ORDER NO. AD9403072C2

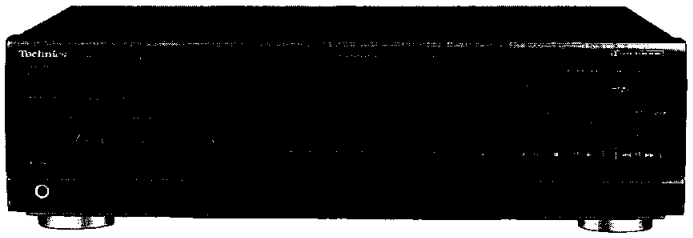
Service Manual

Cassette Deck

Stereo Cassette Deck

RS-BX501

DOLBY B·C NR HX PRO*



Colour

(K) ... Black Type

Area

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

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

Rf kv0013 Capstan Mod

12.

AR-1 MECHANISM SERIES

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Recording system	AC bias
Bias frequency	80 kHz
Erasing system	AC erase
Heads	Recording/Playback head (Permalloy)×1
	Erasing head (Double-gap ferrite)×1
Motors	Capstan drive (DC servo motor)×1
	Reel table drive (DC motor)×1
Tape speed	4.8 cm/sec. (1⅞ ips)
Wow and flutter	0.07% (WRMS)
	±0.2% (DIN)
Fast forward and rewind times	Approx. 50 seconds with C-60 cassette tape
Frequency response (Dolby NR off)	
NORMAL	30 Hz–15 kHz, ±3 dB
	30 Hz–16 kHz (DIN)
CrO_2	30 Hz–15 kHz, ±3 dB
	30 Hz–16 kHz (DIN)
METAL	30 Hz–16 kHz, ±3 dB
	30 Hz–17 kHz (DIN)
S/N (Signal level=max recording level, CrO_2 type tape)	
NR off	56 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)	100 mV/47 kΩ
Output voltage and impedance	
PLAY (OUT)	500 mV/500Ω
HEADPHONES	190 mV/(8Ω)
	(Load impedance 8Ω–600Ω)

■ GENERAL

Power consumption	19 W
Power supply	AC 50 Hz/60 Hz, 230 V–240 V
Dimensions (W×H×D)	430×125×293 mm
Weight	3.8 kg

Note:

Disign and specifications are subject to change without notice.
Weight and dimensions are approximate.

Technics

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■ CAUTION FOR AC MAINS LEAD

For (EB) area only

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ◈ or the BSI mark ♡ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

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

Blue: Neutral
Brown: Live

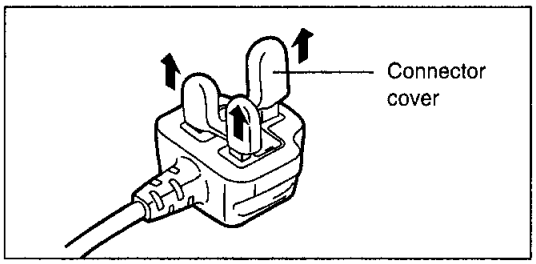
As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

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

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

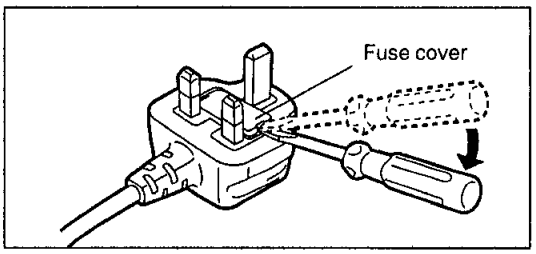
Before use

Remove the connector cover as follows.

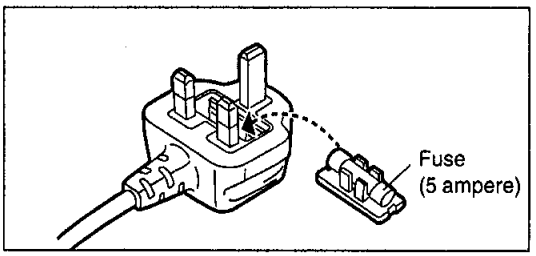


How to replace the fuse

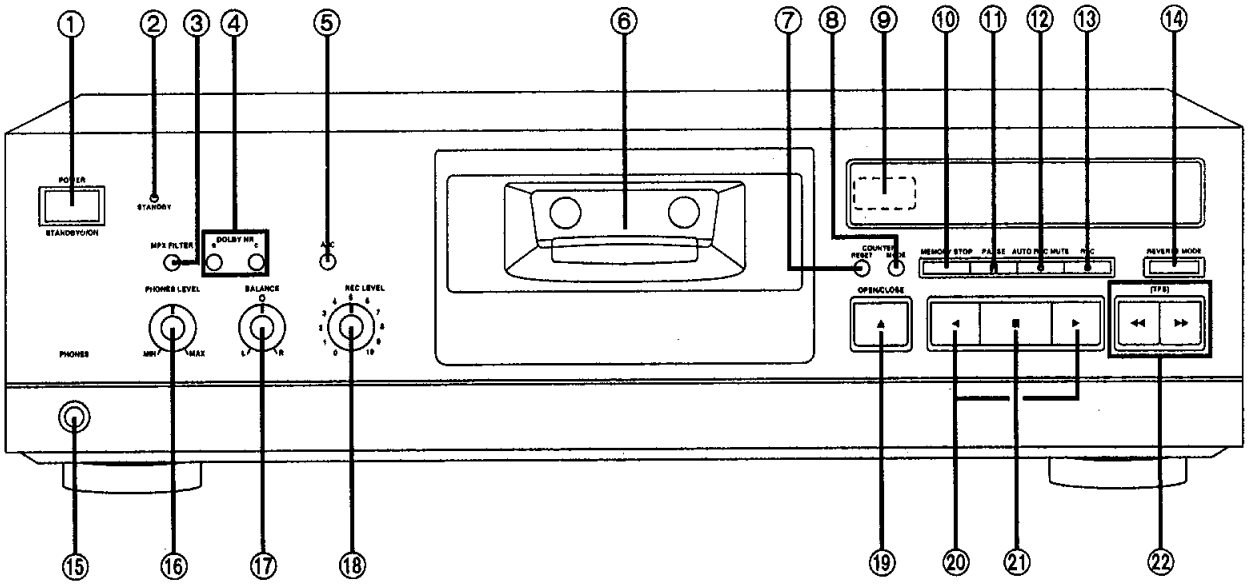
1. Remove the fuse cover with a screwdriver.



2. Replace the fuse and attach the fuse cover.



■ FRONT PANEL CONTROLS

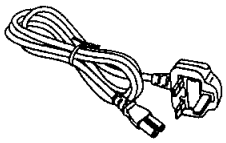


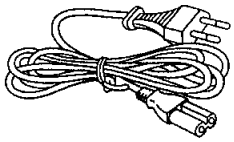
No.	*Name*
①	**Power "STANDBY ⏻/ON" switch (POWER, STANDBY ⏻/ON)** Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
②	**Standby indicator (STANDBY)** When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.
③	**Multiplex filter button (MPX FILTER)**
④	**Dolby noise reduction buttons (DOLBY NR B, C)**
⑤	**Auto tape calibration button (ATC)**
⑥	**Cassette holder**
⑦	**Tape/linear counter reset button (COUNTER RESET)**
⑧	**Tape/linear counter mode button (COUNTER MODE)**
⑨	**Remote control signal sensor**
⑩	**Memory stop button (MEMORY STOP)**
⑪	**Pause button (❚❚ PAUSE)**
⑫	**Automatic record muting button (▢ AUTO REC MUTE)**

No.	*Name*
⑬	**Record button (● REC)**
⑭	**Reverse-mode select button (REVERSE MODE)**
⑮	**Headphones jack (PHONES)**
⑯	**Headphones volume control (PHONES LEVEL)**
⑰	**Recording balance control (BALANCE)**
⑱	**Recording level control (REC LEVEL)**
⑲	**Cassette holder open/close button (▲ OPEN/CLOSE)**
⑳	**Playback buttons (◀/▶)**
㉑	**Stop button (■)**
㉒	**Rewind/fast-forward search buttons (◀◀/▶▶ [TPS])**

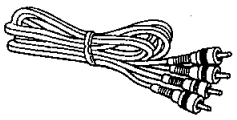
■ ACCESSORIES

AC power supply cord ..... 1 pc.
(For (EB) area: VJA0733) (for others: RJA0019-2K)





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



■ CONNECTIONS

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

Note

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

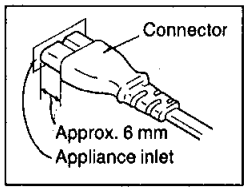
For (EB) area only
BE SURE TO READ THE CAUTION FOR AC MAINS LEAD ON PAGE 2 BEFORE THE FOLLOWING CONNECTIONS.

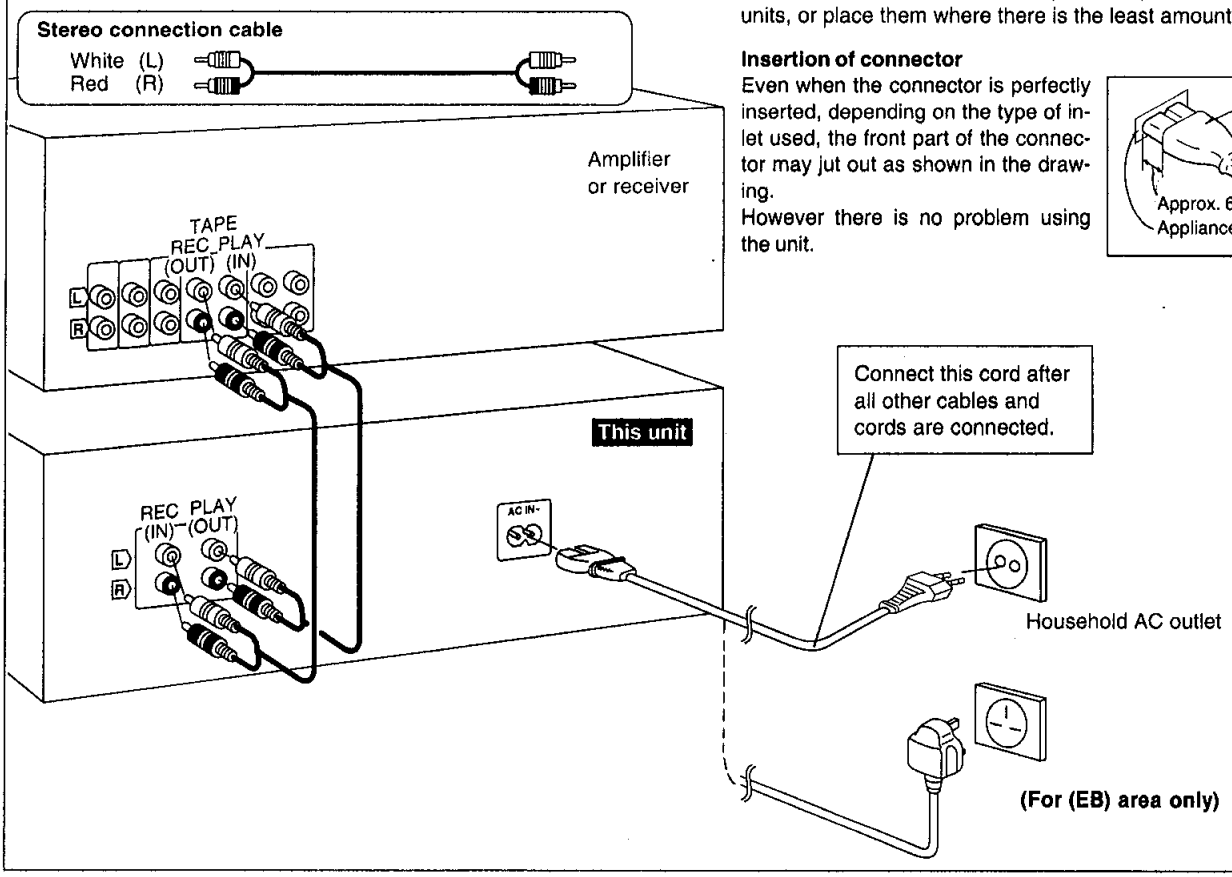
Placements hints

If this unit is placed near a receiver or a tuner, a "hum" noise may be heard during tape playback, recording, or AM reception of the receiver or the tuner.
If this occurs, leave as much space as possible between the units, or place them where there is the least amount of "hum".

Insertion of connector

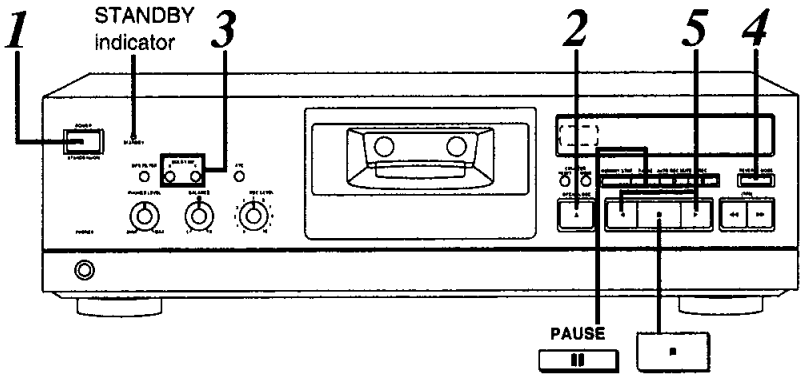
Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.



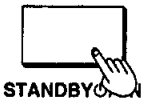


■ PLAYBACK

Either normal, CrO_2 or metal type cassettes can be used.



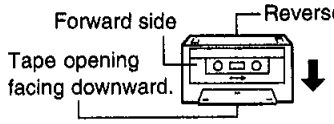
1 POWER

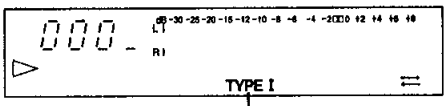


Press POWER.
(The unit will switch on.)
Standby indicator will go off.

2 OPEN/CLOSE

Press OPEN/CLOSE, and then insert the cassette tape.
Press again to close the cassette holder.

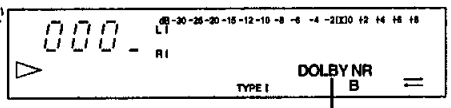




The tape type will be displayed.

3 DOLBY NR B C

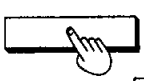
Press either DOLBY NR B or C to select the appropriate noise-reduction system.



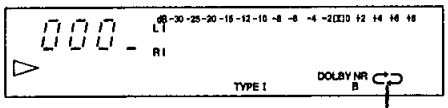
Illuminates

Select the same type as that used for recording. When playing back a tape which was not recorded using a Dolby NR system, press so that the indicators go off.

4 REVERSE MODE



Press REVERSE MODE to select the appropriate reverse mode.



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

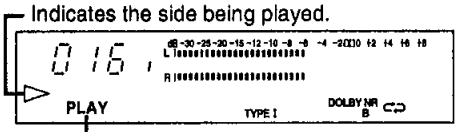
⇄ : One side only.
⇆ : Both sides repeatedly (up to 8 times).

(Refer to page 6.)

5

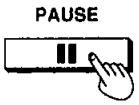
Press ▶ or ◀.
(Playback will begin.)
▶: To begin from the forward side.
◀: To begin from the reverse side.

Indicates the side being played.



Illuminates

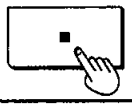
To temporarily stop playback



Press ❚❚.
The "PLAY" indicator will flash.

Press once again to resume playback.

To stop playback



Press ■.

For your reference:

When the cassette holder is open, pressing ◀, ▶, ◀◀ or ▶▶ will close the holder and begin the desired function.

About the automatic-tape-select function

This unit is equipped with the automatic-tape-select feature; it automatically detects the type of tape being used, and then makes the suitable adjustments of the bias and equalizaiton accordingly.
The type of tape being used will be automatically detected and the indicator will illuminate.

TYPE I: NORMAL
TYPE II: CrO_2
TYPE IV: METAL

About the Dolby noise-reduction system

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

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

Dolby B-type noise-reduction

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

Dolby C-type noise-reduction

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

About the Dolby HX-Pro headroom extension system

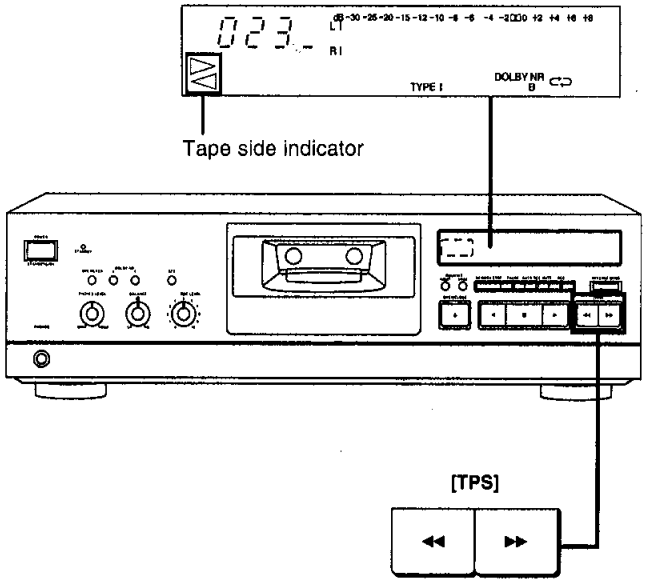
By functioning to improve the maximum output level of the tape's high-frequency range, this system permits recordings without a reduction in the level of the sound source's high-frequency range. In addition, by using the system in parallel with this unit's noise-reduction system, recording and playback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

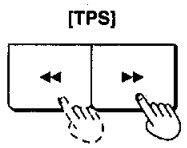
Reverse function

The reverse function on this unit has two modes (⇄ , ⊂⇄⊃). Read the descriptions below and select the mode as desired.
(Refer to step 4 on page 5.)

Mode	Tape travel
⟶ ⟵	Only one side of the tape (either the forward side or the reverse side) will be played, and operation will automatically stop when playback has been completed.
⊂⇄⊃	Both sides of the tape will be played repeatedly eight times, and then operation will automatically stop. (If playback is begun from the reverse side, the forward side will be played seven times.)

■TO FAST-FORWARD OR REWIND THE TAPE





[In stop mode]
Press ◀◀ or ▶▶.

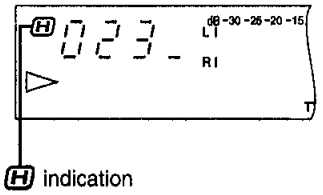
Because this unit is capable of playing back both sides of the tape, the operation changes in accordance with the direction of the tape side indicator.

Tape side Indicator	Rewind	Fast forward
▷	◀◀	▶▶
◁	▶▶	◀◀

High-speed tape transport

When fast-forwarding from near the beginning of the tape or when rewinding from near the end of the tape, the tape travel speed will be faster than that during normal fast-forwarding or rewind.
(During high-speed tape transport, the (H) indication will light up.)

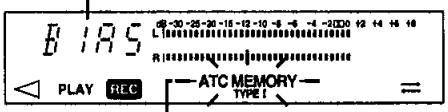
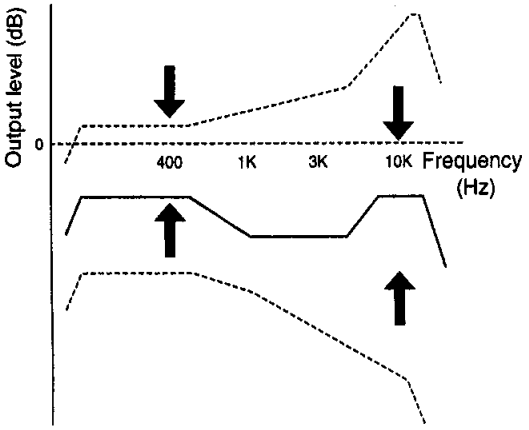
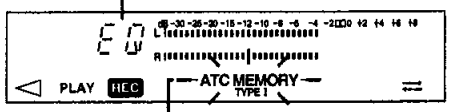
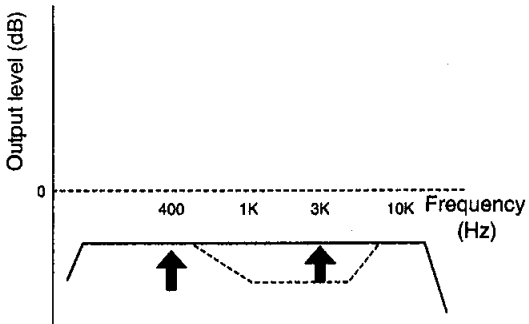
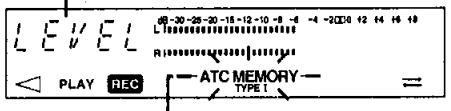
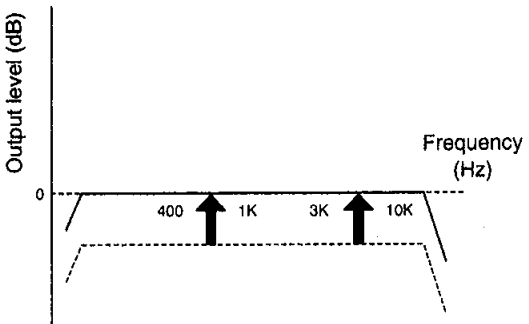
This high-speed tape transport will also function during TPS.



■ ABOUT THE ATC FUNCTION

The ATC (auto tape calibration) function records a test signal in order to automatically set the bias, equalizer and recording/playback level to the optimum recording conditions in accordance with the characteristics of the tape being used.

The table below shows the conditions of the display and the operation of the unit while the ATC settings are being made.

	Display	Unit operation
① **Bias adjustment**	"BIAS" is displayed.  Flashes	The bias is adjusted so that the output level is the same at 400 Hz and at 10 kHz. 
② **Equalizer adjustment**	"EQ" is displayed.  Flashes	 The equalizer is adjusted so that the output level is the same at 400 Hz and at 3 kHz.
③ **Level adjustment**	"LEVEL" is dispalyed.  Flashes	 The tape sensitivity is compensated so that the recording input level and the playback output level are the same.

■ SELF-DIAGNOSTIC

Indicating Procedure

To indicate Self-Diagnostic Function

1. Check the cassette holder is empty (no cassette tape), then turn on the power.
2. Press and hold the DOLBY NR B button (for more than 3 seconds), and also press the STOP (■) button for about 2 seconds until the level meter changes from constantly lit to blinking.
3. Insert a normal blank cassette tape, either A or B side of which has the erase preventing piece folded. Then close the cassette holder.
4. Press the FWD. PLAY (▶) button and play the tape for more than 1 second, then press the STOP (■) button.
5. Insert a normal blank cassette tape, both A and B sides of which have the erase preventing pieces respectively, and close the cassette holder.
   (NOTE: Rewind the tape for 1 or 2 minutes before use.)
6. Press the REC (●) button.
   This automatically makes Deck perform the following operations.

Record an eight second portion with no sound. ➡ Record a 20 second portion off 400Hz test signal.
⬇
When the signal is detected, stop the unit ⬅ TPS-REVIEW search mode ⬅ Stop the unit

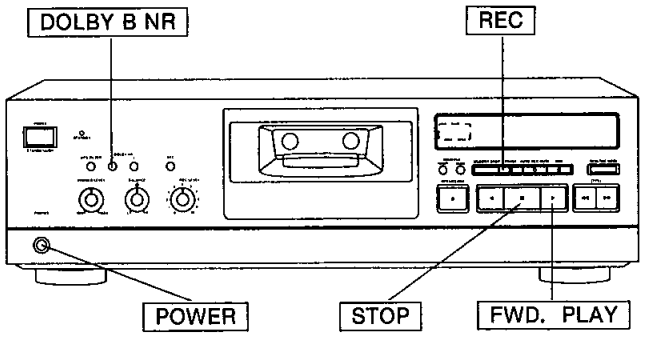
   (NOTE: The tape has to be taken up by playback for about 1 minute.)
7. To check the self-diagnostic results, press the STOP (■) button.
   These results are indicated in the respective displays.
8. If there is no fault, the counter display remains unchanged when the STOP (■) button is pressed.

To resume Ordinary Indication

To return the display to normal mode, switch the power off and then back on again.
To have the indication appear again, take the above-stated steps 1, 2 and 8.

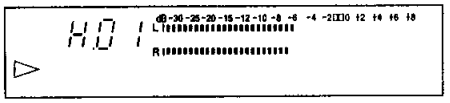
NOTE: The self-diagnostic results are stored in memory.
To clear this memory, press and hold the STOP (■) button for at least 6 seconds until "CL" appears in the FL display.
Be sure to clear the memory after the repair.

Indicating Position



Self-Diagnostic Function Indication

(Example)



Indication Text

Symbol	Trouble	Remedy
H01	Irregular action of cassette mechanism. (Example) Pressing the FWD PLAY button results in REW PLAY action.	The cassette mechanism mode switch (S971) and plunger are defective. (Check and replace them.)
H02	No recording can be made, or the unit is placed in the recording mode though the erase preventing piece has been broken.	The erase preventing switch (S974, S975) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H03	Pressing the PLAY (▶) button fails to play the tape. Pressing the PLAY (▶) button causes the motor to rotate though no cassette tape is in.	The cassette half detect switch (S972) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H04	The cassette holder will not open or close when the OPEN/CLOSE (▲) button is pressed. Pressing the OPEN/CLOSE (▲) buttton causes the cassette holder to open after it has closed, and vice versa.	The cassette holder open/close detect switch (S853, S854) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H05		
H06	No treble is produced when a normal tape is played or recorded. Excessive treble is produced when a CrO_2/Metal tape is played, or the recorded treble is destorted and at a low level.	The auto tape select (CrO_2) switch (S973) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
H07		The automatic tape select (Metal) switch (S976) contacts improperly, or there is a shortcircuit. (Check and replace the switch.)
F01	When the PLAY (▶) button is pressed, the tape runs a little and stops soon.	The hall IC (IC971, 972) is defective and, as the result, reel pulse is out of order. (Check and replace the IC.)
F02	TPS dose not operate.	The PLAYBACK AMP IC (IC2) is defective. (Check and replace the IC.)

DISASSEMBLY INSTRUCTIONS

OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURES

NOTE

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

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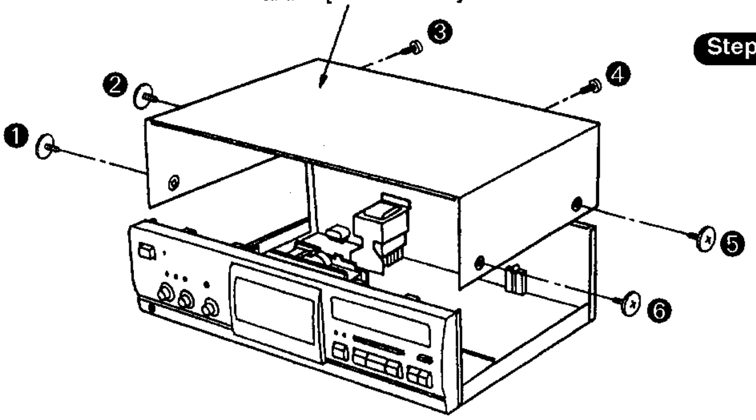
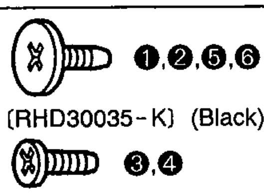
2. Checking for the operation P.C.B. •••••••••••••••••••••••••••••••••••• 11.
3. Checking for the main P.C.B. ••••••••••••••••••••••••••••••••••••••• 12,13.
4. Checking for the motor P.C.B. ••••••••••••••••••••••••••••••••••••••• 13.
5. Replacement for the mechanism unit. ••••••••••••••••••••••••••••••••• 14.
6. Replacement for the head block (R/P) and pinch roller ass'y. •••••••••••••••••••••• 15,16.
7. Replacement for the belt, flywheel ass'y, reel motor and capstan motor. •••••••••••••••• 16,17.
8. Replacement of the parts mounted on mechanism P.C.B. and the plunger. ••••••••••••• 17,18.
9. Replacement for the drive rack and friction gear. ••••••••••••••••••••••••••• 18.

