

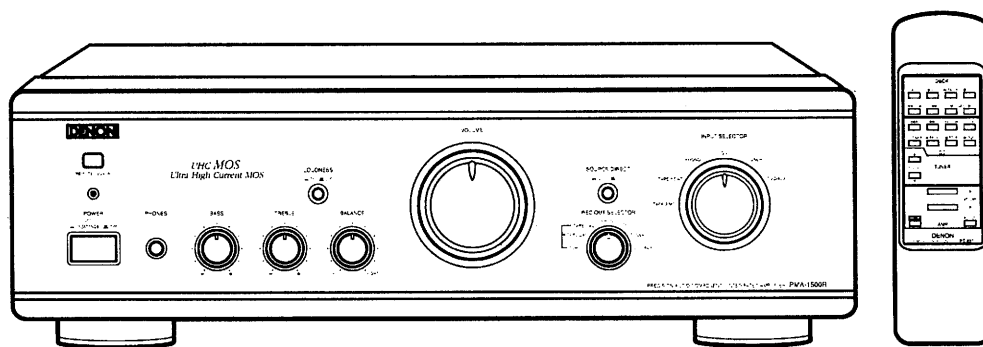
# DENON

Hi-Fi Integrated Stereo Amplifier

## SERVICE MANUAL

# MODEL PMA-1500R

### INTEGRATED STEREO AMPLIFIER



#### — TABLE OF CONTENTS —

OPERATING INSTRUCTIONS .....	2~8
DISASSEMBLY .....	9,10
BLOCK AND LEVEL DIAGRAM .....	11
ADJUSTMENT .....	12
SEMICONDUCTORS .....	13~16
PRINTED WIRING BOARD .....	17,18
NOTE FOR PARTS LIST .....	19
PARTS LIST OF P.W.BOARD .....	20~23
EXPLODED VIEW .....	24
PARTS LIST OF EXPLODED VIEW .....	25
WIRING DIAGRAM .....	26
SCHEMATIC DIAGRAM .....	27

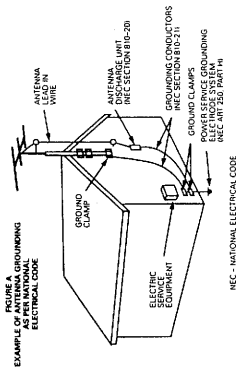
• Some illustration using in this service manual is slightly different from the actual set.

## NIPPON COLUMBIA CO., LTD.

# OPERATING INSTRUCTIONS

## SAFETY INSTRUCTIONS

- Read instructions - All the safety and operating instructions should be read before the appliance is operated.
- Retain instructions - The safety and operating instructions should be retained for future reference.
- Heed Warnings - All warnings on the appliance and in the operating instructions should be adhered to.
- Follow instructions - All operating and use instructions should be followed.
- Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
- Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
- Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
- Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- Grounding or Polarization - Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
- Power-Cord Protection - Power-supply cords should be routed so that they are not likely to be walked on or run over by items placed upon or against them; paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
- Power Lines - An outdoor antenna should be located away from power lines.
- Outdoor Antenna Grounding - If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
- Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- Damage Requiring Service - The appliance should be serviced by qualified service personnel when:
  - The power-supply cord or the plug has been damaged; or
  - Objects have fallen, or liquid has been spilled into the appliance; or
  - The appliance has been exposed to rain; or
  - The appliance does not appear to operate normally or exhibits a marked change in performance; or
  - The appliance has been dropped, or the enclosure damaged.
- Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.



**• SAFETY PRECAUTIONS**

**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN

**CAUTION**  
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of unshielded "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

**• FOR U.S.A. & CANADA MODEL ONLY**

**CAUTION**

TO PREVENT ELECTRIC SHOCK, DO NOT TOUCH OR REACH INTO THE FOLLOWING ENCLOSURE AREAS UNLESS YOU ARE A QUALIFIED SERVICE PERSONNEL. TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**• POUR LES MODELES AMERICAINS ET CANADIENS UNIQUEMENT**

**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN

**ATTENTION**  
POUR PREVENIR LES CHOCES ELECTRIQUES, NE PAS TOUCHER LES PARTIES INTERNES DE L'APPAREIL, SAUF SI LES LAMINES PEUVENT ETRE INSEREES A FOND SANS EN LANCER AUCUNE PARTIE A DECOUVERT.

**安全注意事項**

**CAUTION**

TO PREVENT ELECTRIC SHOCK, DO NOT TOUCH OR REACH INTO THE FOLLOWING ENCLOSURE AREAS UNLESS YOU ARE A QUALIFIED SERVICE PERSONNEL. TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**注意：為減少觸電危險，切勿折下機殼（或機背）。機身內並無用戶修理用零件。請交由專業修理人員修理本機。**

三角形內有箭頭的閃電符號旨在提醒用戶，本產品機殼內有未經絕緣的“危險電壓”，其幅度足以使人觸電而發生危險。

三角形內加感嘆號旨在提醒用戶，有重要的操作與維修說明書配合本機。

**警告：為減少著火或觸電危險，切勿讓本機受雨淋濕或受潮。**

**• DECLARATION OF CONFORMITY**

I hereby certify that this product, to which this declaration relates, is in conformity with the following standards:

EMC: EN 55013, EN 55020, EN 60955-2, EN 60955-3

**• ÜBERSTIMMUNGSERKLÄRUNG**

Wir erklären unter Verantwortung, daß dieses Produkt mit den nach dieser Erklärung benannten, den EN 55013, EN 55020, EN 60955-2 und EN 60955-3

**• DICHIARAZIONE DI CONFORMITÀ**

Dichiaro sotto la mia responsabilità che questo prodotto, al quale la presente dichiarazione si riferisce, è conforme alle seguenti norme:

EMC: EN 55013, EN 55020, EN 60955-2 e EN 60955-3

**• DECLARACIÓN DE CONFORMIDAD**

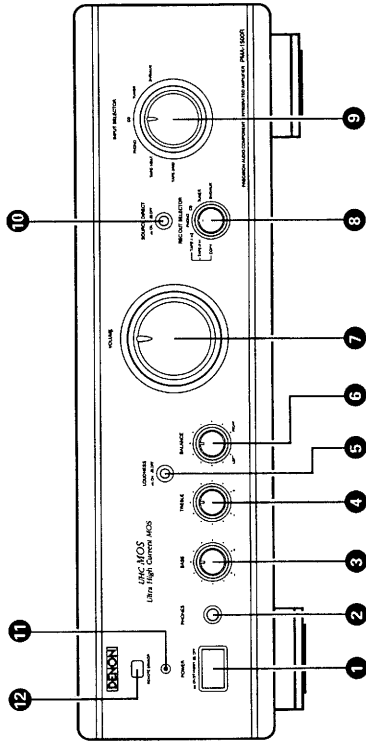
Declaro que este producto, al cual esta declaración corresponde, está en conformidad con las siguientes normas:

EMC: EN 55013, EN 55020, EN 60955-2 y EN 60955-3

AL D.M. 381/88/78 n. 548

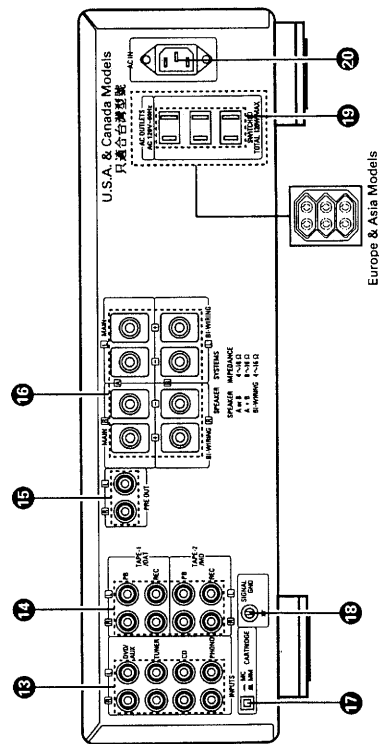
**FRONT PANEL  
FRONTPLATTE  
PANNEAU AVANT  
PANNELLO ANTERIORE**

**PANEL FRONTAL  
VOORPANEEL  
FRAMSIDA  
PAINEL FRONTAL  
正面**



**REAR PANEL  
RÜCKWAND  
PANNEAU ARRIERE  
PANNELLO POSTERIORE**

**PANEL TRASERO  
ACHTERPANEEL  
BAKSIDA  
PAINEL TRAZEIRO  
背板**



**NOTE:**  
1. Mantenga siempre activado el interruptor de alimentación (POWER) en la unid. principal.  
2. Encienda y apague el equipo desde la unidad de control remoto.  
3. Cuando la unidad vaya a estar fuera de uso por un periodo prolongado de tiempo, desconecte el cable de alimentación.

**PRECAUCION:**  
Si el LED POWER está encendido de color naranja, significa que la alimentación de la unidad de control remoto no está funcionando correctamente. Conecte la alimentación desde la unidad de control remoto.

**OPMERKING:**  
1. Het licht van de stroomvoorzieningsknaop (POWER) van het hoofdtoestel is altijd rood. Als het licht van de afstandsbediening stand staat, betekent dit dat de voeding van de afstandsbediening niet werkt. Sluit de afstandsbediening aan op de hoofdeenheid.

**WAARSCHUWING:**  
Als de POWER LED brandt in oranje, betekent dit dat de spanning met de afstandsbediening is ongeschikt. Schakel de spanning in met de afstandsbediening.

**OBSERVERA:**  
1. Låt alltid strömstyraren (POWER) på huvudenheten vara påslagen.  
2. Slå till/från strömmen med hjälp av fjärrkontrollen.  
3. Koppla loss tillslutenheten om apparaten inte ska användas under lång tid.

**WARNING:**  
1. Always keep power on when the unit is running. Do not turn off the power control.  
2. Turn the power on/off using the remote control.  
3. Disconnect the power cord when the unit is not used for a long period.

**NOTA:**  
1. Mantenha o interruptor de Corrente (POWER) na unidade principal sempre ligada.  
2. Ligue e desligue a corrente a partir da unidade de controle remoto.  
3. Desconecte o fio de força quando quiser não utilizar a unidade por longo tempo.

**CAUTELA:**  
Se o POWER LED estiver aceso e laranja, isto significa que a força de desligamento a partir do controle remoto, ligou a força para o controle remoto.

**註:**  
1. 主機上的POWER (電源) 擊須一直保持接通。  
2. 由遙控器操縱電源之開和關。  
3. 本機打長時間不用時應將電源接線拔下。

**注意:**  
若電源發光二極管(LED)亮並顯色, 意味著來自遙控器的電源已斷掉。請接連來自遙控器的電源。

**PRECAUCIONES PARA LA INSTALACION**  
Deje un espacio de 10 cm entre esta unidad y cualquier otro componente situado sobre ella.

**VOORZORGSMAATREGELEN**  
Bij plaatsing dient u een ruimte van minstens 10 cm open te laten tussen dit toestel en een ander erop geplaatst component.

**FÖRSIKTIGHETSÅTGÄRDER VID INSTALLATIONEN**  
Se till att det finns minst 10 cm mellanrum mellan apparaten och en sv. annan apparat som ställs ovanpå.

**CUIDADOS NA INSTALACAO**  
Deixe um espaço de pelo menos 10 cm entre esta unidade e qualquer outro componente colocado acima.

**安裝注意**  
本機須與其他音響設備相隔至少10厘米。

10 cm or more  
10 cm oder mehr  
10 cm ou plus  
10 cm ou plus  
10 厘米以上

**NOTE:**  
1. Lassen Sie den POWER-Schalter an der Hauptgeräteeinheit eingeschaltet.  
2. Schalten Sie den Betrieb des Geräts ein und aus von der Fernbedienung.  
3. Umpflügen die Stromleitung, wenn Sie nicht für eine längere Zeit verwendet werden soll.

**CAUTION:**  
If the POWER LED is lit and orange, this means that the power is turned off from the remote control unit. Turn the power on from the remote control unit.

**HINWEIS:**  
1. Schalten Sie den Netzschalter (POWER) am Hauptgerät stets eingeschaltet.  
2. Schalten Sie den Betrieb des Geräts ein und aus von der Fernbedienung, das Gerät über einen längeren Zeitraum hinweg nicht zu benutzen.  
3. Wenn das POWER LED orange leuchtet, bedeutet dies, daß der Strom vom Fernbedienungsgerät aus ausgeschaltet worden ist. Schalten Sie den Strom vom Fernbedienungsgerät aus ein.

**REMARQUE:**  
1. S'assurer que le commutateur d'alimentation (POWER) sur l'unité principale soit toujours dans la position activée.  
2. Allumer et éteindre l'appareil avec la télécommande.  
3. Débrancher le cordon d'alimentation lorsque l'appareil ne sera plus utilisé pendant une longue période.

**ATTENTION:**  
If the LED is lit and orange, this signifies that the power is turned off from the remote control unit. Turn the power on from the remote control unit.

**NOTA:**  
1. Mantenga sempre l'interruttore della corrente (POWER) dell'unità principale nella posizione di attivazione.  
2. Accendete e spegnete la corrente usando il telecomando.  
3. Scollegare il filo di alimentazione quando avete intenzione di non usare l'apparecchio per un lungo periodo.

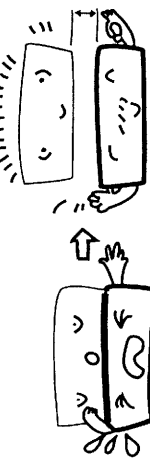
**AVVERTIMENTO:**  
Se il LED di accensione è illuminato di colore arancione, questo significa che la corrente è stata disattivata dalla unità di controllo remoto. Collegare il cavo di alimentazione.

**PRECAUTIONS FOR INSTALLATION**  
Leave at least 10 cm of space between this unit and any other component placed above.

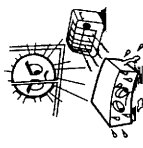

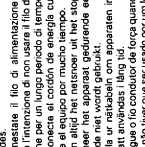
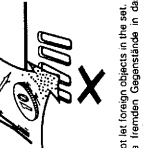
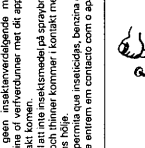
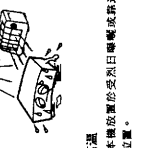
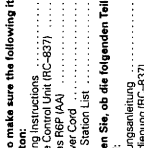
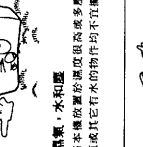
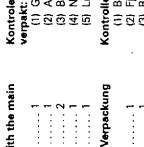

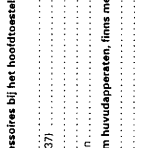
**SICHERHEITSMASSNAHMEN BEIM EINBAU**  
Lassen einen Mindestabstand von 10 cm zwischen diesem Gerät und der anderen Komponente, die drübergestellt wird.

**PRECAUTIONS D'INSTALLATION**  
Prévoir un espace d'au moins 10 cm entre l'unité et tout autre appareil se trouvant au-dessus.

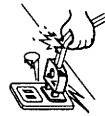
**PRECAUCIONI PER L'INSTALLAZIONE**  
Lasciate uno spazio libero di almeno 10 cm fra quest'unità e qualsiasi altro componente che è collocato sopra la stessa.



