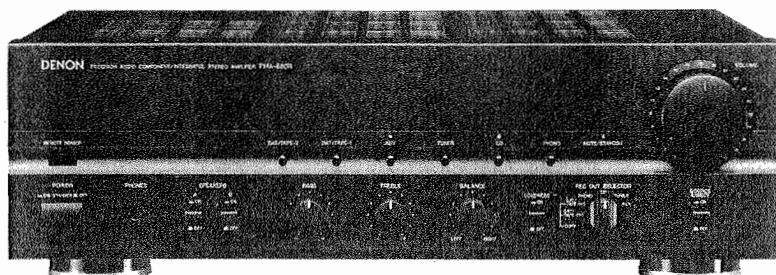


DENON

Hi-Fi Integrated Stereo Amplifier


SERVICE MANUAL MODEL PMA-680R INTEGRATED STEREO AMPLIFIER



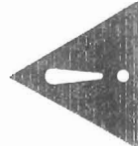
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NIPPON COLUMBIA CO., LTD.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



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

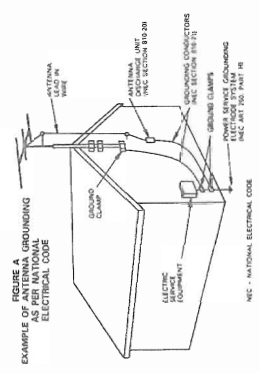
The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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.

SAFETY INSTRUCTIONS

1. Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
2. Return Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and use instructions should be followed.
5. 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.
6. 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 forces, and uneven surfaces may cause the appliance and cart combination to overturn.
7. Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. 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.
9. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. 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.
11. Grounding or Polarization – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched 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.
14. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
15. Power Lines – An outdoor antenna should be located away from power lines.
16. 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.
17. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
18. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
19. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
20. 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.



• **FOR U.S.A. & CANADA MODEL ONLY**

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.

• **POUR LE MODELE CANADIEN UNIQUEMENT**

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.

• **NUR FÜR EUROPÄISCHE MODELLE**

Konformitätserklärung

Die DENON Electronic GmbH
Haiskestraße 32
4030 Ratingen 1

Erklärt als Hersteller/Importeur, daß das in dieser Bedienungsanleitung beschriebene Gerät den Technischen Vorschriften für Ton- und Fernseh-Rundfunkempfänger nach der Amtsblattverfügung 588/1989 (Amtsblatt des Bundesministers für Post und Telekommunikation vom 31. 8. 1989) entspricht.

• **FOR UNITED KINGDOM MODEL ONLY**

CONNECTING THE MAINS PLUG:
This unit operates from a 240V ac 50 Hz mains supply.

Fit a proper mains plug to the mains lead of this equipment. If a 13 amp (BS1363) plug is used, a 5 amp fuse must be fitted. The 13 amp fuse supplied in a new plug must NOT be used. If any other type of plug is used, a 5 amp fuse must be fitted either in the plug or adaptor or at the distribution board.

IMPORTANT

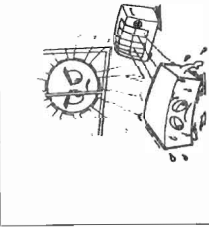
The wires in the mains lead are coloured in accordance with the following code:
Blue: Neutral
Brown: Live

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

DO NOT MAKE ANY CONNECTION TO THE LARGER P.N. MARKED WITH THE LETTER E OR BY THE SYMBOL OR COLOURED GREEN OR GREEN-AND-YELLOW.

Disconnect the mains plug from the supply socket when not in use.

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



- Avoid high temperatures
- Allow for sufficient heat dispersion when installed on the wall
- Ventilate the area above the unit
- Be aware of the risk of fire
- Do not use the unit in damp or wet areas
- Do not use the unit in areas with high humidity
- Do not use the unit in areas with high dust levels
- Do not use the unit in areas with high vibration
- Do not use the unit in areas with high magnetic fields
- Do not use the unit in areas with high electromagnetic interference
- Do not use the unit in areas with high radio frequency interference
- Do not use the unit in areas with high static electricity
- Do not use the unit in areas with high lightning risk
- Do not use the unit in areas with high fire risk
- Do not use the unit in areas with high explosion risk
- Do not use the unit in areas with high chemical risk
- Do not use the unit in areas with high biological risk
- Do not use the unit in areas with high physical risk
- Do not use the unit in areas with high psychological risk
- Do not use the unit in areas with high social risk
- Do not use the unit in areas with high economic risk
- Do not use the unit in areas with high environmental risk



- Keep the set free from moisture, water, and dust.
- Halten Sie das Gerät von Feuchtigkeit, Wasser und Staub fern.
- Protégez l'appareil contre l'humidité, l'eau et la poussière.
- Tenete l'unità lontana dall'umidità, dall'acqua e dalla polvere.
- Mantenga el equipo libre de humedad, agua y polvo.
- Bewahren Sie das eine zureichende Lüftung und Feuchtigkeit fern, wenn das Gerät auf ein Regal gestellt wird.
- Évitez des températures élevées, l'humidité, la poussière, l'eau et le bruit.
- Utsätt inte apparaten för fukt, vatten och damm.
- Mantenha o aparelho livre de qualquer umidade, água ou poeira.



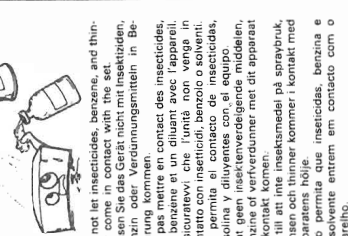
- Unplug the power cord when not using the set.
- Wenn das Gerät eine längere Zeit nicht verwendet werden soll, trennen Sie das Netzstecker vom Netzstecker.
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.
- Disinnestare il filo di alimentazione quando avete l'intenzione di non usare il filo di alimentazione per un lungo periodo di tempo.
- No utilice el equipo por mucho tiempo.
- Neem altijd het netsnoer uit het stopcontact wanneer het apparaat gedurende een lange periode niet wordt gebruikt.
- Koppla ur nätadaptern om apparaten inte ska användas under en lång period.
- Desligue o fio condutor de força quando o aparelho não liver que ser usado por um longo período.



- Never disassemble or modify the set in any way.
- Versuchen Sie niemals das Gerät auseinander zu nehmen oder auf jegliche Art zu verändern.
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.
- Non smontate mai, né modificate l'unità in nessun modo.
- Nunca desarme o modifique el equipo de ninguna forma.
- Bewahren Sie das Gerät in der Originalverpackung auf, wenn Sie es nicht verwenden.
- Niet demonteren of wijzigingen aanbrengen aan het apparaat.
- Não desmonte ou modifique o aparelho de alguma forma.



- Do not let foreign objects in the set.
- Ne pas laisser des objets étrangers dans l'appareil.
- È importante che nessun oggetto è inserito nell'interno dell'unità.
- No foreign objects extraneous dentro del equipo.
- Laat geen vreemde voorwerpen in dit apparaat vallen.
- Se till att frammande föremål inte tränger in i apparaten.
- Não entre objetos estranhos no aparelho.



- Do not let insecticides, benzene, and thinners come in contact with the set.
- Lassen Sie das Gerät nicht mit Insektiziden, Benzin oder Verdünnungsmitteln in Berührung kommen.
- Non permettere che insetticidi, benzina e solventi entrino in contatto con l'appareil.
- No permita el contacto de insecticidas, gasolina y diluyentes con el equipo.
- Bewahren Sie das Gerät von Insektiziden, Benzin und Verdünnungsmitteln fern.
- Se till att inte insektmedel på spraytryck, bensin och thinner kommer i kontakt med apparaten.
- Não permita que inseticidas, benzina e solventes entrem em contacto com o aparelho.

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

OPMERKING:
 1. Zet er altijd voor dat de stroomschakelaar (POWER) van het hoofdtoestel in de ingeschakelde stand staat.
 2. Schakel de stroom in en uit m.b.v. de afstandsbediening.
 3. Trek het netsnoer uit wanneer u denkt het toestel gedurende een lange periode niet te gebruiken.

WÄRSCHUWING:
 1. Houd het netsnoer bij de stroomvoorziening aangesloten.
 2. Schakel de stroom in en uit met behulp van de afstandsbediening.
 3. Trek het netsnoer uit wanneer u denkt het toestel gedurende een lange periode niet te gebruiken.

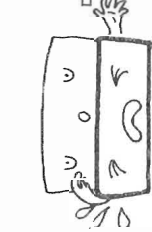
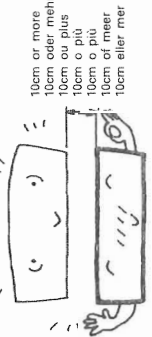
PRECAUÇÕES:
 1. Mantenha o interruptor de Corrente (POWER) na unidade principal sempre ligado.
 2. Ligue e desligue a corrente a partir da unidade de controle remoto.
 3. Desconecte o fio de força quando intender não utilizar a unidade por longo tempo.

PRECAUZIONI:
 1. Assicurarsi che il cavi di alimentazione sia sempre collegato alla presa.
 2. Accendere e spegnere la corrente utilizzando il telecomando.
 3. Scollegare il filo di alimentazione quando avete intenzione di non usare l'apparecchio per un lungo periodo.

AVISO:
 1. Il LED di alimentazione/attesa (MUTE/STANDBY), quando è acceso, indica che l'apparecchio è in funzione.
 2. Accendere e spegnere la corrente utilizzando il telecomando.
 3. Scollegare il filo di alimentazione quando avete intenzione di non usare l'apparecchio per un lungo periodo.

PRECAUTIONS FOR INSTALLATION:
 Leave at least 10cm 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 daraufgestellt wird.
PRECAUTIONS D'INSTALLATION:
 Prévoir un espace d'au moins 10cm entre l'unité et tout autre appareil se trouvant au-dessus.
PRECAUZIONI PER L'INSTALLAZIONE:
 Lasciare uno spazio libero di almeno 10 cm fra quest'unità e qualsiasi altro componente che è collocato sopra la stessa.

PRECAUTIONS PARA LA INSTALACION:
 Dejar un espacio 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.
FÖRSÄKTIGHETSÅTGÄRDER VID INSTALLATIONEN:
 Se till att det finns minst 10 cm mellanrum mellan apparaten och en ev. annan apparat som ställs ovanpå.
PRECAUÇÕES NA INSTALACAO:
 Deixe um espaço de pelo menos 10 cm entre esta unidade e qualquer outro componente colocado acima.



CONNECTIONS
ANSCHLÜSSE
CONNEXIONS
CONNESSIONI

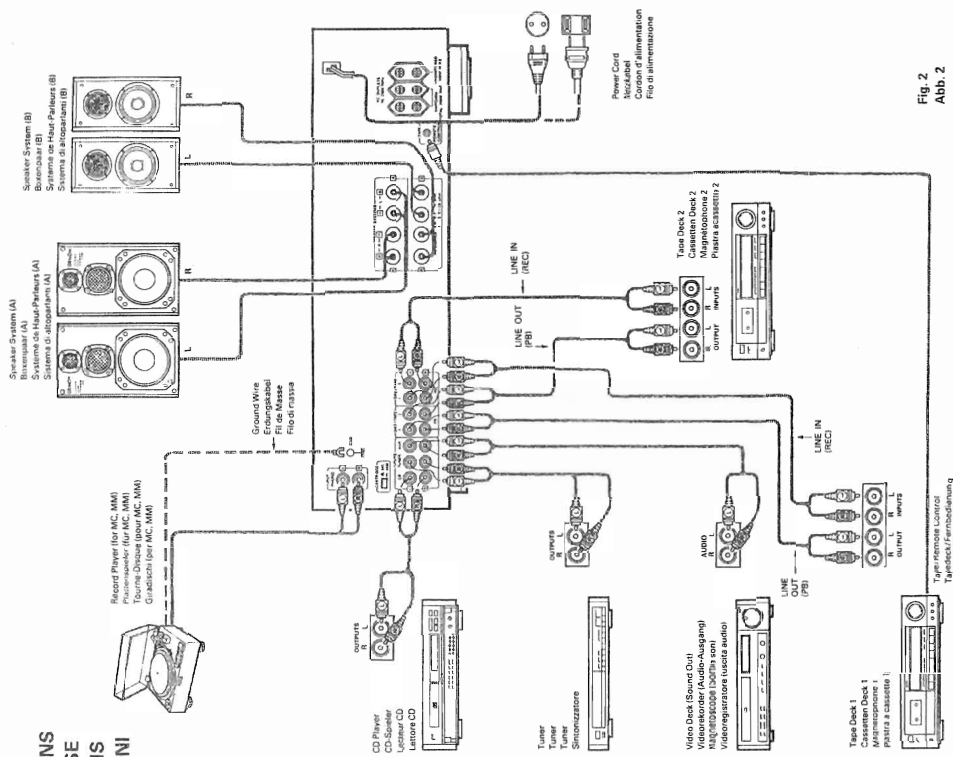
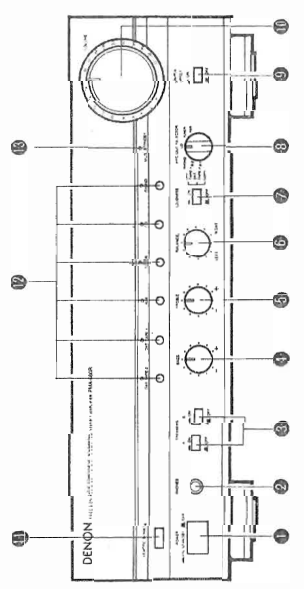
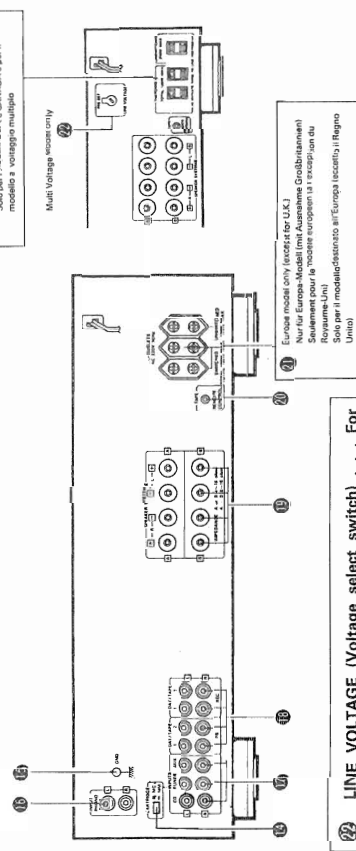


Fig. 2
Abb. 2

FRONT PANEL
FRONTPLATTE
PANNEAU AVANT
PANNELLO ANTERIORE



REAR PANEL
RÜCKWAND
PANNEAU ARRIERE
PANNELLO POSTERIORE



LINE VOLTAGE (Voltage select switch) . . . For Multi-voltage model only.
The desired voltage may be set with the VOLTAGE SELECTOR KNOB on the back panel using:
• Do not twist the VOLTAGE SELECTOR KNOB with excessive force. It may be damaged.
• If the voltage select switch does not turn smoothly, see qualified serviceman.

