

DENON

Hi-Fi Integrated Stereo Amplifier

SERVICE MANUAL

MODEL PMA-250SE

INTEGRATED STEREO AMPLIFIER



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

NIPPON COLUMBIA CO., LTD.

OPERATING INSTRUCTIONS

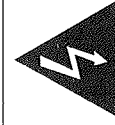
SAFETY INSTRUCTIONS

- 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.
- 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 marked on the appliance.
- Grounding - The power cord of the appliance should be plugged 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.
- Service - 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.



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.

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 uninsulated "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

• POUR LE MODELE CANADIEN UNIQUEMENT

CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION

POUR PREVENIR LES CHOCs ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT. SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

• DECLARATION OF CONFORMITY

We declare under our sole responsibility that this product, to which this declaration relates, is in conformity with the following standards: EN60065, EN55013, EN55020, EN60555-2 and EN60555-3. Following the provisions of 73/23/EEC, 89/336/EEC and 93/68/EEC Directive.

• DECLARACIÓN DE CONFORMIDAD

Declaramos bajo nuestra exclusiva responsabilidad que este producto al que hace referencia esta declaración, está conforme con los siguientes estándares: EN60065, EN55013, EN55020, EN60555-2 y EN60555-3. Conforme con las provisiones de las directivas 73/23/EEC, 89/336/EEC y 93/68/EEC.

• ÜBEREINSTIMMUNGSERKLÄRUNG

Wir erklären unter unserer Verantwortung, daß dieses Produkt, auf das sich diese Erklärung bezieht, den folgenden Standards entspricht: EN60065, EN55013, EN55020, EN60555-2 und EN60555-3. Entsprechend den Bestimmungen der Richtlinien 73/23/EEC, 89/336/EEC und 93/68/EEC.

• EENVOORMIGHEIDSVERKLARING

Wij verklaren uitsluitend op onze verantwoordelijkheid dat dit product, waarop deze verklaring betrekking heeft, in overeenstemming is met de volgende normen: EN60065, EN55013, EN55020, EN60555-2 en EN60555-3. Volgens de bepalingen van de richtlijnen 73/23/EEC, 89/336/EEC en 93/68/EEC.

• DECLARATION DE CONFORMITÉ

Nous déclarons sous notre seule responsabilité que l'appareil, auquel se réfère cette déclaration, est conforme aux standards suivants: EN60065, EN55013, EN55020, EN60555-2 et EN60555-3. D'après les dispositions des directives 73/23/EEC, 89/336/EEC et 93/68/EEC.

• ÖVERENSÄMMELSEINTYG

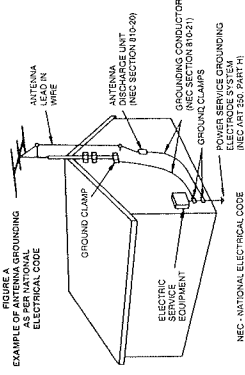
Härmed intygas, helt på eget ansvar, att denna produkt, vilken detta intyg avser, uppfyller följande standarder: EN60065, EN55013, EN55020, EN60555-2 och EN60555-3. Enligt stadgarna i direktiv 73/23/EEC, 89/336/EEC och 93/68/EEC.

• DICHIARAZIONE DI CONFORMITÀ

Dichiaro con piena responsabilità che questo prodotto, al quale la nostra dichiarazione si riferisce, è conforme alle seguenti normative: EN60065, EN55013, EN55020, EN60555-2 e EN60555-3. In conformità con le condizioni delle direttive 73/23/EEC, 89/336/EEC e 93/68/EEC.

• DECLARAÇÃO DE CONFORMIDADE

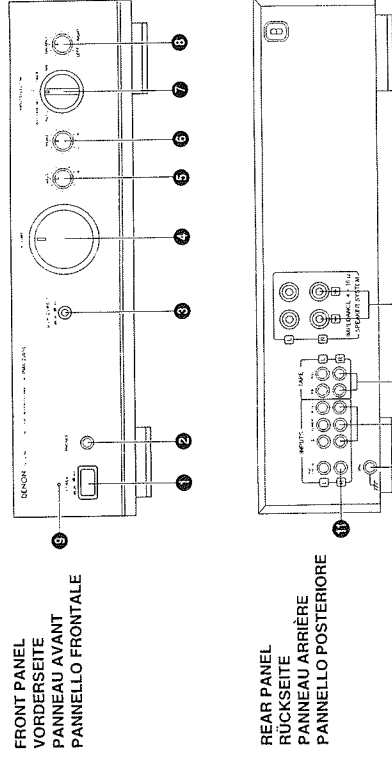
Declaramos sob nossa exclusiva responsabilidade que este produto, ao qual esta declaração corresponde, está em conformidade com as seguintes normas: EN60065, EN55013, EN55020, EN60555-2 e EN60555-3. De acordo com o estabelecido nas diretivas 73/23/EEC, 89/336/EEC e 93/68/EEC.



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- DESIGNATIONS AND FUNCTIONS OF PANEL CONTROLS (1)
- BEZEICHNUNG UND FUNKTION DER BEDIENELEMENTE (1)
- DESIGNATIONS ET FONCTIONS DES ÉLÉMENTS DU PANNEAU DE COMMANDE (1)
- SIGNIFICATO E FUNZIONAMENTO DEI COMANDI SUL PANNELLO (1)



10 GND	11 AUX-1/PHONO	12 CD, TUNER, AUX-2	13 TAPE PB, TAPE REC	14 SPEAKERS
GND FOR PHONO	AUX-1/PHONO terminals for your PHONO system. For connection, you will need the optional PHONO CARD. For more information on the PHONO CARD, please contact your dealer or your DENON Service Center (see page 17).	Input Terminals (CD, TUNER, AUX-2)	Playback and Recording Terminals • Playback Terminals • Recording Terminals	Speaker Terminals
GND FOR PHONO	AUX-1/PHONO-Input for your PHONO system. For connection, you will need the optional PHONO CARD. For more information on the PHONO CARD, please contact your dealer or your DENON Service Center (see page 17).	Engangsbuchsen (CD, TUNER, AUX-2)	Ein-/Ausgänge für Kassettene recorder • Wiedergabe • Aufnahme	Lautsprecherklemmen
GND FOR PHONO	Bornes d'entrée AUX-1/PHONO pour votre système PHONO. Pour la connexion, vous devez utiliser la carte PHONO optionnelle. Pour plus d'informations sur la CARTE PHONO, veuillez contacter votre revendeur ou le service après-vente de DENON (voir page 17).	Bornes d'entrée (CD, TUNER, AUX-2)	Bornes de lecture et d'enregistrement • Bornes de lecture • Bornes d'enregistrement	Bornes de haut-parleurs
GND FOR PHONO	Se si desidera utilizzare questi connettori per il collegamento del sistema PHONO, è necessario la PHONO locataria. Per ulteriori informazioni sulla PHONO CARD, rivolgersi al proprio rivenditore o al Centro di assistenza DENON (consultare pagina 20).	Terminali di ingresso (CD, TUNER, AUX-2)	Terminali di riproduzione e registrazione • Terminali di riproduzione • Terminali di registrazione	Terminali degli altoparlanti

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- NOTE:**
- Unplug the power cord when you do not plan to use the unit for a long period of time.
 - When installing the unit, leave at least 10 cm distance on the left and right and on the rear of the unit as well as 10 cm to any other component placed above.

HINWEIS:

- Trennen Sie das Netzkaabel vom Netz, wenn Sie beabsichtigen, das Gerät über einen längeren Zeitraum nicht zu benutzen.
- Bei der Installation des Gerätes einen Freiraum von mindestens 10 cm auf der linken, rechten und Rückseite des Gehäuses sowie weitere 10 cm Platz zu dem Gerät, das oberhalb der Einheit installiert werden soll.

REMARQUE:

- Débrancher le cordon d'alimentation lorsque l'appareil ne sera pas utilisé pendant une longue période.
- Lorsque vous installez l'appareil, laissez une distance libre d'au moins 10 cm distance sur les côtés de droite et gauche, ainsi qu'à l'arrière. De même, si vous placez un autre composant au-dessus de celui-ci, respectez un espace d'au moins 10 cm.

NOTA:

- Scollegate il cavo di alimentazione quando avete intenzione di non usare l'apparecchio per un lungo periodo.
- Quando si installa l'unità, lasciare almeno 10 cm di spazio a destra, a sinistra e sul retro dell'unità e 10 cm di tutti gli altri componenti che si trovano al di sopra dell'unità.

- NOTA:**
- Quando la unidad vaya a estar fuera de uso por un período prolongado de tiempo, desconecte el cable de alimentación.
 - Deje al menos 10 cm de distancia a la izquierda y derecha así como en la parte posterior cuando vaya a instalar la unidad. Deje también 10 cm de espacio entre la unidad y el componente que quiera instalar encima de ésta.

OPMERKING:

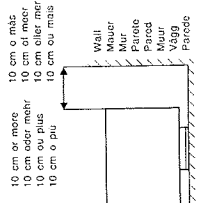
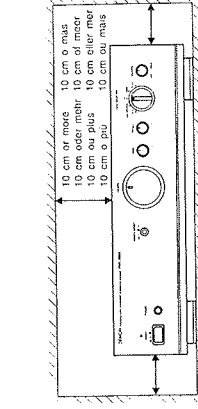
- Trek het netkabel uit wanneer u denkt het toestel gedurende een lange periode niet te gebruiken.
- Laat bij het installeren van de apparatuur ten minste 10 cm ruimte over aan de linker-, de rechter- en de achterkant van het apparaat, evenals tussen boven geplaatste apparatuur.

OBSERVA:

- Koppla loss nätkabeln om apparaten inte skall användas under lång tid.
- Låtma minst 10 cm avstånd till vänster om, till höger om och på baksidan av enheten och i förhållande till alla annan utrustning som placeras ovanpå, när du installerar den.

NOTA:

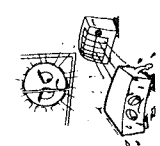

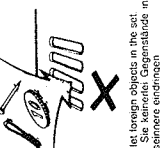

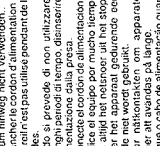
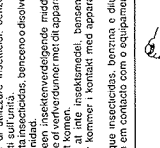
- Desconecte o fio eléctrico quando intenciar não utilizar a unidade por longo tempo.
- Acinstalar a unidade deixe pelo menos 10 cm de distância a esquerda, a direita e atrás da unidade, bem como 10 cm de distância para qualquer outro componente colocado por cima desta.

