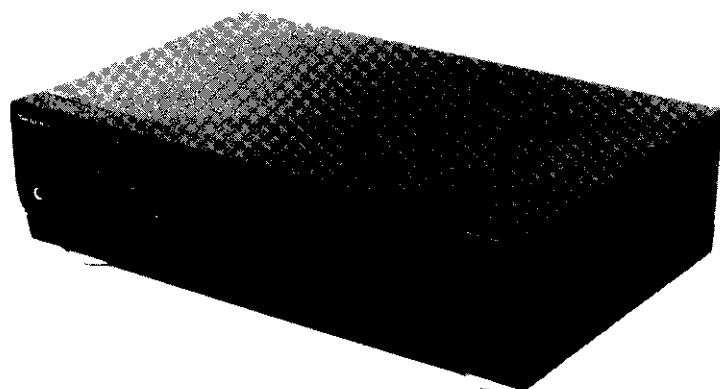


# Service Manual

Stereo Cassette Deck

Cassette Deck

RS-BX646



Colour

(K) ... Black Type

Area

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

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

RS-TR555 MECHANISM SERIES (AR350)

## SPECIFICATIONS

### ■ CASSETTE DECK SECTION

|                  |                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Deck system      | Stereo cassette deck                                                                                                                 |
| Track system     | 4-track, 2-channel                                                                                                                   |
| Recording system | AC bias                                                                                                                              |
| Bias frequency   | 80 kHz                                                                                                                               |
| Erasing system   | AC erase                                                                                                                             |
| Heads            | Recording head [Permalloy (combination)] × 1<br>Playback head [Permalloy (combination)] × 1<br>Erasing head (Double-gap ferrite) × 1 |
| Motors           | Capstan drive (DC SERVO MOTOR) × 1<br>Reel table drive (DC MOTOR) × 1<br>Cassette holder open/close (DC MOTOR) × 1                   |
| Tape speed       | 4.8 cm/sec. (1-7/8 ips)                                                                                                              |
| Wow and flutter  | 0.07% (WRMS)<br>±0.2% (DIN)                                                                                                          |

### Fast forward and rewind times

Approx. 50 seconds with C-60 cassette tape

### Frequency response (Dolby NR off)

|                  |                                           |
|------------------|-------------------------------------------|
| NORMAL           | 30 Hz–17 kHz, ±3 dB<br>20 Hz–18 kHz (DIN) |
| CrO <sub>2</sub> | 30 Hz–18 kHz, ±3 dB<br>20 Hz–19 kHz (DIN) |
| METAL            | 30 Hz–19 kHz, ±3 dB<br>20 Hz–20 kHz (DIN) |

### S/N (Signal level=max recording level, CrO<sub>2</sub> type tape)

|               |                    |
|---------------|--------------------|
| NR off        | 57 dB (A weighted) |
| Dolby B NR on | 66 dB (A weighted) |
| Dolby C NR on | 74 dB (A weighted) |

### Input sensitivity and impedance

|          |             |
|----------|-------------|
| REC (IN) | 10 mV/47 kΩ |
|----------|-------------|

### Output voltage and impedance

|            |                                         |
|------------|-----------------------------------------|
| PLAY (OUT) | 50 mV/500Ω                              |
| HEADPHONES | 90 mV/(8Ω)<br>(Load impedance: 8Ω–600Ω) |

### ■ GENERAL

|                    |                            |
|--------------------|----------------------------|
| Power consumption  | 21 W                       |
| Power supply       | AC 50 Hz/60 Hz, 20 V–240 V |
| Dimensions (W×H×D) | 430×15×293 mm              |
| Weight             | 4.6 kg                     |

### Note:

Specifications are subject to change without notice.  
Weight and dimensions are approximate.

# Technics

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ACCESSORIES

AC power supply cord ..... 1 pc.  
(VJA0733)..... (EB) (RJA0019-2K)..... (E, EG)

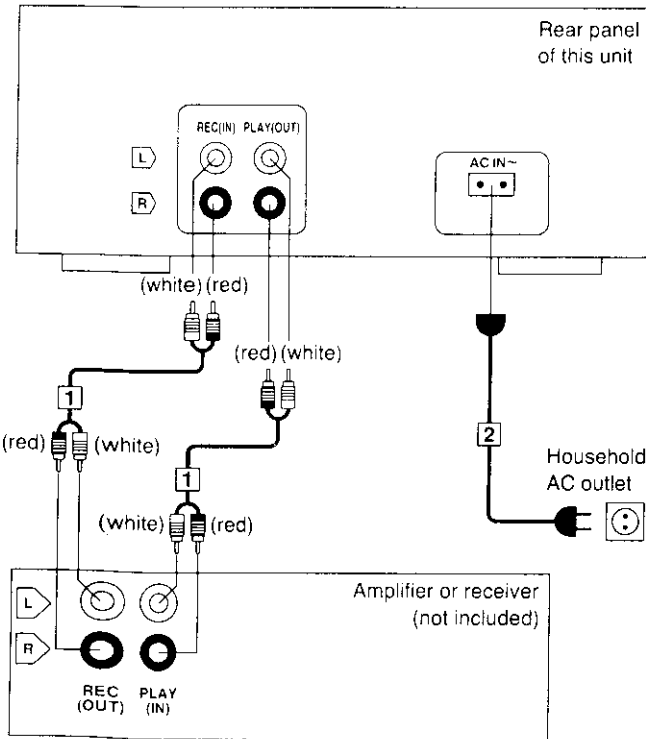


Stereo connection cables ..... 2 pcs.  
(SJP2276)



CONNECTIONS

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



The above illustration 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.

1 Connect the stereo connection cables.

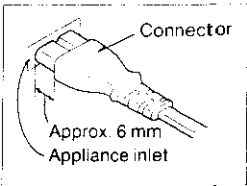
**FOR UNITED KINGDOM ONLY**  
**BE SURE TO READ THE CAUTION FOR AC POWER SUPPLY CORD ON PAGE 3 BEFORE PROCEEDING TO THE STEP 2.**

2 Connect the AC power supply cord after you have connected all other cables and cords.

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

Insertion of Connector

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



Note:

Avoid letting the cables touch each other as much as possible, otherwise noise will be generated.

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 is the least amount of "hum".

## ■ CAUTION FOR AC MAINS LEAD

("EB" area code model only)

For your safety, please read the following text carefully.

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

A 5-ampere fuse is fitted in this plug.

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

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

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

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

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

### CAUTION!

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

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

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

If in any doubt please consult a qualified electrician.

### IMPORTANT

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

Blue: Neutral

Brown: Live

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

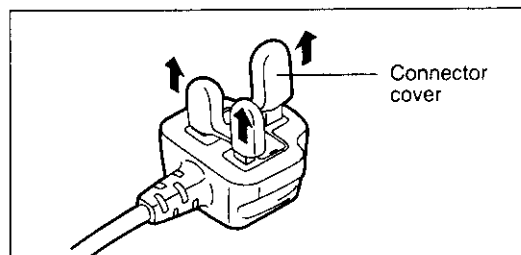
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

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

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

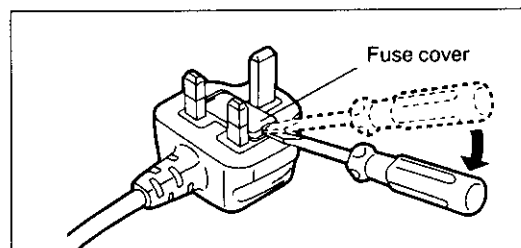
### Before use

Remove the connector cover as follows.

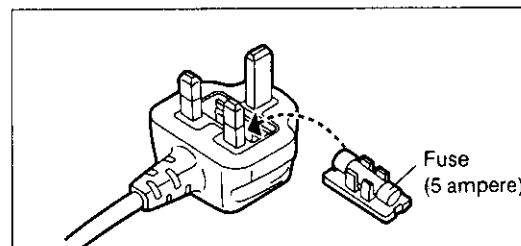


### How to replace the fuse

1. Remove the fuse cover with a screwdriver.

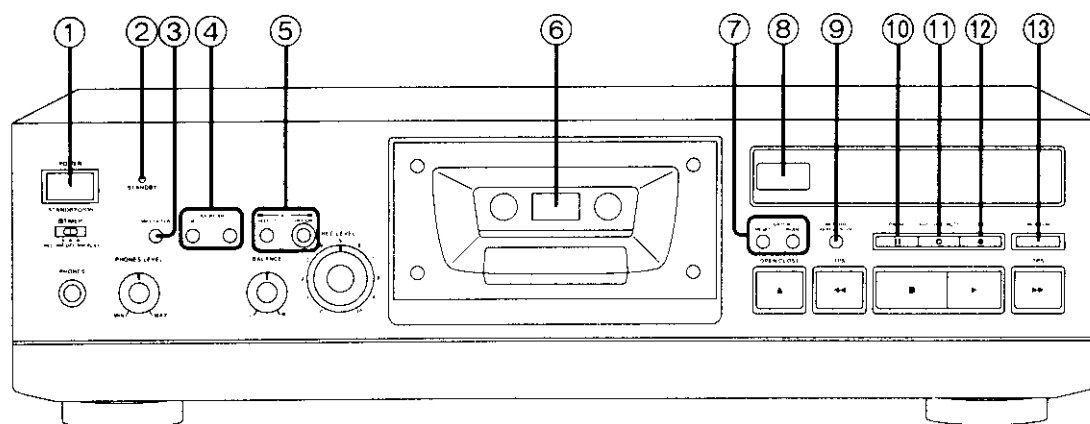


2. Replace the fuse and attach the fuse cover.



## FRONT PANEL CONTROLS AND FUNCTIONS

### Control section



#### ① Power "STANDBY /ON" switch (POWER, STANDBY /ON)

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

#### ② Standby indicator (STANDBY)

When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.

#### ③ Multiplex filter button (MPX FILTER)

This prevents the Dolby NR circuit from operating in error when FM stereo broadcasts are recorded using the noise reduction function.

#### ④ Dolby noise reduction buttons (DOLBY NR B, C)

These buttons are used to reduce the hissing noise heard from the tape. This unit is provided with both the B-type and C-type noise reduction systems. (See page 7.)

#### ⑤ ATC buttons (ATC)

These buttons are used to set the most appropriate bias, level and equalizer according to the type of tapes.

**SELECT:** Each time the button is pressed, the bias position changes as follows:

Standard → High → Low

**OFF/ON:** This button is used to perform or to cancel ATC (Auto Tape Calibration).

#### ⑥ Cassette holder

#### ⑦ Tape counter buttons (COUNTER)

**RESET:** This button is used to reset the tape counter indication to "000\_" or "00.00".

**MODE:** This button is used to select the tape/linear counter indication.

#### ⑧ Remote control signal sensor

You can operate this unit from the remote control equipped with Technics amplifier.

#### ⑨ Memory button (MEMORY REPEAT/STOP)

This button is used to activate the memory repeat play and locate the designated point during playback or recording.

#### ⑩ Pause button (II PAUSE)

This button is used to temporarily stop the tape playback or recording. (See page 7.)

#### ⑪ Automatic record muting button ( AUTO REC MUTE)

This button is used to make a silent interval on the tape while recording is in progress.

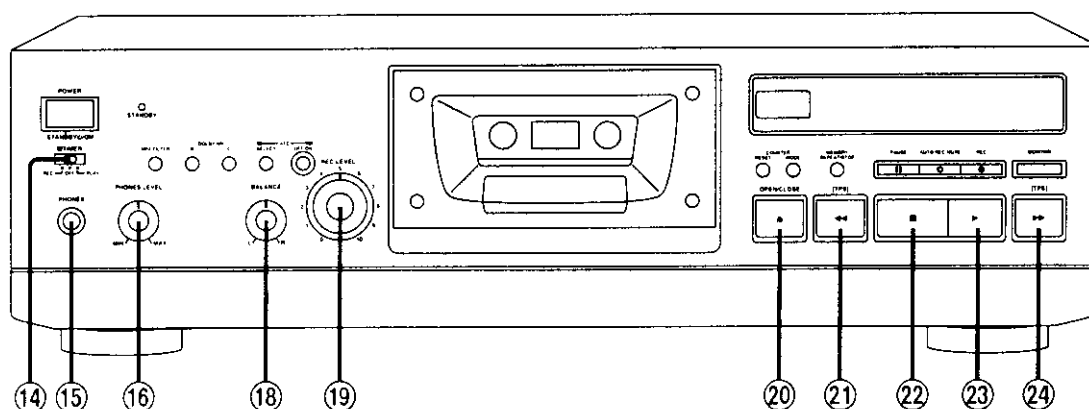
#### ⑫ Record button (● REC)

This button is used to set deck to the recording standby mode.

#### ⑬ Monitor button (MONITOR)

In order to check the recording condition, the sound being recorded and the sound from the sound source can be alternately selected by pressing this button. (The corresponding indicator will illuminate.)

## Control section



⑭ **Timer switch (⏰ TIMER)**

This switch is used to automatically start a tape recording or begin tape playback at a certain time, selected by an optional timer.

⑮ **Headphones jack (PHONES)**

⑯ **Headphones volume control (PHONES LEVEL)**

(See page 7.)

⑰ **Recording balance control (BALANCE)**

This control is used to balance the left and right sound levels during recording.

⑱ **Recording level control (REC LEVEL)**

This control is used to regulate the recording level.

⑳ **Cassette holder open/close button (⏏ OPEN/CLOSE)**

This button is used to open or close the cassette holder. (See page 7.)

㉑ **Rewind/TPS button (⏮ [TPS])**

This button is used to rewind the tape or to easily and quickly search for the beginning of a tune.

㉒ **Stop button (■)**

This button is used to stop the tape movement.

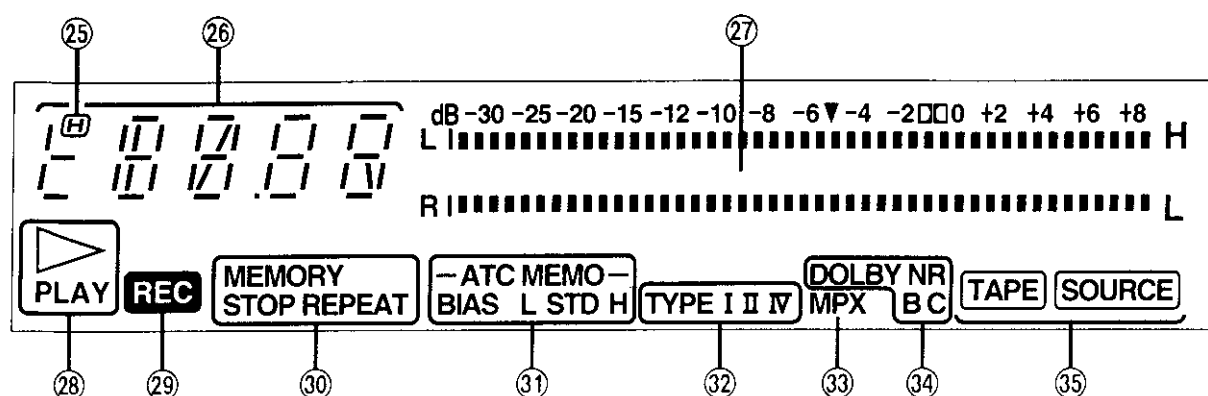
㉓ **Playback button (▶)**

This button is used to start the playback or recording. (See page 7.)

㉔ **Fast forward/TPS button (⏭ [TPS])**

This button is used to advance the tape or to easily and quickly search for the beginning of a tune.

## Display section



### ②⑤ High-speed rewind/fast-forward search indicator (H)

Illuminates during high-speed rewind/fast-forward or high speed search.

### ②⑥ Tape counter/ATC display

Normally functions as the tape/linear counter display. During ATC (Auto Tape Calibration), displays the present condition of the ATC operation.

### ②⑦ Level meter

Indicates the level of the recorded sound during playback.  
Indicates the level being recorded, adjusted by the recording-level control.  
Also displays the present condition of the ATC operation.

### ②⑧ Playback indicator (▷ PLAY)

Illuminates in the playback or the recording mode.  
Flashes in the pause or recording standby mode.

### ②⑨ Recording indicator (REC)

Illuminates in the recording standby mode or recording mode.

### ③① Memory indicators (MEMORY STOP, MEMORY REPEAT)

Each indicator illuminates to show which of the memory modes was set by the memory button.

### ③① ATC memory indicator (ATC MEMO)

Indicates one of the programs of bias position as follows.  
Flashes during ATC (auto tape calibration), and then remains illuminated when the ATC operation is completed.

BIAS STD: Standard  
BIAS H: High  
BIAS L: Low

### ③② Tape select indicators (TYPE)

The type of tape being used will be automatically detected and the indicator will illuminate.

I: NORMAL  
II: CrO<sub>2</sub>  
IV: METAL

### ③③ MPX filter indicator (MPX)

Illuminates to indicate that the multiplex filter is on.

### ③④ Dolby noise-reduction indicators (DOLBY NR B, C)

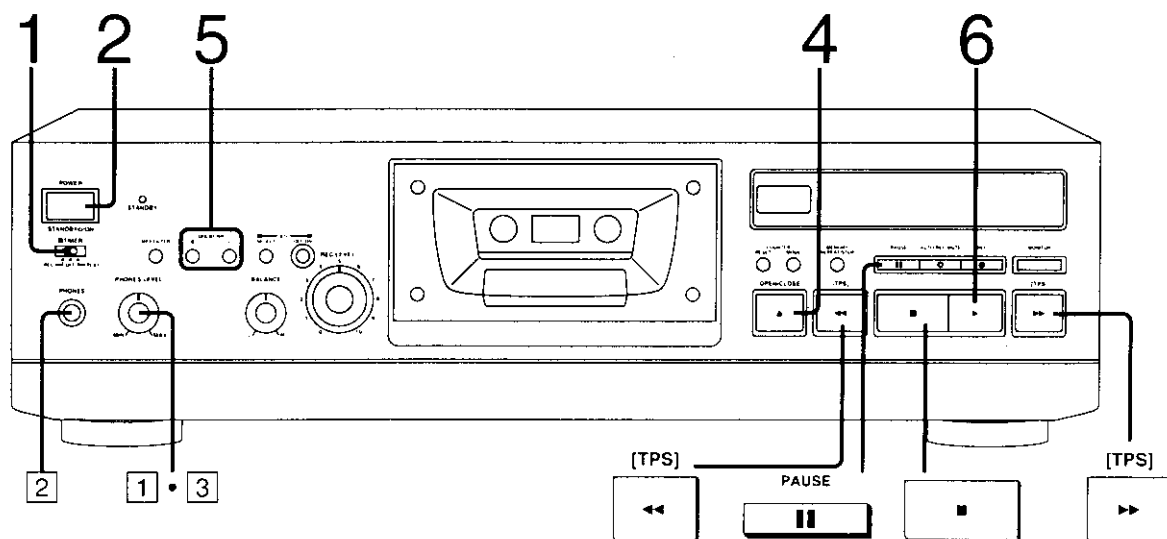
Indicator B or C illuminates when the corresponding noise reduction button (B or C) is pressed.

### ③⑤ Monitor indicators (TAPE, SOURCE)

Each indicator illuminates to show which sound is selected by the monitor switch.

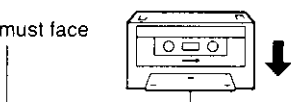
## ■ PLAYBACK (Basic play)

Either normal, CrO<sub>2</sub>, or metal type cassettes can be used.



- 1 Set the timer switch to "OFF".
- 2 Press **POWER STANDBY/ON** to turn the unit on.
- 3 Select the "TAPE" input source on the amplifier.
- 4 Press **OPEN/CLOSE** and insert the cassette tape.

The exposed tape must face downward.



The cassette holder will automatically close.

This unit will automatically detect the type of tape being used, and then makes the suitable adjustments of the bias and equalization accordingly.

The tape select indicator will illuminate as follows:

TYPE I: NORMAL  
TYPE II: CrO<sub>2</sub>  
TYPE IV: METAL

- 5 Press either **DOLBY NR B** or **C** to select the appropriate noise reduction system.

Set to off if neither of the Dolby noise-reduction systems is to be used.

To cancel Dolby noise reduction, press either B or C again. (DOLBY NR B or C indication will go out.)

- 6 Press the **playback button (▶)**.

The playback indicator will illuminate, and playback will begin.

### ■ To temporarily stop playback

Press **PAUSE**.

PAUSE



The playback indicator will begin flashing.

To resume playback, press **PAUSE** again or press the playback button.

### ■ To stop playback

Press the **stop button (■)**.

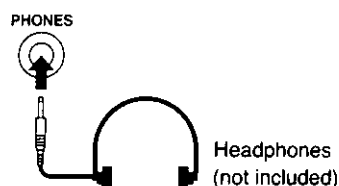


The playback indicator will go out.

### ■ Listening through headphones

- 1 Reduce the volume.
- 2 Connect the headphones (not included) to the **headphones jack**.

Plug type: 6,3 mm phone plug, stereo type.



- 3 Adjust the volume.

Turn to the right to increase or turn to the left to reduce.

#### Note:

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

## DISASSEMBLY INSTRUCTIONS

### "ATTENTION SERVICER"

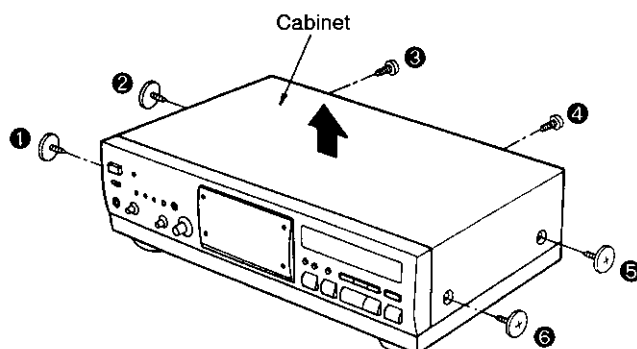
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref.No.  
1

#### Removal of the cabinet

Procedure  
1

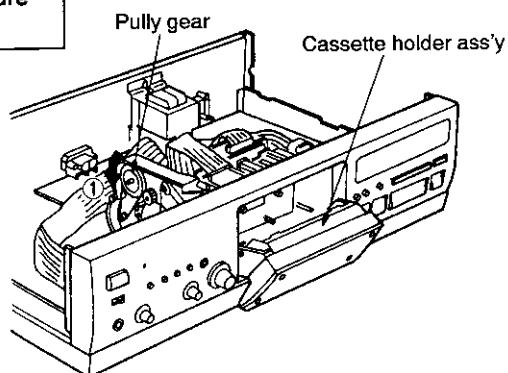
1. Remove the 6 screws (① ~ ⑥).
2. Remove the cabinet in the direction of arrow.



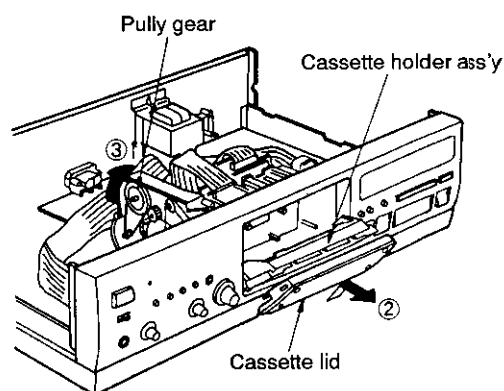
Ref.No.  
2

#### Removal of the front panel ass'y

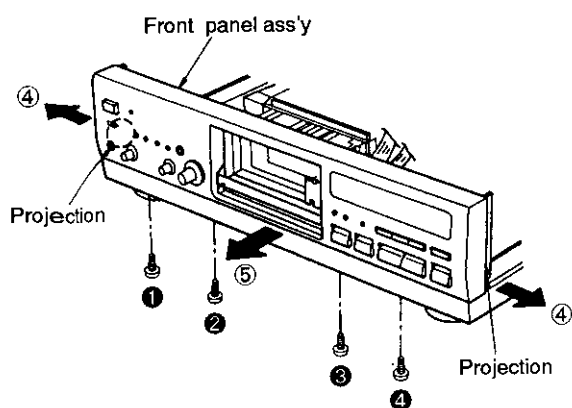
Procedure  
1 → 2



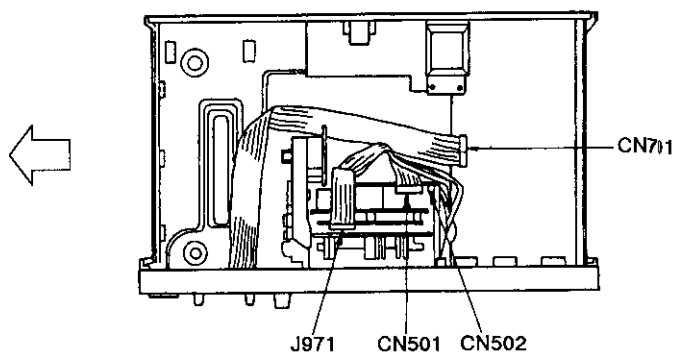
1. Turn the pulley gear in the direction of arrow ①, and open the cassette holder ass'y.



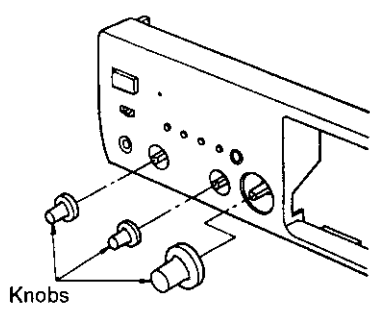
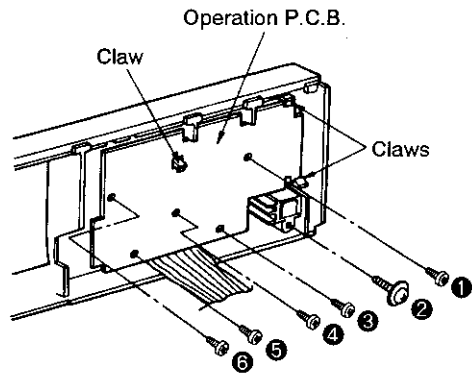
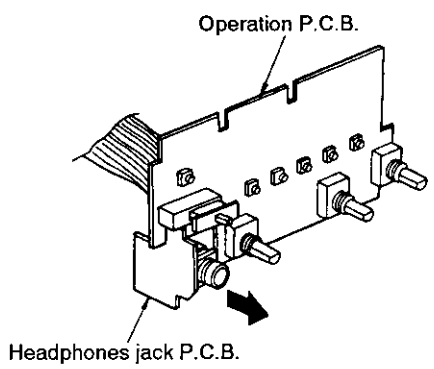
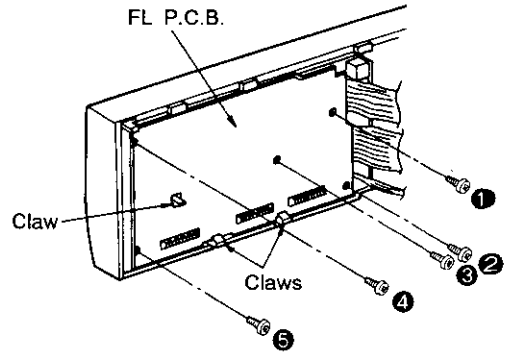
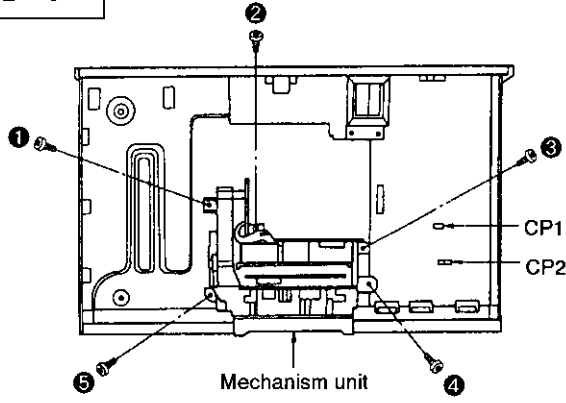
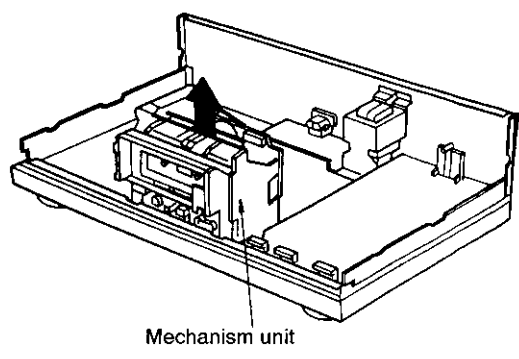
2. Remove the cassette lid in the direction of arrow ②.
3. Turn the pulley gear in the direction of arrow ③, and close the cassette holder ass'y.

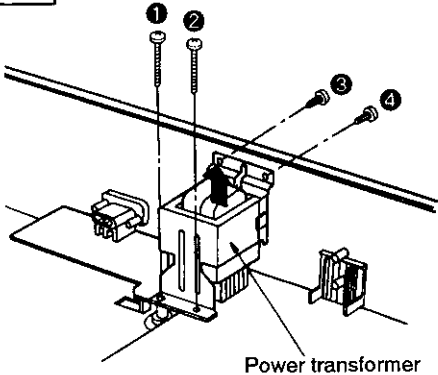
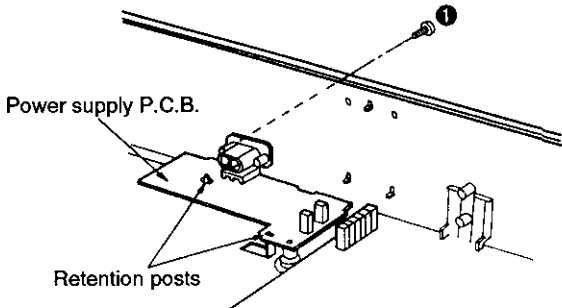
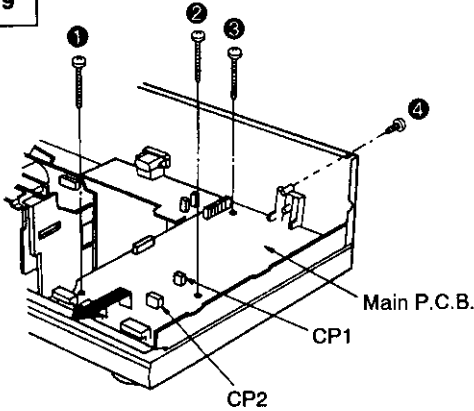
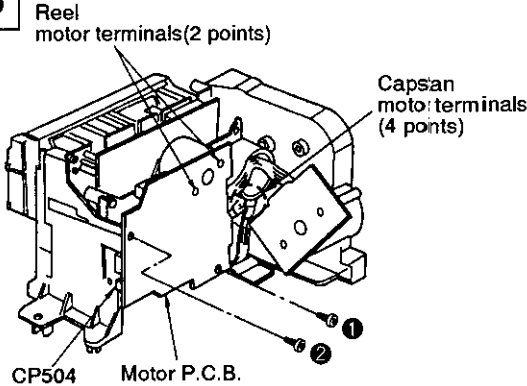
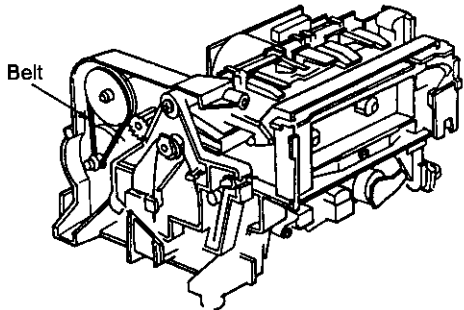
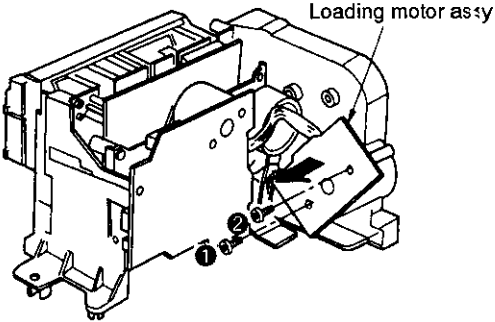


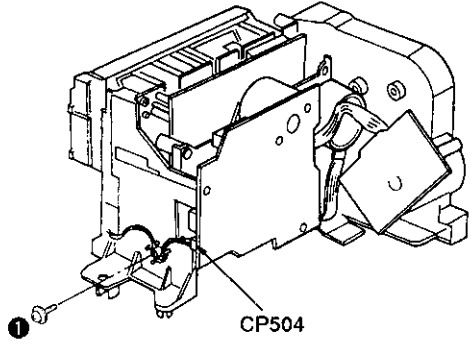
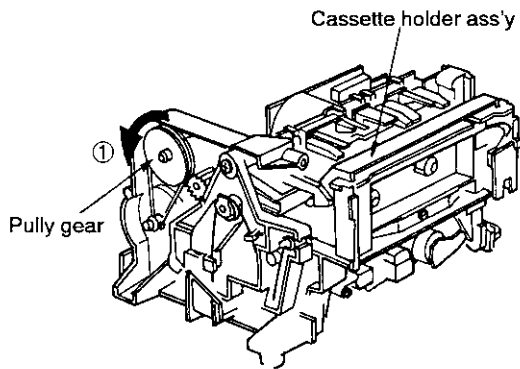
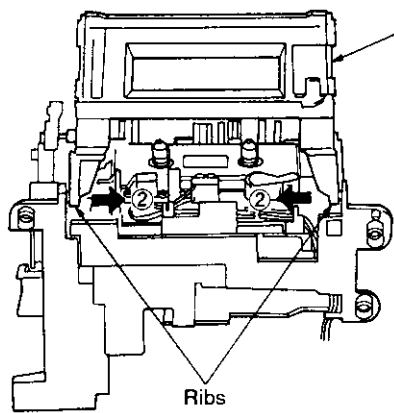
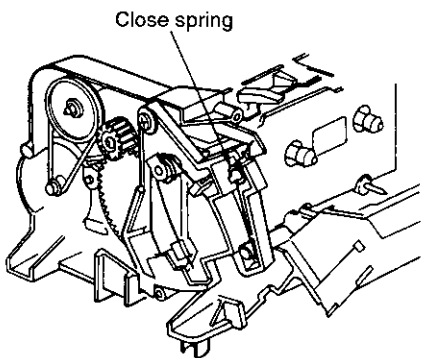
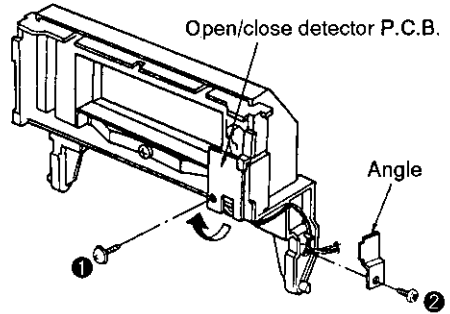
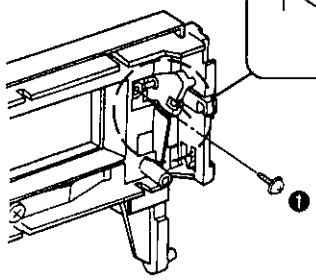
5. Remove the 4 screws (① ~ ④).
6. Pull the front panel ass'y in both directions of arrow ④ to unlock it from the projection of the chassis.
7. Remove the front panel ass'y in the direction of arrow ⑤.