Fig. 1
Abb. 1

CARTRIDGE	GND	PHONO	CD, TUNER, AUX	DATE/TAPE-1, DAT/TAPE-2 • TAPES REC	SPEAKERS	TAPE/REMOTE CONTROL
Cartridge Selector Switch	GND	Phono Input Terminals (Phono)	Input Terminals (CD, TUNER, AUX)	Playback and Recording Terminals • Recording Terminals	Speaker Terminals	Tape deck Remote control Jack
Tauschwehler-Wahlschalter	GND	Schaltkreisstecker-Eingangsbuchsen (Phono)	Eingangsbuchsen (CD, TUNER, AUX)	Wiedergabe- und Aufnahmeterminale	Lautsprecher-Klemmen	Tapedeck-Fernbedienungs-buchse
Sélecteur de cellule	GND	Bornes d'entrée (Phono)	Bornes d'entrée (CD, TUNER, AUX)	Bornes de lecture et d'enregistrement • Bornes de lecture • Bornes d'enregistrement	Bornes de haut-parleurs	Prise de télécommande de magnéto-cassette
Interruttore di selezione cartuccia	GND	Terminali di ingresso Phono	Terminali di ingresso (CD, TUNER, AUX)	Terminali di riproduzione e registrazione • Terminali di riproduzione • Terminali di registrazione	Terminali degli altoparlanti	Presse di controllo a distanza della pannello

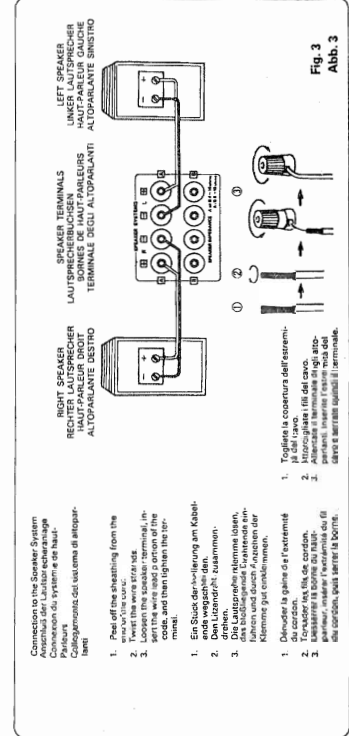


















Fig. 3
Abb. 3

- Connection to the Speaker System**
Anschluss der Lautsprecheranlage
Raccordement du système de haut-parleurs
Collegamento del sistema di altoparlanti
1. Peel off the sheathing from the speaker wire.
 2. Strip the speaker terminal, in order to make a secure connection, in the same way as the other terminals.
 3. Strip the speaker terminal, in order to make a secure connection, in the same way as the other terminals.
- 1. Enlever la gaine de l'extrémité du câble.**
2. Dévisser la partie inférieure du terminal, de façon à assurer une bonne prise de contact.
3. Dévisser la partie supérieure du terminal, de façon à assurer une bonne prise de contact.



DESIGNATIONS AND FUNCTIONS OF PANEL CONTROLS

- 1. **POWER (Power Switch)**
When the power switch is turned ON (), the MUTE/STANDBY 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.
- 2. **PHONES (Headphone Jack)**
This jack is used to plug in the headphones.
- 3. **SPEAKERS (Speaker Selection Switch)**
The PMA-680R can be connected to two speaker systems: speaker system A and speaker system B.
When A is pressed, the speaker system connected to speaker output terminals A operates.
When B is pressed, the speaker system connected to speaker output terminals B operates.
When A and B are pressed on together, both speaker systems operate simultaneously. When the A and B switches are both off (in the out position), there is no output from the speaker terminals. This setting is used to listen to playback through the headphones.

- 4. **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 1000 Hz. The bass is emphasized as the knob is moved off center to the right (), and reduced as it is moved to the left (). When volume control () is set to the right of the center position, the effect of the other controls is reduced.
- 5. **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 (). When volume control () is set to the right of the center position, the effect of the other controls is reduced.
- 6. **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 is equal on both sides. If there is a difference in the left and right channel 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.
- 7. **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.


- 8. **REC OUT SELECTOR (Rec Out 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.
 - AUX: Used to recording component that connected to the AUX terminal.
 - DAT/TAPE-1: Used to recording from the tape deck connected to the DAT/TAPE-1 jacks.
 - DAT/TAPE-2: Used to recording from the tape deck connected to the DAT/TAPE-2 jacks.
- 9. **SOURCE DIRECT (Source Direct Switch)**
The controls (BALANCE, LOUDNESS, and TONE) 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.
- 10. **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.
- 11. **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.
- 12. **INPUT SELECTOR (Input Select Switch)**
Use these to select the program source. When the button for the desired program source is selected, its LED lights. One program source only can be selected at a time, as follows:
 - PHONO: Used to select the output from a turntable that is connected to the PHONO terminal. Use the PHONO switch () (Rear Panel Side) to switch the sensitivity to correspond to the cartridge type being used.
 - CD: Used to listen a compact disc player or other component that is connected to the CD terminal.
 - TUNER: Used to play a component such as an FM/AM tuner or a TV tuner that is connected to the TUNER terminal.
 - AUX: Used to play a component such as a Hi Fi video player, TV tuner, 8-track tape player or tape deck that is connected to the AUX terminal.
 - DAT/TAPE-1: Use this Position when using the tape deck, etc., connected to the DAT/TAPE-1 jacks.
 - DAT/TAPE-2: Use this Position when using the tape deck, etc., connected to the DAT/TAPE-2 jacks.

- PLAYING A RECORD
 1. Set the INPUT SELECTOR switch to "PHONO".
 2. Operate the turntable and play the record.
 3. Turn the volume and tone controls to yield an appropriate volume and sound quality.
- PLAYBACK OF CD PLAYER
 1. Set the INPUT SELECTOR switch to "CD".
 2. Operate the CD player.
 3. Turn the volume and tone controls to yield an appropriate volume and sound quality.
- RECEPTION OF RADIO PROGRAMS
 1. Set the INPUT SELECTOR switch to "TUNER".
 2. Operate the tuner to receive a radio program.
 3. Turn the volume and tone controls to yield an appropriate volume and sound quality.
- CONNECTIONS OF AUDIO EQUIPMENT TO AUX TERMINALS
 1. Set the INPUT SELECTOR switch to "AUX" Position.
 2. Operate the Audio equipment Systems.
 3. Turn the volume and tone controls to yield an appropriate volume and sound quality.
- PLAYBACK WITH TAPE DECK
 1. Set the INPUT SELECTOR switch to "DAT/TAPE-1" or "DAT/TAPE-2".
 2. Operate the Tape Deck.
 3. Turn the volume and tone controls to yield an appropriate volume and sound quality.
- RECORDING WITH TAPE DECK
 1. Set the REC OUT SELECTOR to the program source you wish to record.
 2. Start the playback of the program source.
 3. Start recording with the component connected to "DAT/TAPE-1" or "DAT/TAPE-2".
- 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 DAT/TAPE-1, selecting DAT/TAPE-1 with the INPUT SELECTOR will engage the RECORDING MONITOR and permit a check of the recording condition.

- 13. **MUTE/STANDBY LED**
This LED flashes while the muting circuit is activated when the power is turned on and when muting is turned on from the remote control unit, and remains lit (without flashing) while the power is on.
- 14. **PHONO (Cartridge Selection Switch); Rear Panel Side**
This switch is set according to the type of player cartridge to be used.
 - MC (): Used when an MC (moving-coil) cartridge with an output of less than 0.5 mV is used.
 - MM (): Used when an MM (moving-magnet) cartridge with an output of 2 mV or more is used.
- 15. **TAPE/REMOTE CONTROL (Tape Deck Remote Control Jack); Rear Panel Side**
Remote control of a connected DENON cassette deck is enabled by connecting the tape deck remote control lead to this jack. The jack is a mini-jack designed to accept a 3.5 mm plug.

NOTE: Do not connect headphones or a microphone to this jack. Use this jack only to connect a DENON cassette deck with a remote control jack (wired).
- 16. **AC OUTLETS; Rear Panel Side**
 - For U.S.A., Canada and Multi-voltage models
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 and POWER button on the Remote Control Unit is turned on/off.
 - UNSWITCHED (Capacity: 240 W)
This outlet is always ON whether power switch is on or OFF.
 - For Europe model, except the U.K. and Australia models
AC outlets are used for connecting amplifier component units, such as tuner, turntable, tape deck, etc.
 - SWITCHED (Total capacity: 100 W).
These outlets are turned ON/OFF when main power switch and POWER button on the Remote Control Unit is turned on/off.
 - UNSWITCHED (Capacity: 100 W)
This outlet is always ON whether power switch is on or OFF.


- 17. **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 the speaker jacks are not completely connected or when an output is generated 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.

- 18. **SETTING OF EACH KNOB**
 - Turn the volume control knob counterclockwise, to "0".
 - Set the rotary knob to "flat".
 - Set SOURCE DIRECT and LOUDNESS to "OFF ()".

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

- 19. **OPERATION**


PREPARATION

 1. **CHECKING CONNECTIONS**
 - Make sure that all the connections are proper by referring to the back panel. (Fig. 2, 3)
 - 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 counterclockwise, to "0".
 - Set the rotary knob to "flat".
 - Set SOURCE DIRECT and LOUDNESS to "OFF ()".

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

- 20. **OPERATION**


PREPARATION

 1. **CHECKING CONNECTIONS**
 - Make sure that all the connections are proper by referring to the back panel. (Fig. 2, 3)
 - 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 counterclockwise, to "0".
 - Set the rotary knob to "flat".
 - Set SOURCE DIRECT and LOUDNESS to "OFF ()".

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

- 21. **OPERATION**

PREPARATION

 1. **CHECKING CONNECTIONS**
 - Make sure that all the connections are proper by referring to the back panel. (Fig. 2, 3)
 - 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 counterclockwise, to "0".
 - Set the rotary knob to "flat".
 - Set SOURCE DIRECT and LOUDNESS to "OFF ()".

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

REMOTE CONTROL OPERATION

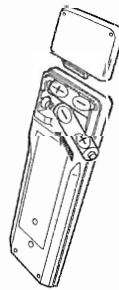
The accessory Remote Control Unit is used to control the amplifier from a convenient distance.

(1) Inserting the Dry Cell Batteries

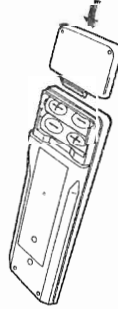
1. Remove the battery cover on the Remote Control Unit.



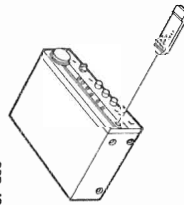
2. Insert two dry cell batteries as shown in the diagram on the battery supply unit.



3. Replace the battery cover.



(2) Directions for use



- Notes on Battery Usage**
- RC-152 uses the size R6P (AA) 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.