**NOTE ON USE / HINWEISE ZUM GEBRAUCH / OBSERVATIONS RELATIVES A L'UTILISATION  
NOTE SULL'USO / NOTAS SOBRE EL USO / ALVORENS TE GEBRUIKEN / OBSERVERA  
OBSERVAÇÕES QUANTO AO USO**

	<ul style="list-style-type: none"> <li>• Avoid high temperatures</li> <li>• Do not use the unit in high dispersion when installed on a rack.</li> <li>• Vermijden. Sie hohe temperaturen.</li> <li>• Beachten Sie, daß eine ausserordentlich hohe Lufttemperatur, wenn das Gerät auf ein Regal gestellt wird.</li> <li>• Eviter des températures élevées</li> <li>• Évitez toute dispersion de chaleur</li> <li>• Évitez toute dispersion de chaleur</li> <li>• Evitare de expone l'unită a temperaturii alte.</li> <li>• Asigurați-vă că se va instala pe un suport mobil par componente având.</li> <li>• Evite altas temperaturas</li> <li>• Permitte la suficiente dispersion del calor</li> <li>• Vermijd hoge temperaturen.</li> <li>• Zorg voor een degelijke hitteafvoer indien het apparaat op een rek wordt geplaatst.</li> <li>• Snij het de linnen mogelijk, til goed vervoer-leiding bij monteren / et rack.</li> <li>• Evite temperaturas altas</li> <li>• Evite toda dispersão de calor, quando o equipamento for instalado numa prateleira.</li> </ul>		<ul style="list-style-type: none"> <li>• Keep the set free from moisture, water, and dust.</li> <li>• Halten Sie das Gerät von Feuchtigkeit, Wasser und Staub fern.</li> <li>• Protéger l'appareil contre l'humidité, l'eau et la poussière.</li> <li>• Mantenga el equipo libre de humedad, agua y polvo.</li> <li>• Měňte jen v suchobizhadi, vodu či stříbrň hbit aparať binnandringhen.</li> <li>• Utsätt inte apparaten för fukt, vatten och damm.</li> <li>• Mantenha o aparelho livre de qualquer umidade, água ou poeira.</li> </ul>		<ul style="list-style-type: none"> <li>• Unplug the power cord when not using the set</li> <li>• Wenn das Gerät eine längere Zeit nicht verwendet werden soll, trennen Sie das Netzstecker vom Netzstecker.</li> <li>• Evitar la desconexión de la alimentación, cuando el equipo no se utilice durante un largo periodo de tiempo.</li> <li>• Desconectate el cordón de energía cuando no utilice el equipo por mucho tiempo.</li> <li>• Snij het de linnen mogelijk, til goed vervoer-leiding bij monteren / et rack.</li> <li>• Kopla ur nätbalken om apparaten inte kommer i kontakt med strömföringen.</li> <li>• Dwellige o fo conductor de força quando o aparelho não estiver em uso por um longo período de tempo.</li> </ul>
	<ul style="list-style-type: none"> <li>• Do not let foreign objects in the set.</li> <li>• Gegenstände in das Gerät kommen lassen.</li> <li>• Ne pas laisser des objets étrangers dans l'appareil.</li> <li>• No dejar objetos extraños dentro del equipo.</li> <li>• Last geen vreemde voorwerpen in dit apparaat.</li> <li>• Sa illi ett föremålde föremål inte tränger in i apparaten.</li> <li>• Não deixe objetos estranhos no aparelho.</li> </ul>		<ul style="list-style-type: none"> <li>• Do not let insecticides, benzene, and thinner come in contact with the set.</li> <li>• Lassen Sie kein Insektizid, Benzin und Lösungsmittel in Berührung kommen.</li> <li>• Ne pas mettre en contact des insecticides, du benzène ou du diluant avec l'appareil.</li> <li>• No permita el contacto de insecticidas, benceno o solvente con el equipo.</li> <li>• Last geen insektiveringsmiddel, middelen, benzene of verfvormer met dit apparaat in contact komen.</li> <li>• Não permita que inseticidas, benzina e solventes entrem em contacto com o aparelho.</li> </ul>		
	<p><b>防止高温</b></p> <ul style="list-style-type: none"> <li>• 勿將本機放置於受烈日曝曬或靠近發熱器</li> <li>• 勿將本機放置於受高濕度影響的位置。</li> <li>• 避免將本機裝於密閉的櫃內。</li> <li>• 裝於櫃內時，要配備足夠大的通風孔，以加散熱。</li> </ul> <p><b>機架/層架安裝注意</b></p> <ul style="list-style-type: none"> <li>• 避免將本機裝於密閉的櫃內。</li> <li>• 裝於櫃內時，要配備足夠大的通風孔，以加散熱。</li> </ul>		<p><b>留電線線</b></p> <ul style="list-style-type: none"> <li>• 在插線插頭須須勿勿接電線線，應裝抓住插頭將其拔出。</li> </ul>		
	<p><b>注意清潔，水和塵</b></p> <ul style="list-style-type: none"> <li>• 勿將本機放置於受高濕度影響的位置。</li> <li>• 花洒或其他有水的物件均不宜擺在本機上方。</li> </ul> <p><b>當你外出時</b></p> <ul style="list-style-type: none"> <li>• 長時間不用本機時，請切外出旅行時，須將插頭從電源電器插座。</li> </ul>		<p><b>勿打開機殼</b></p> <ul style="list-style-type: none"> <li>• 打開機殼可能會造成危險，及使手入機殼內都是危險的。切勿打開機殼。如果本機及沒有必要時，宜立刻按下電源插頭，再與購入本機之商店或經銷商聯絡。</li> </ul>		
	<p><b>勿置雜物掉入機內</b></p> <ul style="list-style-type: none"> <li>• 特別要留意勿讓針、髮夾、螺絲等落入機內。</li> </ul> <p><b>保護機殼</b></p> <ul style="list-style-type: none"> <li>• 避免在本機附近噴灑殺蟲劑，也勿用汽油或香水或任何其他液體清潔，因這類的液體易引起產品損壞或改變。清潔器應小心，用此等清潔劑的噴霧器時請小心遵守說明書指示。</li> </ul>		<p><b>勿打開箱殼</b></p> <ul style="list-style-type: none"> <li>• 打開機殼可能會造成危險，及使手入機殼內都是危險的。切勿打開箱殼。如果本機及沒有必要時，宜立刻按下電源插頭，再與購入本機之商店或經銷商聯絡。</li> </ul>		

**使用注意事項**



- Handle the power cord carefully.
- Hold the plug when unplugging the cord.
- Halten Sie das Kabel am Stecker, wenn Sie den Stecker herausziehen.
- Manipuler le cordon d'alimentation avec précaution.
- Tenir la prise lors du débranchement du cordon.
- Maneggiare il filo di alimentazione con cura.
- Tenga el cable cuando desconecte el cable de la presa.
- Manéje el cordón de energía con cuidado.
- Sostene el cordón de energía cuando desconecte el mismo.
- Hanter het netkabel voorzichtig.
- Houd het snoer bij de stekker vast wanneer deze moet worden aange- of losgekoppeld.
- Hälti kaabeli käsä loppua silän elittäät energiaa.
- Mantene con cuidado o fo conductor de energia.
- Siga a tomada ao desconectar o fio.

**Please check to make sure the following items are included with the main unit in the carton:**

- (1) Operating Instructions
- (2) Remote Control Unit (RC-837)
- (3) Batteries R6P (AA)
- (4) Power Adapter
- (5) Service Station List

**Bitte überprüfen Sie, ob die folgenden Teile vollständig in der Verpackung enthalten sind:**

- (1) Bedienungsanleitung
- (2) Fernbedienung (RC-837)
- (3) Batterien vom Typ R6P (AA)
- (4) Netzteil
- (5) Service-Station-Liste

**Vous devez contrôler que les articles suivants sont bien joints à l'appareil principal dans le carton:**

- (1) Mode d'emploi
- (2) Unité de télécommande (RC-837)
- (3) Piles R6P (AA)
- (4) Adaptateur secteur
- (5) Liste des stations de service

**Controllare che le parti seguenti si trovino imballate con l'apparecchio nella scatola di cartone:**

- (1) Libretto delle istruzioni
- (2) Telecomando (RC-837)
- (3) Batterie R6P (AA)
- (4) Adattatore CA
- (5) Lista di stazioni di servizio tecnica

**Por favor verifique asegurándose de que los siguientes artículos son empacados con el equipo principal:**

- (1) Manual de instrucciones
- (2) Unidad de control remoto (RC-837)
- (3) Pilas R6P (AA)
- (4) Adaptador de CA
- (5) Lista de estaciones de servicio

**Kontroleer of de volgende accessoires bij het hoofdtoestel in de doos zijn verpakt:**

- (1) Gebruiksaanwijzing
- (2) Afstandsbediening (RC-837)
- (3) Batterijen R6P (AA)
- (4) Netvoeding
- (5) Lijst met service-adressen

**Kontrollera att följande, förutom huvudapparaten, finns med i kartongen:**

- (1) Bruksanvisning
- (2) Fjärrkontroll (RC-837)
- (3) Batterier R6P (AA)
- (4) Nätsladd
- (5) Lista över serviceställen

**Confirme-se de que as seguintes peças estão incluídas na embalagem fora da unidade principal:**

- (1) Manual de operação
- (2) Unidade de controle remoto (RC-837)
- (3) Baterias R6P (AA)
- (4) Cabo de CA
- (5) Lista de Estações de Serviço

**下列產品應主機包裝於同一紙箱內，請查對：**

- (1) 操作說明書
- (2) 遙控器 RC-837
- (3) 電池 R6P (AA)
- (4) 交流電線
- (5) 維修站地址一覽表

## 2 CONNECTIONS

### Connecting the speakers

- Speaker impedance
  - When using speaker systems A and B separately, speakers with an impedance of 4 to 16 Ω/ohms can be connected.
  - When bi-wiring with bi-wireable speaker system, speakers with an impedance of 4 to 16 Ω/ohms can be connected.
  - Note that when using two sets of speaker systems together (A + B), using speakers with an impedance other than between 8 to 16 Ω/ohms can result in damage.
- Note that this unit is not equipped with a switch for selecting the speaker system. The A and B speaker output terminals are connected in parallel.
  - The protective circuit may be activated if speakers with other impedances are connected.
- Be sure to connect the cords between the speaker terminals and speaker systems with the same polarities (⊕ to ⊕, ⊖ to ⊖). If not, the central sound will be weak and the position of the different instruments will not be clear, diminishing the stereo effect.
- When connecting the speakers, be sure that the core wires of the speaker cords do not stick out from the terminals and touch other terminals, each other or the rear panel.
- Connecting the speaker cords
  - Peel off the sheathing from the end of the cord.
  - Twist the core wires.
  - Turn the speaker terminal counterclockwise to loosen it.
  - Insert the core wires entirely, then turn the terminal clockwise to tighten it.

### CAUTION

#### Protective Circuit

This set is equipped with a high speed protective circuit. This circuit protects the internal circuitry from damage due to large currents flowing when an output is regenerated by a short circuit. This protective circuit's operation cuts off the output to the speakers. In such a case, be sure to turn the power to the set off and check the connections to the speakers. Then turn the power on again. After muting for several seconds, the set will operate normally.

**NOTE:**  
NEVER touch the speaker terminals when the power is on. Doing so could result in electric shocks.

### 18 INPUTS terminals

These are input terminals for CD players, turntables, AM/FM tuners or other playback components.

**NOTE:**  
The PHONO input terminals are equipped with a short pin-plug. Remove this plug to connect a record player. Store the removed short pin-plug in a safe place so as not to lose it.  
Do not plug a short pin plug into the REC (recording output) terminals. Doing so will result in a loss of sound and may damage connected equipment.

### 19 TAPE PLAY and REC terminals

- Playback and Recording Terminals
  - Playback Terminals
  - Recording Terminals
- PRE-OUT terminals**
- Use these to connect an extra power amplifier.
  - Connect the extra power amplifier's input terminals to the PMA-1500R's pre-out terminals.

### 16 SPEAKER SYSTEMS terminals

Connect the speaker systems here.

### 17 CARTRIDGE (Cartridge Selection Switch)

This switch is set to the type of player cartridge to be used. Set to the MM ( ) or MC ( ) according to the type of cartridge used on your turntable.

### 18 SIGNAL GND (ground) terminal

Connect the turntable's ground wire here.

**NOTE:**  
This terminal is used to reduce noise when a turntable, etc., is connected. It does not provide complete grounding.

### 19 AC OUTLETS

- AC outlets are used for connecting amplifier component units, such as tuner, turntable, tape deck, etc.
- SWITCHED (Total capacity: 120 W).
- These outlets are turned ON/OFF when main power switch is turned on/off.

### 20 AC IN connector

Connect the included AC power cord here. Do not use any other cord than the provided AC power cord.

## 1 DESIGNATIONS AND FUNCTIONS OF PANEL CONTROLS (Refer to Page 5)

- POWER (Power Switch)**  
When the power switch is turned ON ( ), the POWER LED ( ) lights. It takes a few seconds after the power is turned on for the unit to warm up. This is due to the built-in muting circuit that eliminates noise during the on/off operation.
  - PHONES (Headphone Terminal)**  
This terminal is used to plug in the headphones.  
(The SPEAKER output is turned off when the headphones are plugged in.) To prevent hearing loss, do not raise the volume level excessively when using headphones.
  - BASS (Bass Control)**  
This knob is used to control the bass quality of the sound. When the knob is set at the center position, the frequency characteristics are flattened in the range above 1000 Hz. The treble is emphasized as the knob is moved off center to the right ( ), and reduced as it is moved to the left ( ).
  - TREBLE (Treble Control)**  
This knob is used to control the treble quality of the sound. When the knob is set at the center position, the frequency characteristics are flattened in the range above 1000 Hz. The treble is emphasized as the knob is moved off center to the right ( ), and reduced as it is moved to the left ( ).
- NOTE:**  
When the Volume control ( ) is turned right ( ) from the center position, the adjustment range of the BASS ( ) TREBLE ( ) and LOUDNESS ( ) controls decreases. If the Volume control ( ) is turned fully right the bass and treble cannot be adjusted.
- LOUDNESS (Loudness Switch)**  
When the volume is low, it is difficult for the human ear to clearly distinguish notes in the low and high frequency ranges. The loudness switch allows a simple "one-touch" correction of this difficulty. Press the loudness switch ON ( ), when listening to music at a low volume. The low notes and high notes will be corrected to produce a natural sound.
  - BALANCE (Balance Control)**  
This knob is used to adjust the balance between the left and right channels. When it is set to the center position, the amplitude of the amplifier output voltages for a cartridge, move the knob to the left and the right to adjust it. If the volume on the right side is too low, turn the knob to the right ( ). If the volume on the left side is too low, turn the knob to the left ( ). This will achieve an even balance on the left and right sides.
  - VOLUME (Volume Control)**  
This knob controls the overall volume level.  
Turn the knob to the right ( ) to raise the volume and to the left ( ) to lower it.
  - REC OUT SELECTOR (Recording Output Select Switch)**  
Use this switch to select the recording component.
    - PHONO: Used to recording from the turntable.
    - CD: Used to recording from the CD player.
    - TUNER: Used to recording from the tuner.
    - DVD/AUX: Used to recording component that connected to the AUX terminal.
    - TAPE-1 ▶ 2: Used to recording from the tape deck connected to the TAPE-1 jacks.
    - TAPE-2 ▶ 1: Used to recording from the tape deck connected to the TAPE-2 jacks.

### 9 INPUT SELECTOR (Input Select Switch)

This switch is used to select the input signal for the program source.

- PHONO: Use this position when using the record player connected to the PHONO terminals.
- Use the position when using the tape deck, etc., connected to the corresponding to the cartridge type being used.
- CD: Used to listen a compact disc player or other component that is connected to the CD terminals.
- TUNER: Use this position when using the FM/AM tuner or a TV tuner that is connected to the TUNER terminals.

- DVD/AUX: Used to play a component such as a HiFi video player, TV tuner or tape deck that is connected to the DVD/AUX terminals.
- TAPE-1/DAT: Use this position when using the tape deck, etc., connected to the TAPE-1/DAT terminals.
- TAPE-2/MD: Use this position when using the tape deck, etc., connected to the TAPE-2/MD terminals.

### 10 SOURCE DIRECT (Source Direct Switch)

The controls (BASS ( ), TREBLE ( ), LOUDNESS ( ) and BALANCE ( )) can be used when this switch is in the OFF ( ) position. When set to the ON ( ) position, the above controls are by-passed and the signals are input directly to the volume control circuit, providing high quality sound.

### 11 POWER LED

The LED indicates the set's operating mode.

Main unit power switch	Main unit mode	LED color
ON ( )	Operating	Lit red
	Mute	Flashing red
	Standby (power off from remote control)	Lit orange
OFF ( )		Off

The mute mode is set for several seconds when the main unit's power switch is turned ON ( ) or when the standby mode is canceled from the remote control unit. The LED flashes red during the mute mode, then stops flashing, remaining lit, once the set is operable.

### 12 REMOTE SENSOR (Remote Control Sensor)

This sensor receives the infra-red light transmitted from the wireless remote control unit. For remote control, point the wireless remote control unit towards the sensor.

**3 OPERATION (Refer to Page 5)**

**PREPARATION**

- 1. CHECKING CONNECTIONS**
- Make sure that all the connections are properly referring to the rear panel.
  - Check the polarity (positive and negative) of connections, and the direction of stereo separation (right cord to right channel terminal, and left cord to left channel terminal).
  - Check the direction of pin cord connection.

**2. SETTING OF EACH KNOB**

- Turn the volume control knob (7) left (↶), to minimum position.
- Set the rotary knob (3) and balance control (5) to center position.
- Set LOUDNESS switch (6) to "OFF (L)";
- Set SOURCE DIRECT switch (10) to "OFF (L)";

After checking the above items, turn on the power, the amplifier is set in the ready mode in a few seconds.

**PLAYING A RECORD**

1. Set the CARTRIDGE selection switch (7) "MC (L)" or "MM (L)";
2. Set the INPUT SELECTOR (9) to "PHONO";
3. Operate the turntable and play the record;
4. Turn the volume (7) and tone controls (3, 4) and balance control (5) to yield an appropriate volume and sound quality.

**PLAYBACK OF CD PLAYER**

1. Set the INPUT SELECTOR (9) to "CD";
2. Operate the CD player;
3. Turn the volume (7) and tone controls (3, 4) and balance control (5) to yield an appropriate volume and sound quality.