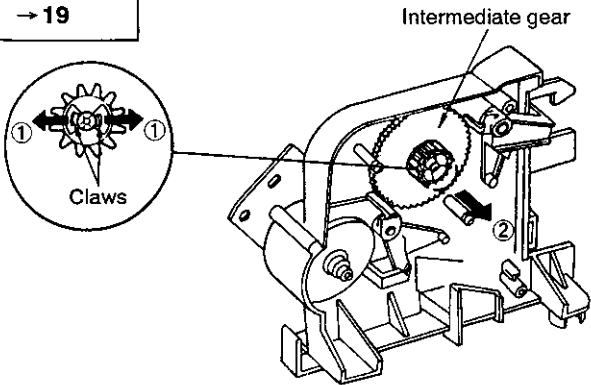
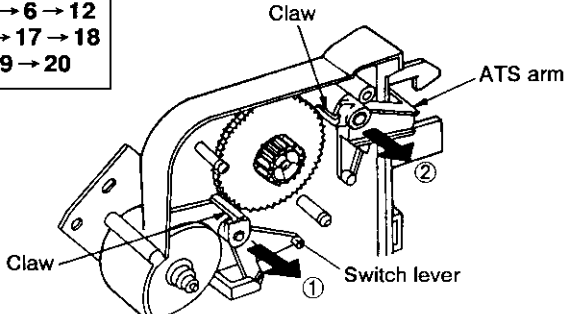
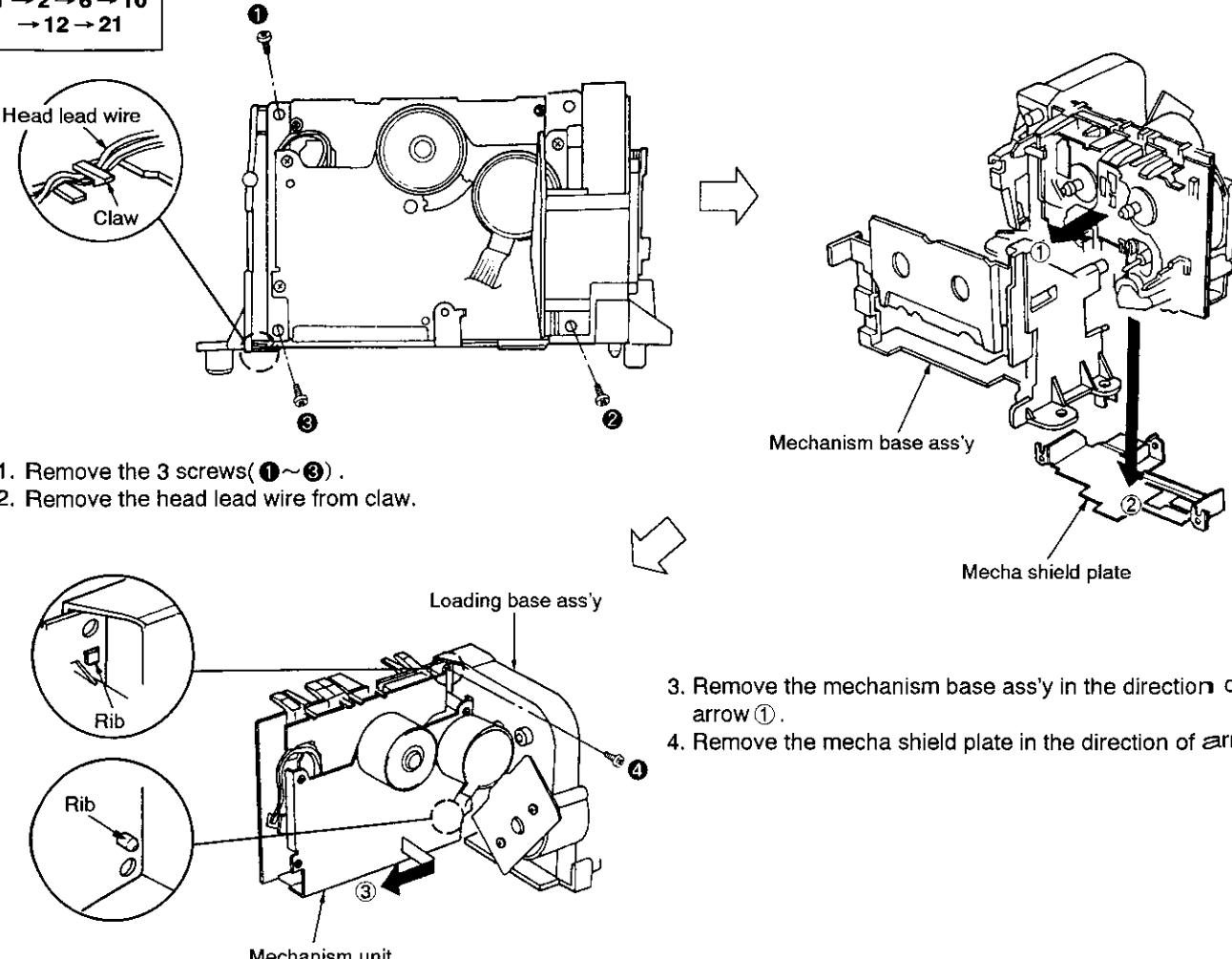
4. Remove the 4 connectors (CN501, CN502, CN701, J71).

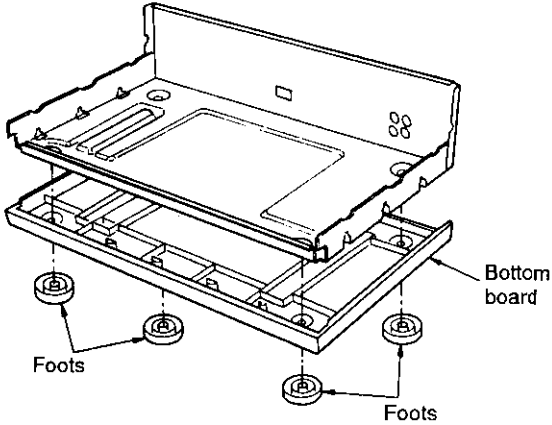
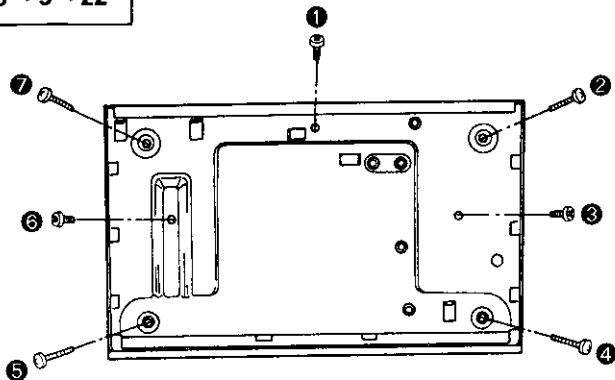
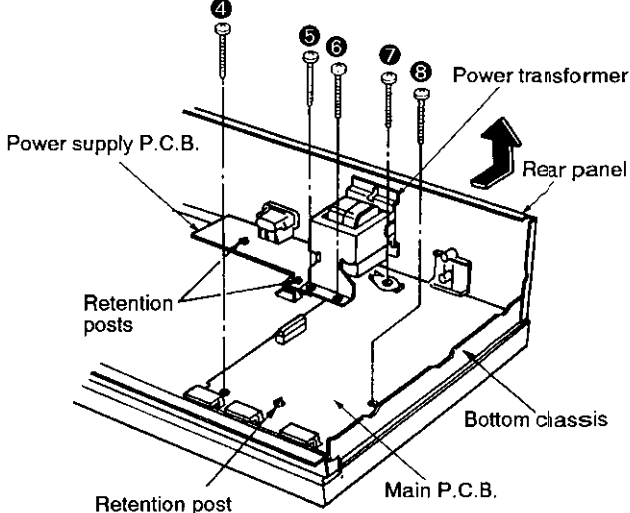
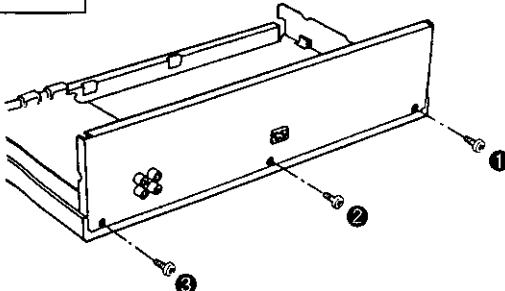
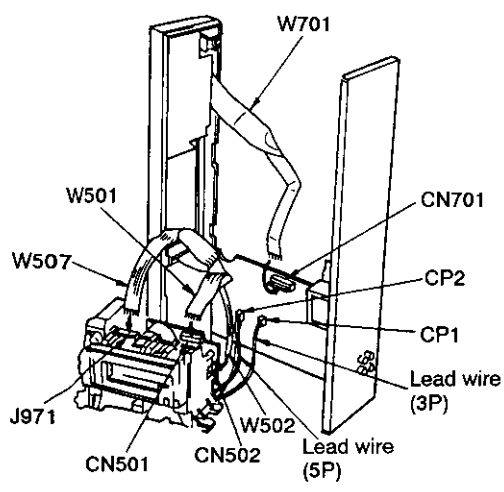
|                                                                                                                                                                                                              |                                       |                                                                                                                               |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Ref.No.<br>3                                                                                                                                                                                                 | Removal of the operation P.C.B.       |                                                                                                                               |                          |
| Procedure<br>1→2→3                                                                                                                                                                                           |                                       |                                                                                                                               |                          |
|  <p>Knobs</p>                                                                                                               |                                       |  <p>Operation P.C.B.<br/>Claw<br/>Claws</p> |                          |
| 1. Pull out the 3 knobs.                                                                                                                                                                                     |                                       | 2. Remove the 6 screws (① ~ ⑥).<br>3. Release the 3 claws.                                                                    |                          |
| Ref.No.<br>4                                                                                                                                                                                                 | Removal of the headphones jack P.C.B. | Ref.No.<br>5                                                                                                                  | Removal of the FL P.C.B. |
| Procedure<br>1→2→3→4                                                                                                                                                                                         | Procedure<br>1→2→5                    |                                                                                                                               |                          |
|  <p>Operation P.C.B.<br/>Headphones jack P.C.B.</p> <p>• Remove the headphones jack P.C.B. in the direction of arrow.</p> |                                       |  <p>FL P.C.B.<br/>Claw<br/>Claws</p>      |                          |
|                                                                                                                                                                                                              |                                       | 1. Remove the 5 screws (① ~ ⑤).<br>2. Release the 3 claws.                                                                    |                          |
| Ref.No.<br>6                                                                                                                                                                                                 | Removal of the mechanism unit         |                                                                                                                               |                          |
| Procedure<br>1→2→6                                                                                                                                                                                           |                                       |                                                                                                                               |                          |
|  <p>CP1<br/>CP2<br/>Mechanism unit</p>                                                                                    |                                       |  <p>Mechanism unit</p>                    |                          |
| 1. Remove the 2 connectors (CP1, CP2).<br>2. Remove the 5 screws (① ~ ⑤).                                                                                                                                    |                                       | 3. Remove the mechanism unit in the direction of arrow.                                                                       |                          |

|                             |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ref.No.<br>7                | Removal of the power transformer                                                                                                                                                                                                                                                                                        | Ref.No.<br>8                                                                                                                                                                                                                                                          | Removal of the power supply P.C.B.                                                                                                                                                                                                                                                                                                                                                                                            |
| Procedure<br>1 → 7          |  <p>Power transformer</p> <ol style="list-style-type: none"> <li>1. Remove the 4 screws(❶~❹).</li> <li>2. Remove the power transformer in the direction of arrow.</li> </ol>                                                           | Procedure<br>1 → 7 → 8                                                                                                                                                                                                                                                |  <p>Power supply P.C.B.</p> <p>Retention posts</p> <ol style="list-style-type: none"> <li>1. Remove the 1 screw(❶).</li> <li>2. Lift the power supply P.C.B. off the retention posts on the bottom chassis.</li> </ol>                                                                                                                      |
| Ref.No.<br>9                | Removal of the main P.C.B.                                                                                                                                                                                                                                                                                              | Ref.No.<br>10                                                                                                                                                                                                                                                         | Removal of the motor P.C.B.                                                                                                                                                                                                                                                                                                                                                                                                   |
| Procedure<br>1 → 2 → 7 → 9  |  <p>Main P.C.B.</p> <p>CP1</p> <p>CP2</p> <ol style="list-style-type: none"> <li>1. Remove the 2 connectors(CP1, CP2).</li> <li>2. Remove the 4 screws(❶~❹).</li> <li>3. Remove the main P.C.B. in the direction of arrow.</li> </ol> | Procedure<br>1 → 2 → 6 → 10                                                                                                                                                                                                                                           |  <p>Reel motor terminals(2 points)</p> <p>Capsan motor terminals(4 points)</p> <p>CP504</p> <p>Motor P.C.B.</p> <ol style="list-style-type: none"> <li>1. Remove the 1 connector(CP504).</li> <li>2. Unsolder the reel motor terminal.</li> <li>3. Unsolder the capstan motor terminals.</li> <li>4. Remove the 2 screws(❶, ❷).</li> </ol> |
| Ref.No.<br>11               | Removal of the loading motor ass'y                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Procedure<br>1 → 2 → 6 → 11 |  <p>Belt</p> <ol style="list-style-type: none"> <li>1. Remove the belt.</li> </ol>                                                                                                                                                   |  <p>Loading motor ass'y</p> <ol style="list-style-type: none"> <li>2. Remove the 2 screws(❶, ❷).</li> <li>3. Remove the loading motor ass'y in the direction of arrow.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                               |

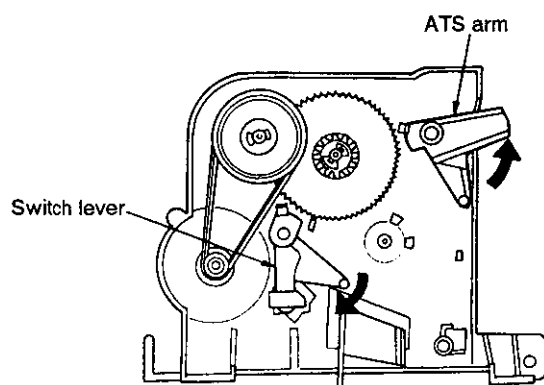
|                                                                                                                              |                                                                                     |                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ref.No.</b><br>12                                                                                                         | <b>Removal of the cassette holder ass'y</b>                                         |                                                                                                                                    |
| <b>Procedure</b><br>1 → 2 → 6 → 12                                                                                           |                                                                                     |                                                                                                                                    |
|                                             |   | <p>Cassette holder ass'y</p> <p>Pully gear</p>                                                                                     |
| 1. Remove the 1 screw(❶).<br>2. Remove the 1 connector(CP504).                                                               |                                                                                     | 3. Turn the pulley gear in the direction of arrow ❶, and open the cassette holder ass'y                                            |
|                                            |  | <p>Cassette holder ass'y</p> <p>Ribs</p> <p>Close spring</p>                                                                       |
| 5. Remove the ribs in the direction of arrow ❷.                                                                              |                                                                                     | 4. Remove the close spring.                                                                                                        |
| <b>Ref.No.</b><br>13                                                                                                         | <b>Removal of the open/close detector P.C.B.</b>                                    | <b>Ref.No.</b><br>14                                                                                                               |
| <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 13                                                                                   |                                                                                     | <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 13 → 14                                                                                    |
|                                           |                                                                                     |                                                |
| 1. Remove the 2 screws(❶, ❷).<br>2. Remove the angle.<br>3. Remove the open/close detector P.C.B. in the direction of arrow. |                                                                                     | <p>Detection lever</p> <p>1. Remove the 1 screw(❶).<br/>         2. Remove the detection lever in the direction of arrow ❶, ❷.</p> |

|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| <b>Ref.No.</b><br>15                            | <b>Removal of the stabilizer</b>                                                                                                                                                                                                                                                                                                                                                                                    |                                                           |
| <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 15      | <div data-bbox="101 280 917 683"> </div> <div data-bbox="54 705 1411 772"> <p>1. Remove the 1 screw( ❶ ).</p> <p>2. Remove the stabilizer spring.</p> <p>3. Release the 4 claws.</p> <p>4. Remove the stabilizer in the direction of arrow.</p> </div>                                                                                                                                                              |                                                           |
| <b>Ref.No.</b><br>16                            | <b>Removal of the drive lever and friction arm</b>                                                                                                                                                                                                                                                                                                                                                                  |                                                           |
| <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 16      | <div data-bbox="70 1019 862 1355"> </div> <div data-bbox="909 817 1434 1310"> </div> <div data-bbox="54 1321 1434 1467"> <p>1. Remove the 1 screw( ❶ ).</p> <p>2. Remove the drive lever in the direction of arrow ❶ .</p> <p>3. Release the drive arm spring from the hook in the direction of arrow ❷ and remove the drive arm spring.</p> <p>4. Remove the friction arm in the direction of arrow ❸ .</p> </div> |                                                           |
| <b>Ref.No.</b><br>17                            | <b>Removal of the drive gear</b>                                                                                                                                                                                                                                                                                                                                                                                    | <b>Ref.No.</b><br>18<br><b>Removal of the pulley gear</b> |
| <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 16 → 17 | <div data-bbox="164 1612 595 2016"> </div> <div data-bbox="54 2027 689 2094"> <p>• Remove the E ring and then remove the drive gear in the direction of arrow.</p> </div>                                                                                                                                                                                                                                           |                                                           |
| <b>Procedure</b><br>1 → 2 → 6 → 18              | <div data-bbox="791 1668 1364 1993"> </div> <div data-bbox="752 2004 1332 2094"> <p>1. Remove the belt.</p> <p>2. Release the 2 claws in the direction of arrow ❶ .</p> <p>3. Remove the pulley gear in the direction of arrow ❷ .</p> </div>                                                                                                                                                                       |                                                           |

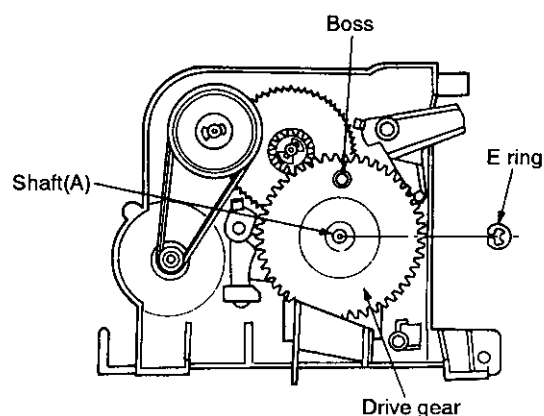
| Ref.No.<br>19                                                | Removal of the intermediate gear                                                                                                                                                                                                                                                                                                                                                                                                                    | Ref.No.<br>20                                                     | Removal of the switch lever and<br>ATS arm                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 16 → 17 → 18<br>→ 19 |  <p>1. Release the 2 claws in the direction of arrow ①.</p> <p>2. Remove the Intermediate gear in the direction of arrow ②.</p>                                                                                                                                                                                                                                    | <b>Procedure</b><br>1 → 2 → 6 → 12<br>→ 16 → 17 → 18<br>→ 19 → 20 |  <p>■ <b>Removal of the switch lever</b></p> <ul style="list-style-type: none"> <li>Release the 1 claw and then remove the switch lever in the direction of arrow ①.</li> </ul> <p>■ <b>Removal of the ATS arm</b></p> <ul style="list-style-type: none"> <li>Release the 1 claw and then remove the ATS arm in the direction of arrow ②.</li> </ul> |
| Ref.No.<br>21                                                | Removal of the mechanism base ass'y, mecha shield plate, loading base ass'y and<br>mechanism unit                                                                                                                                                                                                                                                                                                                                                   |                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Procedure</b><br>1 → 2 → 6 → 10<br>→ 12 → 21              |  <p>1. Remove the 3 screws (① ~ ③).</p> <p>2. Remove the head lead wire from claw.</p> <p>3. Remove the mechanism base ass'y in the direction of arrow ①.</p> <p>4. Remove the mecha shield plate in the direction of arrow ②.</p> <p>5. Remove the 1 screw (④).</p> <p>6. Remove the 2 ribs and then remove the mechanism unit in the direction of arrow ③.</p> |                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                           |                                                                                     |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
| <p><b>Ref.No.</b><br/>22</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Removal of the bottom board</b></p>                                                                                                                                 |   |  |  |  |
| <p><b>Procedure</b><br/>1 → 2 → 6 → 7<br/>→ 8 → 9 → 22</p>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                          |                                                                                     |  |  |  |
| <p><b>Ref.No.</b><br/>23</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>How to check the main P.C.B.</b></p>                                                                                                                                |  |  |  |  |
| <p><b>Procedure</b><br/>1 → 2 → 6 → 23</p>                                                                                                                                                                                                                                                                                                                                                                                                                                            | <br> |                                                                                     |  |  |  |
| <p>1. Remove the 7 screws (① ~ ⑦).</p><br><p>2. Remove the 3 screws (① ~ ③).</p><br><p>5. Connect the flat cables and lead wires to the connectors as follows.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Lead wire(3P) ↔ Connector(CP1)</p> <p>Lead wire(5P) ↔ Connector(CP2)</p> <p>Flat cable(W501) ↔ Connector(CN501)</p> <p>Flat cable(W502) ↔ Connector(CN501)</p> <p>Flat cable(W507) ↔ Connector(J971)</p> <p>Flat cable(W701) ↔ Connector(CN701)</p> </div> |                                                                                                                                                                           |                                                                                     |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                           |                                                                                     |  |  |  |

## ■ INSTALLATION OF THE DRIVE GEAR

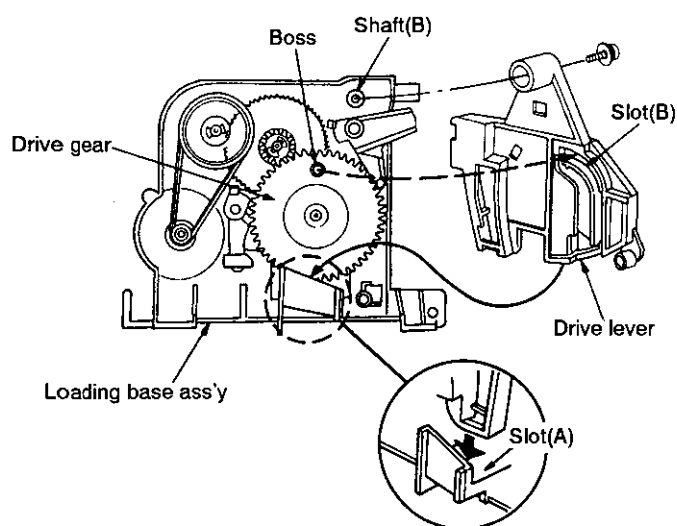


1. Rotate the ATS arm and switch lever fully in the direction of arrow.



2. Position the boss on the drive gear located to the top and attach the drive gear to the shaft(A).
3. Fix the E ring.

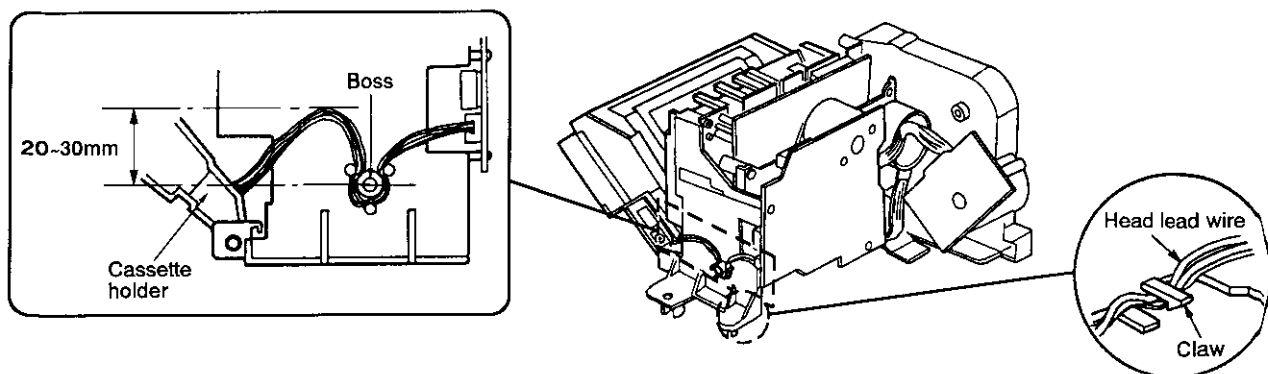
## ■ INSTALLATION OF THE DRIVE LEVER



1. Align the lower portion of drive lever with the slot(A) on the loading base ass'y.
2. Attach the drive lever to the shaft(B) and tighten the screw.

**Note:** When installing the drive lever to the loading base ass'y, align the boss on the drive gear with the slot(B) on the drive lever.

## ■ WIRE ARRANGEMENT



- Leave the cassette holder open and arrange the lead wire to provide 20 to 30mm slack between the cassette holder and boss.

- Pass the head lead wire through the claw as shown above.

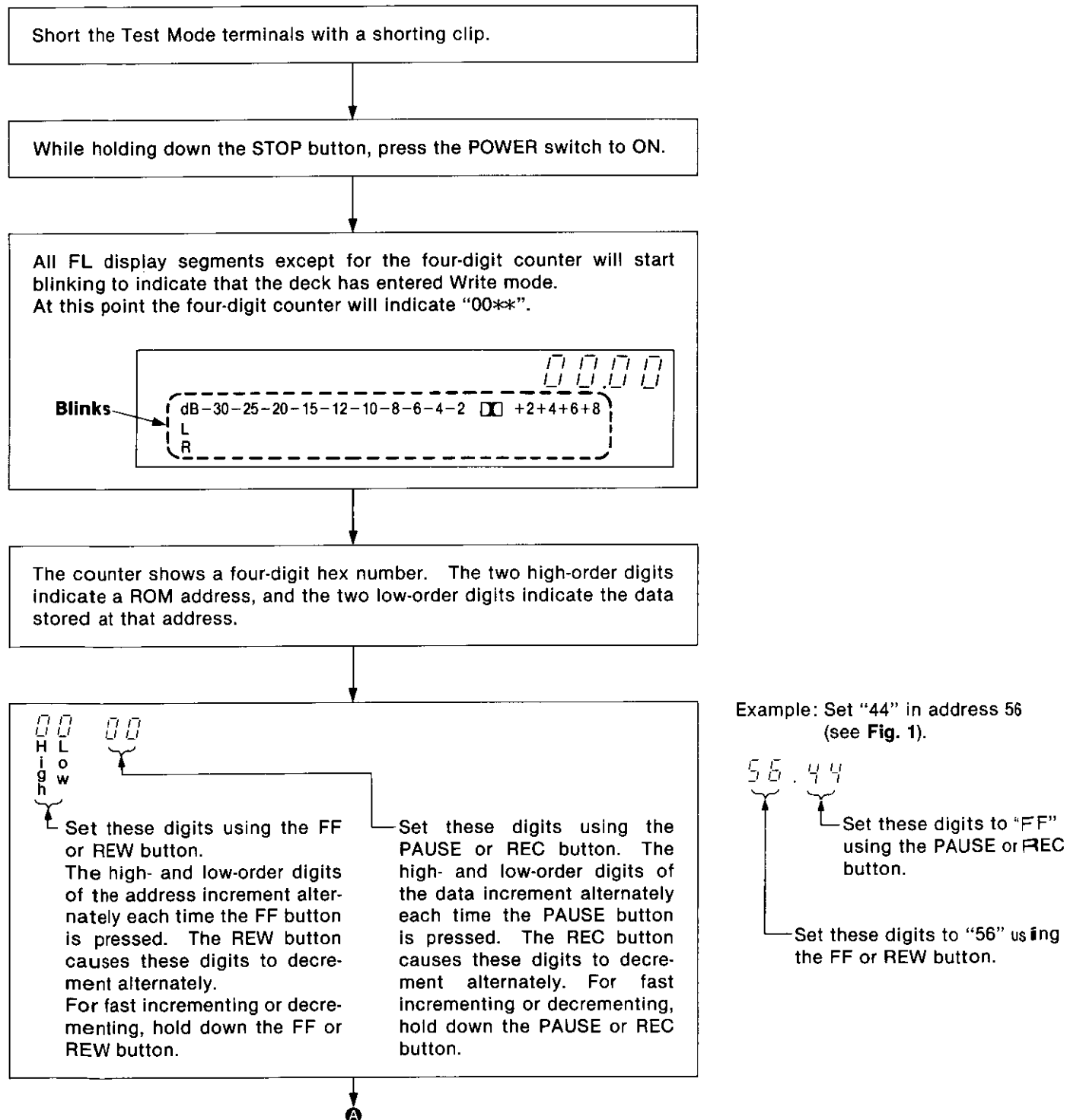
## ■ ADJUSTMENT PROCEDURE

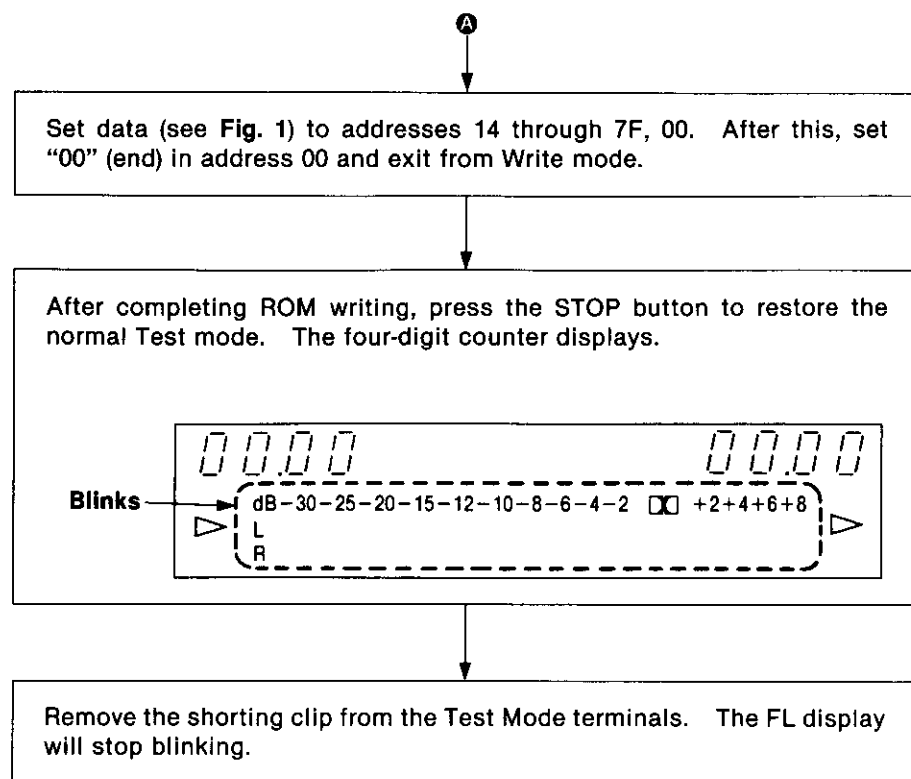
This unit holds recording bias and equalization data in its EEPROM chip. An internal CPU automatically adjusts playback gain, recording bias, overall gain, and overall frequency response according to the ROM data. Manual adjustment with potentiometers is no longer necessary except for head azimuth and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

The adjustment and checkout procedures are as follows.

