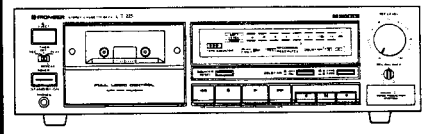
PIONEER®
The future of sound and vision.

# Service Manual



The above illustration shows the model for the U.K., European, Saudi Arabian and Australian. The illustration shows model CT-225.

ORDER NO.
ARP1696

STEREO CASSETTE DECK

# CT-S305
# CT-225
# CT-225-S
# CT-S405

**CT–S305, CT–225, CT–225–S AND CT–S405 HAVE FOLLOWING VERSIONS:**

| Type | Applicable model | | | | Power requirement | Export destination |
|---|---|---|---|---|---|---|
| | CT–S305 | CT–225 | CT–225–S | CT–S405 | | |
| KU | O | — | — | — | AC120V only | U. S. A |
| KUC | — | — | — | O | AC120V only | U. S. A and Canada |
| HEM | — | O | O | — | AC220V, 240V (switchable) * | European continent |
| HB | — | O | — | — | AC220V, 240V (switchable) * | United Kingdom |
| HP | — | O | — | — | AC220V, 240V (switchable) * | Australia |
| SD | — | O | — | — | AC110V, 120V–127V, 220V, 240V (switchable) | Kingdom of Saudi Arabia and general market |

*Change the primary wiring of the power transformer.

- This manual is applicable to the CT-S305/KU, CT-225/HEM, HB, HP, SD, CT-225-S/HEM and CT-S405/KUC types.
- For the CT-225/HEM, HB, HP, SD and CT-S405/KUC types, refer to pages 37-39.
- The CT-225-S is the same as the CT-225 except for the color.
- The CT-225 and CT-225-S are the same as the CT-S305 except for the color.
- CT-S405 was created by adding the HX PRO circuit to CT-S305.
- As to the mechanism descriptions, refer to the CT-W510 service manual (ARP1697).
- Ce manuel pour le service comprend les explications en français de réglage.
- Este manual de servicio trata del método ajuste escrito en español.

**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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# CONTENTS



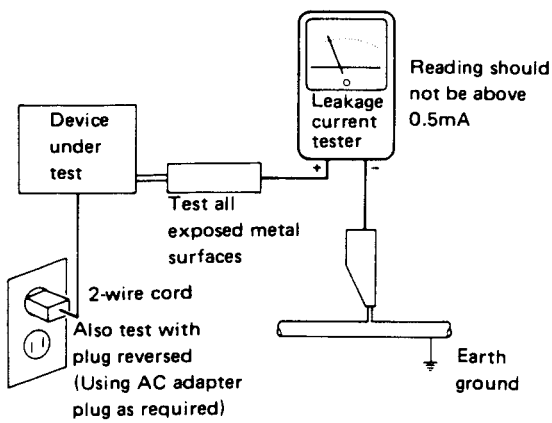
# 1. SAFETY INFORMATION

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

**LEAKAGE CURRENT CHECK**

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.




AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

# 2. DISASSEMBLY

## • REMOVAL OF HEAD AND PINCH ROLLER

1. Remove the screw ①.
2. Remove the screw ② (azimuth adjust screw) and the screw ③.
3. Remove the washer of the pinch roller.

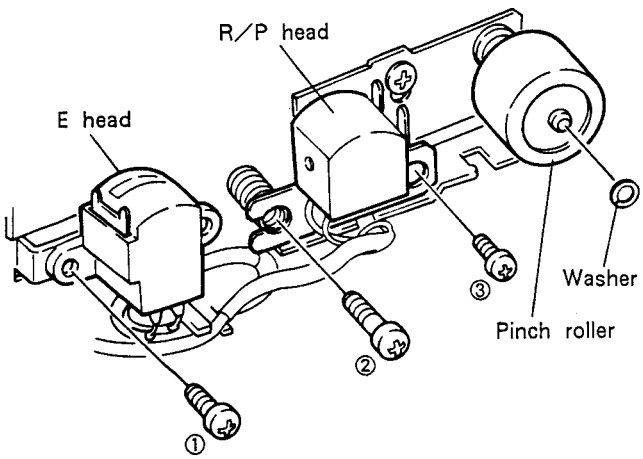



Fig. 2–1

## • REMOVAL OF REEL BASE

1. Pull out the reel base assembly by inserting the tweezers into the groove portion Ⓐ. (Snapped portion is disconnected by extending the groove portion.)

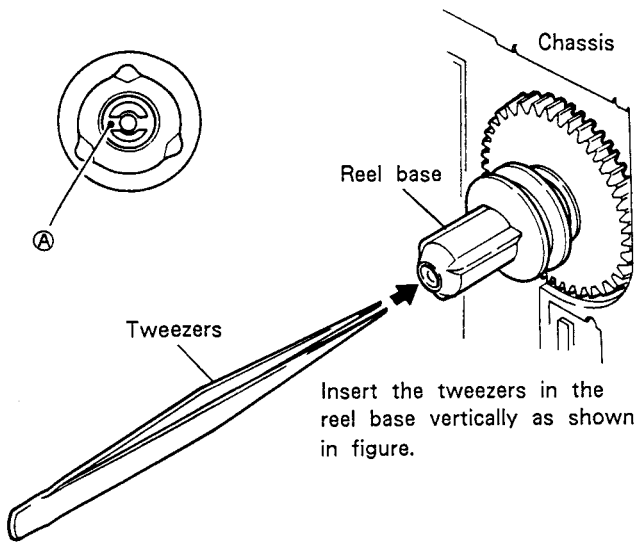
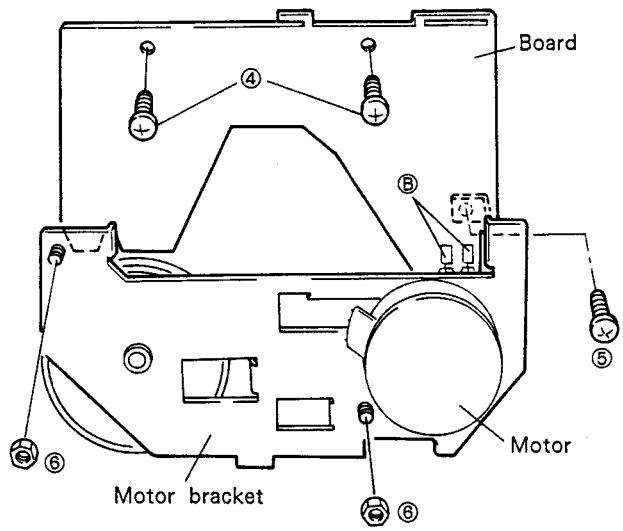



Fig. 2–2

## • REMOVAL OF BELT AND MOTOR

1. Remove the soldering section Ⓑ of the solenoid.
2. Remove two screws ④ holding the board. Pay attention to the leaf switch (Play switch) when raising the board.
3. Remove the screw ⑤ and two nuts ⑥.
4. Remove the motor bracket and the main belt.
5. It is possible to replace the FR belt in the state removed the motor bracket.




Rear side of mechanism section

Fig. 2–3

6. Remove two screws ⑦ and remove the motor.

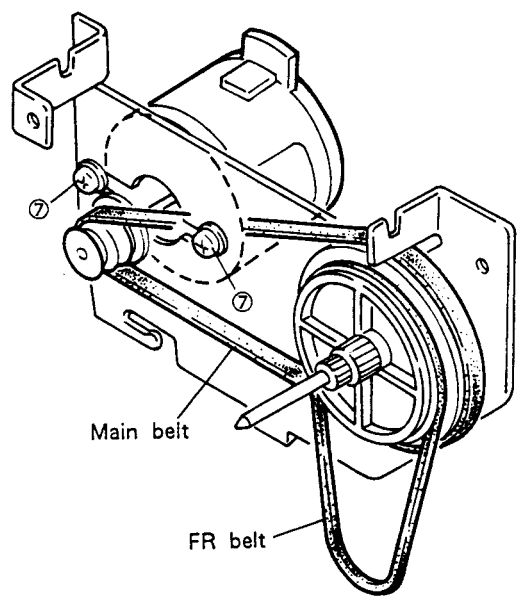



Fig. 2–4

# 3. EXPLODED VIEWS AND PARTS LIST

NOTES :

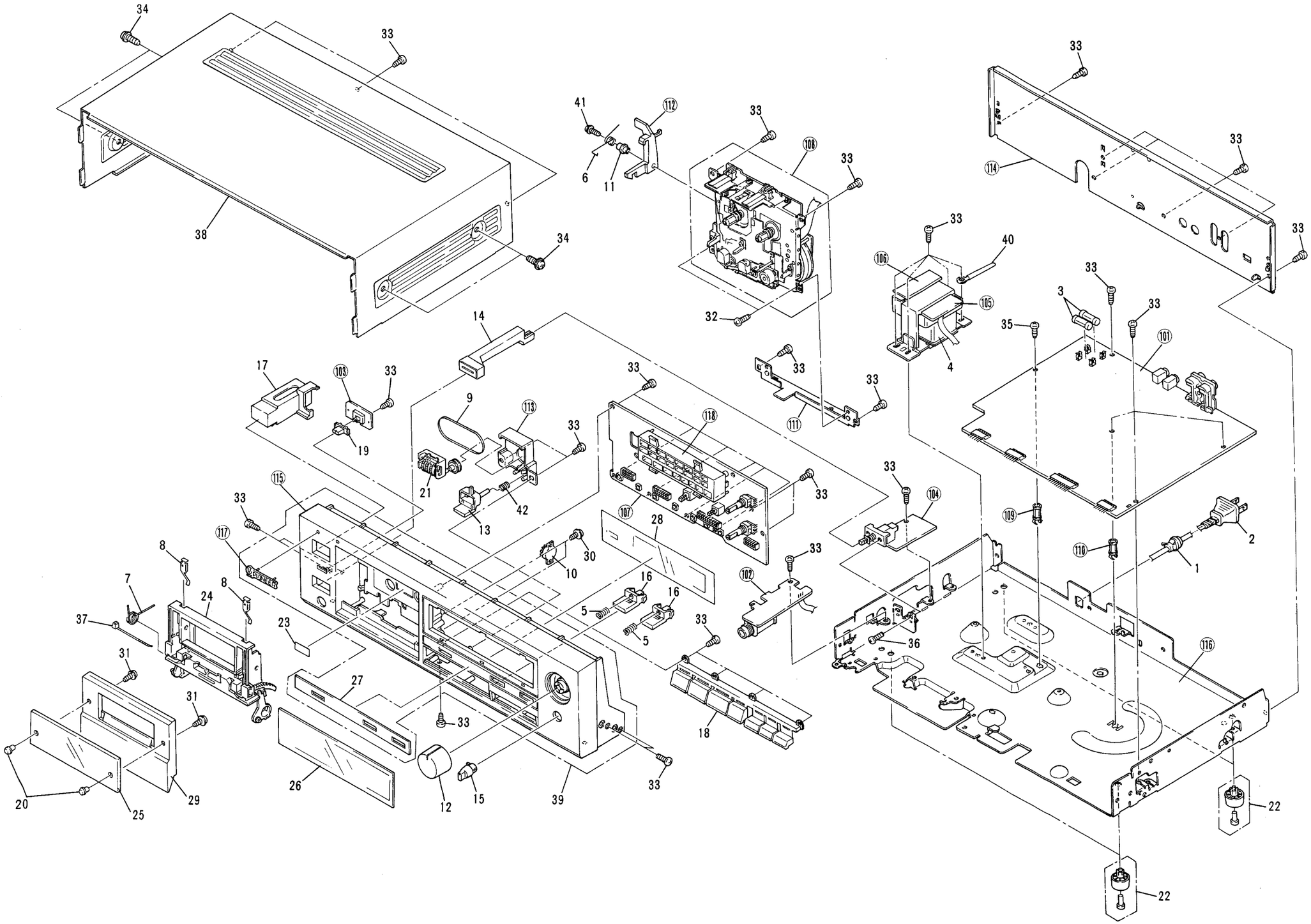
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the impotance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be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

## 3.1 PARTS LIST OF EXTEIOR

| Mark | No. | Part No. | Description |
|---|---|---|---|
| ⚠ | 1 | CM−22 | Strain relief |
| ⚠ | 2 | RDG1010 | AC Power cord |
| ⚠ | 3 | REK−073 | FU1201, FU1202 fuse (1.25A) |
| ⚠ | 4 | RTT1086 | T1 Power transformer |
| | 5 | RBH1146 | Push spring |
| | 6 | RBH1201 | Eject lever spring (L) (For Mechanism unit) |
| | 7 | RBH1203 | Door spring (L) |
| | 8 | RBK1004 | Half pressure spring |
| | 9 | REB−514 | Counter belt |
| | 10 | REC1013 | Damper assembly |
| | 11 | RLA1119 | Collar (For Mechanism unit) |
| | 12 | RAC1221 | Knob (REC LEVEL) |
| | 13 | RAC1228 | Knob (COUNTER RESET) |
| | 14 | RAC1240 | Bottun (POWER) |
| | 15 | RAC1337 | Knob (REC BALANCE) |
| | 16 | RAC1343 | Knob (DOLBY NR) |
| | 17 | RAC1344 | Knob (EJECT) |
| | 18 | RAC1345 | Knob (◂◂, ■, ▸, ▸▸, ●, ❚❚, ○) |
| | 19 | RAC1357 | Knob (REC/TIMER OFF/ PLAY/REPEAT) |
| | 20 | RAT1001 | Screw |
| | 21 | RAW1041 | Counter |
| | 22 | REC−369 | Leg assembly |
| | 23 | REE−113 | Remaining sheet |
| | 24 | RNT1013 | Door pocket |
| | 25 | RAH1244 | Door lens |
| | 26 | RAH1457 | Meter panel |
| | 27 | RAH1458 | Dolby name plate |
| | 28 | RAH1459 | Meter lens |
| | 29 | RAH1469 | Door panel |
| | 30 | ARZ26P060FMC | Screw |
| | 31 | ATZ26P050FMC | Screw |
| | 32 | BBZ30P060FZK | Screw |
| | 33 | BBZ30P080FMC | Screw |
| | 34 | FBT40P080FZK | Screw |
| | 35 | IBZ30P150FCU | Screw |
| | 36 | PMA30P060FMC | Screw |
| | 37 | REC−371 | Binder |
| | 38 | RXX1079 | Bonnet |
| | 39 | RXX1194 | Front panel assembly |
| | 40 | RNH−184 | Cord clamper |
| | 41 | IBZ26P120FMC | Screw |
| | 42 | RBH1214 | Push spring (A) (Color : Black) |

| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 101 | | Main unit |
| | 102 | | Headphone unit |
| | 103 | | Timer SW unit |
| | 104 | | Power SW unit |
| | 105 | | Transformer 1 unit |
| | 106 | | Transformer 2 unit |
| | 107 | | Display unit |
| | 108 | | Mechanism unit |
| | 109 | | PCB spacer |
| | 110 | | PCB holder |
| | 111 | | Mechanism mount plate |
| | 112 | | Eject lever (L) (For Mechanism unit) |
| | 113 | | Counter holder |
| | 114 | | Rear panel |
| | 115 | | Front panel |
| | 116 | | Main chassiis |
| | 117 | | Name plate |
| | 118 | | LED holder |