**RECEPTION OF RADIO PROGRAMS**

1. Set the INPUT SELECTOR (9) to "TUNER";
2. Operate the tuner to receive a radio program;
3. Turn the volume (7) and tone controls (3, 4) and balance control (5) to yield an appropriate volume and sound quality.

**CONNECTIONS OF AUDIO EQUIPMENT TO AUX TERMINALS**

1. Set the INPUT SELECTOR (9) to "DVD/AUX" position;
2. Operate the Audio equipment System;
3. Turn the volume (7) and tone controls (3, 4) and balance control (5) to yield an appropriate volume and sound quality.

**PLAYBACK WITH TAPE DECK**

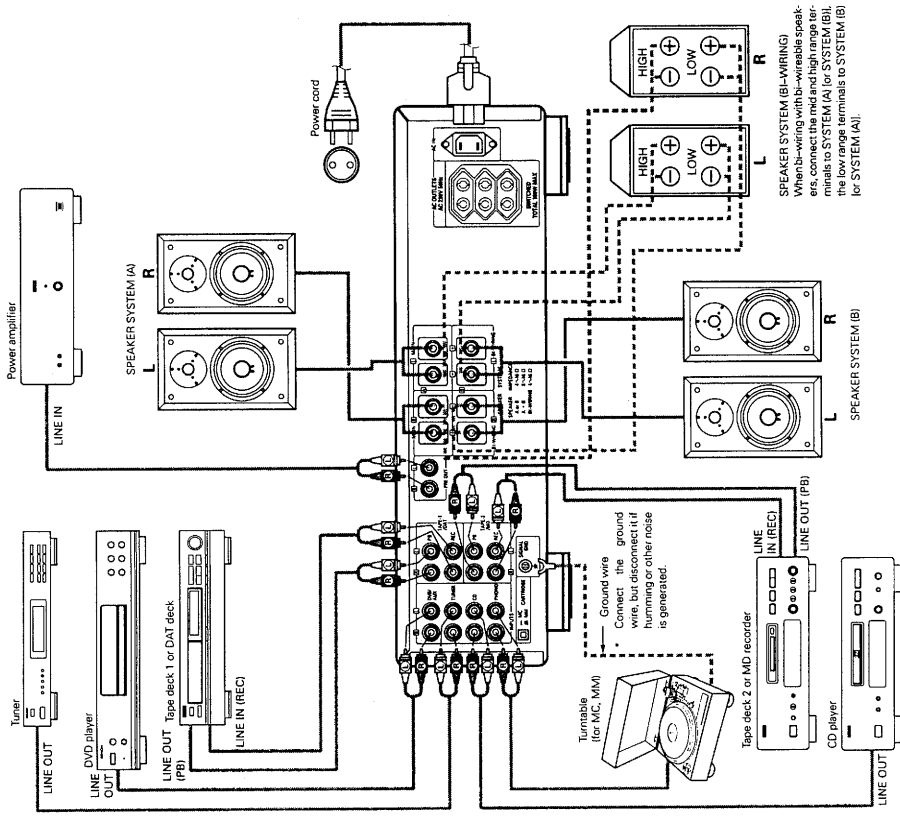
1. Set the INPUT SELECTOR (9) to "TAPE-1/DAT" or "TAPE-2/M";
2. Operate the Tape Deck;
3. Turn the volume (7) and tone controls (3, 4) and balance control (5) to yield an appropriate volume and sound quality.

- RECORDING WITH TAPE DECK**
1. Set the REC OUT SELECTOR (8) to the program source you wish to record;
  2. Start recording with the component connected to "TAPE-1/DAT" or "TAPE-2/M";
  3. Stop recording with the component connected to "TAPE-1/DAT" or "TAPE-2/M";
- In the PMA-1500R, the REC OUT signal and the speaker (head-phones) signal are output via separate circuits so that knobs and switches related to the tone and volume have no effect whatsoever on the sound that is recorded. Also, since the recording function is selected by the REC OUT SELECTOR (8), the free program source can be played through the speakers (or headphones) even during recording.

- **MONITORING THE RECORDING**  
A recording in progress can be monitored if a tape deck with three individual heads for recording and playback is used. A tape deck in which a common head is used for both recording and playback cannot be used to monitor recording. When a recording is being made using TAPE-1/DAT, selecting TAPE-1/DAT with the INPUT SELECTOR will engage the RECORDING MONITOR and permit a check of the recording condition.

**Cautions on Connections**

- Do not plug in the power cord until all connections are completed.
  - Be sure to connect the left and right channels properly.
  - Insert the plugs securely. Incomplete connections can result in noise or no sound.
  - Use the SWITCHED AC OUTLETS to plug in audio components. Do not use them for hair dryers or other appliances.
- Note that placing the pin plug cords next to power cords or rear power transformers may result in humming or other noise.
  - The PHONO input terminals have an extremely high sensitivity, so avoid turning up the volume when no pin plug cords are connected. Doing so may result in induction humming from the power lines.
  - When the pin plug cords are not connected, insert the included short-circuit pin plug.

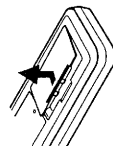


#### 4 REMOTE CONTROL OPERATION

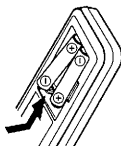
The accessory Remote Control Unit is used to control the amplifier from a convenient distance.

##### (1) Inserting the Dry Cell Batteries

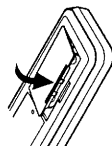
1. Remove the battery cover on the Remote Control Unit.



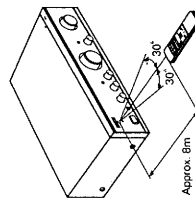
2. Insert two dry cell batteries as shown in the diagram on the battery supply unit.



3. Replace the battery cover.



##### (2) Directions for use



##### Notes on Battery Usage

- RC-837 uses the size R6P (AAA) dry cell batteries.
- The batteries will need to be replaced approximately once a year.
- This will depend upon how often the Remote Control Unit is used.
- If, in less than a year from the time new batteries were inserted, the Remote Control Unit fails to operate the Amplifier from a near-by position, it is time to replace the batteries.
- Insert the batteries properly, following the polarity diagram inside the battery compartment.
- Batteries are prone to damage and leakage. Therefore:
  - Do not mix new batteries with used ones.
  - Do not mix different types of batteries.
  - Do not jumper opposite poles of the batteries, expose them to heat, break them open, nor expose them to open fire.
- If the batteries have leaked, remove any traces of battery fluid from the battery compartment wiping thoroughly with a dry cloth. Then insert new batteries.

- Operate the Remote Control Unit while pointing it towards the Remote Control Sensor on the Amplifier as shown in the diagram on the left.
- The Remote Control Unit can be used at distances up to about 8 meters in a straight line from the amplifier. This distance will decrease if there are obstructions blocking the infra-red light transmission or if the Remote Control Unit is not directed straight at the amplifier.

##### Note on operation

- Do not press the operating buttons on the Amplifier and the Remote Control Unit at the same time. This will cause misoperation.
- Operation of the Remote Control Unit will become less effective or erratic if the infrared Remote Control Sensor on the Amplifier is exposed to strong light or if there are obstructions between the Remote Control Unit and the sensor.
- In case you operate a VCR, TV or other components by remote control, do not operate buttons on two different remote control units at the same time. This will cause misoperation.

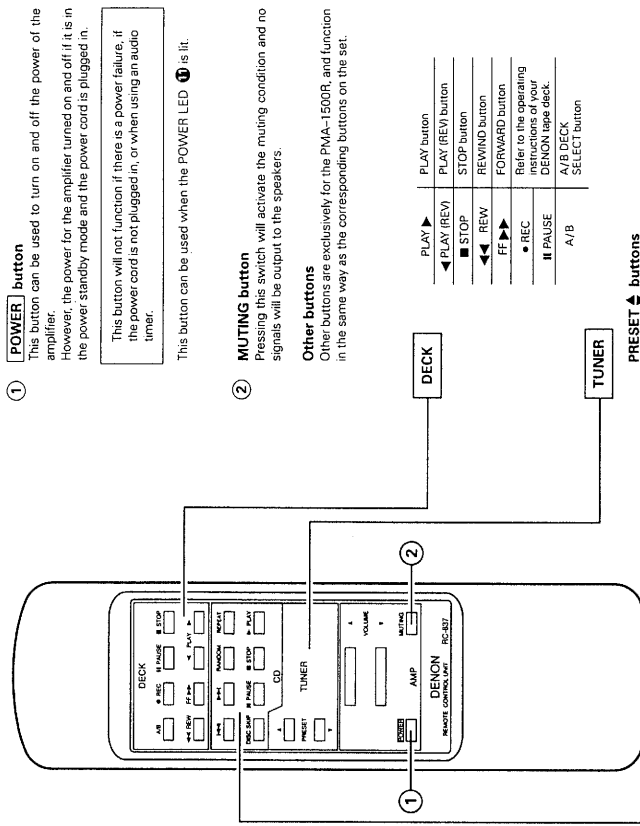
Besides being able to operate the PMA-1500R Integrated-amplifier with this Remote Control Unit, you can also operate a DENON cassette deck and CD player from this handy full-system Remote Control Unit.

Remote control section

Full-system Remote Control Unit

The full-system Remote Control Unit operates all major functions of the Amplifier, such as function switching, volume control. But that's not all! The same control pad can also control the major functions of a DENON CD player and cassette deck and tuner when combined with the PMA-1500R to create a remarkably ergonomic and versatile DENON system with all the quality sound reproduction that the devoted audiophile expects.

#### Remote Control Unit RC-837 supplied with the PMA-1500R



##### 1 POWER button

This button can be used to turn on and off the power of the amplifier. However, the power for the amplifier turned on and off if it is in the power standby mode and the power cord is plugged in.

This button will not function if there is a power failure, if the power cord is not plugged in, or when using an audio timer.

This button can be used when the POWER LED is lit.

##### 2 MUTING button

Pressing this switch will activate the muting condition and no signals will be output to the speakers.

##### Other buttons

Other buttons are exclusively for the PMA-1500R, and function in the same way as the corresponding buttons on the set.

▶▶ PLAY button	▶▶ PLAY (REV) button
■ STOP button	■ STOP button
◀◀ REW button	◀◀ REW button
▶▶ FF button	▶▶ FF button
• REC button	• REC button
PAUSE button	PAUSE button
A/B button	A/B DECK button
	SELECT button

##### PRESET buttons

Press this button to move up or down among the preset station numbers.

▶▶ PLAY button	RANDOM button
■ STOP button	REPEAT button
◀◀ Reverse Track Search button	DISC SKIP button
▶▶ Forward Track Search button	
PAUSE button	

Refer to the operating instructions for DENON CD player

- The RC-837 Remote Control Unit can control CD players and cassette decks manufactured by DENON.
- Note that operation may not be possible for some models.
- Buttons are conveniently separated into groups, each group controlling one specific component. The groups are AMP, CD, DECK and TUNER.

For details on operating other components, refer to the operating instructions for the CD player and/or cassette deck.

##### CAUTION:

- If the power is turned off with the Remote Control Unit, the set is switched to the power stand-by state. If you are absent for a long period of time, unplug the power cord.
- Only the POWER LED is lights orange when in the power stand-by mode.
- You may experience erratic operation of the Remote Control Unit if it is operated in fluorescent light and direct sunlight, in particular if this light strikes the Remote Control Sensor on the Amplifier. However, this is not a malfunction, and if this should happen, simply protect the sensor against such light.

**5 TROUBLESHOOTING**

Check the following before assuming there is a problem with the set.

- Are all connections proper?
  - Is the set being operated as described in the operating instructions?
  - Are the speakers and input components being operated properly?
- If the set does not seem to be operating properly, check the points listed below. If these points do not apply, the set may be damaged. Turn off the power immediately and contact your store of purchase.

Symptom	Cause	Measures	Page
POWER LED does not light and no sound is produced when POWER switch is turned on.	<ul style="list-style-type: none"> <li>Power cord is not connected.</li> </ul>	<ul style="list-style-type: none"> <li>Check that the cord is plugged in.</li> </ul>	10
POWER LED lights but no sound is produced.	<ul style="list-style-type: none"> <li>Speaker cords not properly connected.</li> <li>INPUT SELECTOR not set to proper position.</li> <li>VOLUME control turned down.</li> </ul>	<ul style="list-style-type: none"> <li>Connect securely.</li> <li>Set to the proper position.</li> <li>Set to an appropriate level.</li> </ul>	9, 10 8, 11
Sound is not produced from one side only.	<ul style="list-style-type: none"> <li>Speaker cords not properly connected.</li> <li>Input cords not properly connected.</li> <li>Left/right balance improperly adjusted.</li> </ul>	<ul style="list-style-type: none"> <li>Connect securely.</li> <li>Connect securely.</li> <li>Adjust the BALANCE control.</li> </ul>	9, 10 10 8, 11
Volume level is different when listening to tuner and records.	<ul style="list-style-type: none"> <li>Tuner and record outputs different.</li> </ul>	<ul style="list-style-type: none"> <li>Adjust the tuner output to the turntable's output (if the tuner is equipped with an output control).</li> </ul>	—
Positions of instruments inverted for stereo sources.	<ul style="list-style-type: none"> <li>Left and right speakers or input cords inverted.</li> </ul>	<ul style="list-style-type: none"> <li>Check the left/right connections.</li> </ul>	9, 10
Booming sound produced when playing records.	<ul style="list-style-type: none"> <li>Turntable's ground wire not connected.</li> <li>Input cords not properly connected to PHONO terminals.</li> <li>Influence from a TV or VCR near the turntable.</li> </ul>	<ul style="list-style-type: none"> <li>Connect securely.</li> <li>Connect securely.</li> <li>Change the position of installation.</li> </ul>	10 10 —
Howling produced when volume is turned up while playing records.	<ul style="list-style-type: none"> <li>Turntable and speaker systems are too close.</li> <li>Floor is soft and vibrates easily.</li> </ul>	<ul style="list-style-type: none"> <li>Move speaker systems as far away as possible.</li> <li>Use cushions to absorb the vibrations transmitted from the floor to the speakers. If the turntable does not include insulators, use audio insulators, available in stores.</li> </ul>	— —
Sound is distorted.	<ul style="list-style-type: none"> <li>Stylus pressure is too light.</li> <li>Dirt on tip of stylus.</li> <li>Defective cartridge.</li> </ul>	<ul style="list-style-type: none"> <li>Apply proper pressure.</li> <li>Check the tip of the stylus.</li> <li>Replace the cartridge.</li> </ul>	— —
This unit does not operate properly when remote control unit is used.	<ul style="list-style-type: none"> <li>Batteries dead.</li> <li>Remote control unit too far from this unit.</li> <li>Obstacle between this unit and remote control unit.</li> <li>Different button is being pressed.</li> <li>⊕ and ⊖ ends of battery inserted in reverse.</li> </ul>	<ul style="list-style-type: none"> <li>Replace with new batteries.</li> <li>Move closer.</li> <li>Remove obstacle.</li> <li>Press the proper button.</li> <li>Insert batteries properly.</li> </ul>	12 12 13 12

**6 SPECIFICATIONS**

- POWER AMPLIFIER SECTION**  
**Rated Output Power:** Both channel driven  
 70 W + 70 W  
 20 Hz to 20 kHz, T.H.D. 0.07%  
 (4 Ω/ohms Load)  
 140 W ± 140 W  
 DIN, 1 kHz, T.H.D. 0.7%  
 0.01%  
**Total Harmonic Distortion:** (-3 dB at rated output, 8 Ω/ohms) (1 kHz)
- PRE AMPLIFIER SECTION**  
**Rated Output:** (Recut Terminal)  
 150 mV  
**Input Sensitivity/ Input Impedance:** The value in parentheses ( ) refers to the input impedance when SOURCE DIRECT is ON.  
 PHONO:  
 MM: 2.5 mV / 47 kΩ/ohms  
 MC: 200 mV / 100 Ω/ohms  
 150 mV / 47 kΩ/ohms  
 (150 mV / 13 kΩ/ohms)  
 CD, TUNER, DVD/AUX, TAPE-1 / DAT, TAPE-2 / MD  
 PHONO:  
 20 Hz ~ 20 kHz ± 0.5 dB(MM)  
 30 Hz ~ 20 kHz ± 0.5 dB(MC)
- OVERALL CHARACTERISTICS**  
**SN Ratio (IHF A Network):** PHONO 91 dB  
 MM: 85 dB (input terminals short-circuited)  
 MC: 76 dB (at 0.5 mV input)  
 CD, TUNER, DVD/AUX, TAPE-1/DAT, TAPE-2/MD: 110 dB  
**Tone Control Adjustable Range:**  
 BASS: 100 Hz ± 8 dB  
 TREBLE: 10 kHz ± 8 dB  
 LOUDNESS: 50 Hz + 10 dB  
 10 kHz + 6 dB
- OTHERS**  
**Power Supply:** AC 230 V, 50 Hz (Europe & Asia & Hong Kong Models)  
 AC 120 V, 60 Hz (U.S.A., Canada & Taiwan R.O.C. Models)  
**AC Outlets:** 120 V (U.S.A., Canada & Taiwan R.O.C. Models)  
 100 V (Europe & Asia & Hong Kong Models)  
 305 W (IEC) (Europe & Asia & Hong Kong Models)  
 4.4 A (U.S.A., Canada & Taiwan R.O.C. Models)  
**Dimensions:** 434(W) × 134(H) × 407(D) mm (17-9/32" × 5-9/32" × 16-1/32")  
**Net Weight:** 14.0 kg (30 lbs 14 oz)
- REMOTE CONTROL UNIT (RC-437)**  
**Remote control system:** Infrared pulse system  
**Power supply:** 3V DC, two size R6P ("AA") dry cell batteries  
**External dimensions:** 55(W) × 194(H) × 18(D) mm (2-23/64" × 7-1/64" × 45/64")  
**Weight:** 100 g (Approx. 3.5 oz) (including batteries)

- Maximum dimensions include controls, jacks, and covers.  
 (W) = width, (H) = height, (D) = depth
- For improvement purposes, specifications and functions are subject to change without advanced notice.