### • Writing to EEPROM

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





#### • EEPROM MAP

| Low | High | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7 |
|-----|------|----|----|----|----|----|----|----|---|
| 0   | 00   | —  | 60 | 8E | 94 | —  | —  | —  | — |
| 1   | —    | —  | 83 | 94 | 9A | —  | —  | —  | — |
| 2   | —    | —  | 34 | 1E | 1A | —  | —  | —  | — |
| 3   | —    | —  | 6F | 7F | 8E | —  | —  | —  | — |
| 4   | —    | 08 | C0 | BF | B8 | 60 | 8E | 9D | — |
| 5   | —    | 20 | 7C | 74 | 6F | 83 | 98 | 9D | — |
| 6   | —    | 12 | 60 | 8E | 9D | 44 | 1E | 1A | — |
| 7   | —    | 07 | 83 | 98 | 9D | 64 | 6A | 79 | — |
| 8   | —    | FB | 44 | 1E | 1A | C0 | BF | BC | — |
| 9   | —    | F5 | 5A | 62 | 73 | —  | —  | —  | — |
| A   | —    | 5E | C0 | BF | BC | 26 | 30 | 80 | — |
| B   | —    | 99 | 88 | 87 | 88 | 7C | 7D | 7D | — |
| C   | —    | 50 | 8C | 8C | 94 | 70 | 6B | 6B | — |
| D   | —    | 7C | 0F | 0E | 0D | 83 | 83 | 83 | — |
| E   | —    | 4B | 95 | 96 | 97 | —  | FF | 01 | — |
| F   | —    | 51 | 0E | 0D | 0D | —  | —  | 00 | — |

Fig. 1

## ■ MEASUREMENTS AND ADJUSTMENTS

### Measurement Condition

- Recording level control; Maximum
- Timer switch; Off
- Recording balance control; Center
- Headphones volume control; Maximum

### Measuring instrument

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

### Test tape

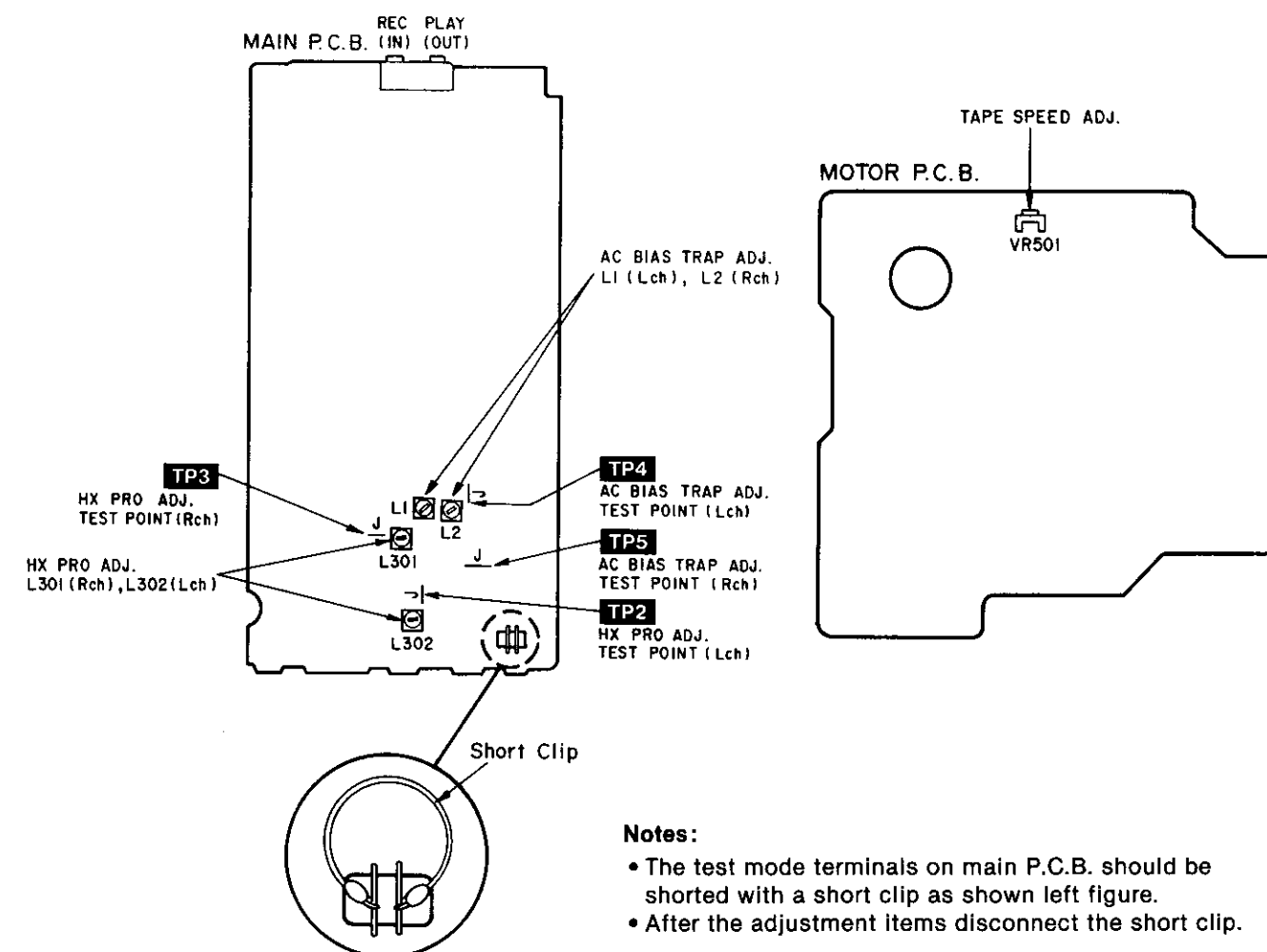
- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM
- Playback gain adjustment (315Hz, 0dB); QZZCFM

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

- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

- Overall gain adjustment and Overall frequency response, AC bias trap adjustment and HX PRO adjustment. Normal reference blank tape; QZZCRA
- CrO<sub>2</sub> reference blank tape; QZZCRX
- Metal reference blank tape; QZZCRZ

### • Adjustment Points



### HEAD AZIMUTH

#### Caution:

- Please replace the tape and spring when reading. Even if you have the screws because of screw and.
- Please remove the tape when replacing the tape.
- If you wish to adhere the tape to the center of the tape.

1. Playback of the test tape until the center of the tape is reached.
2. Perform the head azimuth adjustment.
3. After the adjustment, the center screw is tightened.

### TAPE SPEED

#### Normal speed

1. Playback of the test tape until the center of the tape is reached.
2. Adjust VR501.

#### Adjustment

### PLAYBACK

1. Set the AF oscillator to the center of the tape.
2. With no tape in the REC button and Balance channels release the moment the tape is loaded.
3. Load the tape and the part of the tape recorded. (At this point, the gains.) Adjust the output level.

#### Standard

### AC BIAS TRAP

1. Insert the test tape to the REC button.
2. Adjust L1 between the minimum and maximum.

### HX PRO ADJ.

1. Insert the test tape to the REC button.
2. Connect the test tape (R-CH) and the test tape (L-CH).
3. Adjust L3 between the minimum and maximum.

## HEAD AZIMUTH ADJUSTMENT

## Caution:

- Please replace both azimuth adjustment screws (QH1361A) and springs (QBC1278A) used for to new ones simultaneously when readjusting the head azimuth. (Shown in Fig. 2.) Even if you wish to readjust the head azimuth without replacing the screws and springs, a fine adjustment can not be done because of the screw-locking bond adhered to the azimuth screw and spring.
- Please remove the screw-locking bond left on the head base when replacing the azimuth screw.
- If you wish to readjust the head azimuth, be sure to adjust with adhering the cassette tape closely to the mechanism by pushing the center of cassette tape with your finger. (Shown in Fig. 3.)

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. After the adjustment, apply screwlock to the azimuth adjusting screw.

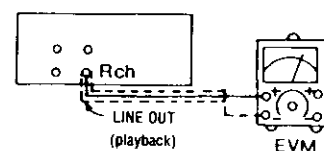


Fig. 1

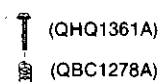


Fig. 2

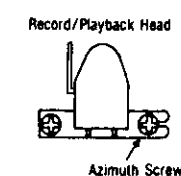


Fig. 4

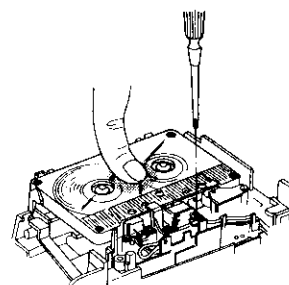


Fig. 3

## TAPE SPEED ADJUSTMENT

Normal speed (Standard Value:  $\pm 45$  Hz)

1. Playback the middle portion of the test tape (QZZCWAT).
2. Adjust VR501 for the output value.

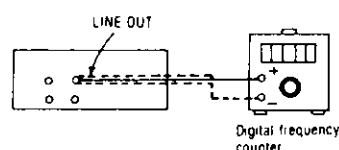
Adjustment target:  $\pm 15$  Hz

Fig. 5

## PLAYBACK GAIN ADJUSTMENT

1. Set the AF oscillator's output frequency to 315Hz.
2. With no tape loaded in the deck, press and hold the REC button. Adjust the test signal level using the Rec. Level and Balance controls until the line output levels on both channels are 320mV. When the adjustment is complete, release the REC button. (The deck stores the data at the moment the REC button is released.)
3. Load the test tape (QZZCFM) into the deck and locate the part where the playback gain test tone (315Hz, 0dB) is recorded. Press the ATC button, then the PLAY button. (At this point the deck automatically adjusts the playback gains.) After this, play back the tape and verify that the output level falls in the specified range.

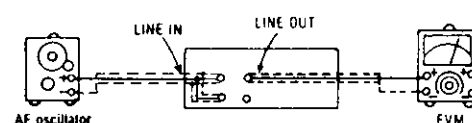
Standard value:  $320\text{mV} \pm 0.5\text{dB}$ 

Fig. 6

## AC BIAS TRAP ADJUSTMENT

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record mode.
2. Adjust L1 (L-CH) [[L2 (R-CH)]] so that the output voltage between TP4 (L-CH) [[TP5 (R-CH)]] and GND is less than the minimum value.

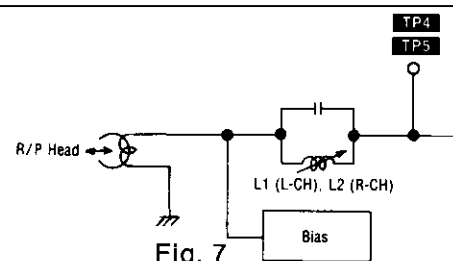


Fig. 7

## HX PRO ADJUSTMENT

1. Insert the Metal blank tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Connect a DC voltmeter across TP2 (L-CH) and GND, TP3 (R-CH) and GND.
3. Adjust L301 (L-CH) and L302 (R-CH) so that the output is the minimum value.

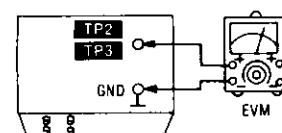


Fig. 8

## PLAYBACK FREQUENCY RESPONSE

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assume that the frequency response is within the range shown in Fig. 10 for both L-CH and R-CH.

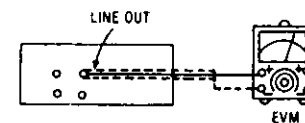


Fig. 9

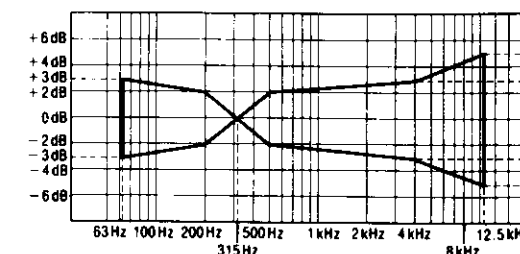


Fig. 10

## 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 TP1 and GND (chassis) is within the standard value.

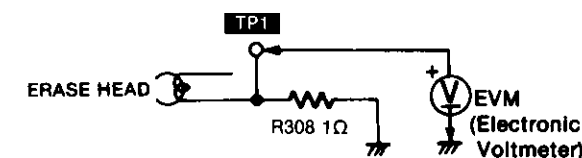
Standard value:  $190 \pm 20\text{mA}$  (Metal)...EVM Reading:  $190 \pm 20\text{mV}$ 

Fig. 11

## OVERALL GAIN ADJUSTMENT AND OVERALL FREQUENCY RESPONSE

1. Load a Normal blank test tape (QZZCRA) into the deck under test. Press the ATC button, then the REC button. (At this point the deck automatically adjusts the overall gain and frequency response.)
2. With the deck placed in Record. Pause mode, apply the reference test signal (1kHz) to the Rec. input and adjust the output level to 320mV with the attenuator (ATT). After this, start recording.
3. While playing back the reference signal just recorded, verify that the output level falls in the following range.

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

## Normal Overall frequency response chart (NR OUT)

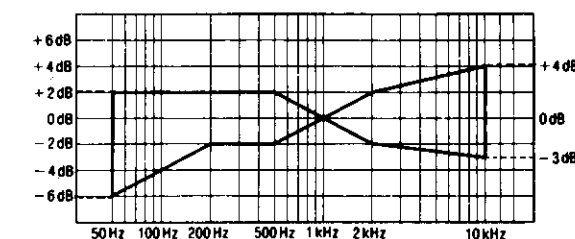


Fig. 13

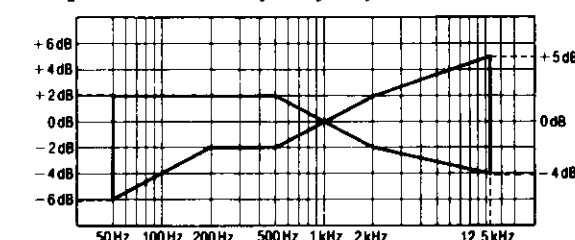
CrO<sub>2</sub> Metal Overall frequency response chart (NR OUT)

Fig. 14

4. Apply test signals (with the specified test frequencies covering the range from 50Hz to 10kHz) whose levels are 20dB lower than the reference signal level (1kHz) to the Rec. input and record these signals in sequence.
5. Play back the test signals just recorded and verify that the levels at the test frequencies fall in the ranges specified in Fig. 13 with respect to the reference signal level.
6. Repeat steps 4 and 5 above for CrO<sub>2</sub> blank test tape (QZZCRX) and Metal blank test tape (QZZCRZ), 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. 14 with respect to the reference signal level.

Steps 1 through 3 above are concerned with overall gain; steps 4 through 6 pertain to overall frequency response.

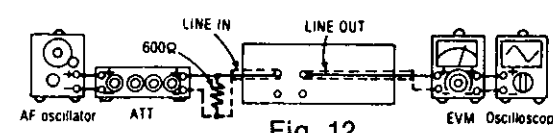
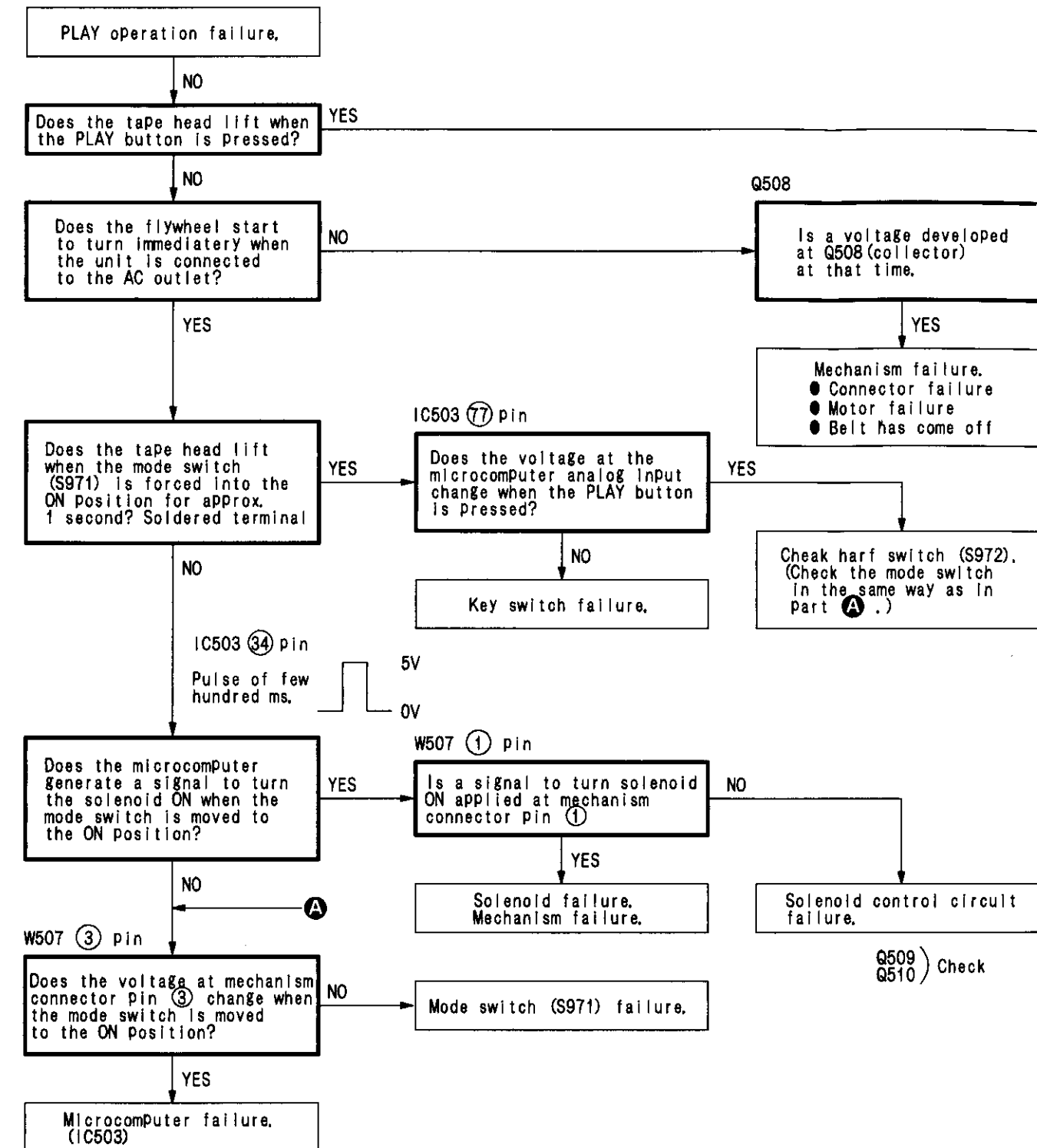
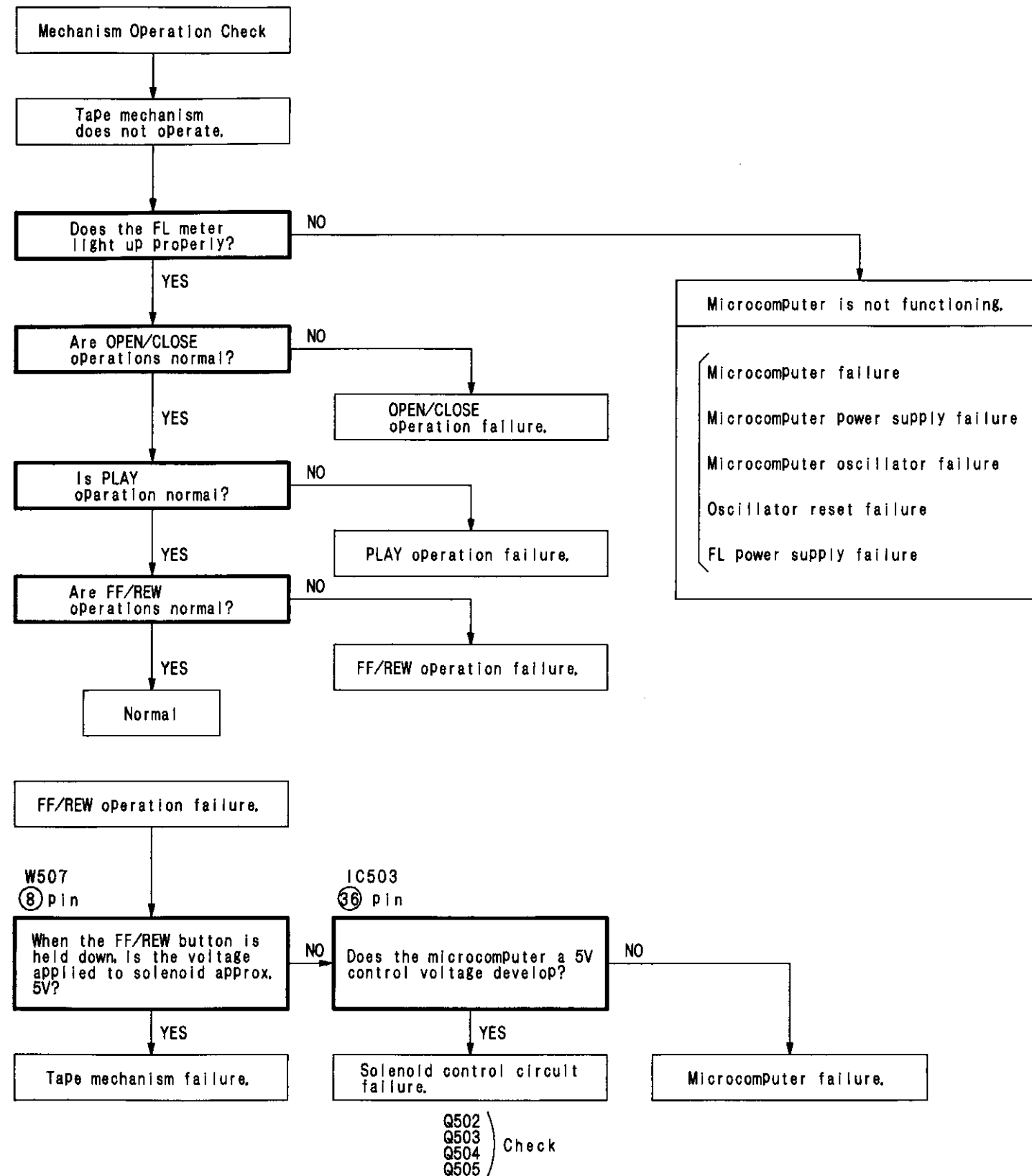
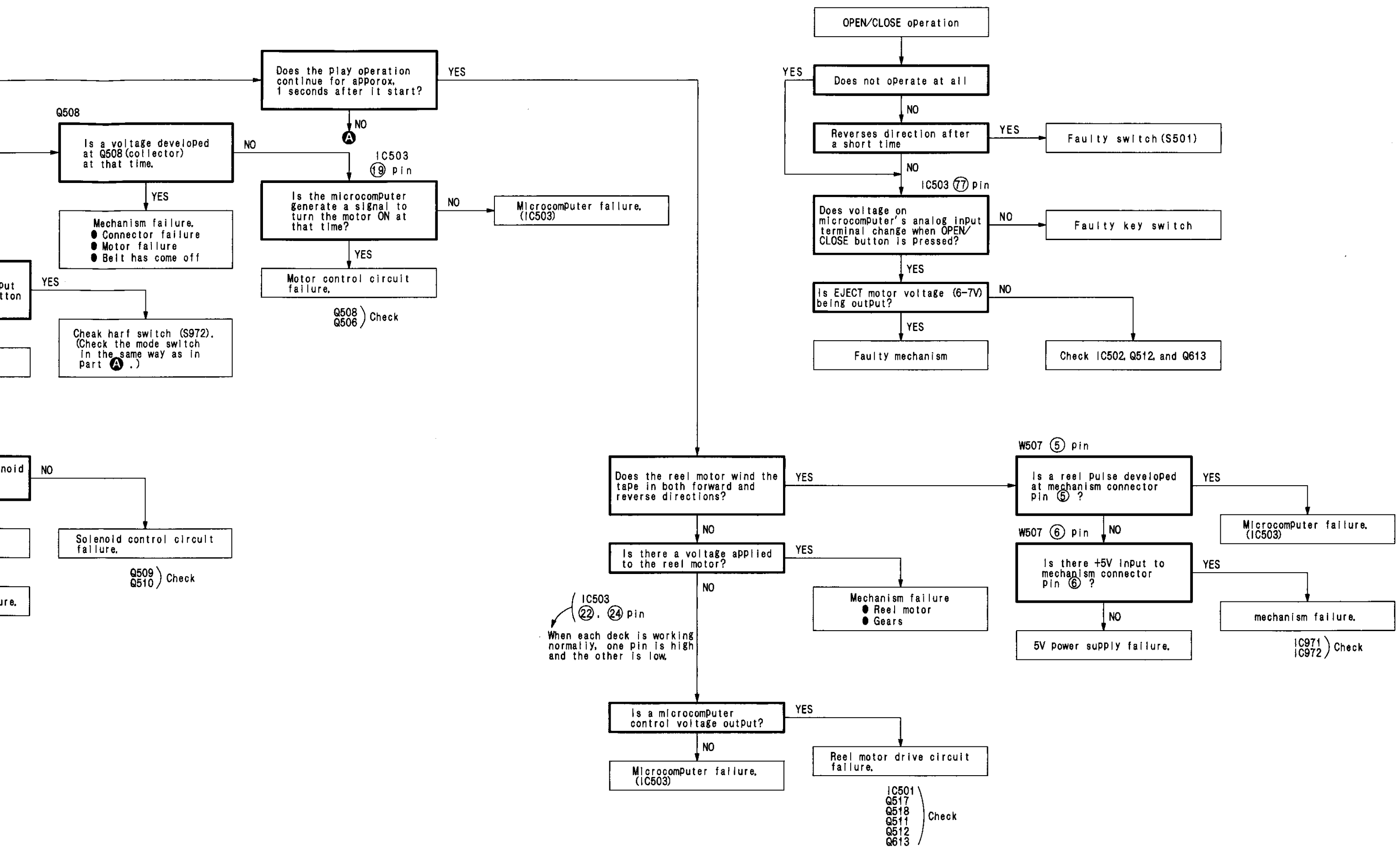


Fig. 12

## TROUBLESHOOTING GUIDE

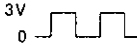
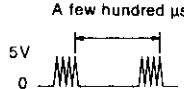
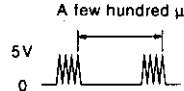
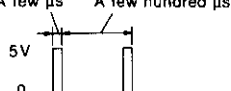
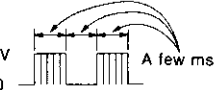


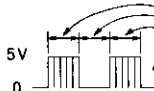
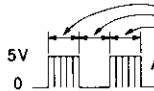
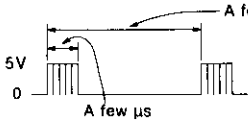
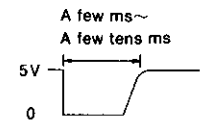


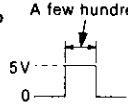
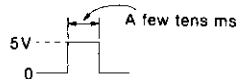
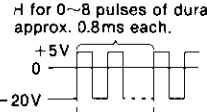
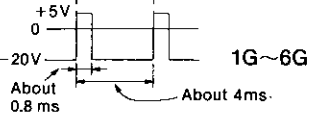
## ■ TERMINAL FUNCTION OF IC

### • IC503 (M38172M2500F): MICROCOMPUTER

\* To check the contents of the item "※" in the IC terminal table, set the unit to the state described in the "Motor Control PCB Checking Method" on page 15.