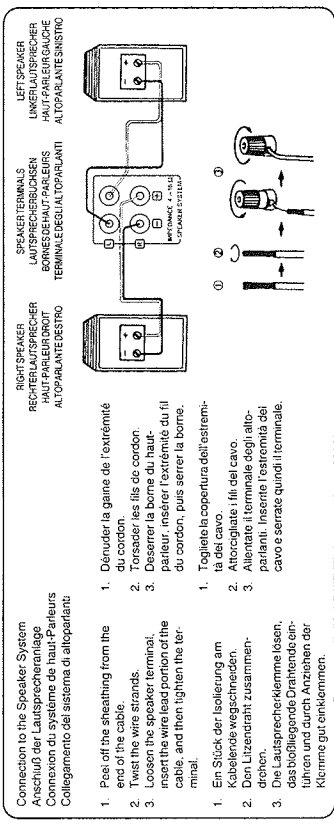
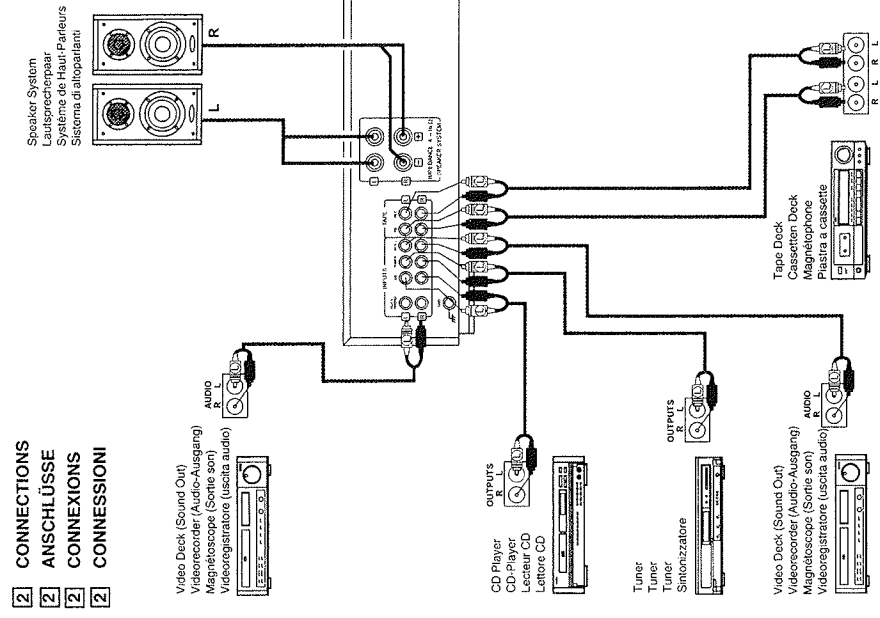


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NOTE ON USE / HINWEISE ZUM GEBRAUCH / OBSERVATIONS RELATIVES A L'UTILISATION / NOTE SULL'USO / NOTAS SOBRE EL USO / ALVORENS TE GEBRUIKEN / OBSERVERA OBSERVAÇÕES SOBRE O USO

 <p>Avoid high temperatures. Allow for sufficient heat dissipation. When the unit is used in a hot environment, the temperature of the unit will rise. Do not use the unit in a hot environment. Do not use the unit in a hot environment. Do not use the unit in a hot environment.</p>	 <p>Keep the set free from moisture, water and dust. Do not use the set in a humid environment. Do not use the set in a humid environment. Do not use the set in a humid environment.</p>	 <p>Do not let foreign objects in the set. Do not let foreign objects in the set. Do not let foreign objects in the set.</p>
 <p>Handle the power cord carefully. Do not pull on the power cord. Do not pull on the power cord. Do not pull on the power cord.</p>	 <p>Do not obstruct the ventilation holes. Do not obstruct the ventilation holes. Do not obstruct the ventilation holes.</p>	 <p>Never disassemble or modify the set in any way. Do not disassemble or modify the set in any way. Do not disassemble or modify the set in any way.</p>



3 DESIGNATIONS AND FUNCTIONS OF PANEL CONTROLS (2) (SEE PAGE 6)

- POWER (Power Switch)**
When the power switch is turned ON (→), the POWER LED (●) lights.
When the power switch is turned ON, power is supplied to the unit. 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 Jack)**
This jack is used to plug in the headphones.
- SOURCE DIRECT (Source Direct Switch)**
The controls (BALANCE and TONE) can be used when this switch is in the OFF (→) position.
When set to the ON (←) position, the above controls are bypassed and the signals are input directly to the volume control circuit, providing high quality sound.
- VOLUME (Volume Control)**
This knob controls the overall volume level.
Turn the knob clockwise (↻) to raise the volume and counterclockwise (↺) to lower it.
- 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 below 100 Hz. The bass is emphasized as the knob is moved off center clockwise (↻), and reduced as it is moved counterclockwise (↺).
- 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 10 kHz. The treble is emphasized as the knob is moved off center clockwise (↻), and reduced as it is moved counterclockwise (↺).
- INPUT SELECTOR (Input Select Switch)**
This switch is used to select the input signal for the program source. The source to be recorded is also selected with this switch.
• AUX-1/PHONO: This is the AUX-1 jack. If you want to use the terminal for PHONO equipment (i.e. a turntable), you will need the optional PHONO CARD.
• CD: Use this position when using the CD player, etc.
• TUNER: Use this position when using the tuner.
• AUX-2: Use this position when using the component connected to the AUX-2 jacks.
• TAPE: Use this position when using a tape deck connected to the TAPE jacks.

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4	OPERATION	12
5	TROUBLESHOOTING	13
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Please check to make sure the following items are included with the main unit in the carton:
(1) Operating instructions

— INHALT —

1	BEZEICHNUNG UND FUNKTION DER BEDIENELEMENTE (1)	6
2	ANSCHLÜSSE	8
3	BEZEICHNUNG UND FUNKTION DER BEDIENELEMENTE (2)	14
4	BEDIENUNG	15
5	FEHLERSUCHE	16
6	TECHNISCHE DATEN	35

Bitte überprüfen Sie, ob die folgenden Teile vollständig in der Verpackung enthalten sind:
(1) Bedienungsanleitung

— TABLE DES MATIÈRES —

1	DESIGNATIONS ET FONCTIONS DES ÉLÉMENTS DU PANNEAU DE COMMANDE (1)	6
2	CONNEXIONS	8
3	DESIGNATIONS ET FONCTIONS DES ÉLÉMENTS DU PANNEAU DE COMMANDE (2)	17
4	UTILISATION	18
5	DEPISTAGE DES PANNES	19
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Veuillez vérifier que les articles suivants sont bien joints à l'appareil principal dans le carton:
(1) Mode d'emploi

— INDICE —

1	SIGNIFICATO FUNZIONAMENTO DEI COMANDI SUL PANNELLO (1)	6
2	CONNESSIONI	8
3	SIGNIFICATO E FUNZIONAMENTO DEI COMANDI SUL PANNELLO (2)	20
4	UTILIZZO	21
5	LOCALIZZAZIONE DEI GUASTI	22
6	SPECIFICAZIONI	35

Controllare che le parti seguenti si trovino imballate con l'appareil principale nei seguenti pacchetti:
(1) Istruzioni per l'uso

4 OPERATION

PREPARATION

- CHECKING CONNECTIONS**
 - Make sure that all the connections are proper by referring to the back panel (see page 9).
 - Check the polarity (+ and -) and (negative) of the speaker connections, and the polarity of stereo separation (right and left) of the right channel terminal, and left cord to left channel terminal.
 - Check the left and right speaker connections are correct.

SETTING OF EACH KNOB

- Turn the volume control knob **4** counterclockwise, to the end.
 - Initially set the tone and balance controls to center position.
 - Set SOURCE DIRECT **5** to "OFF (A)".
- After checking the above items, turn on the power, the amplifier is set in the ready mode in a few seconds.

PLAYBACK OF CD PLAYER

- Set the INPUT SELECTOR switch **7** to "CD".
- Operate the CD player.
- Turn the volume and tone controls to yield an appropriate volume and sound quality.

RECEPTION OF RADIO PROGRAMS

- Set the INPUT SELECTOR switch **7** to "TUNER".
- Operate the tuner to receive a radio program.
- Turn the volume and tone controls to yield an appropriate volume and sound quality.

CONNECTIONS OF AUDIO EQUIPMENT TO AUX-1/PHONO TERMINALS (See warning)

- Set the INPUT SELECTOR switch **7** to "AUX-1/PHONO" Position.
- Operate the Audio equipment Systems.
- Turn the volume and tone controls to yield an appropriate volume and sound quality.

CONNECTIONS OF AUDIO EQUIPMENT TO AUX-2 TERMINALS

- Set the INPUT SELECTOR switch **7** to "AUX-2" Position.
- Operate the Audio equipment Systems.
- Turn the volume and tone controls to yield an appropriate volume and sound quality.

PLAYBACK WITH TAPE DECK

- Set the INPUT SELECTOR switch **7** to "TAPE".
- Operate the Tape Deck.
- Turn the volume and tone controls to yield an appropriate volume and sound quality.

RECORDING WITH TAPE DECK

The source to be recorded is selected by the INPUT SELECTOR switch **7**.

PLAYING A RECORD (with optional Phono card fitted)

- Set the INPUT SELECTOR switch **7** to "AUX-1/PHONO".
- Operate the turntable and play record.
- Turn the volume and tone controls to yield an appropriate volume and sound quality.