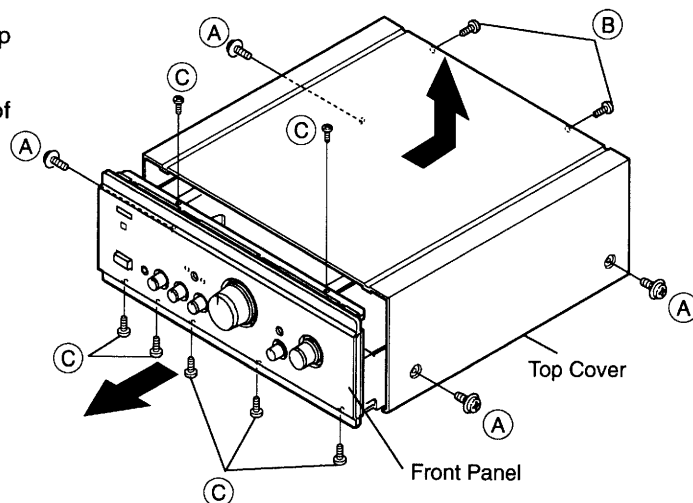


## DISASSEMBLY

(Follow in the reverse order when reassembling)

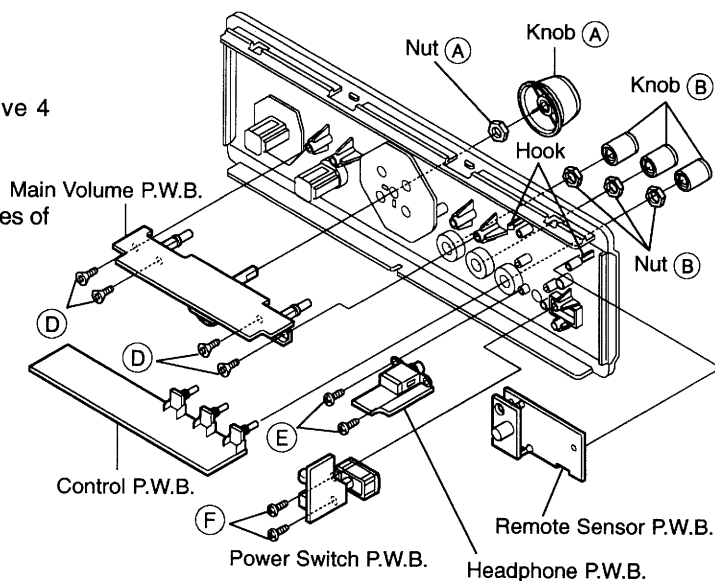
### 1. Top Cover and Front Panel

- (1) Remove 4 screws (A), 2 screws (B) and detach the Top Cover in the arrow direction.
- (2) Remove 7 screws (C) at the top and bottom edges of the Front Panel, then detach it in the arrow direction.



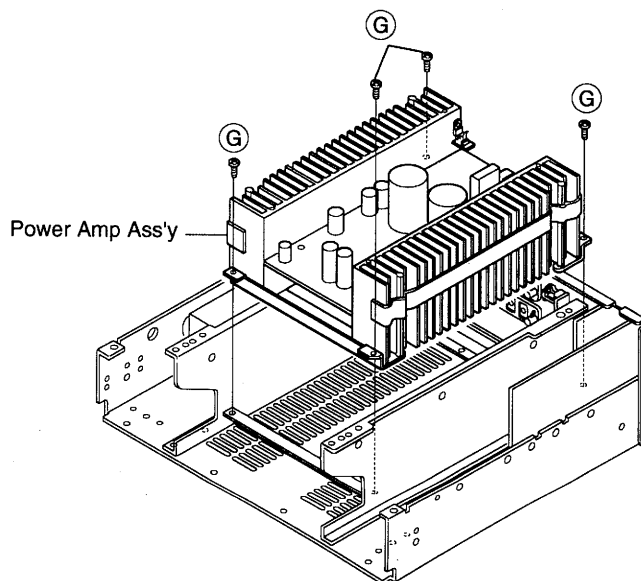
### 2. Each Front Panel P.W.Board

- Main Volume P.W.B.
  - (1) Pull out Knob (A), unfasten Nut (A) and remove 4 screws (D).
- Control P.W.B.
  - (1) Pull out 3 pieces of Knob (B) and unfasten 3 pieces of Nut (B).
- Headphone P.W.B.
  - (1) Remove 2 screws (E).
- Power Switch P.W.B.
  - (1) Remove 2 screws (F).
- Remote Sensor P.W.B.
  - (1) Release 2 Hooks.



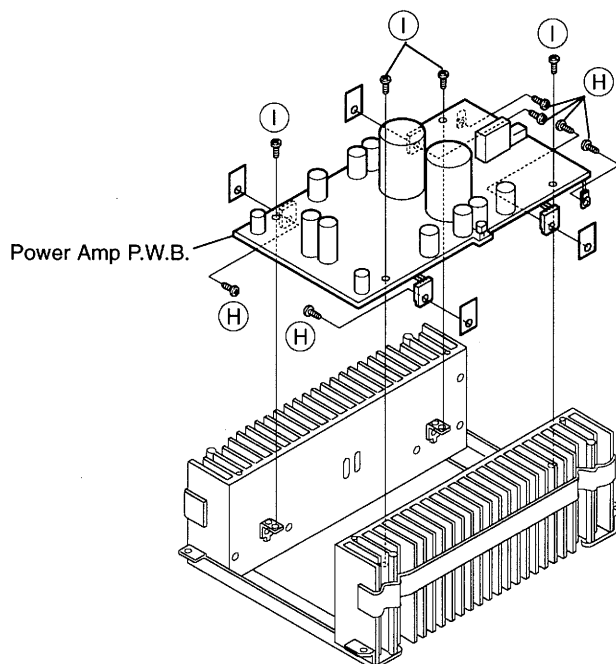
### 3. Power Amp Ass'y

- (1) Remove 4 screws (G) and detach the Power Amp Ass'y.



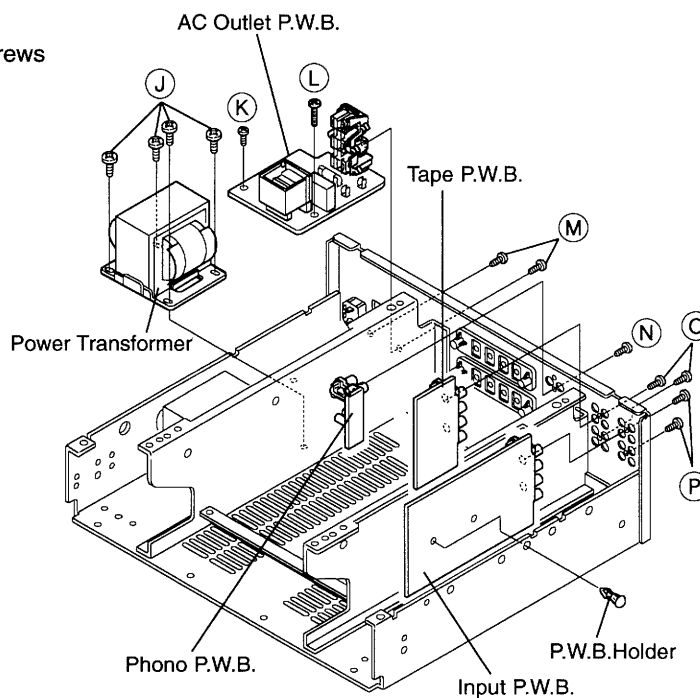
#### 4. Power Amp P.W.B.

- (1) Remove 6 screws (H) from the bottom side of the Power Amp P.W.B.
- (2) Remove 4 screws (I) from the top side of the Power Amp P.W.B..

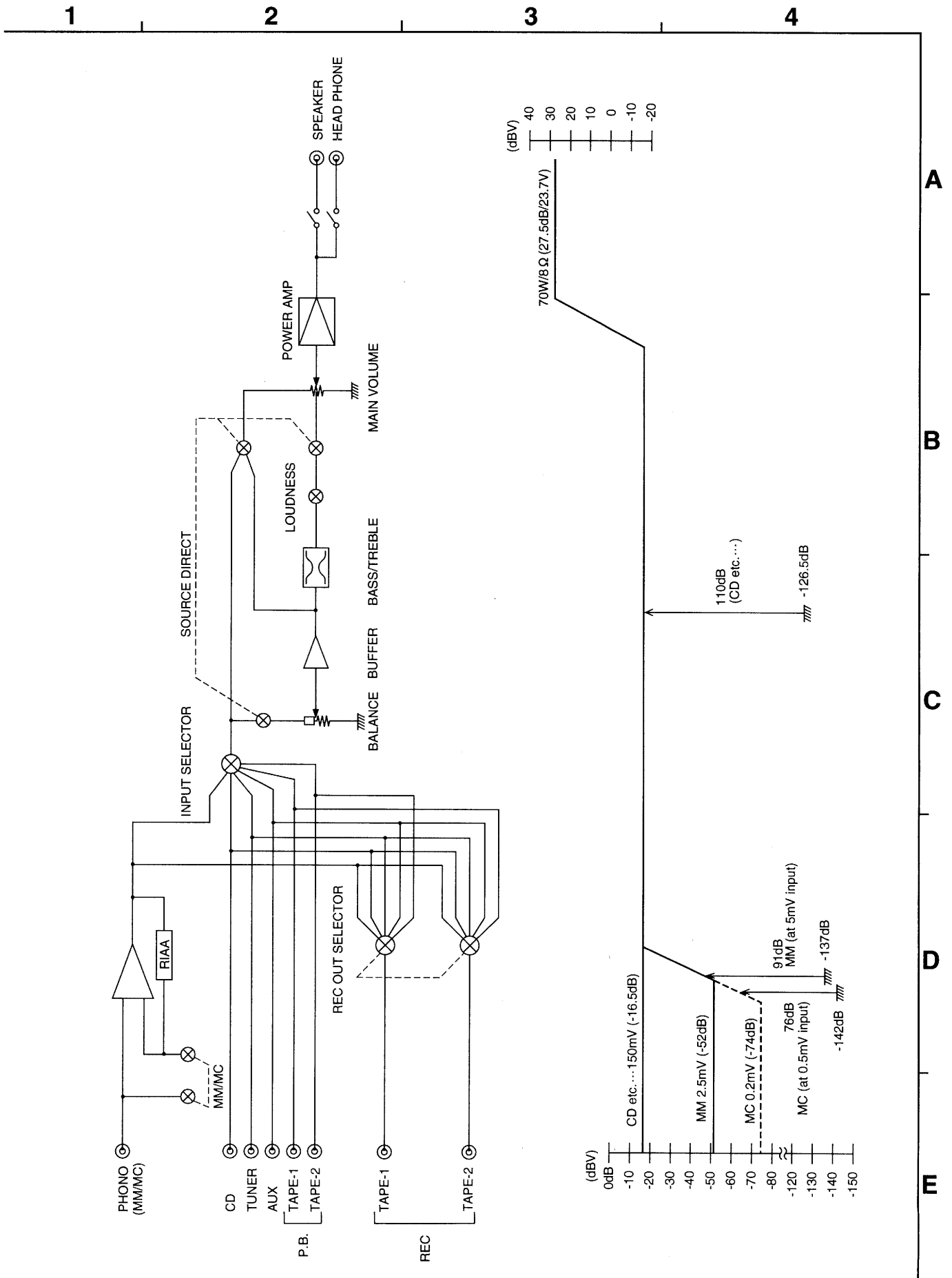


#### 5. Each Rear Panel P.W.B.

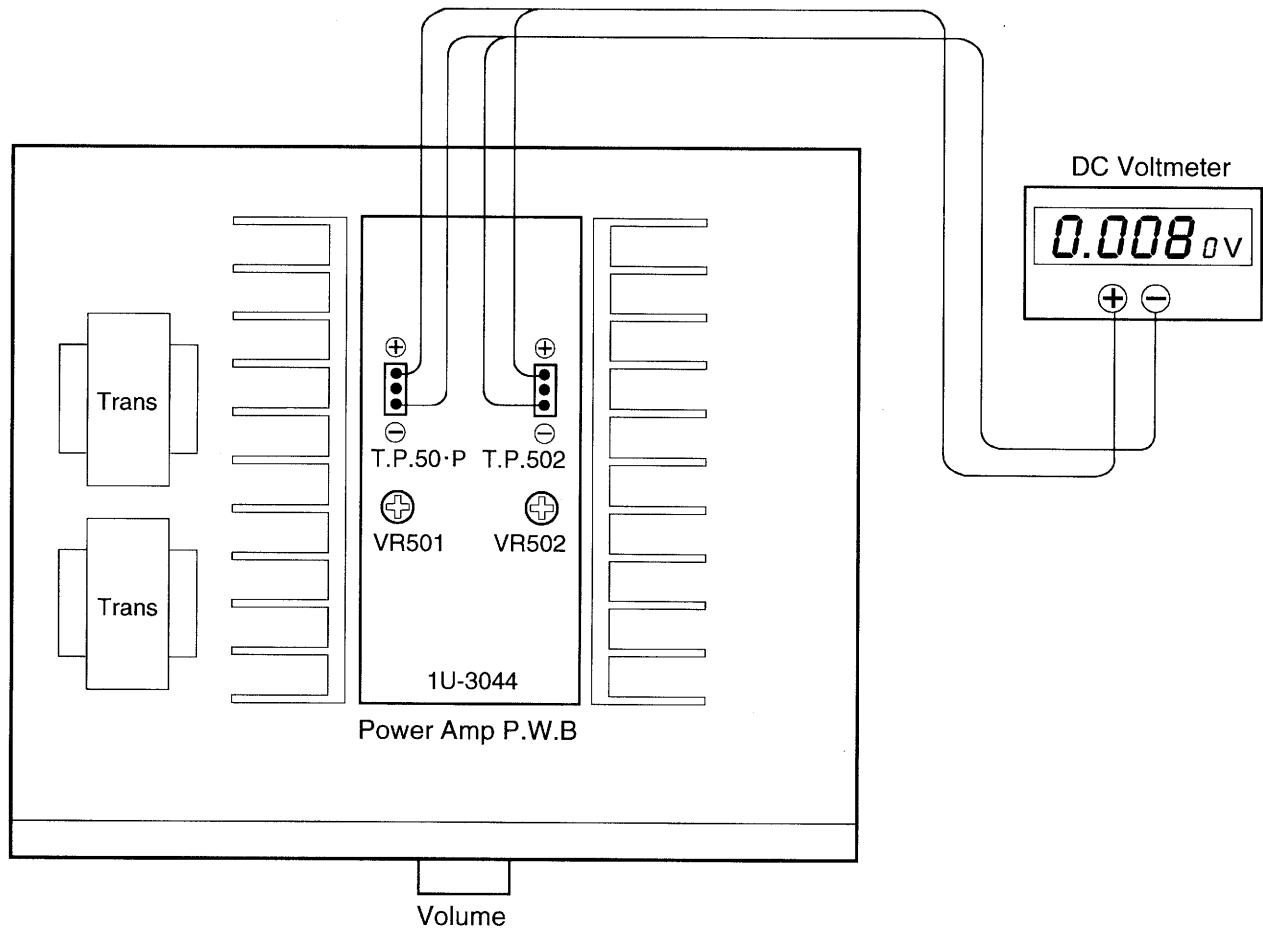
- AC Outlet P.W.B.
  - (1) Remove Power Transformer after removing 4 screws (J).
  - (2) Remove 2 screws (K), (L).
  - (3) Remove 2 screws (M).
- Phono P.W.B.
  - (1) Remove 1 screw (N).
- Tape P.W.B.
  - (1) Remove 2 screws (O).
- Input P.W.B.
  - (1) Remove 2 screws (P).
  - (2) Pull out P.W.B. Holder.



