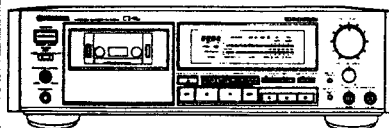


# Service Manual

**PIONEER**  
The future of sound and vision.



The above illustration shows the model CT-91a.

ORDER NO.  
ARP1731

STEREO CASSETTE DECK

# CT-737 MARK II

# CT-737 MARK IIS

CT-737 MARK II AND CT-737 MARK II S HAVE TWO VERSIONS :

| Type | Applicable model |                  | Power requiremant           | Export destination |
|------|------------------|------------------|-----------------------------|--------------------|
|      | CT-737 MARK II   | CT-737 MARK II S |                             |                    |
| HEM  | ○                | ○                | AC220V, 240V (switchable) * | European continent |
| HB   | ○                | —                | AC220V, 240V (switchable) * | United Kingdom     |

\*Change the primary wiring of the power transformer.

- This manual is applicable to the HEM and HB types.
- For the CT-737 MARK II/HB and CT-737 MARK IIS/HEM types, refer to page 43.
- The CT-737 MARK IIS is the same as the CT-737 MARK II except for the color.
- Ce manuel pour le service comprend les explications en français de réglage.
- Este manual de servicio trata del método ajuste escrito en español.

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**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

**PIONEER ELECTRONICS SERVICE INC.** P.O. Box 1760, Long Beach, California 90801 U.S.A.

**PIONEER ELECTRONICS OF CANADA, INC.** 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada

**PIONEER ELECTRONIC [EUROPE] N.V.** Keetberglaan 1, 2740 Beveren, Belgium

**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.** 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

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SA APR. 1989 Printed in Japan

# 1. SPECIFICATIONS

|                                                          |                             |
|----------------------------------------------------------|-----------------------------|
| Systems .....                                            | 4 track, 2-channel stereo   |
| Heads .....                                              | Recording and playback head |
| Hard permalloy recording/playback combination head ..... | × 1                         |
| Erasing head:(Ferrite head) .....                        | × 1                         |
| Motors .....                                             | DC servo capstan motor × 1  |
| DC reel motor .....                                      | × 1                         |
| DC auxiliary motor .....                                 | × 1                         |
| Wow & flutter .....                                      | 0,028% (WRMS)               |
| ± 0,07% (DIN)                                            |                             |
| Fast winding time .....                                  | Approximately 80 seconds    |
| (C-60 tape)                                              |                             |
| Frequency response (-20 dB recording)                    |                             |
| Metal tape .....                                         | 15 Hz to 22,000 Hz          |
| Chrome tape .....                                        | 15 Hz to 21,000 Hz          |
| Normal tape .....                                        | 15 Hz to 21,000 Hz          |
| Signal-to-noise ratio                                    |                             |
| DOLBY NR OFF .....                                       | More than 60 dB             |
| Noise reduction effect                                   |                             |
| DOLBY B-type NR ON .....                                 | More than 10 dB (at 5 kHz)  |
| DOLBY C-type NR ON .....                                 | More than 19 dB (at 5 kHz)  |
| Harmonic distortion .....                                | No more than 0.6% (0 dB)    |
| Input .....                                              | LINE: 58 mV                 |
| (Input impedance: 56 k Ω)                                |                             |
| Output .....                                             | LINE: 318 mV                |
| (Output impedance: 5.2 k Ω)                              |                             |
| Headphones: 0.8 mW                                       |                             |
| (Load impedance 8 Ω VR Max.)                             |                             |

## Subfunctions

- 2-mode Counter (4-digit electronic counter)
- Meter Range Selection (wide/expanded range)
- Auto Monitor Function (TAPE/SOURCE auto selection)
- Power Eject (OPEN/CLOSE)
- Music Search (over ± 15 selections)
- Tape Return/Return Play
- Headphones jack (with volume control)
- Bias control
- Rec calibration level control
- MPX Filter
- Auto Space Recording Mute
- Auto Tape Selector
- Playback/Recording timer start function
- Dolby B-type and C-type Noise Reduction Systems
- Dolby HX Pro system
- FL Level Meter Peak-hold function (15 + 1 segments)

## Miscellaneous

|                                |                               |
|--------------------------------|-------------------------------|
| Power requirements .....       | AC 220Volts~, 50/60 Hz        |
| Power consumption .....        | 22W                           |
| Dimensions .....               | 457(W) × 133.5(H) × 372(D) mm |
| Weight (without package) ..... | 7.3 kg                        |

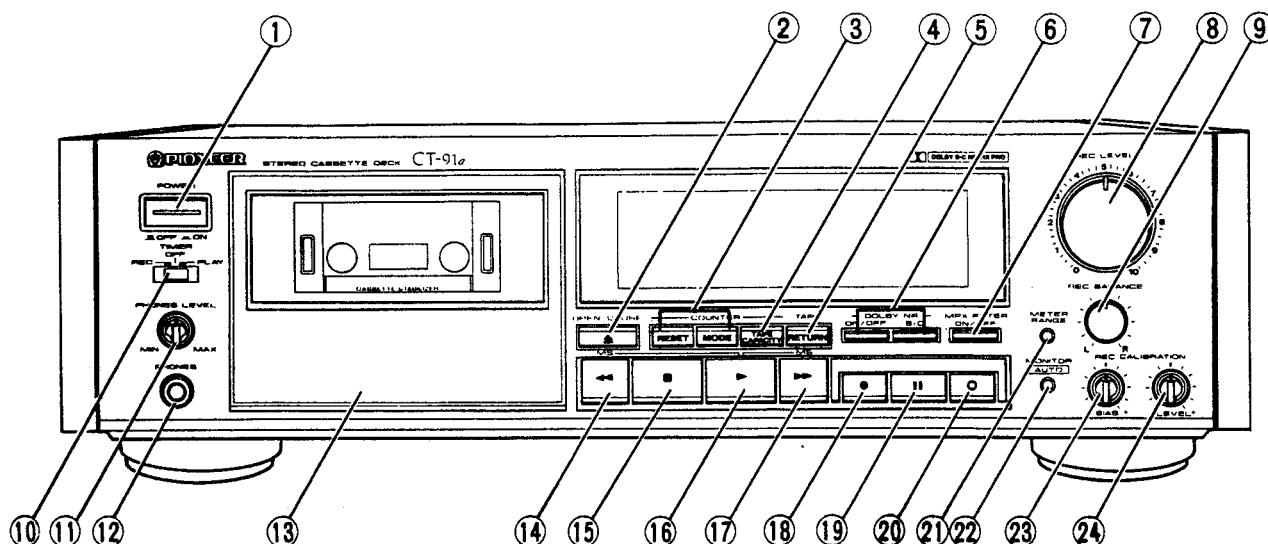
## Accessories

|                              |   |
|------------------------------|---|
| Operating instructions ..... | 1 |
| Connecting cords .....       | 2 |

### NOTE:

Specifications and design subject to possible modifications without notice, due to improvements.

## 2. PANEL FACILITIES



The above illustration shows the model CT-91a.

### ① POWER switch

Turns the power on and off.

After the power is turned on, the dotted lines in the level meter flash for approximately 4 seconds until the circuits of the unit have stabilized. The unit will not operate during this time.

### ② Cassette door OPEN/CLOSE button

#### NOTE:

If the cassette door is closed while the unit is turned OFF, and the power is then turned ON, the cassette door may open and close after pressing one of the operation buttons. This occurs when the microprocessor resets the door mechanism to its initial state and does not indicate any malfunctioning of the unit.

### ③ COUNTER selectors

#### RESET:

Resets the counter indication to "0000".

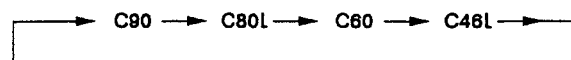
#### MODE:

Each time this button is pressed, one of the following three modes is set in sequence.

- Normal tape counter
- Time counter (displays the elapsed playback or recording time)
- Remaining time counter (displays the remaining time of the tape). CT-91a, CT-939 only.
- Two modes for CT-737.

### ④ TAPE CAPACITY selector (Not provided in the model CT-737)

To indicate the correct time value in the remaining time counter mode, this selector must be set in accordance with the tape used.



### ⑤ TAPE RETURN button

This button is used in the tape counter mode to fast forward or rewind the tape to a point near the counter reading "0000".

### ⑥ DOLBY \* NR selectors

#### ON/OFF:

Used to turn the Dolby NR Systems circuits ON or OFF.

#### B/C:

With the ON/OFF switch in the ON position, Dolby B-type NR or C-type NR can be selected with this switch.

\*

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

**⑦ MPX FILTER switch**

Set this switch to ON when recording FM broadcasts with one of the Dolby NR systems.

**⑧ REC LEVEL control**

**⑨ REC BALANCE control**

**⑩ TIMER mode selector**

**REC:**

Set to this position for timer recording.

**PLAY:**

Set to this position for timer playback.

**OFF:**

When the timer is not to be used, set the selector to this position. (Normally leave the selector in this position.)

**⑪ PHONES LEVEL control**

Used for adjusting the volume when listening with headphones.

**⑫ PHONES jack**

For connection of standard stereo headphones.

**⑬ Cassette door**

Open and close this door by pressing the OPEN/CLOSE button for insertion or removal of the tape.

**⑭ Rewind (◀◀) button**

Press this button to rewind the tape. Also, this button is used for music search during playback.

**⑮ Stop (■) button**

**⑯ Play (▶) button**

**⑰ Fast forward (▶▶) button**

Press this button to fast forward the tape. Also, this button is used for music search during playback.

**⑱ Recording (●) button**

When this button is pressed, the unit is set to one-touch recording pause (recording standby mode).

**⑲ Pause (||) button**

The tape transport can be momentarily stopped by pressing this button during recording or playback. Press the button again to restart operation. The button does not operate during fast forward or rewind.

**⑳ Record muting (○) button**

Press this button to create an unrecorded space during recording.

**㉑ METER RANGE selector**

Selects wide or expanded range for the level meter.

**㉒ MONITOR selector**

For monitoring the sound during recording, this switch can be used to switch between source sound and just recorded sound.

Normally, however, the unit will automatically select tape playback sound after playback has started or the just recorded sound after recording has started.

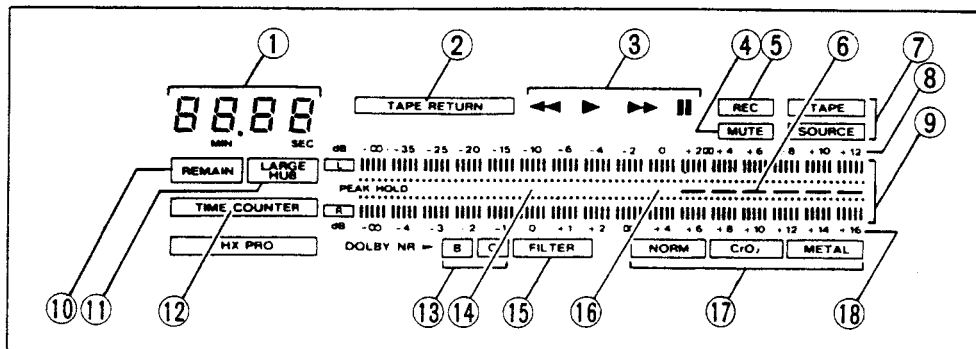
**㉓ REC CALIBRATION BIAS control**

It is possible to adjust the bias according to the tape used and the source to be recorded.