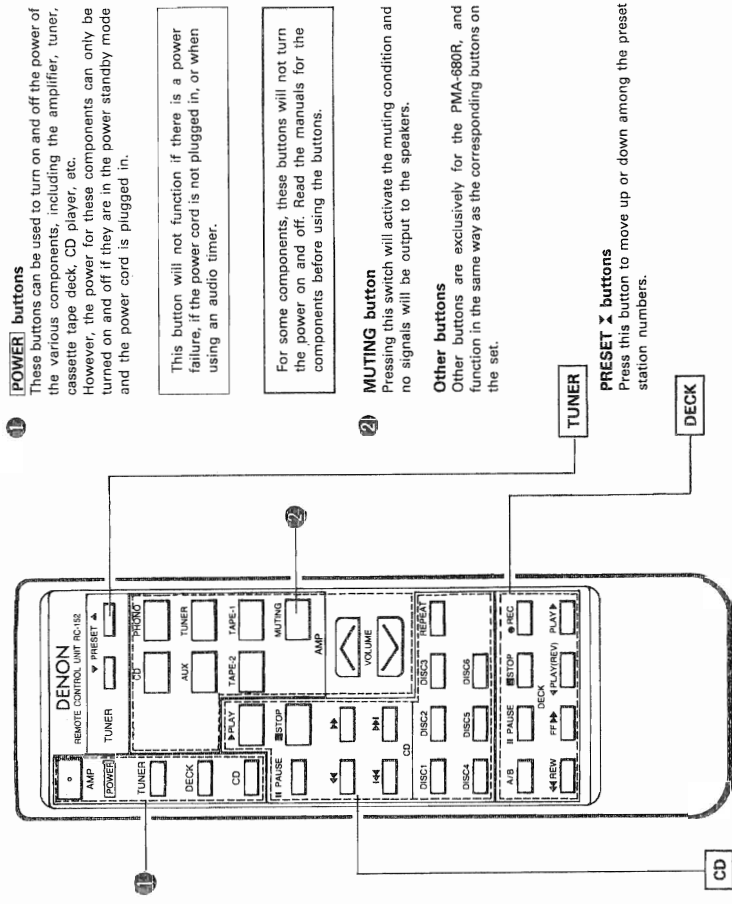
Besides being able to operate the PMA-680R amplifier with this Remote Control Unit, you can also operate a DENON cassette deck, and CD player from this handy full-system Remote Control Unit.

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-680R to create a remarkably ergonomic and versatile DENON system with all the quality sound reproduction that the devoted audiophile expects.

Remote Control Unit RC-152 supplied with the PMA-680R



1 POWER buttons

These buttons can be used to turn on and off the power of the various components, including the amplifier, tuner, cassette tape deck, CD player, etc. However, the power for these components can only be turned on and off if they are 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.

For some components, these buttons will not turn the power on and off. Read the manuals for the components before using the buttons.

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-680R, and function in the same way as the corresponding buttons on the set.

TUNER

PRESET X buttons

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

DECK

▶ PLAY	▶ PLAY (REV)	▶ PLAY button
■ STOP	■ STOP	STOP button
◀◀ REW	◀◀ REW	REWIND button
▶▶ FF	▶▶ FF	FF button
⏸ PAUSE	⏸ PAUSE	Refer to the operating instructions of your DENON tape deck.
A/B W-DECK	A/B W-DECK	A/B DECK SELECT button

▶ PLAY	▶ PLAY button
■ STOP	Reverse Track Search button
◀◀ REW	Forward Track Search button
▶▶ FF	Manual Search Reverse button
⏸ PAUSE	Manual Search Forward button
A/B W-DECK	PAUSE button

- The RC-152 Remote Control Unit can control all CD players (excluding the DCD-1800P) and cassette decks manufactured by DENON.
- Buttons are conveniently separated into groups, each group controlling one specific component. The groups are AMP, FUNCTION, CD, DECK and TUNER etc.

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.
- On the MUTE/STANDBY LED lights 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.

ESPAÑOL

Por favor, verifique que asegurados de que los siguientes artículos son empacados en la caja pero separados de la unidad principal.

- (1) Manual de instrucciones
- (2) Unidad de control remoto (RC-152)
- (3) Pilas R6P (AA)

NEDERLANDS

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

- (1) Gebruiksaanwijzing
- (2) Afstandsbediening (RC-152)
- (3) Batterijen R6P (AA)

SVENSKA

Kontrollera att följande, frutom huvudapparaten, finns med i kartongen.

- (1) Bruksanvisning
- (2) Fjärrkontroll (RC-152)
- (3) Batterier R6P (AA)

PORTUGUES

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

- (1) Instruções de operação
- (2) Unidade de controle remoto (RC-152)
- (3) Baterias R6P (AA)

ENGLISH

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-152)
- (3) Batteries R6P (AA)

DEUTSCH

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

- (1) Bedienungsanleitung
- (2) Fernbedienung (RC-152)
- (3) Batterien vom Typ R6P (AA)

FRANCAIS

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

- (1) Mode d'emploi
- (2) Unité de télécommande (RC-152)
- (3) Piles R6P (AA)

ITALIANO

Controllare che le parti seguenti si trovino imballate con l'apparecchio nella scatola di spedizione.

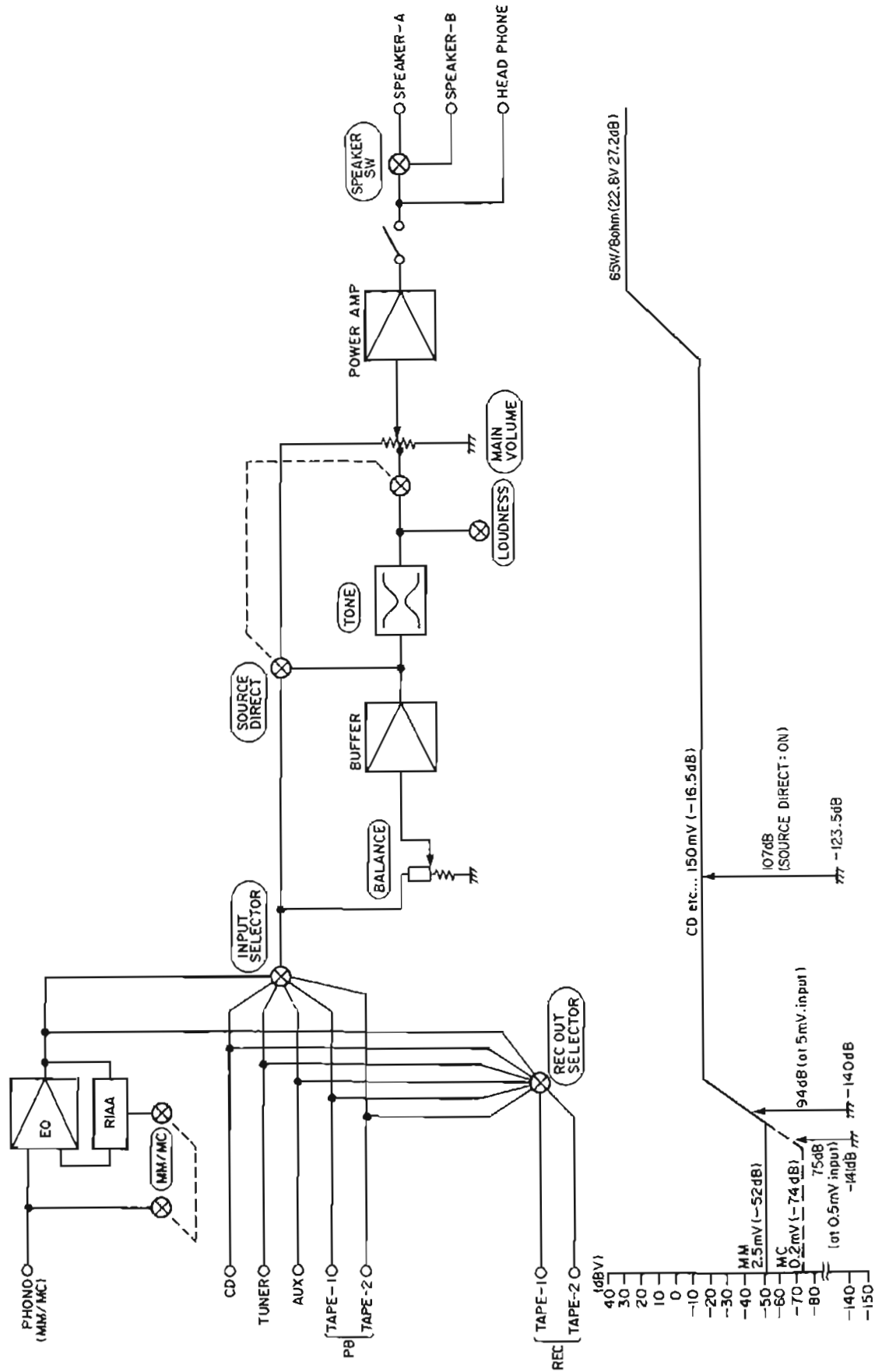
- (1) Libretto delle istruzioni
- (2) Telecomando (RC-152)
- (3) Batteria R6P (AA)

Technical Data (typical value)	Technische Daten (typische Werte)	Caractéristiques techniques (valeurs caractéristiques)
<p>POWER AMPLIFIER SECTION</p> <p>Net Output Power: 65W + 65W (8 Ohm Load) 100W + 100W (4 Ohm Load) DIN, 1 kHz, T.H.D. 0.7%</p> <p>*Continuous 65W per channel min. into 8 ohms or more than 0.05% total harmonic distortion.</p> <p>Total Harmonic Distortion: (-3 dB at rated output, 8 Ohms)</p> <p>PRE-AMPLIFIER SECTION (Recut Terminal)</p> <p>Input Sensitivity/Impedance: 150 mV/10 kohm</p> <p>THD at 20 kHz: 0.05% (8 Ohm Load) 0.05% (4 Ohm Load) DIN, 1 kHz, T.H.D. 0.7%</p> <p>REMARKS: Maximum input: 20 Hz ~ 20 kHz PHONO MM 160 mV/1 kHz MC 120 mV/1 kHz</p>	<p>LEISTUNGSSTÄRKE VERSTÄRKER</p> <p>Netto-Ausgangsleistung: 65W + 65W (8 Ohm) 100W + 100W (4 Ohm) DIN, 1 kHz, T.H.D. 0,7%</p> <p>*Fortdauern 65W pro Kanal min. zu 8 Ohm von mehr als 0,05% totaler harmonischer Verzerrung.</p> <p>Gesamtharmonikfaktor: (-3 dB bei Nennausgang, 8 Ohm)</p> <p>VORVERSTÄRKER (Aufnahme-Ausgangsbuchse)</p> <p>Eingangsempfindlichkeit/Impedanz: 150 mV/10 kOhm</p> <p>THD bei 20 kHz: 0,05% (8 Ohm Last) 0,05% (4 Ohm Last) DIN, 1 kHz, T.H.D. 0,7%</p> <p>ANMERKUNGEN: Maximaler Eingang: 20 Hz bis 20 kHz, T.H.D. 0,05% (8 Ohm Last) 0,05% (4 Ohm Last) DIN, 1 kHz, T.H.D. 0,7%</p>	<p>DEPUISSEANCE</p> <p>Puissance nominale: 65W + 65W (charge 8 ohms) 100W + 100W (charge 4 ohms) DIN, 1 kHz, T.H.T. 0,7%</p> <p>*65W en continu par canal sur min. 8 ohms de charge ou plus de 0,05% de distorsion harmonique totale.</p> <p>Distorsion harmonique totale: (-3 dB à la sortie nominale, 8 ohms)</p> <p>PRE-AMPLI (Bornes de sortie d'enregistrement)</p> <p>Sensibilité d'entrée/impédance d'entrée: 150 mV/10 kohm</p> <p>THD à 20 kHz: 0,05% (8 ohms) 0,05% (4 ohms) sous tension (ON).</p>
<p>OVERALL CHARACTERISTICS</p> <p>SN Ratio (IHF A Network): 20 Hz ~ 20 kHz PHONO MM 160 mV/1 kHz MC 120 mV/1 kHz</p> <p>Input terminals short-circuited: PHONO: int. ±0.3 dB Maximum input: 20 Hz ~ 20 kHz PHONO MM 160 mV/1 kHz MC 120 mV/1 kHz</p> <p>GENERAL CHARACTERISTICS</p> <p>Signal/Rauschabstand (IHF-A-Weiche): 20 Hz ~ 20 kHz PHONO: int. ±0.3 dB</p> <p>GESAMTEIGENSCHAFTEN</p> <p>Signal/Rauschabstand (IHF-A-Weiche): 20 Hz ~ 20 kHz PHONO: int. ±0.3 dB</p> <p>CHARACTERISTIQUES GÉNÉRALES</p> <p>Rapport signal/bruit (réseau IHF A): 20 Hz ~ 20 kHz PHONO: int. ±0.3 dB</p>	<p>CHARACTERISTIQUES GÉNÉRALES</p> <p>Rapport signal/bruit (réseau IHF A): 20 Hz ~ 20 kHz PHONO: int. ±0.3 dB</p> <p>CHARACTERISTIQUES GÉNÉRALES</p> <p>Rapport signal/bruit (réseau IHF A): 20 Hz ~ 20 kHz PHONO: int. ±0.3 dB</p>	<p>CHARACTERISTIQUES GÉNÉRALES</p> <p>Rapport signal/bruit (réseau IHF A): 20 Hz ~ 20 kHz PHONO: int. ±0.3 dB</p>
<p>AC Couplers: Switched x2</p> <p>Unswitched x1</p> <p>Power Consumption</p> <p>Dimensions (W)x(H)x(D)</p> <p>Net Weight</p> <p>REMOTE CONTROL UNIT (RC-152)</p> <p>Remote control system: Infrared system</p> <p>Power supply: 3V DC, Two size R6P ("AA") dry cell batteries</p> <p>External dimensions: Weight:</p>	<p>AC Couplers: Wechselstrom-Ausgänge Geschaltet x2: Ungeschaltet x1:</p> <p>Leistungsaufnahme</p> <p>Abmessungen (B)x(H)x(T)</p> <p>Nettogewicht</p> <p>FERNBEDIENUNGSGERÄT (RC-152)</p> <p>Fernbedienungs-System: Infrarot-System</p> <p>Stromversorgung: 3V DC, Zwei Stück R6P (AA) Batterien vom Format R6 (AA)</p> <p>Äußere Abmessungen: Gewicht:</p>	<p>Prises secteur (AC) Commutées x2: Non commutées x1:</p> <p>Consommation</p> <p>Dimensions (L)x(H)x(D)</p> <p>Poids</p> <p>UNITE DE TELECOMMANDE (RC-152)</p> <p>Système de télécommande: Système à impulsion infrarouge</p> <p>Alimentation: 3V CC, deux piles sèches 3V DC, deux piles sèches de format R6 ("AA")</p> <p>Dimensions extérieures: Poids:</p>