# BLOCK AND LEVEL DIAGRAM



## ADJUSTMENT



## IDLING CURRENT

### ● Setup

1. Place the unit at an ordinary position avoiding direct air flow from an air-conditioner or fan. Do the adjustment at a temperature between 15 °C (59 °F) and 30 °C (86 °F).
2. Set control as follows.
 

POWER switch	→	OFF (■)
VOLUME control	→	fully counterclockwise (⤴ min.)
SPEAKER terminals	→	open: do not connect the speakers, dummy load etc.

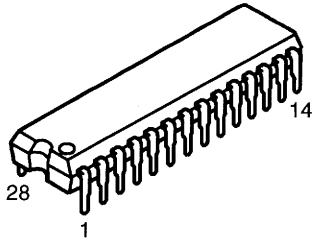
### ● Adjustment

1. Remove top cover. And then connect DC voltmeter to the test points TP501 and TP502 of POWER AMP P.W.B. (1U-3044).
2. Connect power cord to AC230V (218 ~ 242V) (Europe & Asia Models) or AC120V (114~126V) (U.S.A,Canada & TAIWAN R.O.C Models) wall outlet, and turn POWER switch "ON" (■).
3. Right after power on, adjust VR501 and VR502 so that the DC voltmeter reads  $10 \pm 2\text{mV}$ .
4. Then after 2 minutes warmup adjust VR501 and VR502 so that the DC voltmeter reads  $10 \pm 1\text{mV}$ .
5. And after 10 minutes warmup adjust VR501 and VR502 so that the DC voltmeter reads  $10 \pm 0.5\text{mV}$ .

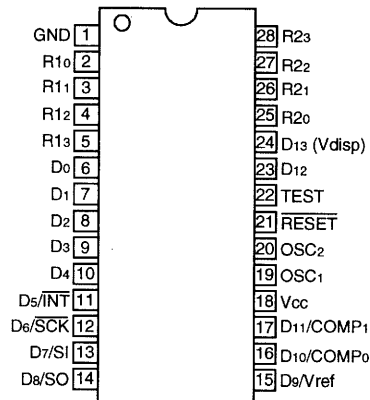
# SEMICONDUCTORS

## ● IC's

### HD404222 (IC903)



Large current terminals	High dielectric terminals
R1, R2, D12, D13	—



### HD404222 (IC901) Terminal Function

Pin No.	Port Name	Symbol	Typ	Opt	I/O	Res	Ini	Act	Det	Function
1	GND	GND	—	—	—	—	—	—	—	Ground
2	R10	PHONO	B	IU	O	HZ	H	L	—	Function display LED drive output
3	R11	CD	B	IU	O	HZ	H	L	—	Function display LED drive output
4	R12	TUNER	B	IU	O	HZ	H	L	—	Function display LED drive output
5	R13	AUX	B	IU	O	HZ	H	L	—	Function display LED drive output
6	D0	VOLUME UP	B	IU	O	HZ	L	H	—	Volume drive output
7	D1	VOLUME DOWN	B	IU	O	HZ	L	H	—	Volume drive output
8	D2	NC	B	IU	I	HZ	L	—	—	Connects to GND
9	D3	B-DOWN	B	IU	I	HZ	H	L	Lv	Break down detection input
10	D4	PROTECTION	B	IU	I	HZ	H	L	Lv	Protection detection input
11	INT	REMOCON	B	IU	I	HZ	H	L	Ed	Remote control signal input
12	D8	CK	B	IU	O	HZ	L	H	—	Analog function switch control output (clock)
13	D7	ST	B	IU	O	HZ	L	H	—	Analog function switch control output (chip select)
14	D6	DATA	B	IU	O	HZ	L	H	—	Analog function switch control output (data)
15	Vref	VREF	—	—	—	—	—	—	—	Comparator reference voltage input
16	D10	KEY IN	B	IU	I	HZ	—	—	Alg	Button input (analog)
17	D11	NC	B	IU	I	HZ	L	—	—	Connects to GND
18	Vcc	Vcc	—	—	—	—	—	—	—	Power supply
19	OSC1	OSC1	—	—	I	—	—	—	—	Xtal input
20	OSC2	OSC2	—	—	O	—	—	—	—	Xtal output
21	RESET	RESET	—	EU	I	L	H	H	—	Reset input
22	TEST	—	—	—	I	—	—	—	—	
23	D12	POWER ON/OFF	B	IU	O	HZ	H	L	—	Power ON/OFF switching output ("L"= Power on)
24	D13	MUTING	B	IU	O	HZ	H	H	—	Mute output ("H"= Mute on)
25	R20	NC	B	IU	O	HZ	L	—	—	Connects to GND
26	R21	MUTE/STANDBY	B	IU	O	HZ	H	L	—	Mute/Standby display LED drive output
27	R22	TAPE2	B	IU	O	HZ	H	L	—	Function display LED drive output
28	R23	TAPE1	B	IU	O	HZ	H	L	—	Function display LED drive output

#### Abbreviations:

Typ (Type) : B=NMOS open drain.

Opt (Option) : IU=internal pull up, EU=external pull up.

Port state : Res=reset, Ini=standby, Act=active.

Det : Lv=level, Ed=edge, Alg=analog.

I/O : Input or output of port "I"= Input port, "O"= Output port.

Res : State at reset

"H"= Outputs high level at reset, "L"= Outputs low level at reset, "HZ"= Becomes high impedance mode at reset.

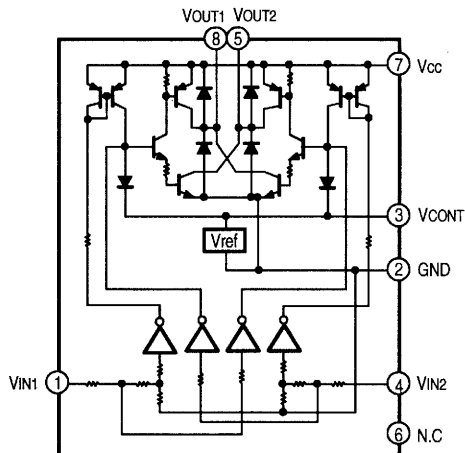
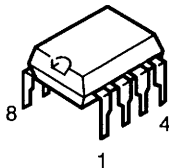
Opt : Pull up or pull down selection information "\*\*U"= Pull up, "\*\*D"= Pull down.

Det : Indicates judging state of input port "Lv"= Level detection, "Ed"= Edge detection.

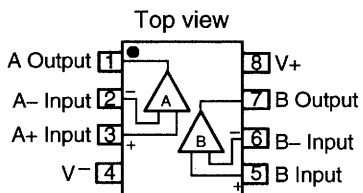
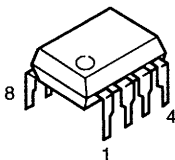
Ini : Initial state of in/out port "H"= High level, "L"= Low level.

Act : Indicates port state in operation.

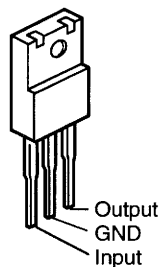
**LB1639 (IC904)**



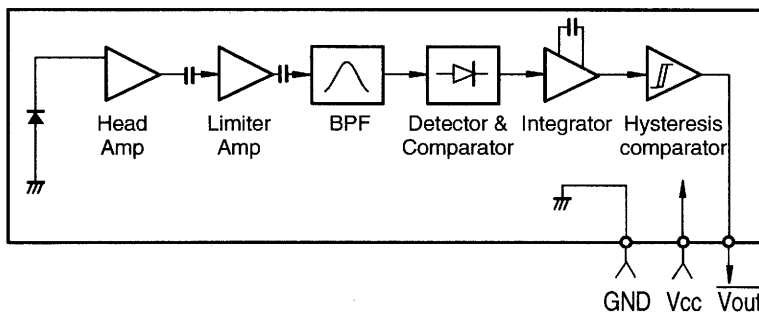
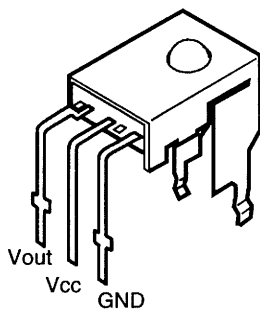
**NJM2068DDC (IC301)  
BA15218 (IC401)**



**NJM7805FA (IC902)**

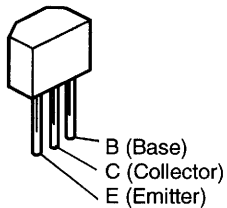


**GP1U271X (Remote Control Sensor) (IC901)**

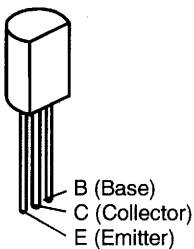


● TRANSISTORS

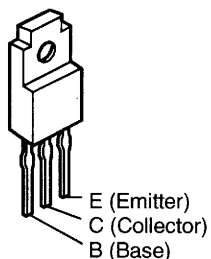
2SA1048 (GR)  
2SC2458 (BL)



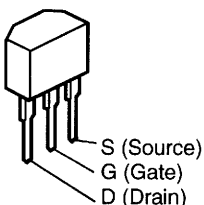
2SA988 (E/F)  
2SC1815 (Y)  
2SC1841 (E/F)



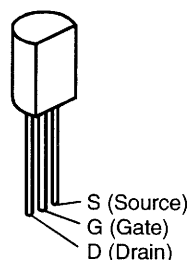
2SB1186A (D)  
2SD1763A (D)



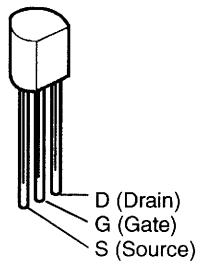
2SK184C (GR)/(BL)



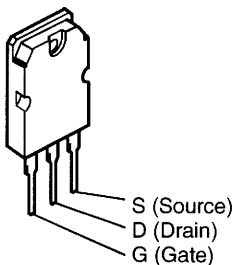
2SK369 (BL)/(GR)-C



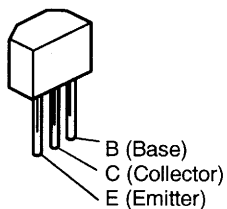
2SK373 (Y)



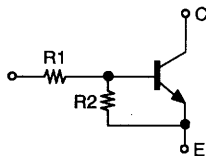
2SK851



DTC114ES  
RN1241

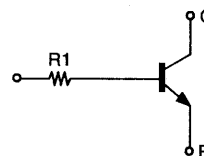


DTC114ES



	R1	R2
DTC114ES	10 kohm	10 kohm

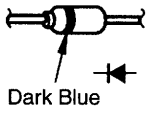
RN1241



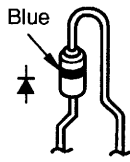
	R1
RN1241	5.6 kohm

● DIODE & LED

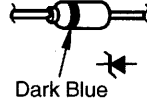
1SS252



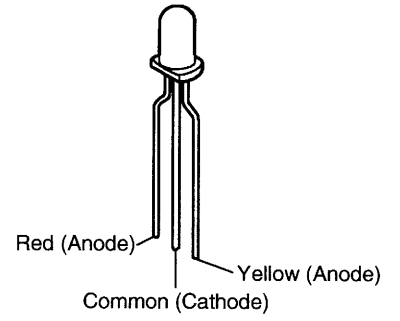
1SR35-200A



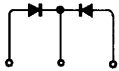
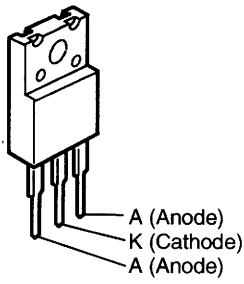
HZS5A-1  
HZS12A-1  
HZS6B-1  
HZS24-1  
MTZJ7.5C  
MTZJ18A



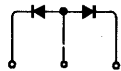
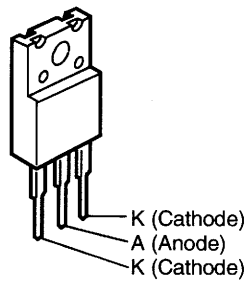
SML16751 (LED)



FMG-22S

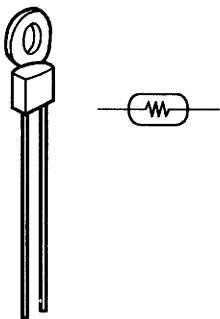


FMG-22R

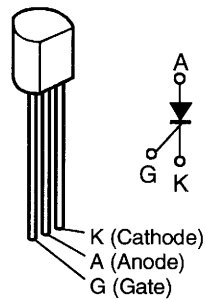


● POSISTOR

PTH9M04BC222TS2F333 (P501)



SFOR3G42 (Thyristor)  
(SC601)





# NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "1" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

**WARNING:**

Parts marked with this symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

● **Resistors**

Ex.: RN 14K 2E 182 G FR  
 Type Shape and performance Power Resistance Allowable error Others

RD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metal oxide film	2H : 1/2W	J : ±5%	NB : Non-burning type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

\* **Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm  
 Indicates number of zeros after effective number.  
 2-digit effective number.

• Units: ohm

1 R 2 ⇒ 1.2 ohm  
 1-digit effective number.  
 2-digit effective number, decimal point indicated by R.

• Units: ohm

● **Capacitors**

Ex.: CE 04W 1H 2R2 M BP  
 Type Shape and performance Dielectric strength Capacity Allowable error Others

CE : Aluminum foil electrolytic	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolytic	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolytic	1C : 16V	J : ±5%	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : ±10%	DL : For charge and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80%	U : UL part
CP : Oil	2A : 100V	-20%	C : CSA part
CM : Mica	2B : 125V	P : +100%	W : UL-CSA type
CF : Metallized	2C : 160V	-0%	F : Lead wire forming
CH : Metallized	2D : 200V	C : ±0.25pF	
	2E : 250V	D : ±0.5pF	
	2H : 500V	= : Others	
	2J : 630V		

\* **Capacity (electrolyte only)**

2 2 2 ⇒ 2200μF  
 Indicates number of zeros after effective number.  
 2-digit effective number.

• Units: μF.

2 R 2 ⇒ 2.2μF  
 1-digit effective number.  
 2-digit effective number, decimal point indicated by R.

• Units: μF.

\* **Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF=0.0022μF  
 (More than 2) — Indicates number of zeros after effective number.  
 2-digit effective number.

• Units: μF.

2 2 1 ⇒ 220pF  
 (0 or 1) — Indicates number of zeros after effective number.  
 2-digit effective number.

• Units: pF.