**㉔ REC CALIBRATION LEVEL control**

The AUTO TAPE SELECTOR of this unit matches the recording characteristics with the tape used. Proper adjustment of the REC CALIBRATION LEVEL control permits optimum use of the given tape characteristics for even better recording results.

## OPERATING DISPLAY



## ① Counter

- The counter has three display modes.
- If the cassette door is open, the message "OPEN" is displayed.
- During music search the number of selections is displayed.

## ② TAPE RETURN

Lights up during tape return operation.

## ③ Tape transport modes

- ◀◀: Lights up when rewinding the tape.
- ▶: Lights up during playback, playback pause, recording pause and recording. Flashes during music search.
- ▶▶: Lights up when fast forwarding the tape.
- ||: Lights up in the pause mode.

## ④ MUTE

Flashes and lights during recording mute operation.

## ⑤ REC

Lights up during recording.

## ⑥ Warning zone

Changes according to the type of tape used and to the selected meter range.

## ⑦ Monitor source

TAPE : Recorded sound  
SOURCE: Original source sound

## ⑧ Scale for wide range

## ⑨ Level

- L : Left channel
- R : Right channel

The □□ marks indicate the reference level for the Dolby NR Systems.

## ⑩ REMAIN (Not provided in the model CT-737)

Lights up when the remaining time counter mode is selected.

## ⑪ LARGE HUB (Not provided in the model CT-737)

Lights up when the TAPE CAPACITY selector is pressed in the remaining time counter mode, and the Large Hub mode is set.

## ⑫ TIME COUNTER

Lights up in the time counter mode.

## ⑬ DOLBY B-type NR/C-type NR

Indicates the selected Dolby NR Systems, B-type or C-type.

## ⑭ 0 dB position for expanded range

## ⑮ MPX FILTER

Lights up when the MPX FILTER switch is pressed while the Dolby NR Systems are ON.

## ⑯ 0 dB position for wide range

## ⑰ Tape type

The unit will automatically detect and display the tape type (NORMAL/CrO<sub>2</sub>/METAL) of the cassette inserted. When no tape is inserted, METAL is displayed.

## ⑱ Scale for expanded range

### 3. EXPLODED VIEWS AND PARTS LIST

#### 3.1 EXTERIOR

##### NOTES :

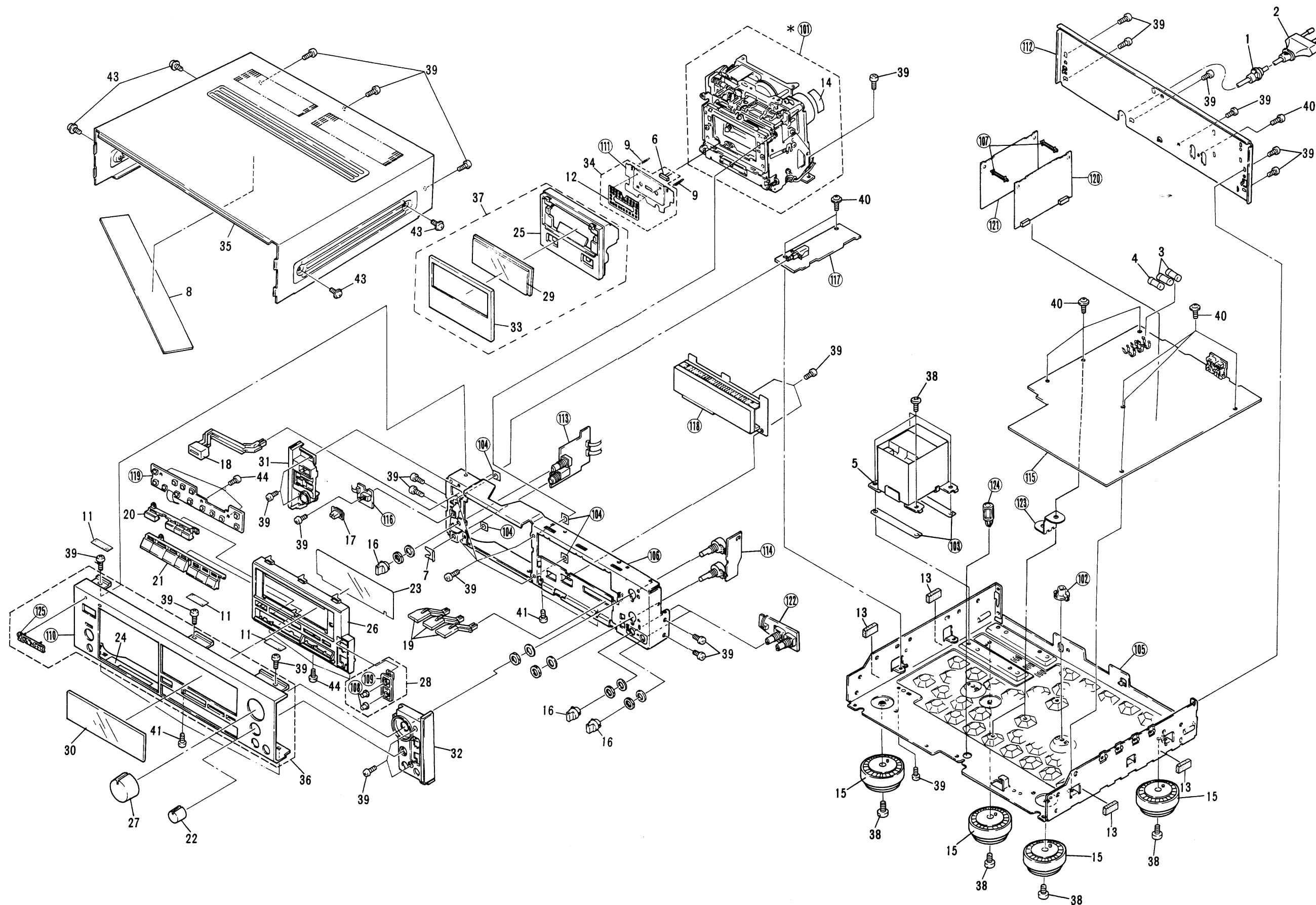
- Parts without part number cannot be supplied.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

##### Parts List of Exterior

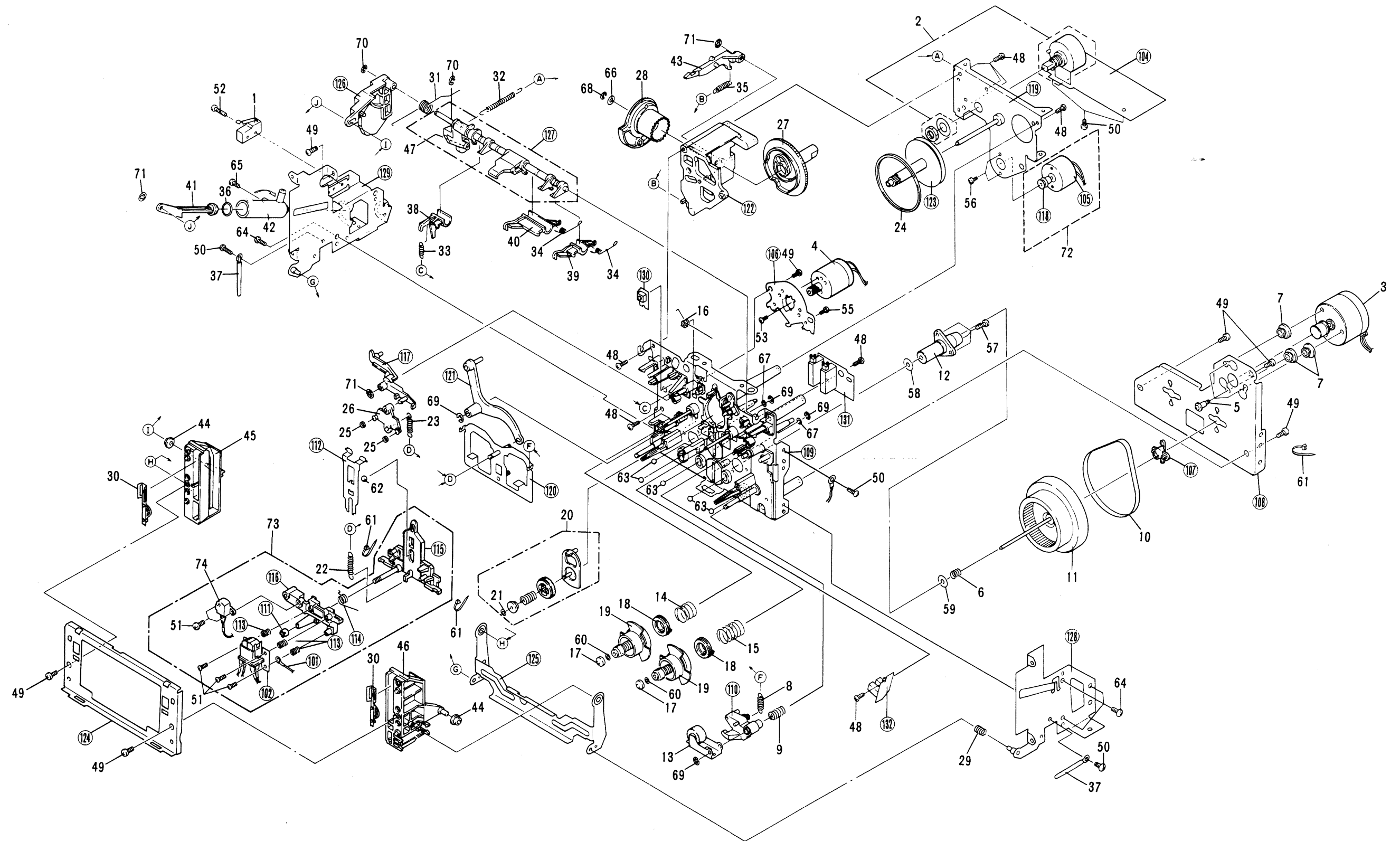
| Mark     | No. | Part No. | Description                                          | Mark | No.          | Part No. | Description             |
|----------|-----|----------|------------------------------------------------------|------|--------------|----------|-------------------------|
| $\Delta$ | 1   | CM-22B   | Strain relief                                        | 36   | RXX1207      |          | Front panel assembly    |
| $\Delta$ | 2   | PDG1003  | AC Power cord                                        | 37   | RXX1113      |          | Door assembly           |
| $\Delta$ | 3   | REK-099  | Fuse<br>(FU401, FU402/800mA)                         | 38   | BBZ40P080FCC |          | Screw                   |
| $\Delta$ | 4   | REK-102  | Fuse (FU403/1.6A)                                    | 39   | BBZ30P060FCC |          | Screw                   |
| $\Delta$ | 5   | RTT1052  | Power transformer (T1)                               | 40   | IBZ30P080FCC |          | Screw                   |
|          | 6   | SLF-401C | Diode (D11)                                          | 41   | BBT30P080FZK |          | Screw                   |
|          | 7   | DBK-106  | Mounting plate                                       | 42   | .....        |          | .....                   |
|          | 8   | PNB1109  | Absorber B                                           | 43   | FBT40P080FZK |          | Screw                   |
|          | 9   | RBL-059  | Cassette plate spring                                | 44   | BBZ26P080FZK |          | Screw                   |
|          | 10  | .....    | .....                                                | 101  |              |          | Tape mechanism unit     |
|          | 11  | REB-223  | Cover cushion (D)                                    | 102  |              |          | P.C.B stud              |
|          | 12  | REB1038  | Stablizer B                                          | 103  |              |          | Power transformer sheet |
|          | 13  | REB1057  | Rubber spacer (A)                                    | 104  |              |          | Tape mechanism sheet    |
|          | 14  | REE1010  | Label                                                | 105  |              |          | Main chassis            |
|          | 15  | AMR1159  | Leg assembly                                         | 106  |              |          | Panel stay              |
|          | 16  | RAC1337  | Headphone knob<br>(PHONES LEVEL, REC<br>CALIBRATION) | 107  |              |          | PC support              |
|          | 17  | RAC-668  | Slide SW knob A (TIMER)                              | 108  |              |          | Monitor button          |
|          | 18  | RAC1203  | Power button (POWER)                                 | 109  |              |          | Monitor button mold     |
|          | 19  | RAC1204  | Push button<br>(DOLBY, MPX)                          | 110  |              |          | Front panel             |
|          | 20  | RAC1232  | Counter button<br>(COUNTER)                          | 111  |              |          | Cassette panel          |
|          | 21  | RAC1206  | Button<br>(◀, ■, ▶, ▶▶, ●, ■, ○)                     | 112  |              |          | Rear panel              |
|          | 22  | RAC1262  | VR knob B<br>(REC BALANCE)                           | 113  |              |          | Headphone unit          |
|          | 23  | RAH1184  | FL filter                                            | 114  |              |          | Input VR unit           |
|          | 24  | RAP1003  | Under escutcheon                                     | 115  |              |          | Main unit               |
|          | 25  | RNK1284  | Door                                                 | 116  |              |          | Timer unit              |
|          | 26  | RNK1301  | Button holder                                        | 117  |              |          | Power switch unit       |
|          | 27  | RXA1158  | VR knob assembly (A)                                 | 118  |              |          | FL unit                 |
|          | 28  | RXA1160  | Monitor button assembly<br>(METER RANGE,<br>MONITOR) | 119  |              |          | Switch unit             |
|          | 29  | RAH1197  | Door lens                                            | 120  |              |          | PB Dolby unit           |
|          | 30  | RAH1198  | FL panel                                             | 121  |              |          | REC Dolby unit          |
|          | 31  | RAH1200  | Side panel (L)                                       | 122  |              |          | CAL VR unit             |
|          | 32  | RAH1201  | Side panel (R)                                       | 123  |              |          | P.C.B base              |
|          | 33  | RAH1314  | Door panel                                           | 124  |              |          | P.C.B holder (H15)      |
|          | 34  | RXX1115  | Cassette plate assembly                              | 125  |              |          | Name plate              |
|          | 35  | RXX1092  | Bonnet                                               |      |              |          |                         |