6 SPECIFICATIONS

6 TECHNISCHE DATEN

6 SPECIFICATIONS

Technical Data (Typical Value)	Technische Daten (Typische Werte)	Caractéristiques techniques (valeurs typiques)
POWER AMPLIFIER SECTION Rated Output Power: (8 Ω/0ohms Load) 20 Hz to 20 kHz, T.H.D. 0.7% (4 Ω/0ohms Load) DIN, 1 kHz, T.H.D. 0.7% Total Harmonic Distortion: (1 kHz) at rated output, 8 Ω/0ohms	LEISTUNGS-VERSTÄRKER Nennleistung: (Basis-Verstärker) 20 Hz bis 20 kHz, T.H.D. 0,7% (an 4 Ω) DIN, 1 kHz, T.H.D. 0,7% Klirrfaktor: (1 kHz/3 dB bei Nennleistung an 8 Ω)	SECTION AMPLIFICATEUR Puissance nominale : en charge sur les deux canaux (avec charge de 8 Ω) 20 Hz à 20 kHz, T. D. H. 0,7% (avec charge de 4 Ω) DIN, 1 kHz, T. D. H. 0,7% Distorsion harmonique totale : (1 kHz/3 dB au niveau nominal sur 8 Ω)
PRE AMPLIFIER SECTION Rated Output: (Recod. Terminal) Input Sensitivity/ Input Impedance: The values in parentheses () refer to the input impedance when SOURCE DIRECT is ON. CD, TUNER, AUX-1/2, TAPE, SOURCE DIRECT	VORVERSTÄRKER Nennspannung: (Rekorderausgang) Eingangsempfindlichkeit/ Eingangsimpedanz: Die Werte in Klammern () stellen die Eingangsimpedanz dar, wenn die Funktion SOURCE DIRECT-Einwirkung ist. CD, TUNER, AUX-1/2, TAPE, SOURCE DIRECT	SECTION AMPLIFICATEUR Voltage nominal : (aux bornes d'enregistrement) Sensibilité/ Impédance d'entrée : Les valeurs entre parenthèses () se rapportent à l'impédance d'entrée lorsque la fonction SOURCE DIRECT est activée. CD, TUNER, AUX-1/2, TAPE, SOURCE DIRECT
OVERALL CHARACTERISTICS S/N Ratio (HF A Network): (Input terminals short-circuited) SOURCE DIRECT: ON Tone Control Adjustable Range: BASS TREBLE	GESAMTEIGENSCHAFTEN SN-Verhältnis (HF-A-Netzwerk): (Eingangsklemmen kurzgeschlossen) SOURCE DIRECT: EIN Klangregelbereich: BASSE HOHEN	CARACTÉRISTIQUES GÉNÉRALES Rapport Signal/Bruit (HF A) : (Bornes d'entrée en court-circuit) SOURCE DIRECT: ON Gamme de réglage de tonalité: GRAVES AIGÜES
OTHERS Power Supply Power Consumption Dimensions (W) x (H) x (D) Net Weight	SONSTIGE Stromversorgung Leistungsaufnahme Abmessungen (B) x (H) x (T) Nettogewicht	DIVERS Alimentation électrique Consommation électrique Dimensions (L) x (H) x (P) Poids net
		30 W + 30 W 50 W + 50 W 0.08 % 150 mV 150 mV / 47 Ω (150 mV / 20 Ω) CD, TUNER, AUX-1/2, TAPE, 98 dB 100 Hz ± 8 dB 10 kHz ± 8 dB AC 230 V / 50 Hz 120 W 434 (W) x 115 (H) x 286 (D) mm (17-3/32" x 4-22/32" x 11-3/32") 5,5 kg (12 lbs 2 oz)

- Specifications and contents are subject to change without notice for purposes of improvement.
- Änderungen des Inhalts und der technischen Daten zum Zweck der technischen Weiterentwicklung vorbehalten.
- Spécifications et contenu sont sujets à modifications sans préavis.

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.

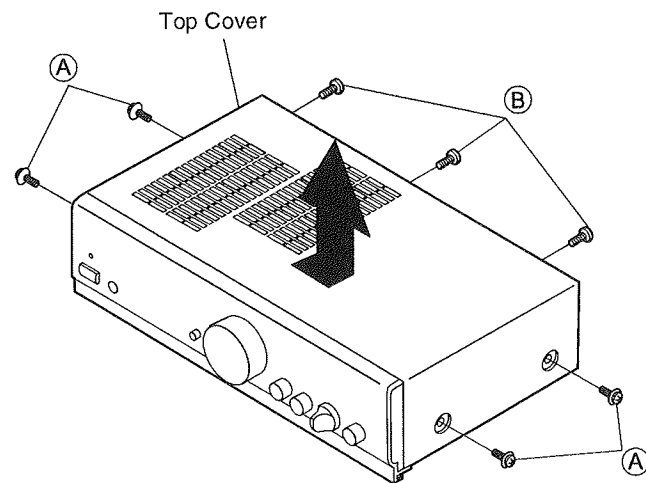
Symptom	Cause	Measures	Page
POWER LED does not light and no sound is produced when POWER switch is turned on.	• Power cord is not connected.	• Check that the cord is plugged in.	8
POWER LED lights but no sound is produced.	• Speaker cords not properly connected. • SELECTOR not set to proper position. • VOLUME control turned down.	• Connect securely. • Set to the proper position. • Set to an appropriate level.	8 11 11
Sound is not produced from one side only.	• Speaker cords not properly connected. • Input cords not properly connected. • Left and right balance improperly adjusted.	• Connect securely. • Connect securely. • Adjust the BALANCE control.	8 9 11
Volume level is different when listening to tuner and records.	• Tuner and record outputs different.	• Adjust the tuner output to the turntable's output (if the tuner is equipped with an output control).	-
Positions of instruments inverted for stereo sources.	• Left and right speakers or input cords inverted.	• Check the left/right connections.	8
"Booming" sound produced when playing records.	• Turntable's ground wire not connected. • Input cords not properly connected to AUX-1/PHONO terminals. • Influence from a TV or VCR near the turntable.	• Connect securely. • Connect securely. • Change the position of installation.	8 8 -
"Howling" produced when volume is turned up while playing records.	• Turntable and speaker systems are too close. • Floor is soft and vibrates easily.	• Move speaker systems as far as possible. • Use cushions to absorb the vibrations transmitted to the turntable. • If the turntable does not include insulators, use audio insulators available in stores.	- -
"Sound is distorted."	• Stylus pressure is too light. • Dirt on tip of stylus. • Distortive cartridge.	• Apply proper pressure. • Check tip of stylus. • Replace the cartridge.	- -

*with optional Phono Card fitted

REMOVAL OF EACH SECTION

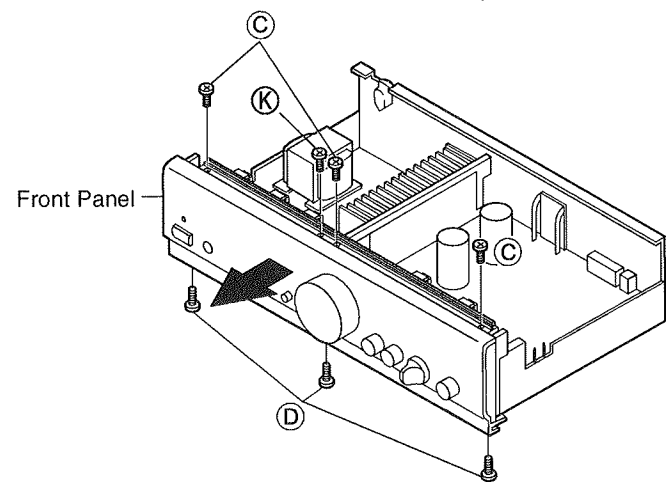
1. Top Cover

- 1) Remove 4 screws (A) and 3 screws (B).
- 2) Pull up the Top Cover in arrow direction.



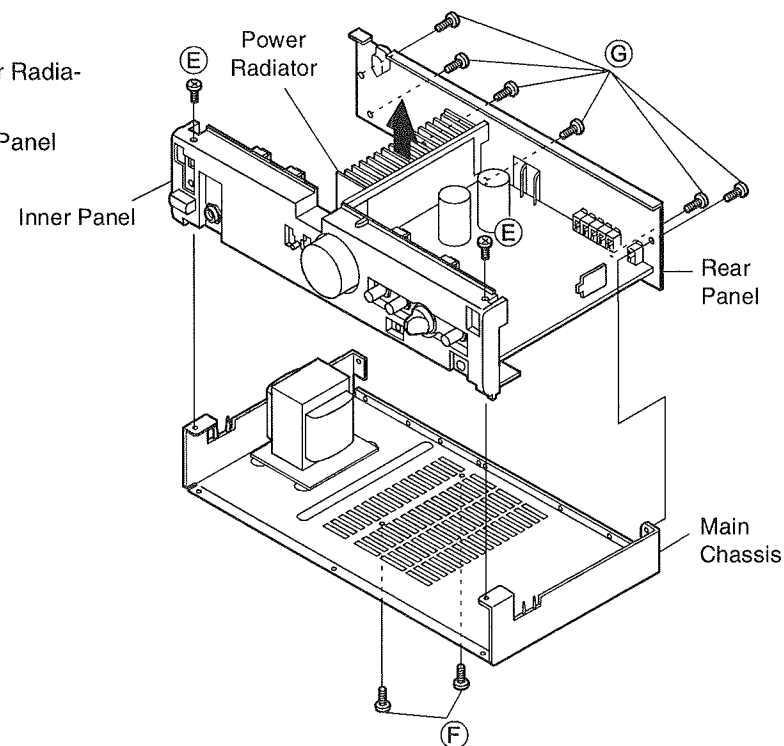
2. Front Panel

- 1) Remove 3 screws (C).
- 2) Remove 1 screw (K).
- 3) Remove 3 screws (D).
- 4) Detach the Front Panel in arrow direction.



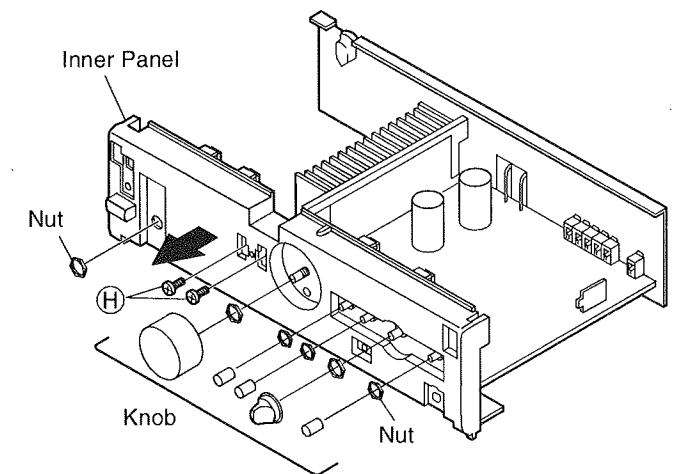
3. Main Chassis

- 1) Remove 2 screws (E).
- 2) Remove 2 screws (F) securing the Power Radiator with the Main Chassis.
- 3) Remove 6 screws (G) securing the Rear Panel with the Main Chassis.



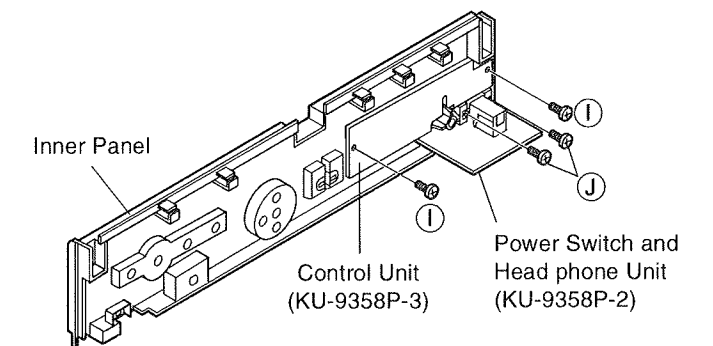
4. Inner Panel

- 1) Remove 5 Knobs and 6 nuts.
- 2) Remove 2 screws (H), and detach Inner Panel in arrow direction.