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



Step 1 Remove the 6 screws.

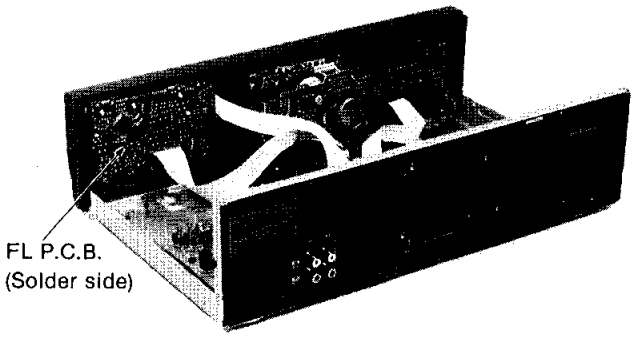


〔RHD30035-K〕 (Black)

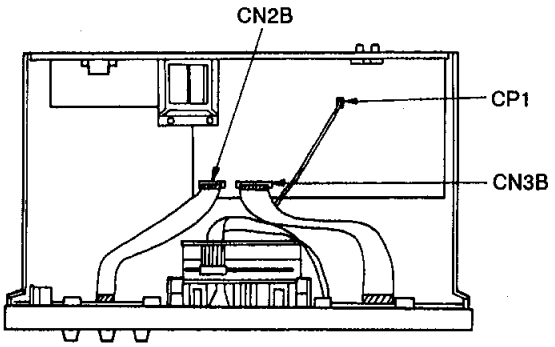
〔XTBS3+8JFZ1〕 (Black)

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

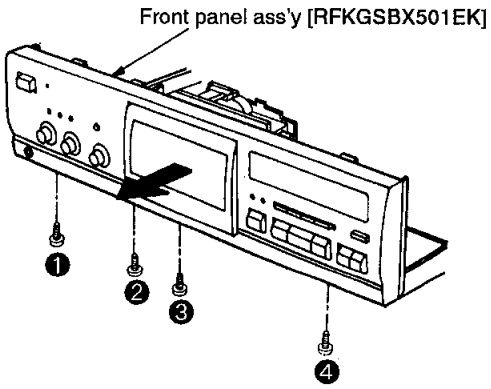
Step 1 Follow the disassembly procedure described in item 1 on page 9.



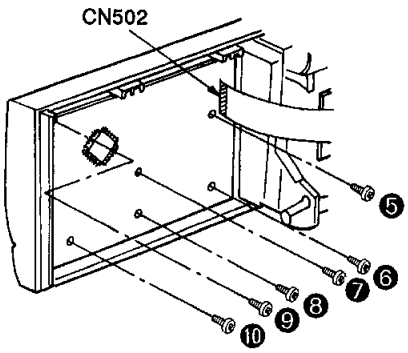
Step 2 Remove the connectors.

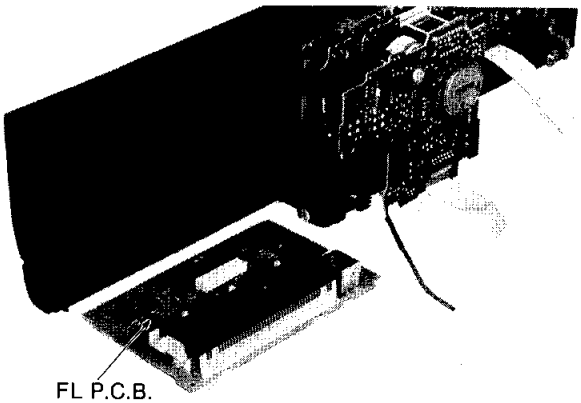


Step 3 Remove the 4 screws.

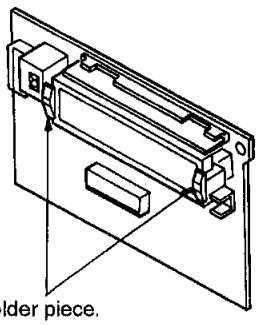


Step 4 Remove the 6 screws and connector.





Removal of the FL meter

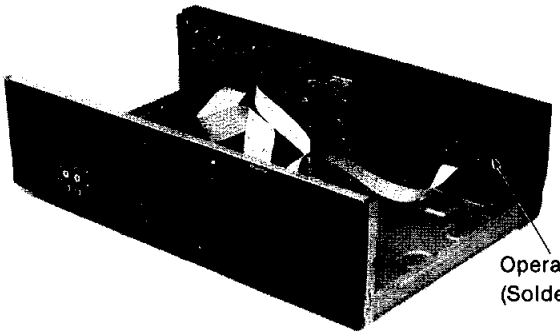


❶~❹ [XTBS3+8JFZ1] (Black)

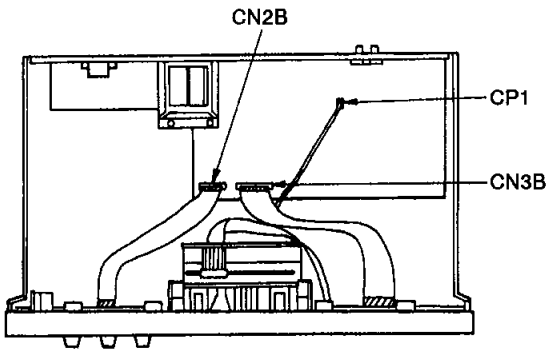
❺~❿ [XTBS26+8J]

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

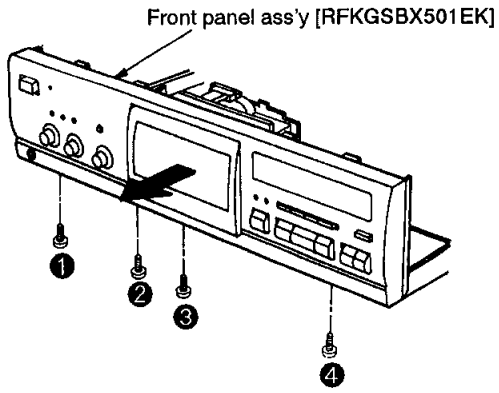
Step 1 Follow the disassembly procedure described in item 1 on page 9.



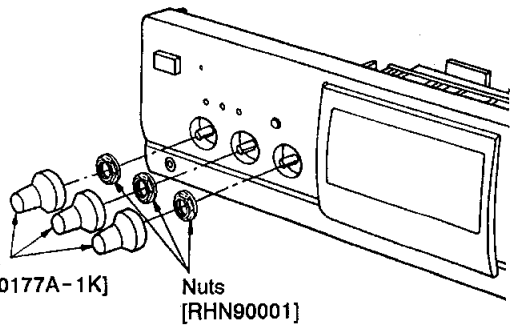
Step 2 Remove the connectors.



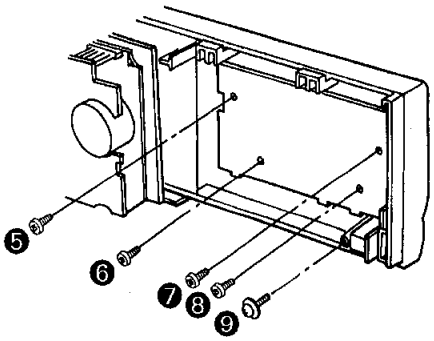
Step 3 Remove the 4 screws.

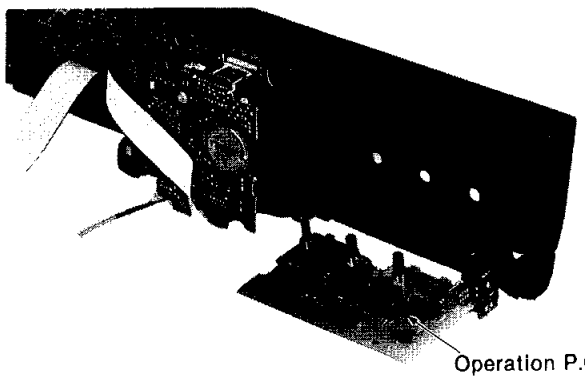


Step 4 Remove the knobs and nuts.



Step 5 Remove the 5 screws.





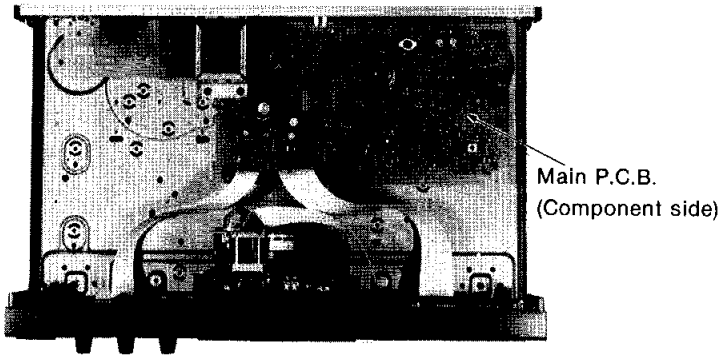
 ❶~❹
〔XTBS3+8JFZ1〕 (Black)

 ❺~❽
〔XTBS26+8J〕

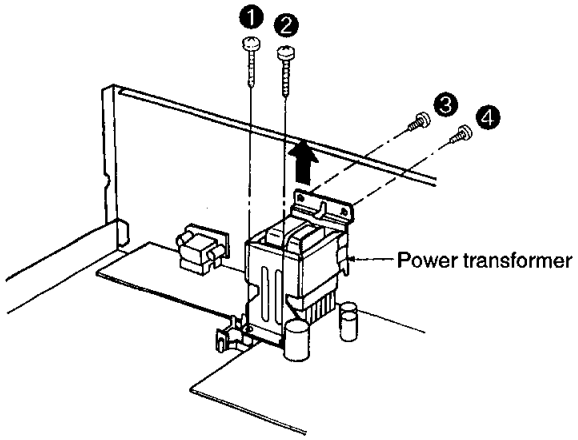
 ❾
〔RHD26016〕

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

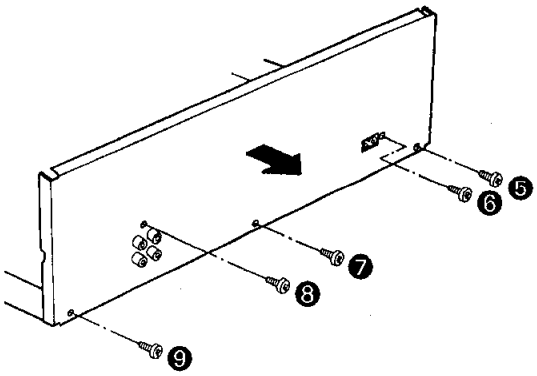
Step 1 Follow the disassembly procedure described in item 1 on page 9.



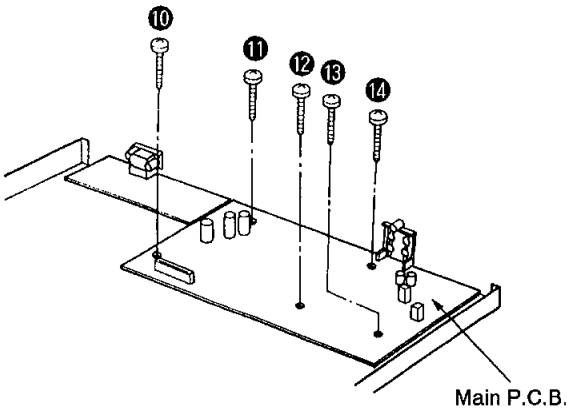
Step 2 Remove the 4 screws.



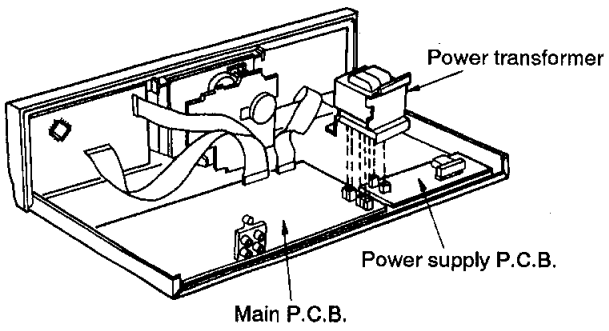
Step 3 Remove the 5 screws.



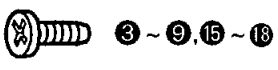
Step 4 Remove the 5 screws.



Step 5 Install the power transformer on the main P.C.B. and power supply P.C.B.

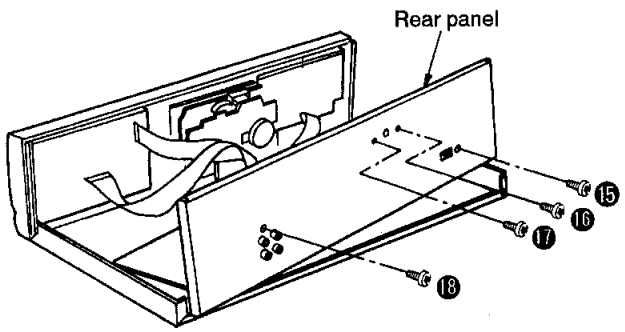


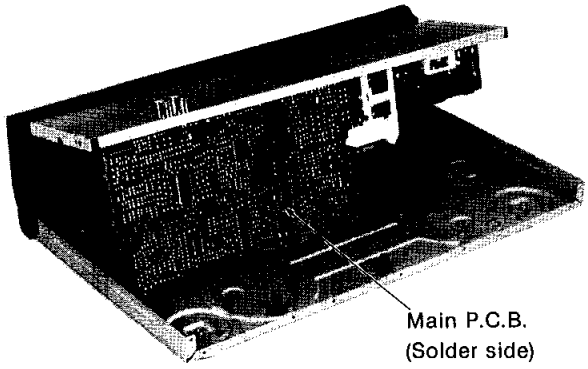
(XTB3+20JFZ) (Black)



(XTBS3+8JFZ1) (Black)

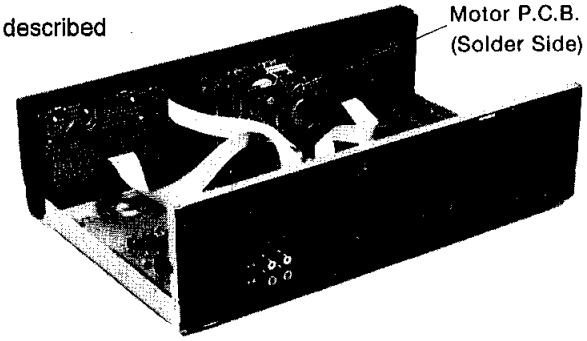
Step 6 Install the rear panel to the main P.C.B., power supply P.C.B. and power transformer with 4 screws.



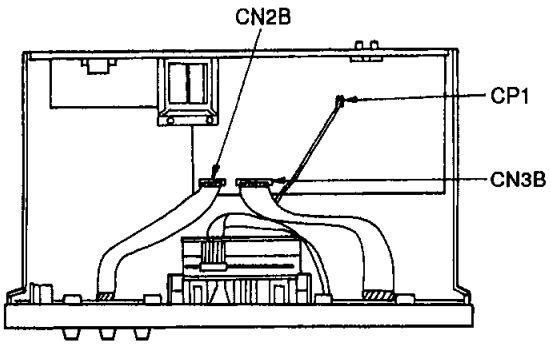


5. Checking for the motor P.C.B.

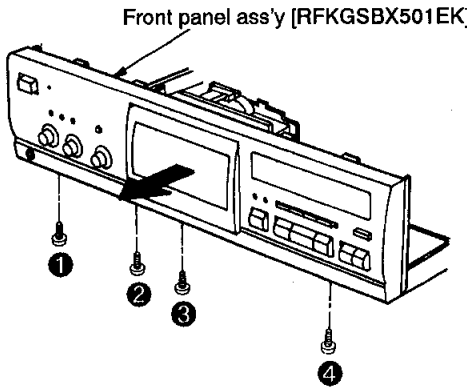
Step 1 Follow the disassembly procedure described in item 1 on page 9.



Step 2 Remove the connectors.

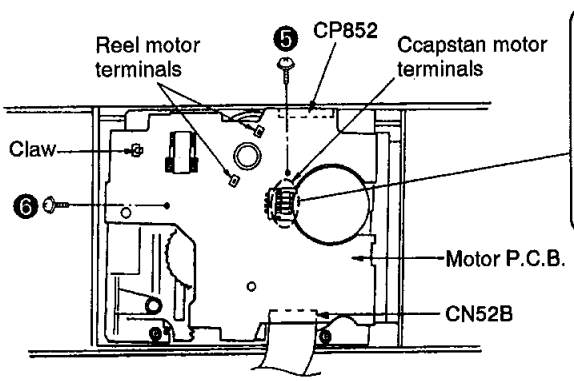


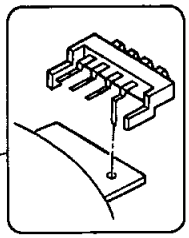
Step 3 Remove the 4 screws.



Step 4 Unsolder the reel motor and capstan motor terminals.

Step 5 Remove the 2 screws, claw and connectors.





NOTE

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

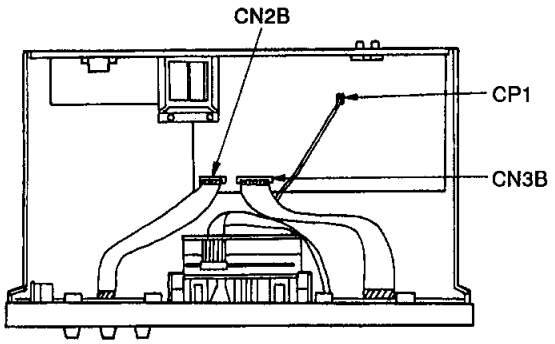
❶~❹ [XTBS3+8JFZ1] (Black)

❺, ❻ [XTW2+6S] (Black)

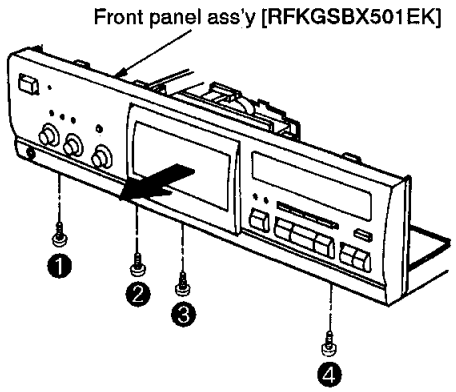
6. Replacement for the mechanism unit

Step 1 Follow the disassembly procedure described in item 1 on page 9.

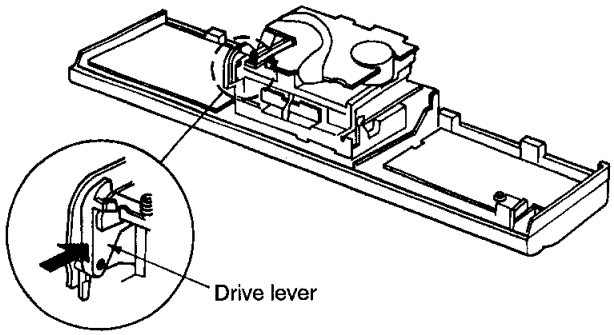
Step 2 Remove the connectors.



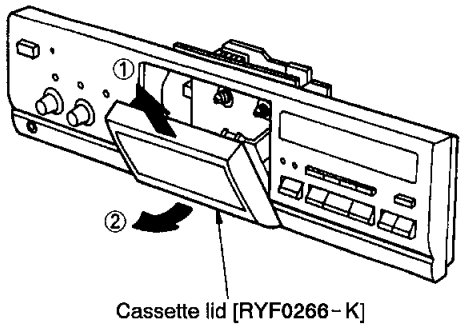
Step 3 Remove the 4 screws.



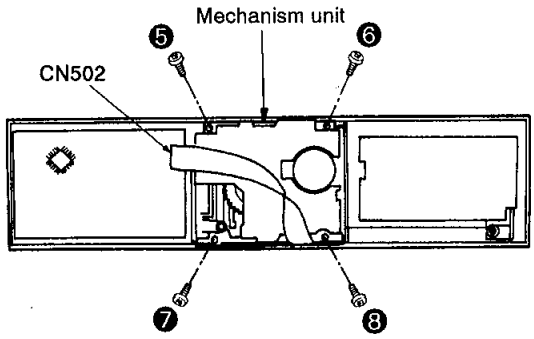
Step 4 Push the drive lever and open the cassette holder ass'y.



Step 5 Lift the cassette lid in the direction of arrow ①, and remove it in the direction of arrow ②.



Step 6 Remove the 4 screws and connector.



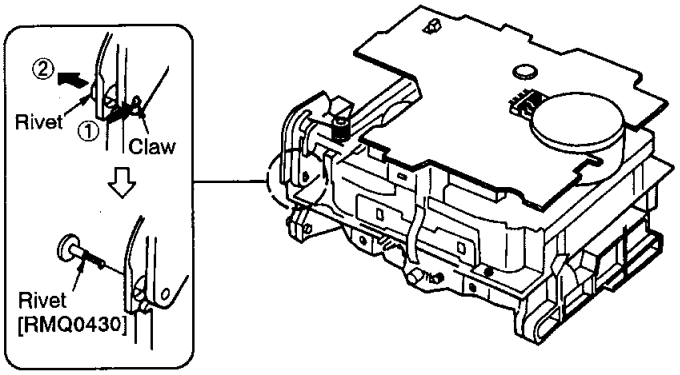
❶~❹ [XTBS3+8JFZ1] (Black)

❺~❽ [XTB3+12JFZ] (Black)

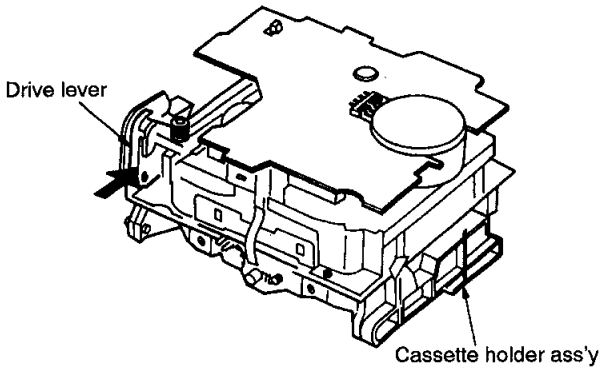
7. Replacement for the head block(R/P) and pinch roller ass'y

Step 1 Follow the disassembly procedure described in item 6 on page 14.

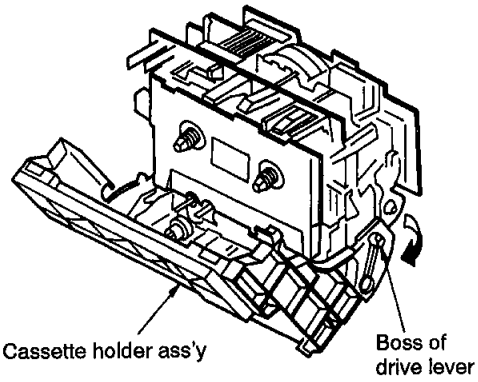
Step 2 Pull out the rivet in the direction of arrow ②,while pressing the claw in the direction of arrow ①.



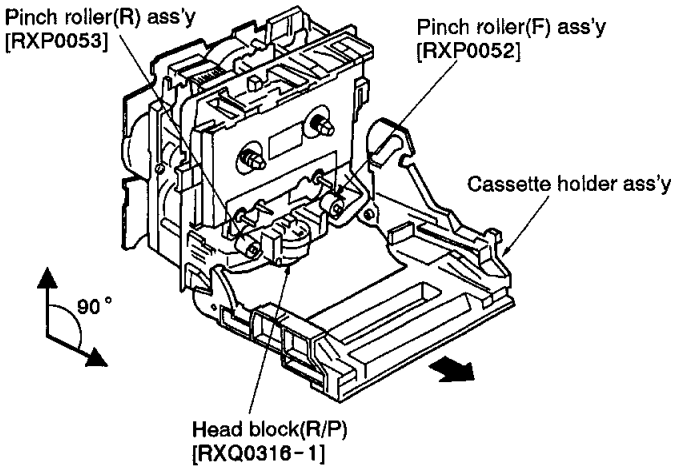
Step 3 Push the drive lever and open the cassette holder ass'y.



Step 4 Operate the cassette holder ass'y in the direction of arrow, and then remove it from the boss of drive lever.



Step 5 Locate the cassette holder ass'y and mechanism unit at a 90 degree angle as shown below, and then pull the cassette holder ass'y.



Installation of the cassette holder ass'y after replacement

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

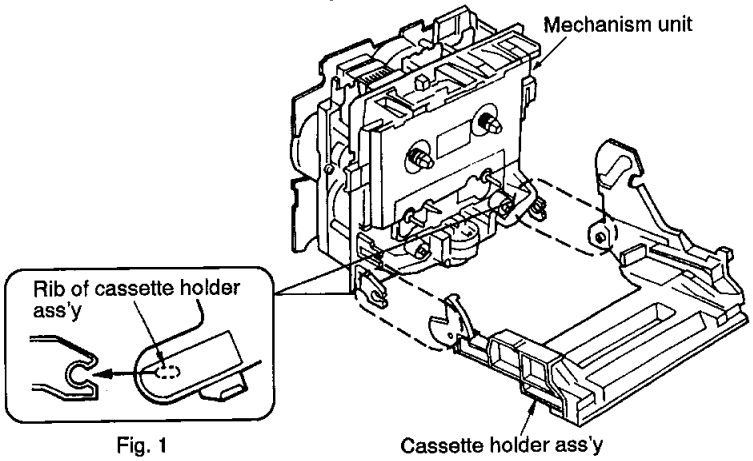
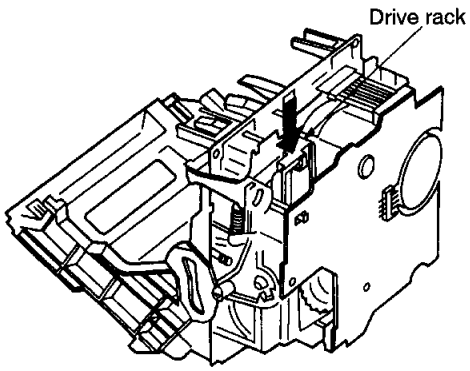
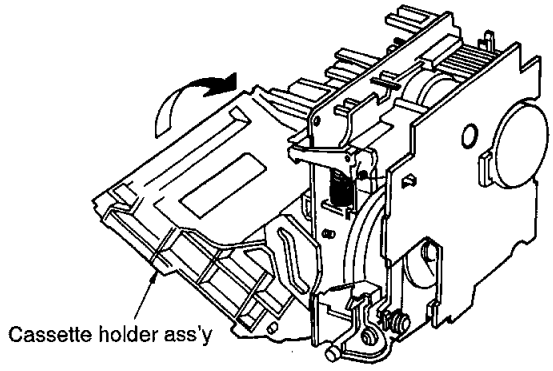


Fig. 1

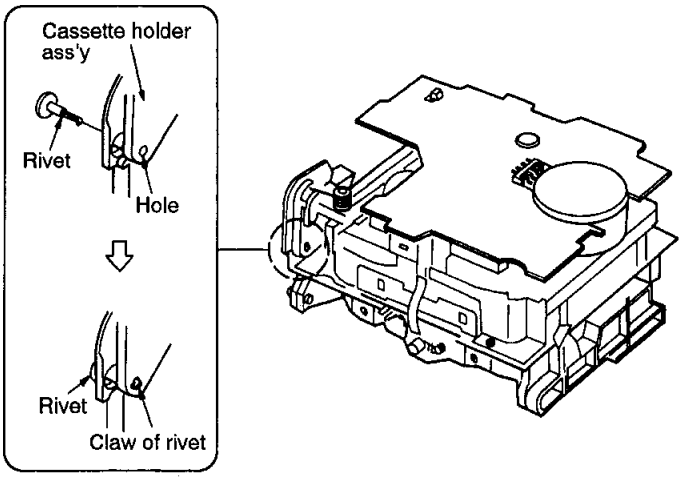
Step 7 Push the drive rack in the direction of arrow.



Step 8 Close the cassette holder ass'y in the direction of arrow.



Step 9 Insert the rivet to the hole of cassette holder ass'y.