# Exterior

\* Disassembly the mechanism unit, remove the bonnet and front panel first.



# 3.2 MECHANISM UNIT





## Parts List

## 5. SCHEMATIC DIAGRAM

MAIN UNIT  
IC7  
IC9, IC10  
IC6  
IC1  
IC13

BA335  
BA6109  
BA6138  
MS220L  
MS233L

D401-D404  
S301-S303  
L204, L205  
L201, L202  
L203

100F2FA9  
RSG1017  
LRA121K  
RTD1020  
RTD1021

A  
IC21  
IC20  
IC11  
IC12  
IC2

NJM78M05A  
NJM78M12A  
PD4148B  
TC4050BP  
TC4068BP

L107, L108  
L101-L106  
L501  
C427  
C407, C408

RTF1017  
RTF1022  
RTF1088  
RCH1010  
RCH1013

IC4  
IC3, IC5, IC8  
Q1, Q2, Q103-Q112  
Q55, Q202, Q203,  
Q208-Q210  
Q550-Q553

PC1297CA  
M5218L  
DTC114TS  
DTC124ES  
DTA114ES

VR1, VR2, VR201,  
V203, V204  
VR3, VR4, VR101,  
VR102, VR301, VR302  
VR202  
R550, R551  
R554, R560

VRTB6VS103  
VRTB6VS223  
VRTB6VS473  
RCX1009  
RCX1010

Q201, Q405  
Q204, Q212, Q501,  
Q504-Q506, Q554  
Q508  
Q402  
Q205, Q206

2SA1283  
2SA1309A  
2SA936  
2SB950  
2SC3243

C7, C8, C15, C16,  
C126, C127, C421,  
C22

RCX1020  
VSS1014  
RCH1020

Q211, Q301, Q302,  
Q502, Q503, Q507,  
Q509, Q555, Q556  
Q401  
Q51-Q54, Q101,  
Q102, Q207  
D407  
D415

RD2.7EB1  
1B2C1-LC2  
1B2Z1-LC2  
1SR35-100A

1SS254

B  
D412  
D409  
D410  
D411, D413, D414,  
D502  
D201-D211, D405,  
D406, D501, D550,  
D551 D552, D51

1. RESISTORS:  
Indicated in  $\Omega$ ,  $1/4W$ ,  $1/2W$ ,  $\pm 5\%$  tolerance unless otherwise noted.  
K:  $10^3$ , M:  $10^6$ , D:  $10^9$ , F:  $\pm 1\%$ , G:  $\pm 2\%$ , J:  $\pm 5\%$ , K:  $\pm 10\%$ , M:  $\pm 20\%$  tolerance.

2. CAPACITORS:  
Indicated in capacity ( $\mu F$ ) / voltage (V) unless otherwise noted.  
p: pF.  
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT:  
□ DC voltage (V) at no input signal.

4. SWITCHES (Underline indicates switch position)

MAIN UNIT

S301: DOLBY NR ON-OFF

S302: DOLBY NR B-C

S303: MPX FILTER ON-OFF

SW UNIT

S901: OPEN/CLOSE

S902: COUNTER RESET

S903: COUNTER MODE

S904: TAPE RETURN

S905: METER RANGE

S906: MS (REW)  $\leftarrow$

S907: STOP  $\blacksquare$

S908: PLAY  $\blacktriangleright$

S909: MS (FF)  $\blacktriangleright$

S910: REC  $\blacksquare$

S911: PAUSE  $\blacksquare$

S912: REC MUTE  $\bullet$

S913: MONITOR AUTO

TAPE SELECTOR UNIT

S2: TAPE SELECTOR METAL-C/O

S3: TAPE SELECTOR NORM

TIMER UNIT

S1101: TIMER REC-OFF-PLAY

REC SW UNIT

S1: REC INH ON-OFF

MECHA UNIT

S11: DOOR OPEN-CLOSE

POWER SW UNIT

S1201: POWER ON-OFF

5. OTHERS

PLAYBACK SIGNAL ROUTE

RECORDING SIGNAL ROUTE

Adjusting point

The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

$\Delta$ -marked capacitors and resistors have parts numbers.

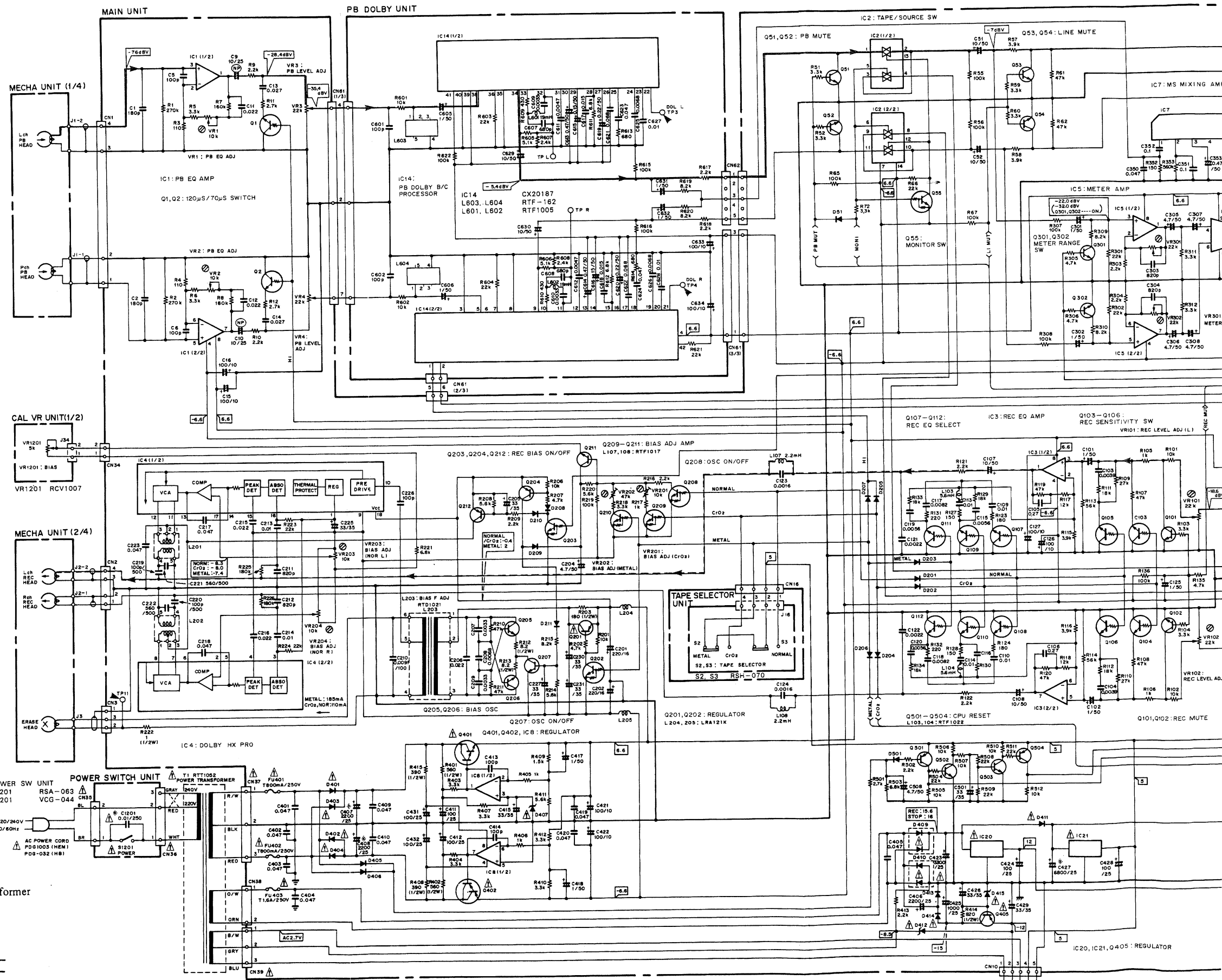
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

## HEM, HB type Line Voltage Selection

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the Bonnet case.
3. Change the connection of the power transformer lead wire.
4. Stick the line voltage label on the rear panel.