• When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

B5 H

# PARTS LIST OF P.W.BOARD

## 1U-3044B MAIN UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks
<b>SEMICONDUCTORS GROUP</b>				<b>RESISTORS GROUP</b>			
IC901	499 0290 007	Remocon sensor GP1U271X		ZD902	276 0634 905	Zener diode MTZJ3.3A	3.3V
IC902	263 0809 006	IC NJM7805FA(S)		ZD911	276 0635 904	Zener diode MTZJ7.5C	
IC903	262 2168 001	IC HD404222		ZD913	276 0481 909	Zener diode HZS18-1TD	
IC904	263 0476 002	IC LB1639		LD901	393 9563 903	LED SML16751WN	
TR101	274 0158 003	Transistor 2SD1763A(D)		SC901	279 0038 908	Thyristor SF0R3G42	
TR102	272 0115 008	Transistor 2SB1186A(D)		<b>RESISTORS GROUP</b>			
TR103,104	275 0042 905	FET 2SK373(Y)		R101,102	241 2422 944	Carbon film 1 kohm 1/4W	RD14B2E102J(PSNB)
TR501~504	275 0055 015	FET 2SK184C (GR)/(BL)		R103,104	241 2387 908	Carbon film 1 ohm 1/4W(NB)	RD14B2E010JNBS
TR505~508	273 0235 923	Transistor 2SC1841(E/F)		R501,502	241 2429 963	Carbon film 1 Mohm 1/4W	RD14B2E105J(PSNB)
TR509~512	271 0202 002	Transistor 2SA1360 (O/Y)		R503,504	245 2044 900	Metal film 100 ohm 1/4W	RN14K2E101G
TR513,514	273 0333 003	Transistor 2SC3423(O/Y)		R505~508	241 2424 900	Carbon film 4.7 kohm 1/4W	RD14B2E472J(PSNB)
TR515,516	273 0198 002	Transistor 2SC1815(Y)		R509,510	241 2421 929	Carbon film 330 ohm 1/4W	RD14B2E331J(PSNB)
TR517,518	274 0158 003	Transistor 2SD1763A(D)		R511,512	241 2424 968	Carbon film 8.2 kohm 1/4W	RD14B2E822J(PSNB)
TR519,520	272 0115 008	Transistor 2SB1186A(D)		R513,514	245 2048 906	Metal film 150 ohm 1/4W	RN14K2E151G
TR525,526	273 0235 923	Transistor 2SC1841(E/F)		R515,516	241 2429 963	Carbon film 1 Mohm 1/4W	RD14B2E105J(PSNB)
TR901	273 0303 910	Transistor 2SC1740S(S)		R519,520	241 2426 966	Carbon film 56 kohm 1/4W	RD14B2E563J(PSNB)
TR902	269 0020 906	Transistor DTC114ES(10K-10K)		R523~526	241 2315 983	Carbon film 330 ohm 1/4W	RD14B2E331GFERS
TR903	273 0317 906	Transistor 2SC2458(BL)		R527~530	241 2377 947	Carbon film 100 ohm 1/4W(NB)	RD14B2E101JNBS
TR904,905	269 0020 906	Transistor DTC114ES(10K-10K)		R531,532	241 2380 918	Carbon film 1.3 kohm 1/4W(NB)	RD14B2E132JNBS
TR906	273 0317 906	Transistor 2SC2458(BL)		R533,534	241 2377 921	Carbon film 82 ohm 1/4W(NB)	RD14B2E820JNBS
TR907	271 0191 906	Transistor 2SA1048(GR)		R535,536	244 2068 022	Metal oxide 12 kohm 1W	RS14B3A123JNBS (RSFSV)
TR918,919	273 0317 906	Transistor 2SC2458(BL)		R537,538	241 2371 930	Carbon film 160 ohm 1/4W	RD14B2E161GFERS
TR920	269 0107 900	Transistor RN1241(A/B)		R539,540	241 2424 926	Carbon film 5.6 kohm 1/4W	RD14B2E562J(PSNB)
TR921~924	273 0317 906	Transistor 2SC2458(BL)		R541,542	241 2422 944	Carbon film 1 kohm 1/4W	RD14B2E102J(PSNB)
TR925	271 0191 906	Transistor 2SA1048(GR)		R543,544	241 2371 930	Carbon film 160 ohm 1/4W	RD14B2E161GFERS
TR926	273 0317 906	Transistor 2SC2458(BL)		R547,548	241 2429 963	Carbon film 1 Mohm 1/4W	RD14B2E105J(PSNB)
TR927	271 0131 924	Transistor 2SA988(E/F)		R559,560	241 2425 967	Carbon film 22 kohm 1/4W	RD14B2E223J(PSNB)
TR929,930	273 0317 906	Transistor 2SC2458(BL)		R563,564	241 2428 906	Carbon film 220 kohm 1/4W	RD14B2E224J(PSNB)
D101	276 0681 000	Diode FMG-22S		R565,566	241 2426 908	Carbon film 33 kohm 1/4W	RD14B2E333J(PSNB)
D102	276 0682 009	Diode FMG-22R		R573,574	244 2058 045	Metal oxide 4.7 ohm 1W	RS14B3A4R7JNBS (RSFSV)
D103,104	276 0553 905	Diode 1SR35-200A		R579,580	244 2058 074	Metal oxide 22 ohm 1W	RS14B3A220JNBS (RSFSV)
D501,502	276 0616 907	Diode 1SS252		R581,582	244 2058 045	Metal oxide 4.7 ohm 1W	RS14B3A4R7JNBS (RSFSV)
D507~512	276 0616 907	Diode 1SS252		R583,584	241 2423 969	Carbon film 3.3 kohm 1/4W	RD14B2E332J (PSNB)
D902,903	276 0616 907	Diode 1SS252		R585,586	244 2050 933	Metal oxide 180 ohm 1W	RS14B3A181 JNBS(S)
D905	276 0616 907	Diode 1SS252		R587,588	244 2052 960	Metal oxide 220 ohm 1W	RS14B3A221 JNBS(S)
D906~911	276 0553 905	Diode 1SR35-200A		R589~592	244 2051 961	Metal oxide 100 ohm 1W	RS14B3A101JNBS(S)
D914~917	276 0616 907	Diode 1SS252		R595,596	244 2050 933	Metal oxide 180 ohm 1W	RS14B3A181JNBS(S)
D921~924	276 0616 907	Diode 1SS252		R597,598	244 2052 960	Metal oxide 220 ohm 1W	RS14B3A221JNBS(S)
ZD101,102	276 0645 907	Zener diode MTZJ18A	18V	R599	241 2376 964	Carbon film 47 ohm 1/4W(NB)	RD14B2E470JNBS
ZD501,502	276 0473 904	Zener diode HZS12A-1	12V				
ZD503,504	276 0458 903	Zener diode HZS5A-1	5V				
ZD901	276 0635 904	Zener diode MTZJ7.5C					

Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks	
R600~602	241 2376 964	Carbon film 47 ohm 1/4W(NB)	RD14B2E470JNBS	C907	255 1265 936	Mylar film 0.01μF/50V	CQ93M1H103J(B)	
R603,604	243 2061 000	Winding 0.1 ohm 3W	RW99=3F0R1K	C908	253 9039 906	Ceramic 0.1μF/25V	CK45=1E104Z(DD-3)	
R611,612	241 2426 966	Carbon film 56 kohm 1/4W	RD14B2E563J (PSNB)	C909	254 4375 707	Electrolytic 1000μF/25V	CE04W1E102MC(ASF)	
R933,934	244 2064 974	Metal oxide 33 ohm 1W	RS14B3A330JNBS(S)	C910	254 4305 926	Electrolytic 0.22μF/50V	CE04W1HR22M (SRE)	
R954,955	244 2043 953	Metal oxide 470 ohm 1W	RS14B3A471JNBS(S)	C911	254 4305 942	Electrolytic 0.47μF/50V	CE04W1HR47M (SRE)	
R995~997	241 2429 963	Carbon film 1 Mohm 1/4W	RD14B2E105J(PSNB)	C912	254 4299 906	Electrolytic 10μF/16V	CE04W1C100M (SRE)	
R999	241 2429 963	Carbon film 1 Mohm 1/4W	RD14B2E105J(PSNB)	C913	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)	
VR501,502	211 6075 024	Semi fixed resistor 4.7 kohm	V06PB472 (CERMET)	C921,922	254 4368 934	Electrolytic 100μF/25V	CE04W1E101M (ASF)	
<b>CAPACITORS GROUP</b>				C923	254 4480 906	Electrolytic 330μF/6.3V	CE04W0J331M(ASF)	
C101	254 4356 755	Electrolytic 220μF/50V	CE04W1H221MC (ARS)	C924	254 4368 934	Electrolytic 100μF/25V	CE04W1E101M (ASF)	
C102,103	254 4356 797	Electrolytic 10μF/50V	CE04W1H100MC (ARS)	C925	254 4313 989	Electrolytic 33μF/50V	CE04W1H330M (ASF)	
C104	254 4356 755	Electrolytic 220μF/50V	CE04W1H221MC (ARS)	C926	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)	
C107	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)	C927,928	254 4313 934	Electrolytic 47μF/50V	CE04W1H470M (ASF)	
C108,109	254 6212 004	Electrolytic 8200μF/71V	CE68W==822MC(DL)	C929,930	254 4313 918	Electrolytic 10μF/50V	CE04W1H100M (ASF)	
C110	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)	C933	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)	
C111	254 4263 916	Electrolytic 0.22μF/100V	CE04W2AR22M	C941	254 4313 934	Electrolytic 47μF/50V	CE04W1H470M (ASF)	
C501,502	255 4235 918	Polypropylene film 100 pF/100V	CQ93P2A101J(NH)	<b>OTHER PARTS GROUP</b>				<b>Q'ty</b>
C503,504	255 4235 918	Polypropylene film 100 pF/100V	CQ93P2A101J(NH)	CF901	399 0191 903	Ceramic 4.00 MHz	CST4.00MGW-TF01	1
C505,506	255 4232 982	Polypropylene film 2200 pF/100V	CQ93P2A222J(NH)	CX031	205 0355 033	3P KR connector base (L)		1
C507,508	254 4356 739	Electrolytic 47μF/50V	CE04W1H470MC (ARS)	CX032,033	205 0343 032	3P connector base (KR-PH)		2
C509,510	255 4237 929	Polypropylene film 56 pF/100V	CQ93P2A560J(NH)	CX034	205 0233 032	3 P EH connector base		1
C511,512	255 4235 918	Polypropylene film 100 pF/100V	CQ93P2A101J(NH)	CX041	205 0343 045	4P connector base(KR-PH)		1
C513~516	254 4373 000	Electrolytic 100μF/100V	CE04W2A101M (ARS)	CX061	205 0233 061	6P EH connector base		1
C517,518	255 4235 918	Polypropylene film 100 pF/100V	CQ93P2A101J(NH)	CY071	205 0343 074	7P connector base(KR-PH)		1
C519,520	255 4242 901	Polypropylene film 15 pF/100V	CQ93P2A150J(NH)	P101	205 0087 042	4P wrapping terminal		1
C521,522	255 4235 918	Polypropylene film 100 pF/100V	CQ93P2A101J(NH)	RL901	214 0129 001	Relay (DH2TU)		1
C525,526	254 4356 755	Electrolytic 220μF/50V	CE04W1H221MC (ARS)	RL902	214 0127 003	Relay (RY-12W)		1
C527,528	255 4232 937	Polypropylene film 1000 pF/100V	CQ93P2A102J(NH)	TP501,502	205 0190 036	3P NH connector base		2
C529,530	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)	W501~504	205 0864 003	M3 screw terminal		4
C531,532	255 4235 057	Polypropylene film 0.1μF/100V	CQ93P2A104J(NH)	W505,506	203 0615 094	1P SIN connector cord		2
C533,534	255 4232 937	Polypropylene film 1000 pF/100V	CQ93P2A102J(NH)	W901	203 0501 027	1P SIN con. Ass'y		1
C535,536	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)		415 0309 042	P.V.C. tube (L=05)		4
C561,562	255 4232 937	Polypropylene film 1000 pF/100V	CQ93P2A102J(NH)		417 0476 007	Radiator		2
C571,572	254 4461 718	Electrolytic 4.7μF/50V	CE04W1H4R7MC (ARS)		417 0476 036	Radiator		2
C903	256 1034 979	Metalized 0.12μF/50V	CF93A1H124J		473 7002 021	Screw 3 8 CBTS(S)-B		4
C904	254 4356 797	Electrolytic 10μF/50V	CE04W1H100MC (ARS)					
C905	255 4235 934	Polypropylene film 0.01μF/100V	CQ93P2A103J(NH)					
C906	254 4305 984	Electrolytic 2.2μF/50V	CE04W1H2R2M (SRE)					

## 1U-3045B&amp;C PHONO UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks	Q'ty	
<b>SEMICONDUCTORS GROUP</b>									
IC301	263 0609 002	IC NJM2068DDC		C317,318	254 4260 906	Electrolytic 0.1 $\mu$ F/50V	CE04W1H0R1M		
IC401	263 0565 007	IC BA15218		C319,320	254 4260 935	Electrolytic 0.47 $\mu$ F/50V	CE04W1HR47M		
TR401-404	275 0038 045	FET 2SK369 (BL)/(GR)		C331,332	254 4260 922	Electrolytic 0.33 $\mu$ F/50V	CE04W1HR33M		
TR928	274 0158 003	Transistor 2SD1763A(D)		C333,334	255 1265 994	Mylar film 0.033 $\mu$ F/50V	CQ93M1H333J(B)		
D001	276 0616 907	Diode 1SS252		C335,336	256 1034 953	Metalized 0.068 $\mu$ F/50V	CF93A1H683J		
D401,402	276 0616 907	Diode 1SS252		C341,342	255 1264 966	Mylar film 3300pF/50V	CQ93M1H332J(B)		
<b>RESISTORS GROUP</b>				C345	256 1045 706	Metalized 1 $\mu$ F/63V	CF93B1J105K(SA)		
R241,242	241 2425 909	Carbon film 12 kohm 1/4W	RD14B2E123J (PSNB)	C401,402	255 4237 922	Polypropylene film 56pF/100V	CQ93P2A50J(NH)		
R243,244	241 2421 961	Carbon film 470 ohm 1/4W	RD14B2E471J (PSNB)	C403,404	255 4237 961	Polypropylene film 150pF/100V	CQ93P2A151J(NH)		
R245,246	241 2427 923	Carbon film 100 kohm 1/4W	RD14B2E104J (PSNB)	C405,406	255 4235 918	Polypropylene film 100pF/100V	CQ93P2A101J(NH)		
R301,302	241 2423 972	Carbon film 3.6 kohm 1/4W	RD14B2E362J (PSNB)	C407,408	255 1264 966	Mylar film 3300pF/50V	CQ93M1H332J(B)		
R441-444	244 2050 933	Metal oxide 180 ohm 1W	RS14B3A181JNBS(S)	C409,410	254 4381 911	Electrolytic 100 $\mu$ F/10V	CE04W1A101M (ASF)		
R990-994	241 2427 923	Carbon film 100 kohm 1/4W	RD14B2E104J(PSNB)	C411,412	254 4260 980	Electrolytic 10 $\mu$ F/50V	CE04W1H100M		
VR301	211 0902 009	Variable resistor 30 kohm	V1620V25FB303R	C413,414	256 1034 953	Metalized 0.068 $\mu$ F/50V	CF93A1H683J		
VR303	211 0798 103	Variable resistor 100 kohm	V14V20FW104K	C415,416	255 1264 911	Mylar film 1200pF/50V	CQ93M1H122J(B)		
VR304	211 0834 012	Variable resistor 10 kohm	V14V20FA103K	C417,418	255 1265 965	Mylar film 0.018 $\mu$ F/50V	CQ93M1H183J(B)		
VR305	211 0834 009	Variable resistor 30 kohm	V14V20FA303K	C419,420	255 1264 908	Mylar film 1000 $\pi$ F/50V	CQ93M1H102J(B)		
<b>CAPACITORS GROUP</b>				C421	254 4381 911	Electrolytic 100 $\mu$ F/10V	CE04W1A101M (ASF)		
C001,002	253 8003 713	Ceramic 4700pF/400V(AC)	CK45E2GAC472MC	C423	254 4313 934	Electrolytic 47 $\mu$ F/50V	CE04W1H470M (ASF)		
C007	254 4313 918	Electrolytic 10 $\mu$ F/50V	CE04W1H100M(ASF)	C424	254 4461 718	Electrolytic 4.7 $\mu$ F/50V	CE04W1H4R7MC (ARS)		
C201-214	255 4237 929	Polypropylene film 56pF/100V	CQ93P2A560J(NH)	C425	254 4313 934	Electrolytic 47 $\mu$ F/50V	CE04W1H470M (ASF)		
C241,242	254 4261 918	Electrolytic 47 $\mu$ F/50V	CE04W1H470M	C429,430	255 1264 908	Mylar film 1000pF/50V	CQ93M1H102J(B)		
C301	254 3053 907	Electrolytic 10 $\mu$ F/16V	CE04D1C100MBP	C441	255 4235 934	Polypropylene film 0.01 $\mu$ F/100V	CQ93P2A103J(NH)		
C302	255 1265 936	Mylar film 0.01 $\mu$ F/50V	CQ93M1H103J(B)	<b>OTHER PARTS GROUP</b>					
C305,306	254 4260 977	Electrolytic 4.7 $\mu$ F/50V	CE04W1H4R7M	CW034	203 4720 011	3P EH-SCN connector cord		1	
C307,308	255 4235 918	Polypropylene film 100pF/100V	CQ93P2A101J(NH)	CW061	204 0532 002	6P EH-SCN cord		1	
C309,310	254 4313 963	Electrolytic 1 $\mu$ F/50V	CE04W1H010M(ASF)	CW062	204 0532 015	6P EH-SCN cord		1	
C311,312	254 4254 941	Electrolytic 100 $\mu$ F/16V	CE04W1C101M	CX062	205 0233 061	6P EH connector base		1	
C313,314	255 1265 994	Mylar film 0.033 $\mu$ F/50V	CQ93M1H333J(B)	CX071,072	205 0343 074	7P connector base(KR-PH)		2	
C315,316	254 4260 919	Electrolytic 0.22 $\mu$ F/50V	CE04W1HR22M	CX081	205 0343 087	8P connector base(KR-PH)		1	
					CX101	205 0375 000	10P connector base (KR-PH)		1
					CX111	205 0375 013	11P connector base (KR-PH)		1
					CY031-033	205 0343 032	3P connector base (KR-PH)		3
					CY041	205 0343 045	4P connector base(KR-PH)		1
					CY072	205 0343 074	7P connector base(KR-PH)		1
					CY081	205 0343 087	8P connector base(KR-PH)		1
					CY101	205 0480 005	10P KR connector base(L)		1
					CY111	205 0375 013	11P connector base (KR-PH)		1
					F1	206 1046 014	Fuse 8A	U.S.A,Canada & Taiwan R.O.C Models	1