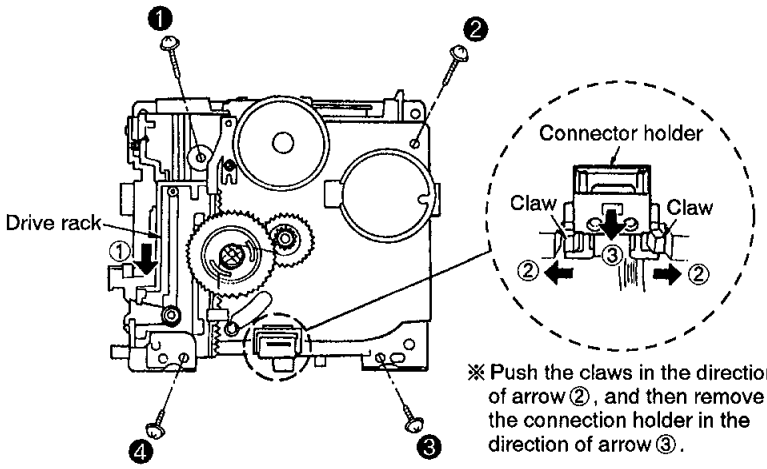


8. Replacement for the belt, flywheel ass'y, reel motor and capstan motor

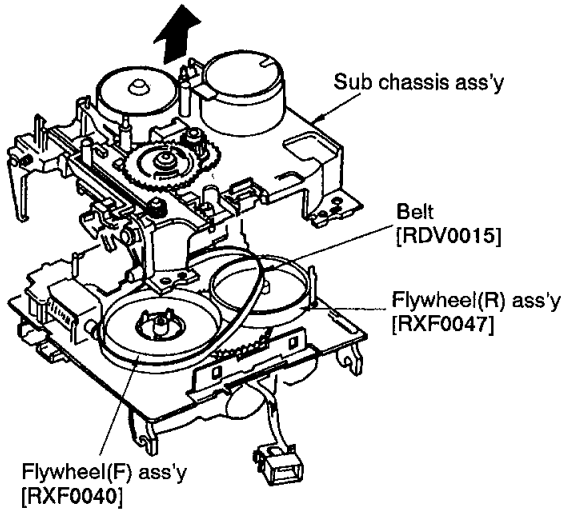
Step 1 Perform the Step 1 ~ Step 5 in item 7 on page 15.

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

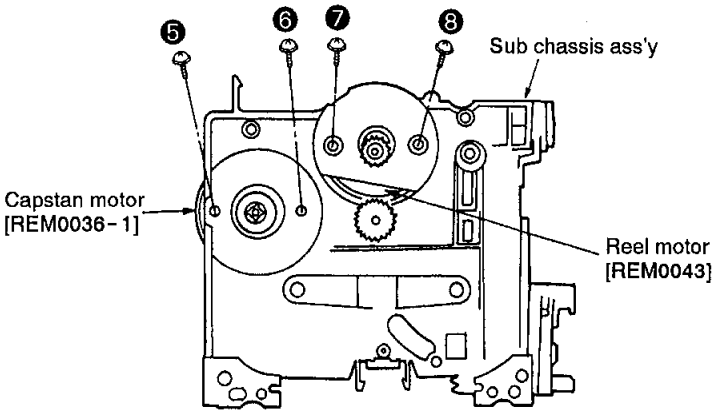
Step 3 Remove the 4 screws and connector holder.

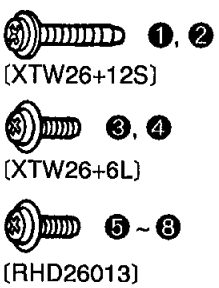


Step 4 Remove the sub chassis ass'y.



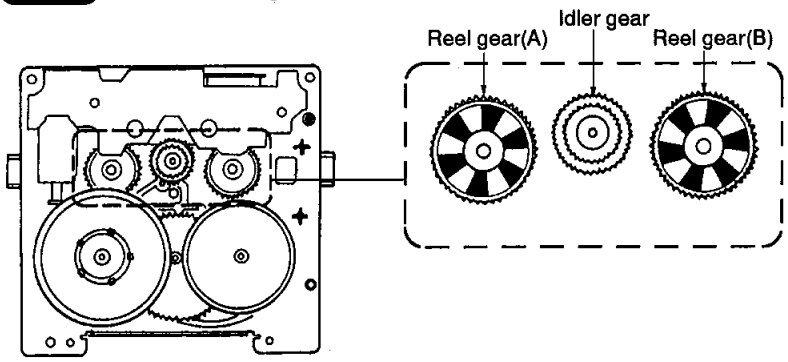
Step 5 Remove the 4 screws.



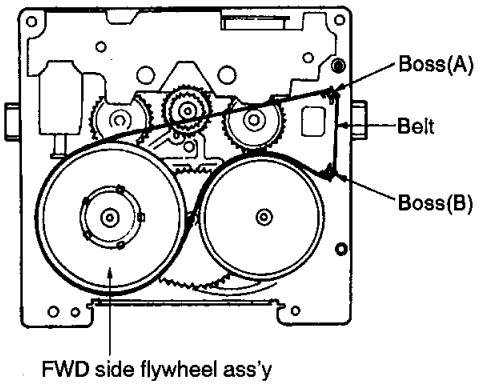


Installation of the sub chassis ass'y after replacement

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

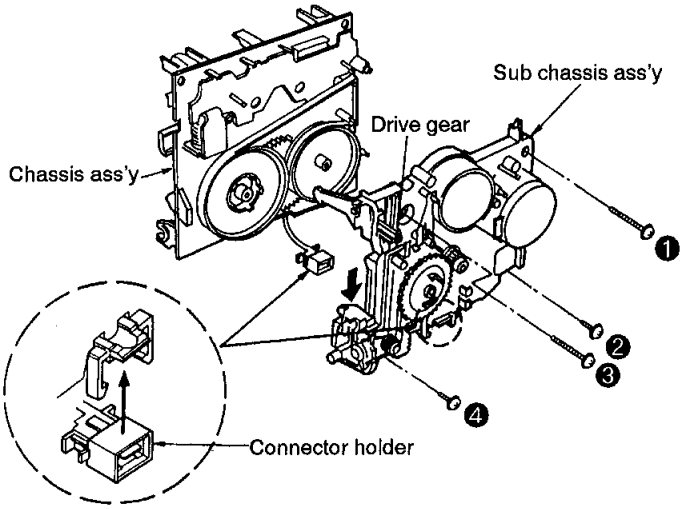


Step 7 Temporarily sevure the belt as shown below.

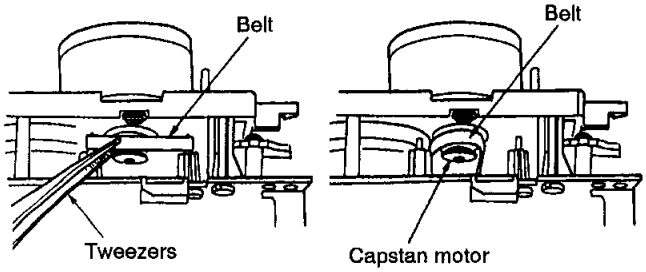


Step 8 Push the drive rack in the direction of arrow.

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



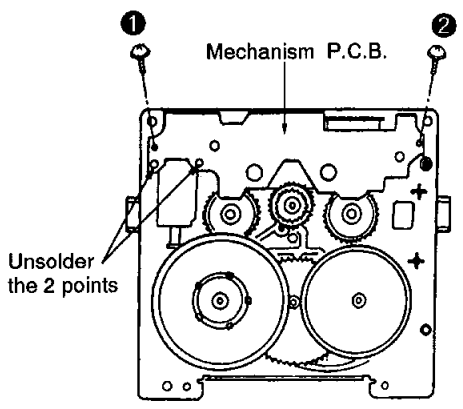
Step 10 Secure the belt with the capstan motor pulley.



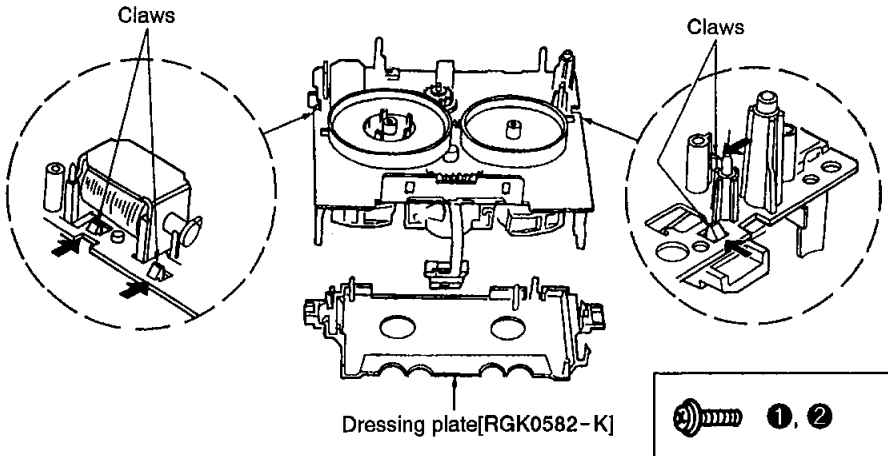
9. Replacement of the parts mounted on mechanism P.C.B. and plunger

Step 1 Perform the Step 1 ~ Step 4 in item 8 on page 16.

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

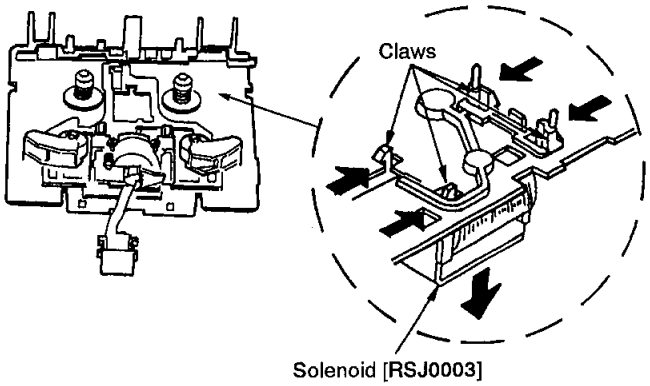


Step 3 Release the 4 claws, and then remove the dressing plate.



❶, ❷ [XTW2+6S]

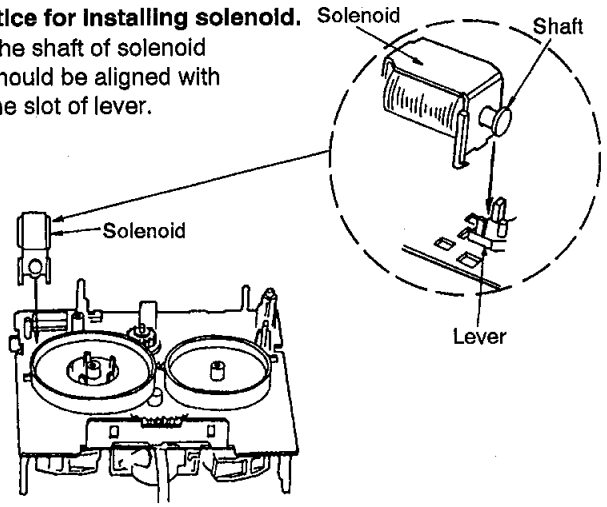
Step 4 Release the 4 claws.



NOTE

Notice for installing solenoid.

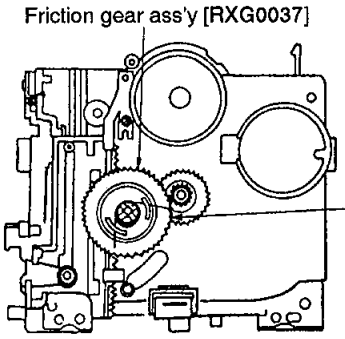
- The shaft of solenoid should be aligned with the slot of lever.

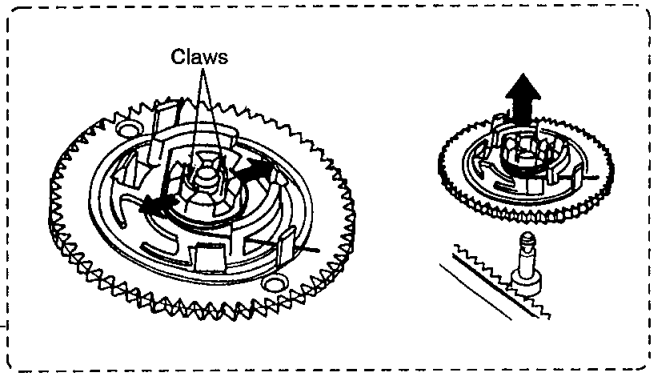


10. Replacement for the drive rack and friction gear ass'y

Step 1 Perform the **Step 1** ~ **Step 4** in item 8 on page 16.

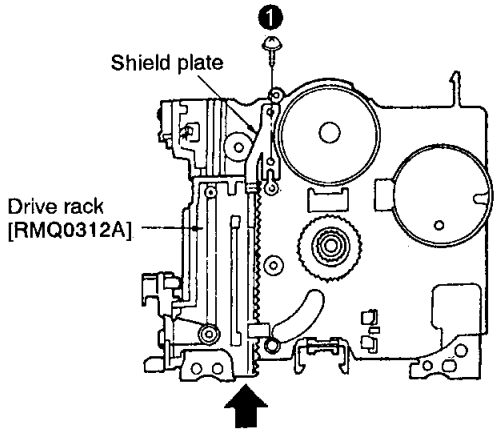
Step 2 Remove the friction gear ass'y.



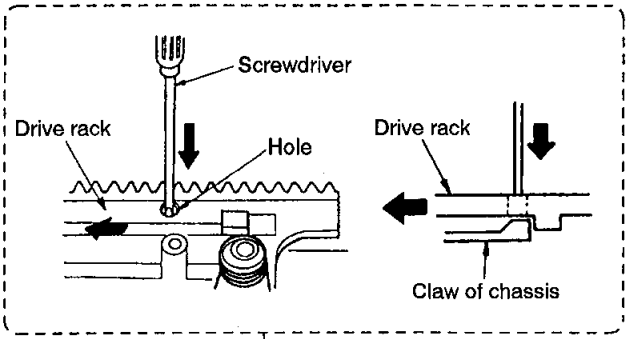


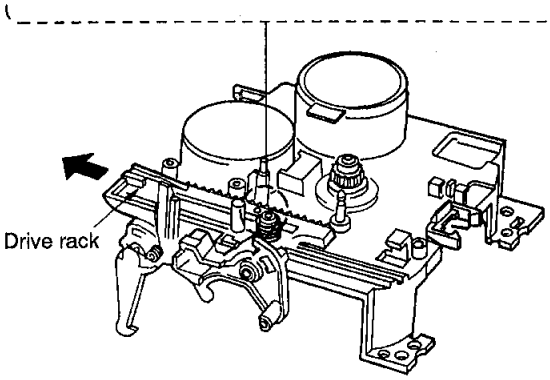
Step 3 Remove the screw and shield plate.

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



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





❶ [XTW2+6S]

■ WRITING TO EEPROM

This unit is equipped with EEPROM memory that stores a variety of design data and performance data such as playback gain, bias value, recording gain, recording equalization, etc., which was programmed at the factory.
This EEPROM memory is capable of being read and written to more than 100,000 times. To illustrate this, if one ATC operation is performed every hour continuously every day for ten years, it world still be possible to successfully read and write with the EEPROM.
Data is actually written in this EEPROM only when ATC is actuated or when power supply is turned on or off. Since it hardly breaks down, there will scarcely occur such a trouble as to require replacement.

Measurement Condition

- Recording-level control; Maximum
- Recording-balance control; Center
- Reverse-mode selector switch; ⇄
- Dolby NR switch; Off
- ATC switch; Off
- Headphones volume control: Maximum
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature 20±5°C (68±9°F)

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- AF oscillator
- ATT (Attenuator)
- Resistor (600Ω)

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

Test tape

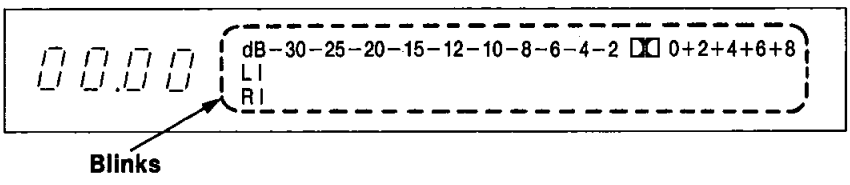
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall gain adjustment and Overall frequency response
  Normal reference blank tape; QZZCRA
  CrO_2 reference blank tape; QZZCRX
  Metal reference blank tape; QZZCRZ

NOTE: Step 2 to step 7 only has to be done after exchange of the EEPROM.

Step 1 — Short the Test Mode terminals with a shorting clip (see Fig. 1).

Step 2 — While holding down the STOP button on DECK2, press the POWER switch to ON.

Step 3 — All FL display segments except for the four-digit counter on DECK2 will start blinking to indicate that the deck has entered Write mode. At this point the four-digit counter will indicate "00**".



Ⓐ

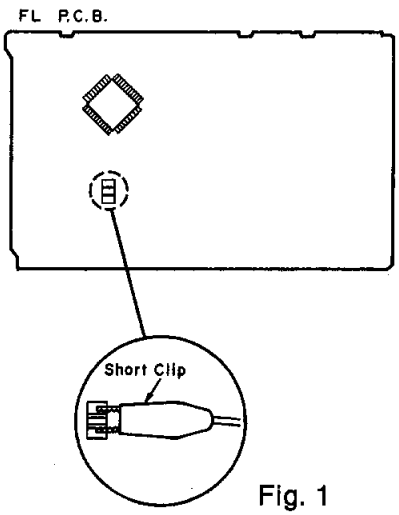


Fig. 1

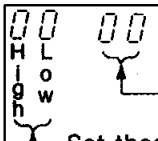
Notes:

- 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.

Step 4

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

Step 5



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

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

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

Set these digits to "5A" using the REC or PAUSE button.

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

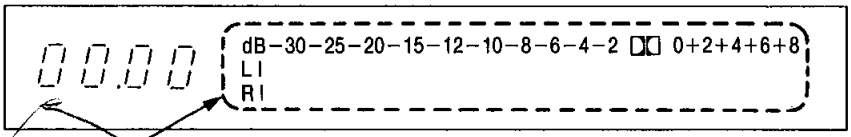
* The data writing process is complete when the next address number appears. For example, writing of the data 03.5A has been completed when the address 04 is displayed.

Step 6

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

Step 7

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



PLAYBACK GAIN

Step 8

- Set the AF oscillator's output frequency to 315Hz/−20dB (100mV) (see Fig. 2).
- With no tape loaded in the deck, press and hold the REC button. Adjust the test signal level using the Rec. Level and Balance controls until the line output levels on both channels are 320mV. When the adjustment is complete, release the REC button. (The deck stores the data at the moment the REC button is released.)
- Load the test tape, QZZCFM, into the deck and locate the section of the tape where the playback gain test tone (315Hz, 0dB) is recorded, then playback the portion. Press the ATC button, and the display will flash −ATC MEMORY− slowly, meaning that playback gain is being automatically adjusted. Press the FOW. PLAY button. (At this point the deck automatically adjusts playback gains.) After this play back the tape and verify that the output level falls in the specified range.

Standard value: 320mV±0.5dB

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

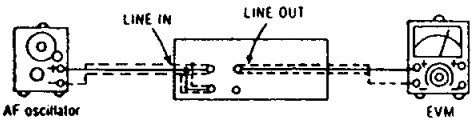


Fig. 2

INITIAL SETTING UP FOR OVERALL GAIN AND OVERALL FREQUENCY RESPONSE

Ⓑ

Step 9

- Load a Normal blank test tape (QZZCRA) into the deck under test. Press the ATC button, then the REC button. The display will flash –ATC MEMORY– 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_2 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 MEMORY– repidly. After a successful adjustment, the display will no longer show –ATC MEMORY–.

Step 10

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

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

• EEPROM MAP

High / Low	0	1	2	3	4	5	6	7
0	00	—	—	—	—	—	—	—
1	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—
3	5A	—	—	—	—	—	—	—
4	—	—	—	—	—	68	84	90
5	—	—	—	—	—	78	60	60
6	—	—	—	—	—	38	30	18
7	—	—	—	—	—	64	68	78
8	—	—	—	—	—	A8	B0	8C
9	—	—	—	—	94	—	—	—
A	—	—	6A	0F	—	—	—	—
B	—	—	70	2B	—	—	—	—
C	—	—	4B	12	—	—	—	—
D	—	—	72	07	—	—	—	—
E	—	—	4C	FB	00	70	74	04
F	—	—	53	F5	00	—	—	00

Fig. 3

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

■ MEASUREMENTS AND ADJUSTMENTS

Measurement Condition

- Recording-level control; Maximum
- Recording-balance control; Center
- Reverse-mode selector switch; ⇄
- Headphones volume control; Maximum
- Dolby NR switch; Off
- ATC switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature 20±5°C (68±9°F)

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator
- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

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

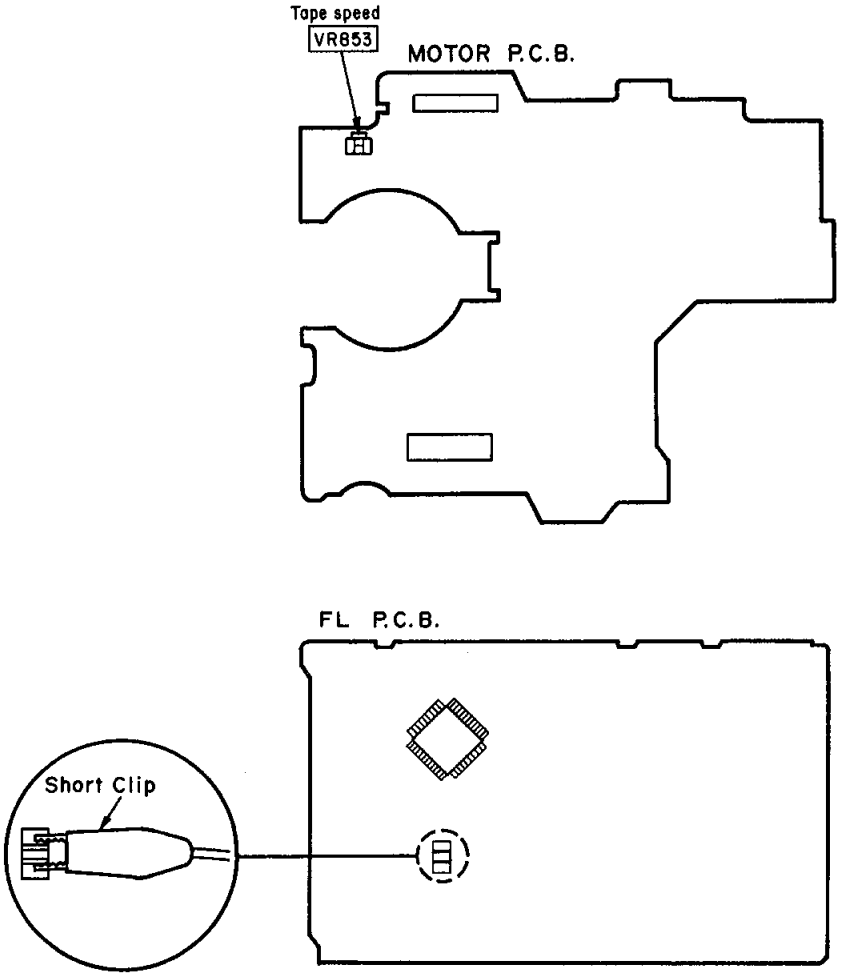
Test tape

- Head azimuth adjustment (8kHz, −20dB)
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, −20dB)
- Playback gain adjustment (315Hz, 0dB)

; QZZCFM

- Tape speed adjustment (3kHz, −10dB); QZZCWAT
- Overall gain adjustment and Overall frequency response
  Normal reference blank tape; QZZCRA
  CrO_2 reference blank tape; QZZCRX
  Metal reference blank tape; QZZCRZ

• Adjustment Points



Notes:

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

HEAD REPLACEMENT

When replacing the head, adjust the head azimuth as instructed below, and rewrite the data to the EEPROM.
(By adjusting head azimuth, data is automatically written to the EEPROM.)

(1) Step 1 on page 19 → (2) Step 8 on page 20 → (3) Step 9 on page 21 → (4) Step 10 on page 21

(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

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

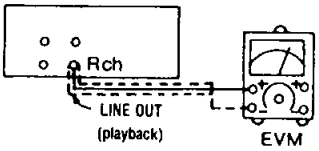


Fig. 4

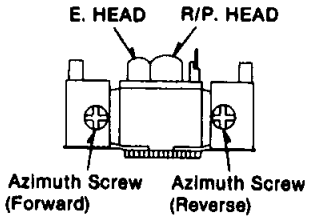


Fig. 5

TAPE SPEED ADJUSTMENT

1. Playback the middle portion of the test tape (QZZCWAT).
2. Short the test terminal.
3. Adjust **VR853** so that the output is within the adjustment target.

Adjustment target: 3000±15Hz

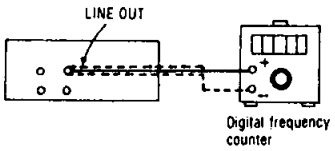


Fig. 6

PLAYBACK GAIN MEASUREMENT

1. Short the test terminal.
2. 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

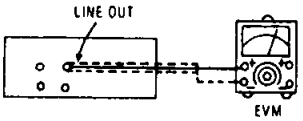


Fig. 7

3. Release the test terminal.
4. When the data is not within the specified range, the head azimuth should be readjusted as instructed below and the data in the EEPROM rewritten. (By adjusting head azimuth, data is automatically written to the EEPROM.)
   When adjusteing head azimuth, check the test tape for scratches or crease. If any exist, use a different tape and follow instructions 1 to 3 below.

(1) Step 1 on page 19 → (2) Step 5 on page 20 → (3) Step 10 on page 21

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. 9** for both L-CH and R-CH.

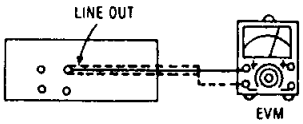


Fig. 8

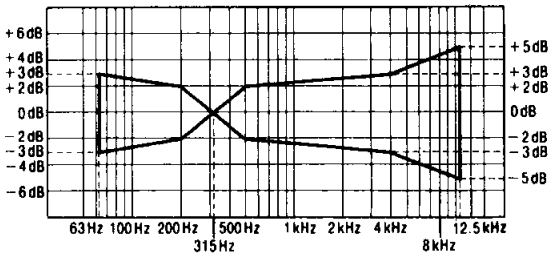


Fig. 9

ERASE CURRENT MEASUREMENT

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±25mA (Metal)..EVM Reading: 190±25mV

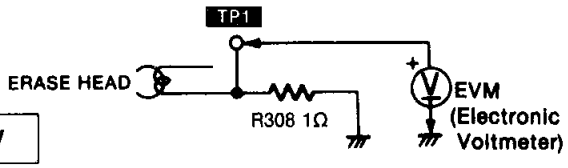


Fig. 10

CONFIRMATION OF THE OVERALL GAIN AND OVERALL FREQUENCY RESPONSE

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

Standard value: 320mV±0.5dB

3. Afterward, apply a signal (frequency at the measured point in the range from 50Hz to 10kHz), whose level is 20dB lower than the reference signal level (1kHz, −24dB=approx. 63mV), to the Rec. input. Then start recording with a normal blank tape (QZZCRA).
4. Play back the test signals just recorded and verify that the levels at the test frequencies fall in the ranges specified in **Fig. 11** with respect to the reference signal level.
5. Repeat steps 3 and 4 above for CrO_2 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. 12** with respect to the reference signal level.
6. Steps 1 through 2 above are concerned with overall gain; steps 3 through 5 pertain to overall frequency response.