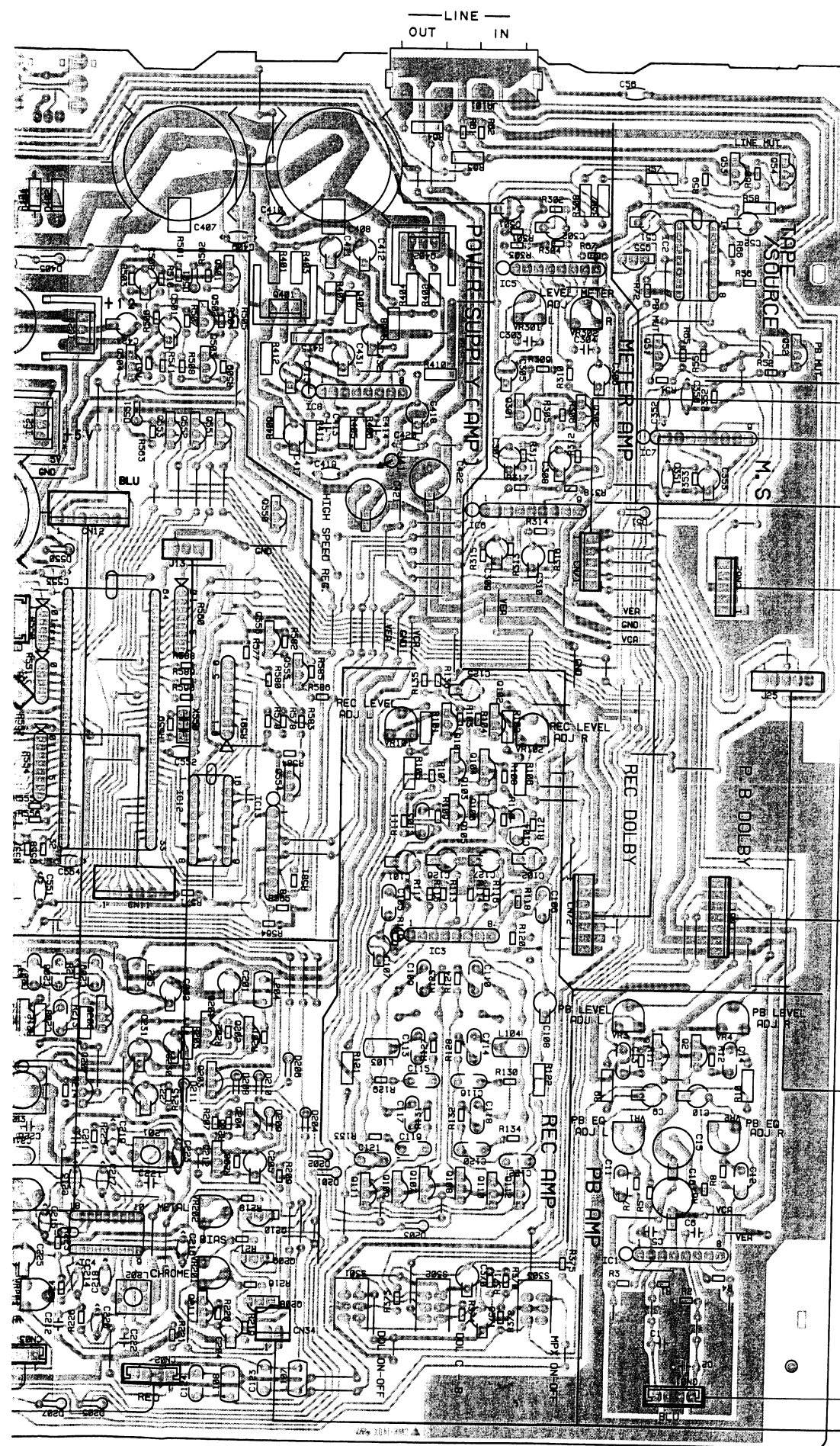
| Part No. | Description |          |
|----------|-------------|----------|
| AAX-193  | 220v label  | HEM 220V |
| AAX-192  | 240v label  | HB 240V  |



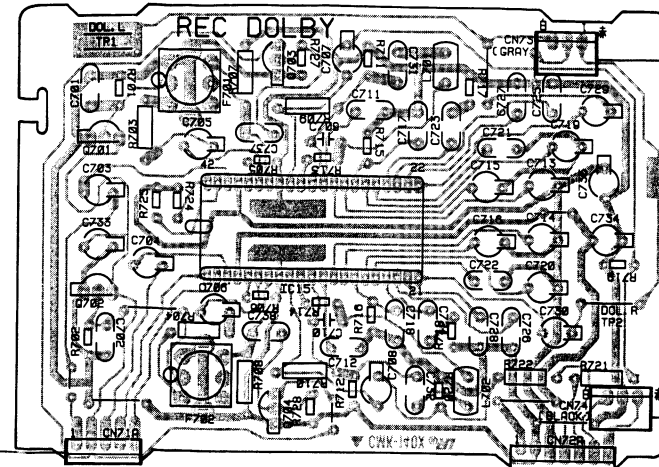




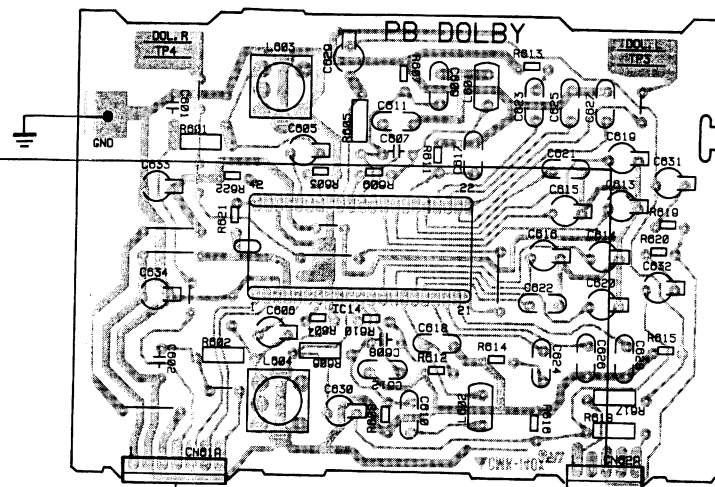




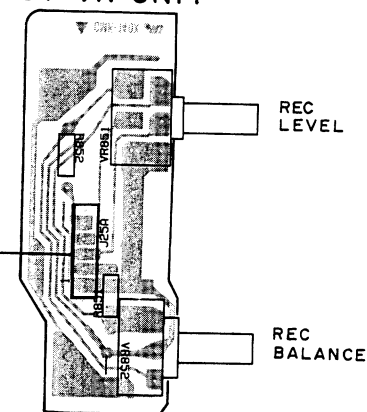
REC DOLBY UNIT



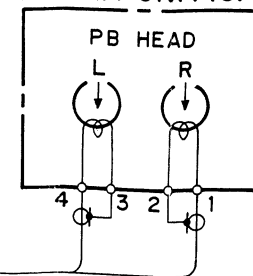
PB DOLBY UNIT



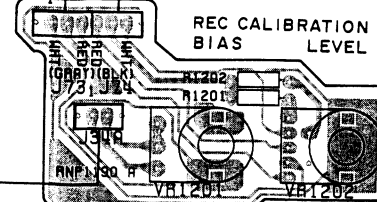
INPUT VR UNIT



## MECHA UNIT(3/3)



| REC | CALIBRATION | BIAS | LEVEL |
|-----|-------------|------|-------|
| 1   | 100         | 0    | 0     |
| 2   | 100         | 0    | 0     |
| 3   | 100         | 0    | 0     |
| 4   | 100         | 0    | 0     |
| 5   | 100         | 0    | 0     |
| 6   | 100         | 0    | 0     |
| 7   | 100         | 0    | 0     |
| 8   | 100         | 0    | 0     |
| 9   | 100         | 0    | 0     |
| 10  | 100         | 0    | 0     |
| 11  | 100         | 0    | 0     |
| 12  | 100         | 0    | 0     |
| 13  | 100         | 0    | 0     |
| 14  | 100         | 0    | 0     |
| 15  | 100         | 0    | 0     |
| 16  | 100         | 0    | 0     |
| 17  | 100         | 0    | 0     |
| 18  | 100         | 0    | 0     |
| 19  | 100         | 0    | 0     |
| 20  | 100         | 0    | 0     |
| 21  | 100         | 0    | 0     |
| 22  | 100         | 0    | 0     |
| 23  | 100         | 0    | 0     |
| 24  | 100         | 0    | 0     |
| 25  | 100         | 0    | 0     |
| 26  | 100         | 0    | 0     |
| 27  | 100         | 0    | 0     |
| 28  | 100         | 0    | 0     |
| 29  | 100         | 0    | 0     |
| 30  | 100         | 0    | 0     |
| 31  | 100         | 0    | 0     |
| 32  | 100         | 0    | 0     |
| 33  | 100         | 0    | 0     |
| 34  | 100         | 0    | 0     |
| 35  | 100         | 0    | 0     |
| 36  | 100         | 0    | 0     |
| 37  | 100         | 0    | 0     |
| 38  | 100         | 0    | 0     |
| 39  | 100         | 0    | 0     |
| 40  | 100         | 0    | 0     |
| 41  | 100         | 0    | 0     |
| 42  | 100         | 0    | 0     |
| 43  | 100         | 0    | 0     |
| 44  | 100         | 0    | 0     |
| 45  | 100         | 0    | 0     |
| 46  | 100         | 0    | 0     |
| 47  | 100         | 0    | 0     |
| 48  | 100         | 0    | 0     |
| 49  | 100         | 0    | 0     |
| 50  | 100         | 0    | 0     |
| 51  | 100         | 0    | 0     |
| 52  | 100         | 0    | 0     |
| 53  | 100         | 0    | 0     |
| 54  | 100         | 0    | 0     |
| 55  | 100         | 0    | 0     |
| 56  | 100         | 0    | 0     |
| 57  | 100         | 0    | 0     |
| 58  | 100         | 0    | 0     |
| 59  | 100         | 0    | 0     |
| 60  | 100         | 0    | 0     |
| 61  | 100         | 0    | 0     |
| 62  | 100         | 0    | 0     |
| 63  | 100         | 0    | 0     |
| 64  | 100         | 0    | 0     |
| 65  | 100         | 0    | 0     |
| 66  | 100         | 0    | 0     |
| 67  | 100         | 0    | 0     |
| 68  | 100         | 0    | 0     |
| 69  | 100         | 0    | 0     |
| 70  | 100         | 0    | 0     |
| 71  | 100         | 0    | 0     |
| 72  | 100         | 0    | 0     |
| 73  | 100         | 0    | 0     |
| 74  | 100         | 0    | 0     |
| 75  | 100         | 0    | 0     |
| 76  | 100         | 0    | 0     |
| 77  | 100         | 0    | 0     |
| 78  | 100         | 0    | 0     |
| 79  | 100         | 0    | 0     |
| 80  | 100         | 0    | 0     |
| 81  | 100         | 0    | 0     |
| 82  | 100         | 0    | 0     |
| 83  | 100         | 0    | 0     |
| 84  | 100         | 0    | 0     |
| 85  | 100         | 0    | 0     |
| 86  | 100         | 0    | 0     |
| 87  | 100         | 0    | 0     |
| 88  | 100         | 0    | 0     |
| 89  | 100         | 0    | 0     |
| 90  | 100         | 0    | 0     |
| 91  | 100         | 0    | 0     |
| 92  | 100         | 0    | 0     |
| 93  | 100         | 0    | 0     |
| 94  | 100         | 0    | 0     |
| 95  | 100         | 0    | 0     |
| 96  | 100         | 0    | 0     |
| 97  | 100         | 0    | 0     |
| 98  | 100         | 0    | 0     |
| 99  | 100         | 0    | 0     |
| 100 | 100         | 0    | 0     |