## 3.1 Exterior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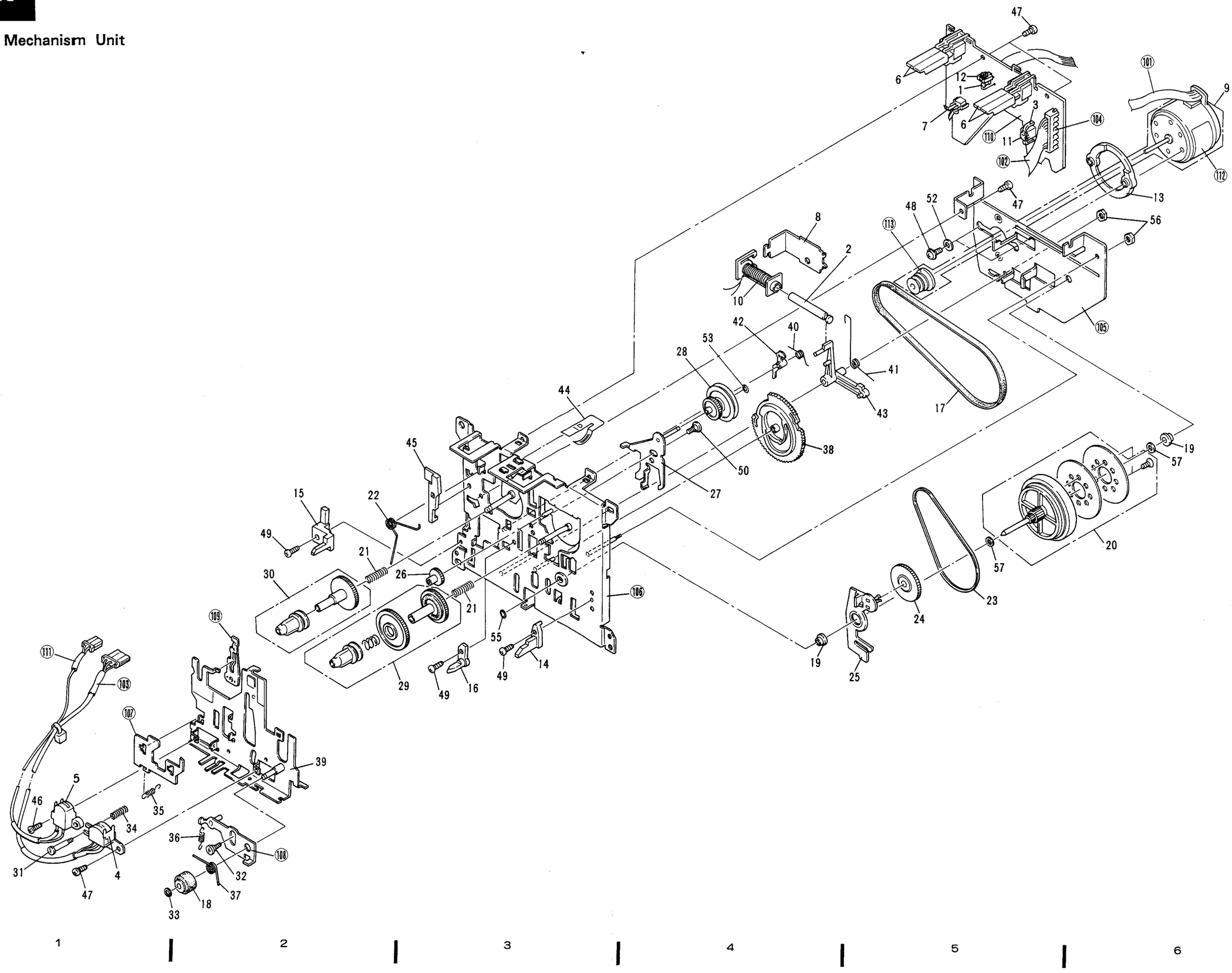
## 3.2 Mechanism Unit



## 3.2 Parts List of Mechanism Unit

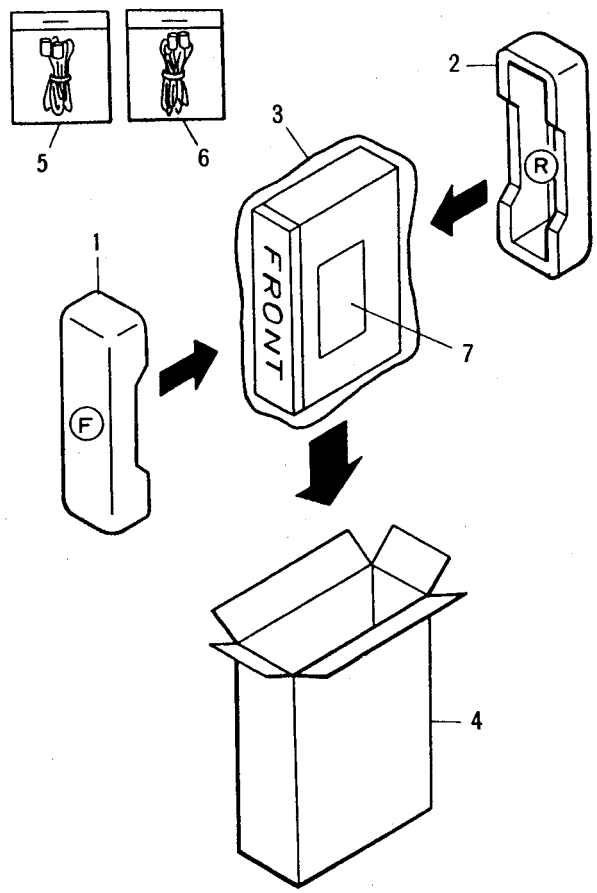
| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 1 | RD 1/6 PM162J | Resistor |
| | 2 | RLA1120 | Plunger |
| | 3 | RNK1461 | Holder |
| | 4 | RPB1026 | R/P Head |
| | 5 | RPB1027 | E Head |
| | 6 | RSN1016 | Leaf switch |
| | 7 | RSN1017 | Leaf switch |
| | 8 | RXA1264 | Yoke assembly |
| | 9 | RXM1026 | Motor assembly |
| | 10 | RXP1009 | Solenoid |
| | 11 | SPI31504BC | Photo sensor |
| | 12 | VRTS6HS472 | Semi-fixed resistor |
| | 13 | RNK1460 | Spacer |
| | 14 | RNK1468 | Guide (R) |
| | 15 | RNK1469 | Guide (L) |
| | 16 | RNK1470 | Guide |
| | 17 | REB1086 | Main belt |
| | 18 | REB1088 | Pinch roller |
| | 19 | RNG1035 | Metal |
| | 20 | RXA1263 | Frywheel assembly |
| | 21 | RBH1208 | Spring |
| | 22 | RBH1209 | Spring |
| | 23 | REB1087 | Belt (FR) |
| | 24 | RNK1465 | Gear (A) |
| | 25 | RNK1466 | Play arm |
| | 26 | RNK1467 | Gear (FF) |
| | 27 | RXA1266 | FR arm assembly |
| | 28 | RXA1267 | FR pully assembly |
| | 29 | RXA1268 | T-Reel assembly |
| | 30 | RXA1269 | S-Reel assembly |
| | 31 | RBA1070 | Azimuth screw |
| | 32 | RBA1071 | Screw |
| | 33 | RBF1030 | Washer |
| | 34 | RBH1205 | Azimuth spring |
| | 35 | RBH1210 | Spring |
| | 36 | RBH1211 | Spring |
| | 37 | RBH1212 | Spring |
| | 38 | RNK1462 | Assist gear |
| | 39 | RXA1270 | Head chassis assembly |
| | 40 | RBH1206 | Spring |
| | 41 | RBH1207 | Spring |
| | 42 | RNK1463 | Arm cue lock |
| | 43 | RNK1464 | Trigger arm |
| | 44 | RBK1026 | Cassette spring |
| | 45 | RNK1451 | Eject lock (L) |
| | 46 | BCZ20P060FMC | Screw |
| | 47 | PCZ20P040FMC | Screw |
| | 48 | RBA1028 | Screw |
| | 49 | RBA1029 | Screw |
| | 50 | RBA1072 | Screw |
| | 51 | | ..... |
| | 52 | RBF1027 | Washer |
| | 53 | RBF1028 | Washer |
| | 54 | | ..... |
| | 55 | RBF1031 | Washer |
| | 56 | RBN1001 | Nut |
| | 57 | WA21D040D013 | Washer |

| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 101 | | Motor wire |
| | 102 | | Wire 12P |
| | 103 | | Connector assembly |
| | 104 | | Cable holder |
| | 105 | | Motor bracket |
| | 106 | | Chassis assembly |
| | 107 | | Select lever |
| | 108 | | Assist arm assembly |
| | 109 | | Arm switch |
| | 110 | | P.C.Board |
| | 111 | | Connector assembly |
| | 112 | | Motor |
| | 113 | | Motor pully |

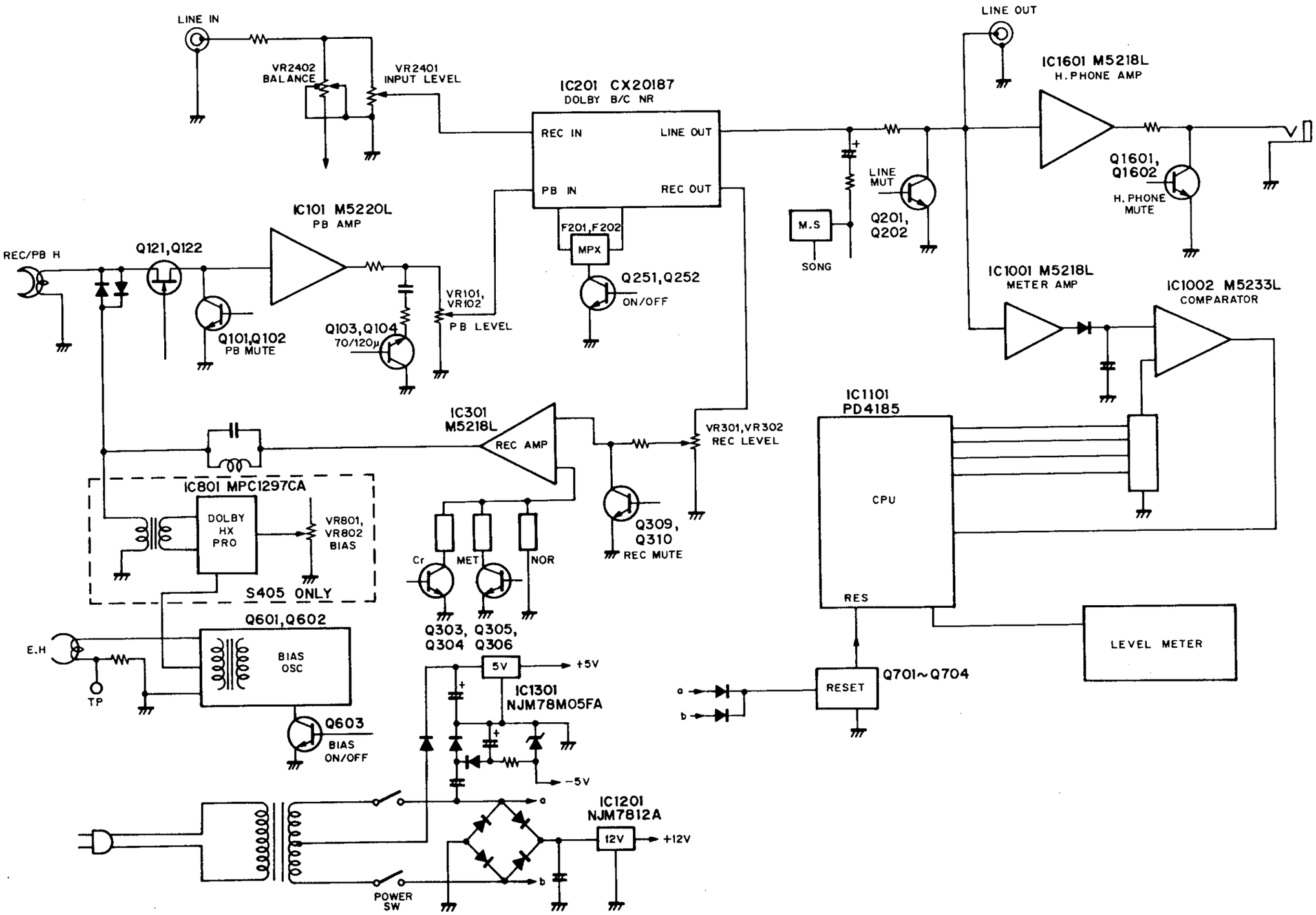
# 4. PACKING

## Parts List

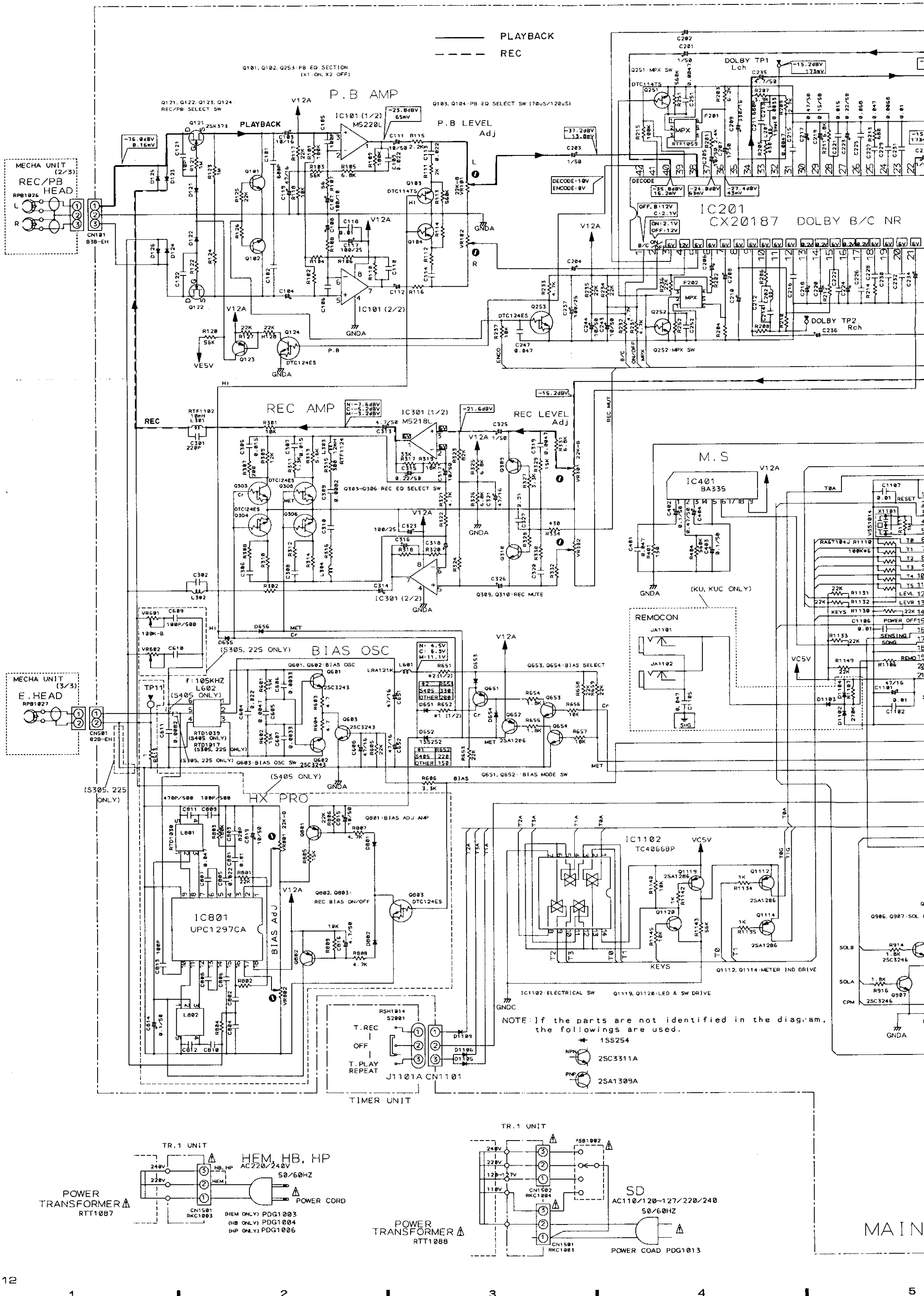
| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 1 | RHA1006 | Pad (A) |
| | 2 | RHA1007 | Pad (B) |
| | 3 | RHC-161 | Styren paper |
| | 4 | RHG1121 | Packing case |
| | 5 | PDE-319 | Connection cord |
| | 6 | RDE-010 | Connection cord |
| | 7 | RRB1044 | Operating instructions (English) |