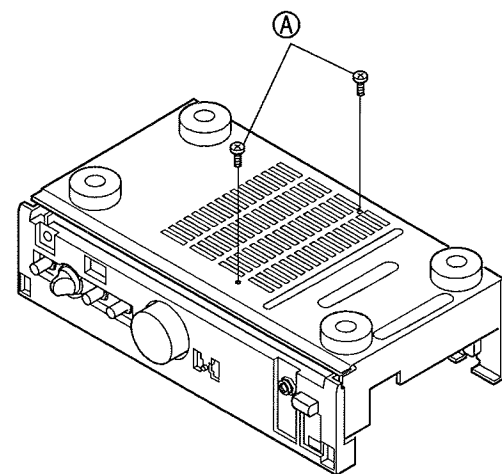
5. Each Unit of Inner Panel

- 1) Remove 2 screws (I), and detach the Control Unit.
- 2) Remove 2 screws (J) and detach the Power Switch and Head phone Unit.

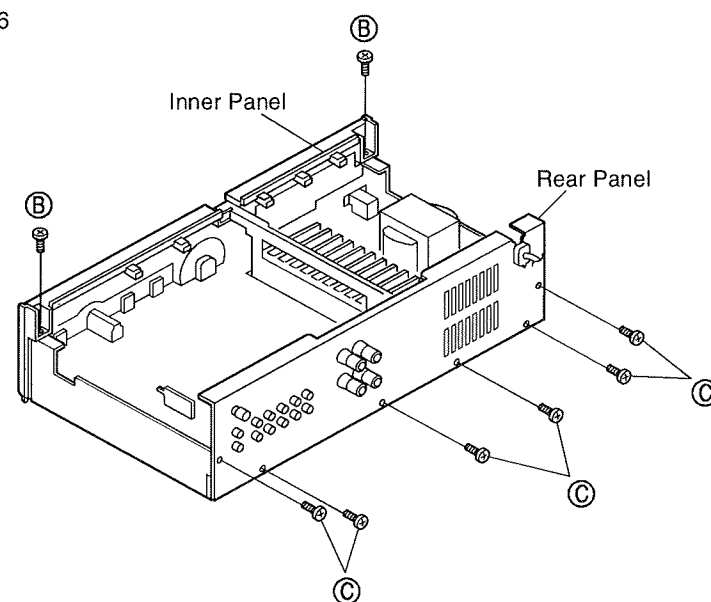


REMOVAL FOR SERVICING

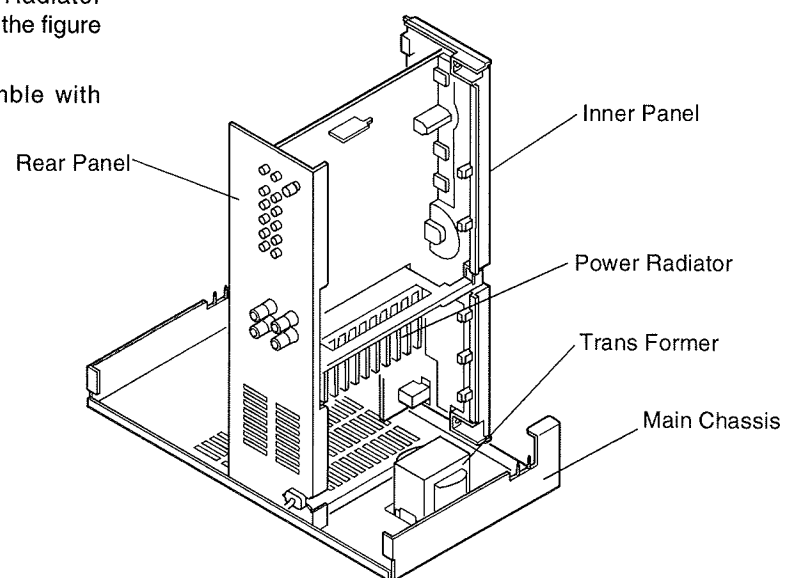
1. Remove the Top Cover and the Front Panel.
(Please refer to the remove of each section.)
2. Remove 2 screws (A) on the bottom.



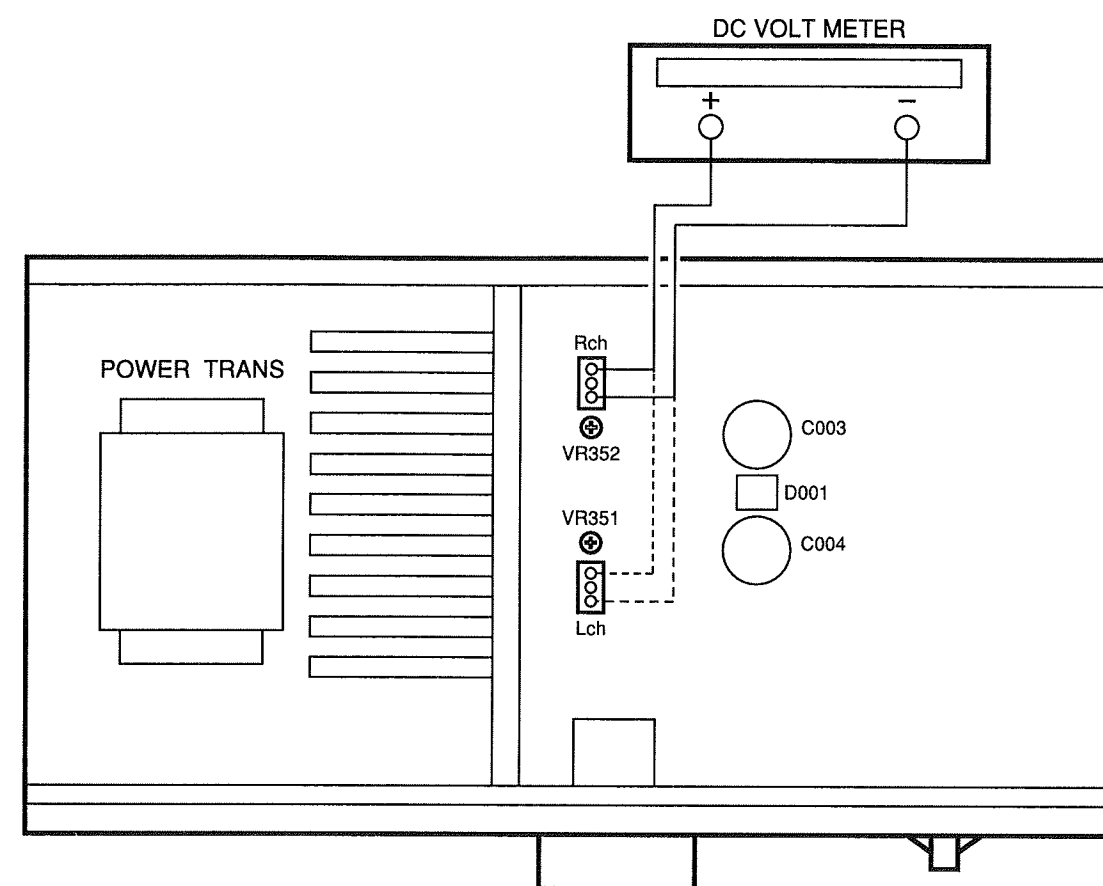
3. Remove 2 screws (B) fixing the Inner panel, and 6 screws (C) securing the Rear Panel.



4. Pull out the Rear Panel, and the Power Radiator together, and the Main Chassis as shown in the figure for servicing.
5. When completed service, please assemble with reverse process.



METHOD OF ADJUSTMENTS



IDLING CURRENT

● Setup

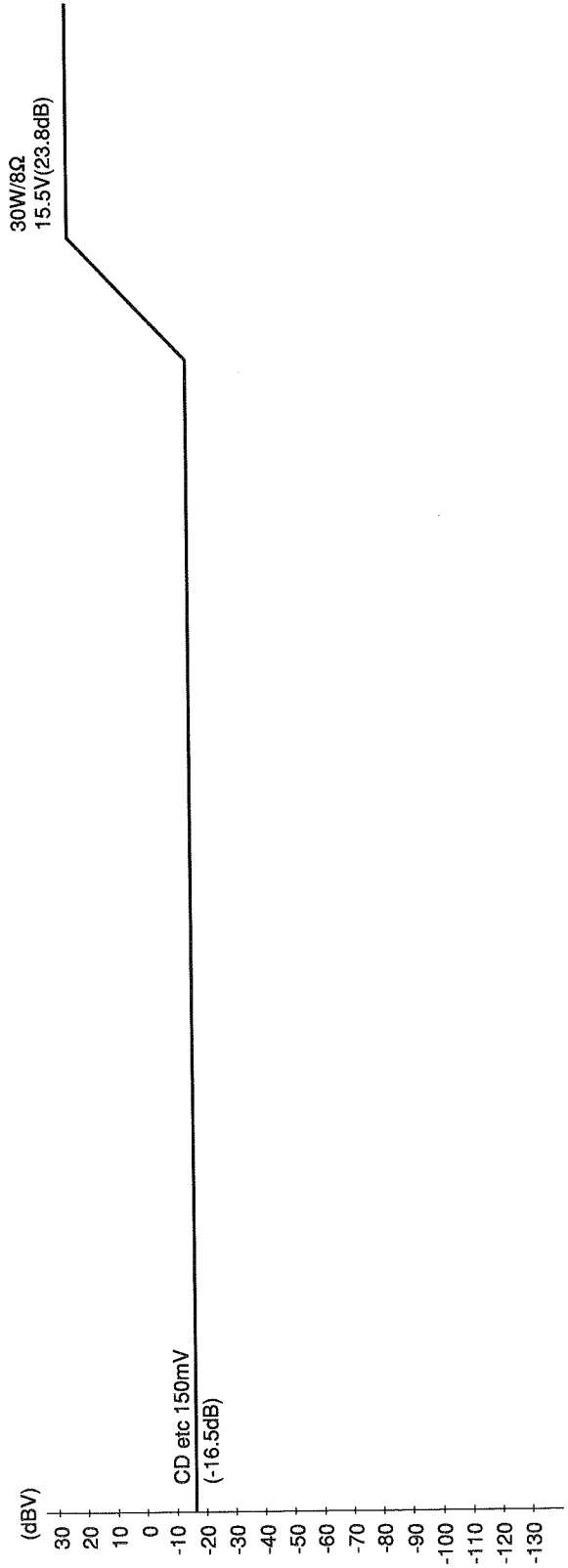
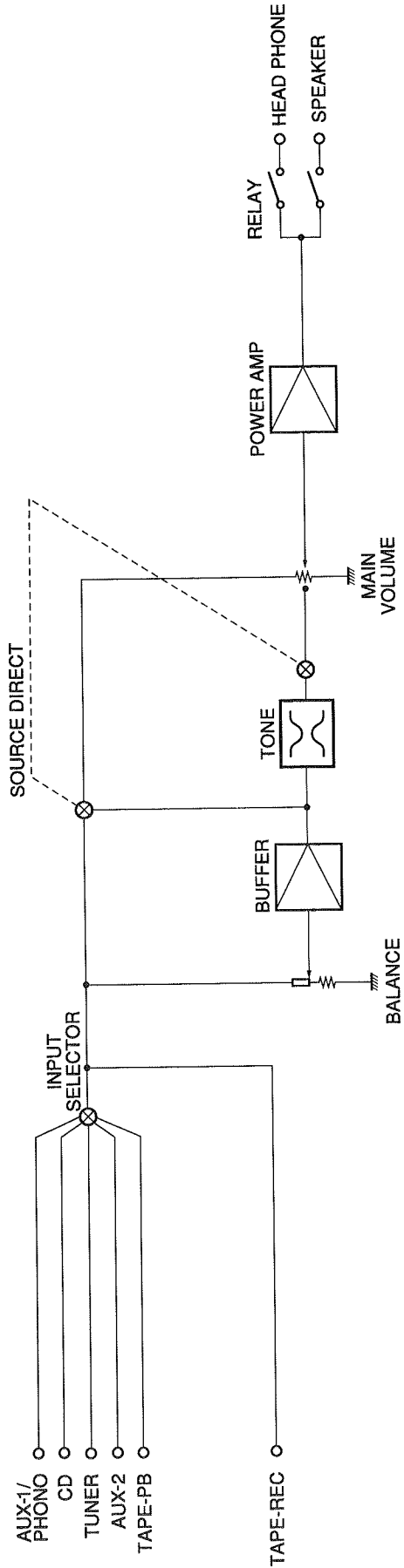
1. Lay the unit at an ordinary position away from a direct current from an air condition or fan. Do the adjustment at a temperature between 15°C (59°F) and 30°C (86°F).
2. Set controls as follows.