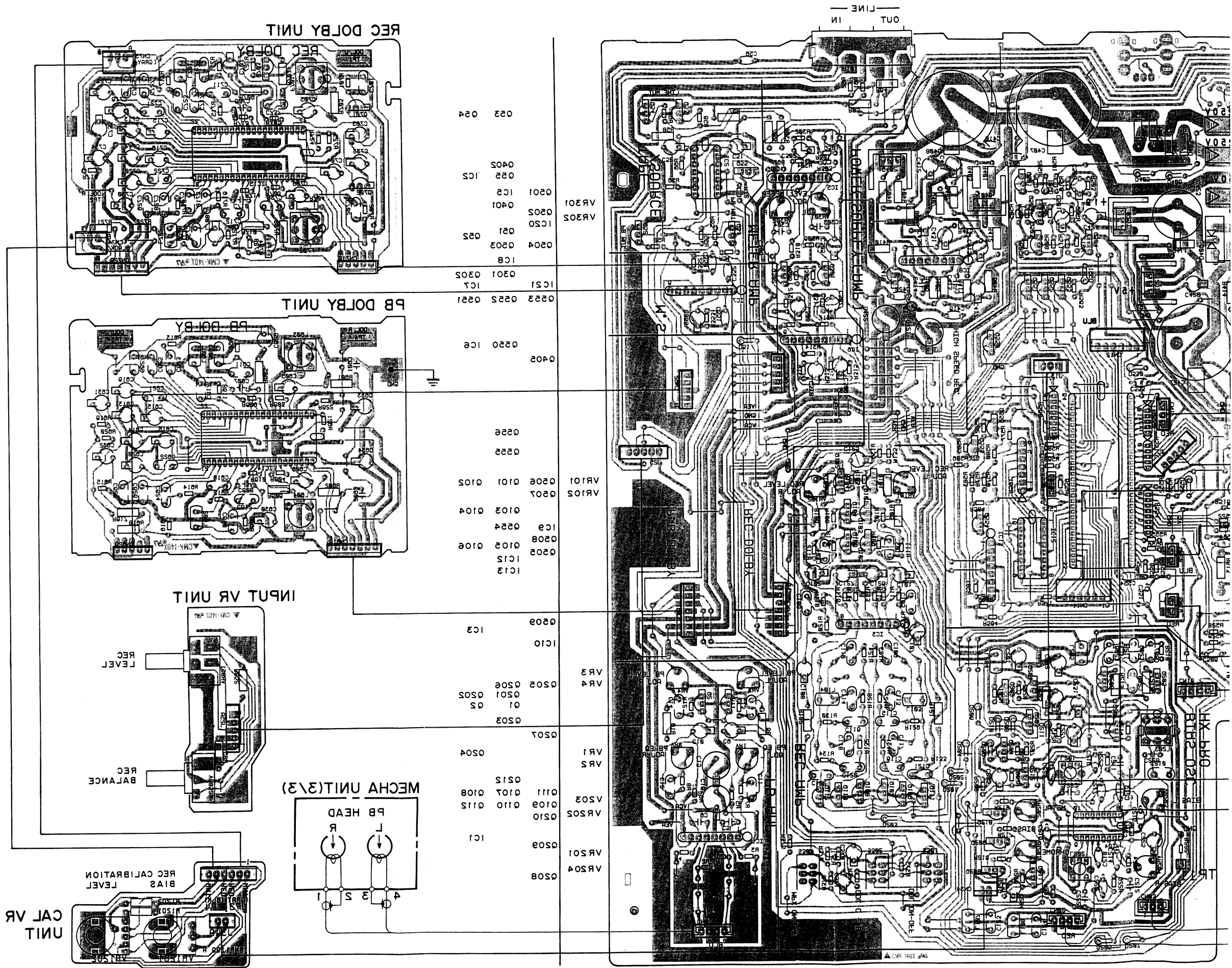


CAL VR  
UNIT

| P.C.B. pattern diagram indication | Corresponding part symbol | Part name                              |
|-----------------------------------|---------------------------|----------------------------------------|
|                                   |                           | Transistor                             |
|                                   |                           | Transistor                             |
|                                   |                           | FET                                    |
|                                   |                           | Diode                                  |
|                                   |                           | Diode                                  |
|                                   |                           | Zener diode                            |
|                                   |                           | Zener diode                            |
|                                   |                           | LED                                    |
|                                   |                           | Varactor                               |
|                                   |                           | Tact switch                            |
|                                   |                           | Tact switch                            |
|                                   |                           | Inductor                               |
|                                   |                           | Inductor                               |
|                                   |                           | Coil                                   |
|                                   |                           | Transformer                            |
|                                   |                           | Filter                                 |
|                                   |                           | Ceramic capacitor                      |
|                                   |                           | Mylar capacitor                        |
|                                   |                           | Styrol capacitor                       |
|                                   |                           | Electrolytic capacitor (Non polarized) |
|                                   |                           | Electrolytic capacitor (Noiseless)     |
|                                   |                           | Electrolytic capacitor (Polarized)     |
|                                   |                           | Electrolytic capacitor (Polarized)     |
|                                   |                           | Power capacitor                        |
|                                   |                           | Semi-fixed resistor                    |
|                                   |                           | Resistor array                         |
|                                   |                           | Resistor                               |
|                                   |                           | Resistor                               |
|                                   |                           | Resonator                              |
|                                   |                           | Thermistor                             |

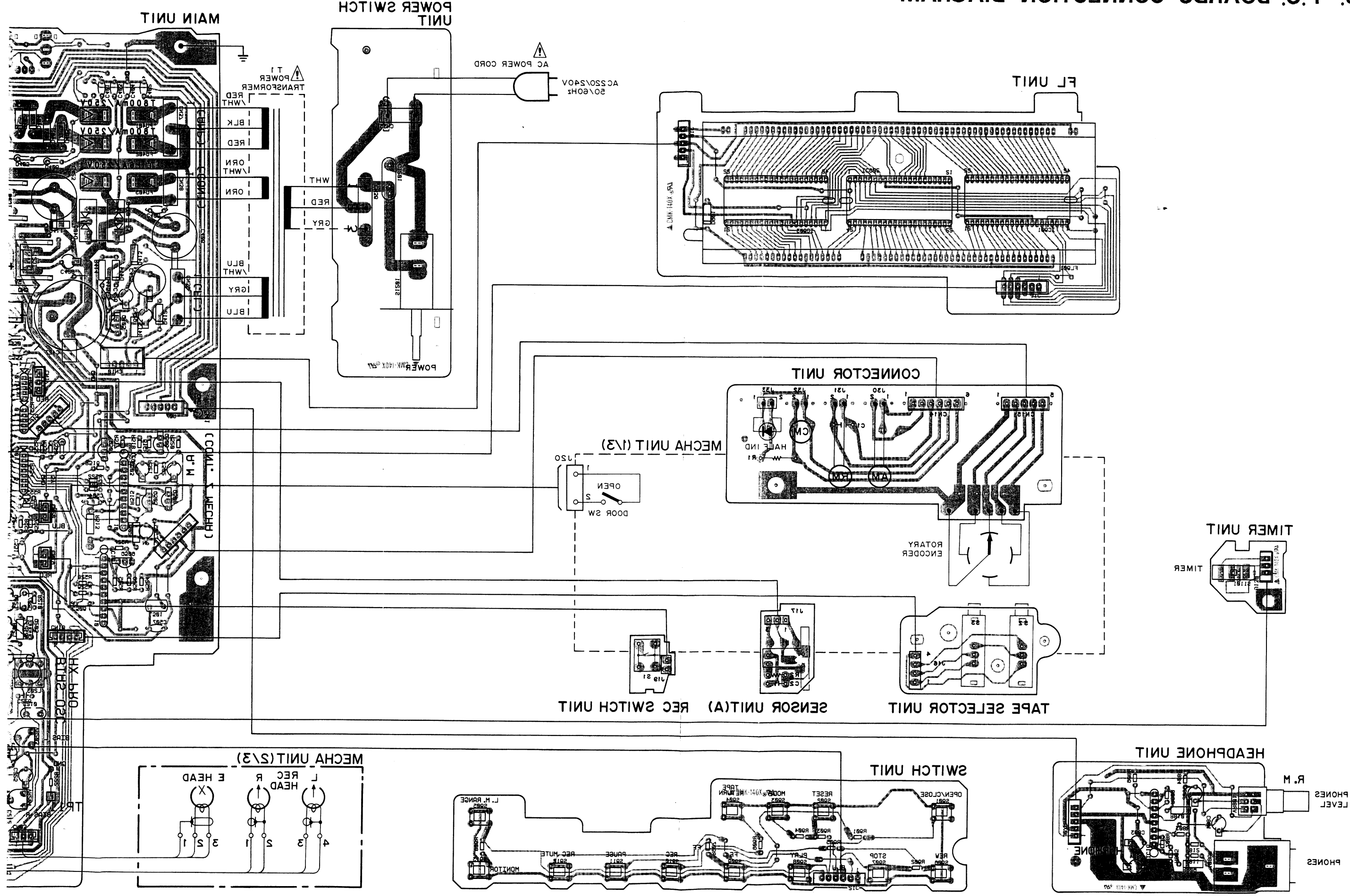
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with  shows negative terminal.
4. The diode marked with  shows cathode side.
5. The transistor terminal marked with  shows emitter.

● View from soldering side





# 6. P.C. BOARDS CONNECTION DIAGRAM



## 7. ELECTRICAL PARTS LIST

### NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

|              |                  |     |         |      |
|--------------|------------------|-----|---------|------|
| 560 $\Omega$ | 56 $\times 10^1$ | 561 | RD1/4PS | 561J |
| 47k $\Omega$ | 47 $\times 10^3$ | 473 | RD1/4PS | 473J |
| 0.5 $\Omega$ | 0R5              |     | RN2H    | 0R5K |
| 1 $\Omega$   | 010              |     | RS1P    | 010K |

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

|                |                   |      |         |       |
|----------------|-------------------|------|---------|-------|
| 5.62k $\Omega$ | 562 $\times 10^1$ | 5621 | RN1/4SR | 5621F |
|----------------|-------------------|------|---------|-------|

### Miscellaneous Parts

#### P. C. BOARD ASSEMBLIES

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | Main unit            |          |
|      | Headphone unit       |          |
|      | Input VR unit        |          |
|      | Timer unit           |          |
|      | Power switch unit    |          |
|      | FL unit              |          |
|      | Switch unit          |          |
|      | PB Dolby unit        |          |
|      | REC Dolby unit       |          |
|      | CAL VR unit          |          |
|      | Tape selector unit   |          |
|      | Sensor unit (A)      |          |
|      | REC switch unit      |          |
|      | Connector unit       |          |

#### OTHERS

| Mark     | Symbol & Description      | Part No. |
|----------|---------------------------|----------|
| $\Delta$ | FU403 Fuse (1.6A)         | REK-102  |
| $\Delta$ | FU401, FU402 Fuse (800mA) | REK-099  |
| $\Delta$ | T1 Power transformer      | RTT1052  |
| $\Delta$ | AC Power cord             | PDG1003  |
|          | D11 Diode (LED)           | SLF-401C |
|          | Erase head                | RPB1002  |
|          | Micro switch              | RSF-031  |
|          | Rotary encoder            | RSX-059  |
|          | Capstan motor assembly    | RXM1016  |
|          | Reel motor assembly       | RXM1018  |
|          | Power motor assembly      | RXX1055  |
|          | Head base assembly        | RXX1103  |
| $\Delta$ | Strain relief             | CM22B    |