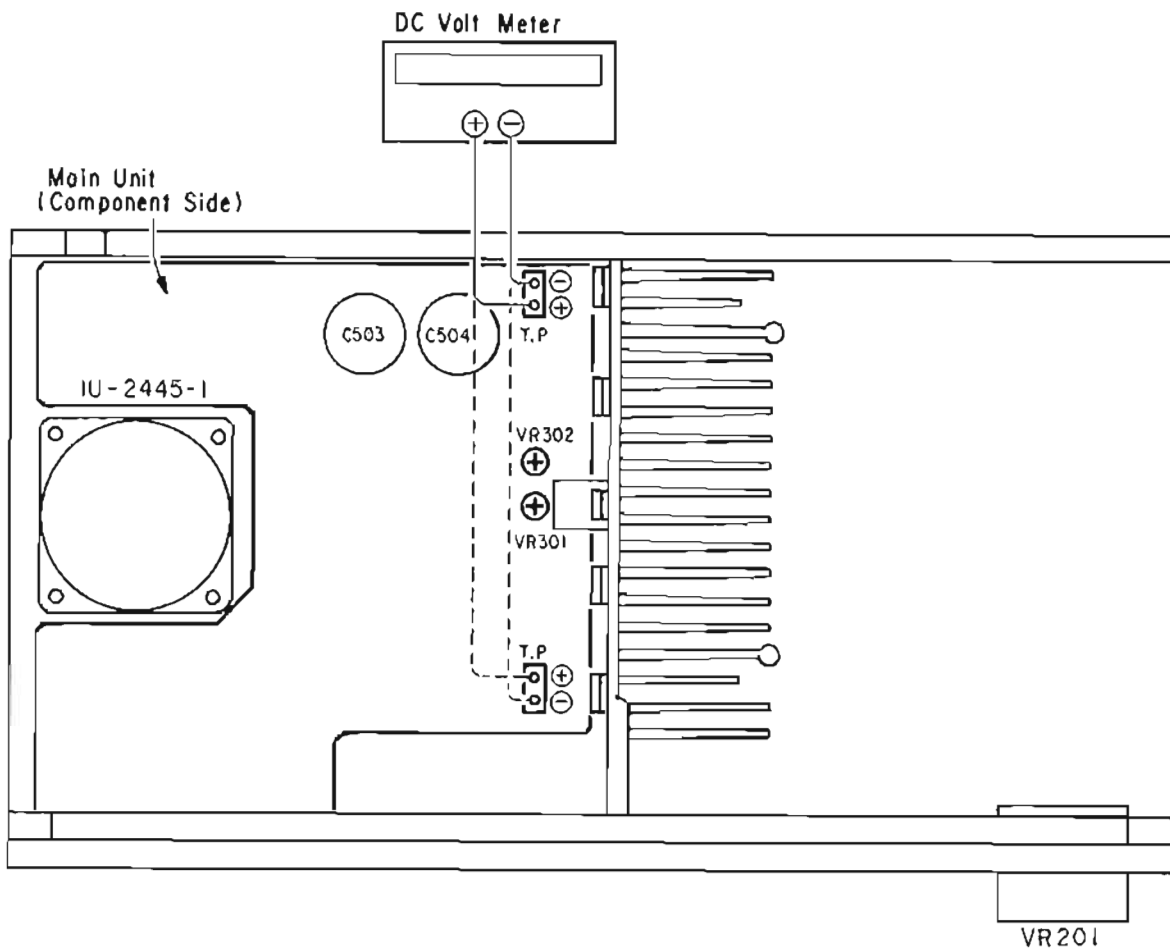
Note: *1 For Europe, Canada and Multi-Voltage *2 For Europe, Canada and Multi-Voltage

Specifications and contents are subject to change without notice for purposes of improvement. Änderungen des Inhalts und der technischen Daten zum Zwecke der Verbesserung vorbehalten. Specifications et contenu sont sujets à modification sans préavis.

BLOCK AND LEVEL DIAGRAM



METHOD OF ADJUSTMENTS



IDLING CURRENT

● Setup

1. Lay the unit at an ordinary position away from a direct current from a cooler 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 (VR201) and Semifixed resistor (VR301...Lch, VR302...Rch)]
 - SPEAKER Terminals → open: do not connect the speakers, dummy load etc.

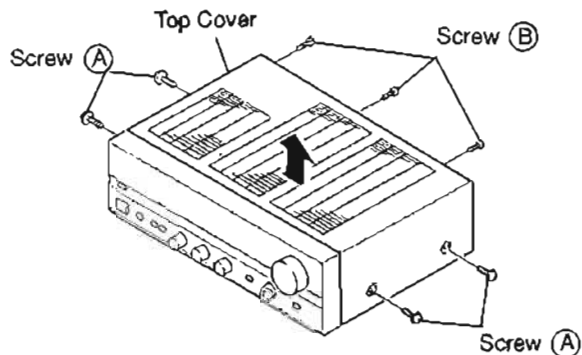
● Adjustment

1. Remove Top cover. And then connect DC Voltmeter to Test points of 1U-2445-1 (Main Unit).
2. Connect Power cord to AC wall outlet, and turn Power Switch "on" (⏻). Within 10 seconds turn VR301 (Lch) and VR302 (Rch) clockwise so that the DC voltmeter reads 1.0 ± 0.2 mV DC.
3. Then after 2 minutes warmup adjust VR301 and VR302 so that the DC Voltmeter reads 3.0 ± 0.2 mV DC.
4. And after 10 minutes warmup adjust VR301 and VR302 so that the DC Voltmeter reads 3.0 ± 0.2 mV DC.

REMOVAL OF EACH SECTION

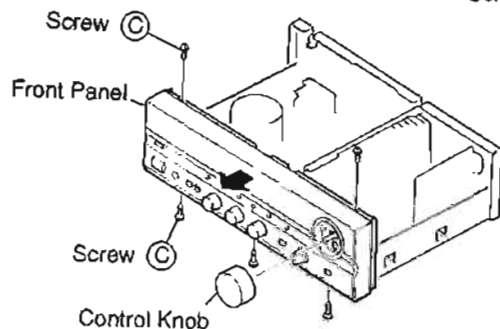
● Top Cover

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



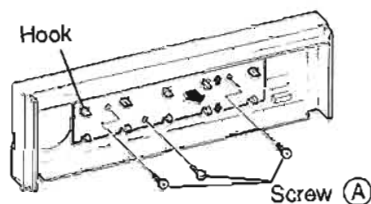
● Front Panel

- 1) Remove Control Knob and 5 screws (C).
- 2) Detach Front Panel in arrow direction.



● Microcomputer Printed Wiring Board.

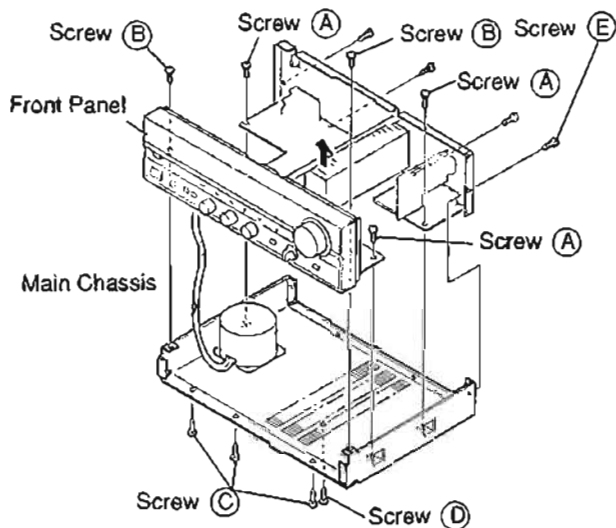
- 1) Remove 3 screws (A).
- 2) Detach P.W.B., expanding 10 hooks outwards.



● Main Chassis

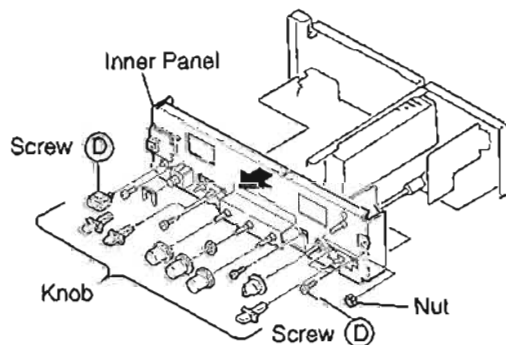
- 1) Remove 3 screws (A) securing P.W.B. with MAIN CHASSIS.
- 2) Remove 2 screws (B) securing FRONT CHASSIS with MAIN CHASSIS.
- 3) Remove 3 screws (C) securing FRONT PANEL with MAIN CHASSIS.
- 4) Remove 1 screw (D) securing Main CHASSIS with POWER RADIATOR.
- 5) Remove 4 screws (E) securing REAR PANEL with MAIN CHASSIS.

NOTE Then, by pulling up, FRONT PANEL, POWER RADIATOR, P.W.B., REAR PANEL will be detached as a whole. However, wire on POWER TRANS still remains connected; therefore make repairing on detached CHASSIS side-up.



● Inner Panel

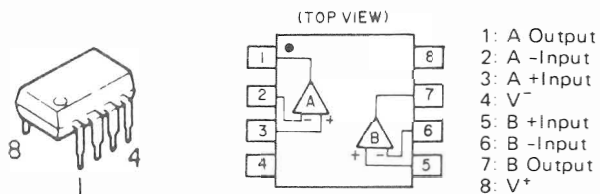
- 1) Remove 8 Knobs.
- 2) Remove 2 nuts and 5 screws (D).
- 3) Detach Inner Panel in arrow direction, undoing hooks at two places.



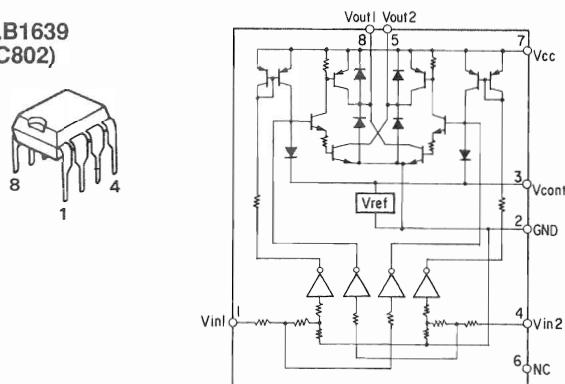
SEMICONDUCTORS

● IC's

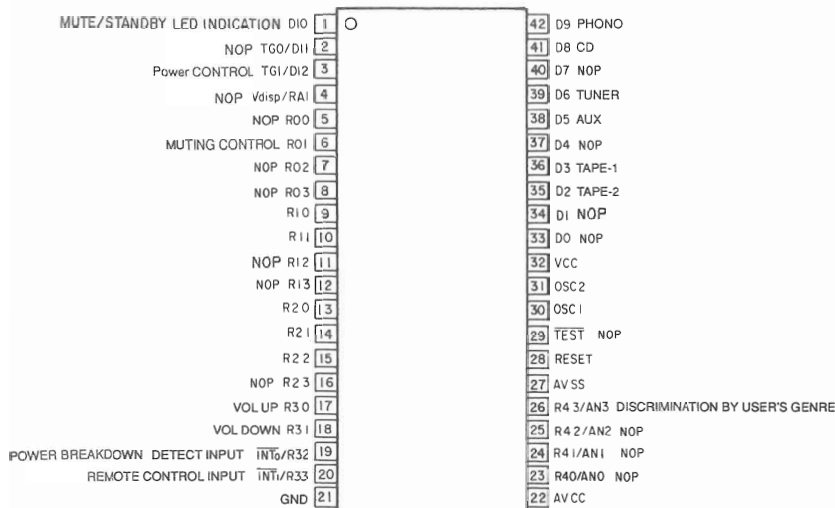
RC4558D-D (IC201,601)