Normal Overall frequency response chart (NR OUT)

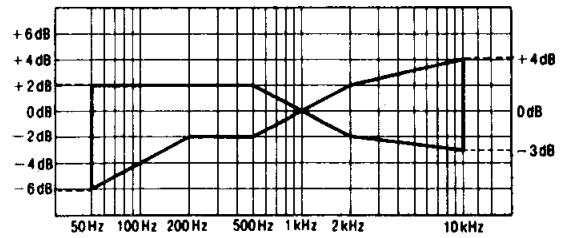


Fig. 11

CrO_2 Metal Overall frequency response chart (NR OUT)

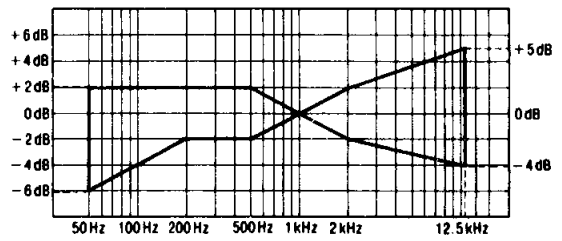


Fig. 12

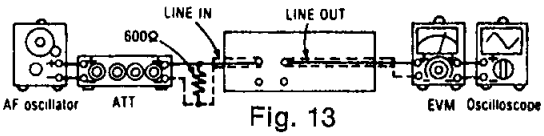


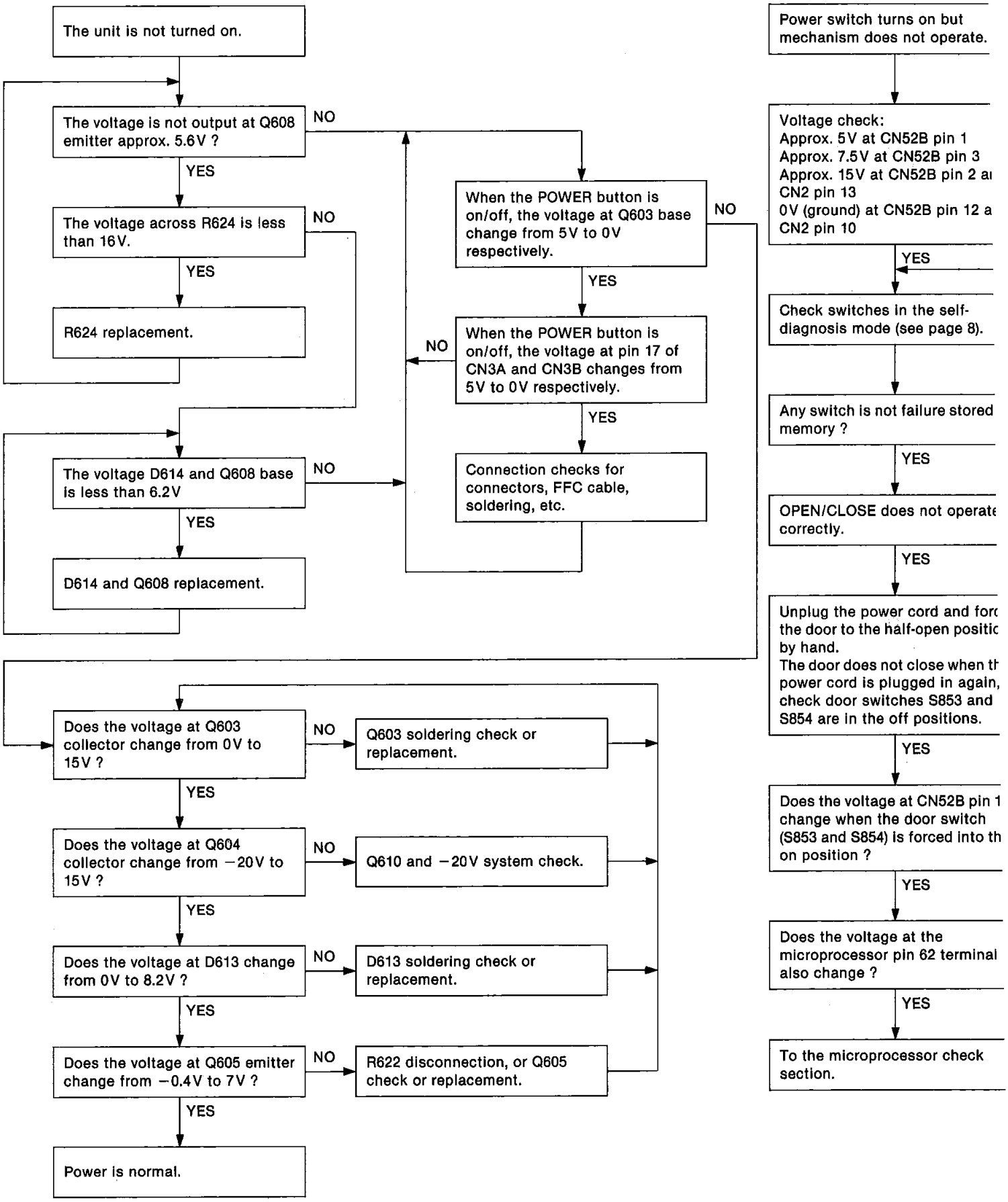
Fig. 13

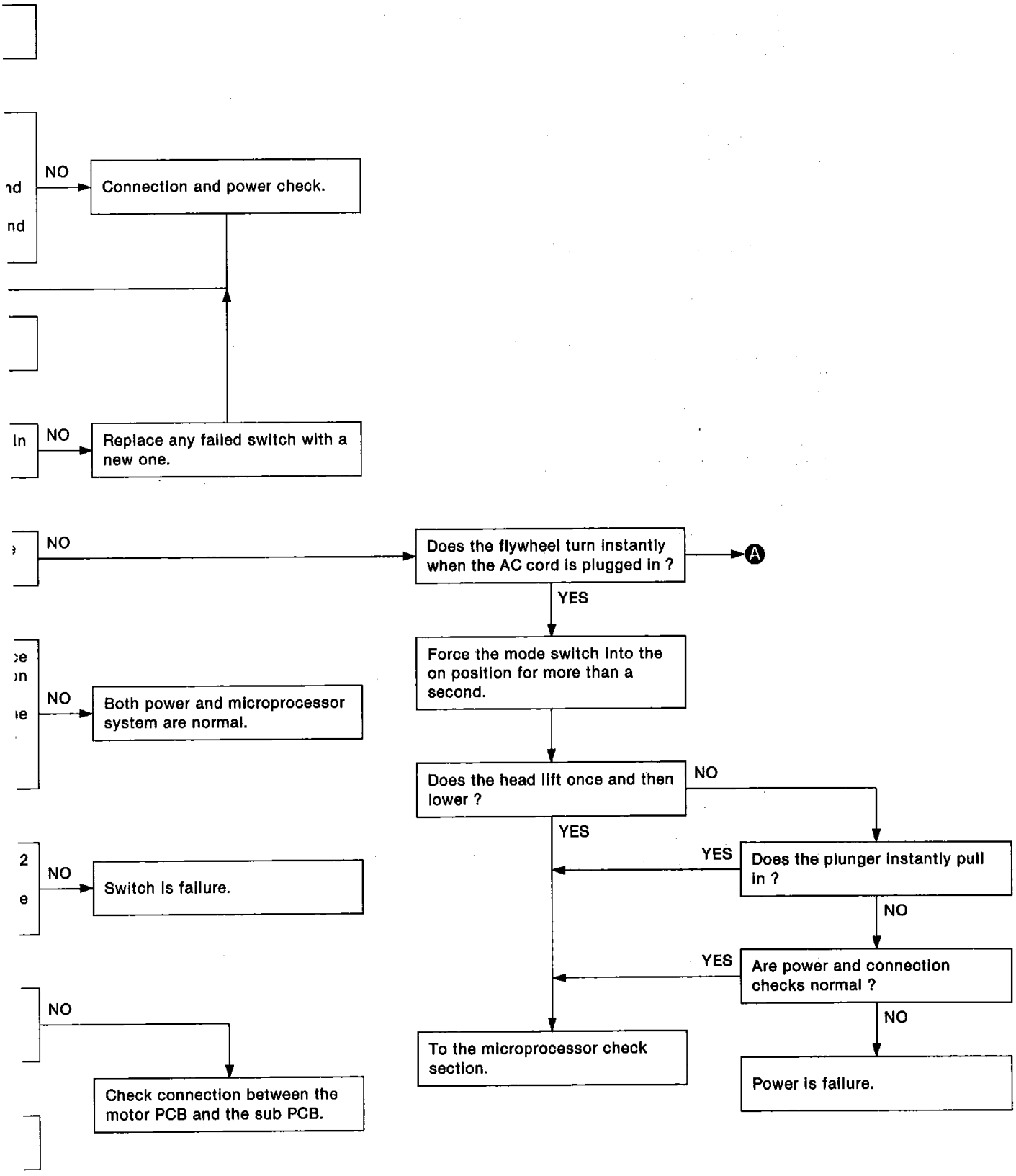
7. When the data is not within the specified range, the head azimuth should be readjusted as instructed below and the data in the EEPROM rewritten. (By adjusting head azimuth, data is automatically written to the EEPROM.)
   When adjusting head azimuth, check the test tape for scratches or creases. If any exist, use a different tape and follow instructions 1 to 4 below.
8. If outside the standard value, data in EEPROM should be written again by taking the following procedure and there thereafter section 1-6 should be carried out again.

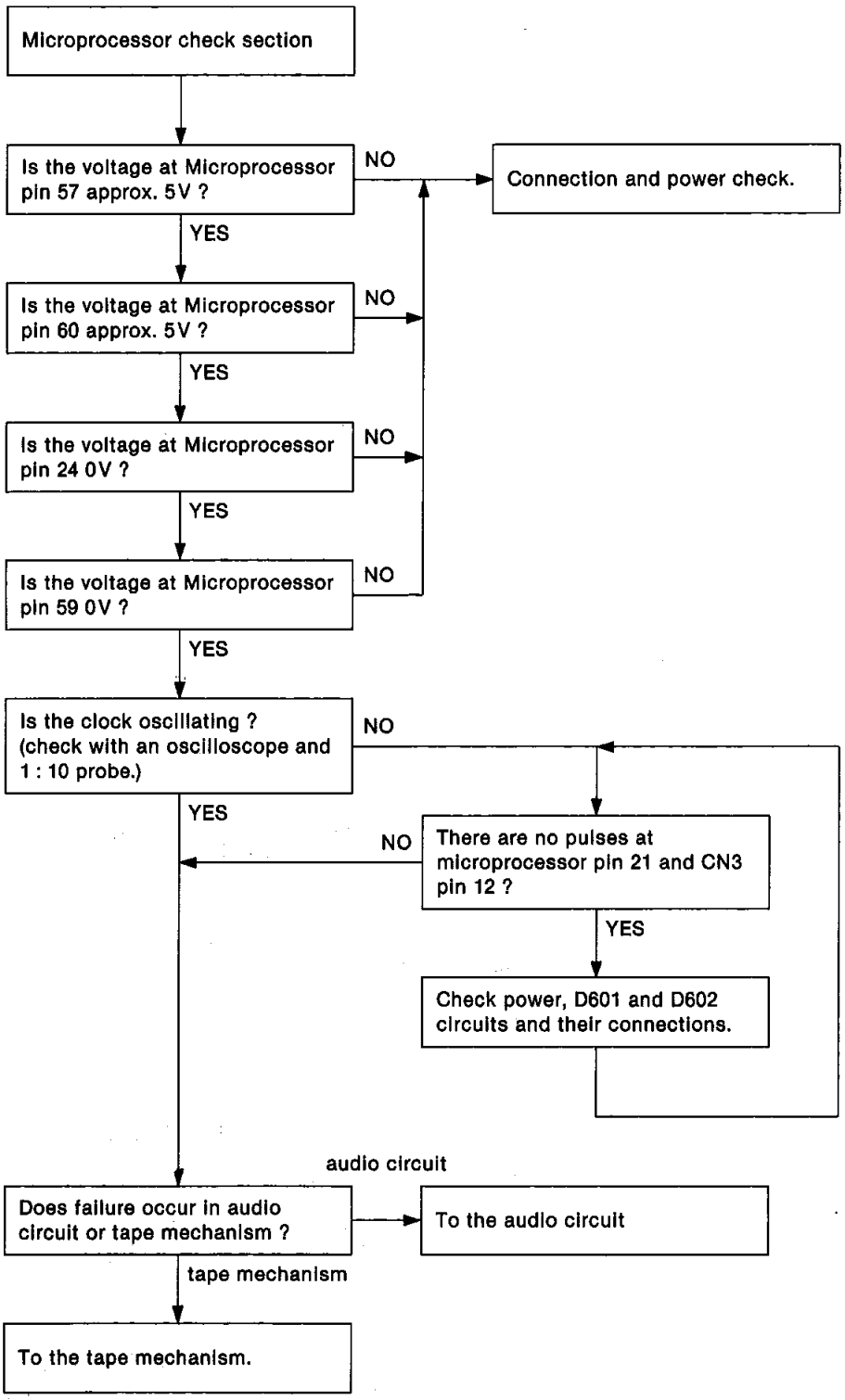
(1)	(2)	(3)	(4)
Step 1 on page 19 →	Step 5 on page 20 →	Step 9 on page 21 →	Step 10 on page 21

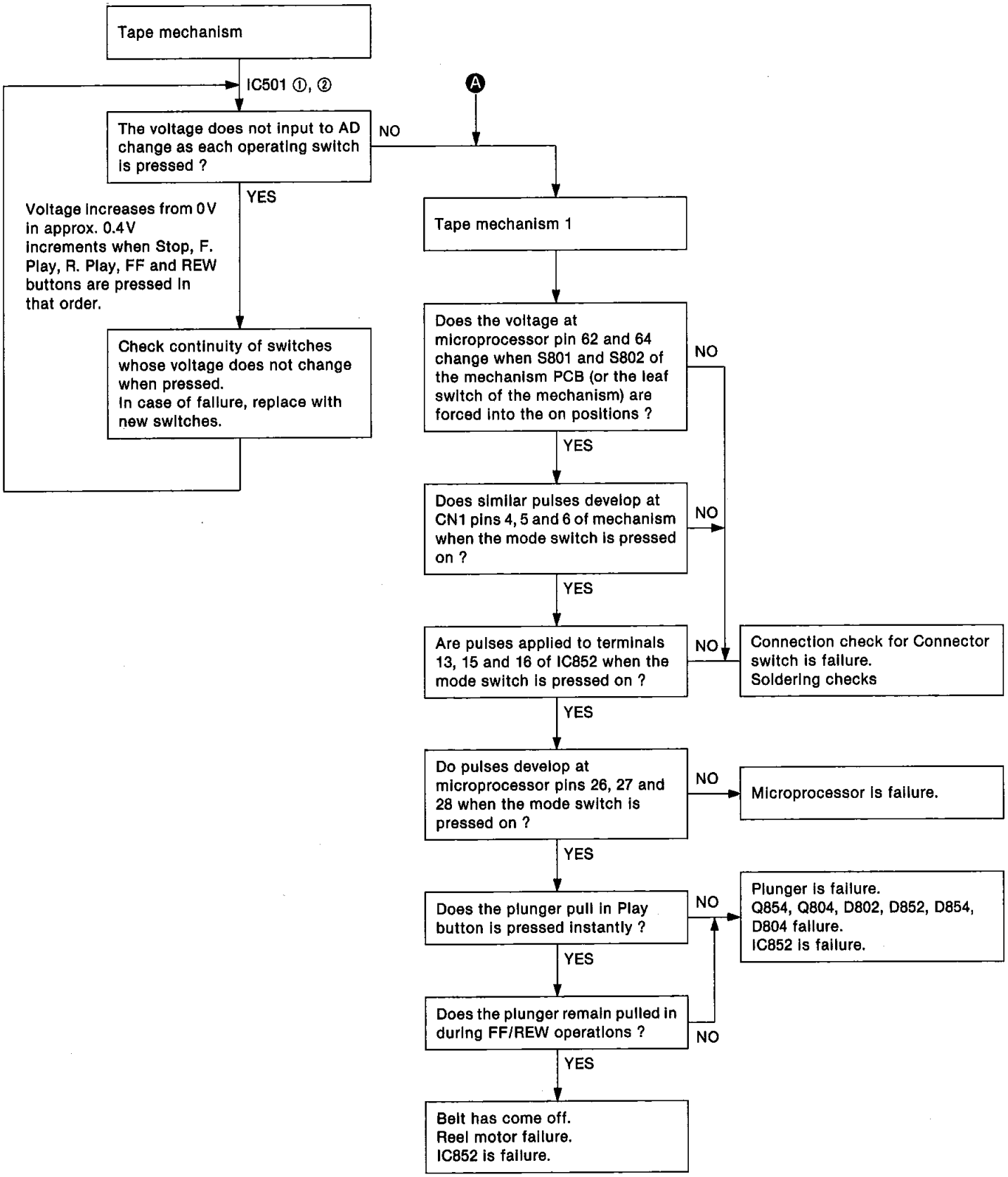
■ TROUBLESHOOTING GUIDE

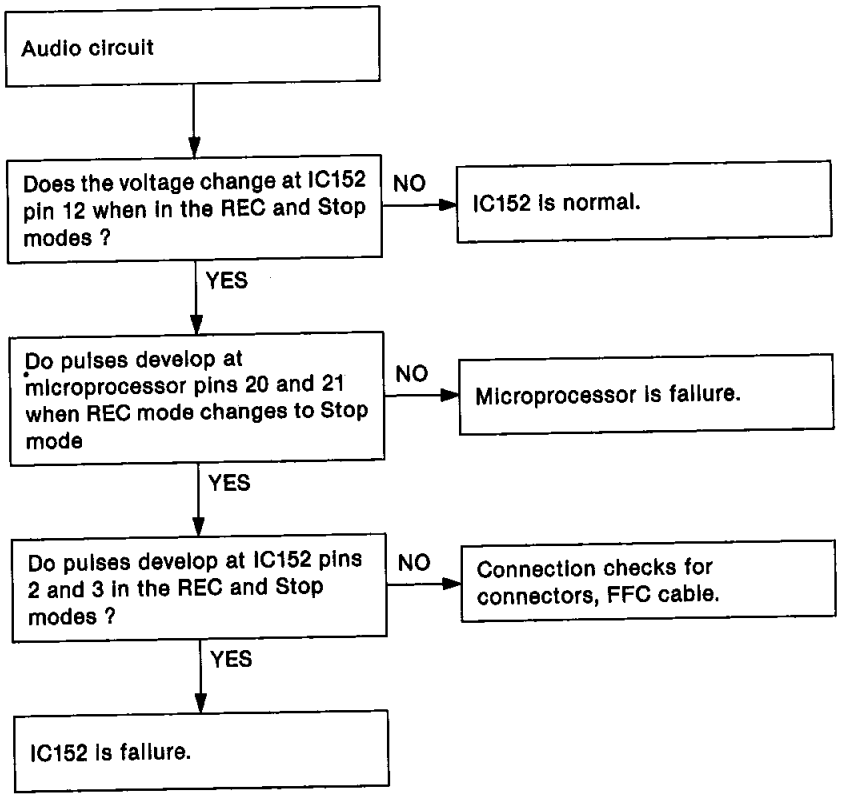
*To perform troubleshooting, set the unit to the state described in the "Motor Control PCB Checking Method" on page 31.




NO
Connection and power check.
NO
Replace any failed switch with a new one.
NO
Does the flywheel turn instantly when the AC cord is plugged in ?
A
YES
Force the mode switch into the on position for more than a second.
NO
Both power and microprocessor system are normal.
Does the head lift once and then lower ?
NO
YES
YES
Does the plunger instantly pull in ?
NO
Switch is failure.
YES
Are power and connection checks normal ?
NO
NO
To the microprocessor check section.
Check connection between the motor PCB and the sub PCB.
Power is failure.


Microprocessor check section
Is the voltage at Microprocessor pin 57 approx. 5V ?
NO
Connection and power check.
YES
Is the voltage at Microprocessor pin 60 approx. 5V ?
NO
YES
Is the voltage at Microprocessor pin 24 0V ?
NO
YES
Is the voltage at Microprocessor pin 59 0V ?
NO
YES
Is the clock oscillating ? (check with an oscilloscope and 1 : 10 probe.)
NO
YES
There are no pulses at microprocessor pin 21 and CN3 pin 12 ?
NO
YES
Check power, D601 and D602 circuits and their connections.
audio circuit
Does failure occur in audio circuit or tape mechanism ?
To the audio circuit
tape mechanism
To the tape mechanism.

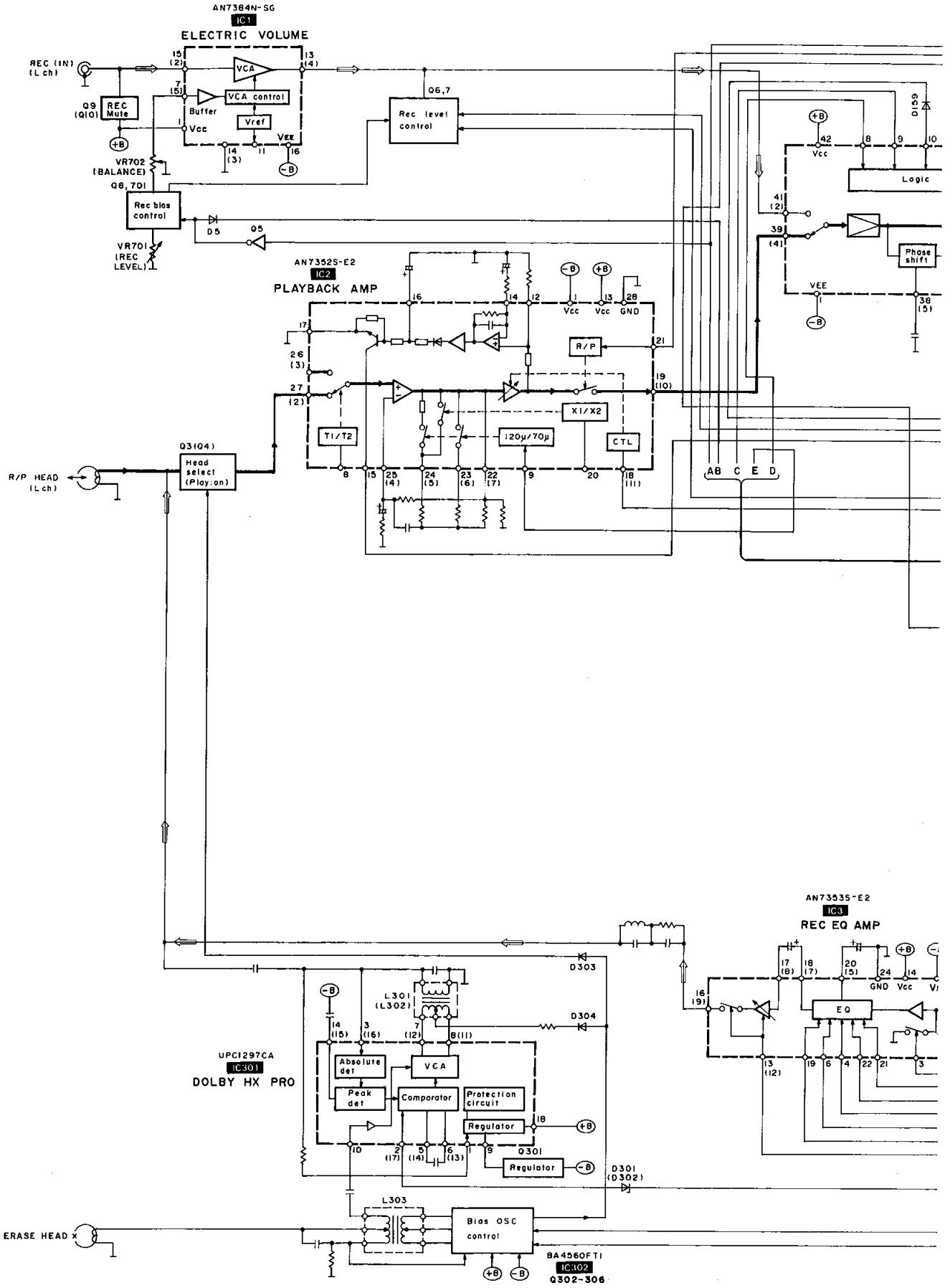

Tape mechanism
IC501 ①, ②
The voltage does not input to AD change as each operating switch is pressed ?
NO
YES
Voltage increases from 0V in approx. 0.4V increments when Stop, F. Play, R. Play, FF and REW buttons are pressed in that order.
Check continuity of switches whose voltage does not change when pressed.
In case of failure, replace with new switches.
A
Tape mechanism 1
Does the voltage at microprocessor pin 62 and 64 change when S801 and S802 of the mechanism PCB (or the leaf switch of the mechanism) are forced into the on positions ?
NO
YES
Does similar pulses develop at CN1 pins 4, 5 and 6 of mechanism when the mode switch is pressed on ?
NO
YES
Are pulses applied to terminals 13, 15 and 16 of IC852 when the mode switch is pressed on ?
NO
Connection check for Connector switch is failure.
Soldering checks
YES
Do pulses develop at microprocessor pins 26, 27 and 28 when the mode switch is pressed on ?
NO
Microprocessor is failure.
YES
Does the plunger pull in Play button is pressed instantly ?
NO
Plunger is failure.
Q854, Q804, D802, D852, D854, D804 failure.
IC852 is failure.
YES
Does the plunger remain pulled in during FF/REW operations ?
NO
YES
Belt has come off.
Reel motor failure.
IC852 is failure.