## 5. BLOCK DIAGRAM

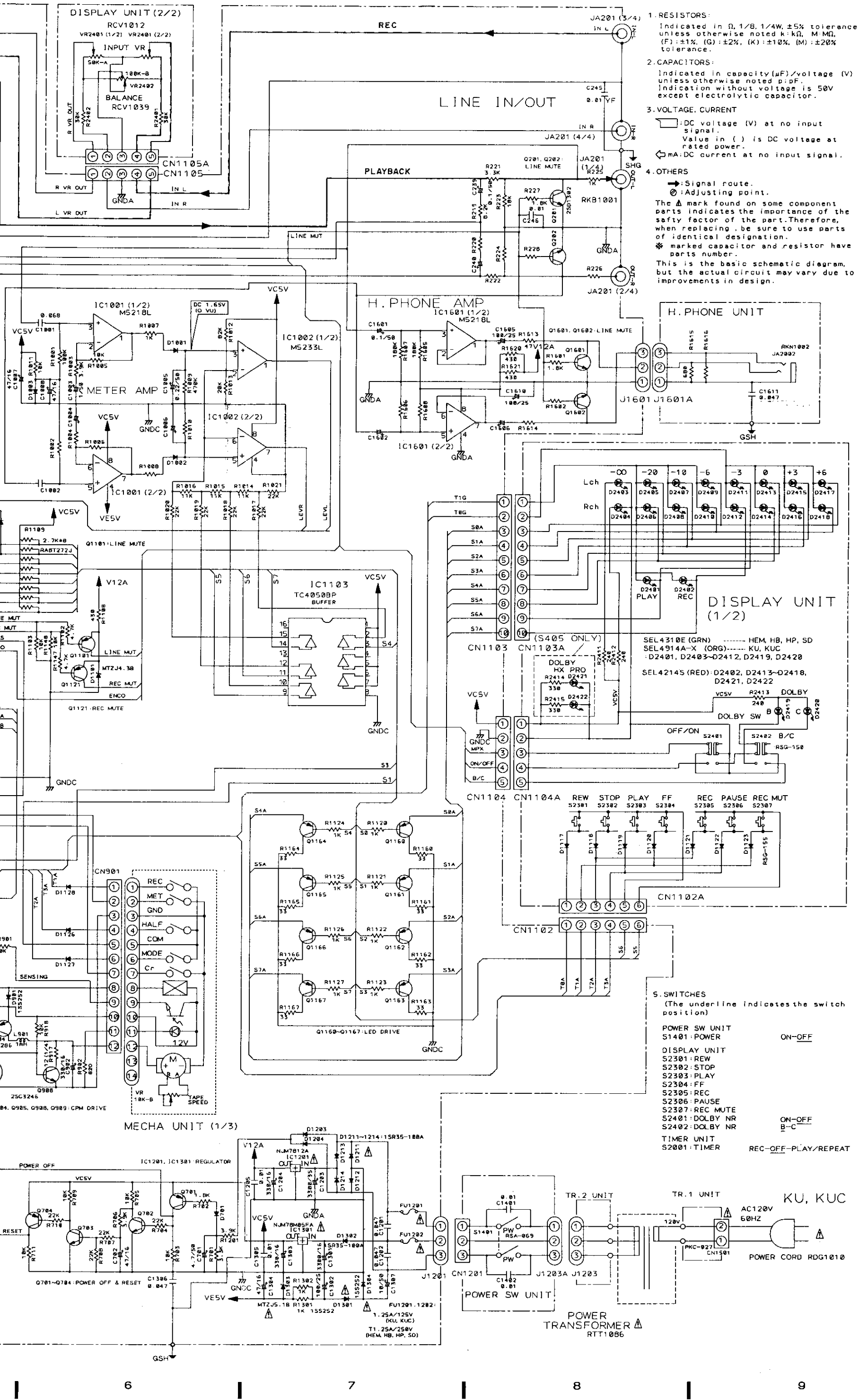


# 6. SCHEMATIC DIAGRAM



DISPLAY UNIT (2/2)
RCV1012
VR2401 (1/2) VR2401 (2/2)
INPUT VR
50K-A
100K-B
VR2402
BALANCE
RCV1039
R VR OUT
L VR OUT
CN1105A
CN1105
GNDA
IN L
IN R
REC
LINE IN/OUT
JA201 (4/4)
PLAYBACK
Q201, Q202: LINE MUTE
LINE MUT
H. PHONE AMP
IC1601 (1/2) M5218L
IC1601 (2/2)
Q1601, Q1602: L1B
IC1001 (1/2) M5218L
IC1001 (2/2)
IC1002 (1/2) M5233L
IC1002 (2/2)
METER AMP
DC 1.65V (0 VU)
VC5V
VE5V
GNDC
LEVR
LEVL
DOLBY TP1 Lch
DOLBY TP2 Rch
-15.2dBV 173mV
-7.4dBV 427mV
-35.8dBV 16.2mV
-24.8dBV 63mV
-27.4dBV 43mV
DECODE
IC201
CX20187 DOLBY B/C NR
OFF: 8V 12V
ON: 2.1V
OFF: 12V
B/C
Q251: MPX SW
Q252: MPX SW
DTC114TS
MPX
RTF1059
F201
F202
ON/OFF
V12A
M. S
IC401
BA335
(KU, KUC ONLY)
REMOCON
JA1101
JA1102
SHG
IC1101
PD4185
SYSTEM CONTROL
RESET
GND
LINE MUT
REC MUT
BIAS
ENCO
CPM
SOLA
SOLB
REMO
SENSING
SONG
POWER OFF
KEYS
LEVL
LEVR
T0A
T1A
T2A
T0G
T1G
IC1102
TC4066BP
Q1119, Q1120: LED & SW DRIVE
Q1112, Q1114: METER IND DRIVE
Q1101: LINE MUTE
Q1121: REC MUTE
IC1103
TC4050BP
BUFFER
S0A
S1A
S2A
S3A
S4A
S5A
S6A
S7A
Q1160~Q1167: LED DRIVE
CN1103
CN1103A
(S405 ONLY)
DOLBY HX PRO
CN1104
CN1104A
CN1102
Lch
Rch
REW
CN901
REC
MET
GND
HALF
COM
MODE
Cr
SENSING
Q901: SENSING
Q906, Q907: SOL DRIVE
Q904, Q905, Q908, Q909: CPM DRIVE
12V
TAPE SPEED
VR 10K-B
MECHA UNIT (1/3)
IC1201, IC1301: REGULATOR
NJM7812A
NJM7805FA
Q701~Q704: POWER OFF & RESET
FU1201
FU1202
1.25A/125V (KU, KUC)
T1.25A/250V (HEM, HB, HP, SD)
POWER SW UNIT
TRANSFOR
MAIN UNIT
GSH
SD
AC110/120~127/220/240
50/60HZ
POWER COAD PDG1013

parts are not identified in the diagram,
lowings are used.
1SS254
2SC3311A
2SA1309A




1. RESISTORS:
Indicated in Ω, 1/8, 1/4W, ±5% tolerance unless otherwise noted k:kΩ, M:MΩ, (F):±1%, (G):±2%, (K):±10%, (M):±20% tolerance.

2. CAPACITORS:
Indicated in capacity(μF)/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. Value in ( ) is DC voltage at rated power.
⇦mA: DC current at no input signal.

4. OTHERS
➡: Signal route.
⊘: Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safty factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitor and resistor have parts number.
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES
(The underline indicates the switch position)

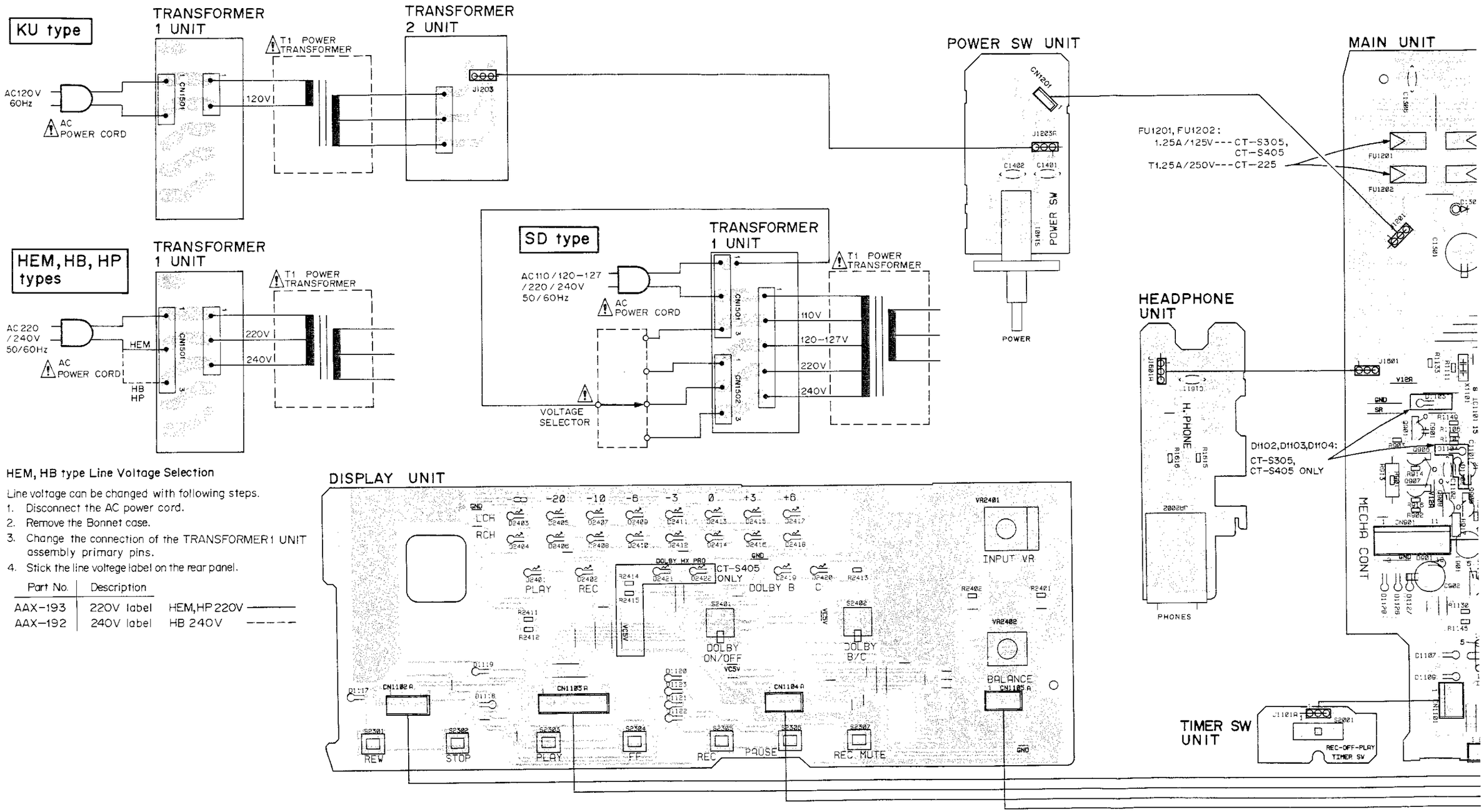
POWER SW UNIT
S1401: POWER ON-OFF

DISPLAY UNIT
S2301: REW
S2302: STOP
S2303: PLAY
S2304: FF
S2305: REC
S2306: PAUSE
S2307: REC MUTE
S2401: DOLBY NR ON-OFF
S2402: DOLBY NR B-C

TIMER UNIT
S2001: TIMER REC-OFF-PLAY/REPEAT

# 7. P.C. BOARDS CONNECTION DIAGRAM

- View from component side

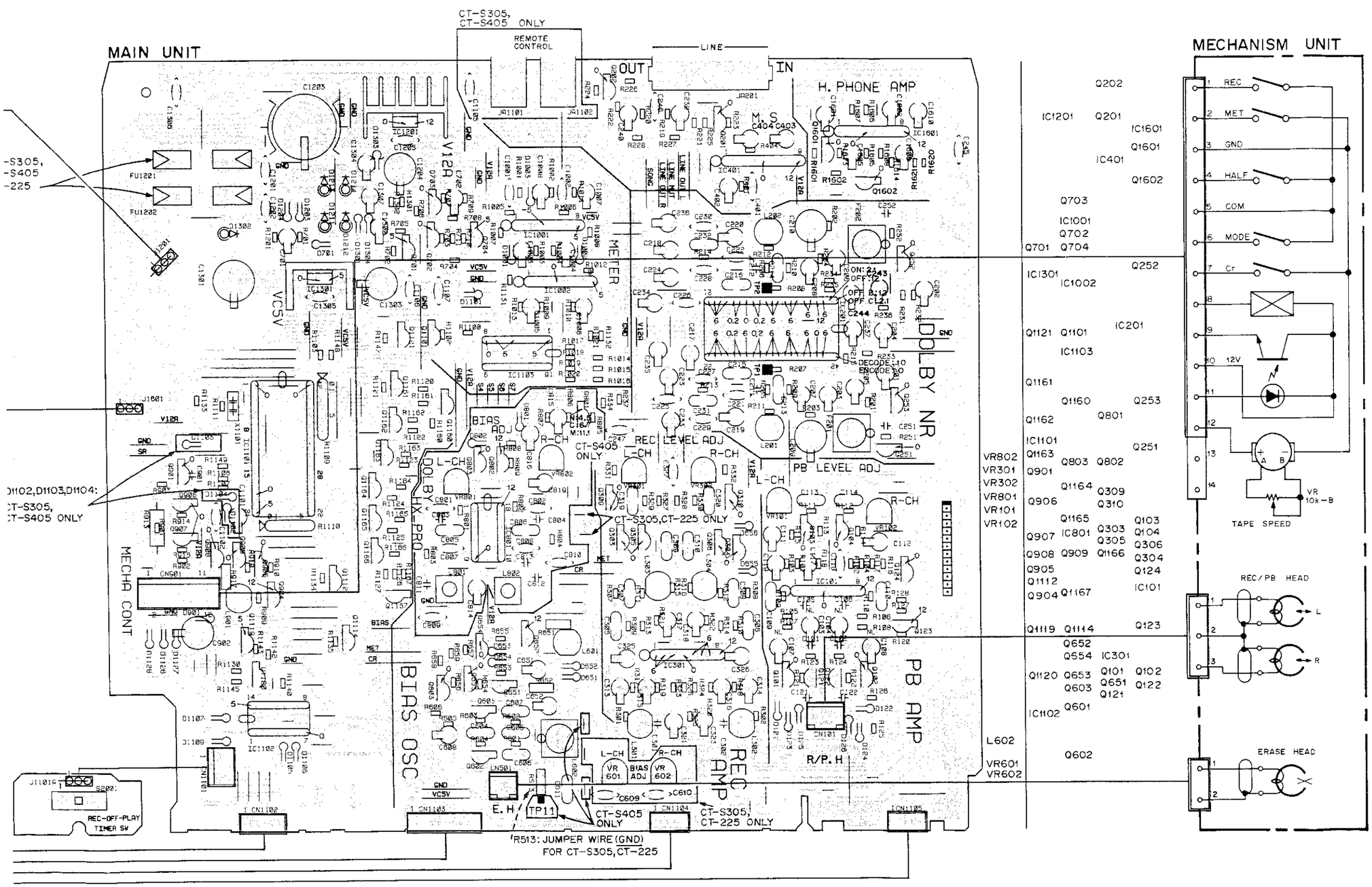



### HEM, HB type Line Voltage Selection

Line voltage can be changed with following steps.