POWER SWITCH	→ OFF (■)
VOLUME CONTROL	→ fully counterclockwise. (⤵) min. [Main volume (VR751) and Semifixed volume (VR351...Lch, VR352...Rch).]
SPEAKER Terminals	→ Open: do not connect the speakers, dummy load etc.

● Adjustment

1. Remove Top cover. And then connect DC Voltmeter to Test points of KU-9358-1 Printed Wiring Board (Main Unit).
2. Connect Power cord to AC wall outlet, and turn Power Switch "ON" (■). Within 10 seconds turn VR351 (Lch) and VR352 (Rch) clockwise so that the DC Voltmeter reads 10 ± 0.5 mV DC.
3. Then after 2 minutes warmup adjust VR351 and VR352 so that the DC Voltmeter reads 10 ± 0.5 mV DC.
4. And after 10 minutes warmup adjust VR351 and VR352 so that the DC Voltmeter reads 10 ± 0.5 mV DC.

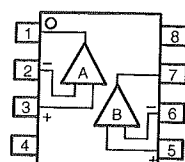
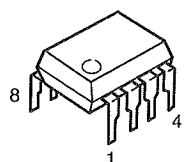
BLOCK AND LEVEL DIAGRAM



SEMICONDUCTORS

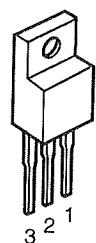
● IC's

NJM2082DD (IC251)
NJM5532DD (IC302)



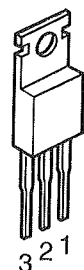
1: A Output
2: A- Input
3: A+ Input
4: V-
5: B+ Input
6: B- Input
7: B Output
8: V+

NJM78M15FA (S)
(IC501)



1: OUT
2: GND
3: IN

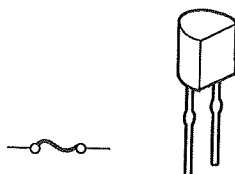
NJM79M15FA
(IC052)



1: OUT
2: IN
3: GND

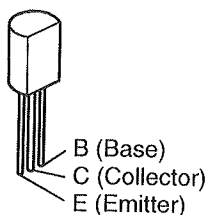
● IC PROTECTOR

ICP-N10
(IP401, 402)



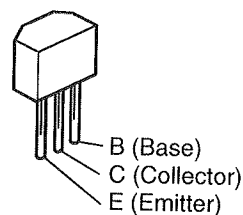
● TRANSISTORS

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



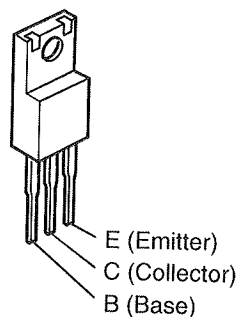
B (Base)
C (Collector)
E (Emitter)

2SA933AS(R)
2SC1740S(R)



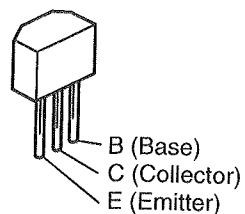
B (Base)
C (Collector)
E (Emitter)

2SB1655E
2SD2396K



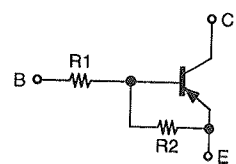
E (Emitter)
C (Collector)
B (Base)

DTA114ES
DTC114ES
DTC123JS



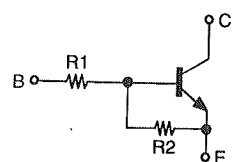
B (Base)
C (Collector)
E (Emitter)

PNP Type



	R1	R2
DTA114ES	10kohm	10kohm

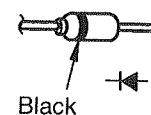
NPN Type



	R1	R2
DTC114ES	10kohm	10kohm
DTC123JS	2.2kohm	47kohm

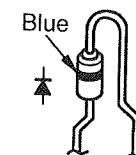
● DIODES

1SS252



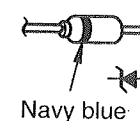
Black

1SR35-200A



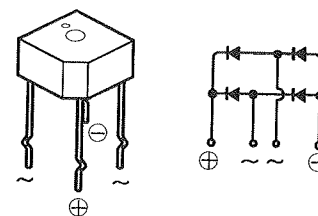
Blue

MTZJ3.0A
MTZJ7.5C
MTZJ18A

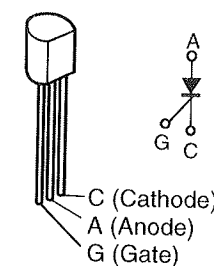


Navy blue

S4VB20F (D001)



SF0R1A42 (Thyristor)
(SC401)



C (Cathode)
A (Anode)
G (Gate)

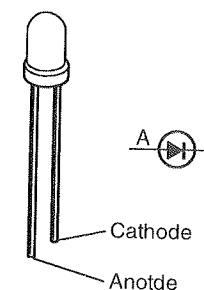
● POSISTOR

PTH9M04BD222TS2F333 (P752)



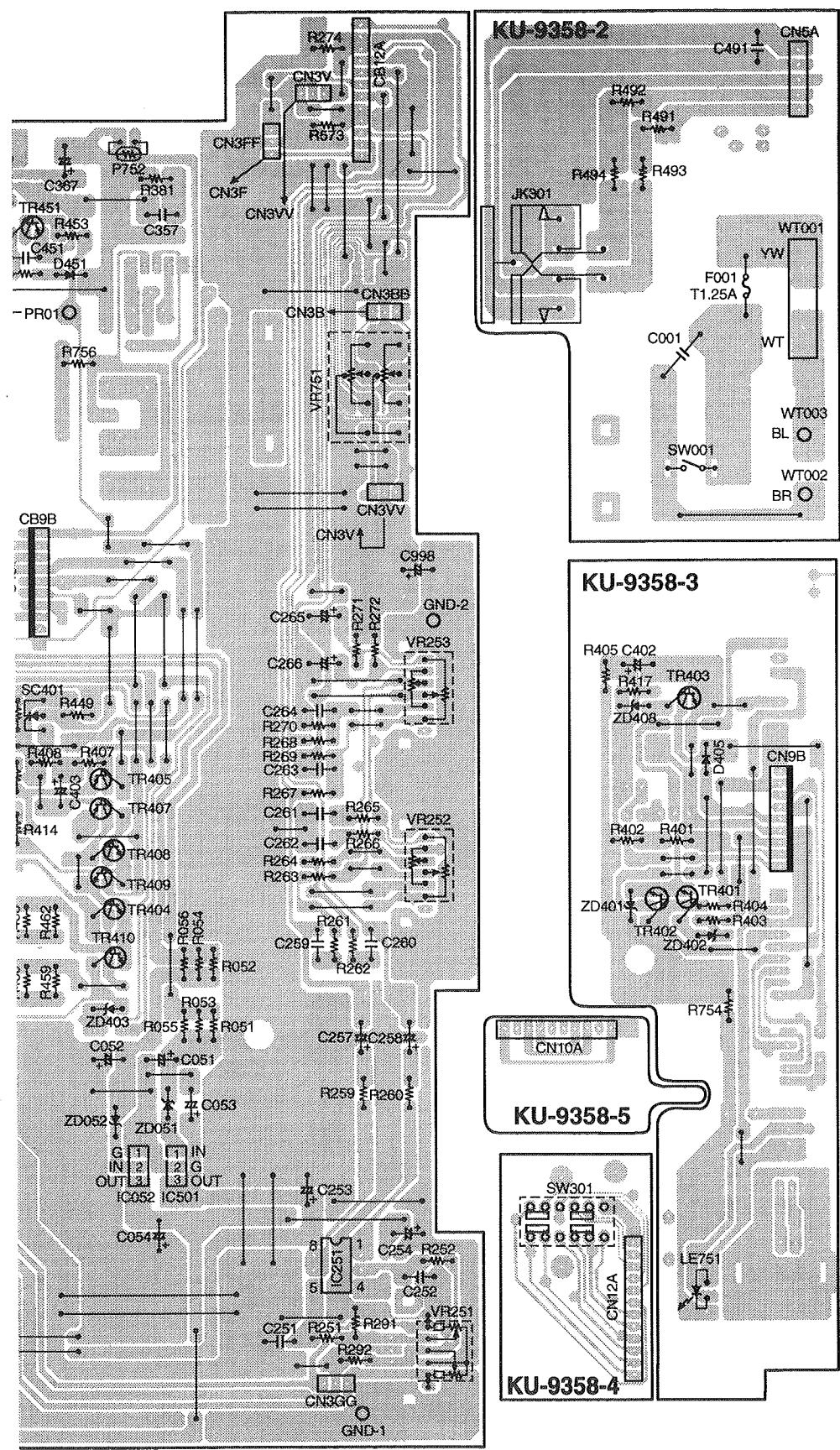
● LED

SEL1810A (LE751)



A (Anode)
C (Cathode)
Anotde

5 6 7 8



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 \triangle have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.: $\frac{RN}{Type}$ $\frac{14K}{Shape and performance}$ $\frac{2E}{Power}$ $\frac{182}{Resist-ance}$ $\frac{G}{Allowable error}$ $\frac{FR}{Others}$

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
 $\frac{1}{\uparrow} \frac{8}{\uparrow} \frac{2}{\uparrow}$ ⇒ 1800 ohm = 1.8 kohm
 Indicates number of zeros after effective number.
 2-digit effective number.
 • Units: ohm

$\frac{1}{\uparrow} \frac{R}{\uparrow} \frac{2}{\uparrow}$ ⇒ 1.2 ohm
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.
 • Units: ohm

● Capacitors

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

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 change and discharge frequency
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)
 $\frac{2}{\uparrow} \frac{2}{\uparrow} \frac{2}{\uparrow}$ ⇒ 2200μF
 Indicates number of zeros after effective number.
 2-digit effective number.
 • Units: μF.