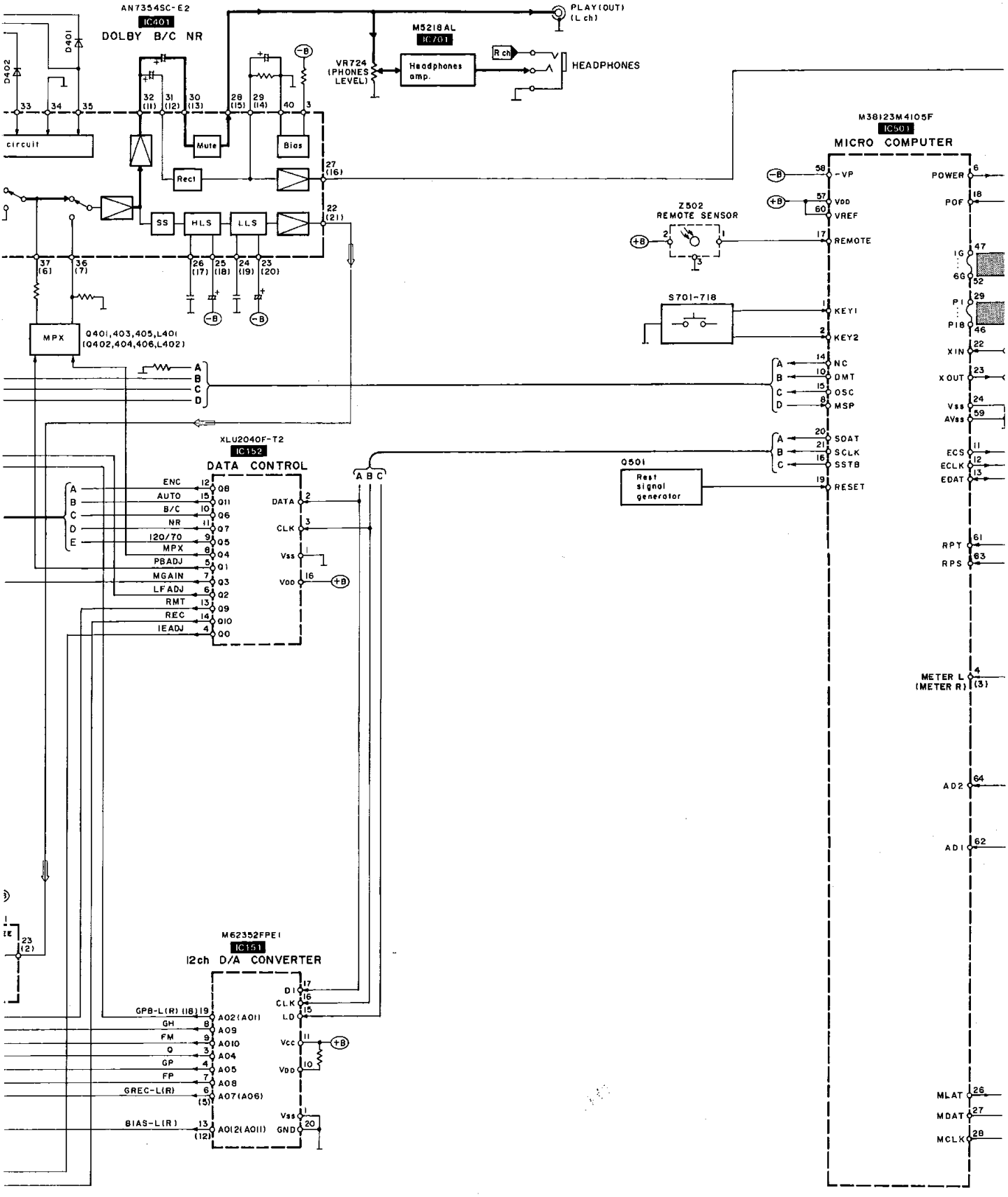


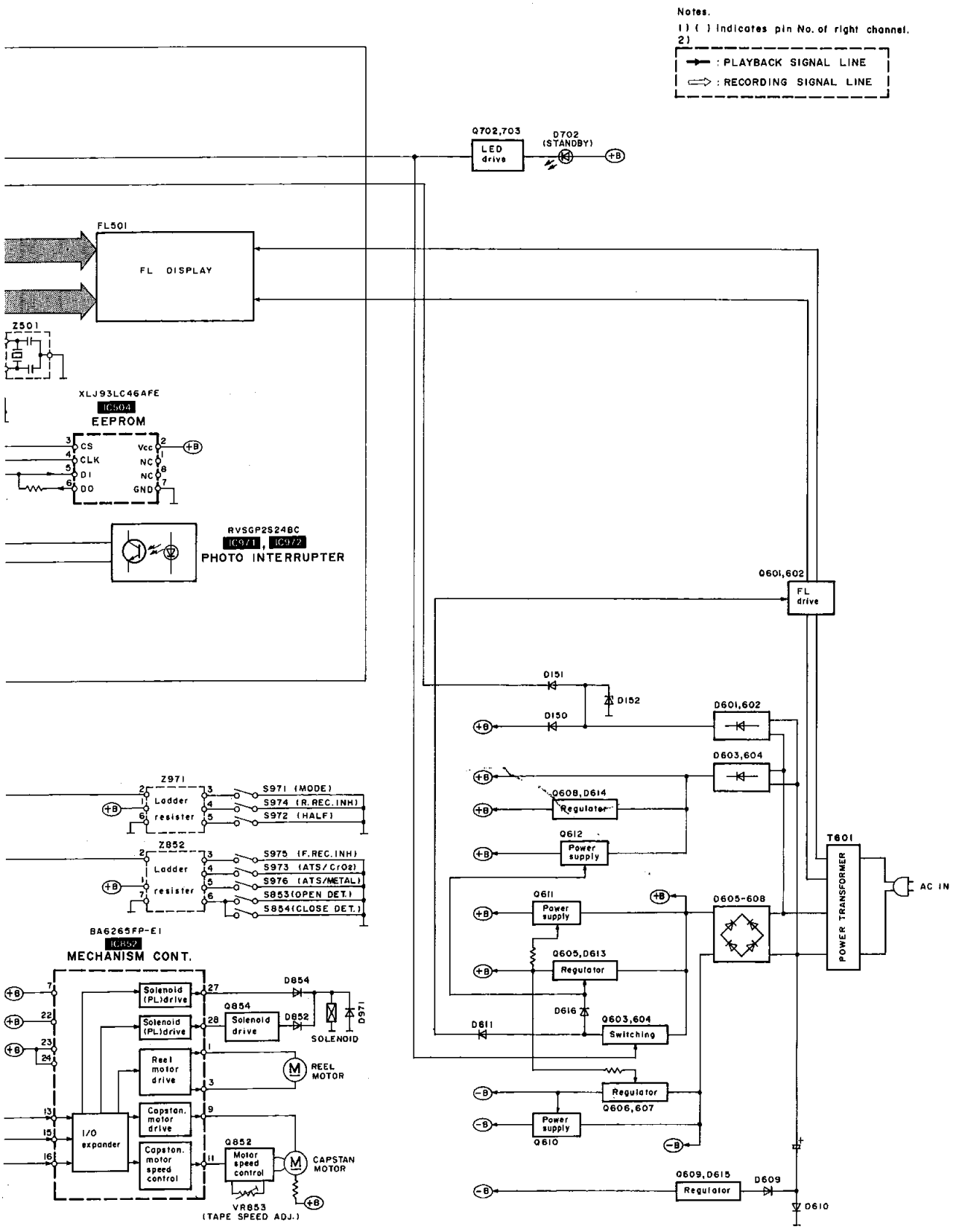
As shown above, check the voltage at each pin of IC152 for the following:

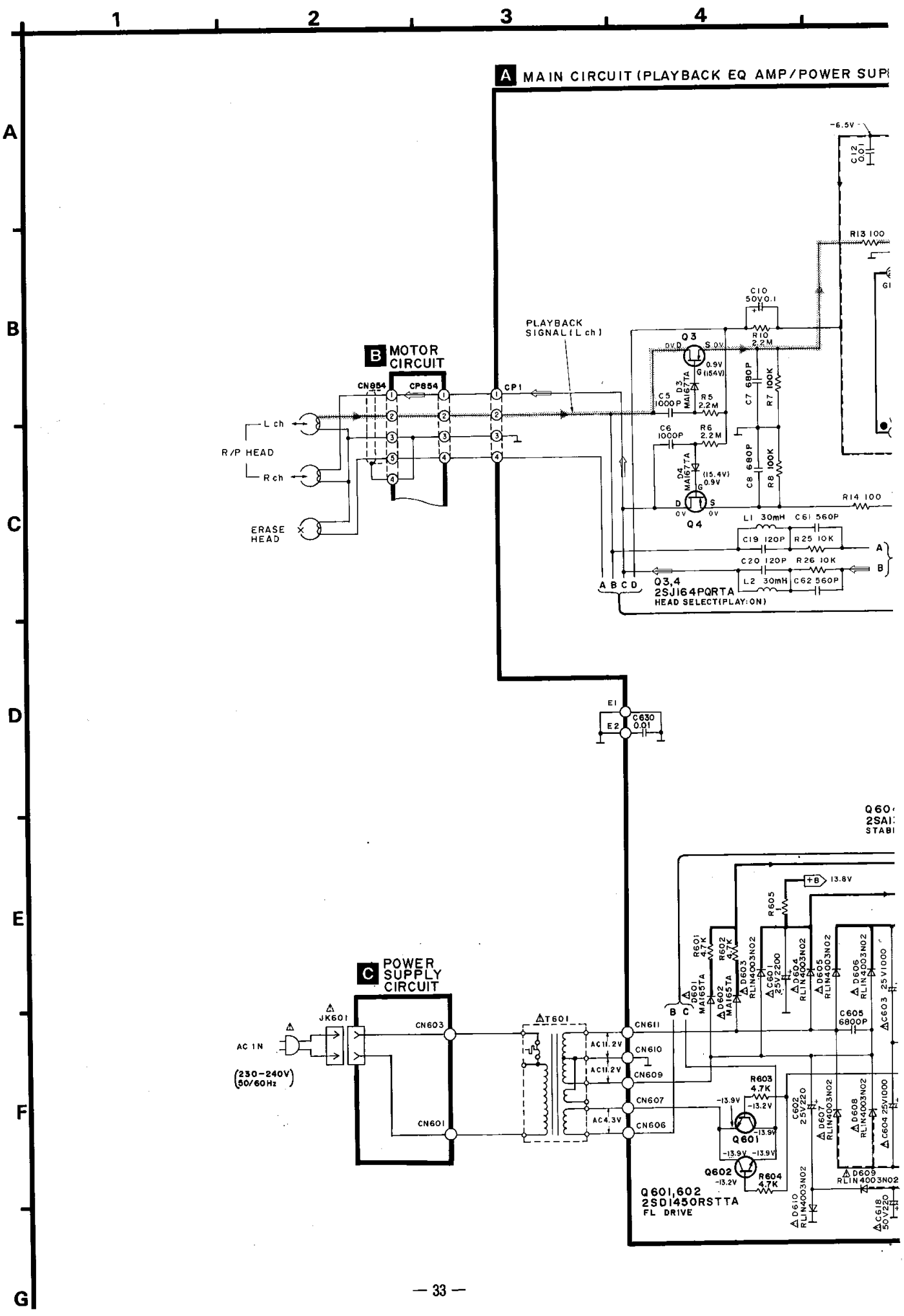
① Equalizer 120μs/70μs change.
② Dubbing seed does not change.
③ Erase current does not change between the CrO_2 and Normal/Metal tape.
(Erase current for CrO_2 and Normal tape is the same.)
④ Deck 1 and deck 2 produces no change.
⑤ Dolby off, B and C produces no change.
⑥ REC and Play produces no change.
⑦ Auto REC mute does not operate.

■ BLOCK DIAGRAM



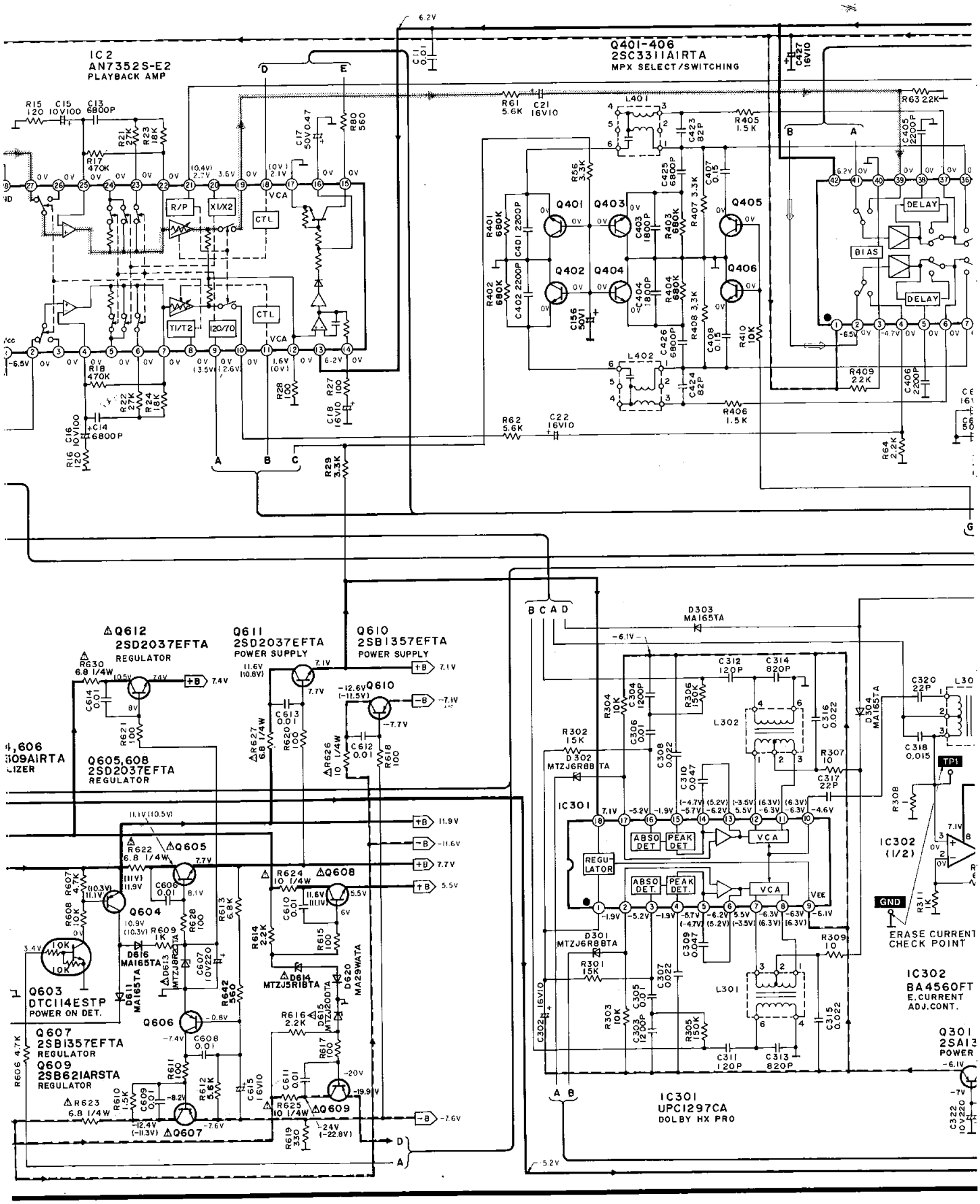

AN7354SC-E2
IC401
DOLBY B/C NR
D401
D402
circuit
Mute
Bias
Rec1
SS
HLS
LLS
MPX
Q401,403,405,L401
(Q402,404,406,L402)
M52184L
IC701
Headphones amp.
VR724 (PHONES LEVEL)
R ch
HEADPHONES
PLAY(OUT) (L ch)
M38123M4105F
IC501
MICRO COMPUTER
-VP
VDD
VREF
REMOTE
Z502
REMOTE SENSOR
S701-718
KEY1
KEY2
NC
DMT
OSC
MSP
SOAT
SCLK
SSTB
RESET
Q501
Rest signal generator
POWER
POF
XIN
XOUT
Vss
AVss
ECS
ECLK
EDAT
RPT
RPS
METER L (METER R)
AD2
AD1
MLAT
MDAT
MCLK
XLU2040F-T2
IC152
DATA CONTROL
ENC
AUTO
B/C
NR
120/70
MPX
PBADJ
MGAIN
LFADJ
RMT
REC
IEADJ
DATA
CLK
Vss
VDD
M62352FPE1
IC151
12ch D/A CONVERTER
GPB-L(R)
GH
FM
Q
GP
FP
GREC-L(R)
BIAS-L(R)
DI
CLK
LD
Vcc
VDD
GND

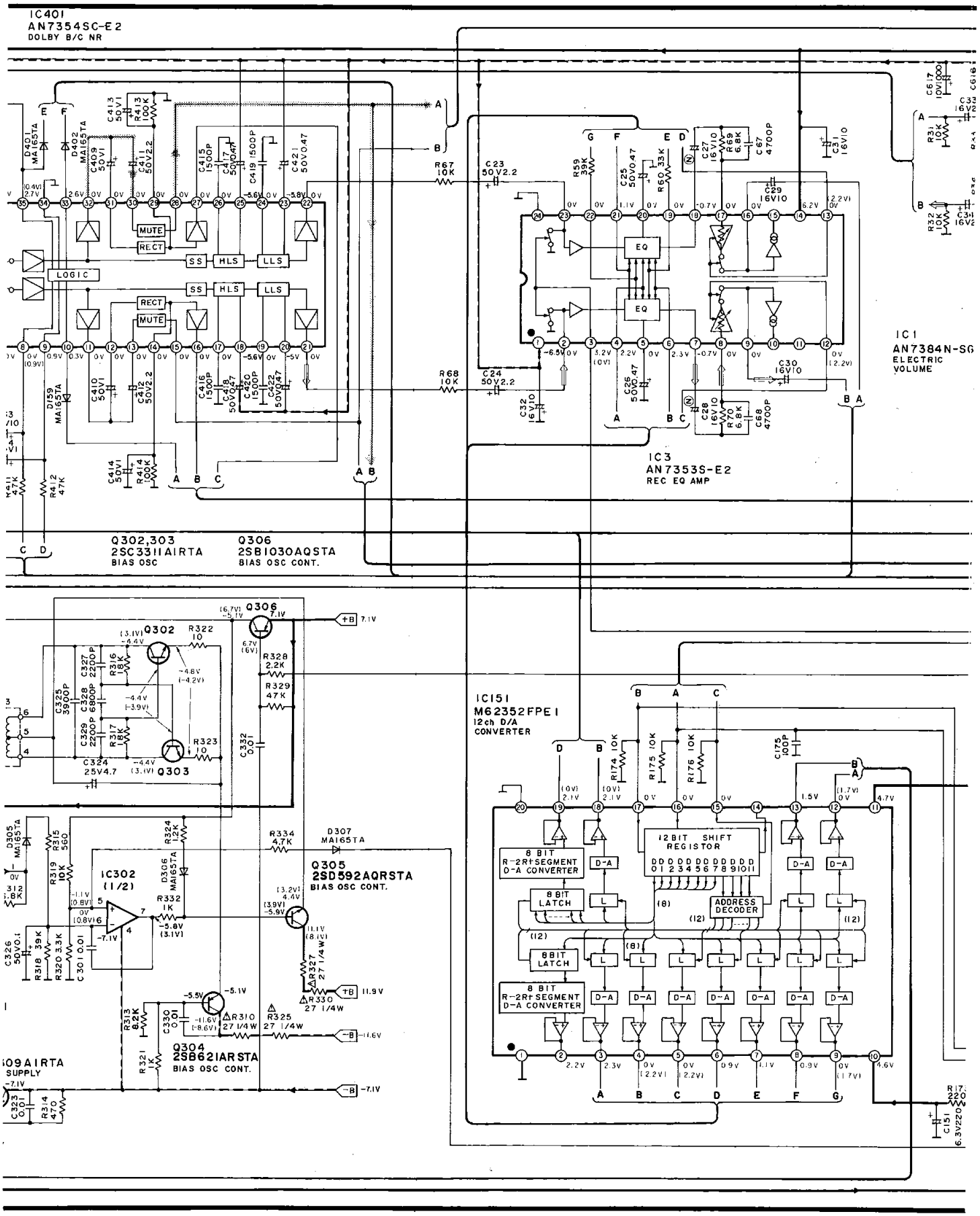

Notes.
1) ( ) indicates pin No. of right channel.
2)
: PLAYBACK SIGNAL LINE
: RECORDING SIGNAL LINE
Q702,703
LED drive
D702 (STANDBY)
+B
FL501
FL DISPLAY
Z501
XLJ93LC46AFE
IC504
EEPROM
CS
CLK
DI
DO
Vcc
NC
NC
GND
RVSGP2S248C
IC971, IC972
PHOTO INTERRUPTER
Q601,602
FL drive
D151
D152
D150
D601,602
D603,604
Q608,D614
Regulator
Q612
Power supply
Q611
Power supply
D605-608
Q605,D613
Regulator
D616
D611
Q603,604
Switching
Regulator
Q606,607
Power supply
Q610
Q609,D615
Regulator
D609
D610
T601
POWER TRANSFORMER
AC IN
Z971
Ladder resister
S971 (MODE)
S974 (R.REC.INH)
S972 (HALF)
Z852
Ladder resister
S975 (F.REC.INH)
S973 (ATS/CrO2)
S976 (ATS/METAL)
S853(OPEN DET.)
S854(CLOSE DET.)
BA6265FP-E1
IC852
MECHANISM CONT.
Solenoid (PL)drive
Solenoid (PL)drive
Reel motor drive
Capstan. motor drive
Capstan. motor speed control
I/O expander
D854
Q854
Solenoid drive
D852
D971
SOLENOID
REEL MOTOR
Q852
Motor speed control
CAPSTAN MOTOR
VR853
(TAPE SPEED ADJ.)

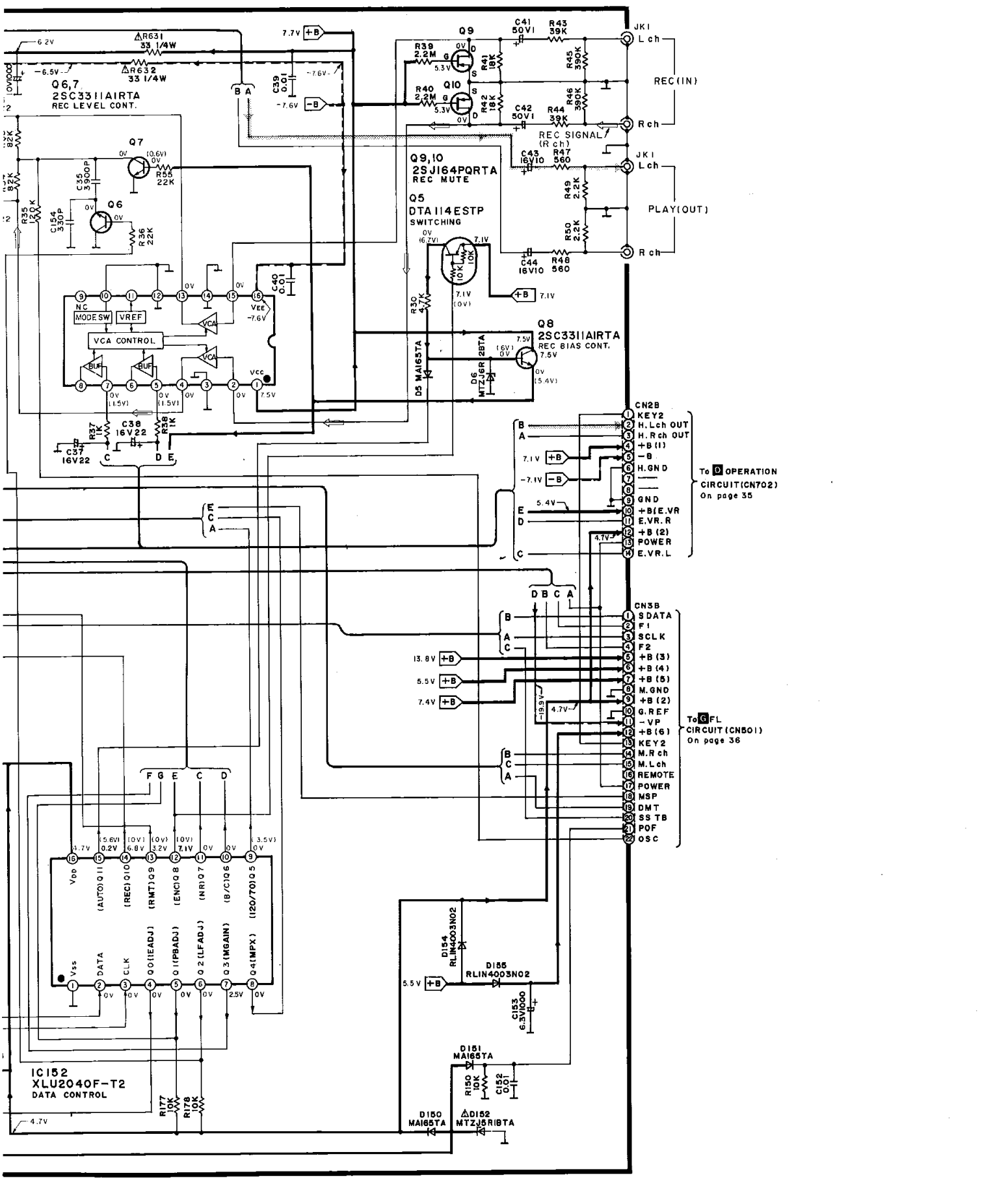

A MAIN CIRCUIT (PLAYBACK EQ AMP/POWER SUP
B MOTOR CIRCUIT
C POWER SUPPLY CIRCUIT
PLAYBACK SIGNAL (L ch)
L ch
R/P HEAD
R ch
ERASE HEAD
CN854
CP854
CP1
Q3
Q4
Q3,4
2SJ164PQRTA
HEAD SELECT(PLAY:ON)
A B C D
C10 50V0.1
R10 2.2M
R13 100
R14 100
C5 1000P
C6 1000P
R5 2.2M
R6 2.2M
C7 680P
C8 680P
R7 100K
R8 100K
D3 MA167TA
D4 MA167TA
L1 30mH
L2 30mH
C61 560P
C62 560P
C19 120P
C20 120P
R25 10K
R26 10K
E1
E2
C630 0.01
JK601
AC IN
(230-240V) 50/60Hz
CN603
CN601
T601
CN611
CN610
CN609
CN607
CN606
AC11.2V
AC11.2V
AC4.3V
+B 13.8V
R605
R601 4.7K
R602 4.7K
D601 MA165TA
D602 MA165TA
D603 RLN4003NO2
D604 RLN4003NO2
D605 RLN4003NO2
D606 RLN4003NO2
C601 25V2200
C603 25V1000
C605 6800P
R603 4.7K
R604 4.7K
Q601
Q602
Q601,602
2SD1450RSTTA
FL DRIVE
C602 25V220
C604 25V1000
D607 RLN4003NO2
D608 RLN4003NO2
D609 RLN4003NO2
D610 RLN4003NO2
C618 50V220

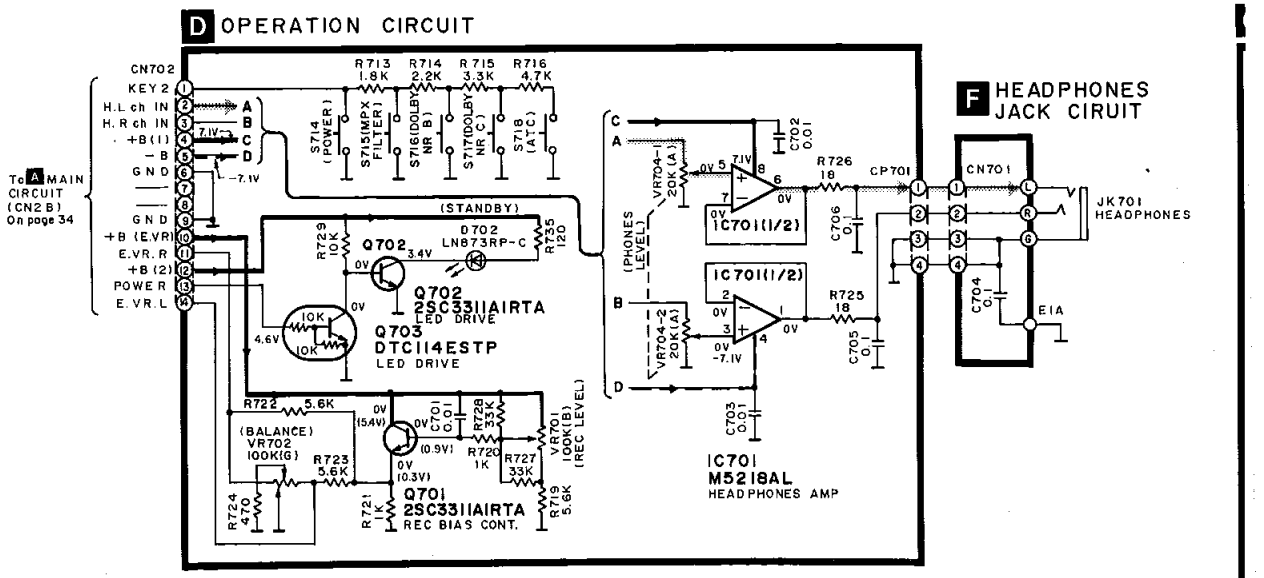
5 6 7 8 9

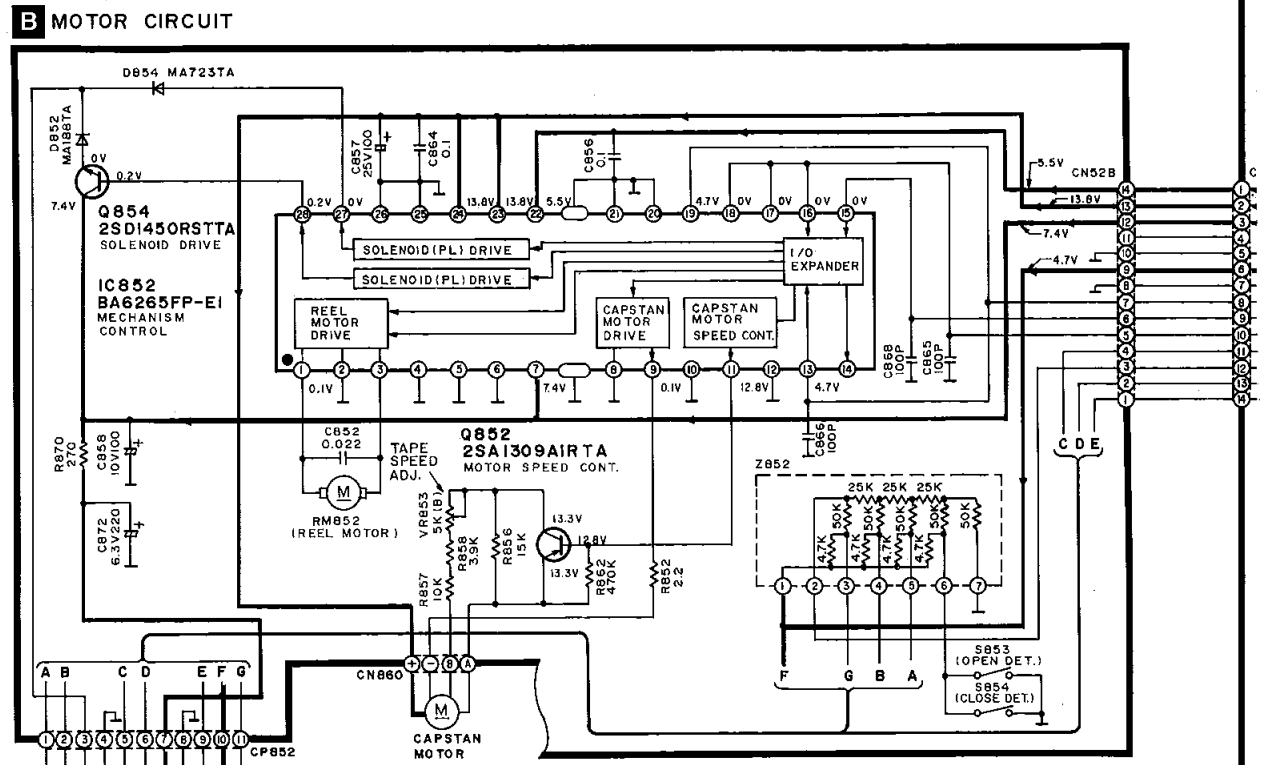
PLY/DOLBY NR/HX PRO/BIAS OSC/REC EQ AMP/CONTROL/ELECTRIC VOLUME)




