AX-R97BK
AX-R97XBK

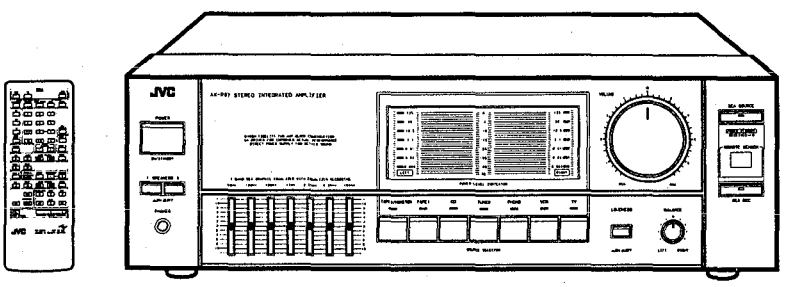
JVC

# SERVICE MANUAL

## STEREO INTEGRATED AMPLIFIER

# AX-R97BK (For the U.S.A.)

# MODEL No. AX-R97XBK (For Canada)



**Note:** The exteriors of AX-R97BK and AX-R97XBK are different in color. Everything else is identical.

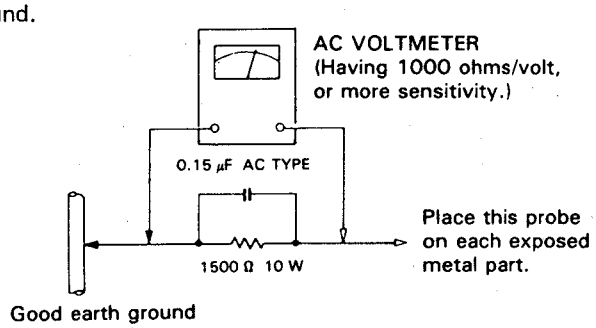
## Contents




**No. 20079**
Jan. 1989

# Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by ( ⚠ ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5 mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).




# Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

# Specifications

Output power : **125 watts per channel, min. RMS, both channels driven into 8 ohms from 20 Hz to 20 kHz, with no more than 0.03% total harmonic distortion.**

*125 watts per channel, min. RMS, both channels driven, into 8 ohms at 1 kHz with no more than 0.004% total harmonic distortion.*

Total harmonic distortion : 0.004% at 125 watts (1 kHz, 8 ohms)

Power band width : 5 Hz — 80 kHz ('66 IHF 0.2%, 8 ohms, both channels driven)

Frequency response : 5 Hz — 60 kHz, +0, -3 dB (8 ohms)

Input terminals

Input sensitivity/ impedance (1 kHz)

PHONO : 2.5 mV/47 kohms

TUNER, CD, : 200 mV/30 kohms

TAPE 1,VCR,TV,

TAPE 2/MONITOR : 200 mV/47 kohms

Signal-to-noise ratio

PHONO : 75 dB ('66 IHF)
78 dB ('78 IHF, Rec Out)

TUNER, CD, : 103 dB ('66 IHF)

TAPE 1, VCR, TV, 77 dB ('78 IHF, Speaker Out)

TAPE 2/MONITOR

S.E.A. graphic equalizer

Center frequencies : 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz, 16 kHz

Control range : +10 dB±1 dB, -10 dB±1 dB

Loudness controls (Volume control at -30 dB position) : +5 dB (at 100 Hz)
+4 dB (at 10 kHz)

PHONO RIAA deviation : ±0.4 dB (20 Hz — 20 kHz)

**GENERAL**

Power source : See below

Dimensions and weight :

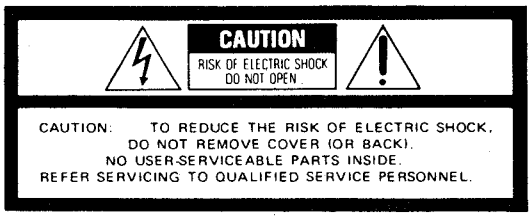
| Dimensions (cm) | | | Weight (kg/lbs) |
|---|---|---|---|
| Width | Height | Depth | |
| 43.5 (17-3/16") | 13.7 (5-7/16") | 34.2 (13-1/2") | 8.8/19.4 |

Design and specifications subject to change without notice.

**POWER SPECIFICATIONS**

| Areas | Line Voltage & Frequency | Power Consumption |
|---|---|---|
| U.S.A. | AC 120 V ∿, 60 Hz | 390 watts |

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




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.

**INFORMATION (For U.S.A.)**

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna;
Relocate this equipment with respect to the receiver;
Move this equipment away from the receiver;
Plug this equipment into a different outlet so that this equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No.004-000-00345-4.

**COMPU LINK**
**Remote**
**Control System**

COMPU LINK is a computer-linked system by which individual JVC audio and/or video components are controlled via a computer. For further details, see page 15.