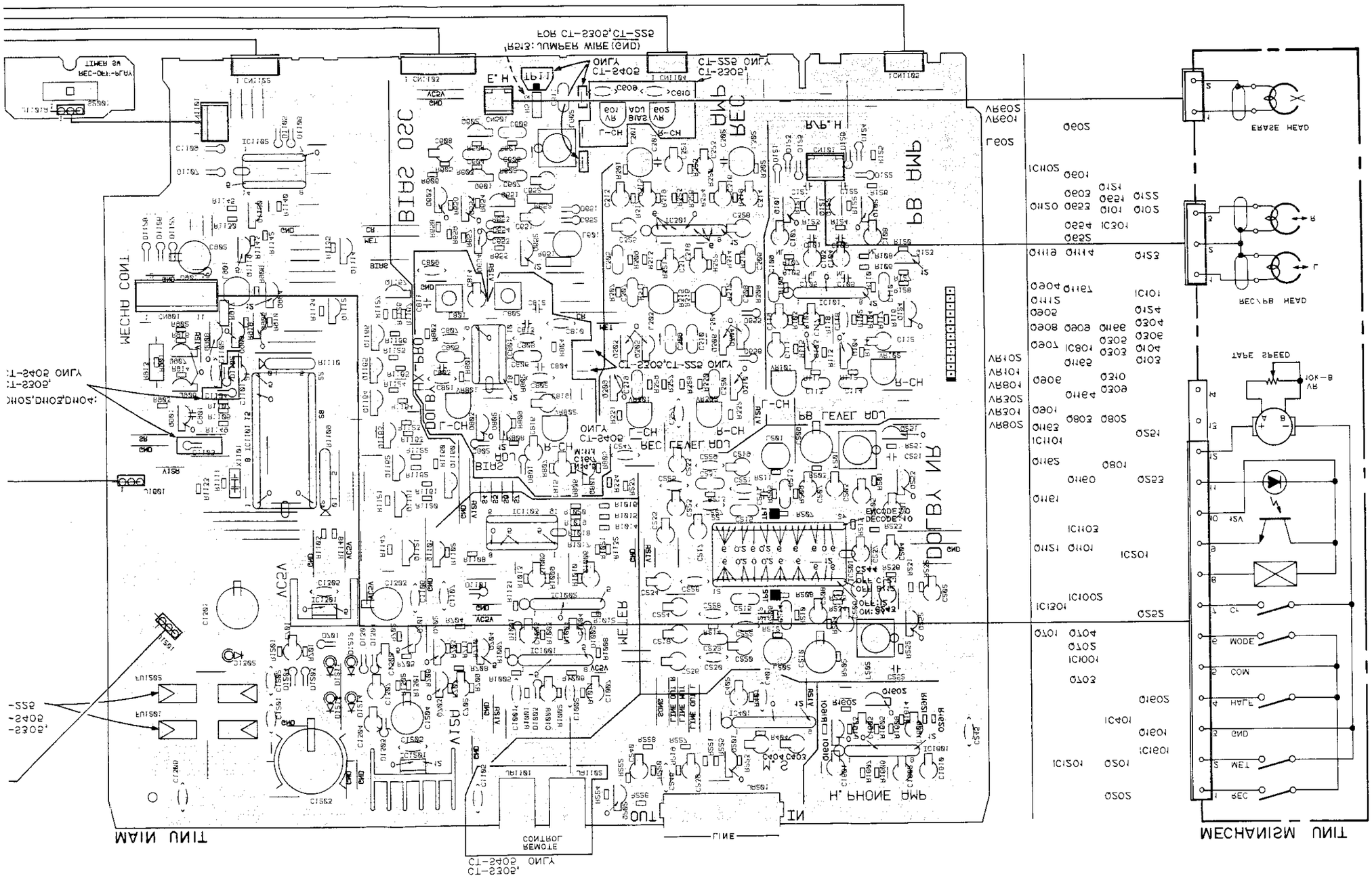
1. Disconnect the AC power cord.
2. Remove the Bonnet case.
3. Change the connection of the TRANSFORMER1 UNIT assembly primary pins.
4. Stick the line voltage label on the rear panel.

| Part No. | Description | |
|---|---|---|
| AAX-193 | 220V label | HEM,HP 220V ——— |
| AAX-192 | 240V label | HB 240V - - - - - |




| P.C.B. pattern diagram indication | Corresponding part symbol | Part name |
|---|---|---|
| | | Transistor |
| | | FET |
| | | Diode |
| | | Zenner diode |
| | | LED |
| | | Varactor |
| | | Tact switch |
| | | 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 |
| | | Resonator |
| | | Thermistor |

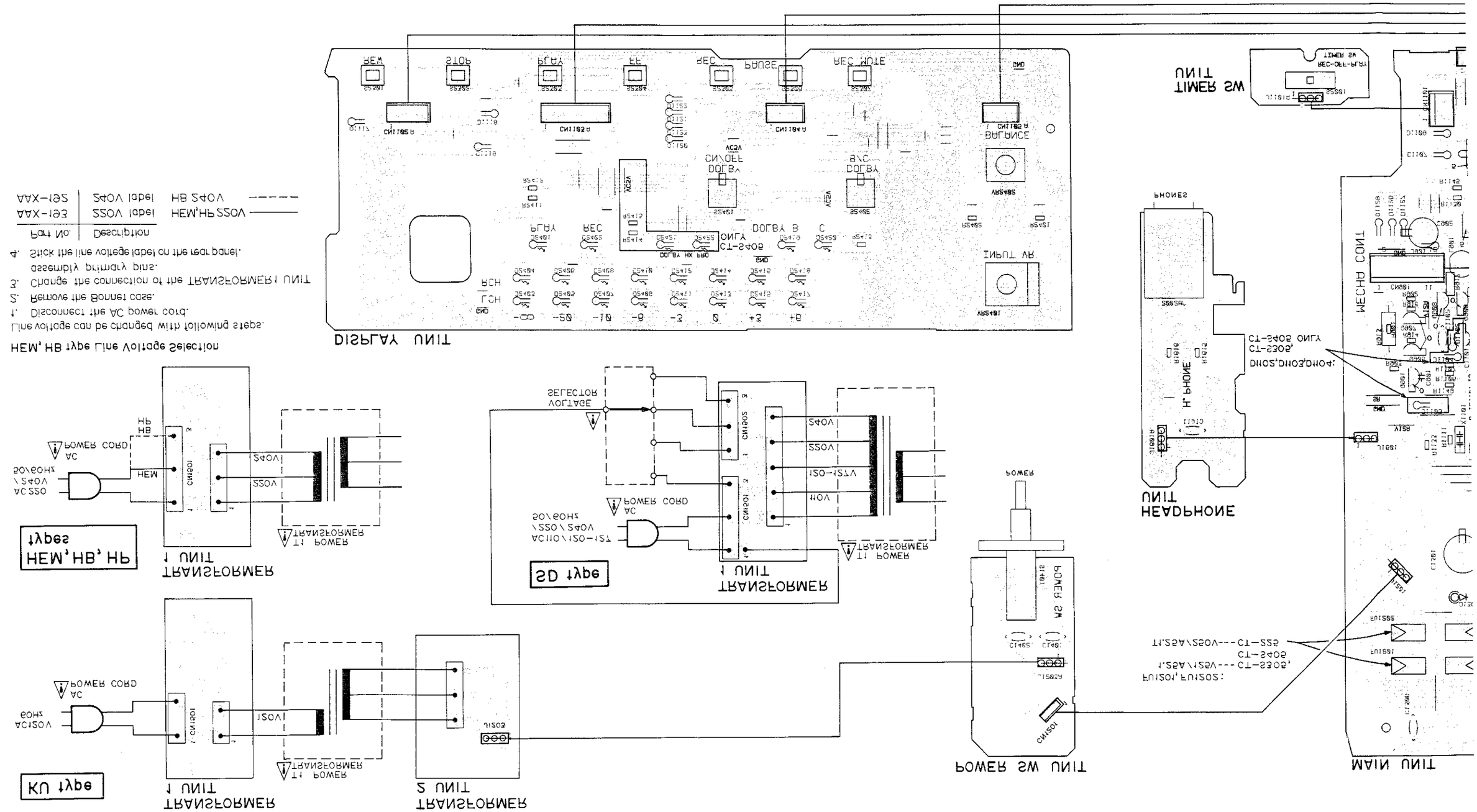
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ⊖ shows negative terminal.
4. The diode marked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


MAIN UNIT
MECHANISM UNIT
MECHA CONT
BIAS OSC
DOLBY NR
REC AMP
PB AMP
METER
ASIV
AC2V
AC2A
H.PHONE AMP
PB LEVEL ADJ
REC LEVEL ADJ
BIAS ADJ
R-CH
L-CH
IN
OUT
LINE
CONTROL REMOTE
ERASE HEAD
REC\PB HEAD
TAPE SPEED
WODE
COM
HALF
GND
TAM
REC
FOR CT-2302,CT-255
ONLY CT-2302
CT-255 ONLY
CT-2302, ONLY

CT-2302

# 7. P.C. BOARDS CONNECTION DIAGRAM

• View from soldering side



# 8. 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 ⚠ mark found on some component parts indicates the impotance 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 Ω | $56\times10^{1}$ | 561 | RD1/4PS 5 6 1 J |
| 47k Ω | $47\times10^{3}$ | 473 | RD1/4PS 4 7 3 J |
| 0.5 Ω | 0R5 | | RN2H 0 R 5 K |
| 1 Ω | 010 | | RS1P 0 1 0 K |

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

| | | | |
|---|---|---|---|
| 5.62k Ω | $562\times10^{1}$ | 5621 | RN1/4SR 5 6 2 1 F |

## Miscellaneous Parts

### P. C. BOARD ASSEMBLY

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | Main unit | |
| | Headphone unit | |
| | Timer SW unit | |
| | Power SW unit | |
| | Transeformer 1 unit | |
| | Transeformer 2 unit | |
| | Display unit | |

### OTHERS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| ⚠ | Strain relief | CM-22 |
| ⚠ | AC Power cord | RDG1010 |
| ⚠ | FU1201, FU1202 Fuse (1.25A) | REK-073 |
| ⚠ | T1 Power transformer (AC120V) | RTT1086 |
| | Resistor | RD⅛PM162J |
| | R/P Head | RPB1026 |
| | E head | RPB1027 |
| | Leaf switch | RSN1016 |
| | Leaf switch | RSN1017 |
| | York assembly | RXA1264 |
| | Motor assembly | RXM1026 |
| | Solenoid | RXP1009 |
| | Photo sensor | SPI31504BC |
| | Semi-fixed resistor | VRTS6HS472 |

## Main Unit

### SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | IC401 | BA335 |
| | IC201 | CX20187 |
| | IC301, IC1001, IC1601 | M5218L |
| | IC101 | M5220L |
| | IC1002 | M5233L |
| ⚠ | IC1301 | NJM78M05FA |
| ⚠ | IC1201 | NJM7812A |
| | IC1101 | PD4185 |
| | IC1103 | TC4050BP |
| | IC1102 | TC4066BP |
| | Q103, Q104, Q251, Q252 | DTC114TS |
| | Q124, Q253, Q303-Q306, Q905, Q909 | DTC124ES |
| | Q652, Q904, Q1112, Q1114, Q1119 | 2SA1286 |
| | Q123, Q651, Q701, Q704, Q1101, Q1121, Q1160-Q1167 | 2SA1309A |
| | Q601-Q603 | 2SC3243 |
| | Q906-Q908 | 2SC3246 |
| | Q101, Q102, Q309, Q310, Q653, Q654, Q702, Q703, Q901, Q1120, Q1601, 1602 | 2SC3311A |
| | Q201, Q202 | 2SD1302 |
| | Q121, Q122 | 2SK373 |
| | D1101 | MTZJ4.3B |
| ⚠ | D1303 | MTZJ5.1B |
| ⚠ | D1211-D1214, D1302 | 1SR35-100AVL |
| | D1301, D1304 | 1SS252 |
| | D652, D901 | 1SS252 |
| | D121-D126, D651, D653-D656, D701, D1001-D1003, D1102-D1107, D1109, D1126-D1128, D1203, D1204 | 1SS254 |

### COILS AND FILTER

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | L601 Radial inductor | LRA121K |
| | L602 Oscillator coil | RTD1017 |
| | L901 Coil 1mH | RTF1090 |
| | L301, L302 Coil 10mH | RTF1102 |
| | L201, L202 Coil 19mH | RTF1111 |
| | L303, L304 Coil 12mH | RTF1124 |
| | F201, F202 MPX Filter | RTF1059 |

## CAPACITORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | C609, C610 | CCCSL101K500 |
| | C121, C122 | CCPUSL100J50 |
| | C103, C104 | CEANL100M16 |
| | C107, C108 | CEANL101M10 |
| | C239, C240, C402, C403, C1601, C1602 | CEASR10M50 |
| | C219, C220 | CEASR15M50 |
| | C223, C224, C315, C316, C1005, C1006 | CEASR22M50 |
| | C217, C218, C404 | CEASR47M50 |
| | C201–C204, C207, C208, C233, C234, C325, C326,C1003, C1004 | CEAS010M50 |
| | C111, C112, C205, C206, C243, C244, C317, C318, C1307 | CEAS100M50 |
| | C117, C237, C323, C1302, C1605, C1606, C1610 | CEAS101M25 |
| | C1301 | CEAS332M16 |
| | C209, C210, C902, C1204, C1303 | CEAS331M16 |
| | C1203 | CEAS332M35 |
| | C235, C236, C313, C314, C701 | CEAS4R7M50 |
| | C119, C321, C608, C651, C652, C702, C1007, C1008, C1101, C1304 | CEAS470M16 |
| | C221, C222, C305–C308 | CFTXA153J50 |
| | C109, C110, C113, C114, C604 | CFTXA223J50 |
| | C213, C214, C606, C607 | CFTXA332J50 |
| | C215, C216, C251, C252, C319, C320, C605 | CFTXA472J50 |
| | C309, C310 | CFTXA822J50 |
| | C231, C232 | CGCYX103K25 |
| | C227, C228, C401 | CGCYX473K25 |
| | C229, C230 | CGCYX682K25 |
| | C225, C226, C1001, C1002 | CGCYX683K25 |
| | C118, C245, C246, C327, C1102, C1106, C1107, C1205, C1305 | CKCYF103Z50 |
| | C247, C1105, C1201, C1202, C1306 | CKCYF473Z50 |
| | C105, C106 | CKPUYB101K50 |
| | C301, C302 | CKPUYB221K50 |
| | C101, C102, C211, C212, C901 | CKPUYB681K50 |
| | C611 | CQPA822J100 |

## RESISTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | R1110 Resistor array | RA6T104J |
| | R1109 Resistor array | RA8T272J |
| | R913 | RS2LMF330J |
| | VR601, VR602 Semi–fixed (BIAS ADJ) (100k) | VRTB6VS104 |
| | VR101, VR102, VR301, VR302 Semi–fixed (22k) | VRTB6VS223 |
| | R917 | RD¼PM120J |
| | R651, R652 | RD½LF□□□J |
| | Other resistors | RD⅙PM□□□J |

## OTHERS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | JA201 Pin jack 4P (LINE L/R) | RKB1001 |
| | JA1101, JA1102 Jack 3.5 ϕ (CONTROL IN/OUT) | RKN–071 |
| | CN1104, CN1105 Connector | 53095–0510 |
| | CN1102 Connector | 53095–0610 |
| | X1101 Ceramic resonator | VSS1014 |

# Headphone Unit

## CAPACITOR

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | C1611 | CKCYF473Z50 |

## RESISTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | R1615, R1616 | RD⅙PM681J |

## OTHERS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | JA2002 Jack (PHONES) | RKN1002 |

# Timer SW Unit

## SWITCH

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | S2001 Slide switch (REC/TIMER OFF/PLAY/REPEAT) | RSH1014 |

# Power SW Unit

## SWITCH

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | S1401 Push switch (POWER) | RSA–069 |

## CAPACITORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | C1401, C1402 | CKCYF103Z50 |

# Transformer 1 unit

There is no supply part in this unit.

# Transformer 2 unit

There is no supply part in this unit.

# Display Unit

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | D2402, D2413–D2418 | SEL4214S |
| | D2401, D2403–D2412, D2419, D2420 | SEL4914A–X |
| | D1117–D1123 | 1SS254 |

## SWITCHES

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | S2401, S2402 Push switch | RSG–150 |
| | S2301–S2307 Tact switch (◂◂, ■, ▸, ●, ▮▮, ○) | RSG–155 |

## RESISTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | VR2401 Varriable resistor (REC LEVEL) (50kA) | RCV1012 |
| | VR2402 Varriable resistor (REC VALANCE) (50kB) | RCV1039 |
| | Other resistors | RD ⅙ PM□□□J |

## OTHERS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | CN1104, CN1105 Connector | 52084–0510 |
| | CN1102 Connector | 52084–0610 |
| | CN1103 Connector | 52084–1010 |

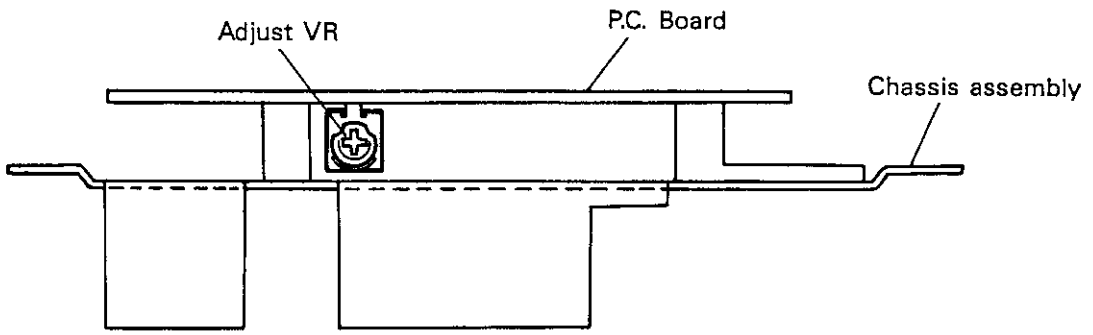
# 9. ADJUSTMENTS

## 9.1 MECHANICAL ADJUSTMENT

1. Tape Speed Adjustment

| Mode | Test tape | Adjustment position | Specification rating (playback frequency) |
|---|---|---|---|
| PLAY | Play the STD-301 tape (3kHz) | Variable resistor control | 3000Hz ± 5Hz |

Note: Adjust after one minute of playback.




Mechanism unit diagram, top view

Fig. 9-1

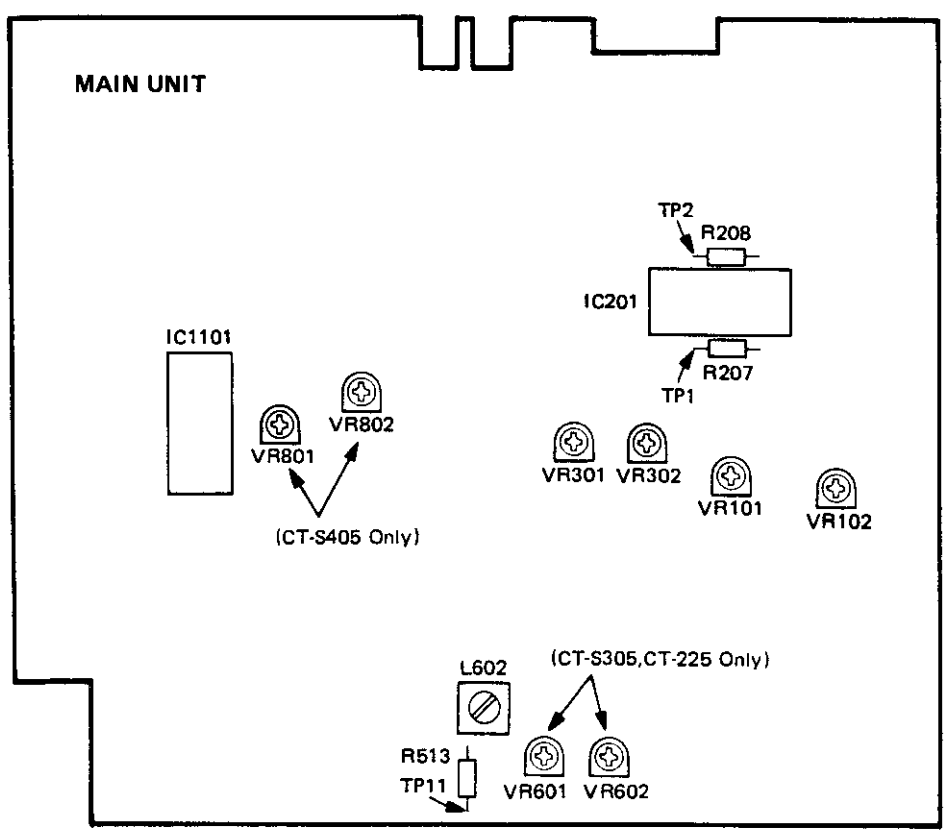



Fig. 9-2

## 9.2 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. 9-3) |
| STD-630 | : NORMAL blank tape |
| STD-620 | : $CrO_2$ blank tape |
| STD-610 | : METAL blank tape |

### List of Adjustments

#### Playback sections

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

#### Recording sections

1. Bias oscillator adjustment. (CT-S405 only)
2. Recording bias adjustment.
3. Recording level adjustment.
4. Level meter check.

NOTE: This unit has an automatic tape selection feature.

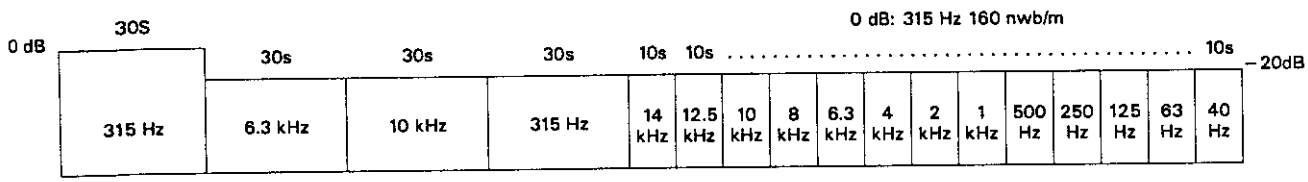



Fig. 9-3. Constants of the test tape STD-331B

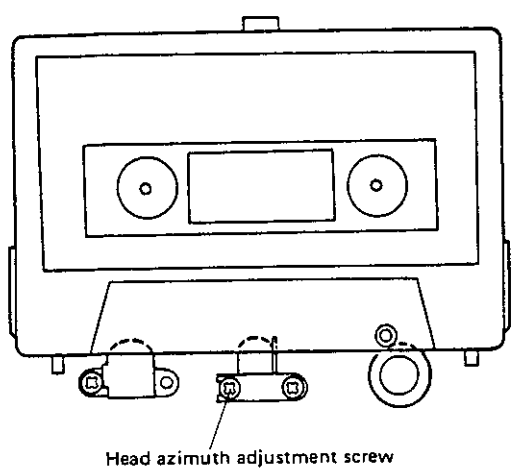



Fig. 9-4. Head azimuth adjustment

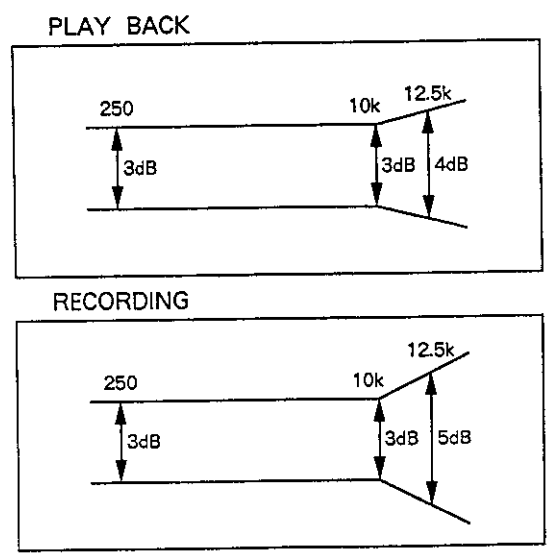



Fig. 9-5. Allowable playback frequency response zone

# PLAYBACK SECTION

## 1. Head Azimuth Adjustment

• Turn VR101, 102 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. (See Fig. 9-4) | LINE OUT | Maximum playback signal level. | |
| 2. | STOP | Lock the screw with screw lock after completing adjustment. | | | | |

## 2. 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. | Deck I | VR101 (Lch)<br>VR102 (Rch) | TP1. DOL.L (Lch)<br>TP2. DOL.R (Rch) | −15.2 dBv | |

# RECORDING SECTION

## 1. Bias Oscillator Adjustment (CT-S405 only)

| 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. | Deck I | L 602 | TP. 11 | 105 kHz ±0.3 kHz | |

## 2. Recording Bias Adjustment

• After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

| 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 | Record the 315 Hz and 6.3 kHz signals at −20 dBv input level and playback. (Use the STD-630 test tape) | Deck I | VR601 (Lch)<br>VR602 (Rch)<br>(CT-S305 ONLY)<br>(CT-225 ONLY)<br>VR801 (Lch)<br>VR802 (Rch)<br>(CT-S405 ONLY) | LINE OUT | Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +1.0 dB±0.5 dB when compared with the 315 Hz signal. | |

## 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 PAUSE | Apply a 315 Hz/0 dBv signal to the line Input terminals, load the STD-630 test tape. | Rec Level control volume | | TP1. DOL.L (Lch)<br>TP2. DOL.R (Rch) | −15.2 dBv | |
| 3. | STOP | Set the DOLBY NR switch to the ON position. (DOLBY B) | | | | | |
| 4. | REC/ PLAY | Record the above signal onto the STD-630 test tape, and playback. | Deck I | VR301 (Lch)<br>VR302 (Rch) | TP1. DOL.L (Lch)<br>TP2. DOL.R (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 $CrO_2$ position. | | | | | |
| 6. | REC/ PLAY | Record the above signal onto the STD-620 test tape, and playback. | Check | | TP1. DOL.L (Lch)<br>TP2. DOL.R (Rch) | −15.2 dBv ±1.5 dB | |
| 7. | STOP | Set the TAPE SELECTOR switch to the METAL position. | | | | | |
| 8. | REC/ PLAY | Record the above signal onto the STD-610 test tape, and playback. | Check | | TP1. DOL.L (Lch)<br>TP2. DOL.R (Rch) | −15.2 dBv ±1.5 dB | |

## 4. Level Meter Check

| No. | Mode | Input signal & test tape | Adjustment location | Measuring location | Adjustment value | Remarks |
|---|---|---|---|---|---|---|
| 1. | REC PAUSE | Apply a 315 Hz/−10 dBv (316 mV) signal to the Line Input terminals. | Rec Level control volume | TP1. DOL.L (Lch)<br>TP2. DOL.R (Rch) | Check that the level meters "0 dB" light up within −15.2 dBv ±2 dB of the signal output level. | |

# 9. RÉGLAGE

## 9.1 RÉGLAGES MÉCANIQUES

1. Reglage de la vitesse de défilement de la bande

| Mode | Bande d'étalonnage | Position de réglage | Spécifications nominales (fréquence de lecture) |
|---|---|---|---|
| LECTURE | Lire la bande STD-301 (3kHz) | Contrôle à résistance variable | 3000Hz ±5Hz |

Remarque: Ajuster après une minute de lecture.