10
11
12
13
14
IC401
AN7354SC-E2
DOLBY B/C NR
IC1
AN7384N-SG
ELECTRIC VOLUME
IC3
AN7353S-E2
REC EQ AMP
Q302,303
2SC3311AIRTA
BIAS OSC
Q306
2SB1030AQSTA
BIAS OSC CONT.
Q302
Q303
Q304
2SB621ARSTA
BIAS OSC CONT.
Q305
2SD592AQRSTA
BIAS OSC CONT.
IC302
(1/2)
IC151
M62352FPE1
12ch D/A
CONVERTER
8 BIT
R-2R↑SEGMENT
D-A CONVERTER
8 BIT
LATCH
12 BIT SHIFT
REGISTOR
ADDRESS
DECODER
MUTE
RECT
SS
HLS
LLS
LOGIC
EQ
+B 7.1V
-B -11.6V
-B -7.1V
+B 11.9V

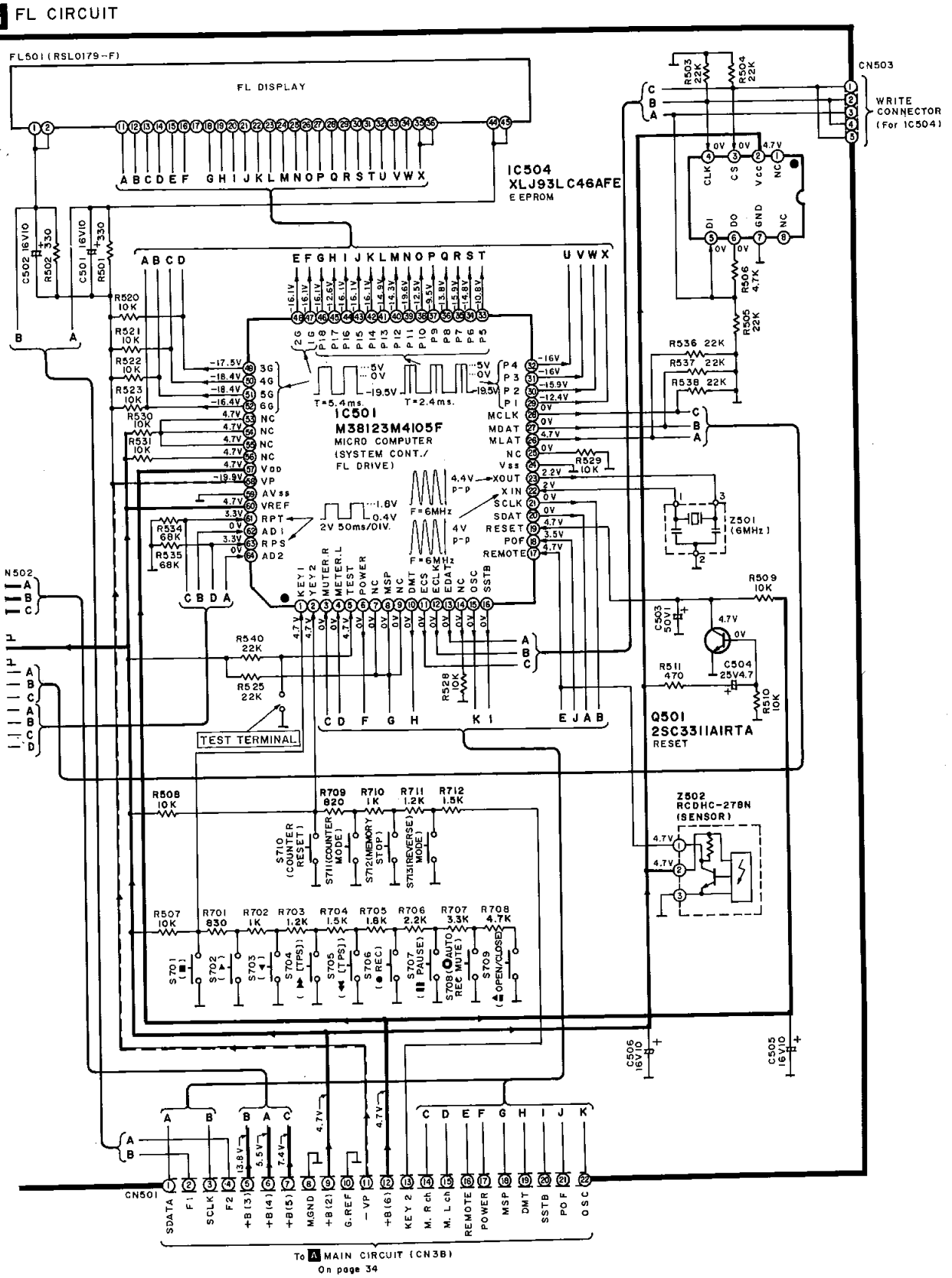

15
16
17
18
19
Q6,7
2SC3311AIRTA
REC LEVEL CONT.
Q7
Q6
Q9,10
2SJ164PQRTA
REC MUTE
Q5
DTA114ESTP
SWITCHING
Q8
2SC3311AIRTA
REC BIAS CONT.
Q9
Q10
REC SIGNAL
(R ch)
REC(IN)
PLAY(OUT)
JK1
L ch
R ch
NC
MODE SW
VREF
VCA CONTROL
VCA
BUF
VEE
Vcc
IC152
XLU2040F-T2
DATA CONTROL
CN2B
KEY2
H. Lch OUT
H. Rch OUT
+B (1)
−B
H. GND
GND
+B (E. VR
E. VR. R
+B (2)
POWER
E. VR. L
To D OPERATION
CIRCUIT (CN702)
On page 35
CN3B
S DATA
F1
SCL K
F2
+B (3)
+B (4)
+B (5)
M. GND
+B (2)
G. REF
−VP
+B (6)
KEY2
M. R ch
M. L ch
REMOTE
POWER
MSP
DMT
SS TB
POF
OSC
To G FL
CIRCUIT (CN501)
On page 36
D154
RLIN4003N02
D155
RLIN4003N02
D151
MA165TA
D150
MA165TA
D152
MTZJ5RIBTA
D5 MA165TA
D6 MTZJ6R
7.7V +B
−7.6V −B
5.5V +B
13.8V +B
7.4V +B
7.1V +B
−7.1V −B
5.4V
4.7V





E MECHANISM CIRCUIT

G FL CIRCUIT


FL501 (RSL0179-F)
FL DISPLAY
IC504
XLJ93LC46AFE
E EPROM
IC501
M38123M4105F
MICRO COMPUTER
(SYSTEM CONT./
FL DRIVE)
Q501
2SC3311AIRTA
RESET
Z501
(6MHz)
Z502
RCDHC-278N
(SENSOR)
CN503
WRITE
CONNECTOR
(For IC504)
CN501
TEST TERMINAL
To A MAIN CIRCUIT (CN3B)
On page 34

■ SCHEMATIC DIAGRAM (Parts list on pages 54~57.)

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

Note 1:

- S701 : Stop switch (■).
- S702 : F.-SIDE playback (▶).
- S703 : R.-SIDE playback (◀).
- S704 : Fast-forward search (TPS) switch (▶▶ (TPS)).
- S705 : Rewind search (TPS) switch (◀◀ (TPS)).
- S706 : Record switch (● REC).
- S707 : Pause switch (▮▮ PAUSE).
- S708 : Automatic-record-muting switch (O AUTO REC MUTE).
- S709 : Casette holder open/close switch (▲ OPEN/CLOSE).
- S710 : Tape/liner counter reset switch (COUNTER RESET).
- S711 : Tape/liner counter mode switch (COUNTER MODE).
- S712 : Memory stop switch (MEMORY STOP).
- S713 : Reverse-mode select switch (REVERSE MODE).
- S714 : Power "STANDBY ⏻ /ON" switch (POWER, STANDBY ⏻ /ON).
- S715 : Multiplex filter switch (MPX FILTER).
- S716, 717 : Dolby noise reduction switches (DOLBY NR B, C). (S716: DOLBY NR B, S717: DOLBY NR C)
- S718 : Auto tape calibration switch (ATC).
- S853 : Cassette holder open detection switch in "**off**" position.
- S854 : Cassette holder close detection switch in "**off**" position.
- S971 : Mode switch in "**off**" position.
- S972 : Half switch in "**off**" position.
- S973 : ATS (CrO_2) switch in "**off**" position.
- S974 : R. REC inhibit switch in "**off**" position.
- S975 : F. 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 ⚠ 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
IC302	BA4560FT1	SVIBA4560FT1
IC701	M5218AL	M5218L

※ marks indicate printed resistor.

Caution!

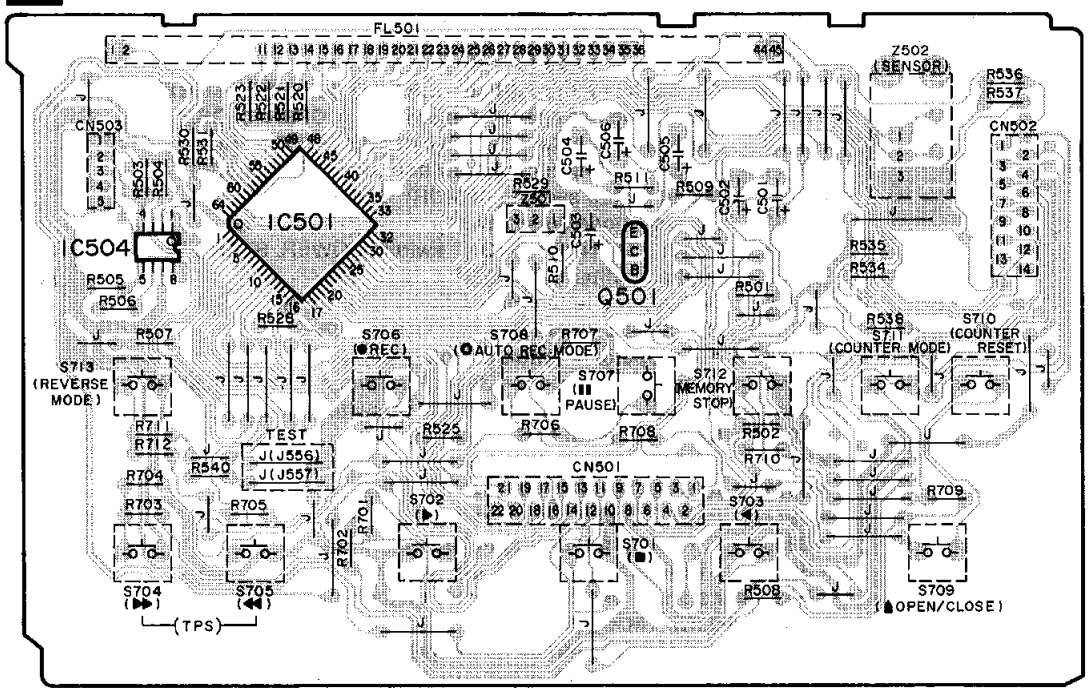
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- 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.

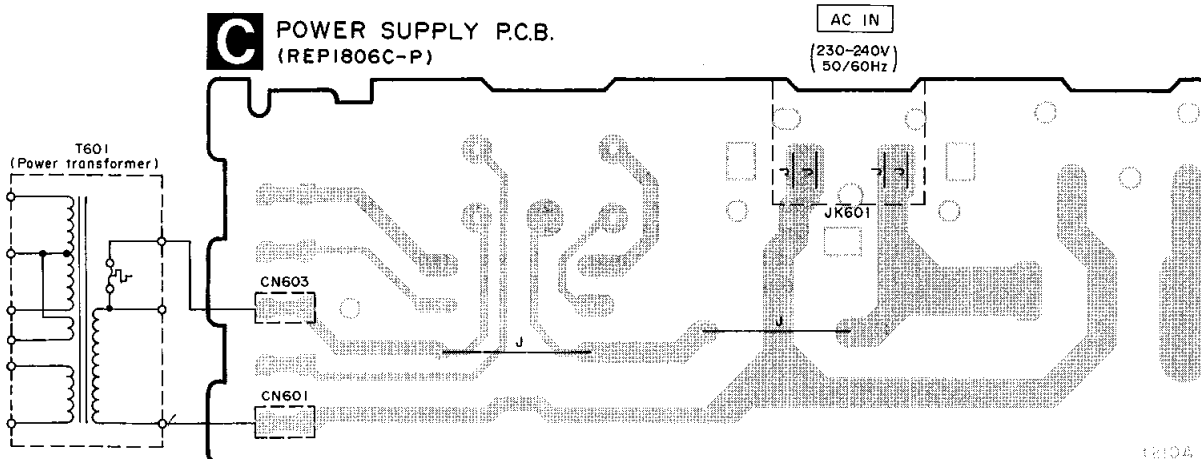
■ PRINTED CIRCUIT BOARDS

(This printed circuit boards may be modified at any time with the development of new technology)

G FL P.C.B. (REP1848A-S)

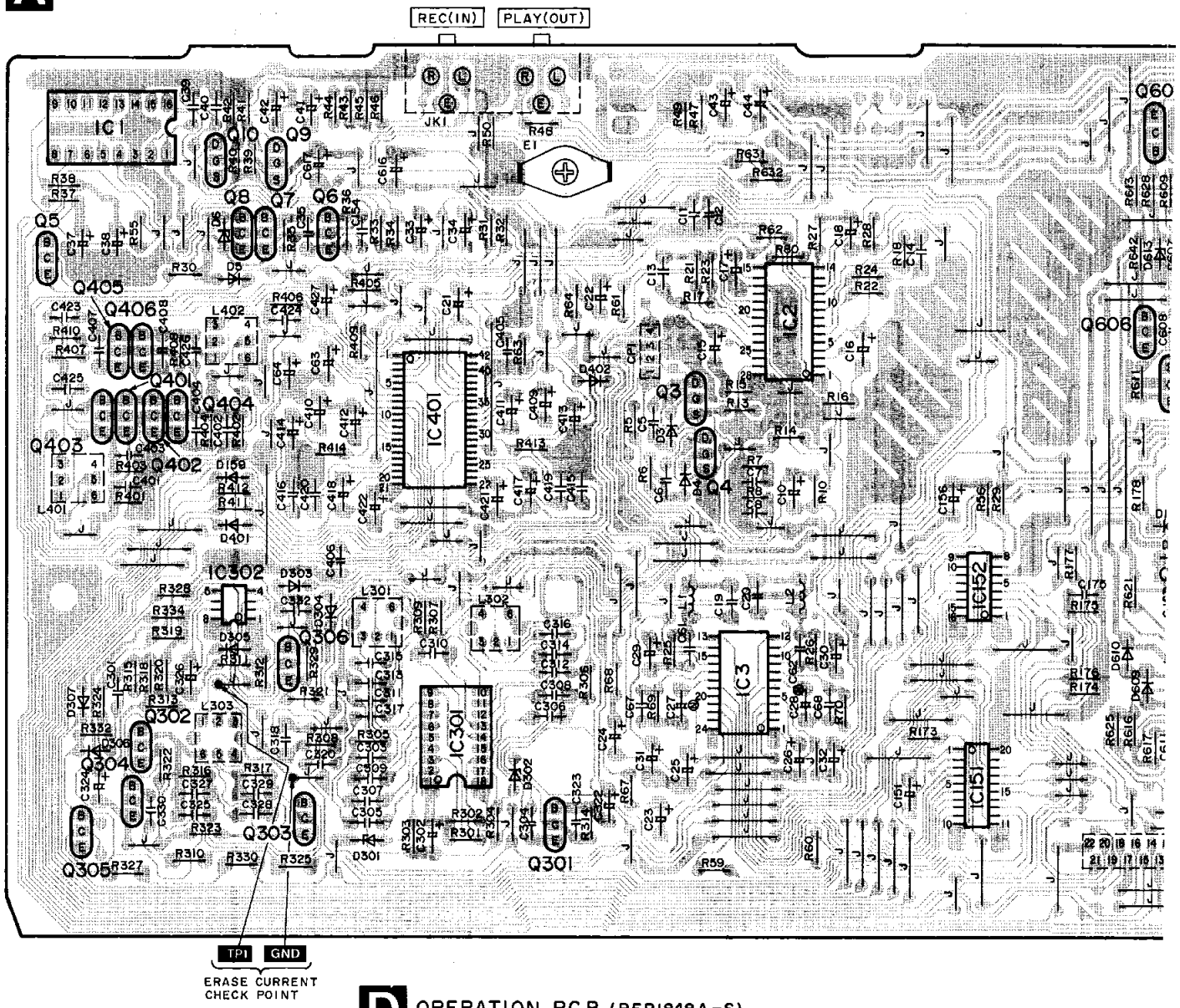


C POWER SUPPLY P.C.B. (REP1806C-P)

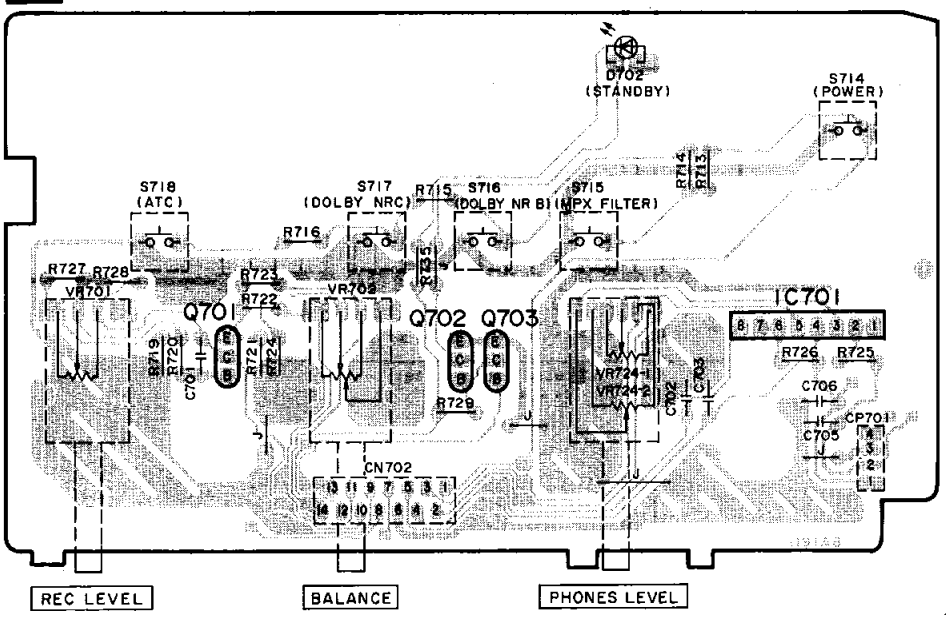


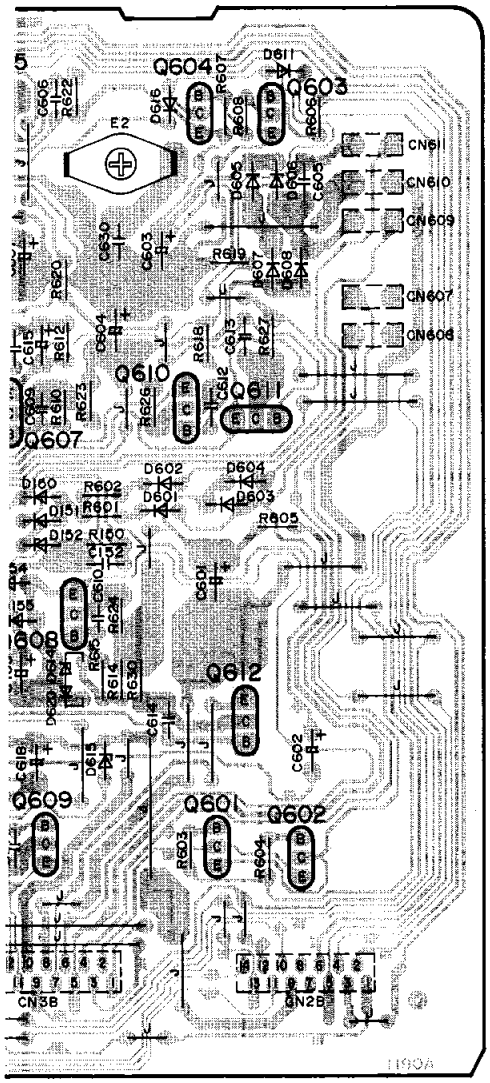
5 6 7 8 9

A MAIN P.C.B. (REPI849A-M)

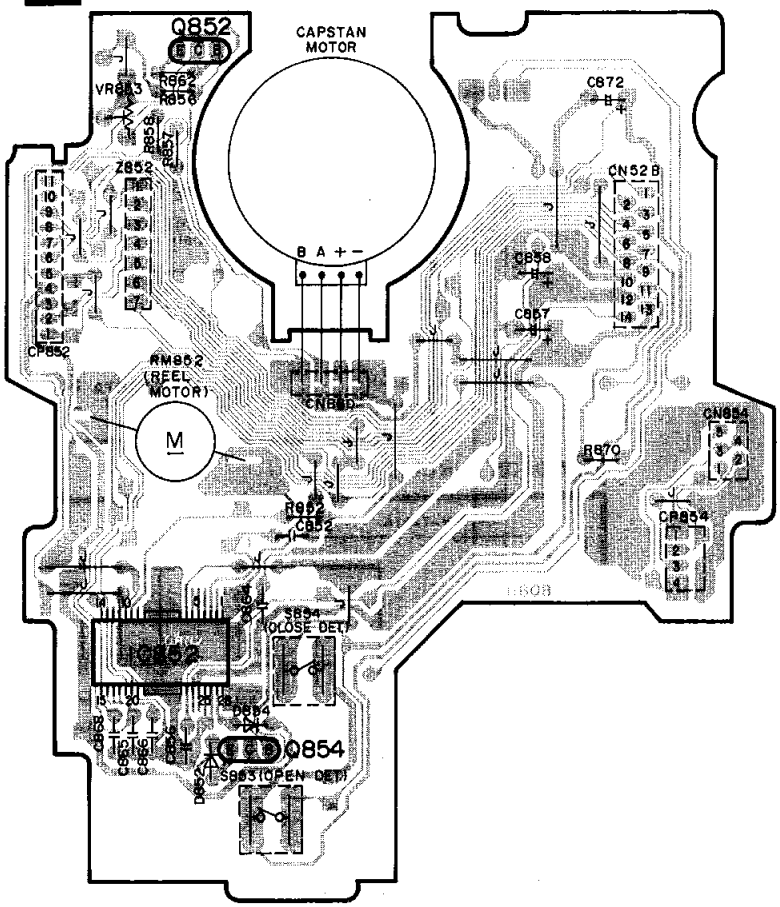


D OPERATION P.C.B. (REPI848A-S)

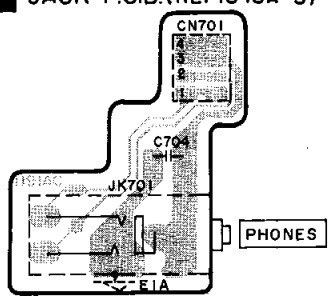




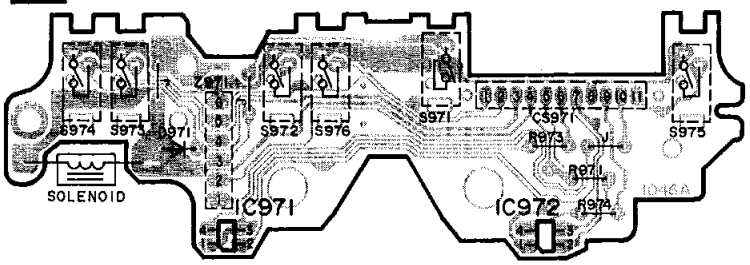
B MOTOR P.C.B. (REPI808B-T)



F HEADPHONES JACK P.C.B. (REPI848A-S)

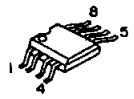


E MECHANISM P.C.B. (REPI656A)

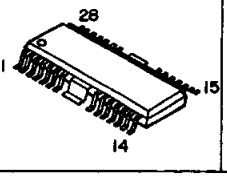


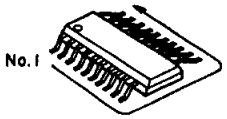
• Terminal guide of IC's, transistors and diodes

BA4560FT1



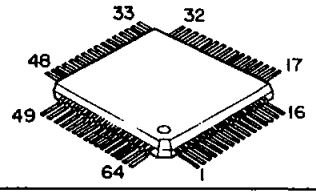
BA6265FP-E1



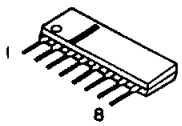


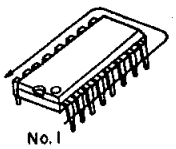
XLJ93LC46AFE	8Pin
XLU2040F-T2	16Pin
M62352FPE1	20Pin
AN7353S-E2	24Pin
AN7352S-E2	28Pin
AN7354SC-E2	42Pin

M38123M4105F



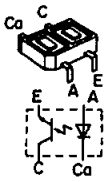
M5218AL



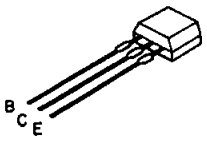


AN7384N-SG	16Pin
UPC1297CA	18Pin

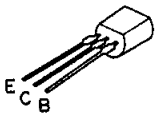
RVSGP2S24BC



DTA114ESTP
DTC114ESTP
DTC114YSTP

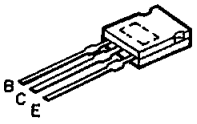


2SB621ARSTA
2SD592AQRSTA



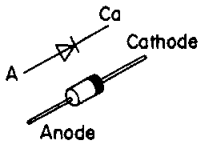
2SA1309AIRTA
2SB1030AQSTA
2SC3311AIRTA
2SD1450RSTTA