| Pin No. | Mark     | I/O Division | Function                                                                                                                                 | Check point           | ※ Discription                                                                                                                                                                             |
|---------|----------|--------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | RPT      | I            | Reel pulse det. input (take up side)                                                                                                     | Connector W507 ⑤ pin  |  <p>Changes within the 0 ↔ 3V range each time the take up reel is through approximately 30 degrees.</p> |
| 2       | RPS      | I            | Reel pulse det. input (supply side)                                                                                                      | Connector W507 ⑪ pin  |  <p>Changes within the 0 ↔ 3V range each time the take up reel is through approximately 30 degrees.</p> |
| 3       | DOOR     | I            | Cassette holder half det. input (photo det.)                                                                                             | Connector W501 ⑧ pin  | Tape in: 5V<br>Tape out: 0V                                                                                                                                                               |
| 4       | KEY2     | I            | Key switch (COUNTER RESET, COUNTER MODE, MEMORY REPEAT/STOP, POWER, DOLBY B, DOLBY C, MPX, ATC ON/OFF, ATC SELECT, TIMER REC/PLAY) input | Connector IC503 ④ pin | +5V without key input and 0V with the stop key ON. An analog value (0~5V) is used for each key ON.                                                                                        |
| 5       | SDAC     | O            | DA converter data output ON: "L", OFF: "H"                                                                                               | Connector CP3 ④ pin   |  <p>Usually</p>                                                                                       |
| 6       | SCKC     | O            | DA converter serial clock output ON: "L", OFF: "H"                                                                                       | Connector CP3 ③ pin   |  <p>Usually</p>                                                                                       |
| 7       | STBC     | O            | DA converter strobe signal output ON: "H", OFF: "L"                                                                                      | Connector CP3 ② pin   |  <p>Usually</p>                                                                                       |
| 8       | DMT      | O            | Line out mute signal output ON: "L", OFF: "H"                                                                                            | Connector CP3 ① pin   | "L" (=0V) when sound is being produced in the play or REC mode and "H" (=5V) when no sound is produced in the stop or FF/REW mode.                                                        |
| 9       | CS       | —            | Not used                                                                                                                                 | —                     | Connected to GND                                                                                                                                                                          |
| 10      | CLK1     |              |                                                                                                                                          |                       |                                                                                                                                                                                           |
| 11      | OP/CL SW | I            | Can switch of eject mechanism input                                                                                                      | Connector W501 ③ pin  | Cassette holder open/close condition: 0V<br>Cassette holder active: 5V                                                                                                                    |
| 12      | HSPD     | O            | High speed take up selector output of reel motor                                                                                         | Connector W501 ② pin  | "H" (=5V) when deck is in the high-speed FF/REW or TPS mode and "L" (=0V) in other modes.                                                                                                 |
| 13      | SDIK     | I/O          | E2PROM chip select signal (ON: "H", OFF: "L")                                                                                            | Connector CN503 ⑤ pin |  <p>(ex...PLAY ↔ STOP mode is changed)</p>                                                            |

| Pin No. | Mark    | I/O Division | Function                                              | Check point               | ※ Discription                                                                                                                                                                                      |
|---------|---------|--------------|-------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14      | SCKE    | O            | E2PROM serial clock signal output ON: "H", OFF: "L"   | Connector CN503 ④ pin     |  (ex...PLAY ↔ STOP mode is changed)                                                                              |
| 15      | SCSE    | O            | E2PROM serial data signal output ON: "H", OFF: "L"    | Connector CN503 ③ pin     |  (ex...PLAY ↔ STOP mode is changed)                                                                              |
| 16      | DATA    | O            | Serial data for amp control output ON: "H", OFF: "L"  | Connector CP3 ⑧ pin       |  Usually                                                                                                         |
| 17      | OSC     | O            | Audio signal for adjustment output ON: "H", OFF: "L"  | Connector CP3 ⑦ pin       | Generates signals at approx. 400Hz or 10kHz (square wave (H and L, 0 and 5V) in REC mode during adjustment of ATC).                                                                                |
| 18      | CLK     | O            | Serial clock for serial data output                   | Connector CP3 ⑥ pin       |  Data output in response to serial data                                                                          |
| 19      | CAPM    | O            | Capstan motor ON/OFF control output ON: "H", OFF: "L" | Connector W502 ③ pin      | STOP mode: "L" (=0V)<br>PLAY mode: "H" (=5V)                                                                                                                                                       |
| 20      | EJECT R | O            | Eject motor close control output                      | Connector W501 ⑤ pin      | OPEN → CLOSE mode: "H" (=5V)<br>Other mode: "L" (=0V)                                                                                                                                              |
| 21      | EJECT F | O            | Eject motor open control output                       | Connector W501 ④ pin      | CLOSE → OPEN mode: "H" (=5V)<br>Other mode: "L" (=0V)                                                                                                                                              |
| 22      | RMR     | O            | Reel motor reverse output                             | Connector W501 ⑥ pin      | REW mode: "L" (=0V)<br>Other mode: "H" (=5V)                                                                                                                                                       |
| 23      | POF     | I            | Power off det. input ON: "H", OFF: "L"                | Connector CP4 ③ pin       |  Rectified waveform at both 50 and 60 Hz (clamping at 5V)                                                      |
| 24      | RMF     | O            | Reel motor forward output                             | Connector W501 ⑦ pin      | PLAY/FF mode: "L" (=0V)<br>Other mode: "H" (=5V)                                                                                                                                                   |
| 25      | HALF    | I            | Cassette half det. switch input                       | Connector W507 ② pin      | Tape in close mode: "L" (=0V)<br>Other mode: "H" (=5V)                                                                                                                                             |
| 26      | MODE    | I            | Mechanism mode switch det. input                      | Connector W507 ③ pin      | STOP/FF/REW mode: "H" (=5V)<br>PLAY/TPS mode: "L" (=0V)                                                                                                                                            |
| 27      | RESET   | I            | Reset input ON: "L", OFF: "H"                         | TRANSISTOR Q501 collector |  Usually H (=5V) but L for a period of a few to a few tens of milliseconds is first plugged in when the player |
| 28      | XCIN    | —            | Not used                                              | —                         | —                                                                                                                                                                                                  |
| 29      | XCOUT   | —            | Not used                                              | —                         | —                                                                                                                                                                                                  |

| Pin No.  | Mark             | I/O Division | Function                                  | Check point          | ※ Discription                                                                                                                                |
|----------|------------------|--------------|-------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 30       | XIN              | I            | Microcomputer clock OSC terminal          | Z501 ① pin terminal  |  Oscillator waveform at 6MHz                                |
| 31       | XOUT             | O            | Microcomputer clock OSC terminal          | Z501 ③ pin terminal  |  Oscillator waveform at 6MHz                                |
| 32       | V <sub>SS</sub>  | —            | Microcomputer GND                         | Connector CP5 ⑩ pin  | 0V                                                                                                                                           |
| 33       | RMSP             | O            | Trigger solenoid control output           | Connector W507 ① pin | STOP → PLAY or PLAY → STOP mode<br> A few hundred ms      |
| 34       | T SOL            | O            | Reel motor speed control output           | D504 ④ terminal      | FF/REW mode: "H" (=5V)<br>PLAY mode: "L" (=0V)                                                                                               |
| 35       | CSOL             | O            | Brake solenoid hold control output        | IC503 ③ pin          | FF/REW/TPS mode: "H" (=5V)<br>Other mode: "L" (=0V)                                                                                          |
| 36       | BSOL             | O            | Brake solenoid control output             | Q503 ⑥ terminal      | STOP → FF/REW or<br>PLAY → TPS mode<br> A few tens ms     |
| 37       | REMOCON          | I            | Remocon signal input ON: "H", OFF: "L"    | Z502 ① pin           | H and L pulse waveform appears on the input of a remote control signal.                                                                      |
| 38       | RECINH           | I            | Rec inhibit switch input                  | Connector W507 ⑦ pin | Rec OK: "L" (=0V)<br>Rec NG: "H" (=5V)                                                                                                       |
| 39       | CrO <sub>2</sub> | I            | CrO <sub>2</sub> tape det. input          | Connector W507 ⑨ pin | CrO <sub>2</sub> /Metal or no tape: "H" (=5V)<br>Normal tape: "L" (=0V)                                                                      |
| 40       | METAL            | I            | Metal tape det. input                     | Connector W507 ⑩ pin | Metal or no tape: "H" (=5V)<br>Normal or CrO <sub>2</sub> tape: "L" (=0V)                                                                    |
| 41<br>58 | P1<br>P18        | O            | FL meter segment output ON: "H", OFF: "L" | FL501 ⑬~⑮ pin        |  H for 0~8 pulses of duration approx. 0.8ms each. P1~P18 |
| 59<br>64 | 1G<br>6G         | O            | FL meter glid output ON: "H", OFF: "L"    | FL501 ⑪~⑬ pin        |  About 0.8 ms About 4ms. 1G~6G                           |
| 65<br>69 | 7G<br>11G        | —            | Not used                                  | —                    | —                                                                                                                                            |
| 70       | POWER            | O            | Power control output ON: "H", OFF: "L"    | Connector CP3 ⑩ pin  | Power ON: "H" (=5V)<br>Power OFF: "L" (=0V)                                                                                                  |
| 71       | MSP              | I            | TPS signal det. input ON: "L", OFF: "H"   | Connector CP3 ⑨ pin  | TPS mode<br>No program: "H" (=5V)<br>Programs: "L" (=0V)                                                                                     |

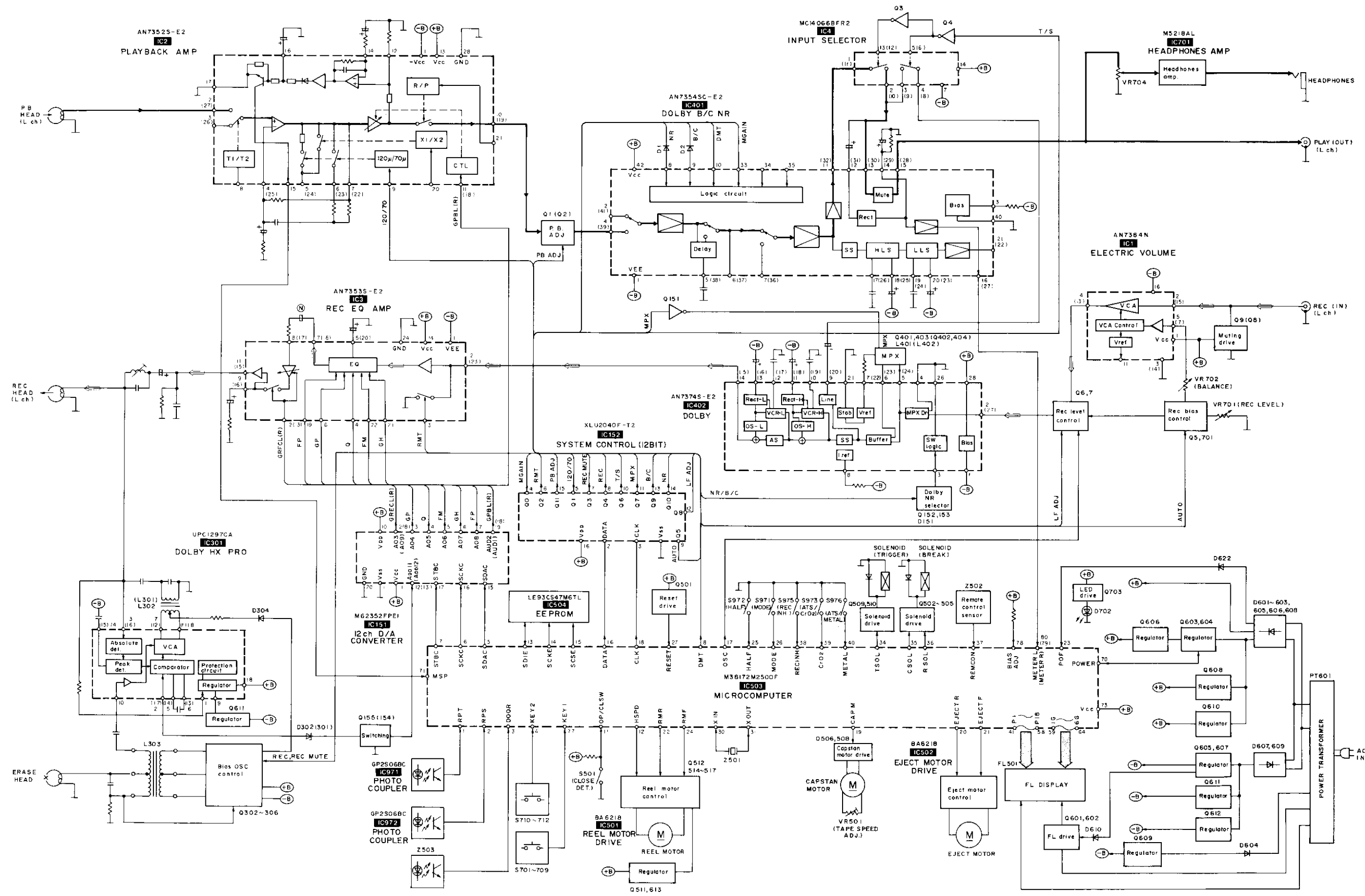
| Pin No. | Mark             | I/O Division | Function                                                                     | Check point         | ※ Discription                                                                                                   |
|---------|------------------|--------------|------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------|
| 72      | TEST             | —            | Test mode input                                                              | Connector CP3 ⑧ pin | Normal: "H" (=5V)<br>Test (Service) mode: "L" (=0V)                                                             |
| 73      | V <sub>CC</sub>  | I            | Power supply terminal                                                        | Connector CP4 ⑨ pin | +5V                                                                                                             |
| 74      | V <sub>EE</sub>  | I            | FL meter pull down voltage input terminal                                    | Connector CP5 ⑥ pin | −20V                                                                                                            |
| 75      | AV <sub>SS</sub> | —            | GND terminal (A/D)                                                           | Connector CP5 ⑩ pin | 0V                                                                                                              |
| 76      | VREF             | I            | Reference power supply (+5V) (A/D)                                           | Connector CP5 ⑧ pin | +5V                                                                                                             |
| 77      | KEY1             | I            | Key switch (STOP, FF, MONITOR, REW, PLAY, REC, ARM, PAUSE, OPEN/CLOSE) input | IC503 ⑦ pin         | +5V without key input on deck 1 and 0V with the stop key ON.<br>An analog value (0~5V) is used for each key ON. |
| 78      | BIAS ADJ         | O            | Bias adj. V.R terminal                                                       | Connector CP3 ⑤ pin | Bias ADJ. Vol. min..... 0V<br>center ..... About 2.5V<br>max ..... About 5V                                     |
| 79      | METER R          | I            | Rch meter level input                                                        | Connector CP3 ⑥ pin | Source mode:<br>No signal (About 0V): 0V<br>0VU (−20dB) input: About 1V                                         |
| 80      | METER L          | I            | Lch meter level input                                                        | Connector CP3 ⑦ pin | Canges within 0 ↔ 5V range each input level mode.                                                               |

P.B.  
HEAD  
(L CH)

REC  
HEAD  
(L CH)

ERASE  
HEAD

BLOCK DIAGRAM



Notes:  
• → Playback signal  
• → Recording signal

# SCHEMATIC DIAGRAM (Parts list on pages 51~54.)

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

## Note:

- S501 : Close switch (Loading).
- S701 : Stop switch (■).
- S702 : Fast forward/TPS switch (▶▶ [TPS]).
- S703 : Monitor switch.
- S704 : Rewind/TPS switch (◀◀ [TPS]).
- S705 : Playback switch (▶).
- S706 : Record switch (● REC).
- S707 : Automatic record muting switch (● AUTO REC MUTE).
- S708 : Pause switch (■ PAUSE).
- S709 : Cassette holder open/close switch (▲ OPEN/CLOSE).
- S710 : Tape counter switch.  
711 (S710: RESET, S711: MODE)
- S712 : Memory switch (MEMORY REPEAT/STOP).
- S713 : Power "STANDBY" / "ON" switch (POWER, STANDBY / ON).
- S714 : Multiplex filter switch (MPX FILTER).
- S715 : Dolby noise reduction switches.  
716 (S715: DOLBY NR B, S716: DOLBY NR C)
- S717 : ATC switch (ATC).  
718 (S717: OFF/ON (Auto Tape Calibration), S718: SELECT (Standard → High → Low).)
- S719 : Timer switch (■ TIMER).
- S971 : Mode switch in "off" position.
- S972 : Cassette half detection switch in "off" position.
- S973 : ATS (CrO<sub>2</sub>) switch in "off" position.
- S975 : Rec inhibit switch in "off" position.
- S976 : ATS (Metal) switch in "off" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.

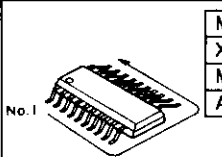
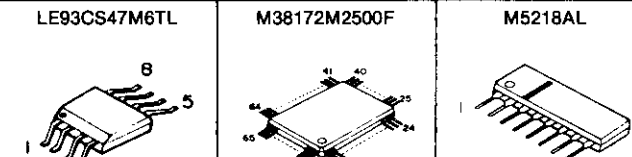
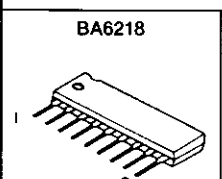
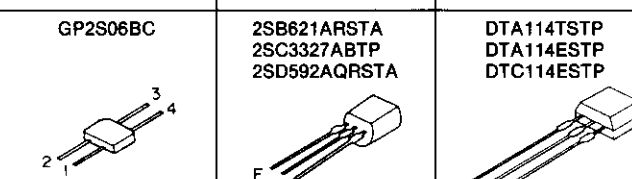
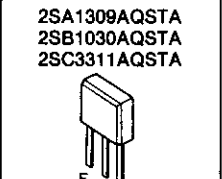
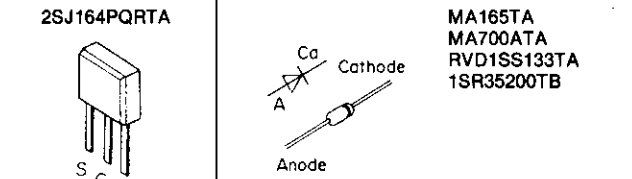
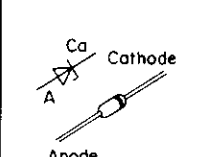
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- ( )..... Voltage values at record mode.
- For measurement us EVM.
- Important safety notice  
Components identified by Δ mark have special characteristics important for safety.
- When replacing any of these components, use only manufacturer's specified parts.
- ( ———— +B ———— ) indicates +B (bias).
- ( ———— -B ———— ) indicates -B (bias).
- ( ———— ) indicates the flow of the playback signal.
- ( ———— ) indicates the flow of the record signal.
- The supply part number is described alone in the replacement parts list.

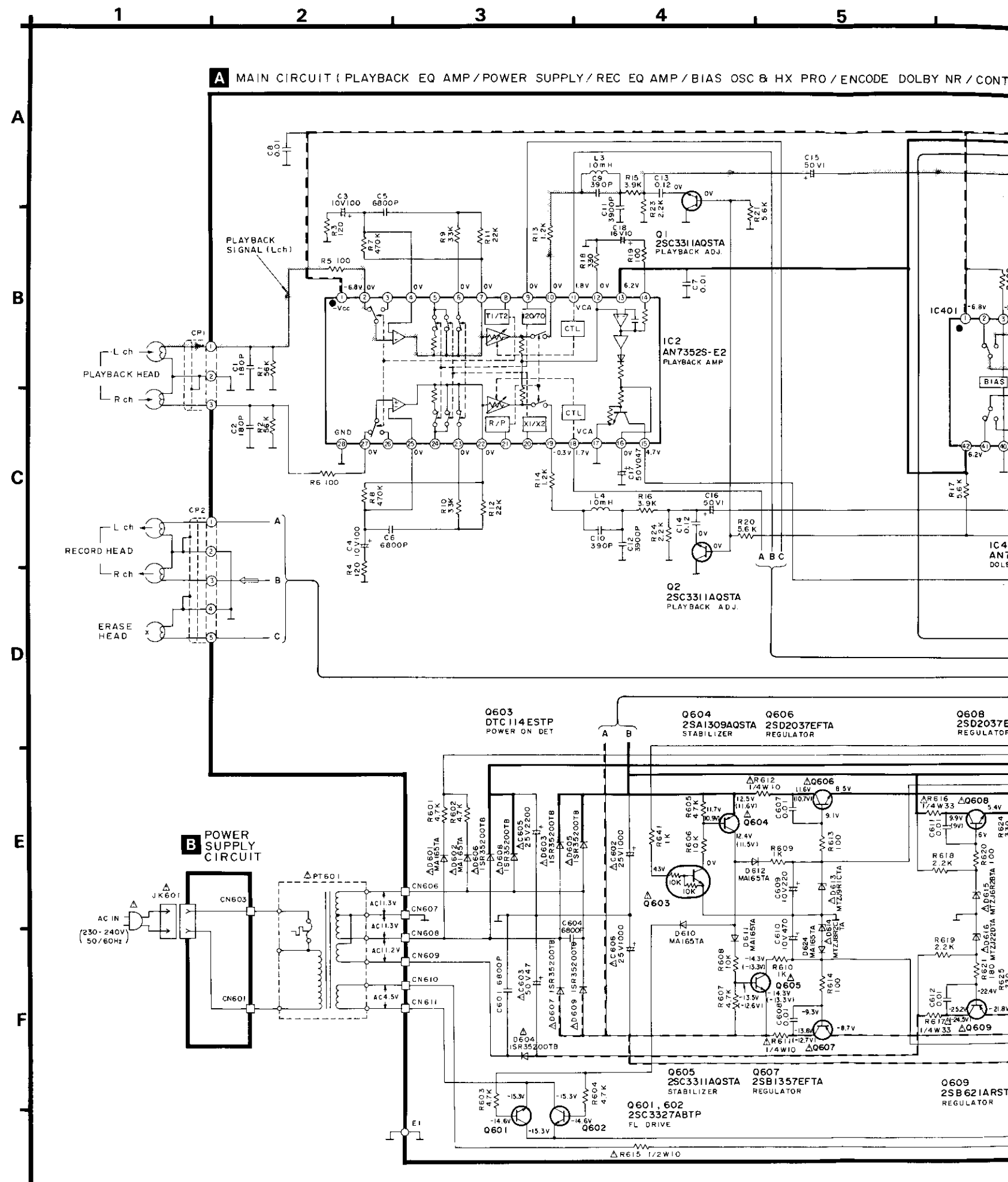
| Ref. No. | Production Part No. | Supply Part No. |
|----------|---------------------|-----------------|
| IC152    | XLU2040F-T2         | XLU2040F-T1     |
| IC701    | M5218AL             | M5218L          |
| Z502     | RCDHC-278-E         | RCDHC-278       |
| Z503     | GP1S53V             | SVDGP1S53       |

## \*Caution!

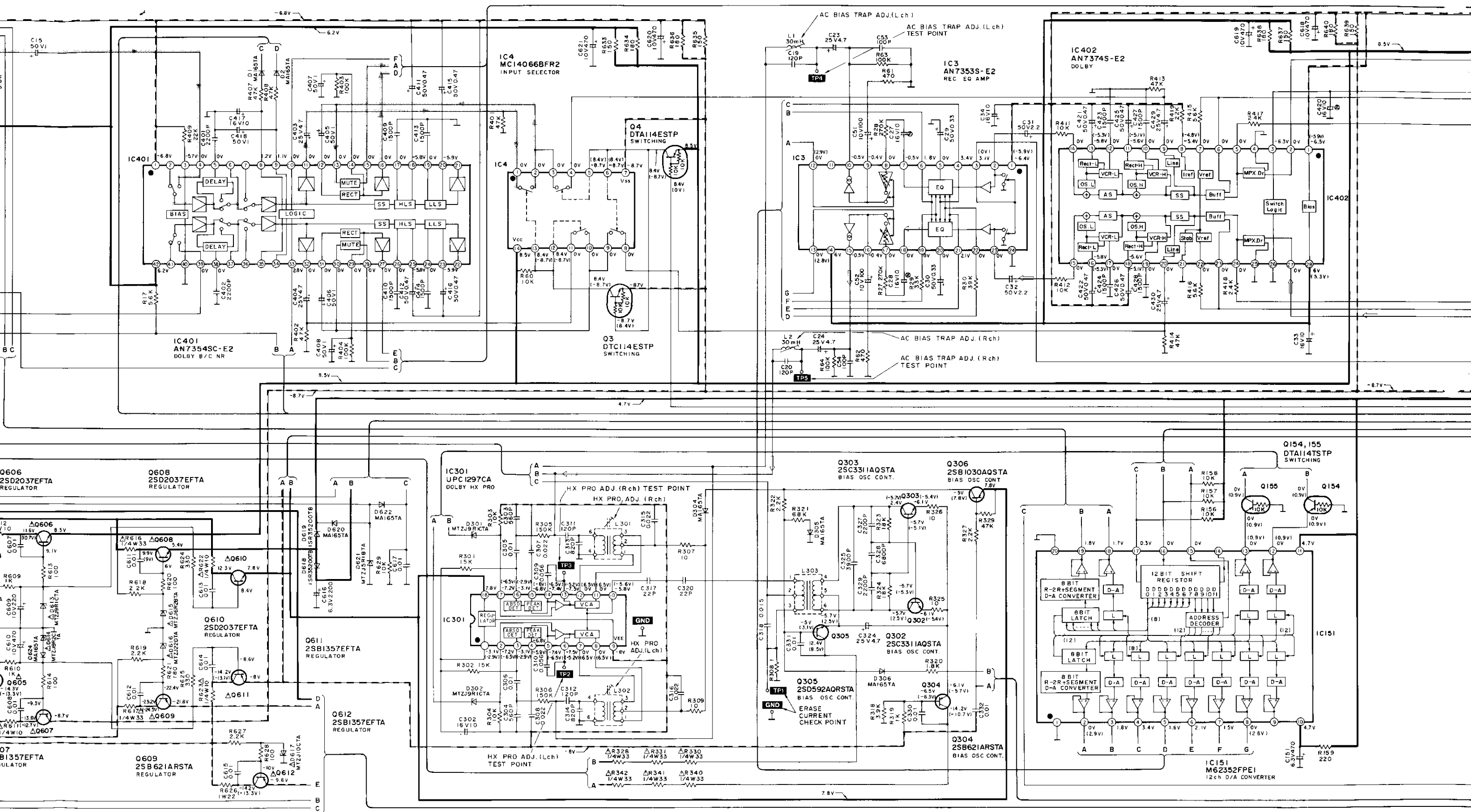
- IC and LSI are sensitive to static electricity.
- Secondary trouble can be prevented by taking care during repair.
- \*Cover the parts boxes made of plastics with aluminum foil.
- \*Ground the soldering iron.
- \*Put a conductive mat on the work table.
- \*Do not touch the legs of IC or LSI with the fingers directly.

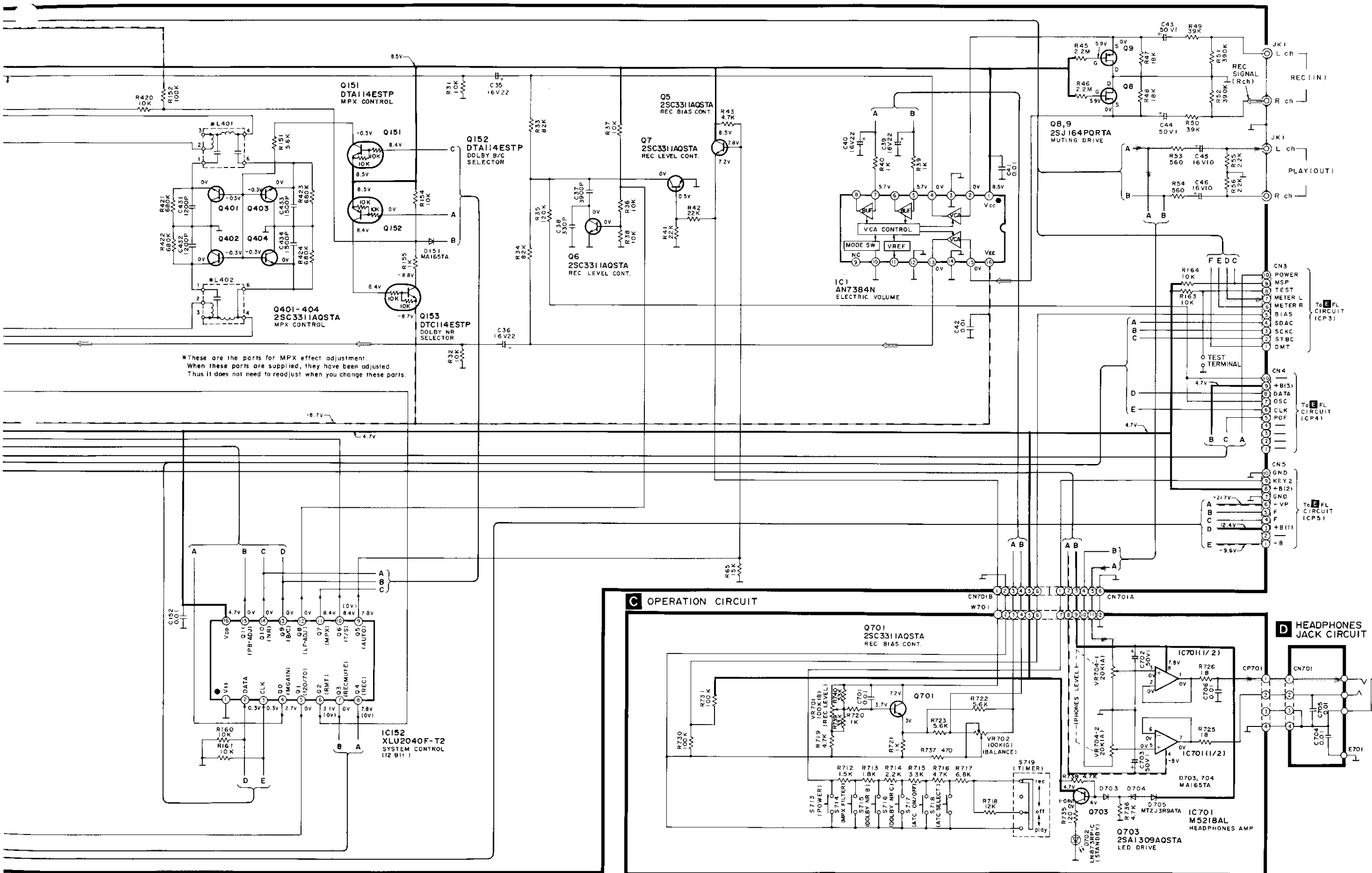
# TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

|                                                                                    |                                                                                      |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
|  |  |
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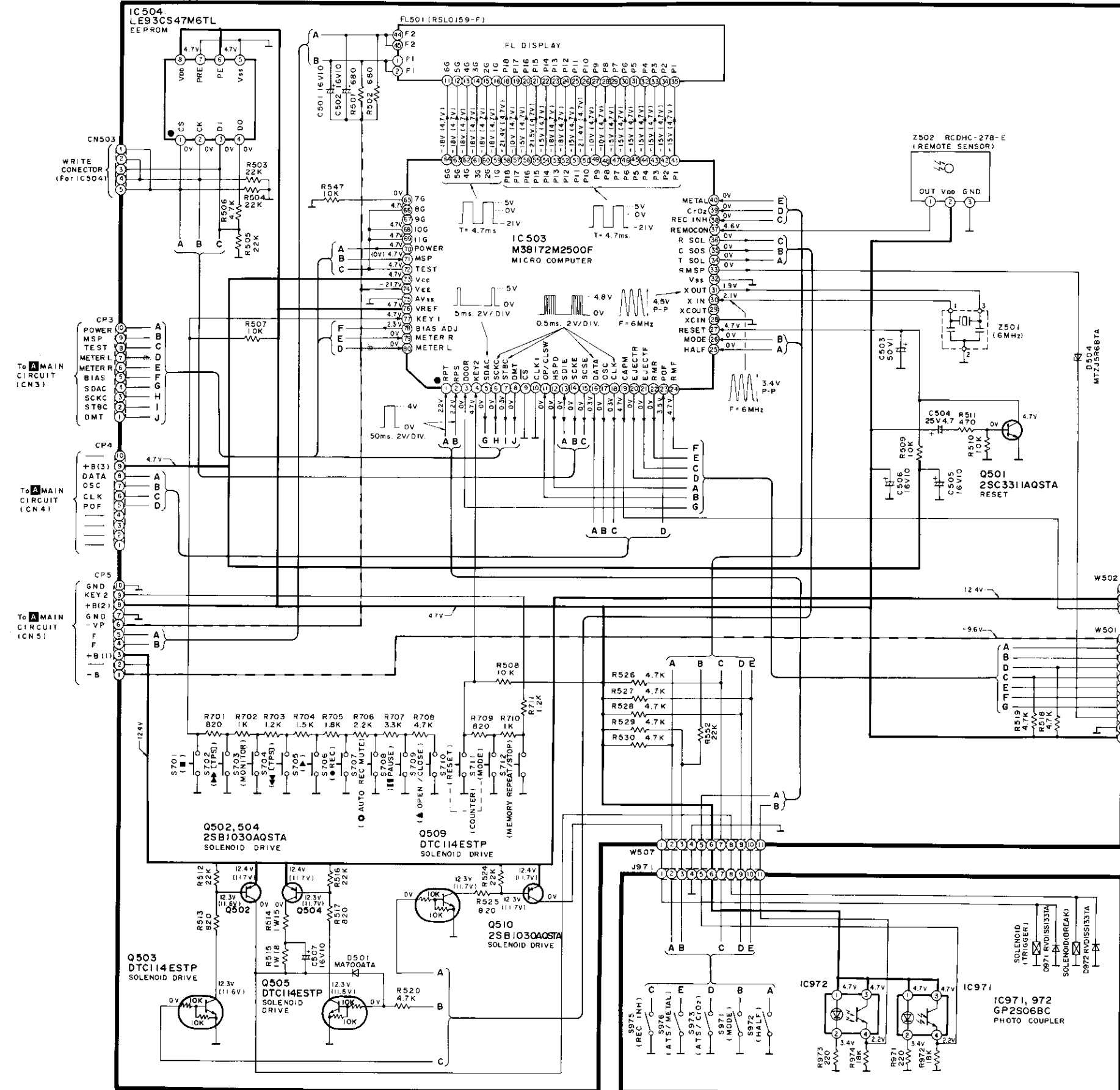


\* HX PRO / ENCODE DOLBY NR / CONTROL / DECODE DOLBY NR / ELECTRIC VOLUME )