## CAUTION

To reduce the risk of electrical shocks, fire, etc.:
1. Do not remove screws, covers or cabinet.
2. Do not expose this appliance to rain or moisture.

Thank you for purchasing this JVC product.
Before you begin operating this unit, please read the instructions carefully to be sure you get the best possible performance.
If you have any question, consult your JVC dealer.

## CONTENTS



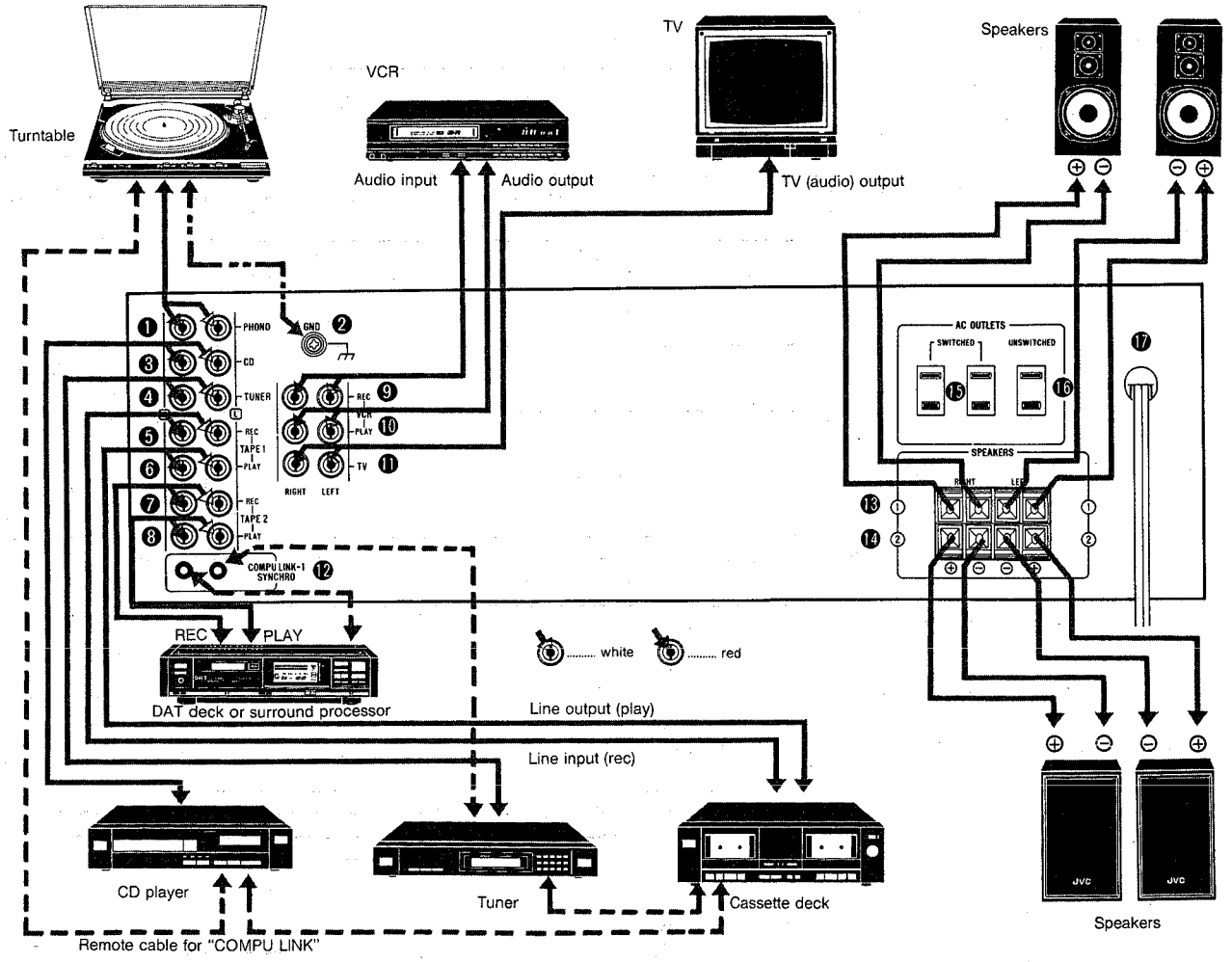
## IMPORTANT

**1. Installation**
- Select a place which in level, dry and neither too hot nor too cold (between -5°C and 40°C/23°F and 104°F).
- Pay attention to good ventilation; placing things on the cabinet or using the amplifier in a narrow and poorly ventilated place may result in the temperature rising and possible trouble.
- Leave sufficient distance between the amplifier and your TV to prevent interference.

**2. Power**
- Do not handle the power cord with wet hands!
- When unplugging from the wall outlet, always grip the plug, not the power cord itself.