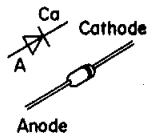
2SB1357EFTA
2SD2037EFTA



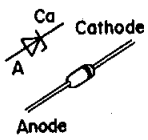
2SJ164PQRTA

RL1N4003N02



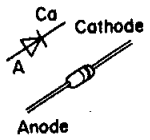


MA29WATA
MA165TA
MA167TA
MA723TA
RVD1SS133TA

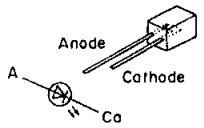


MTZJ5R1BTA
MTZJ6R2BTA
MTZJ6R8BTA
MTZJ8R2CTA
MTZJ20DTA

MA188TA

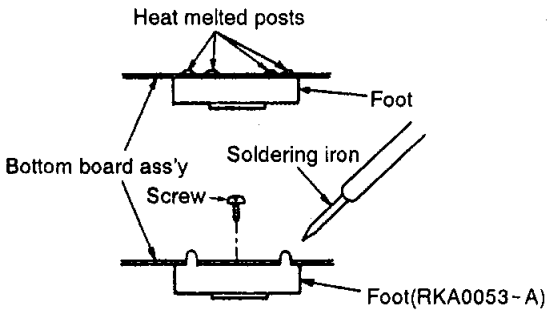


LN873RP-C

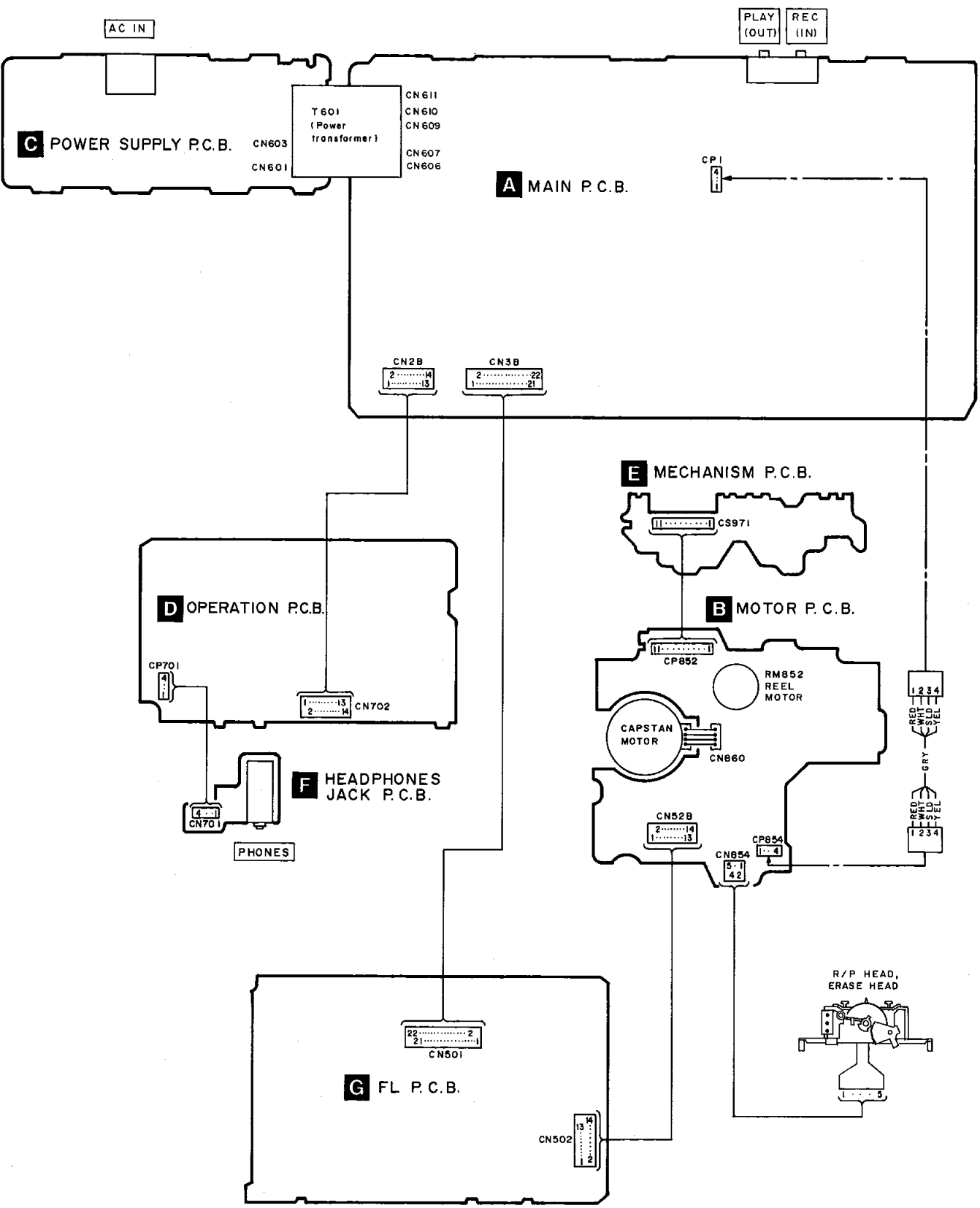


■ REPLACEMENT OF THE FOOT

1. Remove the 4 heat melted posts on the Bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot(RKA0053-A) on the Bottom board ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).



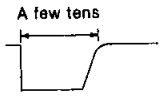
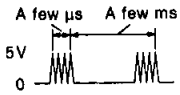
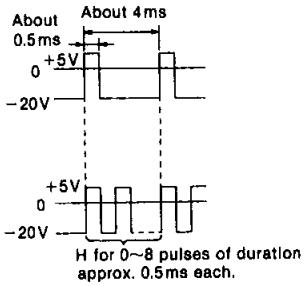
WIRING CONNECTION DIAGRAM



■ TERMINAL FUNCTION OF IC

• IC501 (M38123M4105F): MICROCOMPUTER

Pin No.	Mark	I/O Division	Function	Check point	※ Discription
1	KEY1	I	Key switch (STOP, FF, F. PLAY, R. PLAY, REW, REC, ARM, PAUSE, OPEN/CLOSE) input	IC501 ① pin	+5V without key input and 0V with the stop key ON. An analog value (0~5V) is used for each key ON.
2	KEY2	I	Key switch (COUNTER RESET, COUNTER MODE, MEMORY REPEAT/STOP, POWER, DOLBY B, DOLBY C, MPX, ATC ON/OFF, REVERSE MODE) input	IC501 ② pin	+5V without key input and 0V with the stop key ON. An analog value (0~5V) is used for each key ON.
3	METER-R	I	Rch indication level input	Connector CN501 ⑭ pin	0V with no signal and 1V with 0VU (−20dB) input in the REC or PAUSE mode. The voltage varies from 0 to 5V for different input levels.
4	METER-L	I	Lch indication level input	Connector CN501 ⑮ pin	
5	TEST		Test mode input	IC501 ⑤ pin	Normal: "H" (=4.8V) Test (Service) mode: "L" (=0V)
6	POWER	O	Power control output ON: "H", OFF: "L"	Connector CN501 ⑰ pin	Power ON: "H" (=5V) Power OFF: "L" (=0V)
7	—	—	Not used	—	—
8	MSP	I	TPS signal det. input ON: "L", OFF: "H"	Connector CN501 ⑱ pin	TPS mode No program: "H" (=5V) Programs: "L" (=0V)
9	—	—	Not used	—	—
10	DMT	O	Line out mute signal output ON: "L", OFF: "H"	Connector CN501 ⑲ pin	"L" (=0V) when sound is being produced in the play or REC mode and "H" (=2.5~5V) when no sound is produced in the stop of FF/REW mode.
11	ECS	O	E2PROM chip select signal ON: "H", OFF "L"	Connector CN503 ① pin CN503 ⑤ pin	 (ex...FOR ↔ REV PLAY mode is changed)
12	ECLK	O	E2PROM serial clock output ON: "L", OFF: "H"	Connector CN503 ② pin CN503 ④ pin	 (ex...FOR ↔ REV PLAy mode is changed) Waveform appears in response to 11 above.
13	EDAT	I/O	E2PROM serial data input/output	Connector CN503 ③ pin	 (ex...FOR ↔ REV PLAY mode is changed) Waveform appears in response to 11 above.
14	—	—	Not used	—	—
15	OSC	O	Audio signal for adjustment output	Connector CN501 ㉒ pin	Generated signals at approx. 400Hz, 10kHz and 3kHz (square wave (H and L, 0 and 5V) in REC mode during adjustment of ATC).
16	S STB	O	Strobe (load) output for the DA converter (IC151)	Connector CN501 ⑳ pin	Used to load output for the DA converter (IC151).

Pin No.	Mark	I/O Division	Function	Check point	※ Discription
17	REMOTE	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.
18	POF	I	Power off det. input ON: "H", OFF: "L"	Connector CN501 ㉑ pin	 Rectified waveform at both 50 and 60Hz (clamping at 5V) The microprocessor goes into standby mode when this signal is removed.
19	RESET	I	Reset input ON: "L", OFF: "H"	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.
20	SDAT	O	Serial data output for DA converter (IC151)/serial-parallel converter (IC152) ON: "H", OFF: "L"	Connector CN501 ① pin	 Data output in response to 21
21	SCLK	O	Serial clock output for DA converter (IC151)/serial-parallel converter (IC152) ON: "H", OFF: "L"	Connector CN501 ③ pin	 Pulse signal is emitted only when a mode change occurs.
22	XIN	I	Microcomputer clock OSC terminal	Z501 ① pin terminal	 Oscillator waveform at 6MHz
23	XOUT	O	Microcomputer clock OSC terminal	Z501 ③ pin terminal	 Oscillator waveform at 6MHz
24	GND	—	Microcomputer GND	IC501 ㉔ pin	0V
25	—	—	Not used	—	—
26	MLAT1	O	Latch output for mechanism control ON: "H", OFF: "L"	Connector CN502 ⑧ pin	 Emitted only when mechanism mode changes.
27	MDAT	O	Serial data output for mechanism control ON: "H", OFF: "L"	Connector CN502 ⑨ pin	Serial data used to control the mechanism driver via IC852.
28	MCLK	O	Serial clock output for mechanism control ON: "H", OFF: "L"	Connector CN502 ⑩ pin	Emitted only when mechanism mode changes.
29 ⟆ 46	P1 ⟆ P18	O	FL meter segment output ON: "H", OFF: "L"	FL501 ⑦~㉔ pin	
47 ⟆ 52	1G ⟆ 6G	O	FL meter glid output ON: "H", OFF: "L"	FL501 ①~⑥ pin	

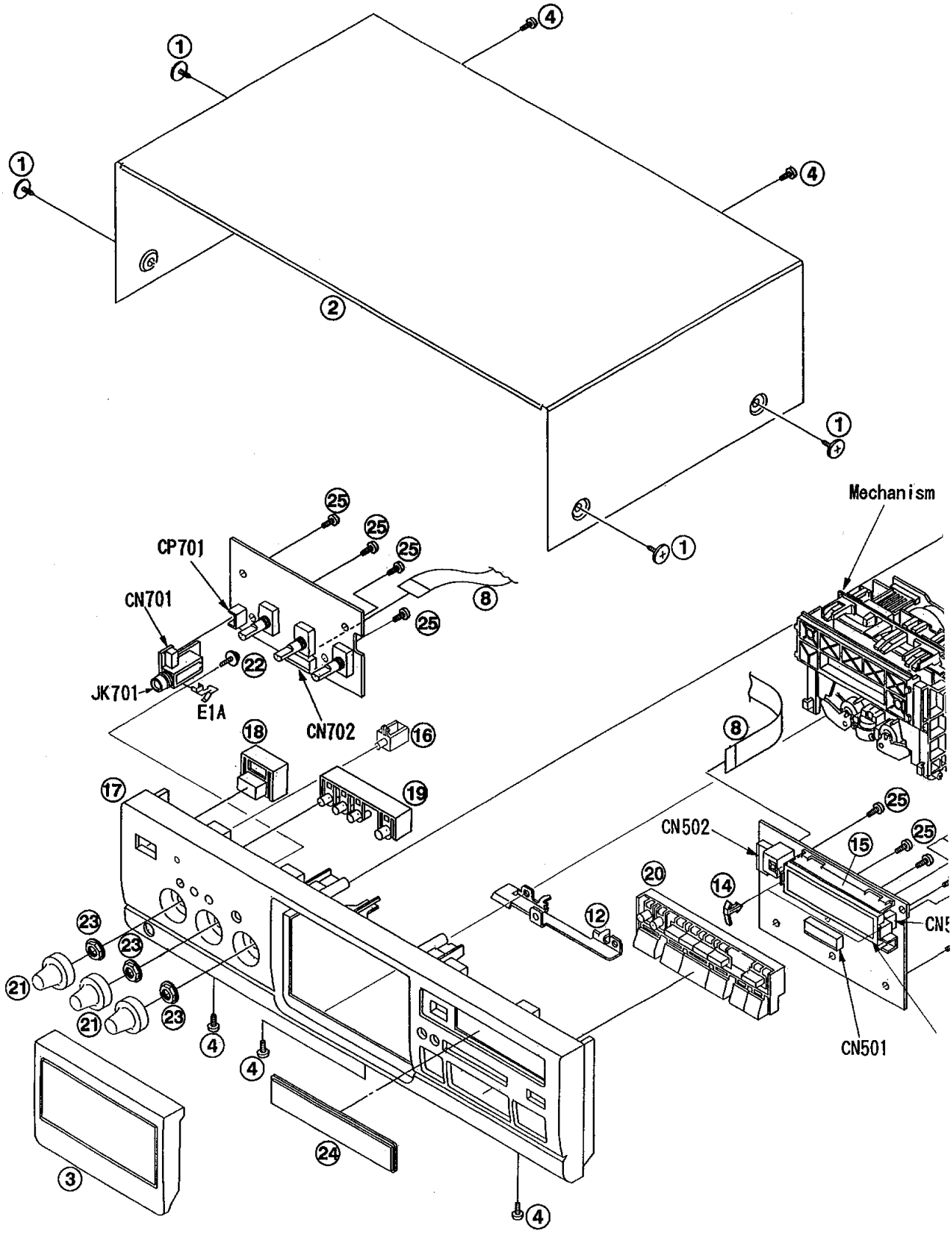
Pin No.	Mark	I/O Division	Function	Check point	※ Discription
53	—	—	Not used	—	—
54	—	—	Not used	—	—
55	—	—	Not used	—	—
56	—	—	Not used	—	—
57	V_{DD}	—	Microcomputer terminal	Connector CN501 ⑫ pin	+5V, Backup
58	-VP	—	FL meter pull down voltage input terminal	Connector CN501 ⑪ pin	−20V
59	AV_{SS}	—	GND terminal (A/D)	Connector CN501 ⑩ pin	0V
60	V_{REF}	I	Reference power supply (+5V) (A/D)	Connector CN501 ⑨ pin	+5V
61	RPT	I	Reel pulse det. input (take up side)	Connector CN502 ⑬ pin	 Changes within the 0 ↔ 3V range each time the take up reel is through approximately 30 degress.
62	AD01	I	Deck 2 Mechanism switch (FINH, CrO_2, Metal, OPEN/CLOSE) input	Connector CN502 ⑫ pin	No tape load: Approx. 4.1V Normal tape with tab: Apprxo. 0V Chrome tape with tab: 1.1V Metal tape with tab: Approx. 1.7V
63	RPS	I	Reel pulse det. input (supply side)	Connector CN502 ⑭ pin	 Changes within the 0 ↔ 3V range each time the take up reel is through approximately 30 degrees.
64	AD02	I	Deck 2 Mechanism switch (MODE, RINH, HALF) input	Connector CN502 ⑪ pin	No tape load: Approx. 4.1V Normal tape with tab: Approx. 2.3V

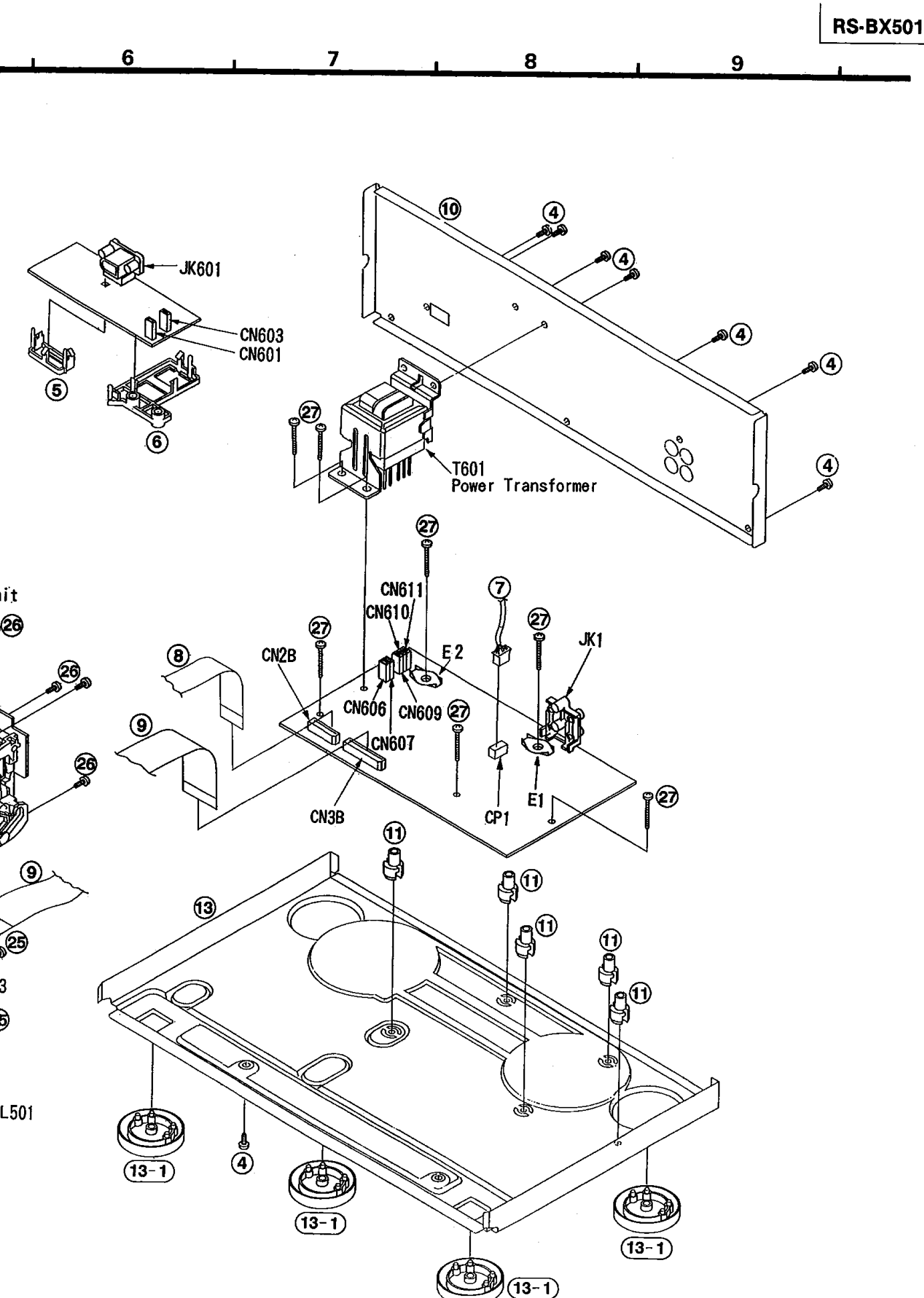
■ REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RHD30035-K	SCREW	
2	RKM0036-K	CABINET	
3	RYF0266-K	CASSETTE LID	
4	XTBS3+8JFZ1	SCREW	
5	RFKNSTR373AK	TRANSFORMER BASE1 ASS'Y	
6	RFKNSTR373BK	TRANSFORMER BASE2 ASS'Y	
7	REX0604	CONNECTOR ASS'Y(8P)	
8	REZ0641	FLEXIBLE FLAT CABLE(14P)	
9	REZ0685	FLEXIBLE FLAT CABLE(22P)	
10	RGR0188A-A	REAR PANEL	(E, EG)
10	RGR0188A-B	REAR PANEL	(EB)
11	RKQ0089	P. C. B. HOLDER	
12	RMA0772	MECHANISM ANGLE	

Ref. No.	Part No.	Part Name & Description	Remarks
13	RFKJLPG460-K	BOTTOM CHASSIS ASS'Y	
13-1	RKA0053-A	FOOT	
14	RMN0195	FL HOLDER PIECE	
15	RMN0265	FL HOLDER	
16	RGL0206-Q	PANEL LIGHT	
17	RFKGSBX501EK	FRONT PANEL ASS'Y	
18	RGU0882-K	BUTTON, POWER	
19	RFKNSBX501AK	BUTTON ASS'Y, ATC	
20	RFKNSBX501BK	BUTTON ASS'Y, OPERATION	
21	RGW0177A-K	KNOB, P. LEVEL/BAL. /REC LEVEL	
22	RHD26016	SCREW	
23	RHN90001	NUT	
24	RKW0331-R	TRANSPARENT PLATE	
25	XTBS26+8J	SCREW	
26	XTB3+12JFZ	SCREW	
27	XTB3+20JFZ	SCREW	

■CABINET PARTS LOCATION

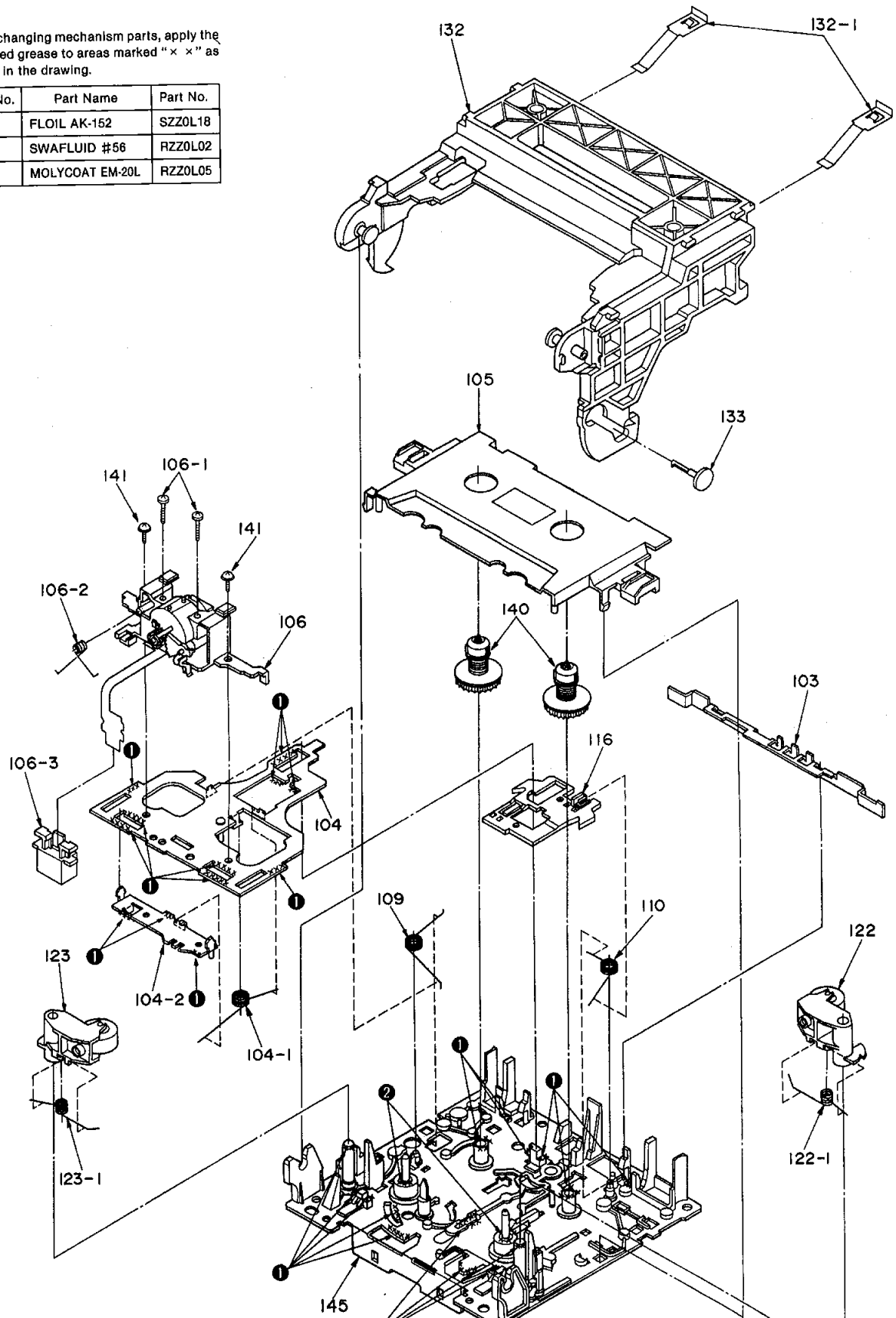


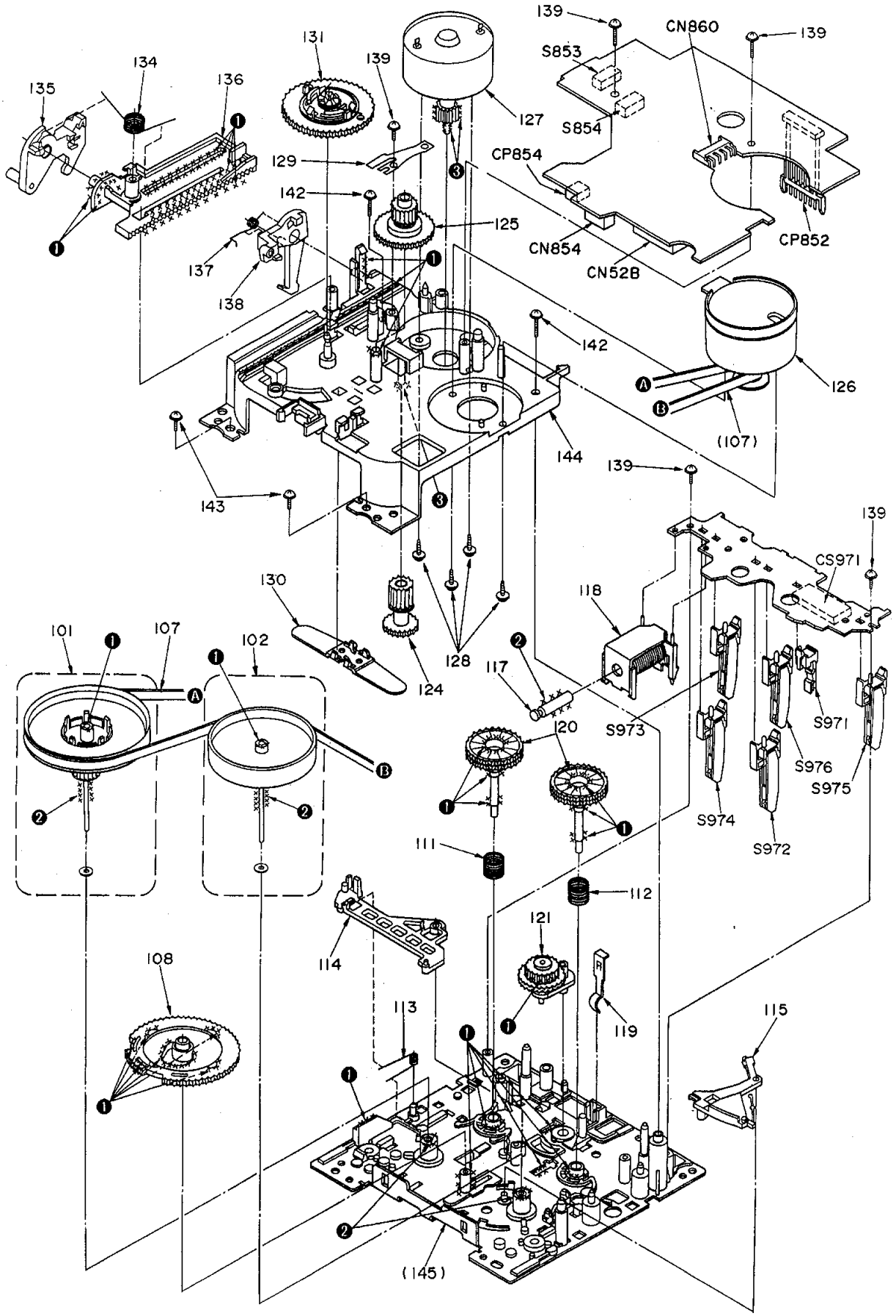

6
7
8
9
JK601
CN603
CN601
5
6
10
4
27
T601
Power Transformer
CN611
CN610
7
JK1
CN2B
E2
8
CN606
CN609
CN607
9
CN3B
CP1
E1
26
11
13
13-1
25
L501