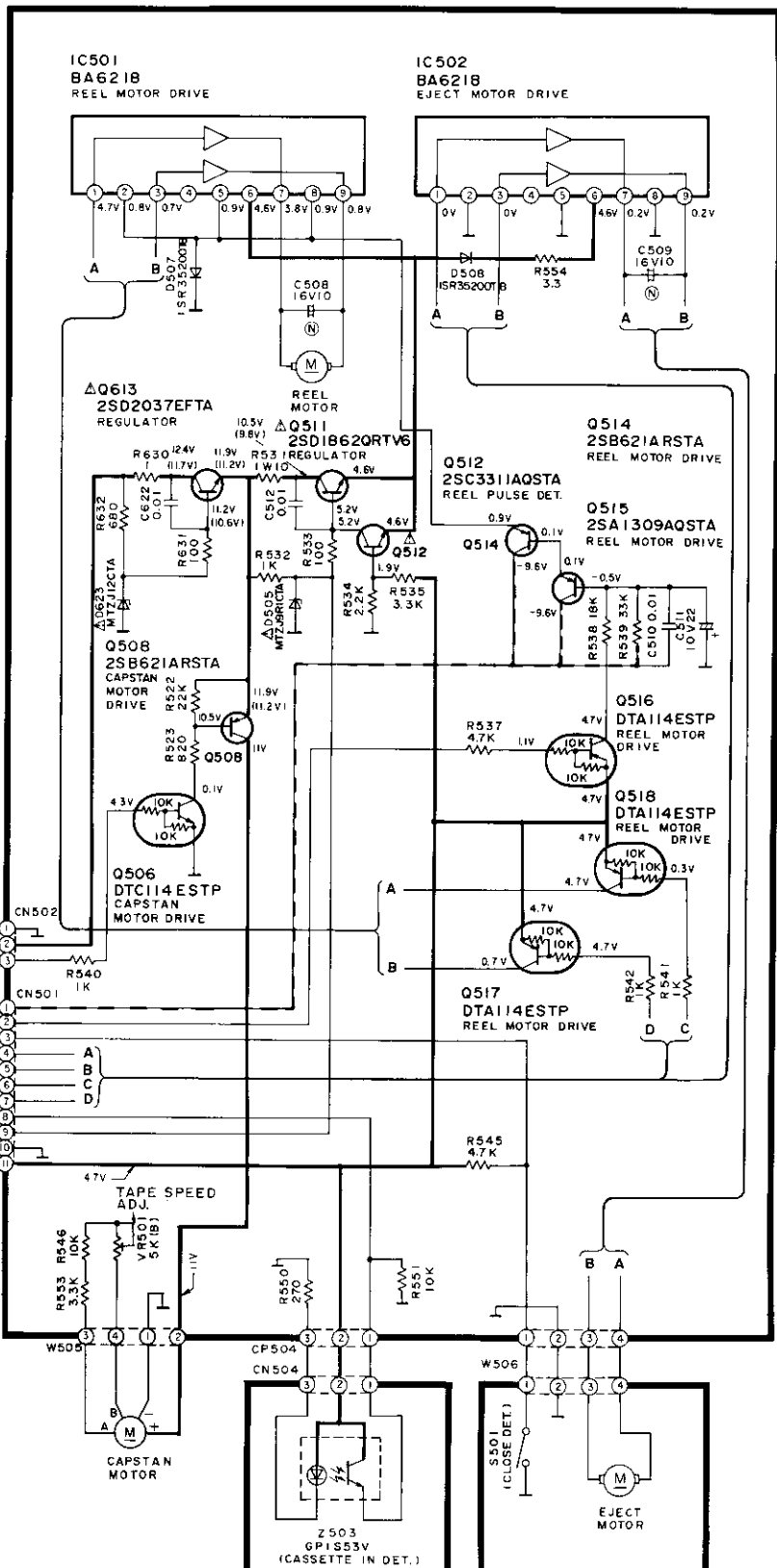


**E** FL CIRCUIT



**F** MECHANISM CIRCUIT

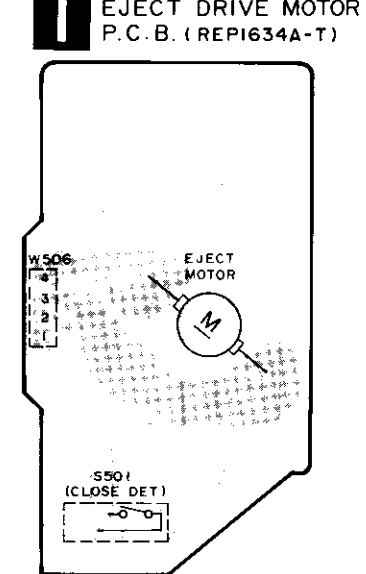
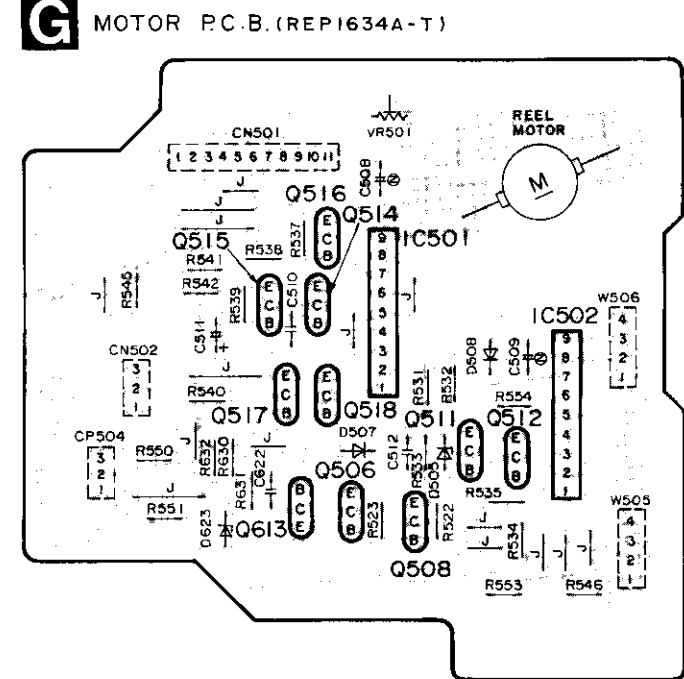
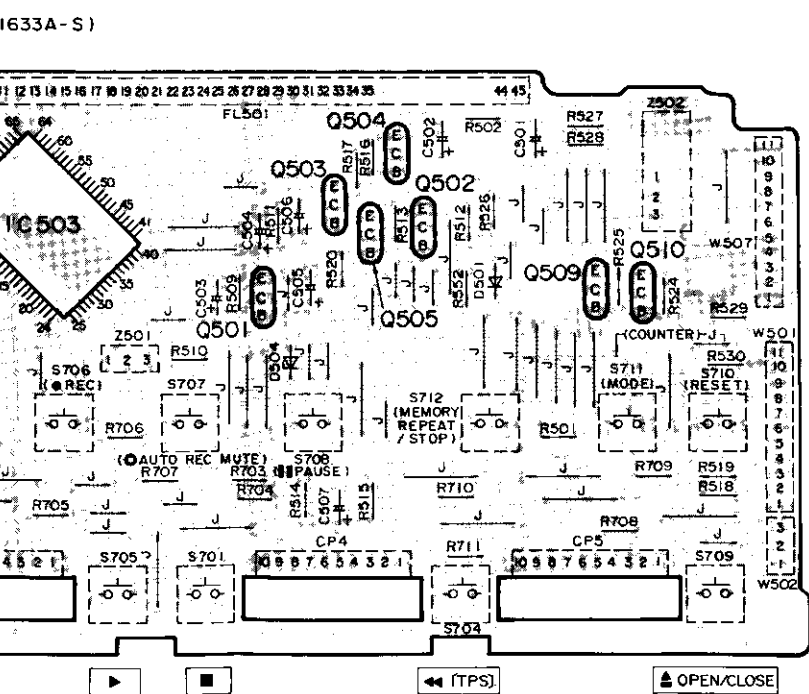
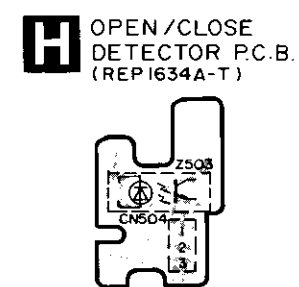
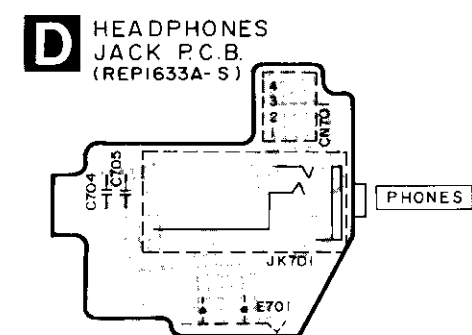
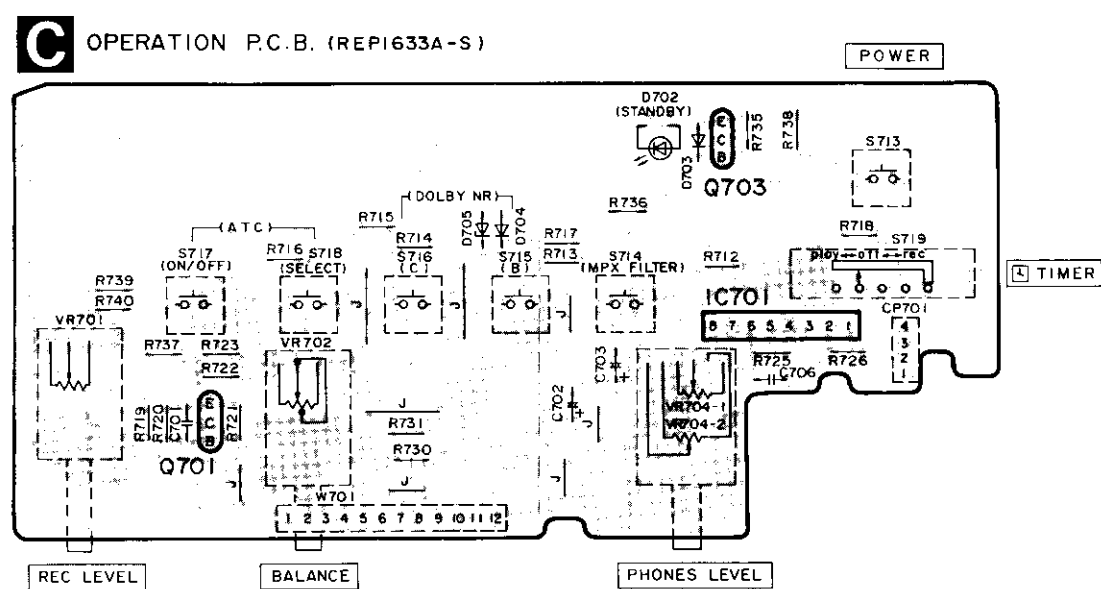
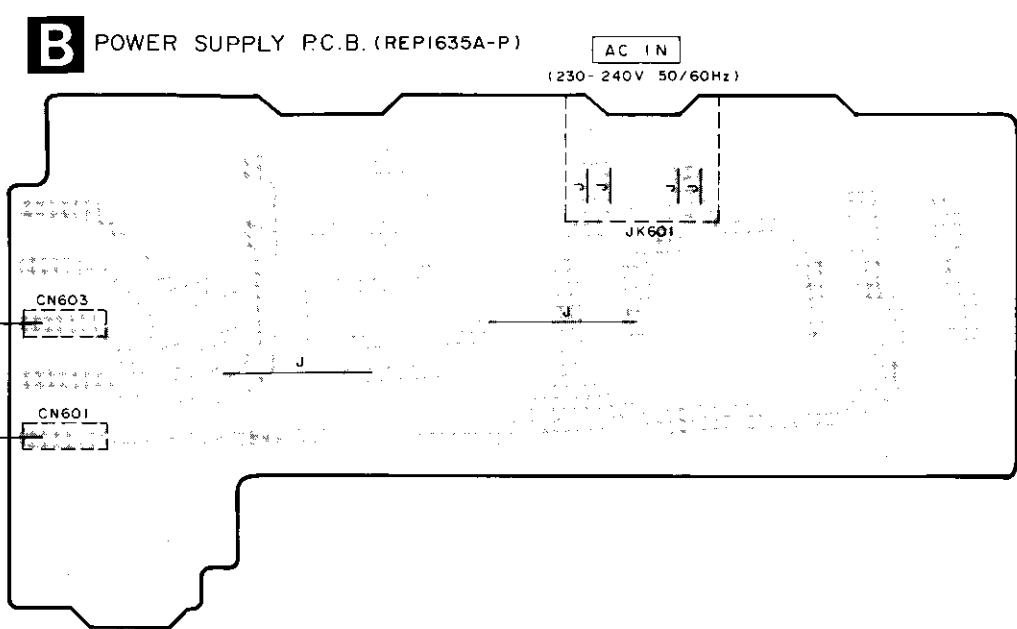
**G** MOTOR CIRCUIT



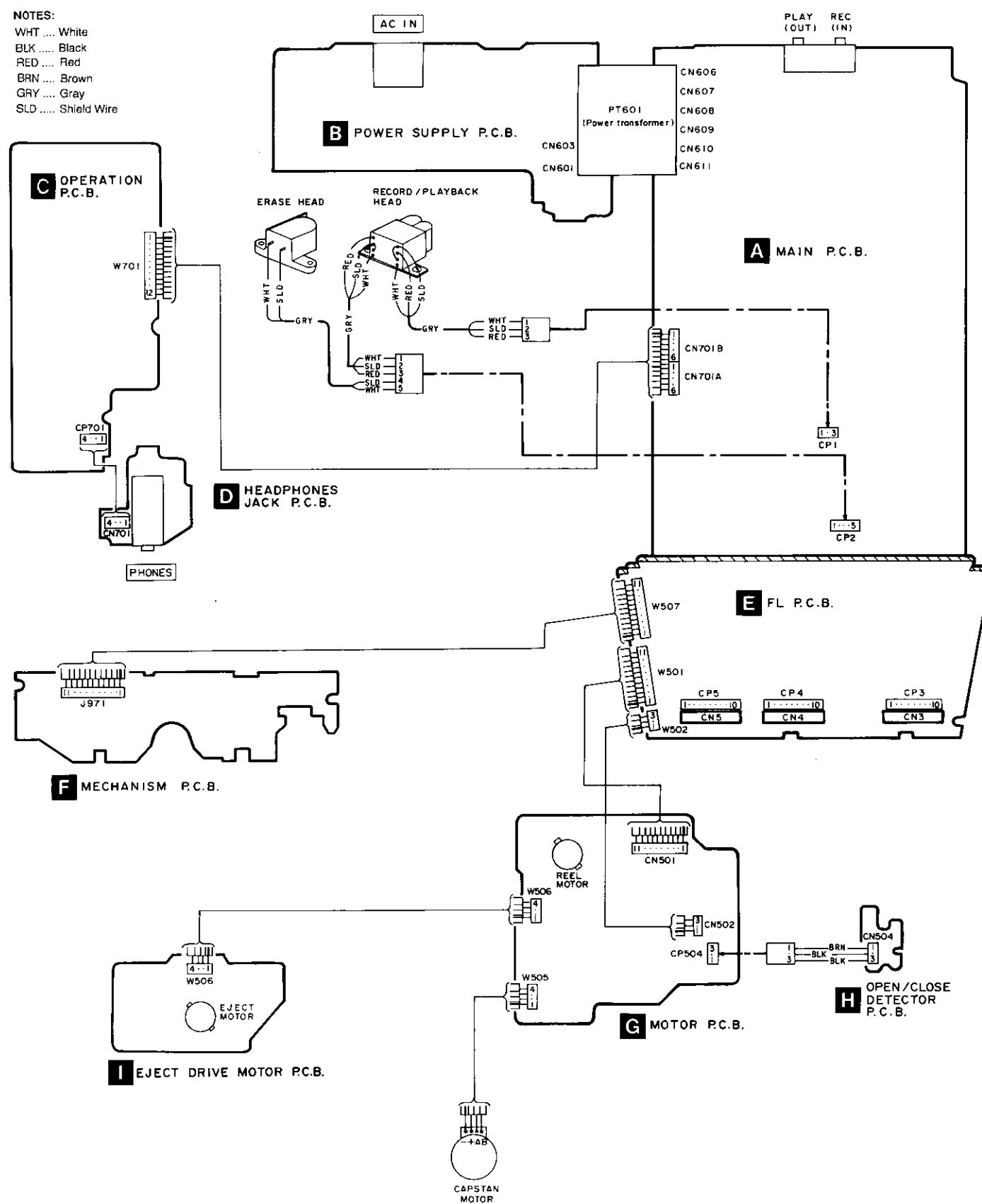
**H** OPEN/CLOSE DETECTOR CIRCUIT

**I** EJECT DRIVE MOTOR CIRCUIT



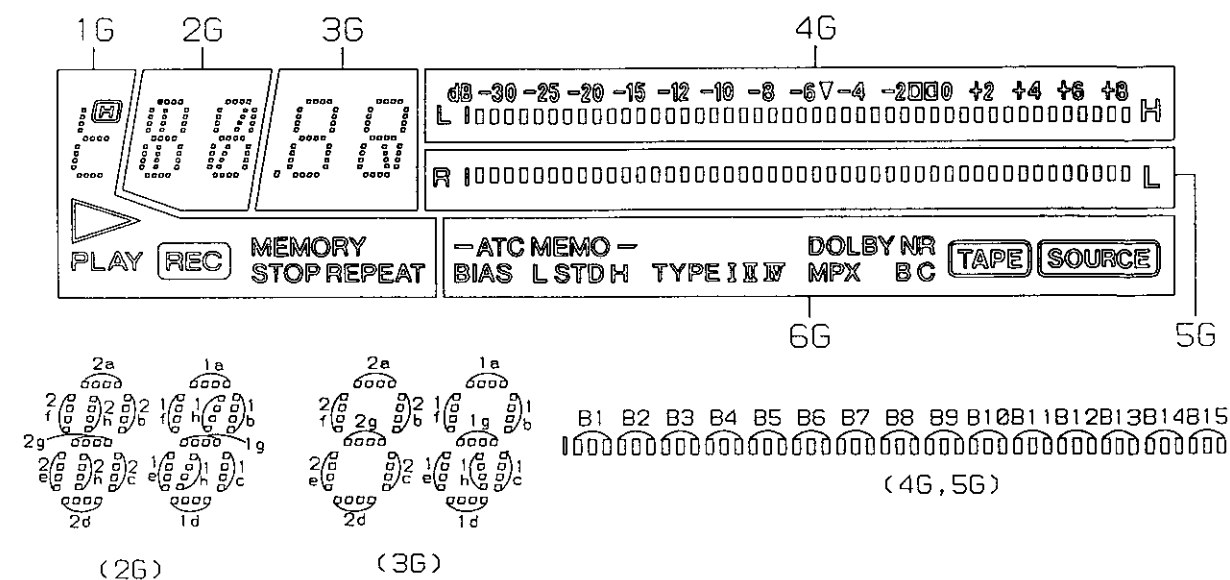


## ■ WIRING CONNECTION DIAGRAM



## INTERNAL CONNECTION OF FL

- **Grid connection diagram**



- **Anode connection diagram**

|     | 1G     | 2G | 3G                | 4G                       | 5G  | 6G       |
|-----|--------|----|-------------------|--------------------------|-----|----------|
| P1  |        | 1a | 1a                | B1                       | B1  | -ATC     |
| P2  |        | 1b | 1b                | B2                       | B2  | L        |
| P3  |        | 1f | 1f                | B3                       | B3  | STD      |
| P4  | -      | 1g | 1g                | B4                       | B4  | H        |
| P5  | -      | 1c | 1c                | B5                       | B5  | TYPE     |
| P6  | -      | 1e | 1e                | B6                       | B6  | I        |
| P7  | -      | 1d | 1d                | B7                       | B7  | II       |
| P8  |        | 2a | 2a                | B8                       | B8  | W        |
| P9  | PLAY   | 2b | 2b                | B9                       | B9  | MEMO     |
| P10 |        | 2f | 2f                | B10                      | B10 | -        |
| P11 | MEMORY | 2g | 2g                | B11                      | B11 | EAS      |
| P12 | STOP   | 2c | 2c                | B12                      | B12 | -        |
| P13 | REPEAT | 2e | 2e                | B13                      | B13 | DOLBY NR |
| P14 | -      | 2d | 2d                | B14                      | B14 | MPX      |
| P15 | -      | 1h | 1h                | B15                      | B15 | B        |
| P16 | -      | 2h | <sup>a</sup> (DP) | -                        | -   | C        |
| P17 | -      | -  | -                 | <sup>L</sup> dB -30 ~ +6 | R I |          |
| P18 | -      | -  | -                 | V H                      | L   |          |

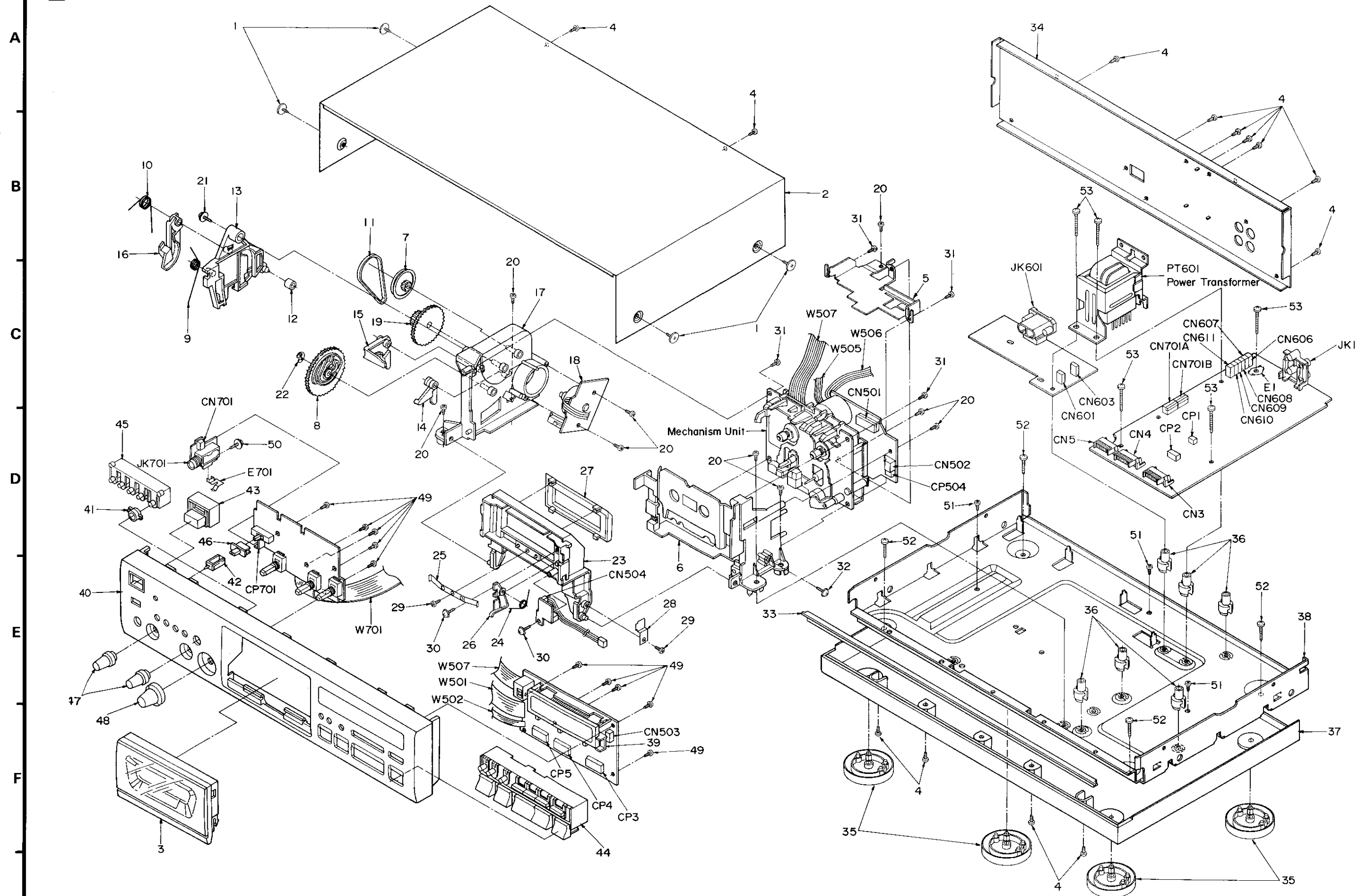
- **Pin connection**

[illegible]

### Note

- |                |               |               |               |
|----------------|---------------|---------------|---------------|
| 1) F1, F2..... | Filament      | 4) NC.....    | No connection |
| 2) NP.....     | No pin        | 5) DL.....    | Datum Line    |
| 3) NX.....     | No extend pin | 6) 1G~6G..... | Grid          |

# CABINET PARTS LOCATION



# REPLACEMENT PARTS LIST

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

 Components identified by  $\Delta$  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

\*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)

Parts without these indications can be used for all areas.

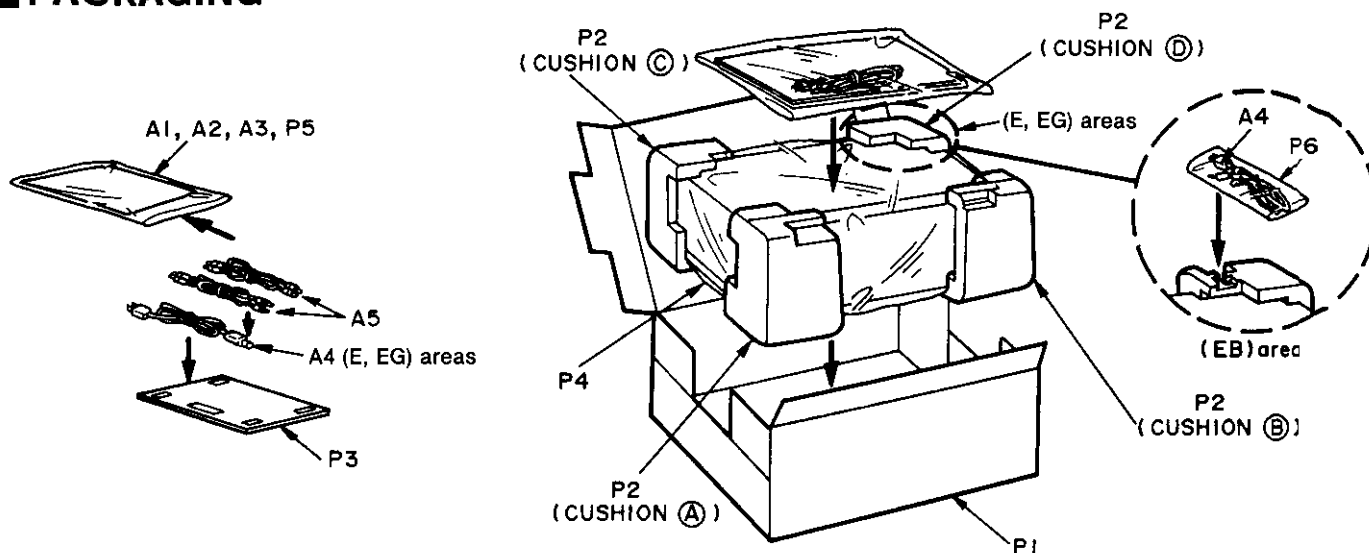
\*The "(SF)" mark denotes the standard part.

| Ref. No. | Part No.     | Part Name & Description | Remarks | Ref. No. | Part No.     | Part Name & Description      | Remarks               |
|----------|--------------|-------------------------|---------|----------|--------------|------------------------------|-----------------------|
|          |              | CABINET AND CHASSIS     |         | 44       | RGU0883-K    | BUTTON, OPERATION            |                       |
|          |              |                         |         | 45       | RGU0885-K    | BUTTON, ATC                  |                       |
| 1        | RHD30035-K   | SCREW                   |         | 46       | RGV0112-K    | KNOB, TIMER                  |                       |
| 2        | RKMD114-K    | CABINET                 |         | 47       | RGW0175-K    | KNOB, H. P. LEVEL/BALANCE    |                       |
| 3        | RYF0216-K    | CASSETTE LID            |         | 48       | RGW0177-K    | KNOB, REC. LEVEL             |                       |
| 4        | XTBS3+8JFZ1  | SCREW                   |         | 49       | XTBS26+8J    | SCREW                        |                       |
| 5        | RMA0693      | MECHA. SHIELD PLATE     |         | 50       | XTWS3+10T    | SCREW                        |                       |
| 6        | RFKNBX747EAK | MECHANISM BASE ASS'Y    |         | 51       | XTB3+10GFZ   | SCREW                        |                       |
| 7        | RDG0081      | PULLEY GEAR             |         | 52       | XTB3+16CFN   | SCREW                        |                       |
| 8        | RDG0242      | DRIVE GEAR              |         | 53       | XTB3+20JFZ   | SCREW                        |                       |
| 9        | RME0134      | CLOSE SPRING            |         |          |              | PACKING MATERIAL             |                       |
| 10       | RME0138      | DRIVE ARM SPRING        |         |          |              |                              |                       |
| 11       | RMG0121      | BELT                    |         | P1       | RPG1621      | PACKING CASE                 | (E, EG)               |
| 12       | RMG0330-C    | CUSHION RUBBER          |         | P1       | RPG1622-1    | PACKING CASE                 | (EB)                  |
| 13       | RML0305      | DRIVE LEVER             |         | P2       | RPN0697      | CUSHION                      | (E, EG)               |
| 14       | RML0306      | SWITCH LEVER            |         | P2       | RPN0698      | CUSHION                      | (EB)                  |
| 15       | RML0307      | ATS ARM                 |         | P3       | RPQ0164      | ACCESSORIES PAD              |                       |
| 16       | RML0311      | FRICTION                |         | P4       | XZB52X60A01Z | PROTECTION COVER (THIS UNIT) |                       |
| 17       | RFKNBX747EBK | LOADING BASE ASS'Y      |         | P5       | XZB24X34C04  | PROTECTION BAG (F. B., ACC.) |                       |
| 18       | REM0026      | LOADING MOTOR ASS'Y     |         | P6       | RPH0032      | MIRROR SHEET                 | (EB)                  |
| 19       | SFUGF01N02   | INTERMEDIATE GEAR       |         |          |              | ACCESSORIES                  |                       |
| 20       | XTB3+8JFZ    | SCREW                   |         |          |              |                              |                       |
| 21       | XTWS3+10Q    | SCREW                   |         |          |              |                              |                       |
| 22       | XJC3FY       | E RING                  |         | A1       | RFKSBX747E-K | INSTRUCTION MANUAL ASS'Y     | (E)                   |
| 23       | RFKNBX747ECK | CASSETTE HOLDER ASS'Y   |         | A1       | RFKSBX747EGK | INSTRUCTION MANUAL ASS'Y     | (EG)                  |
| 24       | RMB0286      | SWITCH LEVER SPRING     |         | A1       | RQT2029-B    | INSTRUCTION MANUAL           | (EB)                  |
| 25       | RMCO038      | STABILIZER SPRING       |         | A2       | RQA0013      | WARRANTY CARD                |                       |
| 26       | RML0308      | DETECTION LEVER         |         | A3       | RQCB0169     | SERVICENTER LIST             |                       |
| 27       | RMQ0371      | STABILIZER              |         | A4       | RJA0019-2K   | AC POWER SUPPLY CORD         | (E, EG) $\Delta$ (SF) |
| 28       | RMQ0407      | ANGLE                   |         | A4       | VJA0733      | AC POWER SUPPLY CORD         | (EB) $\Delta$ (SF)    |
| 29       | XTB3+6J      | SCREW                   |         | A5       | SJP2276      | STEREO CONNECTION CABLE      |                       |
| 30       | XTW2+5L      | SCREW                   |         |          |              |                              |                       |
| 31       | XTB3+10JFZ   | SCREW                   |         |          |              |                              |                       |
| 32       | XTW3+8J      | SCREW                   |         |          |              |                              |                       |
| 33       | RGK0550-T    | MOLE                    |         |          |              |                              |                       |
| 34       | RGR0169A-A1  | REAR PANEL              | (E, EG) |          |              |                              |                       |
| 34       | RGR0169A-B1  | REAR PANEL              | (EB)    |          |              |                              |                       |
| 35       | RKA0053-A    | FOOT                    |         |          |              |                              |                       |
| 36       | RKQ0089      | P. C. B. HOLDER         |         |          |              |                              |                       |
| 37       | RKU0049A-K   | BOTTOM BOARD            |         |          |              |                              |                       |
| 38       | RMK0202A     | BOTTOM CHASSIS          |         |          |              |                              |                       |
| 39       | RMN0221      | FL HOLDER               |         |          |              |                              |                       |
| 40       | RFKGBX646E-K | FRONT PANEL ASS'Y       |         |          |              |                              |                       |
| 41       | RGK0534-N    | ORNAMENT, ATC BUTTON    |         |          |              |                              |                       |
| 42       | RGLO206-Q    | PANEL LIGHT             |         |          |              |                              |                       |
| 43       | RGU0882-K    | BUTTON, POWER           |         |          |              |                              |                       |

| Ref. No. | Part No.     | Part Name & Description     | Remarks |
|----------|--------------|-----------------------------|---------|
|          |              | MECHANISM PARTS LIST        |         |
| 101      | QH1361A      | SCREW                       |         |
| 102      | SJH96-1      | E HEAD                      |         |
| 103      | RHE5201ZA    | SCREW                       |         |
| 104      | RBR4CY009-C  | R/P HEAD                    |         |
| 105      | QBC1278A     | HEAD SPRING                 |         |
| 106      | RMX0014      | SPACER                      |         |
| 107      | RMR0184      | HEAD SPACER                 |         |
| 108      | XTN2+5F      | SCREW                       |         |
| 109      | REX0092-1    | LEAD WIRE BLOCK             |         |
| 110      | RXR0009      | REEL TABLE                  |         |
| 111      | RUW139ZA     | HEAD BASE SPRING            |         |
| 112      | RMA0047A-1   | HEAD BASE                   |         |
| 113      | RXQ0078      | MAIN ROD ASS'Y              |         |
| 114      | RMD0012-2    | EJECT ROD(L)                |         |
| 115      | RME0018-1    | SPRING, EJECT ROD(L)        |         |
| 116      | RML0069-1    | LEVER                       |         |
| 117      | RME0020      | BRAKE SPRING                |         |
| 118      | RML0040-2    | BRAKE LEVER                 |         |
| 119      | RUW142ZA     | SPRING                      |         |
| 120      | RXP0004      | PINCH ROLLER ARM(F)         |         |
| 120-1    | RUW140ZC     | SPRING, PINCH ROLLER ARM(F) |         |
| 121      | RFKRSB555E-K | CHASSIS ASS'Y               |         |
| 122      | MMN-6F4RA88  | REEL MOTOR                  |         |
| 123      | RFM133ZA     | DC MOTOR                    |         |

| Ref. No. | Part No.  | Part Name & Description | Remarks |
|----------|-----------|-------------------------|---------|
| 124      | XTN26+7J  | SCREW                   |         |
| 125      | XTN26+26F | SCREW                   |         |
| 126      | RMA0048   | FLYWHEEL PLATE          |         |
| 127      | RMD5014ZC | ANGLE                   |         |
| 128      | XSN26+3   | SCREW                   |         |
| 129      | RHG3032ZA | RUBBER CUSHION          |         |
| 130      | RHD26002  | SCREW                   |         |
| 131      | RUB428ZE  | MOVING IRON CORE        |         |
| 132      | RSJ0003   | SOLENOID                |         |
| 133      | XTW2+8S   | SCREW                   |         |
| 134      | RXQ0011   | BRAKE SOLENOID          |         |
| 135      | XTN26+4F  | SCREW                   |         |
| 136      | RDG0030   | MAIN GEAR               |         |
| 137      | RXG0009   | IDLE GEAR ASS'Y         |         |
| 138      | RXF0007   | FLYWHEEL(F)             |         |
| 139      | RDV109ZA  | CAPSTAN BELT            |         |
| 140      | RDG0034   | REEL MOTOR GEAR         |         |
| 141      | RXG0003   | REEL TABLE GEAR         |         |
| 142      | RUQ112ZA  | SPRING                  |         |
| 143      | REX0093-2 | LEAD WIRE BLOCK         |         |
| 144      | RUQ111ZB  | SPRING                  |         |
| 145      | RML0037   | TRIGGER LEVER           |         |
| 146      | RUW147ZA  | TRIGGER LEVER SPRING    |         |
| 147      | RUS609ZC  | TAPE PRESSURE SPRING    |         |
| 148      | RJS1172ZA | CONNECTOR(11P), J971    |         |
| 149      | RHW31002  | WASHER                  |         |