LB1639 (IC802)



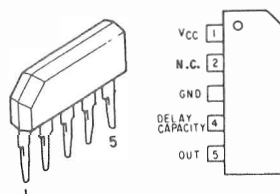
HD404304A13P (IC801)



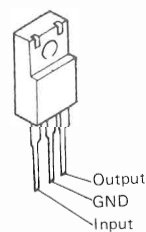
HD404304P Terminal Function

Pin No.	Name	I/O	Contents	Active
1	D10	O	MUTE/STANDBY LED Indication	H
2	TG0/D11	O	NOP	
3	TG1/D12	O	Power Control (REMOTE Power-ON/OFF)	L
4	Vdisp/RA1	I	NOP	
5	R00	O	NOP	
6	R01	O	Muting Control (Power ON-OFF, Function Shifting, MUTING)	L
7	R02	O	NOP	
8	R03	O	NOP	
9	R10	O	Key scan strobe	H
10	R11	O	NOP	H
11	R12	O	NOP	
12	R13	O	NOP	
13	R20	I		
14	R21	I	Key scan receive	
15	R22	I		
16	R23	I	NOP	
17	R30	O	Volume Control "UP" → "H"	H
18	R31	O	Volume Control "DOWN" → "H"	H
19	INT0/R32	I	Power Breakdown detect input	
20	INT1/R33	I	Remote control signal decoding input	
21	GND		GND	
22	AVcc		Avcc (Vcc)	
23	R40/AN0		NOP	
24	R41/AN1	I	NOP	
25	R42/AN2	I	NOP	
26	R43/AN3	I	Discrimination port by user's genre	
27	AVss		AVss (GND)	
28	RESET		M51954A; External	
29	TEST		Vcc	
30	OSC1		Celler Fill Oscillator 4MHz; External	
31	OSC2		Celler Fill Oscillator 4MHz; External	
32	Vcc		Vcc	
33	D0	O	NOP	
34	D1	O	NOP	
35	D2	O	TAPE-2 Control	H
36	D3	O	TAPE-1 Control	H
37	D4	O	NOP	
38	D5	O	AUX Control	H
39	D6	O	TUNER Control	H
40	D7	O	NOP	
41	D8	O	CD Control	H
42	D9	O	PHONO Control	H

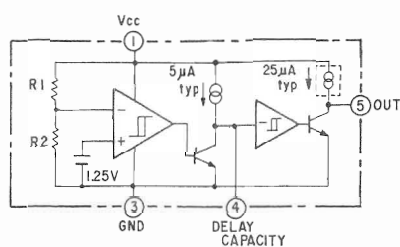
M51954A (IC803)



NJM7806FA (IC502)

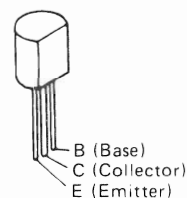


● IC PROTECTOR
ICP-N15 (IC501)

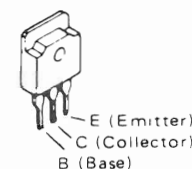


● TRANSISTORS

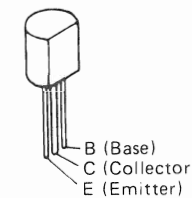
2SA988 (E/F)
2SC1841 (E/F)
2SA970 (BL)



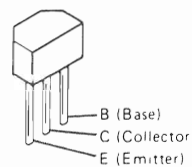
2SA1491 (O)/(P)/(Y)/Z
2SC3855 (O)/(P)/(Y)/Z



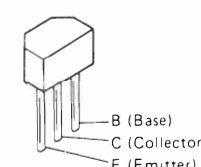
2SB647A (C)
2SD667A (C)
2SC4208A



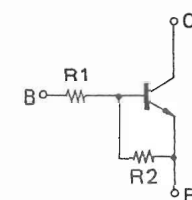
2SC2458 (BL)
2SA1048 (GR)



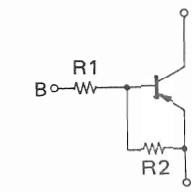
RN1202 NPN
RN2202 PNP



RN1202



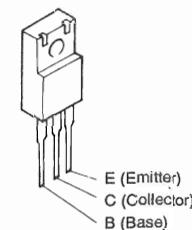
RN2202



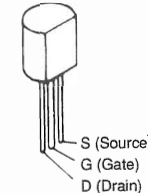
	R1	R2
RN1202	10 Kohm	10 Kohm

	R1	R2
RN2202	10 Kohm	10 Kohm

2SB1274 (R/S)
2SD1913 (R/S)

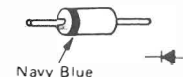


2SK369 (BL)/(GN)-C



● DIODES (including LED)

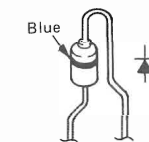
1S2076A
1S270A



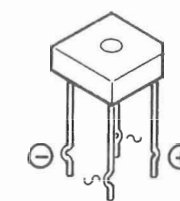
HZS18-1
HZS27-1
HZS16-1
HZS7C-1



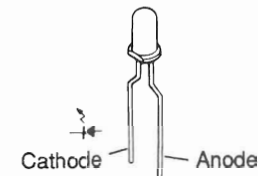
1SR35-200A



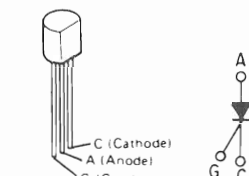
S4VB20



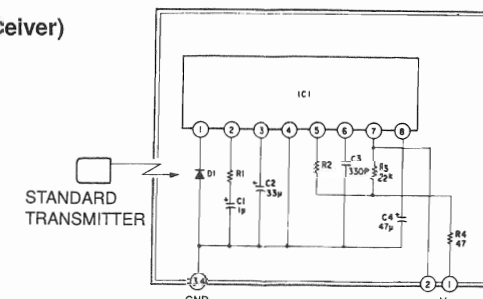
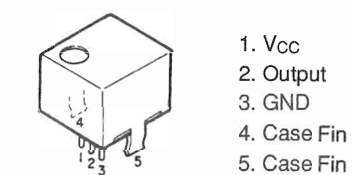
SEL-1810A (Orange)
SEL-1210S (Red)



Thyristor
SFOR1A42



SBX1610-52 (Remote Control Receiver)



- IC1 : CX20106A Chip
- D1 : PIN Photo Diode Chip
- C1,C2,C4 : Aluminum Electrolytic Capacitor
- C3 : SL Characteristic ±5%
- R1 : Gain Adjuster
- R2 : fo Adjuster ±1% USE
- R3,R4 : ±5%

PRINTED WIRING BOARD (Pattern Side)

1 2 3 4 5 6 7 8

1U-2445A MAIN UNIT ASS'Y

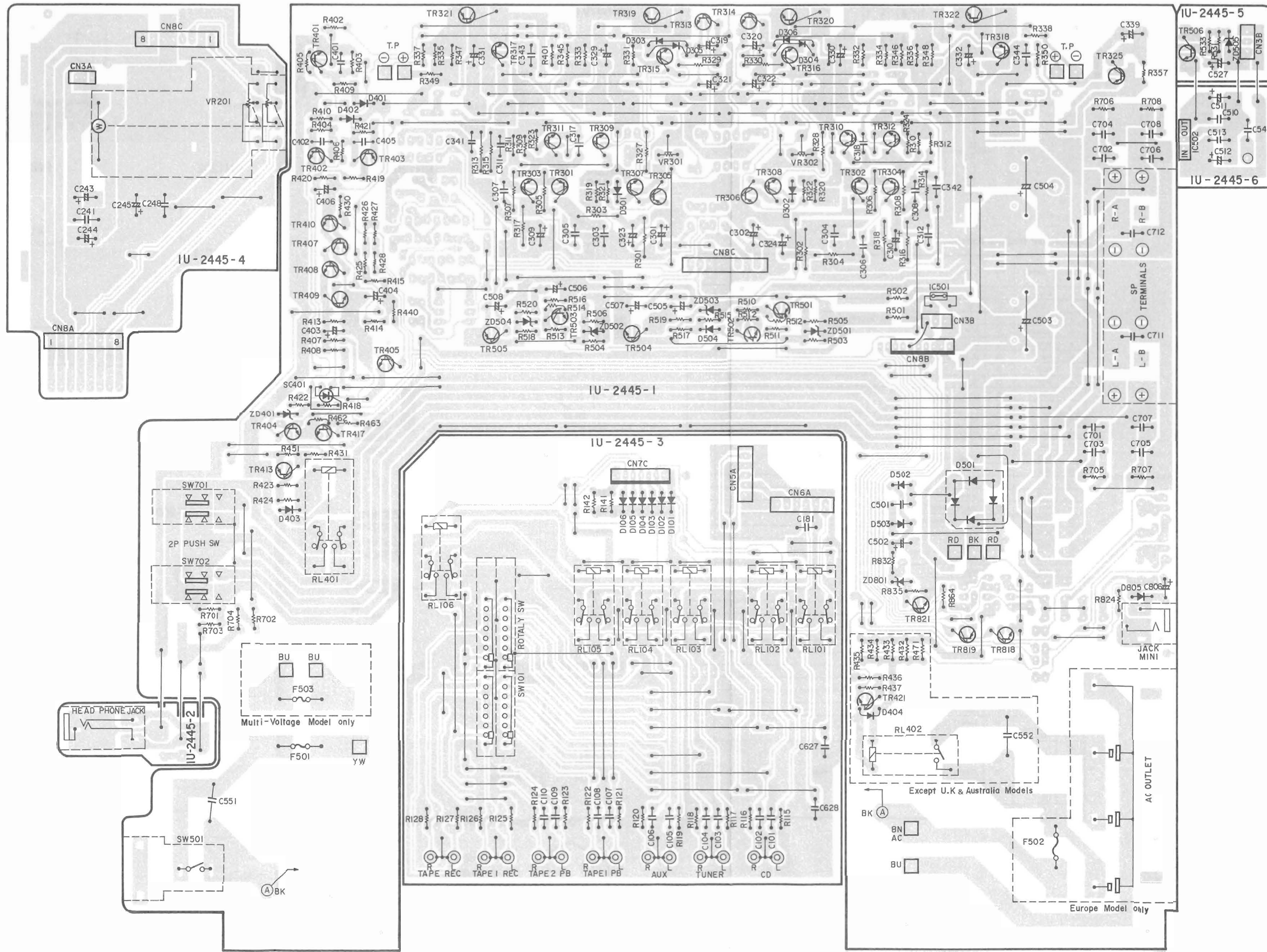
A

B

C

D

E



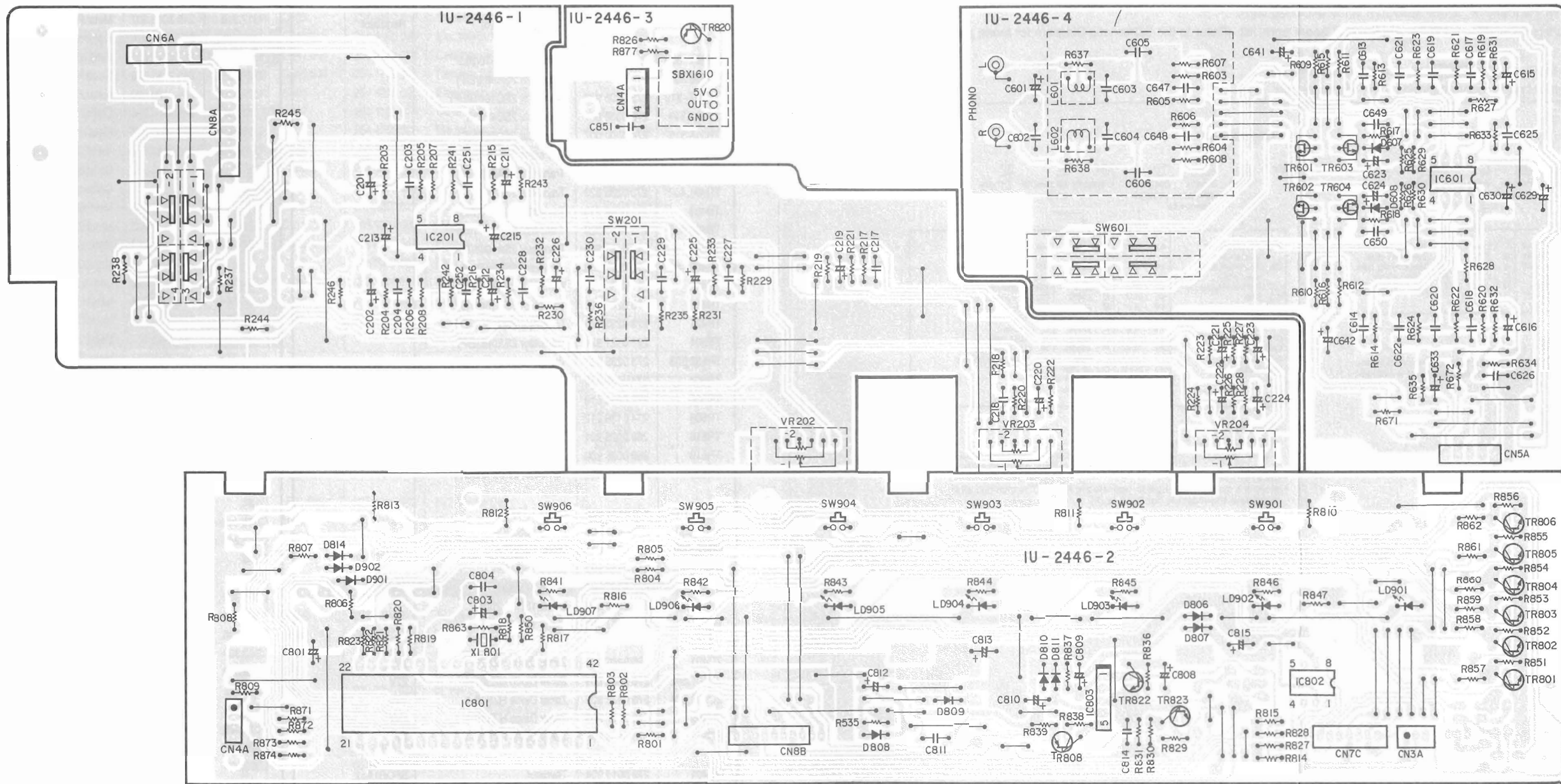
Version	Unit No.	F501	F502	F503	AC Outlet	H/P Jack	SP Terminal
Black for Europe	1U-2445A	2A	1A(T)	—	203 3950 002	203 8354 004	203 0484 001
Gold for Europe	1U-2445B	2A	1A(T)	—	203 3950 002	203 8355 003	203 0484 001
U.S.A.	1U-2445E	5A	—	—	203 3926 007	203 8354 004	203 0472 013
Canada	1U-2445E	5A	—	—	203 3926 007	203 8354 004	203 0472 013
Multi-Voltage	1U-2445D	5A/250V	—	2.5A/250V	203 3926 007	203 8354 004	203 0472 013
U.K. & Australia	1U-2445C	2A	—	—	—	203 8354 004	203 0472 013