**PARTS LIST OF EXPLODED VIEW**

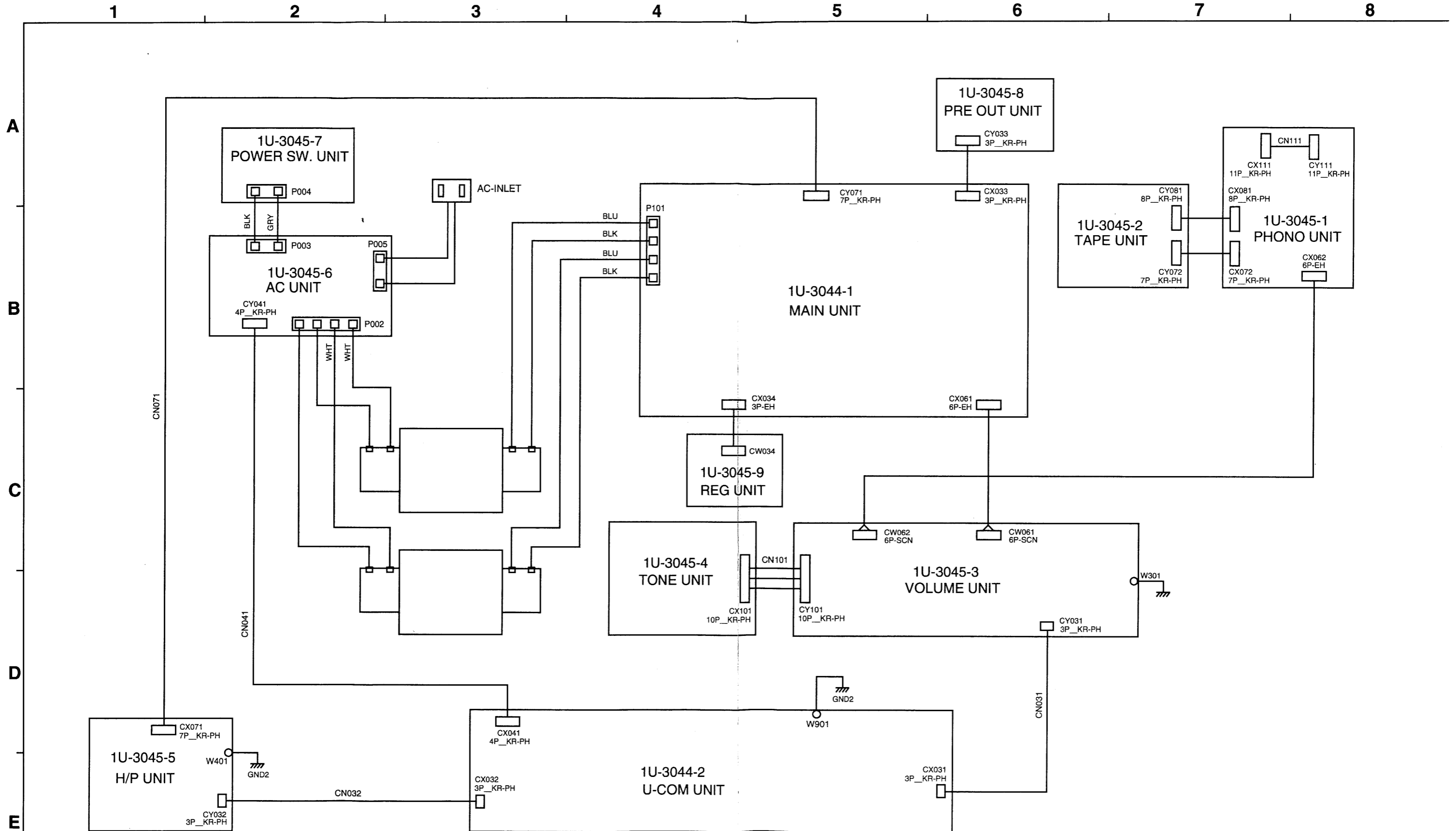
Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	1U-3044B	Main P.W.B. unit ass'y		1
1-1	1U-3044B-1	Main P.W.B. unit		
1-2	1U-3044B-2	U-COM P.W.B. unit		
2	1U-3045B	Phono P.W.B. unit ass'y	Europe & Asia Models	1
2-1	1U-3045B-1	Phono P.W.B. unit	Europe & Asia Models	
2-2	1U-3045B-2	Tape P.W.B. unit	Europe & Asia Models	
2-3	1U-3045B-3	Volume P.W.B. unit	Europe & Asia Models	
2-4	1U-3045B-4	Tone P.W.B. unit	Europe & Asia Models	
2-5	1U-3045B-5	H/P tape P.W.B. unit	Europe & Asia Models	
2-6	1U-3045B-6	AC P.W.B. unit	Europe & Asia Models	
2-7	1U-3045B-7	Power SW. P.W.B. unit	Europe & Asia Models	
2-8	1U-3045B-8	Pre out P.W.B. unit	Europe & Asia Models	
2-9	1U-3045B-9	REG. P.W.B. unit	Europe & Asia Models	
2	1U-3045C	Phono P.W.B. unit ass'y	U.S.A,Canada & Taiwan R.O.C Models	1
2-1	1U-3045C-1	Phono P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-2	1U-3045C-2	Tape P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-3	1U-3045C-3	Volume P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-4	1U-3045C-4	Tone P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-5	1U-3045C-5	H/P tape P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-6	1U-3045C-6	AC P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-7	1U-3045C-7	Power SW. P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-8	1U-3045C-8	Pre out P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
2-9	1U-3045C-9	REG. P.W.B. unit	U.S.A,Canada & Taiwan R.O.C Models	
3	411 1368 200	Main chassis		1
4	412 4268 203	Center bracket (L)		1
5	415 0516 039	Flexible bush		1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
6	445 0048 016	Cord holder (L50)		1
7	412 4280 207	Center bracket (R)		1
8	412 4267 204	Support bracket		2
9	461 0974 001	Trans spacer		1
10	412 4269 008	Trans plate		1
11	104 0194 205	Foot ass'y		4
12	412 2741 036	P.W.B. holder (H=10)		4
13	412 2762 002	P.W.B. holder		1
14	105 1251 111	Back panel		1
15	205 0071 016	Terminal ass'y		1
16	477 0018 001	Washer (P-87)		1
17	203 4871 041	3P KR-KR ribbon 125	CN033	1
18	204 6350 039	11P KR-KR ribbon 100	CN111	1
19	204 2546 012	8P KE-KE ribbon 80	CN081	1
20	204 2543 057	7P KR-KR ribbon 150	CN072	1
21	205 1062 008	8P SP terminal		1
22	203 3975 003	AC outlet (E2)	Europe & Asia Models	1
22	203 3974 004	AC outlet	U.S.A,Canada & Taiwan R.O.C Models	1
23	144 2556 302	Front panel ass'y	Gold model	1
23	144 2556 315	Front panel ass'y	Black model	1
24	203 4871 096	3P KR-KR ribbon 250	CN031	1
25	203 4871 009	3P KR-KR ribbon 70	CN032	1
26	204 2552 019	10P KR-KR ribbon 80	CN101	1
27	412 2814 073	Card spacer (L=18)	TONE UNIT	1
28	441 1780 203	Plate (M)		1
29	113 1356 062	Push knob (MARU)	Gold model	2
29	113 1356 004	Push knob (MARU)	Black model	2
30	441 1781 202	Plate (F)		1
31	212 4805 008	Rotary remote switch	INPUT SEL.	1
32	212 4806 007	Rotary remote switch	REC OUT SEL.	1
33	203 6386 026	4P KR-KR ribbon 325	CN041	1
34	204 2544 098	7P KR-KR ribbon 500	CN071	1
35				
36	417 0549 316	Power radiator		2
37	275 0095 004	FET 2SK851	TR521-524	4
38	415 0234 007	Insulating sheet		4
39	412 3225 205	P.W.B bracket (A)		4
40	279 0034 041	Posistor	PH901,902	2
41	415 0309 013	P.V.C. tube (L=10)	for PH901,902	4
42	412 4266 205	Radiator bracket		2
43	477 0224 031	SP washer	P UNIT GEN	4
44	233 6244 004	Power trans (E2)		2
45	513 1404 004	Power trans label (A)		2
46	445 8004 007	Wire clamper		10
47	113 9213 039	P. knob (P) ass'y	Gold model	1
47	113 9213 000	P. knob (P) ass'y	Black model	1
48	112 9123 126	Knob ass'y (M)	Gold model	1
48	112 9123 139	Knob ass'y (M)	Black model	1
49	112 9125 111	Knob ass'y (F)	Gold model	1

Ref. No.	Part No.	Part Name	Remarks	Q'ty	
49	112 9125 124	Knob ass'y (F)	Black model	1	
50	112 0796 109	Knob MARU ass'y	Gold model	4	
50	112 0796 112	Knob MARU ass'y	Black model	4	
51	461 0501 005	Rubber sheet	F/PANEL	3	
52	102 0584 204	Top cover	Gold model	1	
52	102 0584 217	Top cover	Black model	1	
53	461 9036 005	Spacer		2	
54	209 0012 006	Short pin		2	
Δ	55	203 3970 008	AC inlet	Europe & Asia Models	1
Δ	55	203 3962 003	AC inlet	U.S.A,Canada & Taiwan R.O.C Models	1
56	143 0874 119	Remocon window		1	
57	412 3225 218	P.W.B bracket (A)		2	
58	412 2814 044	Card spacer (L=6)		2	
59	415 9080 003	Teflon spacer		2	
60	445 0048 003	Cord holder (L76)	L=76	4	
61	461 0577 084	Rubber sheet		2	
62	477 0096 007	Push rivet		8	
63	417 0562 005	CU plate		2	
<b>SCREWS</b>					
101	470 0009 022	Screw 3 x 6 CPS (SW.W) ZNP		4	
102	473 7002 021	Screw 3 x 8 CBTS(S)-B		57	
103	473 7003 017	Screw 3 x 8 CFTS (S)-B		2	
104	473 7007 013	Screw 4 x 10 CBTS(S)-B		6	
105	473 7026 007	Screw 4 x 6 CBTS(S)-B		8	
106	473 7500 015	Screw 3 x 8 CBTS(P)-Z		11	
107	473 7501 030	Screw 3 x 20 CBTS (P)-Z		1	
108	473 7508 017	Screw 3 x 10 CBTS(P)-B		19	
109	473 7511 017	Screw 3 x 12 CFTS (P)-Z		2	
110	473 7520 011	Screw 2.6 x 10 CFTS(P)		4	
111	473 8007 025	Cup screw 3 x 8		4	
112	473 8007 038	Cup screw 3 x 14		5	
113	477 0064 107	Fixing screw		5	
114	477 0263 018	3P. swelling screw	Gold model	4	
	477 0263 005	3P. swelling screw	Black model	4	
<b>PACKING &amp; ACCESORIES (Not included EXPLODED VIEW)</b>					
201	513 1581 008	Serial No. sheet		1	
202	505 8006 019	Envelope		1	
Δ	203	206 2147 006	AC cord with connector	Europe & Asia Models	1
Δ	203	206 2150 103	AC cord with connector	Taiwan R.O.C Models	1
204	511 3224 008	Inst. manual		1	
205	515 0671 601	Service station list (EX)		1	
206	394 0031 000	Battery UM-3		1	
207	399 0465 008	Remote controller RC-837		1	

Ref. No.	Part No.	Part Name	Remarks	Q'ty
208	504 9102 003	Stylen paper		1
209	505 9102 019	Poly. cover		1
210	503 1261 101	Cushion		1
211	517 1335 049	E2 POS label		1
212	513 1389 006	Control card base		1
213	501 1970 027	Carton case		1
214	513 1349 004	Thermal carbon film		1
215	513 9111 001	Color label (gold)	Gold model	2

# WIRING DIAGRAM



# EXPLODED VIEW

1                      2                      3                      4                      5                      6                      7                      8



A

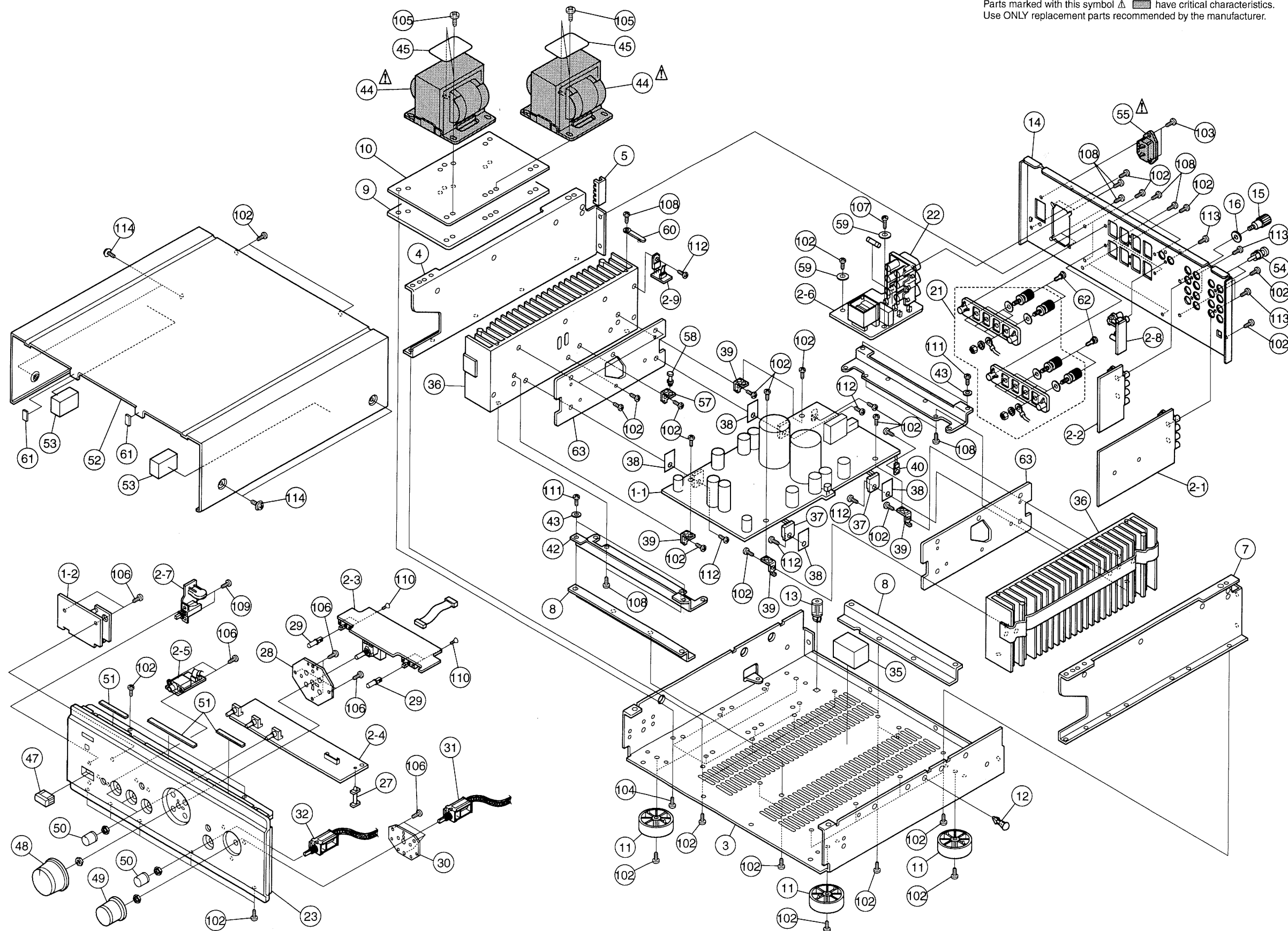
B

C

D

E

**WARNING:**  
Parts marked with this symbol   have critical characteristics.  
Use **ONLY** replacement parts recommended by the manufacturer.