## ■ PACKAGING

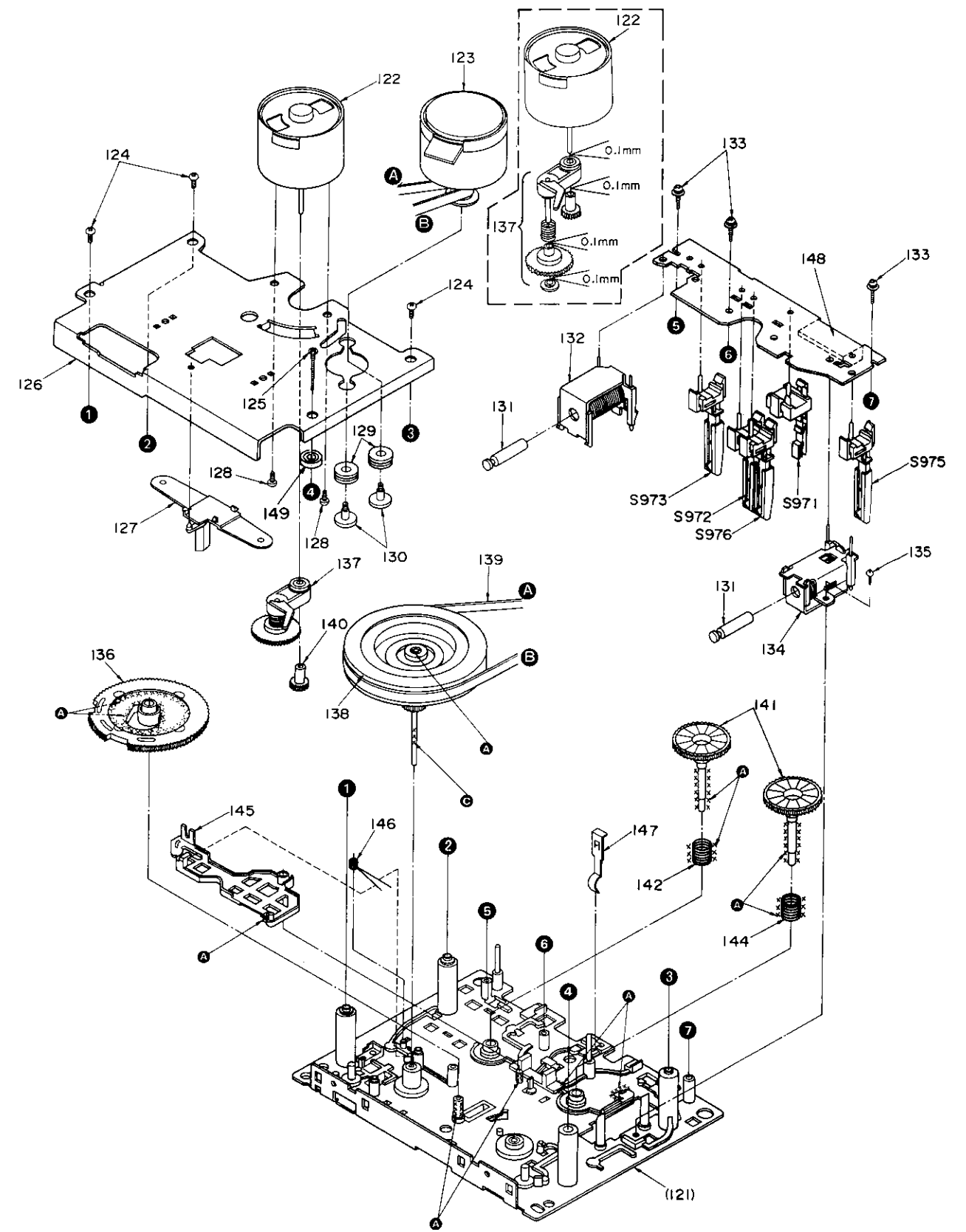
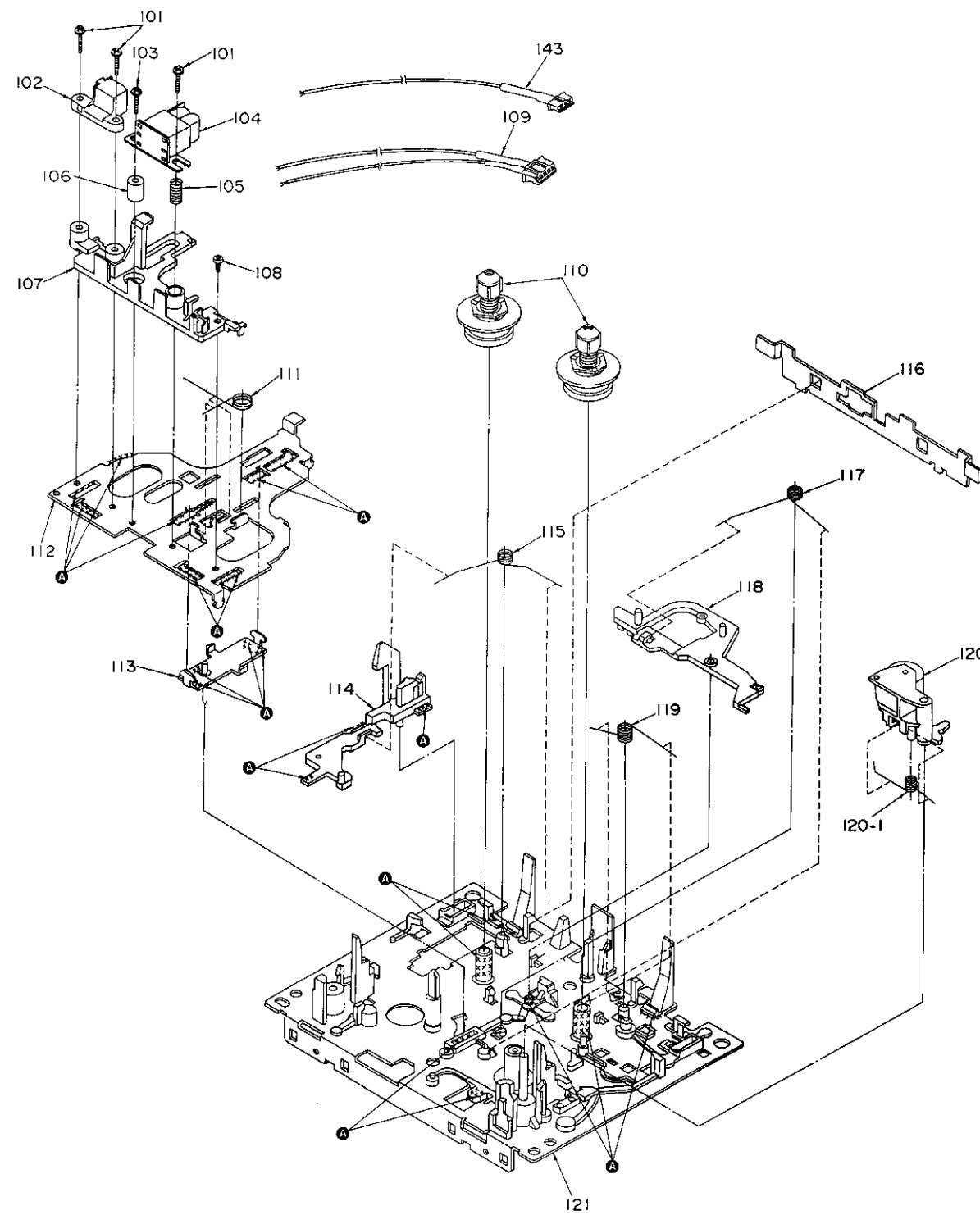


<CUSHION (A), (B), (C), (D) Part No.: RPN0697 (E, EG), RPN0698 (EB)>

# MECHANISM PARTS LOCATION

(Top view)

(Bottom view)



## Note:

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

| Ref. No. | Part Name    | Part No. |
|----------|--------------|----------|
| A        | FLOIL AK-152 | SZZ0L18  |
| C        | SWAFLUID #56 | RZZ0L02  |

REPLACEMENT PARTS LIST

**Notes:** \*Important safety notice:  
Components identified by Δ mark have special characteristics important for safety.  
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When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.  
\*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)  
Parts without these indications can be used for all areas.

| Ref. No.   | Part No.     | Part Name & Description | Remarks | Ref. No.  | Part No.     | Part Name & Description | Remarks |
|------------|--------------|-------------------------|---------|-----------|--------------|-------------------------|---------|
|            |              | INTEGRATED CIRCUIT(S)   |         | Q601, 602 | 2SC3327-A    | TRANSISTOR              |         |
|            |              |                         |         | Q603      | DTC114ESTP   | TRANSISTOR              | Δ       |
|            |              |                         |         | Q604      | 2SA1309A-R   | TRANSISTOR              | Δ       |
| IC1        | AN7384N      | ELECTRIC VOLUME         |         | Q605      | 2SC3311A-Q   | TRANSISTOR              | Δ       |
| IC2        | AN7352S-E2   | PLAYBACK AMP            |         | Q606      | 2SD2037EFTA  | TRANSISTOR              | Δ       |
| IC3        | AN7353S-E2   | REC EQ AMP              |         | Q607      | 2SB1357EFTA  | TRANSISTOR              | Δ       |
| IC4        | MC14066BFR2  | INPUT SELECTOR          |         | Q608      | 2SD2037EFTA  | TRANSISTOR              | Δ       |
| IC151      | M62352FPE1   | 12ch D/A CONVERTER      |         | Q609      | 2SB621A-R    | TRANSISTOR              | Δ       |
| IC152      | XLU2040F-T1  | SYSTEM CONTROL (12BIT)  |         | Q610      | 2SD2037EFTA  | TRANSISTOR              | Δ       |
| IC301      | UPC1297CA    | DOLBY HX PRO            |         | Q611, 612 | 2SB1357EFTA  | TRANSISTOR              | Δ       |
| IC401      | AN7354SC-E2  | DOLBY B/C NR            |         | Q613      | 2SD2037EFTA  | TRANSISTOR              | Δ       |
| IC402      | AN7374S-E2   | DOLBY                   |         | Q701      | 2SC3311A-Q   | TRANSISTOR              |         |
| IC501      | BA6218       | REEL MOTOR DRIVE        |         | Q703      | 2SA1309A-R   | TRANSISTOR              |         |
| IC502      | BA6218       | EJECT MOTOR DRIVE       |         |           |              | DIODE (S)               |         |
| IC503      | M38172M2500F | MICROCOMPUTER           |         |           |              |                         |         |
| IC504      | LE93CS47M6TL | EEPROM                  |         | D1, 2     | MA165        | DIODE                   |         |
| IC701      | M5218L       | HEADPHONES AMP          |         | D151      | MA165        | DIODE                   |         |
| IC971, 972 | GP2S06BC     | PHOTO COUPLER           |         | D301, 302 | MTZJ9R1CTA   | DIODE                   |         |
|            |              | TRANSISTOR(S)           |         | D304-306  | MA165        | DIODE                   |         |
|            |              |                         |         | D501      | MA700        | DIODE                   |         |
| Q1, 2      | 2SC3311A-Q   | TRANSISTOR              |         | D504      | MTZJ5R6BTA   | DIODE                   |         |
| Q3         | DTC114ESTP   | TRANSISTOR              |         | D505      | MTZJ9R1CTA   | DIODE                   | Δ       |
| Q4         | DTA114ESTP   | TRANSISTOR              |         | D507, 508 | 1SR35200TB   | DIODE                   |         |
| Q5-7       | 2SC3311A-Q   | TRANSISTOR              |         | D601, 602 | MA165        | DIODE                   | Δ       |
| Q8, 9      | 2SJ16PQRTA   | TRANSISTOR              |         | D603-609  | 1SR35200TB   | DIODE                   | Δ       |
| Q151, 152  | DTA114ESTP   | TRANSISTOR              |         | D610-612  | MA165        | DIODE                   |         |
| Q153       | DTC114ESTP   | TRANSISTOR              |         | D613      | MTZJ9R1CTA   | DIODE                   | Δ       |
| Q154, 155  | DTA114ESTP   | TRANSISTOR              |         | D614      | MTZJ8R2CTA   | DIODE                   | Δ       |
| Q302, 303  | 2SC3311A-Q   | TRANSISTOR              |         | D615      | MTZJ6R2BTA   | DIODE                   | Δ       |
| Q304       | 2SB621A-R    | TRANSISTOR              |         | D616      | MTZJ22DTA    | DIODE                   | Δ       |
| Q305       | 2SD592ANCQ   | TRANSISTOR              |         | D617      | MTZJ10CTA    | DIODE                   | Δ       |
| Q306       | 2SB1030AQSTA | TRANSISTOR              |         | D618, 619 | 1SR35200TB   | DIODE                   |         |
| Q401-404   | 2SC3311A-Q   | TRANSISTOR              |         | D620      | MA165        | DIODE                   |         |
| Q501       | 2SC3311A-Q   | TRANSISTOR              |         | D621      | MTZJ5R1BTA   | DIODE                   |         |
| Q502       | 2SB1030AQSTA | TRANSISTOR              |         | D622      | MA165        | DIODE                   |         |
| Q503       | DTC114ESTP   | TRANSISTOR              |         | D623      | MTZJ12CTA    | DIODE                   | Δ       |
| Q504       | 2SB1030AQSTA | TRANSISTOR              |         | D624      | MA165        | DIODE                   |         |
| Q505, 506  | DTC114ESTP   | TRANSISTOR              |         | D702      | LN873RP-C    | L. E. D.                |         |
| Q508       | 2SB621A-R    | TRANSISTOR              |         | D703, 704 | MA165        | DIODE                   |         |
| Q509       | DTC114ESTP   | TRANSISTOR              |         | D705      | MTZJ3R9ATA   | DIODE                   |         |
| Q510       | 2SB1030AQSTA | TRANSISTOR              |         | D971, 972 | RVD1SS133TA  | DIODE                   |         |
| Q511       | 2SD1852QRTV6 | TRANSISTOR              | Δ       |           |              |                         |         |
| Q512       | 2SC3311A-Q   | TRANSISTOR              | Δ       |           |              | VARIABLE RESISTOR(S)    |         |
| Q514       | 2SB621A-R    | TRANSISTOR              |         |           |              |                         |         |
| Q515       | 2SA1309A-R   | TRANSISTOR              |         | VR501     | EVNDCAA03B53 | TAPE SPEED ADJ.         |         |
| Q516-518   | DTA114ESTP   | TRANSISTOR              |         | VR701     | EVJ02FF02B15 | REC LEVEL CONTROL       |         |

| Ref. No.  | Part No.     | Part Name & Description       | Remarks | Ref. No.  | Part No.     | Part Name & Description    | Remarks |
|-----------|--------------|-------------------------------|---------|-----------|--------------|----------------------------|---------|
| VR702     | EVJ02SF02G15 | BALANCE CONTROL               |         |           |              | CONNECTOR(S) AND SOCKET(S) |         |
| VR704     | EVJY10F02A24 | HEADPHONES CONTROL            |         |           |              |                            |         |
|           |              | COIL (S)                      |         | CN3-5     | RJU003K010M1 | SOCKET (10P)               |         |
|           |              |                               |         | CN501     | RJS11T72A    | CONNECTOR (11P)            |         |
| L1, 2     | RLZ0003      | COIL (AC BIAS TRAP ADJ.)      |         | CN502     | SJT30344-H   | CONNECTOR (3P)             |         |
| L3, 4     | RLQB103JT-Y  | COIL                          |         | CN503     | SJS50581BB   | SOCKET (5P)                |         |
| L301, 302 | SL09B1-Z     | COIL                          |         | CN504     | REX0508      | CONNECTOR ASS'Y (3P)       |         |
| L303      | SL09B4-K     | COIL (HX PRO ADJ.)            |         | CN601     | RJS1A1101T1  | SOCKET (1P)                |         |
| L401, 402 | QLM9Z10K     | COIL                          |         | CN603     | RJS1A1101T1  | SOCKET (1P)                |         |
|           |              | TRANSFORMER                   |         | CN606-611 | RJS1A1101T1  | SOCKET (1P)                |         |
| PT601     | RTP1K4B016-V | POWER TRANSFORMER             | Δ       | CN701     | RJU057W004   | SOCKET (4P)                |         |
|           |              | COMPONENT COMBINATION (S)     |         | CN701A    | RJS1A6606    | CONNECTOR (6P)             |         |
|           |              |                               |         | CN701B    | RJS1A6606    | CONNECTOR (6P)             |         |
| Z501      | EF0EC6004T4  | CERAMIC OSCILLATOR (6MHz)     |         | CP1       | SJT0313      | CONNECTOR (3P)             |         |
| Z502      | RCDHC-278    | REMOTE SENSOR                 |         | CP2       | RJP5G182A    | CONNECTOR (5P)             |         |
| Z503      | SYDGP1S53    | PHOTO COUPLER                 |         | CP3-5     | RJT003K010-1 | CONNECTOR (10P)            |         |
|           |              | DISPLAY TUBE (S)              |         | CP504     | RJP3G172A    | CONNECTOR (3P)             |         |
|           |              |                               |         | CP701     | RJT057W004-1 | CONNECTOR (4P)             |         |
|           |              |                               |         |           |              | JACK (S)                   |         |
| FL501     | RSL0159-F    | DISPLAY TUBE                  |         | JK1       | SJF3069N     | TERMINAL BOARD: REC/PLAY   |         |
|           |              | SWITCH (ES)                   |         | JK601     | SJS9236      | AC INLET                   | Δ       |
|           |              |                               |         | JK701     | RJJ63TA01    | HEADPHONES JACK            |         |
|           |              |                               |         |           |              | GND PART (S)               |         |
| S501      | RSH1A005     | CLOSE; LOADING                |         |           |              |                            |         |
| S701      | EVQ21405R    | STOP                          |         | E1        | SNE1004-1    | GND PLATE                  |         |
| S702      | EVQ21405R    | F. F. <TPS>                   |         | E701      | RMC0210      | GND PLATE                  |         |
| S703      | EVQ21405R    | MONITOR                       |         |           |              | FLAT CABLE (S)             |         |
| S704      | EVQ21405R    | REW<TPS>                      |         |           |              |                            |         |
| S705      | EVQ21405R    | PLAYBACK                      |         | W501      | RWJ5711230KX | FLAT CABLE (11P)           |         |
| S706      | EVQ21405R    | REC                           |         | W502      | RWJ1803200KX | FLAT CABLE (3P)            |         |
| S707      | EVQ21405R    | AUTO REC MUTE                 |         | W505      | RWJ1804090DK | FLAT CABLE (4P)            |         |
| S708      | EVQ21405R    | PAUSE                         |         | W506      | RWJ1804100KX | FLAT CABLE (4P)            |         |
| S709      | EVQ21405R    | OPEN/CLOSE; CASSETTE HOLDER   |         | W507      | RWJ5711300KX | FLAT CABLE (11P)           |         |
| S710      | EVQ21405R    | COUNTER RESET                 |         | W701      | RWJ1812390KX | FLAT CABLE (12P)           |         |
| S711      | EVQ21405R    | COUNTER MODE                  |         |           |              |                            |         |
| S712      | EVQ21405R    | MEMORY REPEAT/STOP            |         |           |              |                            |         |
| S713      | EVQ21405R    | POWER                         |         |           |              |                            |         |
| S714      | EVQ21405R    | MPX FILTER                    |         |           |              |                            |         |
| S715      | EVQ21405R    | DOLBY NR B                    |         |           |              |                            |         |
| S716      | EVQ21405R    | DOLBY NR C                    |         |           |              |                            |         |
| S717      | EVQ21405R    | ATC ON/OFF (A.T. CALIBRATION) |         |           |              |                            |         |
| S718      | EVQ21405R    | ATC SELECT                    |         |           |              |                            |         |
| S719      | RSS3A18YA-H  | TIMER                         |         |           |              |                            |         |
| S971      | RSH1A89ZD-U  | MODE                          |         |           |              |                            |         |
| S972      | RSH1A90YD-U  | HALF                          |         |           |              |                            |         |
| S973      | RSH1A90YD-U  | ATS                           |         |           |              |                            |         |
| S975      | RSH1A90YD-U  | REC INHIBIT                   |         |           |              |                            |         |
| S976      | RSH1A90YD-U  | ATS                           |         |           |              |                            |         |

# RESISTORS AND CAPACITORS

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

| Ref. No.  | Part No.    | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks |
|-----------|-------------|------------------|-----------|--------------|------------------|-----------|--------------|------------------|
|           |             | RESISTORS        |           |              |                  |           |              |                  |
| R1, 2     | ERDS2TJ563  | 1/4W 56K         | R309      | ERDS2TJ100   | 1/4W 10          | R540-542  | ERDS2TJ102   | 1/4W 1K          |
| R3, 4     | ERDS2EJ121  | 1/4W 120         | R318      | ERDS2TJ392T  | 1/4W 3.9K        | R545      | ERDS2TJ472   | 1/4W 4.7K        |
| R5, 6     | ERDS2TJ101  | 1/4W 100         | R319      | ERDS2TJ102   | 1/4W 1K          | R546, 547 | ERDS2TJ103   | 1/4W 10K         |
| R7, 8     | ERDS2TJ474  | 1/4W 470K        | R320      | ERDS2TJ182   | 1/4W 1.8K        | R550      | ERDS2TJ271   | 1/4W 270         |
| R9, 10    | ERDS2TJ333  | 1/4W 33K         | R321      | ERDS2TJ682T  | 1/4W 6.8K        | R551      | ERDS2TJ103   | 1/4W 10K         |
| R11, 12   | ERDS2TJ223  | 1/4W 22K         | R322      | ERDS2TJ222   | 1/4W 2.2K        | R552      | ERDS2TJ223   | 1/4W 22K         |
| R13, 14   | ERDS2TJ122  | 1/4W 1.2K        | R323, 324 | ERDS2TJ183T  | 1/4W 18K         | R553      | ERDS2TJ332   | 1/4W 3.3K        |
| R15, 16   | ERDS2TJ392T | 1/4W 3.9K        | R325, 326 | ERDS2TJ100   | 1/4W 10          | R554      | ERDS2TJ3R3T  | 1/4W 3.3         |
| R17       | ERDS2TJ562  | 1/4W 5.6K        | R327      | ERDS2TJ222   | 1/4W 2.2K        | R601-605  | ERDS2TJ472   | 1/4W 4.7K        |
| R18       | ERDS2TJ331  | 1/4W 330         | R328      | ERD2FCVG330T | 1/4W 33 $\Delta$ | R606      | ERDS2TJ103   | 1/4W 10K         |
| R19       | ERDS2TJ101  | 1/4W 100         | R329      | ERDS2TJ473   | 1/4W 47K         | R607      | ERDS2TJ472   | 1/4W 4.7K        |
| R20, 21   | ERDS2TJ562  | 1/4W 5.6K        | R330, 331 | ERD2FCVG330T | 1/4W 33 $\Delta$ | R608      | ERDS2TJ103   | 1/4W 10K         |
| R23, 24   | ERDS2TJ222  | 1/4W 2.2K        | R340-342  | ERD2FCVG330T | 1/4W 33 $\Delta$ | R609, 610 | ERDS2TJ102   | 1/4W 1K          |
| R27, 28   | ERDS2TJ274  | 1/4W 270K        | R401, 402 | ERDS2TJ473   | 1/4W 47K         | R611, 612 | ERD2FCVG100T | 1/4W 10 $\Delta$ |
| R29       | ERDS2TJ333  | 1/4W 33K         | R403, 404 | ERDS2TJ104   | 1/4W 100K        | R613, 614 | ERDS2TJ101   | 1/4W 100         |
| R30       | ERDS2TJ393  | 1/4W 39K         | R407, 408 | ERDS2TJ473   | 1/4W 47K         | R615      | ERDS1FVJ100T | 1/2W 10 $\Delta$ |
| R31, 32   | ERDS2TJ103  | 1/4W 10K         | R409      | ERDS2TJ223   | 1/4W 22K         | R616, 617 | ERD2FCVG330T | 1/4W 33 $\Delta$ |
| R33, 34   | ERDS2TJ823T | 1/4W 82K         | R411, 412 | ERDS2TJ103   | 1/4W 10K         | R618, 619 | ERDS2TJ222   | 1/4W 2.2K        |
| R35       | ERDS2TJ124T | 1/4W 120K        | R413, 414 | ERDS2TJ473   | 1/4W 47K         | R620      | ERDS2TJ101   | 1/4W 100         |
| R36-38    | ERDS2TJ103  | 1/4W 10K         | R415, 416 | ERDS2TJ562   | 1/4W 5.6K        | R621      | ERDS2TJ181T  | 1/4W 180         |
| R39, 40   | ERDS2TJ102  | 1/4W 1K          | R417, 418 | ERDS2TJ242   | 1/4W 2.4K        | R622, 623 | ERD2FCVG100T | 1/4W 10 $\Delta$ |
| R41, 42   | ERDS2TJ223  | 1/4W 22K         | R419      | ERDS2TJ223   | 1/4W 22K         | R624, 625 | ERDS2TJ331   | 1/4W 330         |
| R43       | ERDS2TJ472  | 1/4W 4.7K        | R420      | ERDS2TJ103   | 1/4W 10K         | R626      | ERG1SJ220E   | 1W 22            |
| R45, 46   | ERDS2TJ225  | 1/4W 2.2M        | R421-424  | ERDS2TJ684   | 1/4W 680K        | R627      | ERDS2TJ222   | 1/4W 2.2K        |
| R47, 48   | ERDS2TJ183T | 1/4W 18K         | R501, 502 | ERDS2TJ681   | 1/4W 680         | R628      | ERDS2TJ101   | 1/4W 100         |
| R49, 50   | ERDS2TJ393  | 1/4W 39K         | R503-505  | ERDS2TJ223   | 1/4W 22K         | R629      | ERDS2TJ103   | 1/4W 10K         |
| R51, 52   | ERDS2TJ394  | 1/4W 390K        | R506      | ERDS2TJ472   | 1/4W 4.7K        | R630      | ERDS2TJ180   | 1/4W 1.8         |
| R53, 54   | ERDS2TJ561  | 1/4W 560         | R507-510  | ERDS2TJ103   | 1/4W 10K         | R631      | ERDS2TJ101   | 1/4W 100         |
| R55, 56   | ERDS2TJ222  | 1/4W 2.2K        | R511      | ERDS2TJ471   | 1/4W 470         | R632      | ERDS2TJ681   | 1/4W 680         |
| R60       | ERDS2TJ103  | 1/4W 10K         | R512      | ERDS2TJ223   | 1/4W 22K         | R633      | ERDS2TJ151   | 1/4W 150         |
| R61, 62   | ERDS2TJ471  | 1/4W 470         | R513      | ERDS2TJ821   | 1/4W 820         | R634      | ERDS2TJ181T  | 1/4W 180         |
| R63, 64   | ERDS2TJ104  | 1/4W 100K        | R514      | ERG1SJ150E   | 1W 15            | R635      | ERDS2TJ151   | 1/4W 150         |
| R65       | ERDS2TJ153  | 1/4W 15K         | R515      | ERG1SJ180E   | 1W 18            | R636      | ERDS2TJ181T  | 1/4W 180         |
| R151      | ERDS2TJ562  | 1/4W 5.6K        | R516      | ERDS2TJ223   | 1/4W 22K         | R637      | ERDS2TJ151   | 1/4W 150         |
| R152      | ERDS2TJ104  | 1/4W 100K        | R517      | ERDS2TJ821   | 1/4W 820         | R638      | ERDS2TJ181T  | 1/4W 180         |
| R154      | ERDS2TJ103  | 1/4W 10K         | R518-520  | ERDS2TJ472   | 1/4W 4.7K        | R639      | ERDS2TJ151   | 1/4W 150         |
| R155      | ERDS2TJ102  | 1/4W 1K          | R522      | ERDS2TJ223   | 1/4W 22K         | R640      | ERDS2TJ181T  | 1/4W 180         |
| R156-158  | ERDS2TJ103  | 1/4W 10K         | R523      | ERDS2TJ821   | 1/4W 820         | R641      | ERDS2TJ102   | 1/4W 1K          |
| R159      | ERDS2TJ221  | 1/4W 220         | R524      | ERDS2TJ223   | 1/4W 22K         | R701      | ERDS2TJ821   | 1/4W 820         |
| R160, 161 | ERDS2TJ103  | 1/4W 10K         | R525      | ERDS2TJ821   | 1/4W 820         | R702      | ERDS2TJ102   | 1/4W 1K          |
| R163, 164 | ERDS2TJ103  | 1/4W 10K         | R526-530  | ERDS2TJ472   | 1/4W 4.7K        | R703      | ERDS2TJ122   | 1/4W 1.2K        |
| R301, 302 | ERDS2TJ153  | 1/4W 15K         | R531      | ERG1SJ100E   | 1W 10            | R704      | ERDS2TJ152   | 1/4W 1.5K        |
| R303, 304 | ERDS2TJ103  | 1/4W 10K         | R532      | ERDS2TJ102   | 1/4W 1K          | R705      | ERDS2TJ182   | 1/4W 1.8K        |
| R305, 306 | ERDS2TJ154  | 1/4W 150K        | R533      | ERDS2TJ101   | 1/4W 100         | R706      | ERDS2TJ222   | 1/4W 2.2K        |
| R307      | ERDS2TJ100  | 1/4W 10          | R534      | ERDS2TJ222   | 1/4W 2.2K        | R707      | ERDS2TJ332   | 1/4W 3.3K        |
| R308      | ERDS2TJ180  | 1/4W 1.0         | R535      | ERDS2TJ332   | 1/4W 3.3K        | R708      | ERDS2TJ472   | 1/4W 4.7K        |
|           |             |                  | R537      | ERDS2TJ472   | 1/4W 4.7K        | R709      | ERDS2TJ821   | 1/4W 820         |
|           |             |                  | R538      | ERDS2TJ183T  | 1/4W 18K         | R710      | ERDS2TJ102   | 1/4W 1K          |
|           |             |                  | R539      | ERDS2TJ333   | 1/4W 33K         | R711      | ERDS2TJ122   | 1/4W 1.2K        |