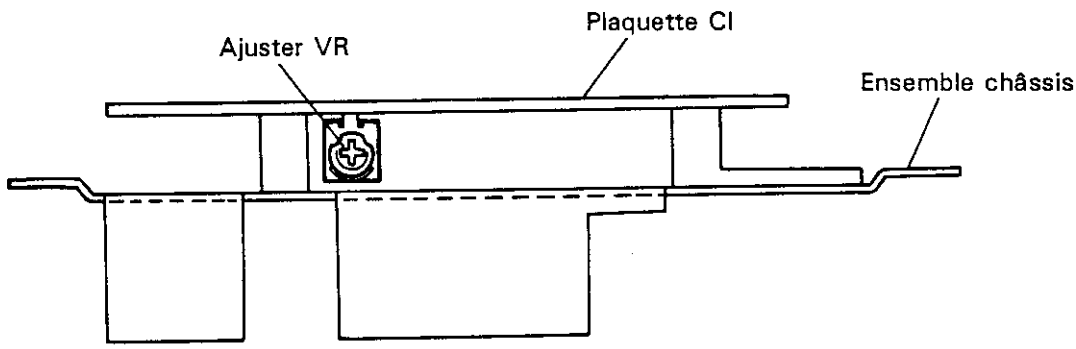



Diagramme de l'unité du mécanisme, vue de haut

Fig. 9-1

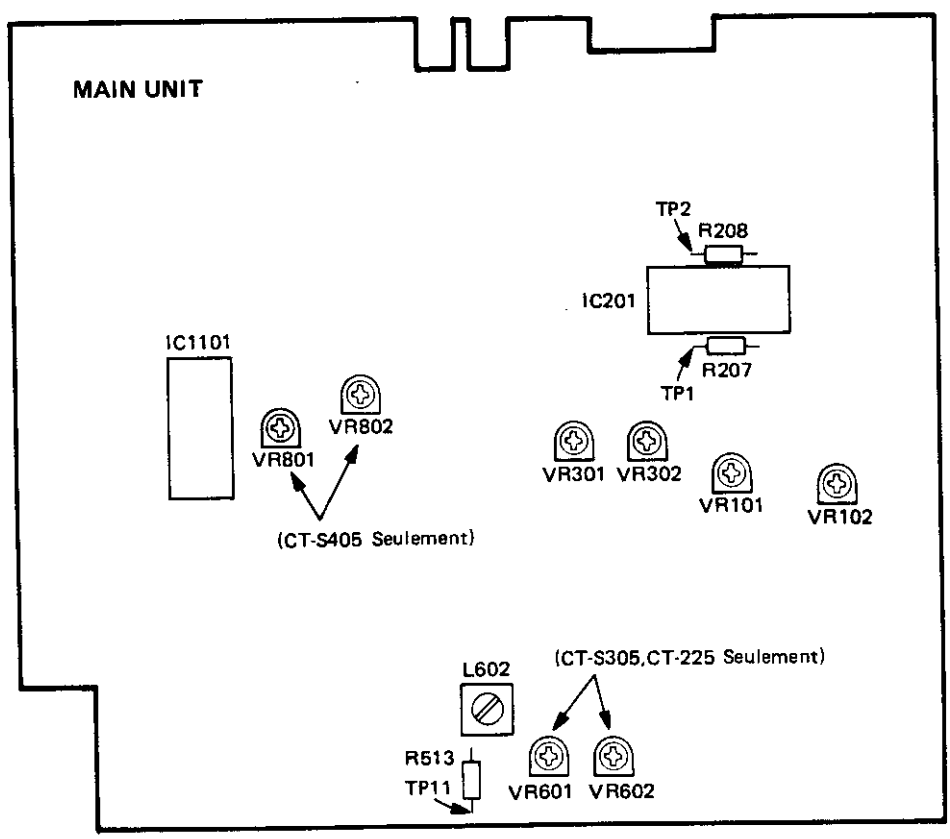



Fig. 9-2

## 9.2 REGLAGES ELECTRIQUES

### Conditions de réglage

1. Les réglages mécaniques doivent tout d'abord être terminés.
2. Les têtes doivent être nettoyées et démagnétisées.
3. Mettre la platine sous tension et la laisser chauffer pendant au moins quelques minutes avant de commencer les réglages électriques.
4. Le signal de référence est de dBv=1 Vrms.
5. Connecter une résistance de charge de 50 kohms (tolérance 47 à 52 kohms) aux bornes de sortie (OUTPUT).
6. Sauf indication contraire, les commutateurs ci-dessous doivent être laissés sur les positions indiquées.
   DOLBY NR : OFF
   Sélecteur de bande : NORM
   (TAPE SELECTOR)

### Bandes d'essai

STD-331B : Réglages de la lecture (Voir fig. 9-3)
STD-630 : Bande vierge de type normal
STD-620 : Bande vierge de type chrome
STD-610 : Bande vierge de type métal

### Liste des réglages

#### Sections de lecture

1. Réglage de l'azimut de la tête.
2. Réglage du niveau de lecture.

#### Sections d'enregistrement

1. Réglage de l'oscillateur de polarisation. (CT-S405 seulement)
2. Réglage de la polarisation d'enregistrement.
3. Réglage du niveau d'enregistrement.
4. Vérification de l'indicateur de niveau.

REMARQUE:
Cette unité est dotée d'une sélection automatique de bande.

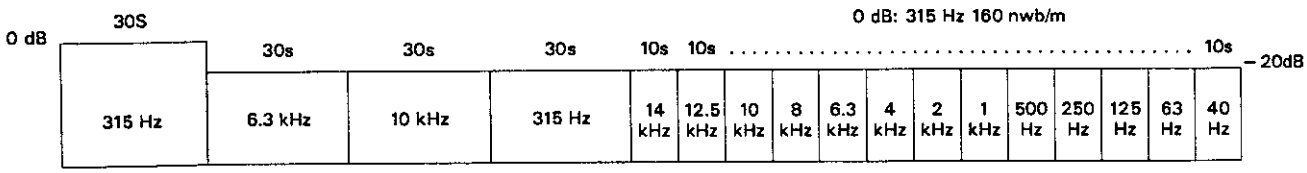



Fig. 9-3 Constantes de la bande d'essai STD-331B

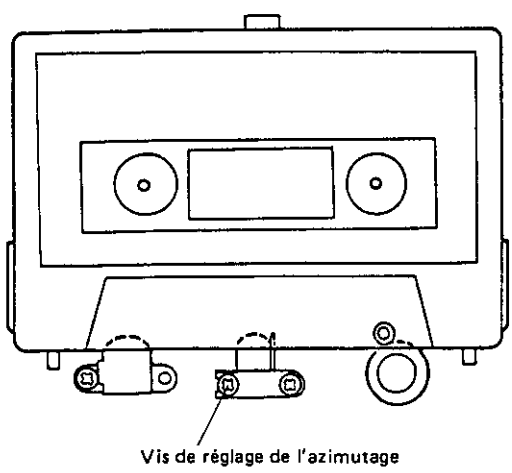



Fig. 9-4 Réglage de l'azimut de la tête

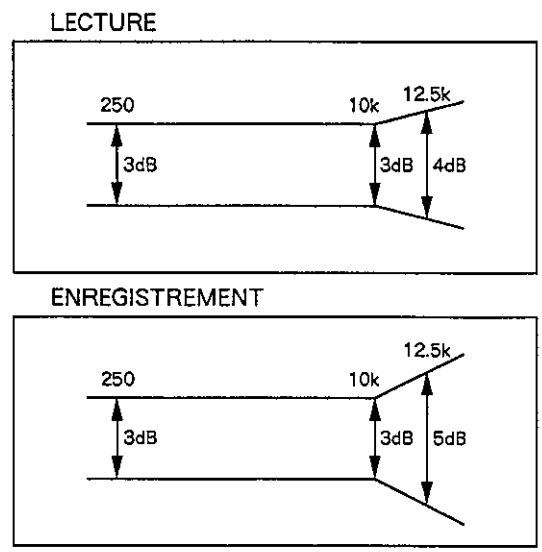



Fig. 9-5 Tolérance de la zone de réponse en fréquence de lecture

# SECTION DE LECTURE

## 1. Réglage de l'azimut de la tête

• Tourner VR 101, 102 sur leur position centrale mécanique.

| No. | Mode | Signal d'entrée et bande d'essai | Points de réglage | Points de mesure | Valeur de réglage | Remarques |
|---|---|---|---|---|---|---|
| 1. | PLAY | Reproduire la section 10 kHz/−20 dB de la bande d'essai STD-331B. | Vis de réglage de l'azimut de la tête. (Voir fig. 9-4) | Sortie de ligne (LINE OUT) | Niveau du signal de reproduction maximum. | |
| 2. | STOP | Verrouiller la vis avec le verrouillage de vis après avoir terminé le réglage. | | | | |

## 2. Réglage du niveau de lecture

• Ce réglage détermine le niveau DOLBY NR et il doit être effectué très soigneusement.

| No. | Mode | Signal d'entrée et bande d'essai | Points de réglage | | Points de mesure | Valeur de réglage | Remarques |
|---|---|---|---|---|---|---|---|
| 1. | PLAY | Reproduire la section 315 Hz/0 dB de la bande d'essai STD-331B. | Platine I | VR101(can. G)<br>VR102(can. D) | TP1. DOL.L (can. G)<br>TP2. DOL.R (can. D) | −15.2 dBv | |

# SECTION D'ENREGISTREMENT

## 1. Réglage de l'oscillateur de polarisation (CT-S405 seulement)

| No. | Mode | Signal d'entrée et bande d'essai | Points de réglage | | Points de mesure | Valeur de réglage | Remarques |
|---|---|---|---|---|---|---|---|
| 1. | REC | Charger la bande d'essai STD-610 et n'introduire aucun signal. | Platine I | L 602 | TP. 11 | 105 kHz ±0.3 kHz | |

## 2. Réglage de la polarisation d'enregistrement

• Après le réglage, des précautions doivent être prises pour éviter une sous-polarisation en vérifiant le taux de distorsion.

| No. | Mode | Signal d'entrée et bande d'essai | Points de réglage | | Points de mesure | Valeur de réglage | Remarques |
|---|---|---|---|---|---|---|---|
| 1. | STOP | Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM. | | | | | |
| 2. | REC | Enregistrer les signaux 315 Hz et 6,3 kHz à un niveau d'entrée de −20 dBv et les reproduire. (Utiliser la bande d'essai STD-630) | Platine I | VR601(can. G)<br>VR602(can. D)<br>(CT-S305 CT-225 seulement)<br>VR801(can.G)<br>VR802(can.D)<br>(CT-S405 seulement) | Sortie de ligne (LINE OUT) | Enregistrer, reproduire et régler de manière répétée de sorte que le niveau de lecture du signal 6,3 kHz devienne +1.0 dB ±0.5 dB lorsqu'il est comparé avec le signal 315 Hz. | |

## 3. Réglage du niveau d'enregistrement

• Régler l'oscillateur de polarisation, les platines I et II étant réglées indépendamment dans le mode d'enregistrement. ← (Enr/lec double seulement)

| No. | Mode | Signal d'entrée et bande d'essai | Points de réglage | | Points de mesure | Valeur de réglage | Remarques |
|---|---|---|---|---|---|---|---|
| 1. | STOP | Régler le sélecteur de bande (TAPE SELECTOR) sur la position NORM. | | | | | |
| 2. | REC PAUSE | Appliquer un signal de 315 Hz/0 dBv aux bornes d'entrée de ligne, charger la bande d'essai STD-630. | Volume de la commande de niveau d'enregistrement. | | TP1. DOL.L (can. G)<br>TP2. DOL.R (can. D) | −15.2 dBv | |
| 3. | STOP | Régler le commutateur DOLBY NR sur la position ON. (DOLBY B) | | | | | |
| 4. | REC/ PLAY | Enregistrer le signal cidessus sur la bande d'essai STD-630 et le reproduire. | Platine I | VR301(can. G)<br>VR302(can. D) | TP1. DOL.L (can. G)<br>TP2. DOL.R (can. D) | Enregistrer, reproduire et régler de manière répétée de sorte que le niveau du signal devienne −15.2 dB. | |
| 5. | STOP | Régler le sélecteur de bande (TAPE SELECTOR) sur la position $CrO_2$. | | | | | |
| 6. | REC/ PLAY | Enregistrer le signal cidessus sur la bande d'essai STD-620 et le reproduire. | Vérifier | | TP1. DOL.L (can. G)<br>TP2. DOL.R (can. D) | −15.2 dBv ±1.5 dB | |
| 7. | STOP | Régler le sélecteur de bande (TAPE SELECTOR) sur la position METAL. | | | | | |
| 8. | REC/ PLAY | Enregistrer le signal cidessus sur la bande d'essai STD-610 et le reproduire. | Vérifier | | TP1. DOL.L (can. G)<br>TP2. DOL.R (can. D) | −15.2 dBv ±1.5 dB | |

## 4. Vérification de l'indicateur de niveau

| No. | Mode | Signal d'entrée et bande d'essai | Points de réglage | Points de mesure | Valeur de réglage | Remarques |
|---|---|---|---|---|---|---|
| 1. | REC PAUSE | Appliquer un signal de 315 Hz/– 10 dBv (316 mV) aux bornes d'entrée de ligne. | Volume de la commande de niveau d'enregistrement | TP1. DOL.L (can. G) TP2. DOL.R (can. D) | Vérifier que les indicateurs de niveau "0 dB" s'allument dans la limite de – 15.2 dBv ±2 dB du niveau de sortie du signal. | |

# 9. AJUSTE

## 9.1 AJUSTE MECANICO

| 1. Ajuste de la velocidad de la cinta | | | |
|---|---|---|---|
| Modo | Cinta de prueba | Posición de ajuste | Valor de especificatión (frecuencia de reproducción) |
| PLAY | Reproducir la STD-301 (3kHz) | Control del resistor variable | 3000Hz ± 5Hz |

Nota: Ajustar la resistencia variable

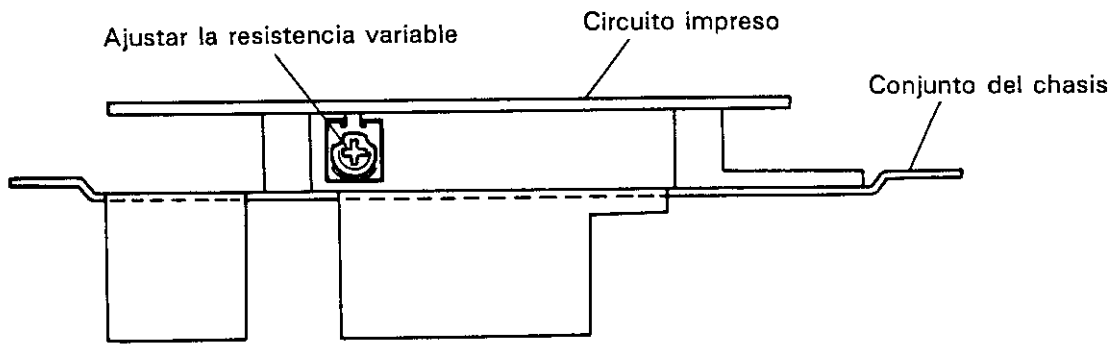



Diagrama del mecanismo, vista de arriba

Fig. 9-1

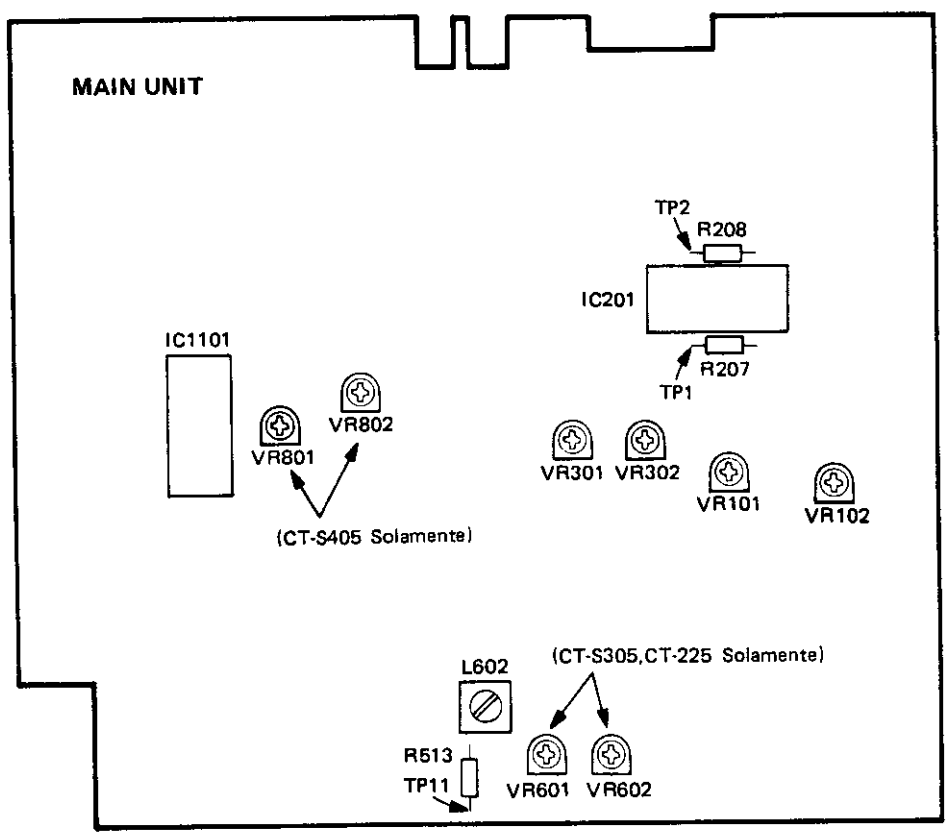



Fig. 9-2

## 9.2 AJUSTES ELÉCTRICOS

### Condiciones de ajuste

1. Los ajustes mecánicos deben haberse completado primero.
2. La cabeza debe estar limpia y desmagnetizada.
3. Encienda la alimentación para permitir que la platina se caliente durante unos pocos minutos por lo menos antes de realizar cualquier ajuste eléctrico.
4. La señal de referencia es de 0 dBv=1 Vrms.
5. Conecte una resistencia de 50 kΩ (o entre 47 y 52 kΩ) en los terminales OUTPUT.
6. A menos que se especifique lo contrario, los conmutadores indicados más abajo deben dejarse en las posiciones indicadas.
   DOLBY NR : OFF
   TAPE SELECTOR : NORM