### Main unit

#### SEMICONDUCTORS

| Mark     | Symbol & Description                                 | Part No.       |
|----------|------------------------------------------------------|----------------|
|          | IC7                                                  | BA335          |
|          | IC9, IC10                                            | BA6109         |
|          | IC6                                                  | BA6138         |
|          | IC1                                                  | M5220L         |
|          | IC13                                                 | M5233L         |
| $\Delta$ | IC21                                                 | NJM78M05A      |
| $\Delta$ | IC20                                                 | NJM78M12A      |
|          | IC11                                                 | PD4148B        |
|          | IC12                                                 | TC4050BP       |
|          | IC2                                                  | TC4066BP       |
|          | IC4                                                  | $\mu$ PC1297CA |
|          | IC3, IC5, IC8                                        | M5218L         |
|          | Q1, Q2, Q103-Q112                                    | DTC114TS       |
|          | Q55, Q202, Q203, Q208-Q210                           | DTC124ES       |
|          | Q550-Q553                                            | DTA114ES       |
| $\Delta$ | Q201, Q405                                           | 2SA1283        |
|          | Q204, Q212, Q501, Q504-Q506, Q554                    | 2SA1309A       |
| $\Delta$ | Q508                                                 | 2SA936         |
|          | Q402                                                 | 2SB950         |
|          | Q205, Q206                                           | 2SC3243        |
|          | Q211, Q301, Q302, Q502, Q503, Q507, Q509, Q555, Q556 | 2SC3311A       |
| $\Delta$ | Q401                                                 | 2SD1276        |
|          | Q51-Q54, Q101, Q102, Q207                            | 2SD1302        |
| $\Delta$ | D407                                                 | HZ5CLL         |
| $\Delta$ | D415                                                 | MTZ13B         |
| $\Delta$ | D412                                                 | RD2.7EB1       |
| $\Delta$ | D409                                                 | 1B2C1-LC2      |
| $\Delta$ | D410                                                 | 1B2Z1-LC2      |
| $\Delta$ | D411, D413, D414, D502                               | 1SR35-100A     |
|          | D51, D201-D211, D405, D406, D501, D550-D552          | 1SS254         |
| $\Delta$ | D401-D404                                            | 10DF2FA9       |



**SWITCHES**

| Mark | Symbol & Description                            | Part No. |
|------|-------------------------------------------------|----------|
|      | S301-S303 Push switch<br>(DOLBY NR, MPX FILTER) | RSG1017  |

**COILS**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | L204, L205           | LRA121K  |
|      | L201, L202 (85kHz)   | RTD1020  |
|      | L203 Oscillator coil | RTD1021  |
|      | L107, L108 (2.2mH)   | RTF1017  |
|      | L103, L104 (5.6mH)   | RTF1022  |
|      | L501 (0.15mH)        | RTF1068  |

**CAPACITORS**

| Mark | Symbol & Description                                                       | Part No.     |
|------|----------------------------------------------------------------------------|--------------|
|      | C219, C220                                                                 | CCCSL101K500 |
|      | C505                                                                       | CEANP4R7M35  |
|      | C503                                                                       | CEASR22M50   |
|      | C353                                                                       | CEASR47M50   |
|      | C411, C412, C424, C428, C431, C432                                         | CEAS101M25   |
|      | C201, C202                                                                 | CEAS221M16   |
|      | C425                                                                       | CEAS102M25   |
|      | C309, C310                                                                 | CEAS2R2M50   |
|      | C406                                                                       | CEAS222M25   |
|      | C205, C225, C227, C230, C231, C415, C426, C429, C501, C502                 | CEAS330M35   |
|      | C423                                                                       | CEAS332M25   |
|      | C204, C305-C308, C508                                                      | CEAS4R7M50   |
|      | C9, C10                                                                    | CEYANP100M25 |
|      | C101, C102, C125, C301, C302, C417, C418                                   | CEYA010M50   |
|      | C51, C52, C107, C108, C370, C371                                           | CEYA100M50   |
|      | C15, C16, C126, C127, C421, C422                                           | CEZA101M10   |
|      | C109, C110, C113, C114, C213, C214                                         | CFTXA103J50  |
|      | C121, C122                                                                 | CFTXA222J50  |
|      | C11, C12, C206, C215, C216                                                 | CFTXA223J50  |
|      | C13, C14                                                                   | CFTXA273J50  |
|      | C207, C209                                                                 | CFTXA332J50  |
|      | C105, C106                                                                 | CFTXA274J50  |
|      | C103, C104                                                                 | CFTXA392J50  |
|      | C115, C116, C119, C120                                                     | CFTXA562J50  |
|      | C208                                                                       | CFTXA682J50  |
|      | C117, C118                                                                 | CFTXA822J50  |
|      | C351, C352                                                                 | CGCYX104K25  |
|      | C221, C222 -                                                               | CKCYB561J500 |
|      | C504, C506, C551-C553                                                      | CKCYF103Z50  |
|      | C56, C217, C218, C223, C350, C401-C405, C409, C410, C419, C420, C507, C554 | CKCYF473Z50  |

| Mark | Symbol & Description     | Part No.     |
|------|--------------------------|--------------|
|      | C5, C6, C226, C413, C414 | CKPUYB101K50 |
|      | C211, C212, C303, C304   | CKPUYB821K50 |
|      | C123, C124               | CQMA162J50   |
|      | C210                     | CQPA912J100  |
|      | C1, C2                   | CQSF181J50   |

|                      |         |
|----------------------|---------|
| C427 (6800/25)       | RCH1010 |
| C407, C408 (2200/25) | RCH1029 |

**RESISTORS**

| Mark | Symbol & Description                                  | Part No.            |
|------|-------------------------------------------------------|---------------------|
|      | VR1, VR2, VR201, VR203, VR204 (Semi-fixed 10k)        | VRTB6VS103          |
|      | VR3, VR4, VR101, VR102, VR301, VR302 (Semi-fixed 22k) | VRTB6VS223          |
|      | VR202 (Semi-fixed 47k)                                | VRTB6VS473          |
|      | R550, R551 (22k×4)                                    | RCX1009             |
|      | R554, R560 (10k×7)                                    | RCX1010             |
|      | R591 (11k)                                            | RCX1020             |
|      | R577-R581                                             | RN 1/4 PQ □ □ □ □ F |
|      | R513                                                  | RS1LMF010J          |

|                                                                                                   |                    |
|---------------------------------------------------------------------------------------------------|--------------------|
| R222                                                                                              | RD 1/4 LF010J      |
| R203, R212, R213, R401, R402, R408, R414, R415                                                    | RD 1/4 PMF □ □ □ J |
| R9, R10, R57, R58, R63, R64, R101, R102, R105, R106, R121, R122, R307, R308, R403-R407, R409-R413 | RD 1/4 PM □ □ □ J  |

|                 |                   |
|-----------------|-------------------|
| Other resistors | RD 1/4 PM □ □ □ J |
|-----------------|-------------------|

**OTHERS**

| Mark | Symbol & Description                | Part No. |
|------|-------------------------------------|----------|
|      | Pin jack 4P (INPUT, OUTPUT)         | RKB1003  |
|      | X550 Ceramic resonator<br>(4.19MHz) | VSS1014  |

**Headphone Unit**
**SEMICONDUCTOR**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | IC16 OP-AMP IC       | M5218L   |

**CAPACITORS**

| Mark | Symbol & Description | Part No.   |
|------|----------------------|------------|
|      | C801, C802           | CEYA010M50 |
|      | C803, C804           | CEZA101M10 |

**RESISTORS**

| Mark | Symbol & Description                                 | Part No.          |
|------|------------------------------------------------------|-------------------|
|      | VR801 Variable resistor<br>(20k-B)<br>(PHONES LEVEL) | RCV1016           |
|      | R809, R810                                           | RD 1/4 PM470J     |
|      | Other resistors                                      | RD 1/4 PM □ □ □ J |

## OTHER

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | JA801 Jack (PHONES)  | RKN1002  |

## INPUT VR Unit

## RESISTORS

| Mark | Symbol & Description               | Part No.                |
|------|------------------------------------|-------------------------|
|      | VR852 Variable resistor<br>(20k-A) | RCS1005                 |
|      | VR851 Variable resistor<br>(50k-A) | RCV1021                 |
|      | R851, R852                         | RD $\frac{1}{4}$ PM333J |

## Timer Unit

## SWITCH

| Mark | Symbol & Description                       | Part No. |
|------|--------------------------------------------|----------|
|      | S1101 Slide Switch<br>(TIMER REC-OFF-PLAY) | RSH1014  |

## Power Switch Unit

## SWITCH

| Mark     | Symbol & Description      | Part No. |
|----------|---------------------------|----------|
| $\Delta$ | S1201 Push switch (POWER) | RSA-063  |

## CAPACITOR

| Mark     | Symbol & Description        | Part No. |
|----------|-----------------------------|----------|
| $\Delta$ | C1201 (0.01 $\mu$ F/AC400V) | VCG-044  |

## FL Unit

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No.         |
|------|----------------------|------------------|
|      | IC901-IC903<br>D901  | LC7570<br>1SS254 |

## OTHER

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | FL tube              | RAW1018  |

## Switch Unit

## SWITCHES

| Mark | Symbol & Description                                                                                                                                                                                                                          | Part No. |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|      | S901-S913 Tact switch<br>( $\blacksquare$ , $\blacktriangleleft$ , $\bullet$ , $\blacktriangle$ , $\blacksquare$ , TAPE RETURN,<br>$\blacktriangleright$ , COUNTER, RESET, COUNTER<br>MODE, TAPE CAPACITY, METER<br>RANGE, MONITOR, $\odot$ ) | RSG-155  |

## RESISTORS

| Mark | Symbol & Description | Part No.                                       |
|------|----------------------|------------------------------------------------|
|      | All resistors        | RD $\frac{1}{8}$ DPM $\square\square\square$ J |

## PB DOLBY Unit

## SEMICONDUCTOR

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | IC14 DOLBY-B, C IC   | CX20187  |

## COILS

| Mark | Symbol & Description   | Part No. |
|------|------------------------|----------|
|      | L603, L604 Trap coil   | RTF1067  |
|      | L601, L602 Coil (19mH) | RTF1005  |

## CAPACITORS

| Mark | Symbol & Description | Part No.     |
|------|----------------------|--------------|
|      | C631, C632           | CEASR10M50   |
|      | C615, C616           | CEASR15M50   |
|      | C619, C620           | CEASR22M50   |
|      | C613, C614           | CEASR47M50   |
|      | C605, C606           | CEYA010M50   |
|      | C629, C630           | CEYA100M50   |
|      | C633, C634           | CEZA101M10   |
|      | C627, C628           | CFTXA103J50  |
|      | C617, C618           | CFTXA153J50  |
|      | C609, C610           | CFTXA332J50  |
|      | C611, C612           | CFTXA472J50  |
|      | C623, C624           | CFTXA473J50  |
|      | C625, C626           | CFTXA682J50  |
|      | C621, C622           | CFTXA683J50  |
|      | C601, C602           | CKPUYB101K50 |
|      | C607, C608           | CKPUYB681K50 |