*

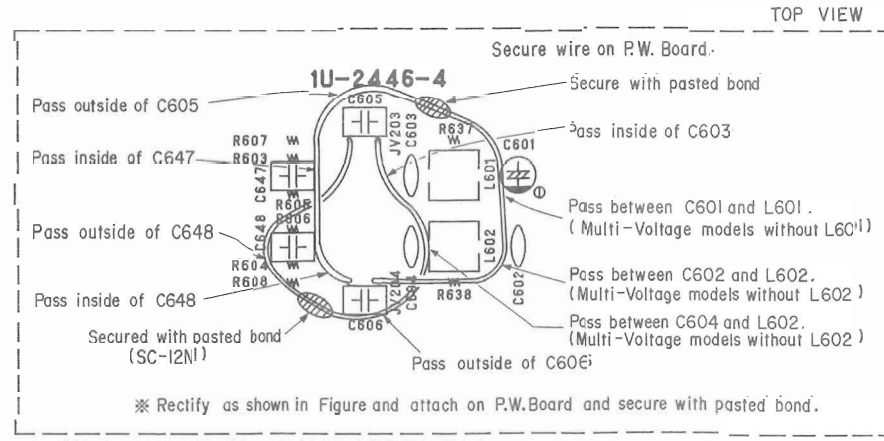
1U-2446A CONTROL UNIT ASS'Y

1 2 3 4 5 6 7 8

Note: Wire rectification is necessary.
Rectify according to below.
(Component Side)



A
B
C
D



* Version	Unit No.	L601, 602	R637, 638
Europe Black	1U-2446A	235 9003 002	820 ohm
Europe Gold	1U-2446A	235 9003 002	820 ohm
U.S.A.	1U-2446C	—	Jumper
Multi-Voltage	1U-2446C	—	Jumper
Australia, UK	1U-2446C	—	Jumper
Canada	1U-2446C	—	Jumper

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" (l) 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

HD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metallic film	2H : 1/2W	J : ±5%	NE : 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, 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
CO : 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

2 R 2 ⇒ 2.2μF

1-digit effective number, decimal point indicated by R

2-digit effective number, decimal point indicated by R

• Units: μF, (for P, pF (μμF))

• When the dielectric strength is indicated in AC, "AC" is included after the dielectric units: μF, (for P, pF (μμF))

PARTS LIST OF P.W. BOARD 1U-2445A MAIN UNIT

Ref. No.	Part No.	Part Name	Remarks	Q'ty
SEMICONDUCTORS GROUP				
IC501	268 0073 905	IC ICP-N15	IC Protector	
IC502	263 0793 002	IC NJM7806FA(S)	Regulator	
TR301-304	271 0094 919	Transistor 2SA970(BL)		
TR305,306	271 0131 924	Transistor 2SA988(E/F)		
TR307-312	273 0235 923	Transistor 2SC1841(E/F)		
TR313,314	273 0380 001	Transistor 2SC4208A		
TR315,316	274 0060 007	Transistor 2SD667A(C)		
TR317,318	272 0053 908	Transistor 2SB647A(C)		
TR325	271 0131 924	Transistor 2SA988(E/F)		
TR401,402	273 0235 923	Transistor 2SC1841(E/F)		
TR403	271 0094 919	Transistor 2SA970(BL)		
TR404,405	273 0235 923	Transistor 2SC1841(E/F)		
TR407	271 0191 906	Transistor 2SA1048(GR)		
TR408-410	273 0317 906	Transistor 2SC2458(BL)		
TR413	271 0131 924	Transistor 2SA988(E/F)		
TR417	273 0235 923	Transistor 2SC1841(E/F)		
TR421	273 0235 923	Transistor 2SC1841(E/F)		
TR501	271 0131 924	Transistor 2SA988(E/F)		
TR502,503	273 0235 923	Transistor 2SC1841(E/F)		
TR504	274 0136 012	Transistor 2SD1913(H/S)		
TR505	272 0093 010	Transistor 2SB1274(R/S)		
TR506	274 0136 012	Transistor 2SD1913(R/S)		
TR818	269 0025 901	Transistor RN1202(10K-10K)	Built in Resistor	
TR819	269 0026 900	Transistor RN2202(10K-10K)	Built in Resistor	
TR821	273 0317 906	Transistor 2SC2458(BL)		
D101-106	276 0432 903	Diode 1SS270A		
D301,302	276 0432 903	Diode 1SS270A		
D303-306	276 0449 011	Diode 1S2U76A		
D401-404	276 0432 903	Diode 1SS270A		
D501	276 0305 001	Diode S4VB20	Bridge	
D502-504	276 0553 905	Diode 1SR35-200A		
D805	276 0432 903	Diode 1SS270A		
ZD401	276 0466 908	Zener Diode HZS7C-1	7V	
ZD501,502	276 0482 908	Zener Diode HZS27-1	27V	
ZD503,504	276 0478 909	Zener Diode HZS18-1	18V	
ZD505	276 0477 900	Zener Diode HZS16-1	16V	
ZD801	276 0466 908	Zener Diode HZS7C-1	7V	
SC401	279 0016 904	Thyristor	SPUH1A42	
RESISTORS GROUP				
(Not included Carbon Film ±5%, 1/4W Type. Refer to the Schematic Diagram for those Parts)				
R141	244 2052 957	Metal Oxide 5.6kohm,1W	RS14B3A562JNBS(S)	
R142	244 2050 991	Metal Oxide 6.8kohm,1W	RS14B3A682JNBS(S)	
R301,302	245 2116 906	Metal Film 100kohm,1/4W	RN14K2E104G	
R303,304	245 2099 900	Metal Film 470ohm,1/4W	RN14K2E471G	
R305,306	245 2096 903	Metal Film 15kohm,1/4W	RN14K2E153G	
R307,308	245 2060 900	Metal Film 470ohm,1/4W	RN14K2E471G	
R309-312	241 2480 963	Carbon Film 2.2kohm, 1/4W (N.B)	RD14B2E222JNBS	
R313,314	245 2036 905	Metal Film 47ohm,1/4W	RN14K2E470G	
R315,316	245 2116 906	Metal Film 100kohm,1/4W	RN14K2E104G	
R317,318	245 2063 907	Metal Film 620ohm,1/4W	RN14K2E621G	
R319-322	247 2377 976	Carbon Film 130ohm,1/4W(N.B)	RD14B2E131JNBS	
R323,324	241 2315 967	Fusible 68ohm,1/4W	RD14B2E680GFRS	
R327,328	245 2083 903	Metal Film 4.3kohm,1/4W	RN14K2E432G	
R329,330	245 2109 900	Metal Film 51kohm,1/4W	RN14K2E513G	
R331,332	241 2378 920	Carbon Film 220ohm,1/4W	RD14B2E221JNBS	
R333-336	244 2043 982	Metal Oxide 0.22ohm,1W	RS14B3AR22JNBS(S)	
R345-348	244 2043 982	Metal Oxide 0.22ohm,1W	RS14B3AR22JNBS(S)	
R357	241 2379 987	Carbon Film 1kohm,1/4W(N.B)	RD14B2E102JNBS	
R401-404	241 2380 950	Carbon Film 2kohm,1/4W(N.B)	RD14B2E202JNBS	
R423	244 2043 940	Metal Oxide 2.2kohm,1W	RS14B3A222JNBS(S)	
R424	244 2052 902	Metal Oxide 2.7kohm,1W	RS14B3A272JNBS(S)	
R432-435	244 2051 990	Metal Oxide 4.7kohm,1W	RS14B3A472JNBS(S)	
R471	244 2051 990	Metal Oxide 4.7kohm,1W	RS14B3A472JNBS(S)	
R501,502	241 2387 940	Carbon Film 4.7ohm,1/4W(N.B)	RD14B2E47JNBS	
R503-506	244 2043 908	Metal Oxide 680ohm,1W	RS14B3A681JNBS(S)	
R701-704	244 2050 933	Metal Oxide 180ohm,1W	RS14B3A181JNBS(S)	
R705-708	244 2043 937	Metal Oxide 10ohm,1W	RS14B3A100JNBS(S)	
R996-999	245 2068 902	Metal Film 1kohm,1/4W	RN14K2E102G	
VR201	211 0761 004	Variable Resistor 30kohm	Main	1
VR301,302	211 6064 048	Semi Fixed Resistor 5kohm	V06PB5C2	2
CAPACITORS GROUP				
C101-110	253 4537 089	Ceramic 56pF/50V	CC45SL1H560J	
C181	253 1181 014	Ceramic 0.022μF/50V	CK45F1H223Z	
C241	253 1181 014	Ceramic 0.022μF/50V	CK45F1H223Z	
C243,244	254 4254 006	Electrolytic 10μF/16V	CE04W1C100M	
C245	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M	
C248	253 1181 014	Ceramic 0.022μF/50V	CK45F1H223Z	
C301,302	254 4260 058	Electrolytic 2.2μF/50V	CE04W1H2R2M	
C303,304	255 6177 948	Plastic Film 100pF/50V	CQ09S1H101J(SMT)	
C305,306	255 6177 980	Plastic Film 220pF/50V	CQ09S1H221J(SMT)	
C307,308	255 4199 986	Plastic Film 0.001μF/50V	CQ92M1H102J(MRZ)	
C309,310	254 4256 059	Electrolytic 220μF/25V	CE04W1E221M	
C311,312	253 4535 081	Ceramic 8pF/50V	CC45SL1H080D	
C317,318	253 4466 901	Ceramic 8pF/500V	CC45SL2H060D	
C319,320	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M	
C321,322	254 4260 090	Electrolytic 22μF/50V	CE04W1H220M	
C323,324	254 4260 058	Electrolytic 2.2μF/50V	CE04W1H2R2M	
C329-332	254 4262 001	Electrolytic 4.7μF/63V	CE04W1J4R7M	
C339	254 4262 755	Electrolytic 100μF/63V	CE04W1J101MC	
C341-344	253 1172 042	Ceramic 220pF/50V	CK45B1H221K	
C401,402	253 1181 001	Ceramic 0.01μF/50V	CK45F1H103Z	
C403	254 425C 042	Electrolytic 330μF/6.3V	CE04W0J331M	
C404	254 4252 037	Electrolytic 100μF/10V	CE04W1A101M	
C405	253 1181 014	Ceramic 0.022μF/50V	CK45F1H223Z	
C406	254 4252 008	Electrolytic 22μF/10V	CE04W1A220M	
C501	256 1042 000	Metallized 0.1μF/250V	CF93A2E104K	
C502	254 4263 013	Electrolytic 0.22μF/100V	CE04W2AR22M	
C503,504	254 4365 704	Electrolytic 10000μF/56V	CE04W=103MC(DL)	
C505,506	254 4256 059	Electrolytic 220μF/25V	CE04W1E221M	
C507,508	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M	
C510	253 1181 001	Ceramic 0.01μF/50V	CK45F1H103Z	

1U-2445E for U.S.A. and Canada Parts list (Except the following 1U-2445A for Europe Black)

Table with 4 columns: Ref. No., Part No., Part Name, Remarks. Contains parts like C511, C512, C513, C527, C541, C551, C627, C701, C703, C705, C707, C711, C80E.