$\frac{2}{\uparrow} \frac{R}{\uparrow} \frac{2}{\uparrow}$ ⇒ 2.2μF
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.
 • Units: μF.

* Capacity (except electrolyte)
 $\frac{2}{\uparrow} \frac{2}{\uparrow} \frac{1}{\uparrow}$ ⇒ 2200pF=0.0022μF
 (More than 2) 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.

PARTS LIST OF P.W.B. ASS'Y
KU-9358P MAIN P.W.B. UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC052	263 0508 006	IC NJM79M15FA	
IC251	263 0743 007	IC NJM2082DD	
IC302	263 0680 005	IC NJM5532DD	
IC501	263 0819 009	IC NJM78M15FA(S)	
IP401,402	268 0072 906	IC ICP-N10	IC protector
TR013	274 0183 007	Transistor 2SD2396K	
TR014	272 0146 006	Transistor 2SB1655E	
TR015	271 0287 904	Transistor 2SA933AS(R)	
TR351,352	273 0235 923	Transistor 2SC1841(E/F)	
TR353,354	271 0131 924	Transistor 2SA988(E/F)	
TR355,356	273 0198 905	Transistor 2SC1815(Y)	
TR357,358	271 0131 924	Transistor 2SA988(E/F)	
TR359,360	273 0235 923	Transistor 2SC1841(E/F)	
TR401	273 0303 907	Transistor 2SC1740S(R)	
TR402	269 0020 906	Transistor DTC114ES(10K-10K)	
TR403	273 0303 907	Transistor 2SC1740S(R)	
TR404	269 0169 906	Transistor DTC123JS(2.2K-47K)	
TR405	269 0046 906	Transistor DTA114ES(10K-10K)	
TR406	273 0317 906	Transistor 2SC2458(BL)	
TR407	271 0287 904	Transistor 2SA933AS(R)	
TR408,409	273 0303 907	Transistor 2SC1740S(R)	
TR410	269 0169 906	Transistor DTC123JS(2.2K-47K)	
TR451,452	273 0235 923	Transistor 2SC1841(E/F)	
△ D001	276 0338 007	Diode S4VB20F	
D351~356	276 0616 907	Diode 1SS252	
D401~403	276 0553 905	Diode 1SR35-200A	
D405	276 0616 907	Diode 1SS252	
D451~454	276 0616 907	Diode 1SS252	
ZD001	276 0645 907	Zener diode MTZJ18A	18V
ZD003~005	276 0624 902	Zener diode MTZJ2.0A	2.0V
ZD051,052	276 0635 904	Zener diode MTZJ7.5C	7.5V
ZD401,402	276 0635 904	Zener diode MTZJ7.5C	7.5V
ZD403	276 0645 907	Zener diode MTZJ18A	18V
ZD408	276 0643 938	Zener diode MTZJ3.0A	3.0V
LE751	393 9453 916	LED SEL1810A	Orange
P752	279 0034 041	Posistor PTH9M04BD222TS2F333	
SC401	279 0016 904	Thyristor SF0R1A42	

Ref. No.	Part No.	Part Name	Remarks
RESISTORS GROUP (Not included Carbon Film ±5%)			
△ R011,012	241 2387 908	Carbon film 1ohm 1/4W(NB)	RD14B2E010JNBS
R321,322	245 2118 904	Metal film 120kohm 1/4W	RN14K2E124G
R323,324	245 2068 902	Metal film 1kohm 1/4W	RN14K2E102G
R325,326	245 2070 903	Metal film 1.2kohm 1/4W	RN14K2E122G
R327,328	245 2118 904	Metal film 120kohm 1/4W	RN14K2E124G
△ R351~354	241 2371 998	Fusible resistor 560ohm 1/4W	RD14B2E561GFRS
△ R371~374	241 2378 904	Carbon film 180ohm 1/4W(NB)	RD14B2E181JNBS
△ R375,376	243 2026 932	Winding 0.22ohm 3W	RW===3FR2R22K
△ R381,382	244 2043 937	Metal oxide 10ohm 1W	RS14B3A100JNBS(S)
R391,392	245 2132 906	Metal film 470kohm 1/4W	RN14K2E474G
△ R399,400	243 2085 002	Winding 0.1ohm 3W	RW99=3F0R1K
△ R401,402	244 2043 908	Metal oxide 680ohm 1W	RS14B3A681JNBS(S)
△ R410,411	244 2043 908	Metal oxide 680ohm 1W	RS14B3A681JNBS(S)
△ R451,452	241 2380 963	Carbon film 2.2kohm 1/4W(NB)	RD14B2E222JNBS
△ R459~464	244 2043 940	Metal oxide 2.2kohm 1W	RS14B3A222JNBS(S)
△ R491~494	244 2050 933	Metal oxide 180ohm 1W	RS14B3A181JNBS(S)
VR251	211 0798 103	Variable resistor 100kohm	Balance
VR252	211 9141 010	Variable resistor 50kohm	Treble
VR253	211 9141 007	Variable resistor 100kohm	Bass
VR351,352	211 6093 941	Semi fixed resistor 10kohm	V06PB103
VR751	211 9138 007	Variable resistor 100kohm	Main
CAPACITORS GROUP			
△ C001	253 8003 713	Ceramic 4700pF/400VAC	CK45E2GAC472MC
C002	256 1042 903	Metalized 0.1 μF/250V	CF93A2E104K
C003,004	254 6197 006	Electrolytic 8200 μF/56V	CE68W==822MC(DL)
C005,006	255 4081 081	Mylar film 0.1 μF/100V	CQ93P2A104J
C011	254 4260 948	Electrolytic 1 μF/50V	CE04W1H010M
C012	253 1179 903	Ceramic 100pF/50V	CK45B1H101K
C013,014	254 4256 952	Electrolytic 220 μF/25V	CE04W1E221M
C015,016	256 1034 979	Metalized 0.1 μF/50V	CF93A1H104J
C051,052	254 4260 980	Electrolytic 10 μF/50V	CE04W1H100M
C053,054	254 4256 952	Electrolytic 220 μF/25V	CE04W1E221M
C251,252	255 4229 966	Mylar film 330pF/100V	CQ92P2A331J
C253,254	254 4260 948	Electrolytic 1 μF/50V	CE04W1H010M
C257,258	254 4254 909	Electrolytic 10 μF/16V	CE04W1C100M
C259,260	255 1264 995	Mylar film 5600pF/50V	CQ93M1H562J
C261,262	256 1034 940	Metalized 0.056 μF/50V	CF93A1H563J
C263,264	256 1034 911	Metalized 0.033 μF/50V	CF93A1H333J
C265,266	254 4260 919	Electrolytic 0.22 μF/50V	CE04W1HR22M
C323,324	255 4238 009	Mylar film 0.47 μF/100V	CQ93P2A474J(ECQ-P)
C325,326	255 4229 908	Mylar film 100pF/100V	CQ92P2A101J
C327,328	254 4252 943	Electrolytic 220 μF/10V	CE04W1A221M
C329,330	255 6180 951	Mylar film 10pF/50V	CQ09S1H100J(SMT)

Ref. No.	Part No.	Part Name	Remarks
C351~354	253 4537 966	Ceramic 47pF/50V	CC45SL1H470J
C355,356	256 1035 952	Metalized 0.47 μF/50V	CF93A1H474J
C357,358	255 4199 902	Mylar film 0.1 μF/50V	CQ92M1H104J(MRZ)
C367~369	254 4260 948	Electrolytic 1 μF/50V	CE04W1H010M
C391,392	256 1034 979	Metalized 0.1 μF/50V	CF93A1H104J
C393,394	253 4537 966	Ceramic 47pF/50V	CC45SL1H470J
C395,396	253 1179 945	Ceramic 220pF/50V	CK45B1H221K
C401	254 4263 916	Electrolytic 0.22 μF/100V	CE04W2AR22M
C402	254 4254 909	Electrolytic 10 μF/16V	CE04W1C100M
C403	254 4252 927	Electrolytic 47 μF/10V	CE04W1A470M
C404	254 4258 772	Electrolytic 330 μF/35V	CE04W1V331MC
C405	254 4250 932	Electrolytic 220 μF/6.3V	CE04W0J221M
C451,452	253 1181 904	Ceramic 0.01 μF/50V	CK45F1H103Z
C491	253 1181 904	Ceramic 0.01 μF/50V	CK45F1H103Z
C893	254 4254 909	Electrolytic 10 μF/16V	CE04W1C100M
OTHER PARTS GROUP			
JK001	204 8497 000	4P pin jack(GND)(K)	1
JK002	204 8538 008	6P pin jack(S-GND)	1
JK003	204 8509 008	2P pin jack(C-GND)	1
JK301	204 8320 012	Head phone jack	1
RL451,452	214 0167 005	Relay(G5Z-2A)	2
△ SW001	212 1030 009	Power switch(TV-5)	1
SW201	212 2620 007	Slide switch	1
SW301	212 2622 005	1P push switch	1
△ F001	206 1075 014	Fuse(1.25A)	1
△	202 0040 909	Fuse clip	2
TR361~364	205 1004 011	6P pin header	4
T301	205 0526 011	4P SP terminal(EK)	1
WT001	205 0692 000	2P wrapping terminal	1
WT002,003	205 1035 006	1P terminal(1687)	2
CN10A	205 0536 056	10P connector socket	1
CN12A	205 0536 027	12P connector socket	1
CB5A,CN5A	205 0233 058	5P EH connector base	2
CB9B,CN9B	205 0343 090	9P connector base (KR-PH)	2
CB10A,10B	205 0535 057	10P connector base	2
CB12A	205 0535 028	12P connector base	1
TPL,TPR	205 0190 036	3P NH connector base	2
	415 0299 000	Condenser cover	for C001
	205 1005 007	1P terminal	3
	415 0309 026	PVC tube(L=20)	for P752