## RESISTORS

| Mark | Symbol & Description               | Part No.                                      |
|------|------------------------------------|-----------------------------------------------|
|      | R601, R602, R605, R606, R617, R618 | RD $\frac{1}{4}$ PM $\square\square\square$ J |
|      | Other resistors                    | RD $\frac{1}{8}$ PM $\square\square\square$ J |

## REC DOLBY Unit

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No.            |
|------|----------------------|---------------------|
|      | IC15<br>Q701-Q704    | CX20187<br>DTC114ES |

## COILS AND FILTERS

| Mark | Symbol & Description   | Part No. |
|------|------------------------|----------|
|      | L701, L702 Coil (19mH) | RTF1005  |
|      | F701, F702 MPX Filter  | RTF1066  |

**CAPACITORS**

| Mark | Symbol & Description | Part No.     |
|------|----------------------|--------------|
|      | C715, C716           | CEASR15M50   |
|      | C719, C720           | CEASR22M50   |
|      | C713, C714           | CEASR47M50   |
|      | C733                 | CEAS100M50   |
|      | C703, C704           | CEYA010M50   |
|      | C705-C708            | CEYA100M50   |
|      | C729, C730           | CEYA4R7M50   |
|      | C734, C735           | CEZA101M10   |
|      | C727, C728           | CFTXA103J50  |
|      | C701, C702           | CFTXA122J50  |
|      | C717, C718           | CFTXA153J50  |
|      | C731, C732           | CFTXA332J50  |
|      | C737, C738           | CFTXA392J50  |
|      | C711, C712           | CFTXA472J50  |
|      | C723, C724           | CFTXA473J50  |
|      | C725, C726           | CFTXA682J50  |
|      | C721, C722           | CFTXA683J50  |
|      | C709, C710           | CKPUYB681K50 |

**RESISTORS**

| Mark | Symbol & Description                 | Part No.  |
|------|--------------------------------------|-----------|
|      | R721, R722, R703, R704,<br>R707-R710 | RD¼PM□□□J |
|      | Other resistors                      | RD½PM□□□J |

**CAL VR Unit****RESISTORS**

| Mark | Symbol & Description                | Part No.  |
|------|-------------------------------------|-----------|
|      | VR1201 Variable resistor<br>(5k-B)  | RCV1007   |
|      | VR1202 Variable resistor<br>(5kB×2) | RCV1036   |
|      | R1201, R1202                        | RD¼PM562J |

**Tape Selector Unit****SWITCHES**

| Mark | Symbol & Description                                      | Part No. |
|------|-----------------------------------------------------------|----------|
|      | S2, S3 Slide switch<br>(NORMAL, CrO <sub>2</sub> , MATAL) | RSH-070  |

**Sensor Unit (A)****SEMICONDUCTOR**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | D1 Photo interrupter | GP1A51HR |

**CAPACITOR**

| Mark | Symbol & Description | Part No.     |
|------|----------------------|--------------|
|      | C2                   | CKPUYY103N16 |

**REC SW Unit****SWITCH**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | S1 Tact switch       | RSG-143  |

**Connector Unit****CAPACITOR**

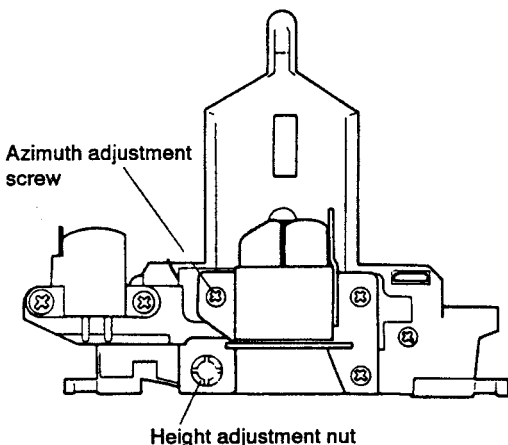
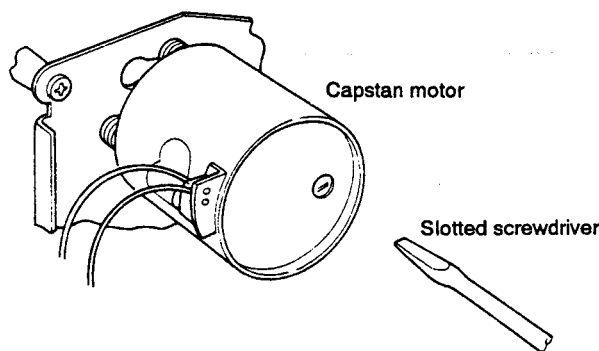
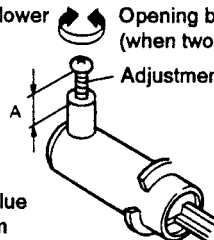
| Mark | Symbol & Description | Part No.    |
|------|----------------------|-------------|
|      | C1                   | CKCYF473Z50 |

**RESISTOR**

| Mark | Symbol & Description | Part No.  |
|------|----------------------|-----------|
|      | R1                   | RD¼PM681J |

## 8. ADJUSTMENTS

### 8.1. MECHANISM RELATED ADJUSTMENT

| 1. Azimuth adjustment                                                                                                                                                                                                                                                                                 |      |                                             |                                                                                                                                                        | 2. Tape Speed Adjustment                                                                                                                                                |                                                  |                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| No.                                                                                                                                                                                                                                                                                                   | Mode | Adjustment Location                         | Specifications                                                                                                                                         | Mode                                                                                                                                                                    | Adjustment Location                              | Specifications                                                                                             |
| 1                                                                                                                                                                                                                                                                                                     | PLAY | Azimuth adjustment screw (Refer to Fig. 1.) | Playback test tape STD-331B and adjust so that the 10 kHz output level is maximum and also so that there is no phase difference between L-ch and R-ch. | PLAY                                                                                                                                                                    | Capstan motor adjustment hole (Refer to Fig. 2.) | Adjust so that the playback frequency is $3015 \pm 5$ Hz at the beginning of winding of test tape STD-301. |
| <div><p>Azimuth adjustment screw</p><p>Height adjustment nut</p><p>Fig. 1.</p></div>                                                                                                                                |      |                                             |                                                                                                                                                        | PLAY                                                                                                                                                                    |                                                  | Playback test tape STD-301 again and confirm that the above specifications are satisfied.                  |
|                                                                                                                                                                                                                                                                                                       |      |                                             |                                                                                                                                                        | <div><p>Capstan motor</p><p>Slotted screwdriver</p><p>Fig. 2.</p></div>              |                                                  |                                                                                                            |
| 3. Adjustment of Door Damper                                                                                                                                                                                                                                                                          |      |                                             |                                                                                                                                                        |                                                                                                                                                                         |                                                  |                                                                                                            |
| Adjustment Location                                                                                                                                                                                                                                                                                   |      |                                             |                                                                                                                                                        | Specifications                                                                                                                                                          |                                                  |                                                                                                            |
| Cylinder adjustment screw (Refer to Fig. 3.)                                                                                                                                                                                                                                                          |      |                                             |                                                                                                                                                        | Make sure that the door opens smoothly, there is no two-stage motion, and that there is no bounding when it opens completely. (Perform with no cassette half inserted.) |                                                  |                                                                                                            |
| <div><p>Opening becomes slower (when bounding)</p><p>Opening becomes faster (when two-stage motion)</p><p>Adjustment screw</p><p>A</p><p>Reference value<br/><math>A = 5 \pm 1</math> mm</p><p>Fig. 3.</p></div> |      |                                             |                                                                                                                                                        |                                                                                                                                                                         |                                                  |                                                                                                            |

## 8.2 ELECTRICAL ADJUSTMENTS

### Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0dBv=1Vrms.
5. Connect a 50 kilo-ohm (or between 47 to 52 kilo-ohm) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.  
DOLBY NR : OFF  
TAPE SELECTOR : NORM

### Test Tapes

- STD-331B : Playback adjustments  
(See Fig. 8-1)
- STD-630 : NORMAL blank tape
- STD-620 : CrO<sub>2</sub> blank tape
- STD-610 : METAL blank tape

### List of Adjustments

#### Playback sections

1. Head azimuth adjustment.
2. Playback equalizer adjustment.
3. Playback level adjustment.

#### Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.

NOTE: This unit has an automatic tape selection feature.

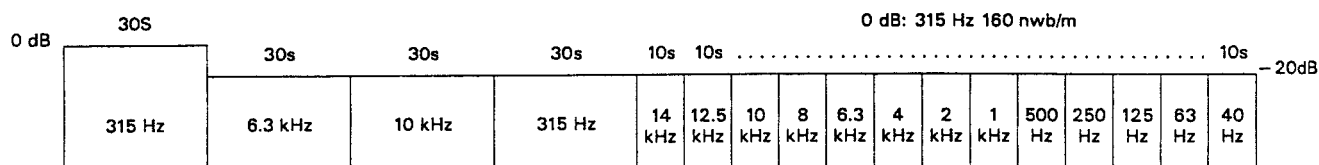


Fig. 8-1. Constants of the test tape STD-331B

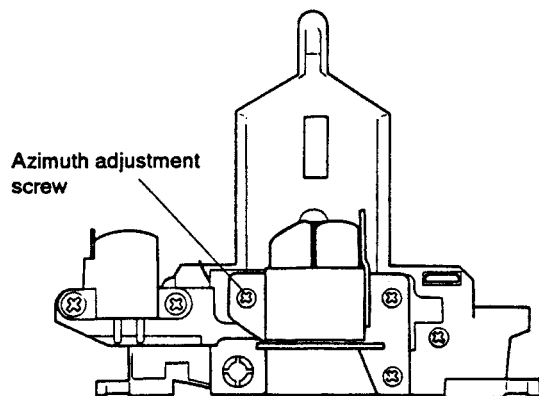


Fig. 8-2. Head azimuth adjustment

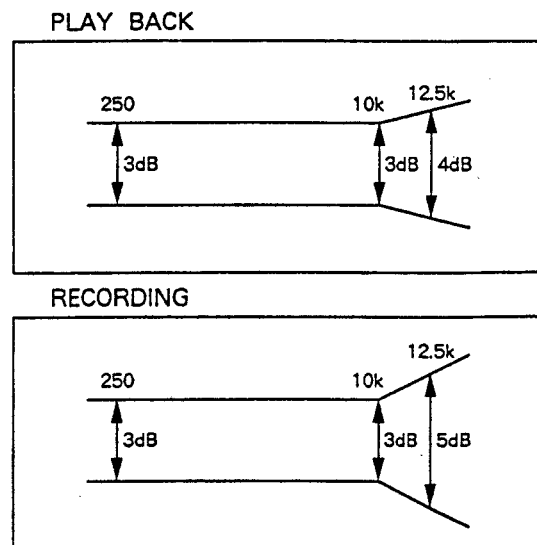


Fig. 8-3. Allowable playback frequency response zone

## PLAYBACK SECTION

### 1. Head Azimuth Adjustment

- Turn VR3, VR4 to mechanical center positions.

| No. | Mode | Input signal & test tape                                    | Adjustment location                              | Measuring location | Adjustment value               | Remarks |
|-----|------|-------------------------------------------------------------|--------------------------------------------------|--------------------|--------------------------------|---------|
| 1.  | PLAY | Play the 10 kHz/−20 dB section of STD-331B test tape.       | Head azimuth adjustment screw.<br>(See Fig. 8-2) | LINE OUT           | Maximum playback signal level. |         |
| 2.  | STOP | Lock the screw with screw lock after completing adjustment. |                                                  |                    |                                |         |