OTHER GROUP

Table with 4 columns: Ref. No., Part No., Part Name, Remarks. Contains parts like SW101, SW501, SW701, F501, F502, RL101, RL401, RL402, CN5A, CN8A, CN8B, CN7C, CN3A, CN8C, CN3B, CN3B, CN6A.

Table with 5 columns: Ref. No., Part No., Part Name, Remarks, Q'ty. Contains parts like F501, F502, AC Outlet (3P).

1U-2445D for Multi-voltage model Parts list (Except the following 1U-2445A for Europe Black)

Table with 5 columns: Ref. No., Part No., Part Name, Remarks, Q'ty. Contains parts like F501, F502, F503, AC Outlet (3P), 8P SP Terminal, Fuse Label.

1U-2445C for Australia, U.K. models Parts list (Except the following 1U-2445A for Europe Black)

Table with 5 columns: Ref. No., Part No., Part Name, Remarks, Q'ty. Contains parts like F501, F502, F503, AC Outlet (3P), Relay (TV-5), TR421, D404, C552.

1U-2446A CONTROL UNIT

Table with 4 columns: Ref. No., Part No., Part Name, Remarks. Contains SEMICONDUCTORS GROUP and RESISTORS GROUP parts like IC201, IC601, IC801, TR601, LD901.

Table with 4 columns: Ref. No., Part No., Part Name, Remarks. Contains CAPACITORS GROUP parts like C201, C203, C211, C213, C215, C217, C219, C221, C223, C225, C227, C229, C251, C601, C602, C603, C605, C613, C615, C617, C619, C621, C623.

Table with 4 columns: Ref. No., Part No., Part Name, Remarks. Contains parts like C625, C629, C633, C641, C647, C649, C801, C802, C803, C804, C808, C809, C810, C811, C812, C813, C814, C815, C851.

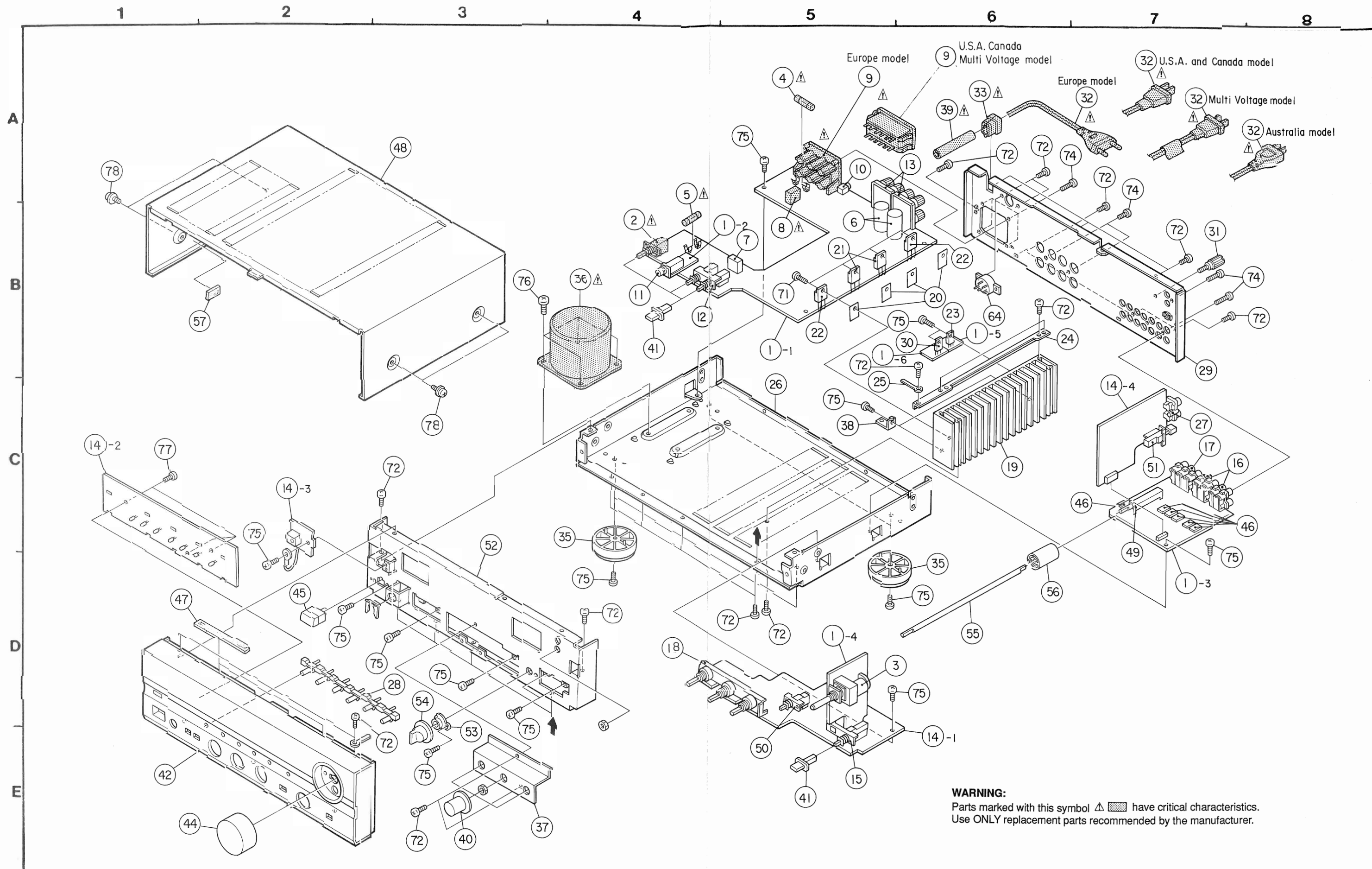
OTHER GROUP

Table with 5 columns: Ref. No., Part No., Part Name, Remarks, Q'ty. Contains parts like SW201, SW202, SW601, SW901, L601, XL801, CN4A, CN3A, CN8A, CN5A, CN8B, CN7C, CN6A, CN4A.

1U-2446C for U.S.A., Canada, Multi-voltage Australia and U.K. PARTS LIST (Except the following 1U-2446A for Europe Black)

Table with 4 columns: Ref. No., Part No., Part Name, Remarks. Contains parts like 235 9003 002 FTZ Choke Coil.

EXPLODED VIEW OF CHASSIS AND CABINET



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

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	Note	Main Unit Ass'y		1 ^s
-1-1	—	Main Unit		(1)
-1-2	—	H/P Unit		(1)
-1-3	—	Input Unit		(1)
-1-4	—	M.Vol. Unit		(1)
-1-5	—	+16V Unit		(1)
-1-6	—	+6V Unit		(1)
2	212 1103 004	Power Switch (TV-5)		1
3	211 0761 004	Variable Resistor	Main	1
4	Note	Fuse 1A T	F502	1
* 5	Note	Fuse	F501	1
6	254 4365 704	Chemicon 10000μF/56V	C503,504	2
7	214 9003 005	Relay	RL401	1
8	214 0142 004	Relay (TV-5)		1
* 9	Note	AC Outlet (3P)		1
10	204 8260 004	Mini Jack		1
* 11	Note	Head Phone Jack		1
12	212 9532 004	2P Push Switch(SP)	SW701,702	1
* 13	Note	8P SP Terminal		1
* 14	Note	Control Unit		1 ^s
14-1	—	Control Unit		(1)
14-2	—	μ-Com Unit		(1)
14-3	—	Sensor Unit		(1)
14-4	—	EQ.Unit		(1)
15	212 1100 007	1P Push Switch	S.Direct	1
16	204 8266 008	4P Pin Jack (S-GND)		2
17	204 8278 009	6P Pin Jack (S-GND)		1
18	211 0762 003	Variable Resistor	3 Gang	1
19	417 0460 301	Power Radiator		1
20	415 0234 007	Insulating Sheet		4
21	273 0389 002	Transistor 2SC3855(O/P/Y)(Z)	TR319,320	2
22	271 0240 006	Transistor 2SA1491(O/P/Y)(Z)	TR321,322	2
23	274 0136 012	Transistor 2SD1913(R/S)	TR506	1
24	412 3526 108	Radiator Bracket		1
25	445 0048 003	Cord Holder (L=76)		1
26	411 1180 200	Main Chassis		1
27	204 8413 000	2P Pin Jack (C-GND)		1
* 28	Note	Function Knob		1
* 29	Note	Rear Panel		1
30	263 0793 002	NJM7806FA(S)	IC502	1
31	205 0071 016	Terminal Ass'y		1
* 32	Note	AC Cord		1
* 33	445 0056 008	Cord Bush		1
* 34	Note	Masking Sheet		1
35	104 0194 001	Foot Ass'y		4
* 36	Note	Power Trans		1
37	412 3530 000	Volume Bracket		1
38	412 3225 108	P.W.B.Bracket(A)		2
* 39	415 0305 017	UL Tube (8.3)	for AC Cord	1
* 40	Note	Maru Knob(s)	Bass,Treble, Balance	3
* 41	Note	Push Knob (KAKU)		4
* 42	Note	Front Panel Ass'y		1
* 43	445 8004 007	Wire Clamper		8
* 44	Note	VR Knob Ass'y		1
* 45	Note	Power Knob Ass'y		1
46	214 0127 003	Relay (RY-12W)		6
47	461 0501 005	Rubber Sheet	100x8xT1 Put on F/P Upper	1
* 48	Note	Top Cover		1

● Note : Refer to Addendum List for parts with **

Ref. No.	Part No.	Part Name	Remarks	Q'ty
49	212 0336 005	Rotary Switch	Rec Out	1
50	212 1097 000	1P Push Switch	Loudness	1
51	212 1099 008	1P Push Switch	MM-MC	1
* 52	411 1179 305	Front Chassis Ass'y		1
53	119 0070 004	LOD Guide		1
* 54	Note	Fuji Knob	Rec Out	1
55	112 0642 208	VR Knob Joint(A)		1
56	112 0643 003	VR Knob Joint(B)		1
57	461 0501 089	Rubber Sheet	20x20xT8	1
58	—	—		1
59	—	—		1

SCREWS				
71	473 8007 009	Cup Screw 3x12		4
* 72	Note	Tapping Screw (S) 3x8	Black	22
73	—	—		
* 74	Note	Fixing Screw		10
75	473 7002 018	Tapping Screw (S) 3x8		20
76	473 7004 016	Tapping Screw (S) 4x6		4
77	473 7501 001	Tapping Screw (P) 3x10		3
* 78	Note	3P Swelling Screw		4
79	—	—		
80	—	—		

PACKING & ACCESSORIES (Not included Exploded View)				
101	505 8006 019	Envelope		1
102	511 2367 005	Inst. Manual		1
103	499 0240 002	Remote Control(RC-152)		1
104	—	Battery	R6P/AA	2
105	504 9102 003	Styrene Paper		1
106	505 9102 006	Poly Cover		1
107	504 0092 060	Styrene Paper	for AC Cord	1
108	503 0888 103	Cushion		2
109	501 1616 019	Carton Case		1
110	—	—		
111	513 1389 006	Control Card Base		1
112	513 1349 004	Thermal Carbon Film		1
113	—	—		
114	—	—		

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.

WARNING:

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

ADDENDUM LIST

Ref. No.	Parts Name & Descriptions	Parts No.						
		Europe Black	Europe Gold	U.S.A.	Canada	Multi-Voltage	Australia	U.K.
1	Main Unit Ass'y (1s)	1U-2445A	1U-2445B	1U-2445E	1U-2445E	1U-2445D	1U-2445C	1U-2445C
* 4	Fuse (F-502) (1)	206 1015 029 (1AT)	206 1015 029 (1AT)	—	—	—	—	—
* 5	Fuse (F-501) (1)	206 1015 061 2A	206 1015 061 2A	206 1046 027 5A	206 1046 027 5A	206 1061 044 5A/250V	206 1015 061 2A	206 1015 061 2A
* 9	AC Outlet (3P) (1)	203 3950 002	203 3950 002	203 3926 007 (Polarized)	203 3926 007 (Polarized)	203 3926 007 (Polarized)	—	—
11	Headphone Jack (1)	204 8354 004	204 8355 003	204 8354 004	204 8354 004	204 8354 004	204 8354 004	204 8354 004
13	8P SP Terminal (1)	205 0484 001	205 0484 001	205 0472 013	205 0472 013	205 0472 013	205 0472 013	205 0472 013
14	Control Unit (1s)	1U-2446A	1U-2446A	1U-2446C	1U-2446C	1U-2446C	1U-2446C	1U-2446C
28	Function Knob (1)	113 1538 000	113 1538 013	113 1538 068	113 1538 000	113 1538 000	113 1538 000	113 1538 000
29	Rear Panel (1)	105 1040 209	105 1040 209	105 1040 238	105 1040 238	105 1040 212	105 1040 225	105 1040 225
* 32	AC Cord (1)	206 2063 009	206 2063 009	206 2060 002 (Polarized)	206 2060 002 (Polarized)	206 2054 005	206 2025 005	206 2024 103
34	Masking Sheet (1)	513 1144 005	513 1144 005	513 9224 008	513 9224 008	—	—	—
* 36	Power Trans (1)	233 5960 004	233 5960 004	233 5980 000	233 5980 000	233 5973 004	233 5974 003	233 5974 003
40	Maru Knob Bass, Treb., Balance (3)	112 0646 000	112 0646 013	112 0646 000	112 0646 000	112 0646 000	112 0646 000	112 0646 000
41	Push Knob (KAKU) (4)	113 1493 103	113 1493 116	113 1493 103	113 1493 103	113 1493 103	113 1493 103	113 1493 103
42	Front Panel Ass'y (1)	144 2208 304	144 2208 317	144 2208 320	144 2208 304	144 2208 304	144 2208 304	144 2208 304
44	VR Knob Ass'y (1)	112 0569 145	112 0569 158	112 0569 145	112 0569 145	112 0569 145	112 0569 145	112 0569 145
45	Power Knob Ass'y (1)	113 1054 128	113 1054 131	113 1054 128	113 1054 128	113 1054 128	113 1054 128	113 1054 128
48	Top Cover (1)	102 0416 000	102 0416 013	102 0416 000	102 0416 000	102 0416 000	102 0416 000	102 0416 000
54	Fuji Knob (Rec out) (1)	112 0641 005	112 0641 018	112 0641 005	112 0641 005	112 0641 005	112 0641 005	112 0641 005
60	Fuse Label (1)	—	—	513 2011 043	513 2011 043	513 2011 027	—	—
61	Fuse Caution Label (1)	—	—	513 1673 013	513 1673 013	—	—	—
* 62	Fuse (F-503) (1)	—	—	—	—	206 1061 015 2.5A/250V	—	—
63	Fuse Label (1)	—	—	—	—	513 2011 030	—	—
* 64	Voltage Sel. Switch (1)	—	—	—	—	212 9555 007	—	—
65	Preset Label (1)	—	—	—	—	515 8030 008	—	—
66	—	—	—	—	—	—	—	—
67	—	—	—	—	—	—	—	—
68	—	—	—	—	—	—	—	—