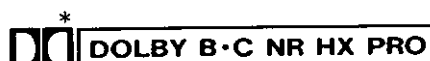
| Ref. No.  | Part No.      | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks |
|-----------|---------------|------------------|-----------|--------------|------------------|-----------|--------------|------------------|
| R712      | ERDS2TJ152    | 1/4W 1.5K        | C303, 304 | ECBT1H561KB5 | 50V 560P         | C617      | ECBT1E103ZF  | 25V 0.01U        |
| R713      | ERDS2TJ182    | 1/4W 1.8K        | C305, 306 | ECQB1H103JF3 | 50V 0.01U        | C618-621  | ECEA1AU471   | 10V 470U         |
| R714      | ERDS2TJ222    | 1/4W 2.2K        | C307, 308 | ECQB1H223JF3 | 50V 0.022U       | C622      | ECBT1E103ZF  | 25V 0.01U        |
| R715      | ERDS2TJ332    | 1/4W 3.3K        | C309, 310 | ECQV1H563JM3 | 50V 0.056U       | C701      | ECBT1E103ZF  | 25V 0.01U        |
| R716      | ERDS2TJ472    | 1/4W 4.7K        | C311, 312 | ECBT1H121KB5 | 50V 120P         | C702, 703 | ECEA1HKA010B | 50V 1U           |
| R717      | ERDS2TJ682T   | 1/4W 6.8K        | C313, 314 | ECKR2H821KB5 | 500V 820P        | C704-706  | ECBT1E103ZF  | 25V 0.01U        |
| R718      | ERDS2TJ123    | 1/4W 12K         | C315, 316 | ECBT1E223ZF  | 25V 0.022U       |           |              |                  |
| R719      | ERDS2TJ472    | 1/4W 4.7K        | C317      | ECBT1H220J5  | 50V 22P          |           |              |                  |
| R720, 721 | ERDS2TJ102    | 1/4W 1K          | C318      | ECQP1153JZ   | 100V 0.015U      |           |              |                  |
| R722, 723 | ERDS2TJ562    | 1/4W 5.6K        | C320      | ECBT1H220J5  | 50V 22P          |           |              |                  |
| R725, 726 | ERDS2TJ180T   | 1/4W 18          | C324      | ECEA1EKA4R7B | 25V 4.7U         |           |              |                  |
| R730, 731 | ERDS2TJ104    | 1/4W 100K        | C325      | ECKR1H392KB5 | 50V 3900P        |           |              |                  |
| R735      | ERDS2EJ121    | 1/4W 120         | C327      | ECKW1H222KB5 | 50V 2200P        |           |              |                  |
| R736      | ERDS2TJ472    | 1/4W 4.7K        | C328      | ECKD1H682KB  | 50V 6800P        |           |              |                  |
| R737      | ERDS2TJ471    | 1/4W 470         | C329      | ECKW1H222KB5 | 50V 2200P        |           |              |                  |
| R738      | ERDS2TJ472    | 1/4W 4.7K        | C330-332  | ECBT1E103ZF  | 25V 0.01U        |           |              |                  |
| R739, 740 | ERDS2TJ333    | 1/4W 33K         | C401, 402 | ECBT1C222KR5 | 16V 2200P        |           |              |                  |
| R971      | ERDS2TJ221    | 1/4W 220         | C403, 404 | ECEA1EKA4R7B | 25V 4.7U         |           |              |                  |
| R972      | ERDS2TJ183T   | 1/4W 18K         | C405-408  | ECEA1HKA010B | 50V 1U           |           |              |                  |
| R973      | ERDS2TJ221T   | 1/4W 220         | C409, 410 | ECQB1H152JF3 | 50V 1500P        |           |              |                  |
| R974      | ERDS2TJ183T   | 1/4W 18K         | C411, 412 | ECEA1HKA4R7B | 50V 0.47U        |           |              |                  |
|           |               |                  | C413, 414 | ECQB1H152JF3 | 50V 1500P        |           |              |                  |
|           |               | CAPACITORS       | C415, 416 | ECEA1HKA4R7B | 50V 0.47U        |           |              |                  |
|           |               |                  | C417      | ECEA1CKA100B | 16V 10U          |           |              |                  |
| C1, 2     | ECBT1H181KB5  | 50V 180P         | C418      | ECEA1HKA010B | 50V 1U           |           |              |                  |
| C3, 4     | ECEA1AU101    | 10V 100U         | C420      | ECEA1CN100SB | 16V 10U          |           |              |                  |
| C5, 6     | ECQB1H682JF3  | 50V 6800P        | C421, 422 | ECEA1HKA4R7B | 50V 0.47U        |           |              |                  |
| C7, 8     | ECBT1E103ZF   | 25V 0.01U        | C423, 424 | ECQB1H152JF3 | 50V 1500P        |           |              |                  |
| C9, 10    | ECBT1H391KB5  | 50V 390P         | C425, 426 | ECEA1HKA4R7B | 50V 0.47U        |           |              |                  |
| C11, 12   | ECBT1C392KR5  | 16V 3900P        | C427, 428 | ECQB1H152JF3 | 50V 1500P        |           |              |                  |
| C13, 14   | ECQV1H124JM3  | 50V 0.12U        | C429, 430 | ECEA1EKA4R7B | 25V 4.7U         |           |              |                  |
| C15, 16   | ECEA1HKA010B  | 50V 1U           | C431, 432 | ECBT1C122KR5 | 16V 1200P        |           |              |                  |
| C17       | ECEA1HKA4R7B  | 50V 0.47U        | C433, 434 | ECBT1C152KR5 | 16V 1500P        |           |              |                  |
| C18       | ECEA1CKA100B  | 16V 10U          | C501, 502 | ECEA1CKA100B | 16V 10U          |           |              |                  |
| C19, 20   | ECKR2H121KB5  | 500V 120P        | C503      | ECEA1HKA010B | 50V 1U           |           |              |                  |
| C23, 24   | ECEA1EKA4R7B  | 25V 4.7U         | C504      | ECEA1EKA4R7B | 25V 4.7U         |           |              |                  |
| C27, 28   | ECEA1CN100SB  | 16V 10U          | C505-507  | ECEA1CKA100B | 16V 10U          |           |              |                  |
| C29, 30   | ECEA1HKA4R33B | 50V 0.33U        | C508, 509 | ECEA1CN100SB | 16V 10U          |           |              |                  |
| C31, 32   | ECEA1HKA2R2B  | 50V 2.2U         | C510      | ECBT1E103ZF  | 25V 0.01U        |           |              |                  |
| C33, 34   | ECEA1CKA100B  | 16V 10U          | C511      | ECEA1AKA220B | 10V 22U          |           |              |                  |
| C35, 36   | ECEA1CKA220B  | 16V 22U          | C512      | ECBT1E103ZF  | 25V 0.01U        |           |              |                  |
| C37       | ECQB1H392JF3  | 50V 3900P        | C601      | ECKR2H682PE  | 500V 6800P       |           |              |                  |
| C38       | ECBT1H331KB5  | 50V 330P         | C602      | ECA1EM102B   | 25V 1000U Δ      |           |              |                  |
| C39, 40   | ECEA1CKA220B  | 16V 22U          | C603      | ECA1HM470B   | 50V 47U Δ        |           |              |                  |
| C41, 42   | ECBT1E103ZF   | 25V 0.01U        | C604      | ECKR2H682PE  | 500V 6800P       |           |              |                  |
| C43, 44   | ECEA1HKA010B  | 50V 1U           | C605      | ECEA1EU22    | 25V 2200U Δ      |           |              |                  |
| C45, 46   | ECEA1CKA100B  | 16V 10U          | C606      | ECA1EM102B   | 25V 1000U Δ      |           |              |                  |
| C51, 52   | ECEA1AU101    | 10V 100U         | C607, 608 | ECBT1E103ZF  | 25V 0.01U        |           |              |                  |
| C53, 54   | ECBT1H101KB5  | 50V 100P         | C609      | ECEA1AU221   | 10V 220U         |           |              |                  |
| C151      | ECA0JM471B    | 6.3V 470U        | C610      | ECEA1AU471   | 10V 470U         |           |              |                  |
| C152      | ECBT1E103ZF   | 25V 0.01U        | C611-615  | ECBT1E103ZF  | 25V 0.01U        |           |              |                  |
| C302      | ECEA1CKA100B  | 16V 10U          | C616      | ECA0JM222B   | 6.3V 2200U       |           |              |                  |

# Service Manual

Cassette Deck

## RS-BX701

Stereo Cassette Deck

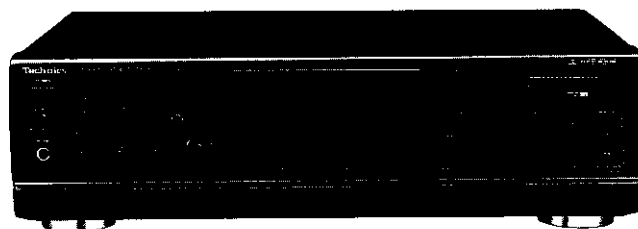


Colour

(K) ... Black Type

Area

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



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- Please file and use this manual together with the service manual for Model No. RS-BX646, Order No. AD9305159C2.
- Use this manual together with the service manual for Model No. RS-BX646, Order No. AD9305159C2.

**Note:** This simplified service manual is provided to indicate the main difference between the original model No. RS-BX646 (E).

## CHANGES

### ■ CHANGE IN REPLACEMENT PARTS LIST (on pages 47, 48, 51~54.)

- Notes:**
- Mentioned in this parts list is only those different from Model No. RS-BX646 (E). All other parts are the same as for RS-BX646 (E).
  - Important safety notice:  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.  
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

| Ref. No.              | Change of Part No. |                        | Part Name & Description | Remarks |
|-----------------------|--------------------|------------------------|-------------------------|---------|
|                       | RS-BX646 (E)       | ➡ RS-BX701 (E, EB, EG) |                         |         |
| INTEGRATED CIRCUIT(S) |                    |                        |                         |         |
| IC1                   | AN7384N            | AN7384N-SG             | ELECTRIC VOLUME         |         |
| DIODE(S)              |                    |                        |                         |         |
| D301, 302             | MTZJ9R1CTA         | MTZJ8R2CTA             | DIODE                   |         |
| D614                  | MTZJ8R2CTA         | MA4043M                | DIODE                   | ⚠       |
| D624                  | MA165              | MA4043M                | DIODE                   | ⚠       |

# Technics

| Ref. No.                   | Change of Part No. |                      | Part Name & Description       | Remarks  |
|----------------------------|--------------------|----------------------|-------------------------------|----------|
|                            | RS-BX646 (E)       | RS-BX701 (E, EB, EG) |                               |          |
| VARIABLE RESISTOR(S)       |                    |                      |                               |          |
| VR703                      | —                  | EVJ02KF02B53         | BIAS ADJ. CONTROL             | Addition |
| COMPONENT COMBINATION(S)   |                    |                      |                               |          |
| Z503                       | SVDGP1S53          | —                    | PHOTO COUPLER                 | Deletion |
| CONNECTOR(S) AND SOCKET(S) |                    |                      |                               |          |
| CN504                      | REX0508            | —                    | CONNECTOR ASS'Y (3P)          | Deletion |
| CP504                      | RJP3G17ZA          | —                    | CONNECTOR (3P)                | Deletion |
| GND PART(S)                |                    |                      |                               |          |
| E1                         | SNE1004-1          | SNE1004-2            | GND PART(S)                   |          |
| RESISTORS                  |                    |                      |                               |          |
| R27, 28                    | ERDS2TJ274         | ERDS2TJ563           | 1/4W 56kΩ                     |          |
| R61, 62                    | ERDS2TJ471         | ERDS2TJ222           | 1/4W 2.2kΩ                    |          |
| R610                       | ERDS2TJ102         | ERDS2TJ151           | 1/4W 150Ω                     |          |
| CAPACITORS                 |                    |                      |                               |          |
| C610                       | ECEA1AU471         | RCE1AM471BV          | 10V 470μF                     |          |
| C618-621                   | ECEA1AU471         | RCE1AM471BV          | 10V 470μF                     |          |
| CABINET AND CHASSIS        |                    |                      |                               |          |
| 1                          | RHD30035-K         | RHD30035-K1          | SCREW                         |          |
| 23                         | RFKNBX747ECK       | RYF0283-K            | CASSETTE HOLDER ASS'Y         |          |
| 23-1                       | —                  | RUS757ZA             | SPRING, TAPE PRESSURE         | Addition |
| 24                         | RMB0286            | —                    | SWITCH LEVER SPRING           | Deletion |
| 25                         | RMC0038            | —                    | STABILIZER SPRING             | Deletion |
| 26                         | RML0308            | —                    | DETECTION LEVER               | Deletion |
| 27                         | RMQ0371            | —                    | STABILIZER                    | Deletion |
| 28                         | RMQ0407            | —                    | ANGLE                         | Deletion |
| 29                         | XTB3+6J            | —                    | SCREW                         | Deletion |
| 30                         | XTW2+5L            | —                    | SCREW                         | Deletion |
| 32                         | XTW3+8J            | —                    | SCREW                         | Deletion |
| 34                         | RGR0169A-A1        | RGR0169A-F           | REAR PANEL                    | (E, EG)  |
|                            |                    | RGR0169A-G           |                               | (EB)     |
| 40                         | RFKGBX646E-K       | RFKGSBX701EK         | FRONT PANEL ASS'Y             |          |
| 47                         | RGW0175-K          | RGW0175-2K           | KNOB, H.P. LEVEL/BIAS/BALANCE |          |
| 48                         | RGW0177-K          | RGW0177A-K           | KNOB, REC LEVEL               |          |
| MECHANISM PARTS            |                    |                      |                               |          |
| 129                        | RHG3032ZA          | RMG0102-1            | RUBBER CUSHION                |          |
| 136                        | RDG0030            | RDG0221              | MAIN GEAR                     |          |
| PACKING MATERIAL           |                    |                      |                               |          |
| P1                         | RPG1621            | RPG2094              | PACKING CASE                  | (E, EG)  |
|                            |                    | RPG2095              |                               | (EB)     |
| P4                         | XZB52X60A01Z       | SPP723               | PROTECTION COVER (THIS UNIT)  |          |
| P5                         | XZB24X34C04        | XZB25X34C03Y         | PROTECTION BAG (F.B. ACC.)    |          |
| ACCESSORIES                |                    |                      |                               |          |
| A1                         | RFKSBX747E-K       | RFKSSBX701E          | INSTRUCTION MANUAL ASS'Y      | (E)      |
|                            |                    | RFKSSBX701EG         |                               | (EG)     |
|                            |                    | RQT2527-B            |                               | (EB)     |

## ■ WRITING TO EEPROM

This unit holds recording bias and equalization data in its EEPROM, allowing playback gain and overall gain to be automatically adjusted inside the ROM. When the ROM malfunctions and requires replacement, be sure follow the instruction below.

When the head is replaced, follow steps 8 and 9 in the writing to the EEPROM procedure. (When the head is replaced, both playback gain and overall gain change and the default data must be rewritten to the EEPROM.)

### Measurement Condition

- Recording level control; Maximum
- Timer switch; Off
- Recording balance control; Center
- Headphones volume control; Maximum
- Test Mode terminals; Short Circuit
- Bias control; Center
- Dolby NR switch; Off
- ATC switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature  $20 \pm 5^{\circ}\text{C}$  ( $68 \pm 9^{\circ}\text{F}$ )
- Power switch; Off

### Measuring instrument

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

**Note:** Before writing data to the ROM, be sure to set the AF oscillator output level to 0dB (1 kHz)=1V.

### Test tape

- Overall gain adjustment
- Normal reference blank tape; QZZCRV2
- CrO<sub>2</sub> 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.

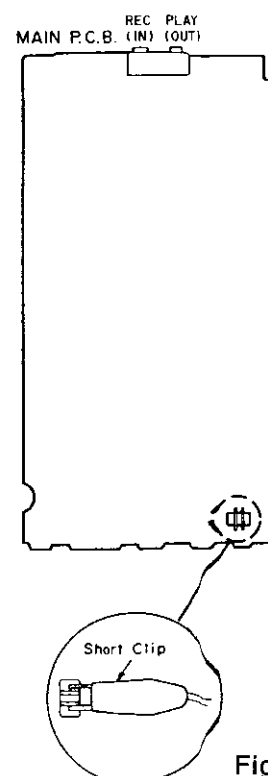
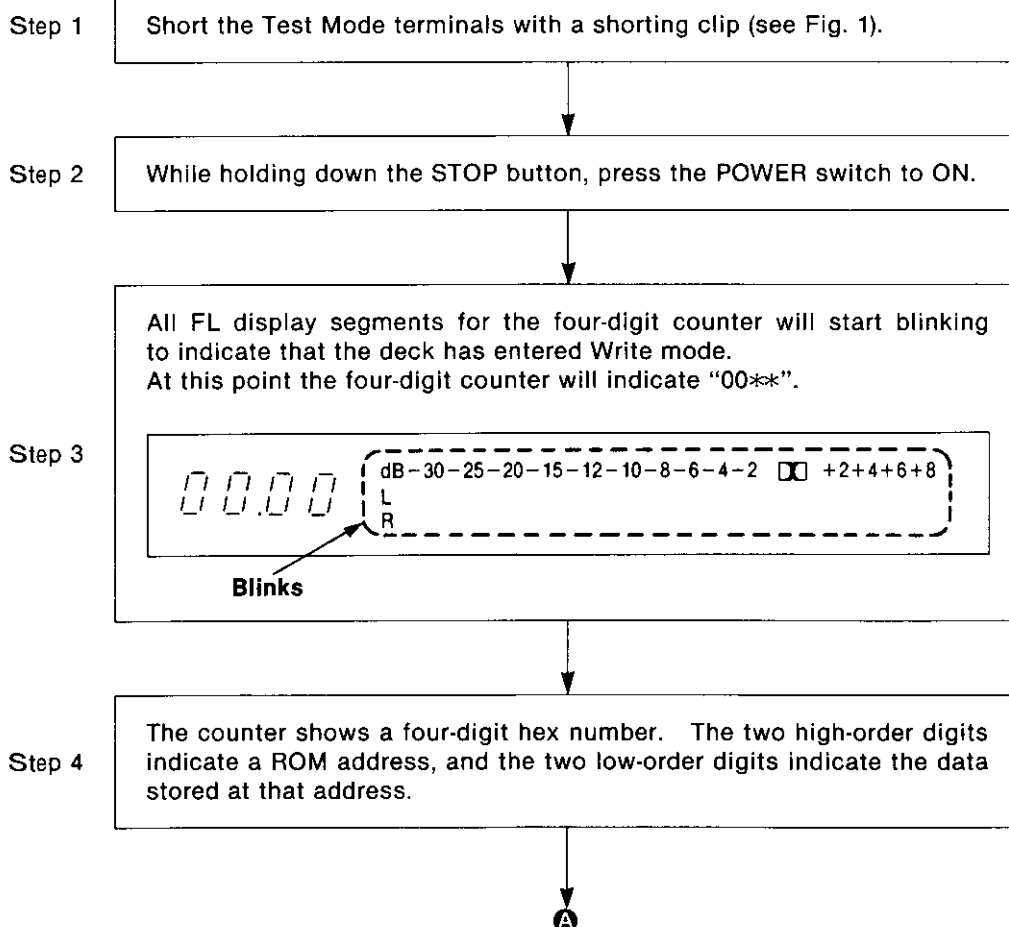


Fig. 1

### Notes:

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

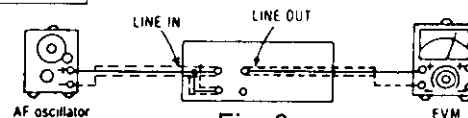
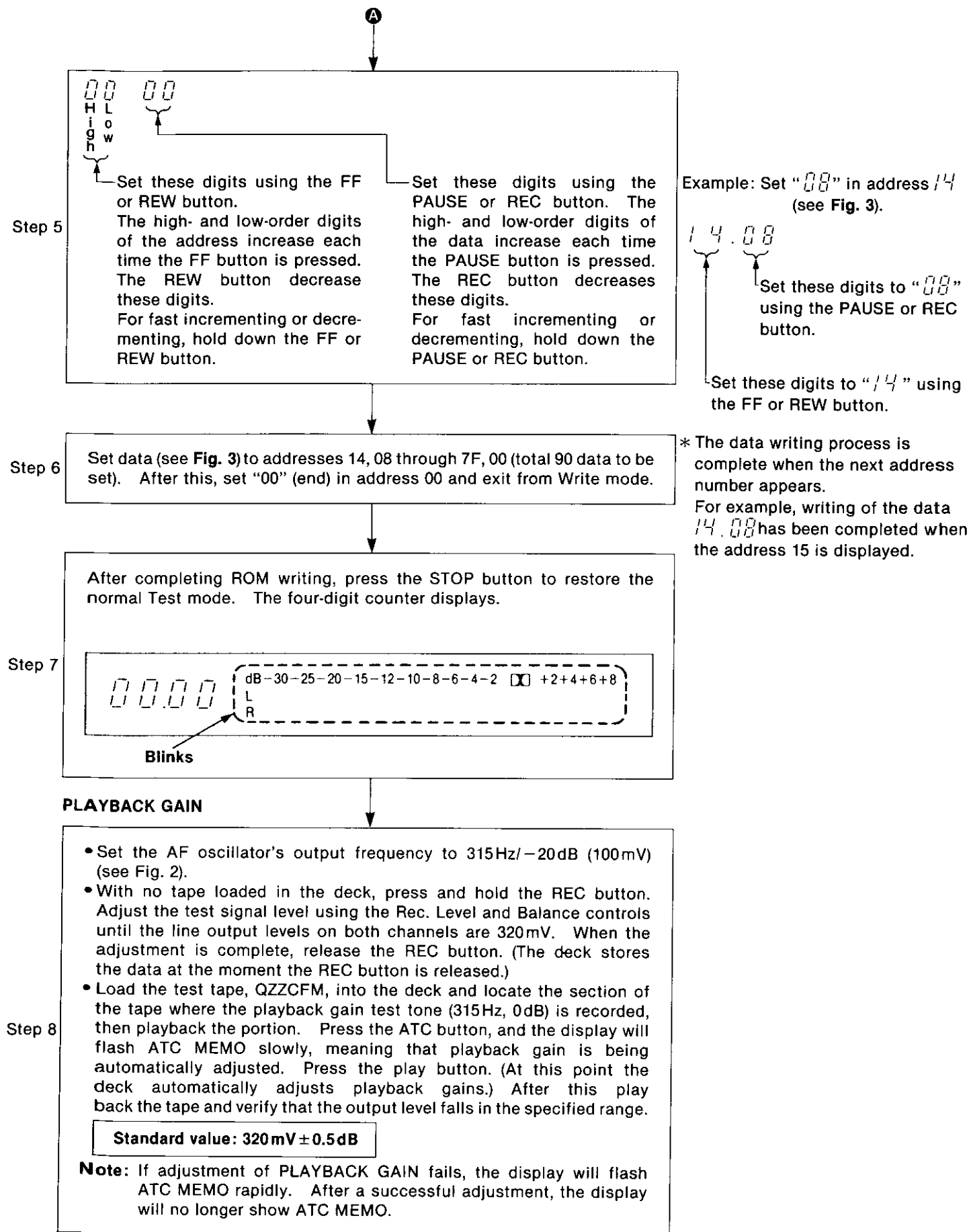


Fig. 2

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

B

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 ATC MEMO slowly. (At this point the deck automatically adjusts the overall gain and frequency response.)
  - After the above setting, the overall gain for selection of CrO<sub>2</sub> 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 ATC MEMO rapidly. After a successful adjustment, the display will no longer show ATC MEMO.

Step 10

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

### • EEPROM MAP

| Low \ High | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  |
|------------|----|----|----|----|----|----|----|----|
| 0          | 00 | —  | 60 | 8E | 94 | —  | —  | —  |
| 1          | —  | —  | 83 | 94 | 9A | —  | —  | —  |
| 2          | —  | —  | 34 | 1E | 1A | —  | —  | —  |
| 3          | —  | —  | 6F | 7F | 8E | —  | —  | —  |
| 4          | —  | 08 | C0 | BF | B8 | 60 | 8E | 9D |
| 5          | —  | 20 | 7C | 74 | 6F | 83 | 98 | 9D |
| 6          | —  | 12 | 60 | 8E | 9D | 44 | 1E | 1A |
| 7          | —  | 07 | 83 | 98 | 9D | 64 | 6A | 79 |
| 8          | —  | FB | 44 | 1E | 1A | C0 | BF | BC |
| 9          | —  | F5 | 5A | 62 | 73 | —  | —  | —  |
| A          | —  | 5E | C0 | BF | BC | 26 | 30 | 80 |
| B          | —  | 99 | 88 | 87 | 88 | 7C | 7D | 7D |
| C          | —  | 50 | 8C | 8C | 94 | 70 | 6B | 6B |
| D          | —  | 7C | 0F | 0E | 0D | 83 | 83 | 83 |
| E          | —  | 4B | 95 | 96 | 97 | —  | FF | 01 |
| F          | —  | 51 | 0E | 0D | 0D | —  | —  | 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
- Timer switch; Off
- Recording balance control; Center
- Headphones volume control; Maximum
- Bias control; Center

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

### Measuring instrument

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

- 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

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM
- Playback gain adjustment (315Hz, 0dB); QZZCFM

- Overall gain adjustment and Overall frequency response, AC bias trap adjustment and HX PRO adjustment.

Normal reference blank tape; QZZCRV2

CrO<sub>2</sub> reference blank tape; QZZCRX1

Metal reference blank tape; QZZCRZ5

### • Adjustment Points

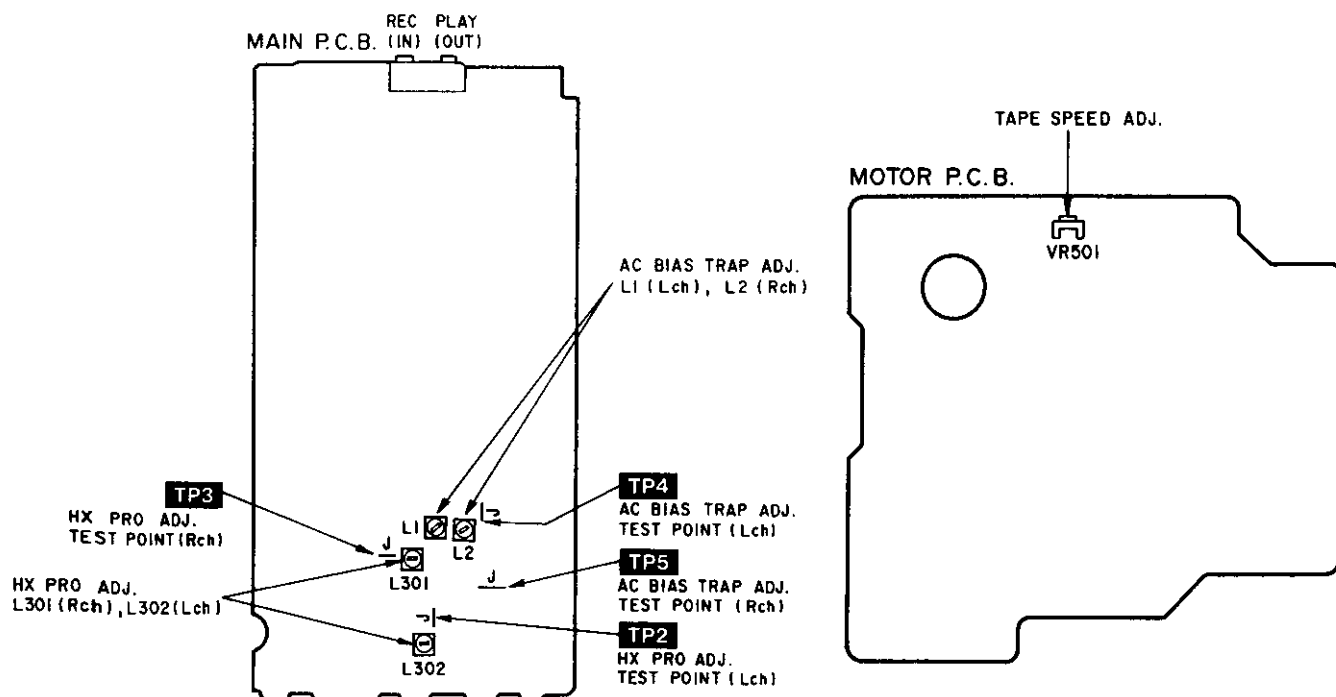
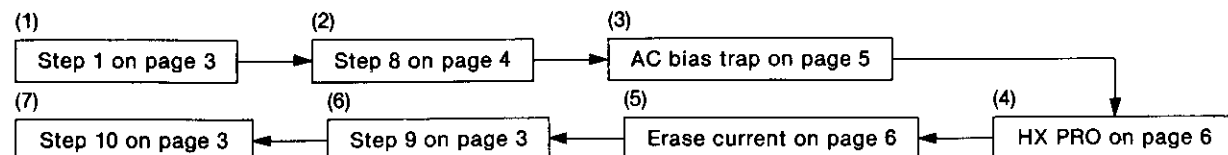


Fig. 4

## 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

### Caution:

- Please replace both azimuth adjustment screws (QH1361A) and springs (QBC1278A) used for to new ones simultaneously when readjusting the head azimuth. (See Fig. 6.) Even if you wish to readjust the head azimuth without replacing the screws and springs, a fine adjustment can not be done because of the screw-locking bond adhered to the azimuth screw and spring.
- Please remove the screw-locking bond left on the head base when replacing the azimuth screw.
- If you wish to readjust the head azimuth, be sure to adjust with adhering the cassette tape closely to the mechanism by pushing the center of cassette tape with your finger. (Shown in Fig. 7.)

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. (See Fig. 5)
2. After the adjustment, apply screwlock to the azimuth adjusting screw. (See Fig. 8)

When the head azimuth is adjusted after head replacement, follow the Writing to the EEPROM procedure on page 4 and 5 (steps 8 and 9).

(When the head is replaced, both playback gain and overall gain change and the default data must be rewritten to the EEPROM.)

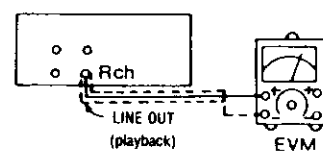


Fig. 5

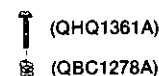


Fig. 6

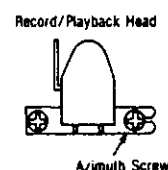


Fig. 8

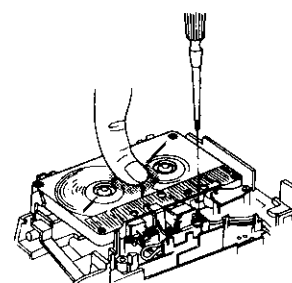


Fig. 7

## TAPE SPEED ADJUSTMENT

Normal speed (Standard Value: 3000 ± 45 Hz)

1. Playback the middle portion of the test tape (QZZCWAT).
2. Adjust VR501 for the output value.

Adjustment target: 3000 ± 15 Hz

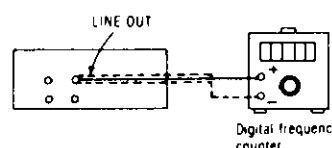


Fig. 9

## PLAYBACK GAIN MEASUREMENTS

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

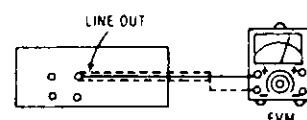


Fig. 10

## AC BIAS TRAP ADJUSTMENT

1. Insert the Metal blank test tape (QZZCRZ5) and set the unit to the Record mode.
2. Adjust L1 (L-CH) [L2 (R-CH)] so that the output voltage between TP4 (L-CH) [TP5 (R-CH)] and GND so that the output is the minimum value.