### 2. Playback Equalizer Adjustment

| No. | Mode | Input signal & test tape                                             | Adjustment location    | Measuring location | Adjustment value                                                                        | Remarks |
|-----|------|----------------------------------------------------------------------|------------------------|--------------------|-----------------------------------------------------------------------------------------|---------|
| 1.  | PLAY | Play the 315 Hz and 10 kHz/−20 dB portion of the STD-331B test tape. | VR1 (Lch)<br>VR2 (Rch) | LINE OUT           | Adjust the 10 kHz level to 0.0 dB $\pm$ 0.5 dB in respect to the 315 Hz playback level. |         |

### 3. Playback level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

| No. | Mode | Input signal & test tape                                | Adjustment location    | Measuring location         | Adjustment value | Remarks |
|-----|------|---------------------------------------------------------|------------------------|----------------------------|------------------|---------|
| 1.  | PLAY | Play the 315 Hz/0 dB section of the STD-331B test tape. | VR3 (Lch)<br>VR4 (Rch) | TP. 3 (Lch)<br>TP. 4 (Rch) | −15.2 dBv        |         |

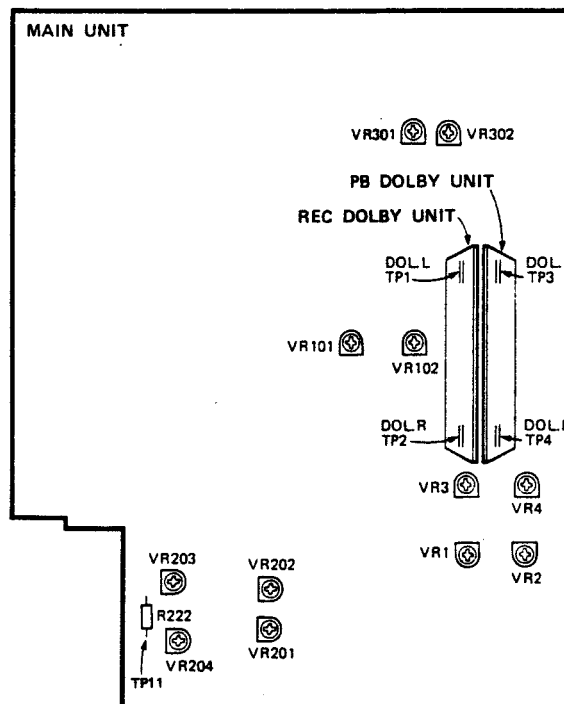


Fig.8—4 Adjustments locations



## RECORDING SECTION

### 1. Bias Oscillator Adjustment

| No. | Mode | Input signal & test tape                         | Adjustment location | Measuring location | Adjustment value  | Remarks |
|-----|------|--------------------------------------------------|---------------------|--------------------|-------------------|---------|
| 1.  | REC  | Load the STD-610 test tape with no input signal. | L 203               | TP. 11             | 85kHz $\pm$ 300Hz |         |

### 2. Recording Bias Adjustment

| 2-1. Overbias Adjustment           |                                                                                              |                                                                                                      |                     |                        |                         |                                                                                                              |                                                                       |                 |
|------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------|------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------|
| No.                                | Mode                                                                                         | Input signal & test tape                                                                             | Adjustment location |                        | Measuring location      | Adjustment value                                                                                             | Remarks                                                               |                 |
| 1.                                 | REC/<br>PAUSE                                                                                | Apply a 6.3 kHz/10 dBv (– 10VU meter reading) signal to the Line input terminals and insert STD-630. | —                   |                        | LINE OUT L, R terminals | —                                                                                                            | Turn control clockwise past the peak to assure proper overbias value. |                 |
| 2.                                 | REC<br>→PLAY                                                                                 | Record and play back the 6.3 kHz signal at – 10 dBv input level.                                     | NOR                 | VR203 (L)<br>VR204 (R) |                         | NOR                                                                                                          |                                                                       | 3.0 dB overbias |
| 3.                                 |                                                                                              | Record the 6.3 kHz/ – 10 dBv signal on STD-620 and play back.                                        | CrO <sub>2</sub>    | VR201 (L/R)            |                         | CrO <sub>2</sub>                                                                                             |                                                                       | 2.5 dB overbias |
| 4.                                 |                                                                                              | Record the 6.3kHz/ – 10 dBv signal on STD-610 and play back.                                         | METAL               | VR202 (L/R)            |                         | METAL                                                                                                        |                                                                       | 1.0 dB overbias |
| 5.                                 | Turn control clockwise past the peak to assure proper overbias value.                        |                                                                                                      |                     |                        |                         |                                                                                                              |                                                                       |                 |
| 2-2. Frequency Response Adjustment |                                                                                              |                                                                                                      |                     |                        |                         |                                                                                                              |                                                                       |                 |
| No.                                | Mode                                                                                         | Input signal & test tape                                                                             | Adjustment location |                        | Measuring location      | Adjustment value                                                                                             | Remarks                                                               |                 |
| 1.                                 | REC/<br>PAUSE                                                                                | Apply a 10kHz/315 Hz/ – 20 dBv signal to the Line input terminals and insert STD-630.                | —                   |                        | LINE OUT L, R terminals | —                                                                                                            |                                                                       |                 |
| 2.                                 | REC<br>→PLAY                                                                                 | Record and play back the 315 Hz signal and a 10 kHz signal at – 20 dBv input level.                  | NOR                 | VR203 (L)<br>VR204 (R) |                         | Record and play back repeatedly, comparing the 315 Hz and 10 kHz playback levels, and adjust to +0.5±0.5 dB. |                                                                       |                 |
| 3.                                 |                                                                                              | Record the 10 kHz/ 315 Hz, – 20 dBv signal on STD-620 and play back.                                 | CrO <sub>2</sub>    | VR201 (L/R)            |                         | +0.5±1.0 dB                                                                                                  |                                                                       |                 |
| 4.                                 |                                                                                              | Record the 10 kHz/ 315 Hz, – 20 dBv signal on STD-610 and play back.                                 | METAL               | VR202 (L/R)            |                         | +0.5±1.0 dB                                                                                                  |                                                                       |                 |
| 5.                                 | Check distortion value after adjustment is completed and confirm that there is no underbias. |                                                                                                      |                     |                        |                         |                                                                                                              |                                                                       |                 |

### 3. Recording Level Adjustment

| No. | Mode         | Input signal & test tape                                                             | Adjustment location        | Measuring location         | Adjustment value                                                                            | Remarks |
|-----|--------------|--------------------------------------------------------------------------------------|----------------------------|----------------------------|---------------------------------------------------------------------------------------------|---------|
| 1.  | STOP         | Set the TAPE SELECTOR switch to the NORM position.                                   |                            |                            |                                                                                             |         |
| 2.  | REC<br>PAUSE | Apply a 315 Hz/0 dBv signal to the line input terminals, load the STD-630 test tape. | Rec Level control volume   | TP. 1 (Lch)<br>TP. 2 (Rch) | – 15.2 dBv                                                                                  |         |
| 3.  | STOP         | Set the DOLBY NR switch to the ON position. (DOLBY B)                                |                            |                            |                                                                                             |         |
| 4.  | REC/<br>PLAY | Record the above signal onto the STD-630 test tape, and playback.                    | VR101 (Lch)<br>VR102 (Rch) | TP. 3 (Lch)<br>TP. 4 (Rch) | Repeatedly record, playback and adjust so that the playback signal level becomes – 15.2 dB. |         |
| 5.  | STOP         | Set the TAPE SELECTOR switch to the CrO <sub>2</sub> position.                       |                            |                            |                                                                                             |         |
| 6.  | REC/<br>PLAY | Record the above signal onto the STD-620 test tape, and playback.                    | Check                      | TP. 3 (Lch)<br>TP. 4 (Rch) | – 15.2 dBv $\pm$ 1.5 dB                                                                     |         |
| 7.  | STOP         | Set the TAPE SELECTOR switch to the METAL position.                                  |                            |                            |                                                                                             |         |
| 8.  | REC/<br>PLAY | Record the above signal onto the STD-610 test tape, and playback.                    | Check                      | TP. 3 (Lch)<br>TP. 4 (Rch) | – 15.2 dBv $\pm$ 1.5 dB                                                                     |         |

## 9. FOR CT-737MARK II /HB AND CT-737MARK II S /HEM TYPES

### CONTRAST OF MISCELLANEOUS PARTS

#### NOTES :

- Parts without part number cannot be supplied.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The CT-737MARK II /HB and CT-737MARK II S /HEM types are the same as the CT-737MARK II /HEM type with the exception of the following sections.

| Mark     | Symbol & Description                                                                                       | Part No.                |                        |                           | Remarks |
|----------|------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|---------------------------|---------|
|          |                                                                                                            | CT-737MARK II /HEM type | CT-737MARK II /HB type | CT-737MARK II S /HEM type |         |
| $\Delta$ | AC Power cord                                                                                              | PDG1003                 | RDG-032                | PDG1003                   |         |
|          | Slide SW knob (A) (TIMER)                                                                                  | RAC-668                 | RAC-668                | RAC1219                   |         |
|          | Power button (POWER)                                                                                       | RAC1203                 | RAC1203                | RAC1292                   |         |
|          | Push button (DOLBY, MPX)                                                                                   | RAC1204                 | RAC1204                | RAC1293                   |         |
|          | Button ( $\leftarrow$ , $\blacksquare$ , $\rightarrow$ , $\Rightarrow$ , $\bullet$ , $\square$ , $\circ$ ) | RAC1206                 | RAC1206                | RAC1294                   |         |
|          | Counter button (COUNTER)                                                                                   | RAC1232                 | RAC1232                | RAC1289                   |         |
|          | VR knob B (REC BALANCE)                                                                                    | RAC1262                 | RAC1262                | RAC1263                   |         |
|          | Headphone knob                                                                                             | RAC1337                 | RAC1337                | RAC1360                   |         |
|          | (PHONES LEVEL, REC CALIBRATION)                                                                            |                         |                        |                           |         |
|          | Side panel (L)                                                                                             | RAH1200                 | RAH1200                | RAH1321                   |         |
|          | Side panel (R)                                                                                             | RAH1201                 | RAH1201                | RAH1322                   |         |
|          | Door panel                                                                                                 | RAH1314                 | RAH1314                | RAH1315                   |         |
|          | Under escutcheon                                                                                           | RAP1003                 | RAP1003                | RAP1006                   |         |
|          | Button holder                                                                                              | RNK1301                 | RNK1301                | RNK1361                   |         |
|          | VR knob assembly (A)                                                                                       | RXA1158                 | RXA1158                | RXA1214                   |         |
|          | Bonnet                                                                                                     | RXX1092                 | RXX1092                | RXX1093                   |         |
|          | Door assembly                                                                                              | RXX1113                 | RXX1113                | RXX1114                   |         |
|          | Front panel assembly                                                                                       | RXX1207                 | RXX1207                | RXX1208                   |         |
|          | Packing case                                                                                               | RHG1126                 | RHG1126                | RHG1127                   |         |
|          | Operating instructions                                                                                     | RRD1062                 | .....                  | .....                     |         |
|          | (French/Italian/Dutch/Swedish/Spanish/Portuguese)                                                          |                         |                        |                           |         |