■ MECHANISM PARTS LOCATION

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

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




139
CN860
139
131
139
S853
134
135
136
127
S854
129
CP854
142
125
CN854
CP852
137
CN52B
138
142
126
(107)
144
139
143
139
CS971
130
118
101
107
102
128
117
124
S973
S971
20
S976
S975
S974
S972
111
112
121
114
108
113
119
115
(145)

■ REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS	
101	RXF0040	FLYWHEEL(F) ASS'Y	
102	RXF0047	FLYWHEEL(R) ASS'Y	
103	RML0272	SWITCH LEVER	
104	RXQ0265	HEAD BASE ASS'Y	
104-1	RMB0266-1	SPRING, FOR./REV. SIDE ROD	
104-2	RXM0036	FOR./REV. SIDE ROD	
105	RGK0582-K	DRESSING PLATE	
106	RXQ0316-1	HEAD BLOCK(R/P)	
106-1	RHD17015	AZIMUTH ADJUSTMENT SCREW	
106-2	RMB0352	SPRING, HEAD HOLD	
106-3	RMQ0360A	CONNECTOR HOLDER	
107	RDV0015	BELT	
108	RDK0019A	MAIN GEAR	
109	RMB0261	SPRING, HEAD BASE	
110	RMB0262	SPRING, BRAKE ROD	
111	RMB0263	SPRING(F)	
112	RMB0264	SPRING(R)	
113	RUW1472A	SPRING, TRIGGER LEVER	
114	RML0267A	TRIGGER LEVER	
115	RML0268A	FOR./REV. SIDE LEVER	
116	RMM0091A	BRAKE ROD	
117	RMS0398	MOVING IRON CORE	
118	RSJ0003	SOLENOID	
119	RUS6092C	SPRING, TAPE PRESSURE	
120	RXG0036	REEL GEAR	
121	RXL0106	IDLE GEAR	
122	RXP0052	PINCH ROLLER(F) ASS'Y	
122-1	RMB0259	SPRING, PINCH ROLLER(F)	
123	RXP0053	PINCH ROLLER(R) ASS'Y	
123-1	RMB0260	SPRING, PINCH ROLLER(R)	
124	RDG0206A-1	LOADING GEAR	
125	RDG0209A	INTERMEDIATE GEAR	
126	REM0036-1	CAPSTAN MOTOR	
127	REM0043	REEL MOTOR	
128	RHD26013	SCREW	
129	RMC0169	SHIELD PLATE	
130	RMQ0314A	SURASUTO SPACER	
131	RXG0037	FRICTION GEAR ASS'Y	
132	RYF0263-K	CASSETTE HOLDER	
132-1	RUS757ZA	SPRING, TAPE PRESSURE	
133	RMQ0430	RIVET	
134	RMB0269	SPRING, DRIVE LEVER	
135	RML0270A-1	DRIVE LEVER	
136	RMQ0312A	DRIVE RACK	

Ref. No.	Part No.	Part Name & Description	Remarks
137	RMB0268	SPRING, HOLDER HOOK	
138	RML0271A	HOLDER HOOK	
139	XTW2+6S	SCREW	
140	RXR0018	REEL TABLE	
141	XTW2+5L	SCREW	
142	XTW26+12S	SCREW	
143	XTW26+6L	SCREW	
144	RFKJSCH404AK	SUB CHASSIS ASS'Y	
145	RFKJSCH404BK	CHASSIS ASS'Y	

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC1	AN7384N-SG	ELECTRIC VOLUME	
IC2	AN7352S-E2	PLAYBACK AMP	
IC3	AN7353S-E2	REC EQ AMP	
IC151	M62352FPE1	12ch D/A CONVERTER	
IC152	XLU2040F-T1	DATA CONTROL	
IC301	UPC1297CA	DOLBY HX PRO	
IC302	SVIBA4560FT1	E. CURRENT ADJ. CONTROL	
IC401	AN7354SC-E2	DOLBY B/C NR	
IC501	M38123M4105F	MICROCOMPUTER	
IC504	XLJ93LC46AFE	EEPROM	
IC701	M5218L	HEADPHONES AMP	
IC852	BA6265FP-E1	MECHANISM CONTROL	
IC971	RVSGP2S24BC	PHOTO INTERRUPTER	
IC972	RVSGP2S24BC	PHOTO INTERRUPTER	
		TRANSISTOR(S)	
Q3, 4	2SJ164PQRTA	TRANSISTOR	
Q5	DTA114ESTP	TRANSISTOR	
Q6-8	2SC3311AIRTA	TRANSISTOR	
Q9, 10	2SJ164PQRTA	TRANSISTOR	
Q301	2SA1309AIRTA	TRANSISTOR	
Q302, 303	2SC3311AIRTA	TRANSISTOR	
Q304	2SB621A-R	TRANSISTOR	
Q305	2SD592ANCQ	TRANSISTOR	
Q306	2SB1030AQSTA	TRANSISTOR	
Q401-406	2SC3311AIRTA	TRANSISTOR	
Q501	2SC3311AIRTA	TRANSISTOR	
Q601, 602	2SD1450RTA	TRANSISTOR	
Q603	DTC114ESTP	TRANSISTOR	
Q604	2SA1309AIRTA	TRANSISTOR	
Q605	2SD2037EFTA	TRANSISTOR	⚠
Q606	2SA1309AIRTA	TRANSISTOR	
Q607	2SB1357EFTA	TRANSISTOR	⚠
Q608	2SD2037EFTA	TRANSISTOR	⚠
Q609	2SB621A-R	TRANSISTOR	⚠
Q610	2SB1357EFTA	TRANSISTOR	
Q611	2SD2037EFTA	TRANSISTOR	
Q612	2SD2037EFTA	TRANSISTOR	⚠
Q701, 702	2SC3311AIRTA	TRANSISTOR	
Q703	DTC114ESTP	TRANSISTOR	
Q852	2SA1309AIRTA	TRANSISTOR	
Q854	2SD1450RTA	TRANSISTOR	
		DIODE(S)	
D3, 4	MA167	DIODE	
D5	MA165	DIODE	
D6	MTZJ6R2BTA	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D150, 151	MA165	DIODE	
D152	MTZJ5R1BTA	DIODE	⚠
D154, 155	RL1N4003N02	DIODE	
D159	MA165	DIODE	
D301, 302	MTZJ6R8BTA	DIODE	
D303-307	MA165	DIODE	
D401, 402	MA165	DIODE	
D601, 602	MA165	DIODE	⚠
D603-610	RL1N4003N02	DIODE	⚠
D611	MA165	DIODE	
D613	MTZJ8R2CTA	DIODE	⚠
D614	MTZJ5R1BTA	DIODE	⚠
D615	MTZJ20DTA	DIODE	⚠
D616	MA165	DIODE	
D620	MA29WA	DIODE	
D702	LN873RP-C	L. E. D.	
D852	MA188TA	DIODE	
D854	MA723TA	DIODE	
D971	RVD1SS133TA	DIODE	
		VARIABLE RESISTOR(S)	
VR701	EVJ02FF02B15	REC LEVEL CONTROL	
VR702	EVJ02SF02G15	BALANCE CONTROL	
VR704	EVJY10F02A24	PHONES LEVEL CONTROL	
VR853	EVNDCAA03B53	TAPE SPEED ADJ.	
		COIL(S)	
L1, 2	SLQX303-1KT	COIL	
L301, 302	SL09B1-Z	COIL	
L303	SL09B4-K	COIL(HX PRO ADJ.)	
L401, 402	RLM2B006T-K	COIL	
		TRANSFORMER(S)	
T601	RTP1K4B018-V	POWER TRANSFORMER	⚠
		OSC. (S) AND COMBINATION(S)	
Z501	EFOEC6004T4	CERAMIC OSCILLATOR(6MHz)	
Z502	RCDHC-278N	REMOTE SENSOR	
Z852	EXBF7L355SYV	COMBINATION PART	
Z971	EXBF6L306SYV	COMBINATION PART	
		DISPLAY TUBE(S)	
FL501	RSL0179-F	DISPLAY TUBE	
		SWITCH(ES)	
S701	EVQ21405R	STOP	

Ref. No.	Part No.	Part Name & Description	Remarks
S702	EVQ21405R	F. -SIDE PLAYBACK	
S703	EVQ21405R	R. -SIDE PLAYBACK	
S704	EVQ21405R	F. F. SERCH<TPS>	
S705	EVQ21405R	REW. SERCH<TPS>	
S706	EVQ21405R	REC	
S707	EVQ21405R	PAUSE	
S708	EVQ21405R	AUTO REC MUTE	
S709	EVQ21405R	OPEN/CLOSE	
S710	EVQ21405R	COUNTER RESET	
S711	EVQ21405R	COUNTER MODE	
S712	EVQ21405R	MEMORY STOP	
S713	EVQ21405R	REVERSE MODE	
S714	EVQ21405R	POWER	
S715	EVQ21405R	MPX FILTER	
S716	EVQ21405R	DOLBY NR B	
S717	EVQ21405R	DOLBY NR C	
S718	EVQ21405R	ATC	
S853	RSH1A024-U	OPEN DETECTION	
S854	RSH1A024-U	CLOSE DETECTION	
S971	RSH1A018-U	MODE	
S972	RSH1A019-U	HALF	
S973	RSH1A019-U	ATS	
S974	RSH1A019-U	R. REC. INH.	
S975	RSH1A019-U	F. REC. INH.	
S976	RSH1A019-U	ATS	
		CONNECTOR(S) AND SOCKET(S)	
CN2B	RJS1A6814	CONNECTOR(14P)	
CN3B	RJS1A6822	CONNECTOR(22P)	
CN52B	RJS1A6714	CONNECTOR(14P)	
CN501	RJS1A6222	CONNECTOR(22P)	
CN502	RJS1A6214-1	CONNECTOR(14P)	
CN503	SJS50581BB	SOCKET(5P)	
CN601	RJS1A1101T1	CONNECTOR(1P)	
CN603	RJS1A1101T1	CONNECTOR(1P)	
CN606, 607	RJS1A1101T1	CONNECTOR(1P)	
CN609-611	RJS1A1101T1	CONNECTOR(1P)	
CN701	RJU057W004	SOCKET(4P)	
CN702	RJS1A6214-1	CONNECTOR(14P)	
CN854	RJS2A0205-2S	CONNECTOR(5P)	
CN860	RJR0113	MOTOR CONNECTOR(4P)	
CP1	SJTD413	CONNECTOR(4P)	
CP701	RJT057W004-1	CONNECTOR(4P)	
CP852	RJT071H11A	CONNECTOR(11P)	
CP854	RJP4G17ZA	CONNECTOR(4P)	
CS971	RJU071H11M	SOCKET(11P)	
		JACK(S)	
JK1	SJF3069N	TERMINAL BOARD:REC/PLAY	
JK601	SJS9236	AC INLET	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
JK701	SJJ146B	HEADPHONES JACK	
		GND PART(S)	
E1	SNE1004-2	GND PLATE	
E1A	SUSD165	GND SPRING, H. P. JACK	
E2	SNE1004-2	GND PLATE	

ERD2FC6860.

■ RESISTORS AND CAPACITORS

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

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R5, 6	ERDS2TJ225	1/4W 2.2M
R7, 8	ERDS2TJ104	1/4W 100K
R10	ERDS2TJ225	1/4W 2.2M
R13, 14	ERDS2TJ101	1/4W 100
R15, 16	ERDS2EJ121	1/4W 120
R17, 18	ERDS2TJ474	1/4W 470K
R21, 22	ERDS2TJ273	1/4W 27K
R23, 24	ERDS2TJ183T	1/4W 18K
R25, 26	ERDS2TJ103	1/4W 10K
R27, 28	ERDS2TJ101	1/4W 100
R29	ERDS2TJ332	1/4W 3.3K
R30	ERDS2TJ472	1/4W 4.7K
R31, 32	ERDS2TJ103	1/4W 10K
R33, 34	ERDS2TJ823T	1/4W 82K
R35	ERDS2TJ124T	1/4W 120K
R36	ERDS2TJ223	1/4W 22K
R37, 38	ERDS2TJ102	1/4W 1K
R39, 40	ERDS2TJ225	1/4W 2.2M
R41, 42	ERDS2TJ183T	1/4W 18K
R43, 44	ERDS2TJ393	1/4W 39K
R45, 46	ERDS2TJ394	1/4W 390K
R47, 48	ERDS2TJ561	1/4W 560
R49, 50	ERDS2TJ222	1/4W 2.2K
R55	ERDS2TJ223	1/4W 22K
R56	ERDS2TJ332	1/4W 3.3K
R59	ERDS2TJ393	1/4W 39K
R60	ERDS2TJ333	1/4W 33K
R61, 62	ERDS2TJ562	1/4W 5.6K
R63, 64	ERDS2TJ222	1/4W 2.2K
R67, 68	ERDS2TJ103	1/4W 10K
R69, 70	ERDS2TJ682T	1/4W 6.8K
R80	ERDS2TJ561	1/4W 560
R150	ERDS2TJ103	1/4W 10K
R173	ERDS2TJ221	1/4W 220
R174-178	ERDS2TJ103	1/4W 10K
R301, 302	ERDS2TJ153	1/4W 15K
R303, 304	ERDS2TJ103	1/4W 10K
R305, 306	ERDS2TJ154	1/4W 150K
R307	ERDS2TJ100	1/4W 10
R308	ERDS2TJ1R0	1/4W 1.0
R309	ERDS2TJ100	1/4W 10
R310	ERD2FCVG270T	1/4W 27 ⚠
R311	ERDS2TJ102	1/4W 1K
R312	ERDS2TJ682T	1/4W 6.8K
R313	ERDS2TJ822	1/4W 8.2K
R314	ERDS2TJ471	1/4W 470
R315	ERDS2TJ561	1/4W 560
R316, 317	ERDS2TJ183T	1/4W 18K
R318	ERDS2TJ393	1/4W 39K
R319	ERDS2TJ103	1/4W 10K
R320	ERDS2TJ332	1/4W 3.3K
R321	ERDS2TJ102	1/4W 1K
R322, 323	ERDS2TJ100	1/4W 10
R324	ERDS2TJ122	1/4W 1.2K
R325	ERD2FCVG270T	1/4W 27 ⚠
R327	ERD2FCVG270T	1/4W 27 ⚠
R328	ERDS2TJ222	1/4W 2.2K
R329	ERDS2TJ473	1/4W 47K
R330	ERD2FCVG270T	1/4W 27 ⚠
R332	ERDS2TJ102	1/4W 1K
R334	ERDS2TJ472	1/4W 4.7K
R401-404	ERDS2TJ684	1/4W 680K
R405, 406	ERDS2TJ152	1/4W 1.5K
R407, 408	ERDS2TJ332	1/4W 3.3K
R409	ERDS2TJ223	1/4W 22K
R410	ERDS2TJ103	1/4W 10K
R411, 412	ERDS2TJ473	1/4W 47K
R413, 414	ERDS2TJ104	1/4W 100K
R501, 502	ERDS2TJ331	1/4W 330
R503-505	ERDS2TJ223	1/4W 22K
R506	ERDS2TJ472	1/4W 4.7K
R507-510	ERDS2TJ103	1/4W 10K
R511	ERDS2TJ471	1/4W 470
R520-523	ERDS2TJ103	1/4W 10K
R525	ERDS2TJ223	1/4W 22K
R528-531	ERDS2TJ103	1/4W 10K
R534, 535	ERDS2TJ683	1/4W 68K
R536-538	ERDS2TJ223	1/4W 22K
R540	ERDS2TJ223	1/4W 22K
R601-604	ERDS2TJ472	1/4W 4.7K
R605	ERDS2TJ1R0	1/4W 1.0
R606, 607	ERDS2TJ472	1/4W 4.7K
R608	ERDS2TJ103	1/4W 10K
R609	ERDS2TJ102	1/4W 1K
R610	ERDS2TJ152	1/4W 1.5K
R611	ERDS2TJ101	1/4W 100
R612	ERDS2TJ562	1/4W 5.6K
R613	ERDS2TJ682T	1/4W 6.8K
R614	ERDS2TJ222	1/4W 2.2K
R615	ERDS2TJ101	1/4W 100
R616	ERDS2TJ222	1/4W 2.2K
R617, 618	ERDS2TJ101	1/4W 100
R619	ERDS2TJ331	1/4W 330
R620, 621	ERDS2TJ101	1/4W 100
R622, 623	ERD2FCVJ6R8T	1/4W 6.8 ⚠
R624-626	ERD2FCVG100T	1/4W 10 ⚠
R627	ERD2FCVJ6R8T	1/4W 6.8 ⚠
R628	ERDS2TJ101	1/4W 100
R630	ERD2FCVJ6R8T	1/4W 6.8 ⚠
R631, 632	ERD2FCVG330T	1/4W 33 ⚠
R642	ERDS2TJ561	1/4W 560
R701	ERDS2TJ821	1/4W 820
R702	ERDS2TJ102	1/4W 1K
R703	ERDS2TJ122	1/4W 1.2K
R704	ERDS2TJ152	1/4W 1.5K
R705	ERDS2TJ182	1/4W 1.8K
R706	ERDS2TJ222	1/4W 2.2K
R707	ERDS2TJ332	1/4W 3.3K
R708	ERDS2TJ472	1/4W 4.7K
R709	ERDS2TJ821	1/4W 820
R710	ERDS2TJ102	1/4W 1K
R711	ERDS2TJ122	1/4W 1.2K
R712	ERDS2TJ152	1/4W 1.5K
R713	ERDS2TJ182	1/4W 1.8K
R714	ERDS2TJ222	1/4W 2.2K
R715	ERDS2TJ332	1/4W 3.3K
R716	ERDS2TJ472	1/4W 4.7K
R719	ERDS2TJ562	1/4W 5.6K
R720, 721	ERDS2TJ102	1/4W 1K
R722, 723	ERDS2TJ562	1/4W 5.6K
R724	ERDS2TJ471	1/4W 470
R725, 726	ERDS2TJ180T	1/4W 18
R727, 728	ERDS2TJ333	1/4W 33K
R729	ERDS2TJ103	1/4W 10K
R735	ERDS2EJ121	1/4W 120
R852	ERDS2TJ2R2T	1/4W 2.2
R856	ERDS2TJ153	1/4W 15K
R857	ERDS2TJ103	1/4W 10K
R858	ERDS2TJ392T	1/4W 3.9K
R862	ERDS2TJ474	1/4W 470K
R870	ERDS2TJ271	1/4W 270
R971	ERDS2TJ221	1/4W 220
R973, 974	ERDS2TJ393	1/4W 39K
		CAPACITORS
C5, 6	ECBT1H102KB5	50V 1000P
C7, 8	ECBA1H681KB5	50V 680P
C10	ECEA1HKA0R1B	50V 0.1U
C11, 12	ECBT1E103ZF	25V 0.01U
C13, 14	ECQB1H682JF3	50V 6800P
C15, 16	ECEA1AKA101B	10V 100U
C17	ECEA1HKAR47B	50V 0.47U
C18	ECEA1CKA100B	16V 10U

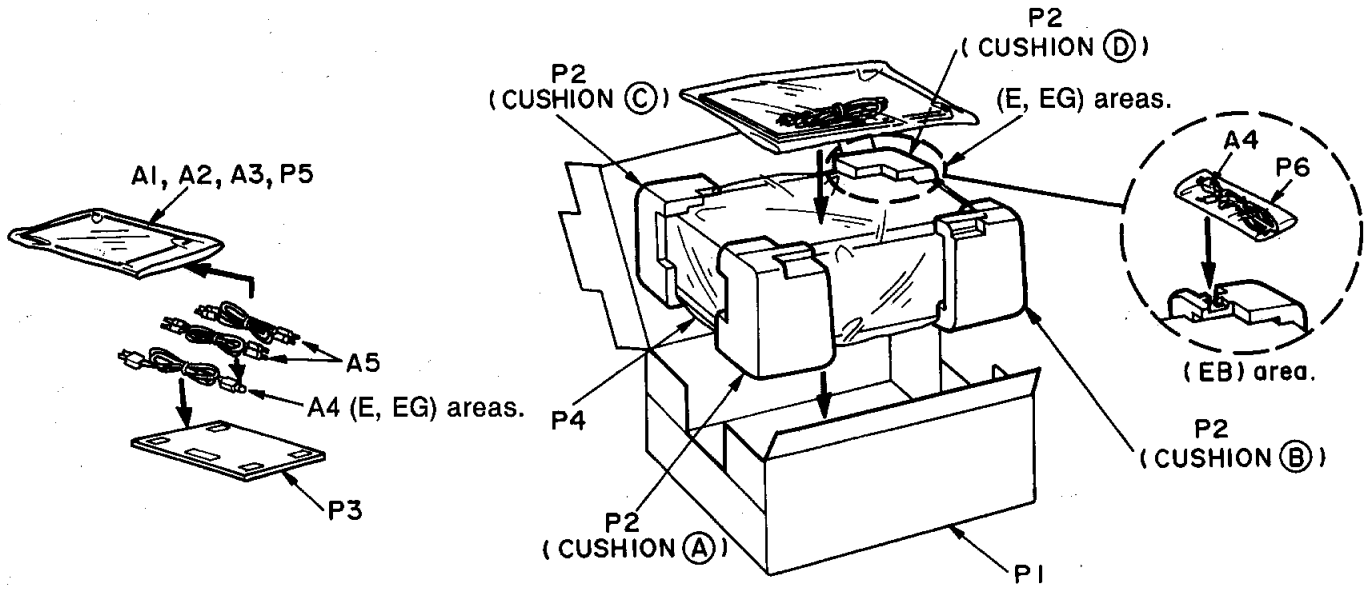
Ref. No.	Part No.	Values & Remarks
C19, 20	ECKR2H121KB5	500V 120P
C21, 22	ECEA1CKA100B	16V 10U
C23, 24	ECEA1HKA2R2B	50V 2.2U
C25, 26	ECEA1HKAR47B	50V 0.47U
C27, 28	ECEA1CKN100B	16V 10U
C29-32	ECEA1CKA100B	16V 10U
C33, 34	ECEA1CKA220B	16V 22U
C35	ECKR1H392KB5	50V 3900P
C37, 38	ECEA1CKA220B	16V 22U
C39, 40	ECBT1E103ZF	25V 0.01U
C41, 42	ECEA1HKA010B	50V 1U
C43, 44	ECEA1CKA100B	16V 10U
C61, 62	ECBT1H561KB5	50V 560P
C63	ECEA1CKA100B	16V 10U
C64	ECEA1HKA010B	50V 1U
C67, 68	ECBT1C472KR5	16V 4700P
C151	ECEA0JKA221B	6.3V 220U
C152	ECBT1E103ZF	25V 0.01U
C153	ECEA0JU102	6.3V 1000U
C154	ECBT1H331KB5	50V 330P
C156	ECEA1HKA010B	50V 1U
C175	ECBT1H101KB5	50V 100P
C301	ECBT1E103ZF	25V 0.01U
C302	ECEA1CKA100B	16V 10U
C303, 304	ECBT1C122KR5	16V 1200P
C305, 306	ECQB1H103JF3	50V 0.01U
C307, 308	ECQB1H223JF3	50V 0.022U
C309, 310	ECQV1H473JM3	50V 0.047U
C311, 312	ECBT1H121KB5	50V 120P
C313, 314	ECKR2H821KB5	500V 820P
C315, 316	ECBT1E223ZF	25V 0.022U
C317	ECBT1H220J5	50V 22P
C318	ECQP1153JZ	100V 0.015U
C320	ECBT1H220J5	50V 22P
C322	ECEA1AKA221B	10V 220U
C323	ECBT1E103ZF	25V 0.01U
C324	ECEA1EKA4R7B	25V 4.7U
C325	ECKR1H392KB5	50V 3900P
C326	ECEA1HKA0R1B	50V 0.1U
C327	ECKW1H222KB5	50V 2200P
C328	ECKD1H682KB	50V 6800P
C329	ECKW1H222KB5	50V 2200P
C330	ECBT1E103ZF	25V 0.01U
C332	ECBT1E103ZF	25V 0.01U
C401, 402	ECBT1C222KR5	16V 2200P
C403, 404	ECBT1C182KR5	16V 1800P
C405, 406	ECBT1C222KR5	16V 2200P
C407, 408	ECQV1H154JM3	50V 0.15U
C409, 410	ECEA1HKA010B	50V 1U
C411, 412	ECEA1HKA2R2B	50V 2.2U
C413, 414	ECEA1HKA010B	50V 1U
C415, 416	ECQB1H152JF3	50V 1500P
C417, 418	ECEA1HKAR47B	50V 0.47U
C419, 420	ECQB1H152JF3	50V 1500P
C421, 422	ECEA1HKAR47B	50V 0.47U
C423, 424	ECBT1H820KB5	50V 82P
C425, 426	ECBT1C682KR5	16V 6800P
C427	ECEA1CKA100B	16V 10U
C501, 502	ECEA1CKA100B	16V 10U
C503	ECEA1HKA010B	50V 1U
C504	ECEA1EKA4R7B	25V 4.7U
C505, 506	ECEA1CKA100B	16V 10U
C601	ECEA1EU222	25V 2200U ⚠
C602	ECA1EM221B	25V 220U
C603, 604	ECA1EM102E	25V 1000U ⚠
C605	ECKR2H682PE	500V 6800P
C606	ECBT1E103ZF	25V 0.01U
C607	ECEA1AKA221B	10V 220U
C608-614	ECBT1E103ZF	25V 0.01U
C615	ECEA1CKA100B	16V 10U
C616, 617	ECA1AM102B	10V 1000U
C618	ECA1HM221B	50V 220U ⚠
C630	ECBT1E103ZF	25V 0.01U
C701-703	ECBT1E103ZF	25V 0.01U
C704-706	ECBT1H104ZF5	50V 0.1U
C852	ECBT1E223ZF	25V 0.022U
C856	ECBT1H104ZF5	50V 0.1U
C857	ECEA1EKA101B	25V 100U
C858	ECEA1AKA101B	10V 100U
C864	ECBT1H104ZF5	50V 0.1U
C865, 866	ECBT1H101KB5	50V 100P
C868	ECBT1H101KB5	50V 100P
C872	ECEA0JKA221B	6.3V 220U

■ REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL	
P1	RPG2015	PACKING CASE	(E, EG)
P1	RPG2016	PACKING CASE	(EB)
P2	RPN0697	CUSHION	(E, EG)
P2	RPN0698	CUSHION	(EB)
P3	RPQ0164	ACCESSORIES PAD	
P4	SPP723	PROTECTION COVER (THIS UNIT)	
P5	XZB25X34C03Y	PROTECTION BAG (F. B., ACC.)	
P6	RPH0032	MIRROR SHEET	(EB)

Ref. No.	Part No.	Part Name & Description	Remarks
		ACCESSORIES	
A1	RFKSSBX501E	INSTRUCTION MANUAL ASS'Y	(E)
A1	RFKSSBX501EG	INSTRUCTION MANUAL ASS'Y	(EG)
A1	RQT2367-B	INSTRUCTION MANUAL	(EB)
A2	RQA0013	WARRANTY CARD	
A3	RQCB0169	SERVICENTER LIST	
A4	RJA0019-2K	AC POWER SUPPLY CORD	(E, EG) ⚠ (SF)
A4	VJA0733 .	AC POWER SUPPLY CORD	(EB) ⚠ (SF)
A5	SJP2276	STEREO CONNECTION CABLE	

■ PACKAGING



〈CUSHION Ⓐ, Ⓑ, Ⓒ, Ⓓ Part No.: RPN0697 (E, EG), PRN698 (EB)〉

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