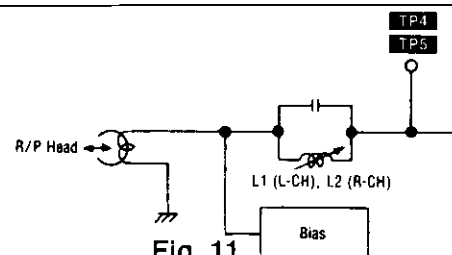


Fig. 11

## HX PRO ADJUSTMENT

1. Insert the Metal blank tape (QZZCRZ5) and set the unit to the Record Pause mode.
2. Connect a DC voltmeter across TP2 (L-CH) and GND, TP3 (R-CH) and GND.
3. Adjust L301 (L-CH) and L302 (R-CH) so that the output is the minimum value.

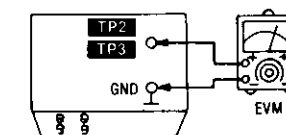


Fig. 12

## PLAYBACK FREQUENCY RESPONSE

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

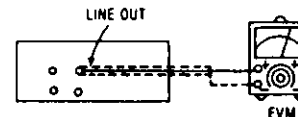


Fig. 13

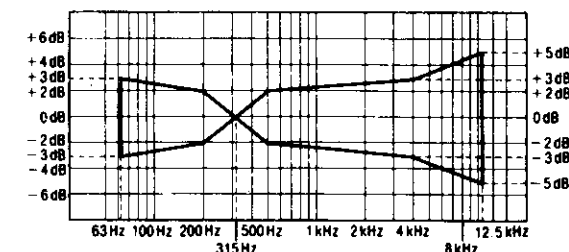


Fig. 14

## 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 TP1 and GND (chassis) is within the standard value.

Standard value: 190 ± 20 mA (Metal)...EVM Reading: 190 ± 20 mV

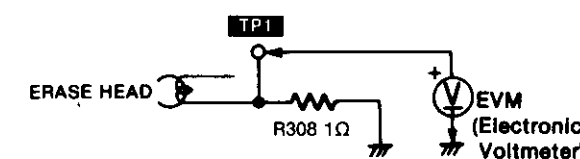


Fig. 15

## CONFIRMATION OF THE OVERALL GAIN AND OVERALL FREQUENCY RESPONSE

1. In the Record Pause mode, load a normal blank tape (QZZCRV2) 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 (QZZCRX1).
4. Play back the test signals just recorded and verify that the levels at the test frequencies fall in the ranges specified in Fig. 17 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. 18 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.

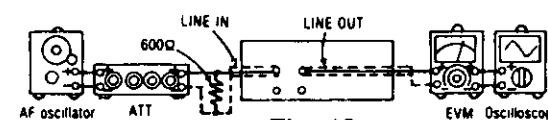


Fig. 16

## Normal Overall frequency response chart (NR OUT)

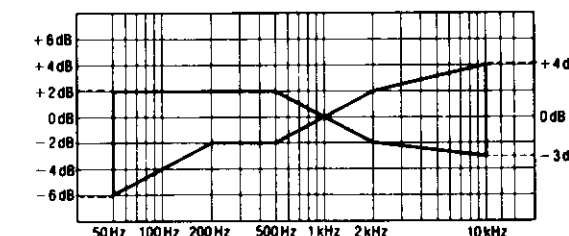


Fig. 17

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

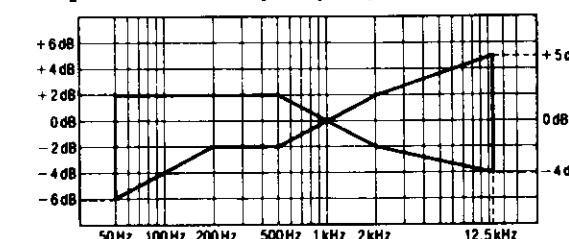
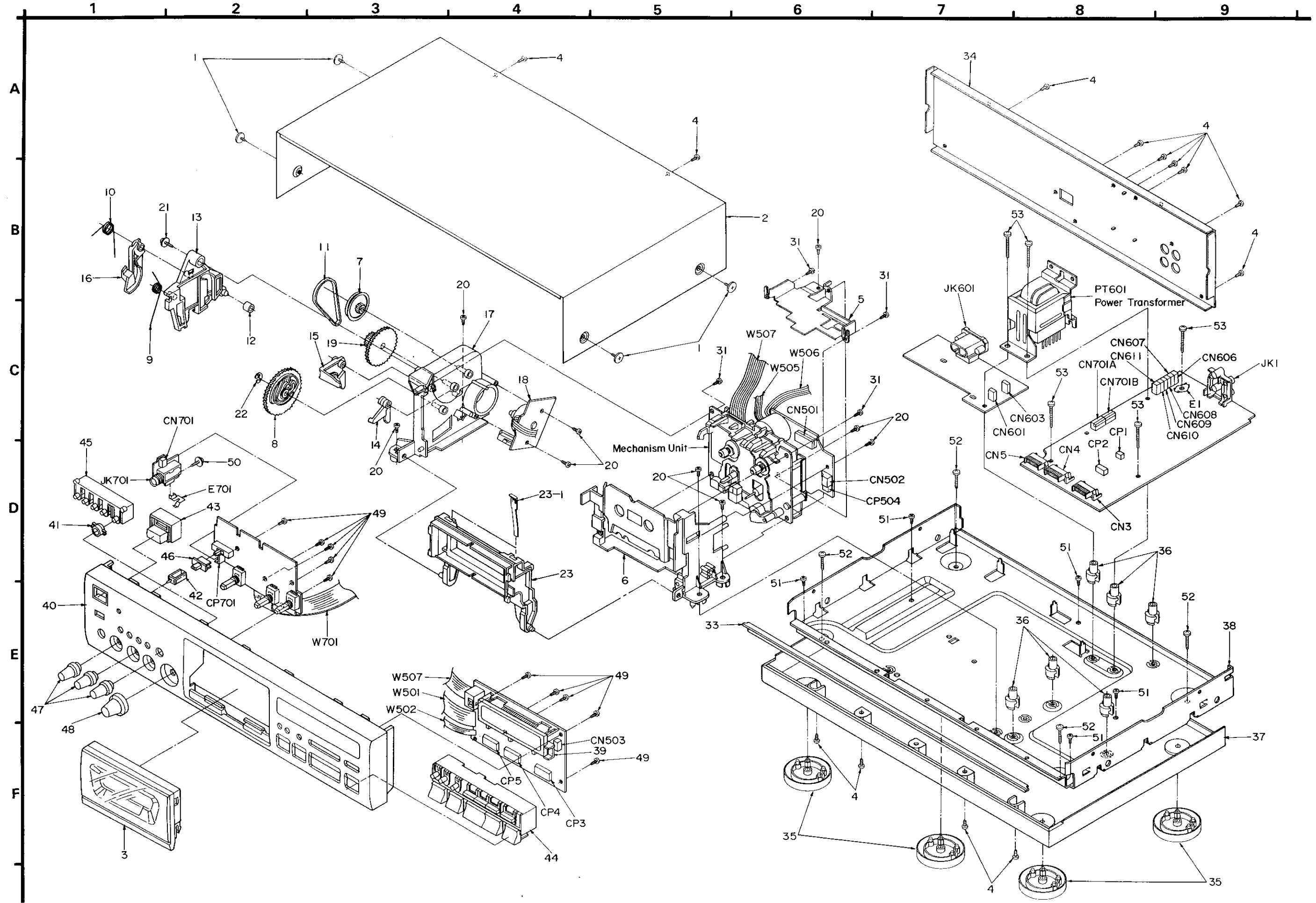
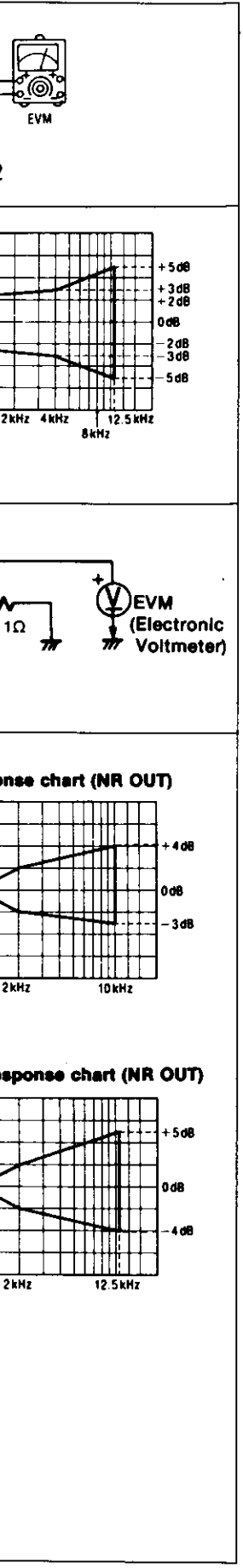


Fig. 18

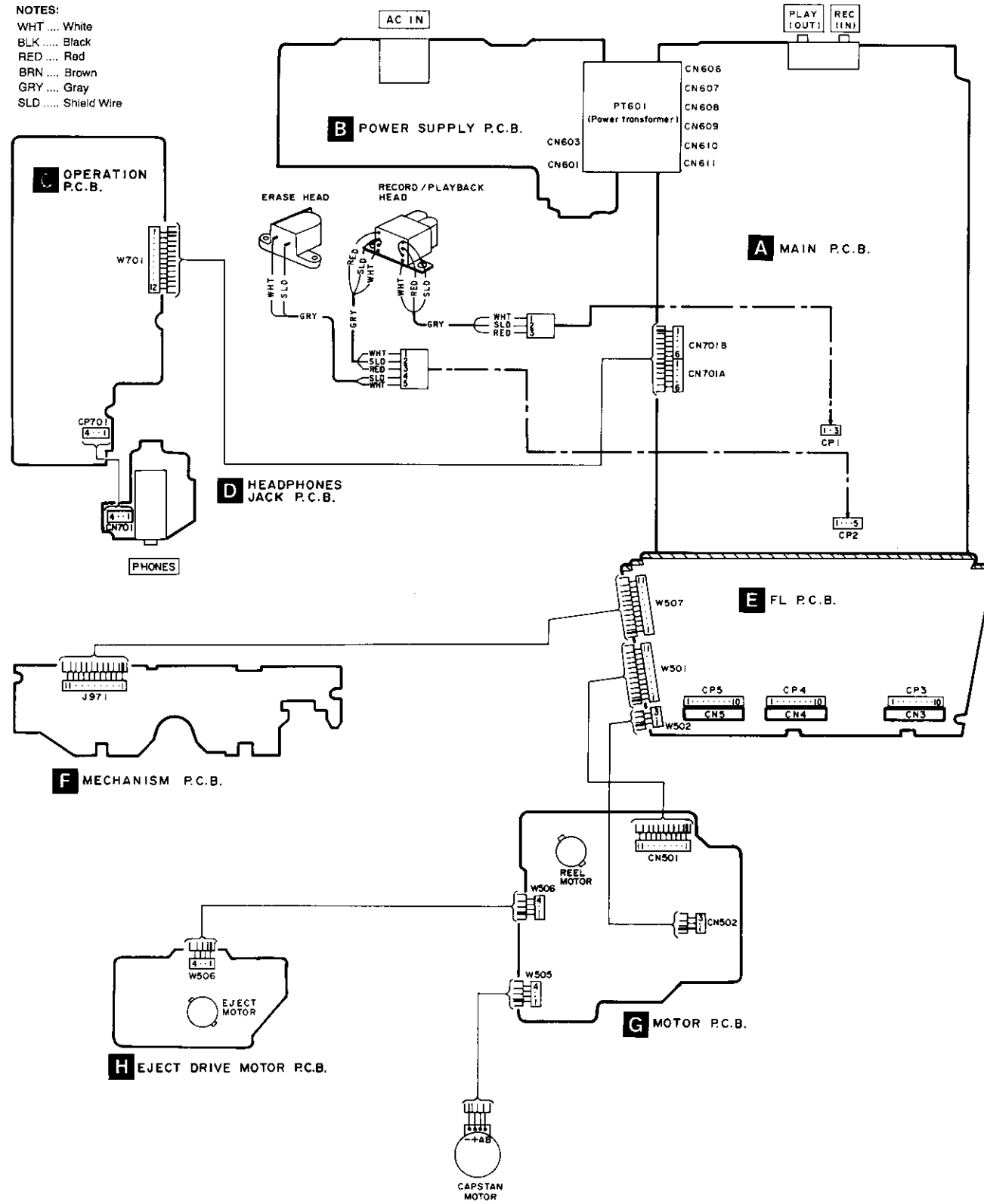
CABINET PARTS LOCATION



# WIRING CONNECTION DIAGRAM

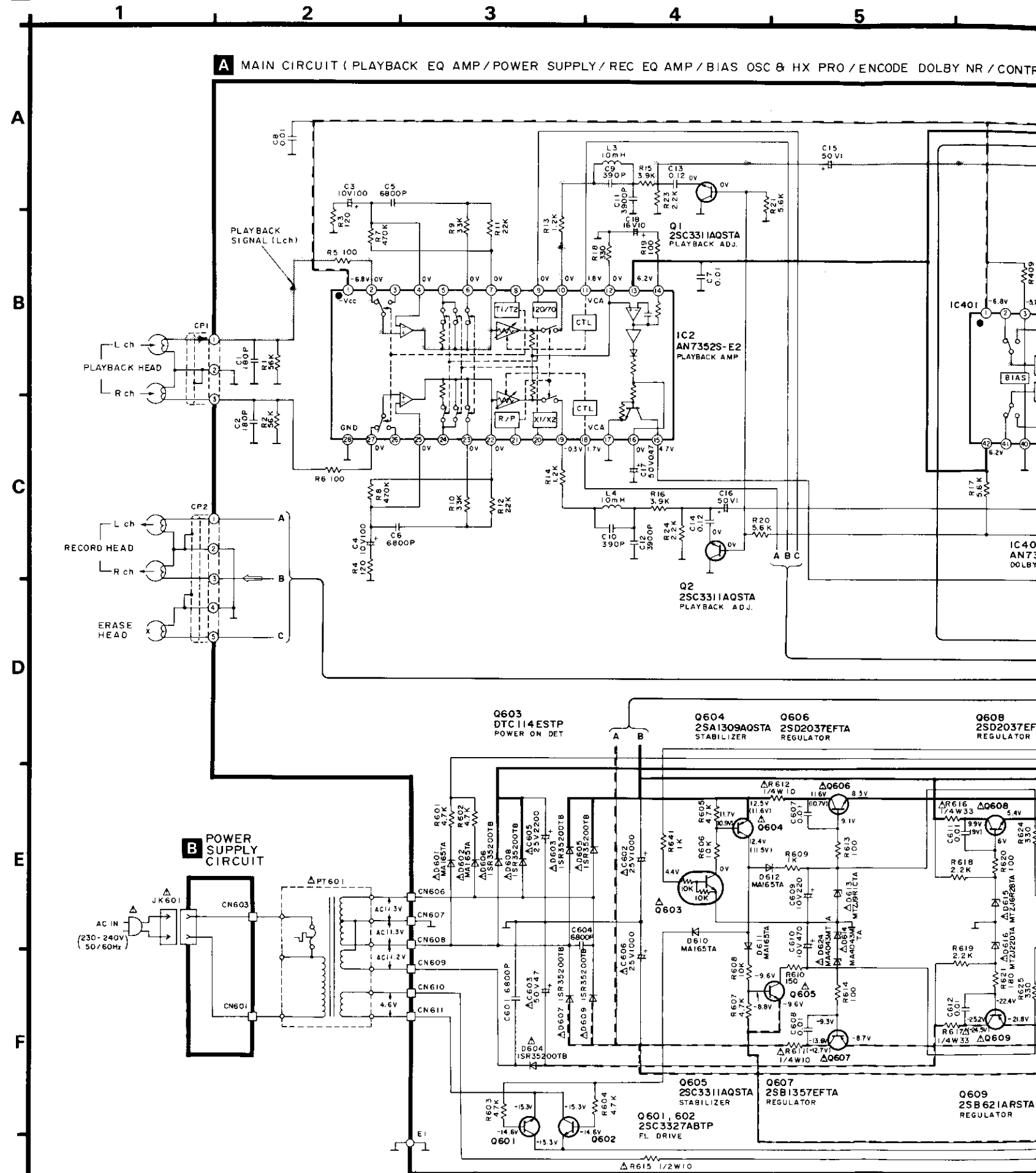
## NOTES:

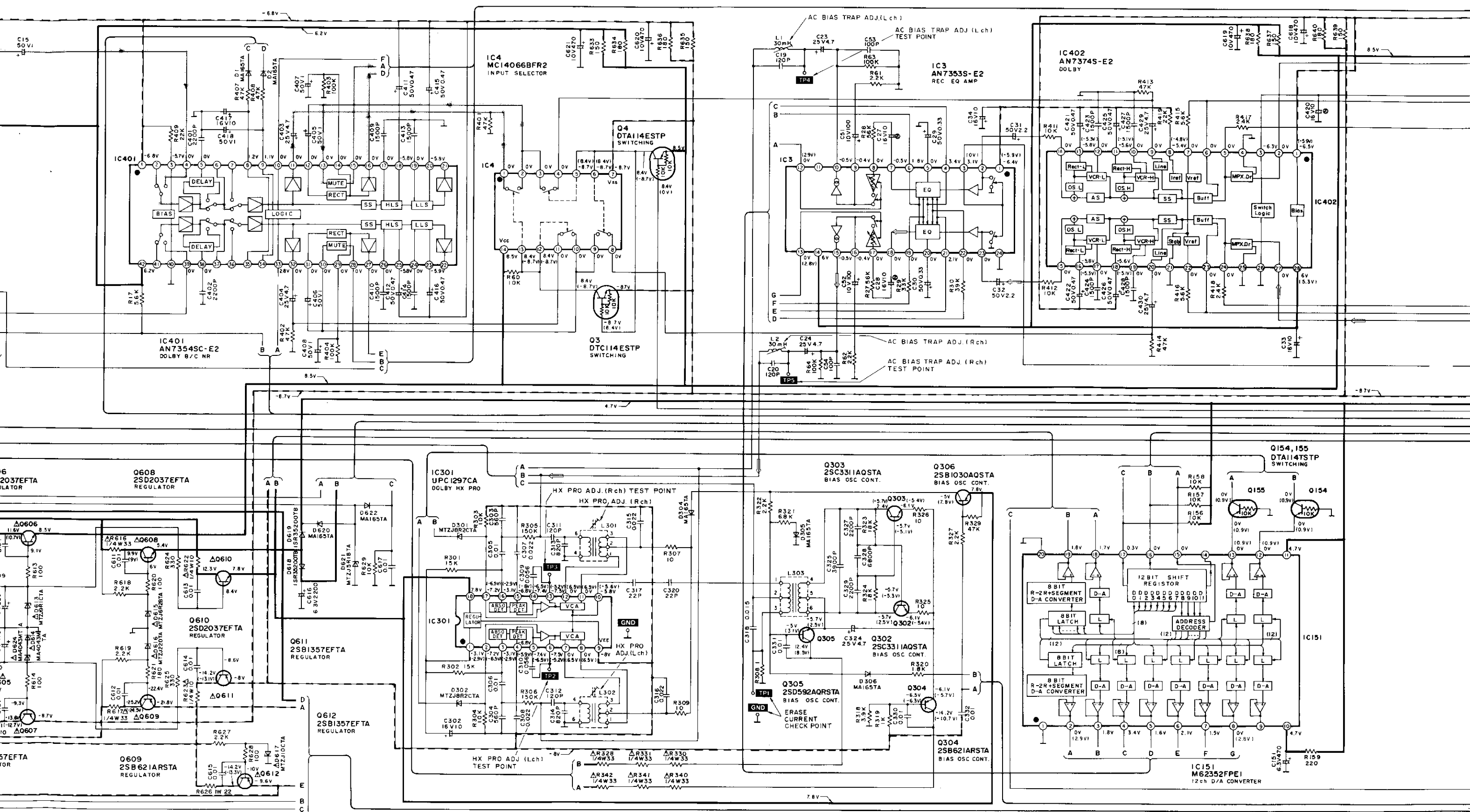
WHT .... White  
BLK .... Black  
RED .... Red  
BRN .... Brown  
GRY .... Gray  
SLD .... Shield Wire

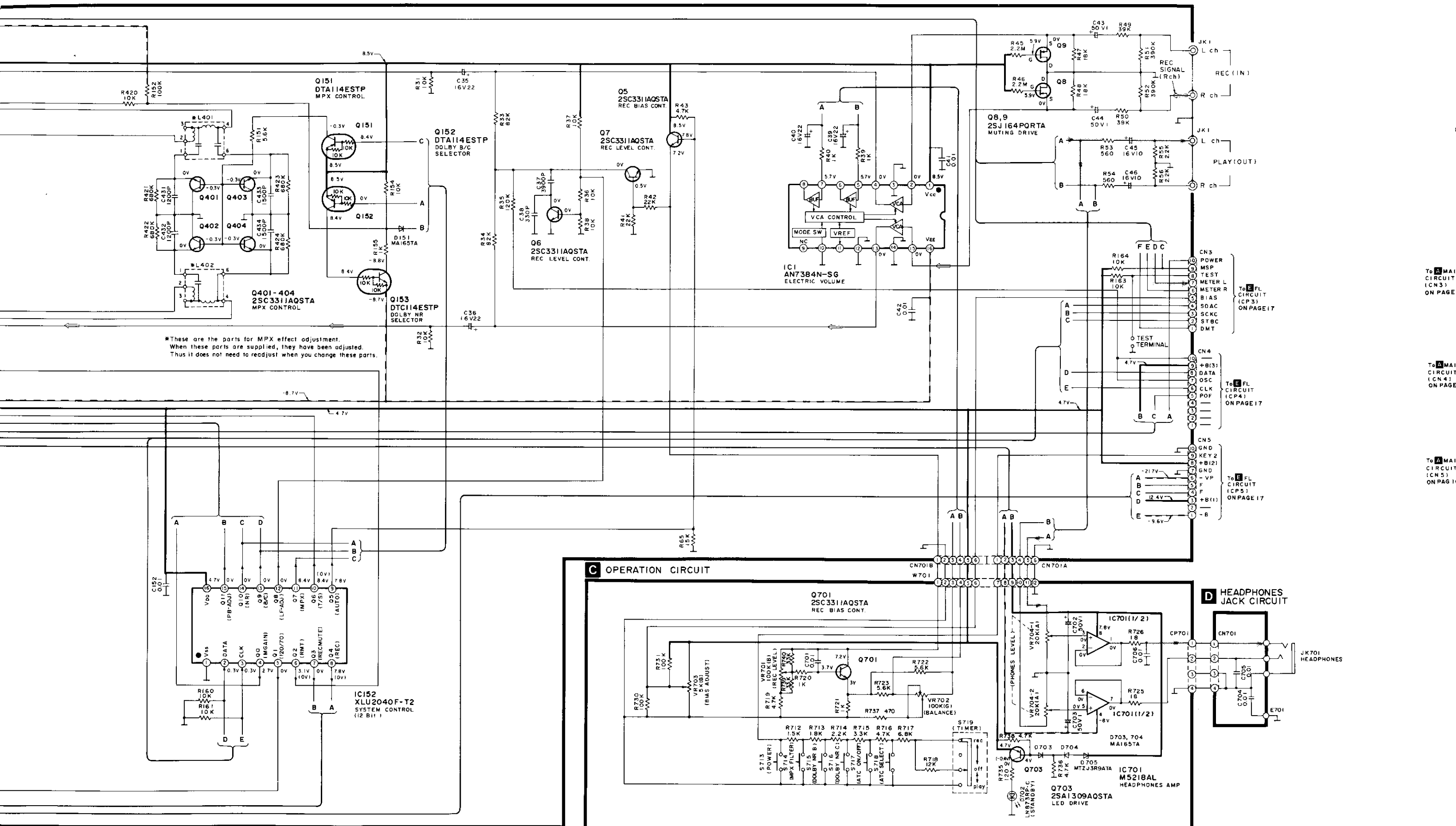


# SCHEMATIC DIAGRAM

Note: This schematic diagram may be modified at any time with development of new technology







25

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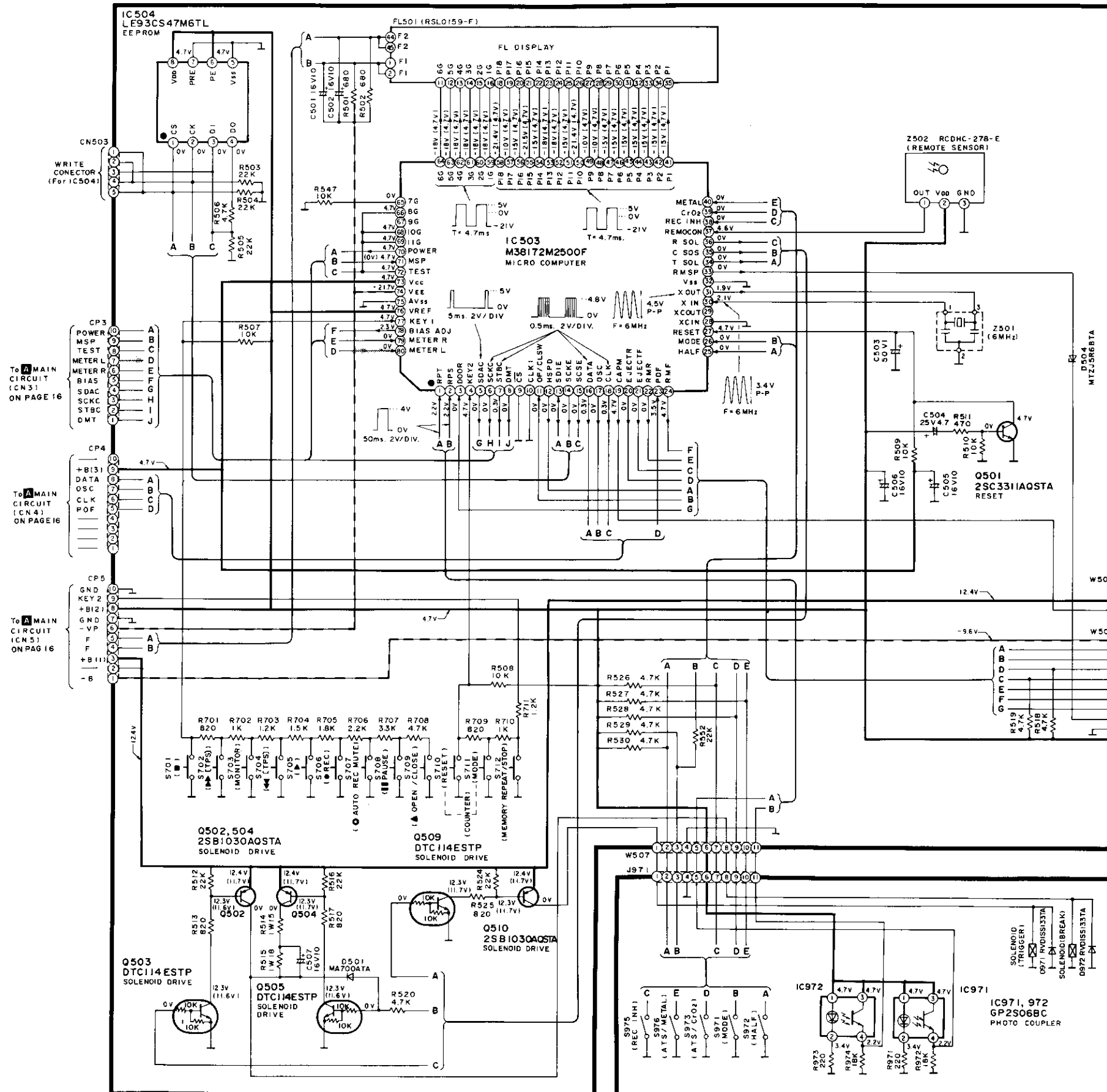
31

32

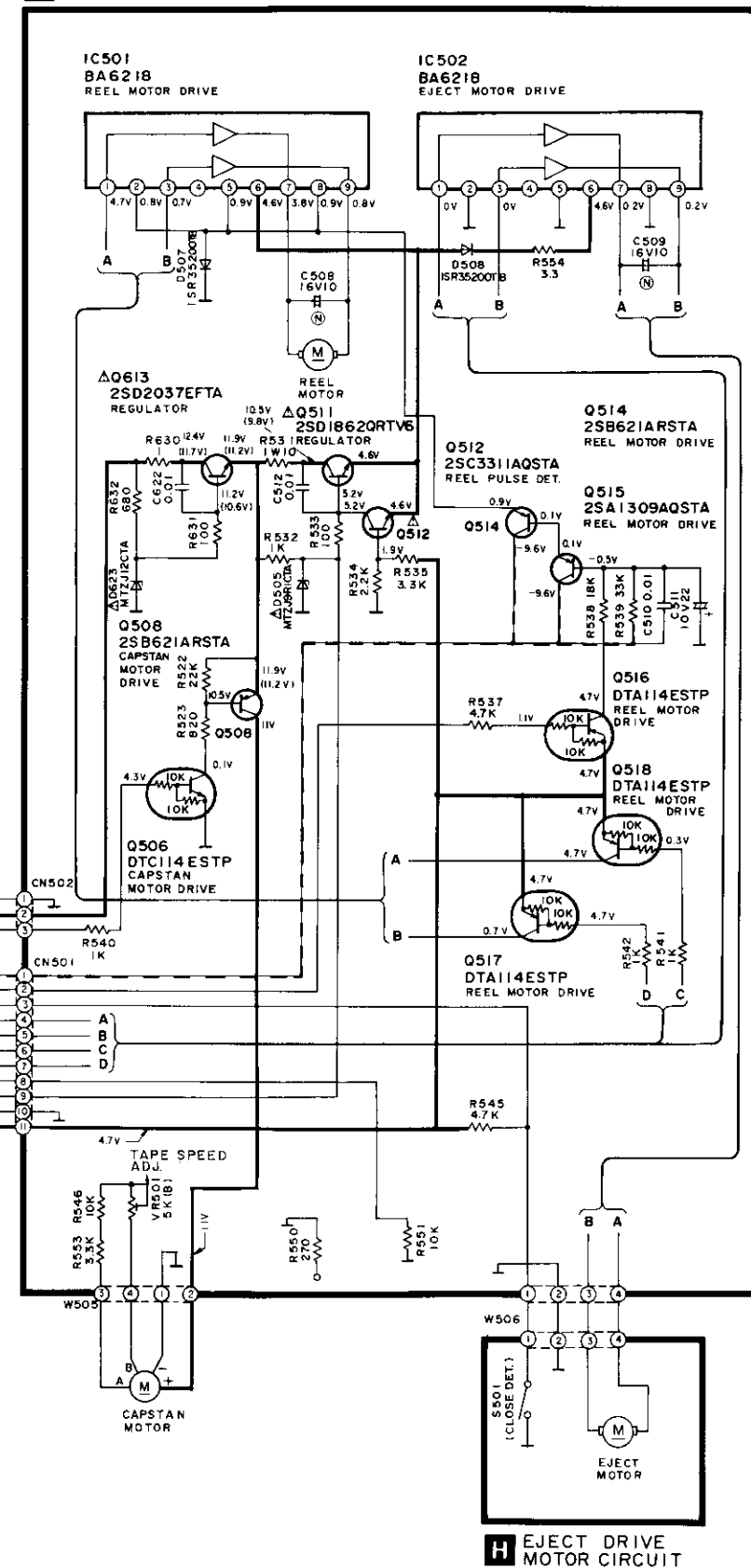
33

34

## E FL CIRCUIT



## G MOTOR CIRCUIT



## F MECHANISM CIRCUIT

- 17 -

- 18 -