### Cintas de prueba

STD-331B : Ajustes de reproducción (Consulte la figura 9-3)
STD-630 : Cinta virgen NORMAL
STD-620 : Cinta virgen de $CrO_2$
STD-610 : Cinta virgen de METAL

### Lista de ajustes

**Secciones de reproducción**

1. Ajuste de azimut de la cabeza
2. Ajuste del nivel de reproducción

**Secciones de grabación**

1. Ajuste del oscillador de polarización (CT-S405 sólo)
2. Ajuste de la polarización de grabación
3. Ajuste del nivel de grabación
4. Verificación del medidor de nivel

NOTA:
Esta unidad posee una función de selección automática de cinta.

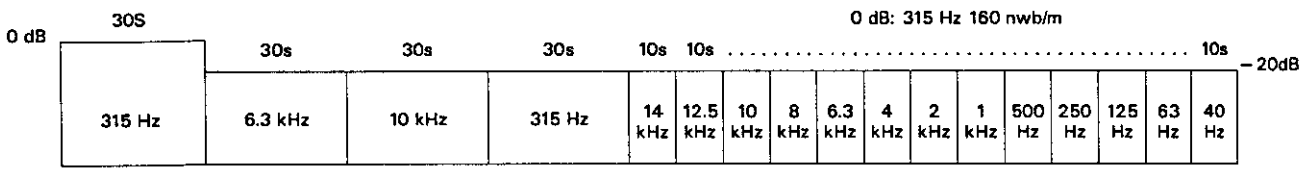



Figura 9-3 Constantes de la cinta de prueba STD-331B

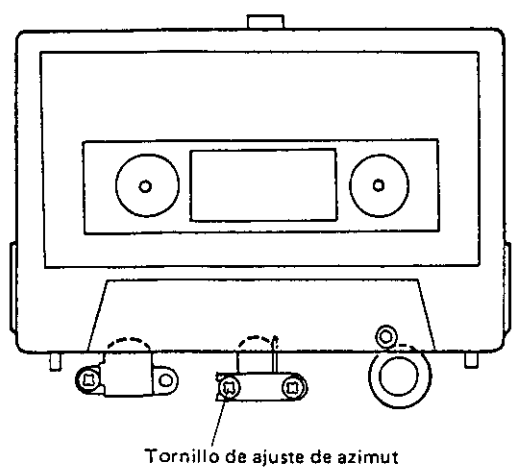



Figura 9-4 Ajuste de azimut de la cabeza

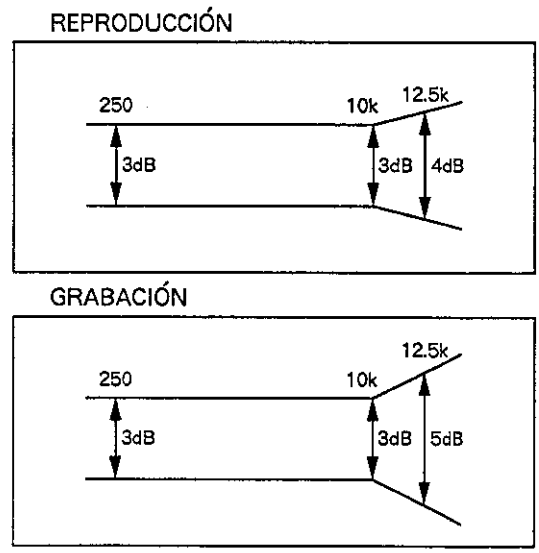



Figura 9-5 Zona permisible de respuesta de frecuencia de reproducción

# SECCION DE REPRODUCCION

## 1. Ajuste del azimut de la cabeza

• Poner VR 101, 102 en las posiciones del centro mecánico.

| N.° | Modo | Señal de entrada y cinta de prueba | Punto de ajuste | Punto de medición | Valor de ajuste | Comentarios |
|---|---|---|---|---|---|---|
| 1. | PLAY | Reproduzca la sección de 10 kHz/– 20 dB de la cinta de prueba STD-331B. | Tornillo de ajuste del azimut de la cabeza. (Vea la figura 9-4) | LINE OUT | Nivel máximo de la señal de reproducción. | |
| 2. | STOP | Bloquee el tornillo con su cierre una vez finalizado el ajuste. | | | | |

## 2. Ajuste del nivel de reproducción

• Este ajuste determina el nivel DOLBY NR y debe realizarse con mucho cuidado.

| N.° | Modo | Señal de entrada y cinta de prueba | Punto de ajuste | | Punto de medición | Valor de ajuste | Comentarios |
|---|---|---|---|---|---|---|---|
| 1. | PLAY | Produzca la parte de 315 Hz/0 dB de la cinta de prueba STD-331B. | Platina I | VR 101 (Lch)<br>VR 102 (Rch) | TP1. DOL.L (Lch)<br>TP2. DOL.R (Rch) | – 15.2 dBv | |

# SECCIÓN DE GRABACIÓN

## 1. Ajuste del oscilador de polarización (CT-S405 sólo)

| N.° | Modo | Señal de entrada y cinta de prueba | Punto de ajuste | | Punto de medición | Valor de ajuste | Comentarios |
|---|---|---|---|---|---|---|---|
| 1. | REC | Introduzca la cinta de prueba STD-610 sin señal de entrada. | Platina I | L 602 | TP. 11 | 105 kHz ±0.3 kHz | |

## 2. Ajuste de polarización de grabación

• Una vez finalizado el ajuste, compruebe el porcentaje de distorsión para no obtener subpolarización.

| N.° | Modo | Señal de entrada y cinta de prueba | Punto de ajuste | | Punto de medición | Valor de ajuste | Comentarios |
|---|---|---|---|---|---|---|---|
| 1. | STOP | Ponga el conmutador TAPE SELECTOR en la posición NORM. | | | | | |
| 2. | REC | Grabe la señal de 315 Hz y 6,3 kHz a un nivel de entrada de – 20 dBv y reprodúzcala. (Use la cinta de prueba STD-630) | Platina I | VR 601 (Lch)<br>VR 602 (Rch)<br>(CT-S305 CT-225 Solamente)<br>VR801 (Lch)<br>VR802 (Rch)<br>(CT-S405 solamente) | LINE OUT | Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción de 6,3 kHz sea de + 1.0 dB ± 0.5 dB cuando se compare con la señal de 315 Hz. | |

## 3. Ajuste del nivel de grabación

| N.° | Modo | Señal de entrada y cinta de prueba | Punto de ajuste | | Punto de medición | Valor de ajuste | Comentarios |
|---|---|---|---|---|---|---|---|
| 1. | STOP | Ponga el conmutador TAPE SELECTOR en la posición NORM. | | | | | |
| 2. | REC PAUSE | Aplique una señal de 315 Hz/0 dBv a los terminales de entrada de línea e introduzca la cinta de prueba STD-630. | Control de nivel de grabación. | | TP1. DDL.L (Lch)<br>TP2. DDL.R (Rch) | – 15.2 dBv | |
| 3. | STOP | Ponga el conmutador DOLBY NR en la posición ON. (DOLBY B) | | | | | |
| 4. | REC/ PLAY | Grabe la señal de arriba en la cinta de prueba STD-630 y reprodúzcala. | Platina I | VR 301 (Lch)<br>VR 302 (Rch) | TP1. DDL.L (Lch)<br>TP2. DDL.R (Rch) | Grabe, reproduzca y ajuste repetidamente para que el nivel de la señal de reproducción sea de – 15.2 dB. | |
| 5. | STOP | Ponga el conmutador TAPE SELECTOR en la posición $CrO_2$. | | | | | |
| 6. | REC/ PLAY | Grabe la señal de arriba en la cinta de prueba STD-620 y reprodúzcala. | Verifique | | TP1. DDL.L (Lch)<br>TP2. DDL.R (Rch) | – 15.2 dBv ± 1.5 dB | |
| 7. | STOP | Ponga el conmutador TAPE SELECTOR en la posición METAL. | | | | | |
| 8. | REC/ PLAY | Grabe la señal de arriba en la cinta de prueba STD-610 y reprodúzcala. | Verifique | | TP1. DDL.L (Lch)<br>TP2. DDL.R (Rch) | – 15.2 dBv ± 1.5 dB | |

### 4. Verificación del medidor de nivel

| N.º | Modo | Señal de entrada y cinta de prueba | Punto de ajuste | Punto de medición | Valor de ajuste | Comentarios |
|---|---|---|---|---|---|---|
| 1. | REC PAUSE | Aplique una señal de 315 Hz/−10 dBv (316 mV) a los terminales de entrada de línea. | Control de nivel de grabación | TP1. DOL.L (Lch) TP2. DOL.R (Rch) | Verifique si se encienden los medidores de nivel "0 dB" cuando el nivel de salida de la señal sea −15.2 dBv ±2 dB. | |

# 10. IC DESCRIPTIONS

## IC1101 (PD4185)

| Pin No. | Name | Description |
|---|---|---|
| 1 | — | Connect to GND |
| 2 | | Non connect |
| 3 | RESET | System reset terminal |
| 4 | — | Crystal connecting terminal |
| 5 | | |
| 6 | KEY IN 0/$\overline{T0}$ | Key matrix IN * / Display matrix * |
| 7 | KEY IN 1/$\overline{T1}$ | |
| 8 | KEY IN 2/$\overline{T2}$ | |
| 9 | KEY IN 3/$\overline{T3}$ | |
| 10 | $\overline{T4}$ | |
| 11 | $\overline{T5}$ | |
| 12 | LEV L | Meter level L-ch data input |
| 13 | LEV R | Meter level R-ch data input |
| 14 | KEYS | Key matrix/Display matrix SW* |
| 15 | POWER OFF | Power off reset |
| 16 | SENSING | Sensing terminal |
| 17 | SONG | Blank search input |
| 18 | — | Connect to GND |
| 19 | REMO | Remote signal input |
| 20 | — | Non connect |
| 21 | VC5V | Power supply (+5V) |
| 22 | SOLB | SOA (pin 23) voltage drop control (in FAST) |

| Pin No. | Name | Description |
|---|---|---|
| 23 | SOLA | Solenoid drive |
| 24 | CPM | Capstan motor drive |
| 25 | — | Non connect |
| 26 | | |
| 27 | | |
| 28 | | |
| 29 | | |
| 30 | ENCO | Encode/decode SW Decode= "L" |
| 31 | BIAS | Bias OSC SW Bias OSC ON= "H" |
| 32 | REC MUT | REC mute Active= "L" |
| 33 | LINE MUT | Line mute Active= "L" |
| 34 | S7 | Key matrix and Display matrix * |
| 35 | S6 | |
| 36 | S5 | |
| 37 | S4 | |
| 38 | S3 | |
| 39 | S2 | |
| 40 | S1 | |
| 41 | S0 | |
| 42 | — | GND |

- Unless otherwise specified, pins indicated by the over-line "−" (above Pin Name) in the Name column are low active (ON) and others are high active (ON).

*When pin 14 is low level, "$\overline{T0}$ to $\overline{T5}$ (pins 6 to 11) ×S0 to S7 (pins 34 to 41)" is used for the dynamic display. When pin 14 is high level, "KEY IN 0 to KEY IN 3 (pins 6 to 9) ×S0 to S7 (pins 34 to 41)" is used for the key matrix. And then "LEV L (pin 12), LEV R (pin 13) ×S4 to S7 (pins 34 to 37)" is used for the level scanning for the level meter.