Ref. No.	Part No.	Part Name	Remarks	Q'ty
F1	206 1015 074	Fuse 3.15A	Europe & Asia Models	1
F8	206 1046 014	Fuse 8A	U.S.A,Canada & Taiwan R.O.C Models	1
F8	206 1015 032	Fuse 2.5A	Europe & Asia Models	1
JK201-204	204 8540 012	4P pin jack		4
JK205	204 8559 016	2P pin jack (S-GND)		1
JK402	204 8480 004	Head phone jack (SW)		1
L401-404	235 9003 002	FTZ choke coil	Europe & Asia Models	4
P002	205 0348 040	4P wrapping terminal		1
P003-005	205 0692 000	2P wrapping terminal		3
RL001	214 0142 004	Relay (TV-5)		1
SW001	212 1030 009	Power switch (TV-5)		1
SW201	212 1035 004	Slide SW (2-6) remote	INPUT SEL.	1
SW202	212 4331 006	Slide SW (4-6) remote	REC OUT SEL.	1
SW301	212 1169 006	1P push switch	S.DIRECT	1
SW302	212 1173 005	1P push switch	LOUDNESS	1
SW401	212 4728 004	1P push switch	MM/MC	1
T3	233 6230 005	Power trans. mini E3	U.S.A,Canada & Taiwan R.O.C Models	1
T3	233 6227 005	Power trans. mini E2	Europe & Asia Models	1
W301	203 0659 005	1P contact Ass'y		1
W401	203 0501 030	1P SIN con. Ass'y		1
	202 0040 909	Fuse clip	for F-001,008	4
		Knob	for SW401	1



1 2 3 4 5 6 7 8

# 1U-3045B&C PHONO UNIT

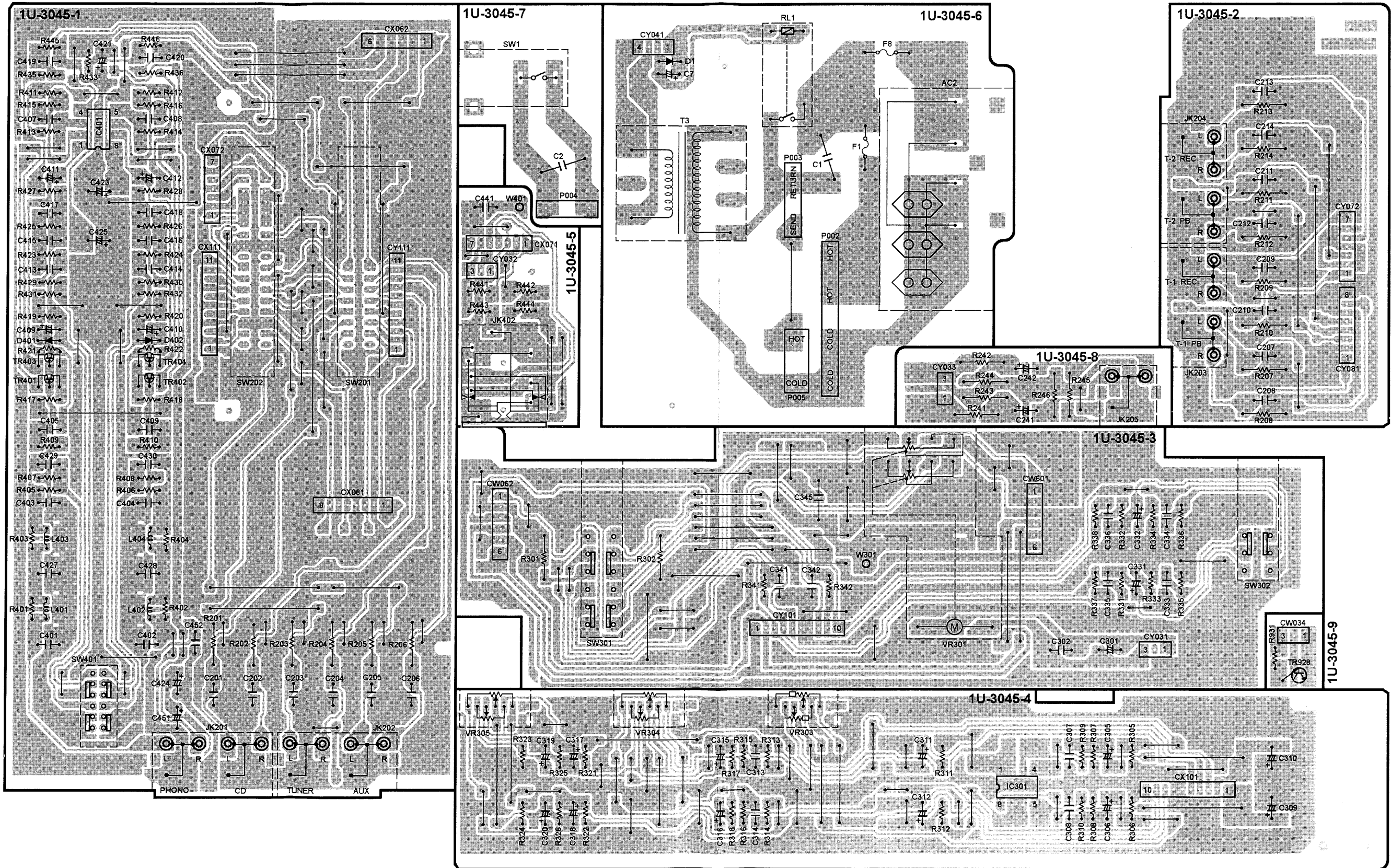
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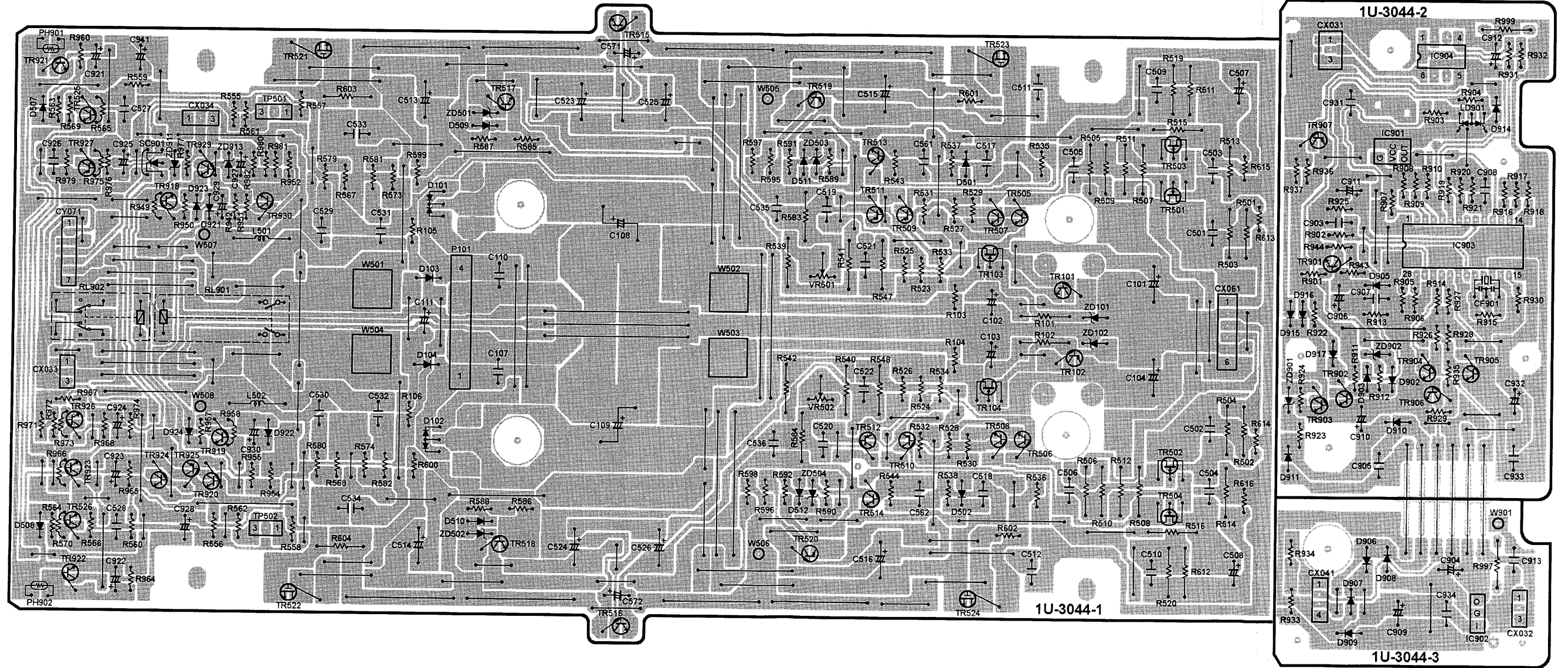
D

E



1 2 3 4 5 6 7 8

1U-3044B MAIN UNIT



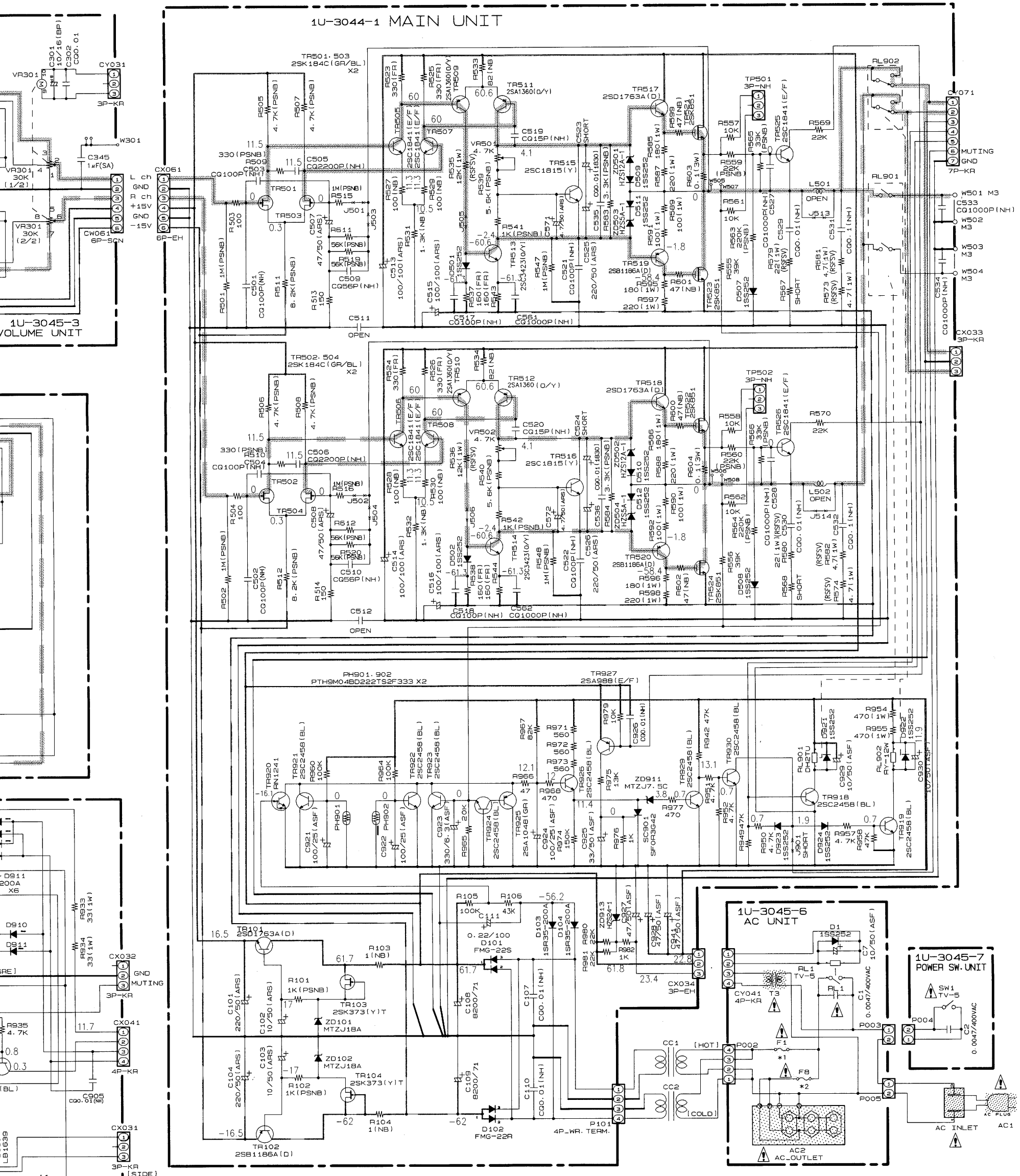
A

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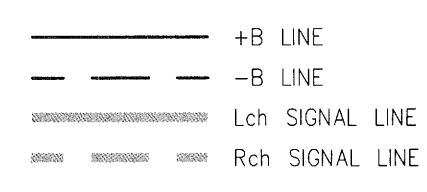
C

D

E



	*1	*2	*3	*4	*5	*6	*7
	F1	F8	L401 -404	R401 -404	C405 406 C511, 512	C201 -214	C401 402
Europe, Asia Models	T3.15A	T2.5A	150μH	1kΩ	100pF	56pF	56pF
U.S.A, Canada & Taiwan, R.O.C Models	8A/125V	8A/125V	OPEN	SHORT	OPEN	OPEN	OPEN



1U-3045-3 VOLUME UNIT

1U-3045-6 AC UNIT

1U-3045-7 POWER SW. UNIT

U-3044-2 CON UNIT

**NOTICE**  
 ALL RESISTANCE VALUES IN OHM. k=1,000 OHM M=1,000,000 OHM  
 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD  
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT  
 CONDITION.  
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR  
 NOTICE.

**WARNING:**  
 Parts marked with this symbol have critical characteristics.  
 Use ONLY replacement parts recommended by the manufacturer.

**CAUTION:**  
 Before returning the unit to the customer, make sure you make either (1) a  
 leakage current check or (2) a line to chassis resistance check. If the leakage  
 current exceeds 0.5 milliamps, or if the resistance from chassis to either side  
 of the power cord is less than 240 kohms, the unit is defective.

**WARNING:**  
 DO NOT return the unit to the customer unit the problem is located and  
 corrected.

A

B

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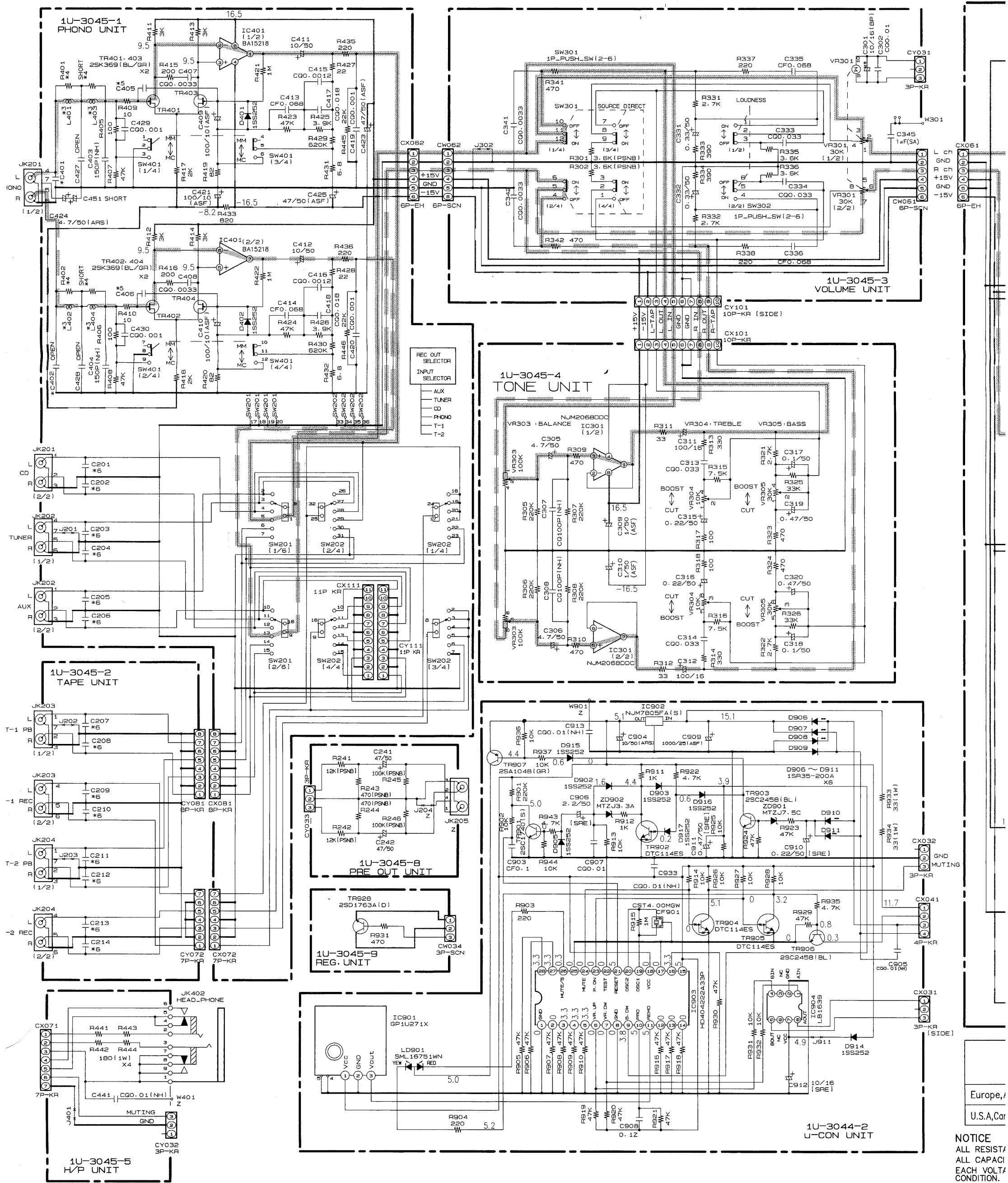
D

E

F

G

H



Europe,  
U.S.A,Car

NOTICE  
ALL RESISTA  
ALL CAPACI  
EACH VOLTA  
CONDITION.  
CIRCUIT AND  
NOTICE.