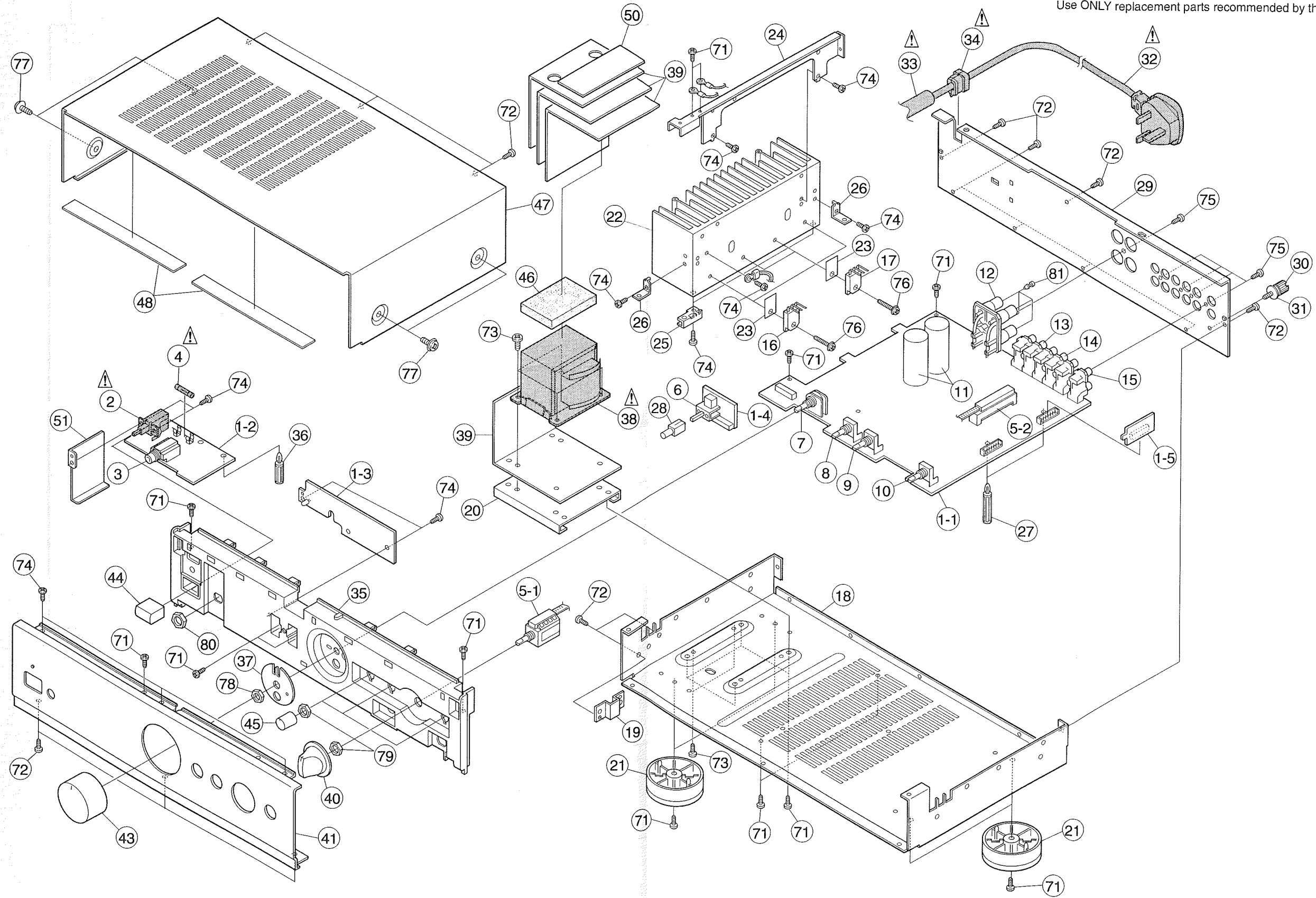
PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty	Ref. No.	Part No.	Part Name	Remarks	Q'ty	
1	KU-9358P	Main P.W.B. unit Ass'y		1s	46	461 9088 008	Rubber sheet	Power trans	1	
1-1	KU-9358P-1	Amp unit		(1)	47	102 9054 007	Top cover	Top cover	1	
1-2	KU-9358P-2	Power switch,headphone unit		(1)	48	122 9041 001	Himeron sheet	Top cover	2	
1-3	KU-9358P-3	Control unit		(1)	★	49	513 1642 002	No. sheet	1	
1-4	KU-9358P-4	Source direct switch unit		(1)	50	122 9048 004	Spacer		1	
1-5	KU-9358P-5	Jump unit		(1)	51	415 9110 009	Insulating sheet		1	
△	2	212 1030 009	Power switch (TV-5)	SW001	1	SCREWS & NUTS				
	3	204 8320 012	Head phone jack	JK301	1	71	473 7002 018	Screw 3×8	CBTS(S)-Z	19
△	4	206 1075 014	Fuse (1.25A)	F001	1	72	473 7015 018	Screw 3×8	CBTS(S)-B	15
	5-1	212 2621 006	Rotary switch (Remote)		1	73	473 7004 016	Screw 4×6	CBTS(S)-Z	6
	5-2	212 2620 007	Slide switch	SW201	1	74	473 7500 044	Screw 3×8	CBTS(P)-B	14
	6	212 2622 005	1P push switch	SW301	1	75	477 0064 107	Fixing screw		5
	7	211 9138 007	Variable resistor 100kohm	Main VR751	1	76	473 8007 038	Cup screw 3×14		4
	8	211 9141 007	Variable resistor 100kohm	Bass VR253	1	77	477 0263 005	3P swelling screw		4
	9	211 9141 010	Variable resistor 50kohm	Treble VR252	1	78	475 6138 015	Volume nut M7		1
	10	211 0798 103	Variable resistor 100kohm	Balance VR251	1	79	475 6138 031	Volume nut M9		4
	11	254 6197 006	Electrolytic 8200 μF/56V	C003,004	2	80	475 6138 028	Volume nut M12		1
	12	205 0526 011	4P SP terminal(EK)	T301	1	81	477 0096 007	Push rivet		4
	13	204 8497 000	4P pin jack(GND)(K)	JK001	1	PACKING & ACCESORIES (Not included EXPLODED VIEW.)				
	14	204 8538 008	6P pin jack(S-GND)	JK002	1	101	511 9467 005	Inst. manual	E,G,F,I,ES,NL,S,PO	1
	15	204 8509 008	2P pin jack(C-GND)	JK003	1	102	504 0125 005	Stylen paper		1
	16	274 0179 011	Transistor 2SD2493LF107	TR361,362	2	103	509 9120 006	Spacer carton		1
	17	272 0141 014	Transistor 2SB1624LF107	TR363,364	2	104	505 0131 050	Cabinet cover		1
●	18	411 0941 709	Chassis		1	105	503 9306 000	Cushion		2
●	19	412 4001 004	Side bracket		1	106	501 9299 030	Carton case		1
●	20	412 9518 000	Trans bracket		1	107	GEN 0225	Control card sub Ass'y		1
	21	104 0208 308	Foot Ass'y	H=15	4	108	509 9122 004	Sub carton		2
●	22	417 9099 003	Power radiator		1					
●	23	415 0234 007	Insulating sheet		4					
●	24	412 9506 009	Radiator bracket		1					
●	25	412 9507 008	Fix bracket		2					
●	26	412 4000 005	P.W.B. bracket (A)		2					
●	27	415 9107 012	Tapping card spacer	L=35.7	2					
	28	113 1745 107	Push button (Round)	SOURCE DIRECT	1					
●	29	105 9277 029	Rear panel		1					
	30	205 0071 016	Terminal Ass'y	GND	1					
	31	477 0018 001	Washer (P-87)		1					
△	32	206 2132 008	AC cord with plug		1					
△	33	415 0364 003	UL tube (φ8)	L=50	1					
△	34	445 0056 008	Cord bush		1					
	35	146 9365 000	Inner panel		1					
●	36	415 9107 009	Tapping card spacer	L=22.2	1					
●	37	412 9521 000	Volume plate		1					
△	38	233 5764 103	Power trans		1					
●	39	414 9201 106	Shield bracket		4					
	40	112 9149 003	Knob (Fuji)	INPUT SELECTOR	1					
●	41	144 9257 109	Front panel Ass'y		1					
★	42	445 8004 007	Wire clammer		10					
	43	112 0761 008	Volume knob	VOLUME	1					
	44	113 1738 101	Power button		1					
	45	112 0555 007	Volume knob (B)	BASS,TREBLE, BALANCE	3					