# 11. FOR CT−225/HEM, HB, HP, SD, CT−225−S/HEM AND CT−S405/KUC TYPES

NOTES :

- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the impotance 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−225/HEM, HB, HP, SD, CT−225−S/HEM and CT−S405/KUC types are the same as the CT−S305/KU type with the exception of the following sections.**

| Mark | Symbol & Description | Parts No. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | CT−S305 /KU | CT−225 /HEM | CT−225 /HB | CT−225 /HP | CT−225 /SD | CT−225 −S/HEM | CT−S405 /KUC |
| | Main unit | Non supply | Non supply | Non supply | Non supply | Non supply | Non supply | Non supply |
| | Display unit | Non supply | Non supply | Non supply | Non supply | Non supply | Non supply | Non supply |
| | Transformer 1 unit | Non supply | Non supply | Non supply | Non supply | Non supply | Non supply | Non supply |
| ⚠ | Strain relief | CM−22 | CM−22B | CM−22B | CM−22B | CM−22B | CM−22B | CM−22 |
| ⚠ | AC Power cord | RDG1010 | PDG1003 | PDG1004 | PDG1006 | PDG1013 | PDG1003 | RDG1010 |
| ⚠ | FU1201, FU1202 Fuse (1.25A/125V) | REK−073 | ..... | ..... | ..... | ..... | ..... | REK−073 |
| ⚠ | FU1201, FU1202 Fuse (T1.25A/250V) | ..... | REK−101 | REK−101 | REK−101 | REK−101 | REK−101 | ..... |
| ⚠ | T1 Power transformer | RTT1086 | RTT1087 | RTT1087 | RTT1087 | RTT1088 | RTT1087 | RTT1086 |
| ⚠ | Voltage selector switch | ..... | ..... | ..... | ..... | PSB1002 | ..... | ..... |
| | Front panel assembly | RXX1194 | RXX1176 | RXX1176 | RXX1176 | RXX1176 | RXX1195 | RXX1203 |
| | Knob (REC LEVEL) | RAC1221 | RAC1221 | RAC1221 | RAC1221 | RAC1221 | RAC1222 | RAC1221 |
| | Knob (COUNTER RESET) | RAC1228 | RAC1228 | RAC1228 | RAC1228 | RAC1228 | RAC1309 | RAC1228 |
| | Bottun (POWER) | RAC1240 | RAC1240 | RAC1240 | RAC1240 | RAC1240 | RAC1241 | RAC1240 |
| | Knob (REC BALANCE) | RAC1337 | RAC1337 | RAC1337 | RAC1337 | RAC1337 | RAC1360 | RAC1337 |
| | Knob (DOLBY NR) | RAC1343 | RAC1343 | RAC1343 | RAC1343 | RAC1343 | RAC1351 | RAC1343 |
| | Knob (EJECT) | RAC1344 | RAC1344 | RAC1344 | RAC1344 | RAC1344 | RAC1352 | RAC1344 |
| | Knob (◂◂, ■, ▸, ▸▸, ●, ❚❚, ⏏) | RAC1345 | RAC1345 | RAC1345 | RAC1345 | RAC1345 | RAC1353 | RAC1345 |
| | Knob (REC/TIMER OFF/PLAY/REPEAT) | RAC1357 | RAC1357 | RAC1357 | RAC1357 | RAC1357 | RAC1350 | RAC1357 |
| | Dolby name plate | RAH1458 | RAH1458 | RAH1458 | RAH1458 | RAH1458 | RAH1484 | RAH1458 |
| | Door panel | RAH1469 | RAH1469 | RAH1469 | RAH1469 | RAH1469 | RAH1485 | RAH1499 |
| | Bonnet | RXX1079 | RXX1079 | RXX1079 | RXX1079 | RXX1079 | RXX1080 | RXX1079 |
| | Meter lens | RAH1459 | RAH1459 | RAH1459 | RAH1459 | RAH1459 | RAH1459 | RAH1489 |
| | Connection cord (For packing) | PDE−319 | ..... | ..... | ..... | ..... | ..... | PDE−319 |
| | Packing case | RHG1121 | RHG1113 | RHG1113 | RHG1113 | RHG1113 | RHG1122 | RHG1123 |
| | Operating instructions (English, French, German, Italian, Dutch, Spanish, Portuguese, Swedish ) | ..... | RRE1025 | ..... | ..... | ..... | RRE1025 | ..... |
| | Operating instructions (English ) | RRB1044 | ..... | RRB1044 | RRB1044 | RRB1044 | ..... | RRB1044 |
| | Operating instructions (Spanish) | ..... | ..... | ..... | ..... | RRD1054 | ..... | ..... |

## MAIN UNIT

**The main units of CT−225/HEM, HB, HP, SD, CT−225−S/HEM and CT−S405/KUC types are the same as the main unit of CT−S305/KU type with the exception of the following sections.**

| Mark | Symbol & Description | Parts No. | | | Remarks |
|---|---|---|---|---|---|
| | | CT−S305 /KU type | CT−225/HEM, HB, HP, SD and CT−225−S /HEMtypes | CT−S405 /KUC type | |
| | IC801 | ..... | ..... | μ PC1297CA | |
| | Q801, Q802 | ..... | ..... | 2SA1309A | |
| | Q803 | ..... | ..... | DTC124ES | |
| | D1102−D1104 | 1SS254 | ..... | 1SS254 | |
| | D801, D802 | ..... | ..... | 1SS254 | |
| | C1105 | CKCYF473Z50 | ..... | CKCYF473Z50 | |
| | C801, C802 | ..... | ..... | CGCYX103K25 | |
| | C803, C804 | ..... | ..... | CKPUYB821K50 | |
| | C805, C806 | ..... | ..... | CFTXA223J50 | |
| | C807, C808 | ..... | ..... | CGCYX473K25 | |
| | C809, C810 | ..... | ..... | CCCSL101K500 | |
| | C811, C812 | ..... | ..... | CKCYB471J500 | |
| | C813 | ..... | ..... | CKPUYB101K50 | |
| | C814 | ..... | ..... | CEASR10M50 | |
| | C815, C819 | ..... | ..... | CEAS100M50 | |
| | C816 | ..... | ..... | CEAS4R7M50 | |
| | R513 | ..... | ..... | RD¼LF010J | |
| | R801, R802, R806 | ..... | ..... | RD⅛PM223J | |
| | R803, R804 | ..... | ..... | RD⅛PM184J | |
| | R805 | ..... | ..... | RD⅛PM153J | |
| | R807, R808 | ..... | ..... | RD⅛PM472J | |
| | R809 | ..... | ..... | RD⅛PM103J | |
| | VR801, VR802 | ..... | ..... | VRTB6VS223 | |
| | L602 | RTD1017 | RTD1017 | RDT1039 | |
| | L801, L802 | ..... | ..... | RTD1030 | |
| | JA1101, JA1102 | RKN−071 | ..... | RKN−071 | |
| | C609, C610 | CCCSL101K500 | CCCSL101K500 | ..... | |
| | R651 | RD¼LF201J | RD¼LF201J | RD¼LF331J | |
| | R652 | RD¼LF151J | RD¼LF151J | RD¼LF221J | |
| | VR601, VR602 | VRTB6VS104 | VRTB6VS104 | ..... | |

## DISPLAY UNIT

**The display units of CT−225/HEM, HB, HP, SD, CT−225−S/HEM and CT−S405/KUC types are the same as the display unit of CT−S305/KU type with the exception of the following sections.**

| Mark | Symbol & Description | Parts No. | | | Remarks |
|---|---|---|---|---|---|
| | | CT−S305/KU type | CT−225/HEM, HB, HP, SD and CT−225−S/HEM types | CT−S405/KUC type | |
| | D2401, D2403−D2412, D2419, D2420<br>D2421, D2422<br>R2414, R2415 | SEL4914A−X<br>.....<br>..... | SEL4310E<br>.....<br>..... | SEL4914A−X<br>SEL4214S<br>RD 1/6 PM331J | |

## TRANSFORMER 1 UNIT

**The transformer 1 units of CT−225/HEM, HB, HP, SD, CT−225−S/HEM and CT−S405/KUC types sre the same as the transformer 1 unit of CT−S305/KU type.**

# 12. SPECIFICATIONS

Systems ..... 4 track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head × 1
"Ferrite" erasing head × 1
Motor ..... DC servo capstan motor × 1
Wow and Flutter ..... No more than 0.075% (WRMS)
± 0.19% (DIN)
Fast winding Time ..... Approximately 110 seconds
(C-60 tape)

Frequency Response ( ± 6 dB)
−20 dB recording:
Normal tape ..... 25 to 16,000 Hz
Chrome tape ..... 25 to 16,500 Hz
Metal tape ..... 25 to 17,000 Hz
Signal-to-Noise Ratio
Dolby NR OFF ..... More than 57 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 0.7% (0 dB)
Input (Sensitivity)
LINE (INPUT) ..... 63 mV (Input impedance 50 kΩ)
Output (Reference level)
LINE (OUTPUT) ..... 316 mV (Output impedance 3.4 kΩ)
Headphone ..... 0.25 mW (load impedance 8 Ω)

### Subfunctions

- DOLBY B-type and C-type NR Systems
- DOLBY HX PRO (CT-S405 only)
- 3-position automatic tape selector (NORM/CrO2/METAL)
- Music search over ± 15 selections
- Automatic space recording mute
- 7 segments/channel LED level meter
- Timer Recording/Playback
- System remote control compatible (U.S., Canadian models only)
- Repeat playback
- 3-digit mechanical tape counter

### Miscellaneous

Power Requirements
U.S., Canadian models ..... AC 120V, 60Hz
European model ..... AC 220 Volts ~ , 50/60 Hz
U.K., Australian models ..... AC 240 Volts ~ , 50/60 Hz
Other destination models .....
AC 110V/120−127V/220V/240V,
50/60 Hz (switchable)

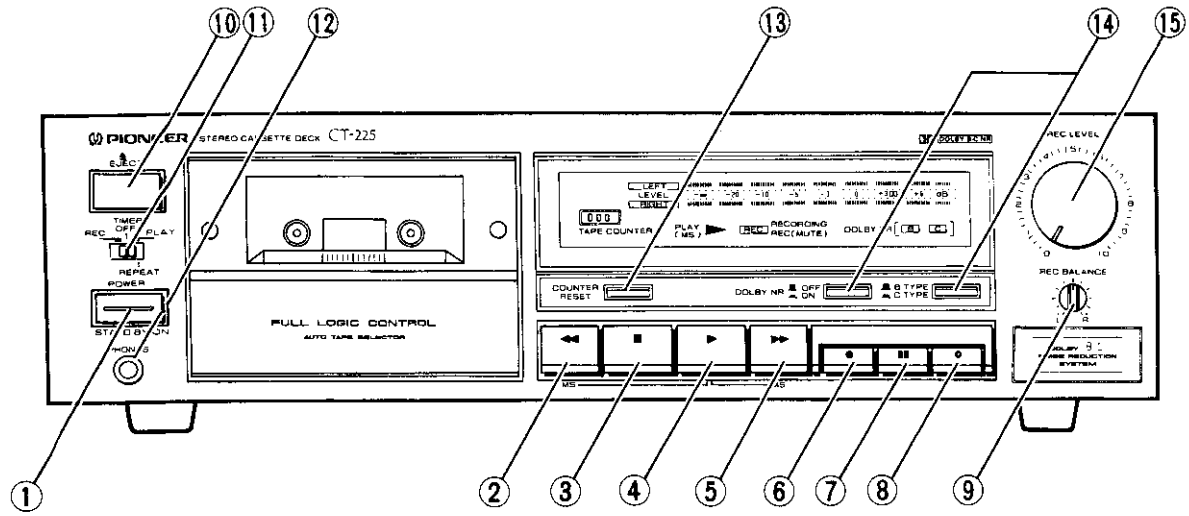
Power Consumption
U.S., Canadian models ..... CT-S305 ; 13W
CT-S405 ; 14W
European, U.K., Australian models ..... 14W
Other destination models ..... 14W
Dimensions ..... 420(W) × 120(H) × 272(D) mm
16-9/16 (W) × 4-3/4 (H) × 10-11/16 (D) in
Weight (without package) ..... 3.6 kg (7 lb 15 oz)

### Accessories

Operating instructions ..... 1
Connection cord with pin plugs ..... 2
System remote control cord (U.S., Canadian models only) ..... 1

*NOTE:*
*Specifications and design subject to possible modifications without notice due to improvements.*

# 13. PANEL FACILITIES




The illustration shows model CT-225.

### ① POWER (STANDBY/ON) switch

*NOTE:*
*The POWER switch turns off the transformer secondary circuits only, and so even at the STANDBY position, the unit is connected to the mains as long as the power cord is connected to a power outlet.*

### ② Rewind button (◄◄)

To rewind the tape in the direction of the arrows.
When this button is pressed once during playback of a selection, the same selection will be played again. If pressed in the blank between two selections, the first selection before the current tape position will be played. The unit will skip one selection in reverse direction for each time the ◄◄ button is pressed

### ③ Stop button (■)

To stop all operations.

### ④ Playback button (►)

To start playback.

### ⑤ Fast forward button (►►)

To fast-forward the tape in the direction of the arrows.
When pressed during playback, the unit will skip one selection in forward direction for each time the ►► button is pressed.

### ⑥ Recording button (●)

When the recording (●) button is pressed, the unit is set to recording standby mode.
Press the pause (❚❚) button or playback (►) button when ready to record.
The unit will not enter the recording standby mode if a cassette with the erasure prevention tabs removed is loaded.

### ⑦ Pause button (❚❚)

To stop tape transport momentarily during recording or playback. Press the button again to resume operation. This can also be done by pressing the playback (►) button. This button does not work during fast-forward and rewind.

### ⑧ Record muting button (O)

Press this button during recording to create a blank portion of approx. 4 seconds on the tape. The unit will then enter the recording standby mode.

### ⑨ REC BALANCE control

Balancing the recording level between left (L) and right (R) channels.

### ⑩ EJECT button (▲)

Press to open the cassette door after you have pressed the stop button (■) and the tape has stopped.

### ⑪ TIMER mode selector

**OFF:**

Normally, be sure to leave the switch in this position.

**REC:**

For timer recording

**PLAY/REPEAT:**

For timer playback or for repeat playback.

- Recording or playback may suddenly start when turning the power on with this switch in the REC or PLAY position.

### ⑫ PHONES jack

### ⑬ Tape COUNTER RESET button

Resets the tape counter reading to "000".

### ⑭ DOLBY * NR switches

Set these switches to ON and B-TYPE or C-TYPE for recording with the built-in Dolby Noise Reduction Systems and for playback of tapes which have been recorded using the Dolby Noise Reduction Systems.

For other tapes, set the left DOLBY NR switch to OFF.

** [HX PRO is CT-S405 only, not provided in other models.]*

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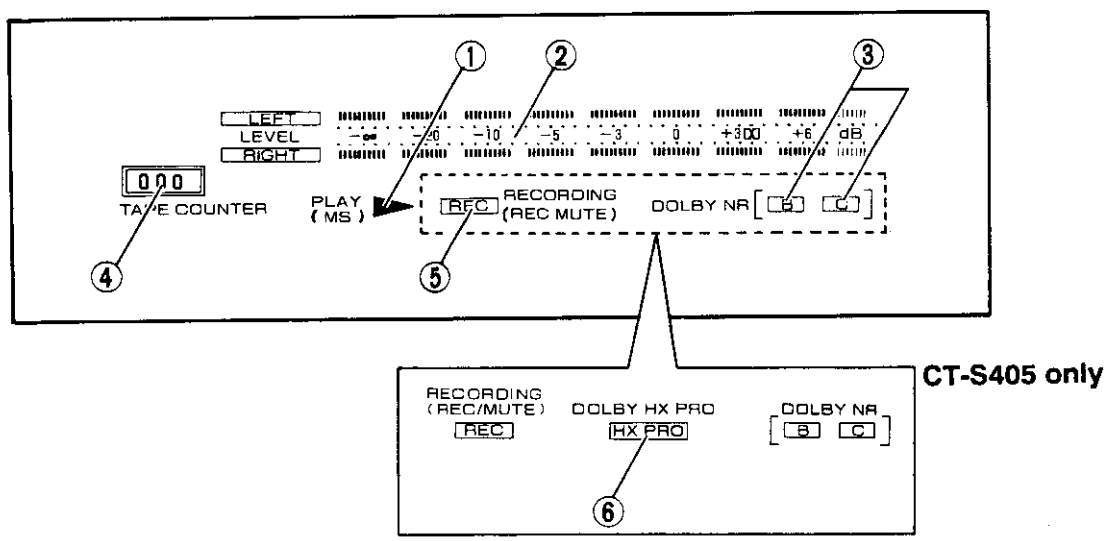
### ⑮ REC LEVEL control

## OPERATING DISPLAY




### ① Play indicator

▶: Lights during playback and recording.

The indicator flashes slowly in the pause mode and fast during music search.

### ② LEVEL meter

LEFT: Left channel.

RIGHT: Right channel.

### ③ DOLBY B/C NR indicator

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

### ④ TAPE COUNTER

### ⑤ REC indicator

Lights during recording.

### ⑥ DOLBY HX PRO indicator (CT-S405 only)

Lights up when the POWER switch is pressed.