SCREWS								
72	Tapping Screw (s)3x8 Black (20)	473 7015 018	473 7015 018	473 7015 018	473 7015 018	473 7015 018	473 7015 018	473 7015 018
74	Fixing Screw (10)	477 0064 107	477 0064 107	477 0064 107	477 0064 107	477 0064 107	477 0064 107	477 0064 107
78	3P Swelling Screw (4)	477 0263 005	477 0263 018	477 0263 005	477 0263 005	477 0263 005	477 0263 005	477 0263 005

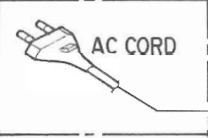
PACKING & ACCESSORIES								
115	Color Label (Gold) (2)	—	513 9111 001	—	—	—	—	—
116	DAI Warranty (1)	—	—	515 0418 505	—	—	—	—
117	DCI Warranty Form (1)	—	—	—	515 0569 001	—	—	—
118	CSA Label DCI (1)	—	—	—	LL-64064	—	—	—
121	—	—	—	—	—	—	—	—
122	—	—	—	—	—	—	—	—

WIRING DIAGRAM

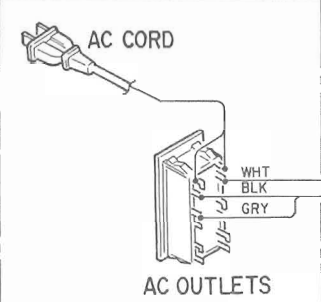
1 2 3 4 5 6 7 8

A

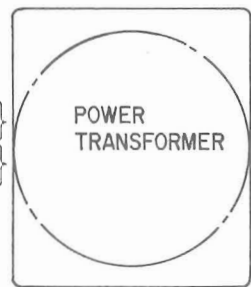
Europe, Australia & U.K. models



U.S.A & Canada models

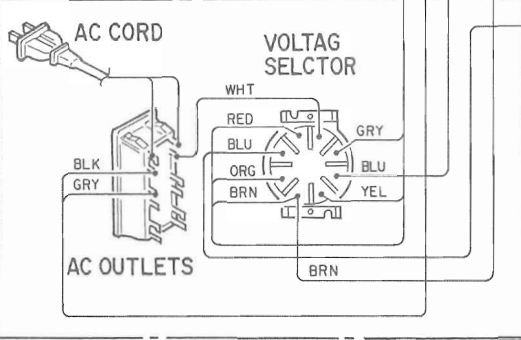


Europe, Australia & U.K. models



Multi-Voltage model
U.S.A & Canada models

Multi-Voltage model



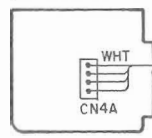
C

D

E

Version	Unit No.	
	Main	Control
Black for Europe	1U-2445A	1U-2446A
Gold for Europe	1U-2445B	1U-2446A
Black for U.S.A.	1U-2445E	1U-2446C
Black for Canada	1U-2445E	1U-2446C
Black for Australia	1U-2445C	1U-2446C
Black for Multi Voltage	1U-2445D	1U-2446C
Black for U.K.	1U-2445C	1U-2446C

IU-2446-6



IU-2445-2

IU-2446-2

IU-2445-4

IU-2445-3

IU-2446-4

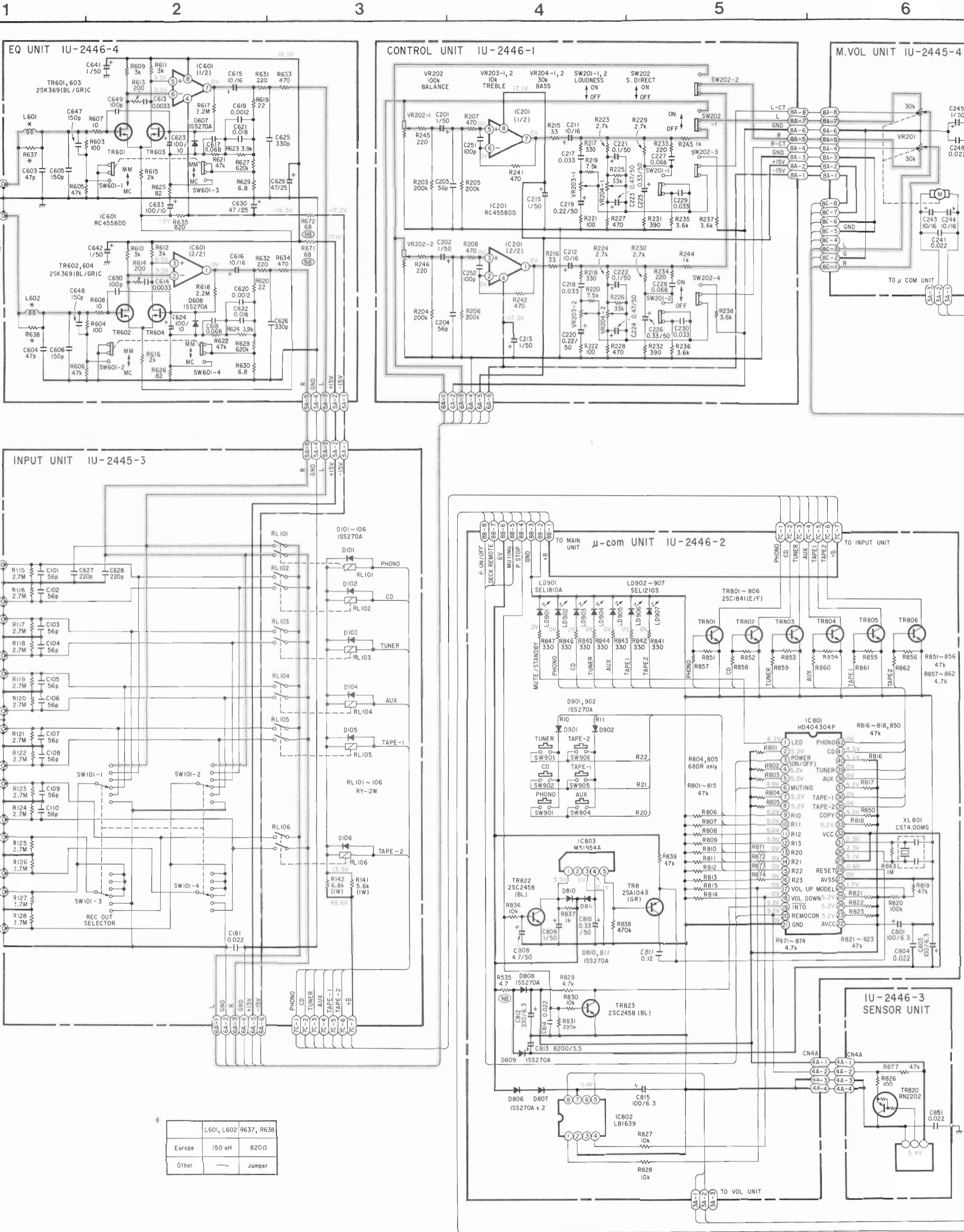
IU-2445-5

IU-2445-6

IU-2445-1

IU-2446-1

SCHEMATIC DIAGRAM



*:

L601, L602	R637, R638
Europe	150 uH 820Ω
Other	— Jumper

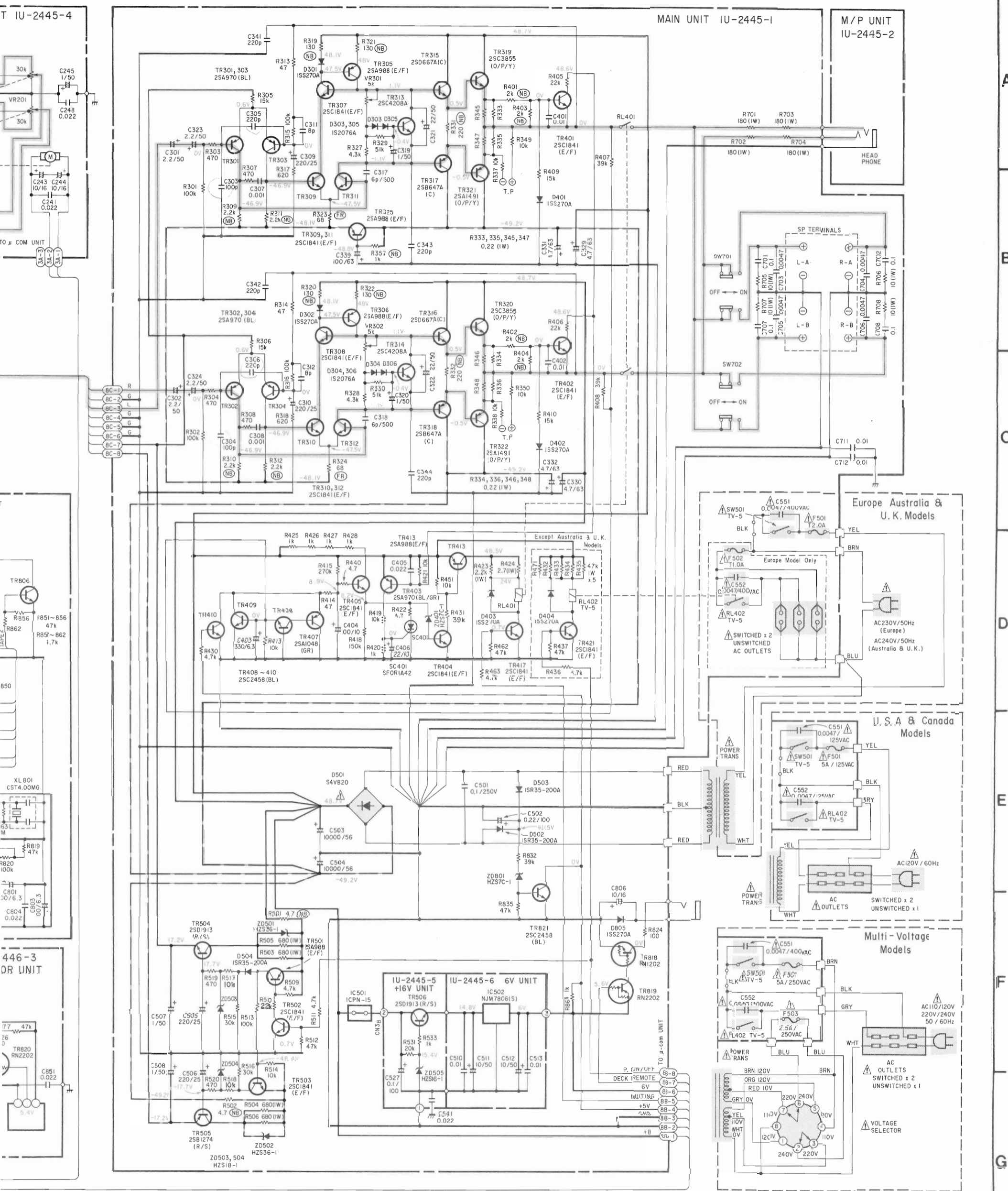
NOTES
 ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
 Parts marked with this symbol 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 test the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to ground is defective.

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

NOTES:
 Circuit and parts are subject to change without prior notice.



NOTE:
 — +B LINE
 - - - -B LINE
 ···· SIGNAL LINE

acteristics
 acturer.

take either (1) a leakage current check or (2) a line to chassis resistance check. If
 nce from chassis to either side of the power cord is less than 240 kohms, the unit is

s located and corrected.

A
 B
 C
 D
 E
 F
 G
 H