EXPLODED VIEW OF CHASSIS AND CABINET

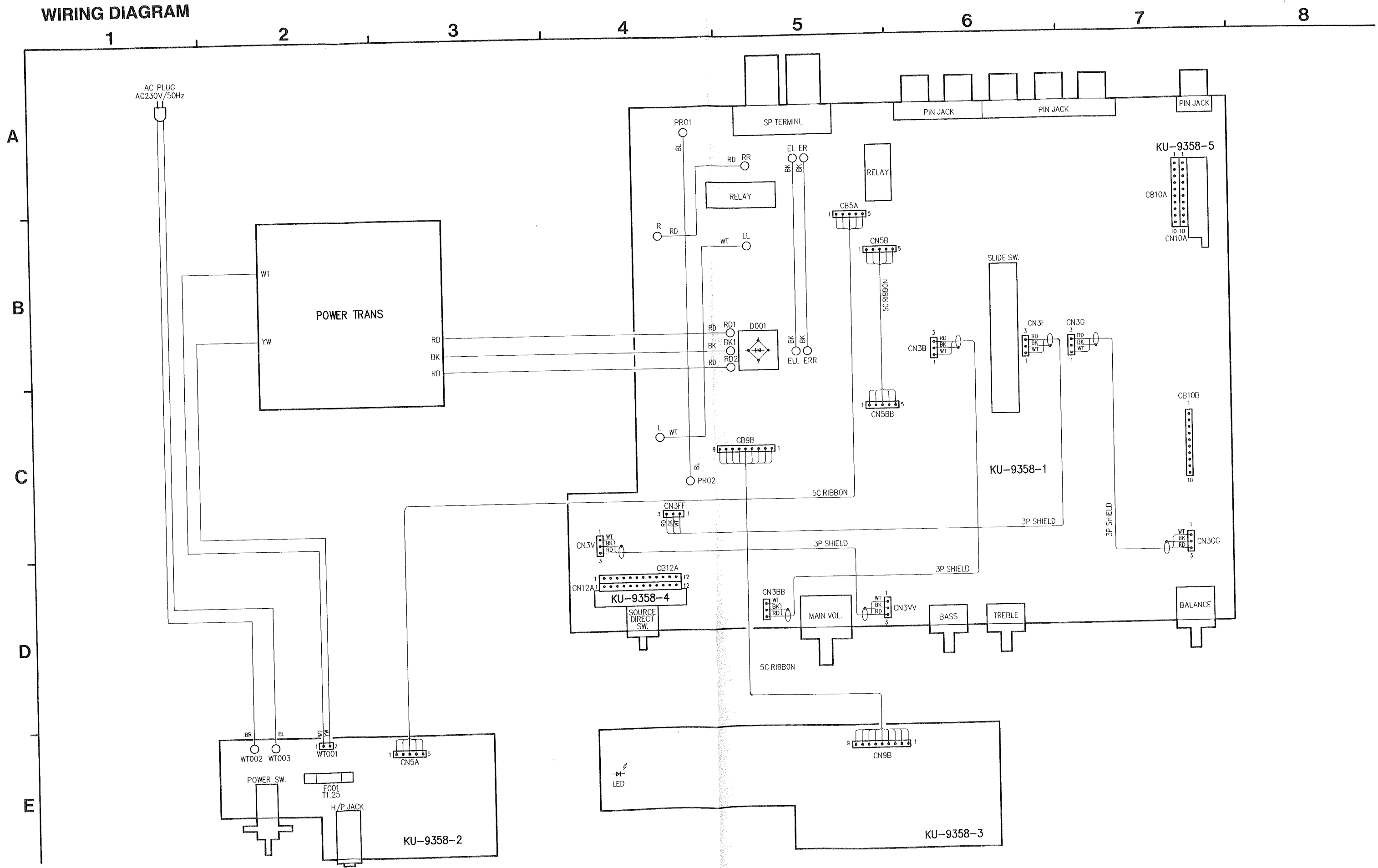
1 2 3 4 5 6 7 8

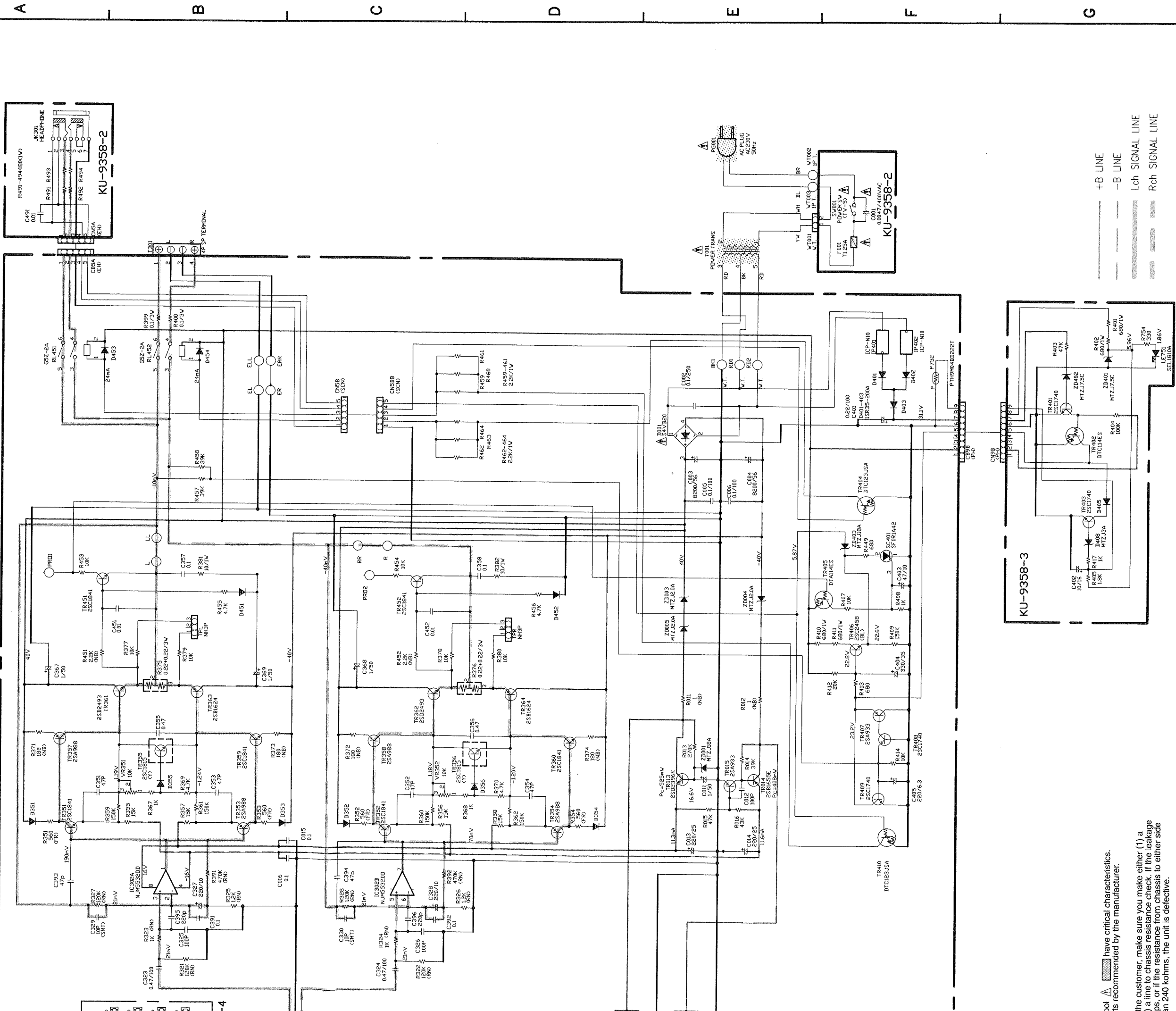
WARNING:
Parts marked with this symbol   have critical characteristics.
Use **ONLY** replacement parts recommended by the manufacturer.



A
B
C
D
E

WIRING DIAGRAM





+B LINE
 -B LINE
 Lch SIGNAL LINE
 Rch SIGNAL LINE

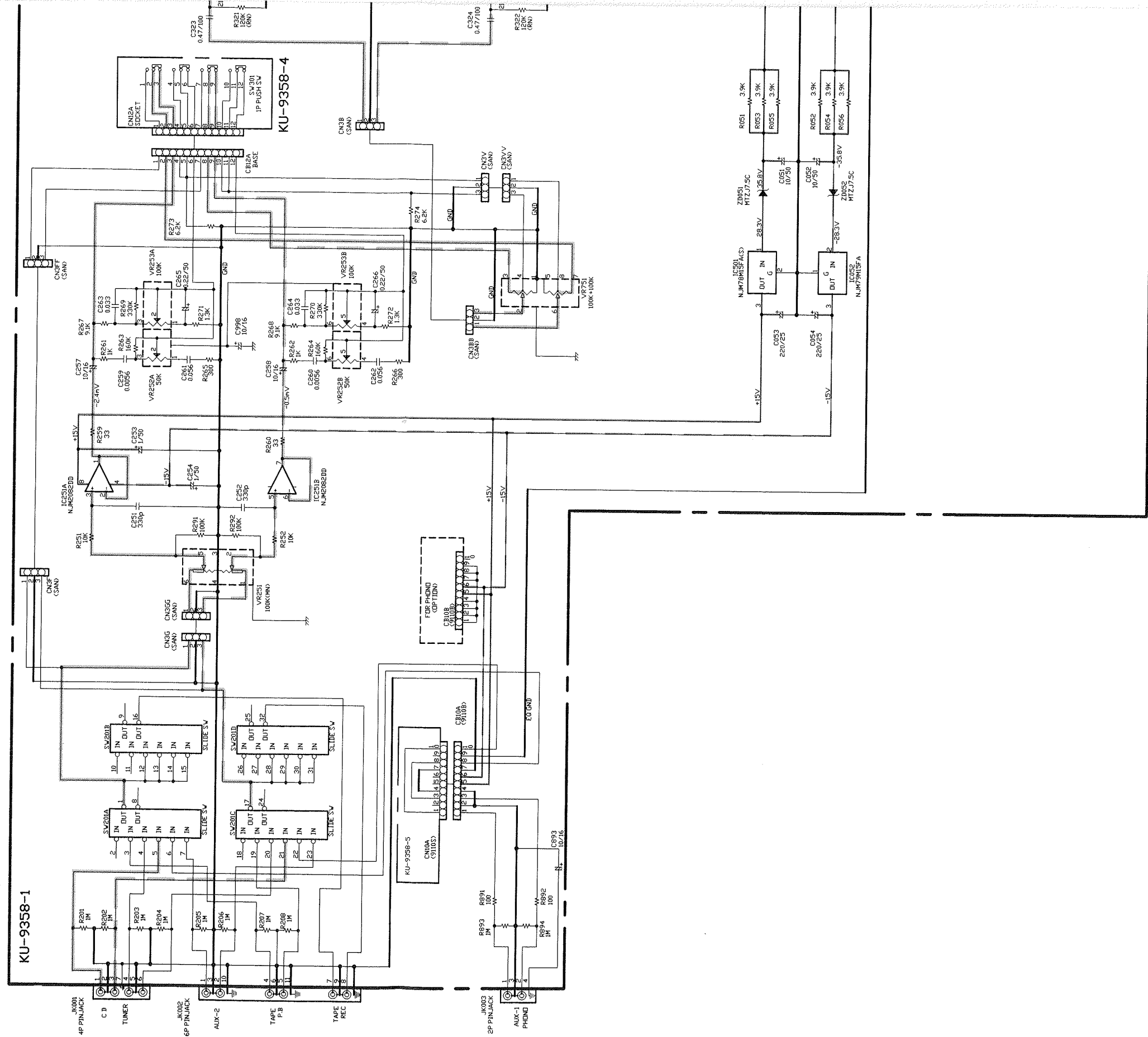
Symbol have critical characteristics. Parts recommended by the manufacturer.

2) a line to chassis resistance check. If the leakage is more than 240 kohms, the unit is defective.


the customer until the problem is located and

SCHEMATIC DIAGRAM

1 2 3 4 5 6



NOTES
 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  Use ONLY replacement parts recommended.

CAUTION:
 Before returning the unit to the customer, leakage current check or (2) a line to chait current exceeds 0.5 milliamps, or if the re of the power cord is less than 240 kohms

WARNING:
 DO NOT return the unit to the customer u corrected.

DENON

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