**3. Malfunctions, etc.**
- Do not insert any metallic object inside the amplifier.

# CONNECTION DIAGRAM




❶ PHONO terminals
❷ GND terminal
If your turntable has a ground lead, connect it to the GND terminal.
❸ CD terminals
❹ TUNER terminals
❺ TAPE 1 REC terminals
❻ TAPE 1 PLAY terminals
❼ TAPE 2 REC terminals
❽ TAPE 2 PLAY terminals
❾ VCR REC terminals
❿ VCR PLAY terminals
⓫ TV terminals

**Notes:**

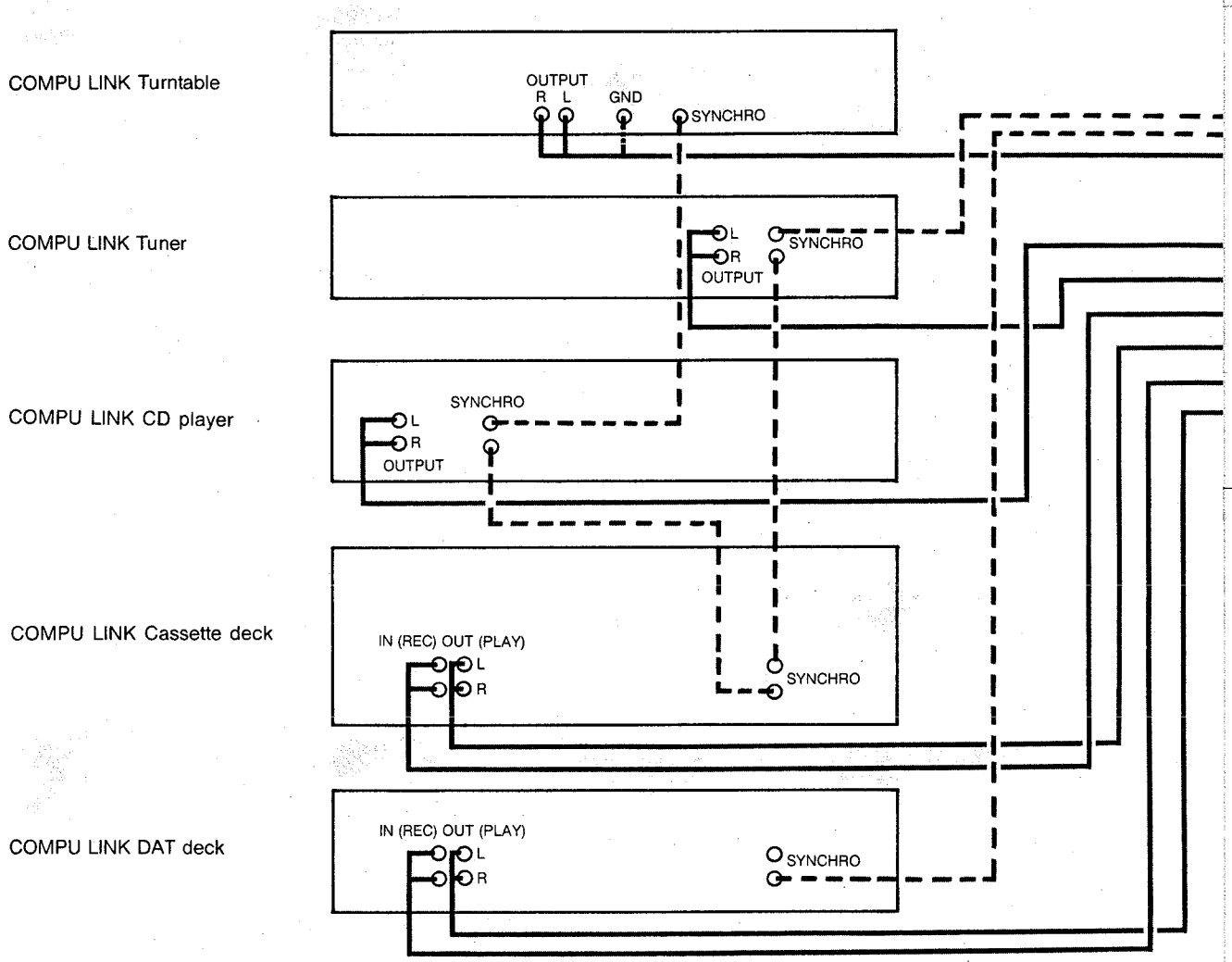
- **These TV terminals can also be used to receive audio signals from audio equipment.**
- **The VCR terminals can also be used as TAPE terminals for an extra tape deck.**

⓬ COMPU LINK-1/SYNCHRO terminals
Connect to units provided with a COMPU LINK-1/SYNCHRO terminal to let the COMPU LINK control system function.
⓭ SPEAKERS 1 terminals
⓮ SPEAKERS 2 terminals
⓯ SWITCHED AC OUTLETS
⓰ UNSWITCHED AC OUTLET
⓱ Power cord

**Notes:**

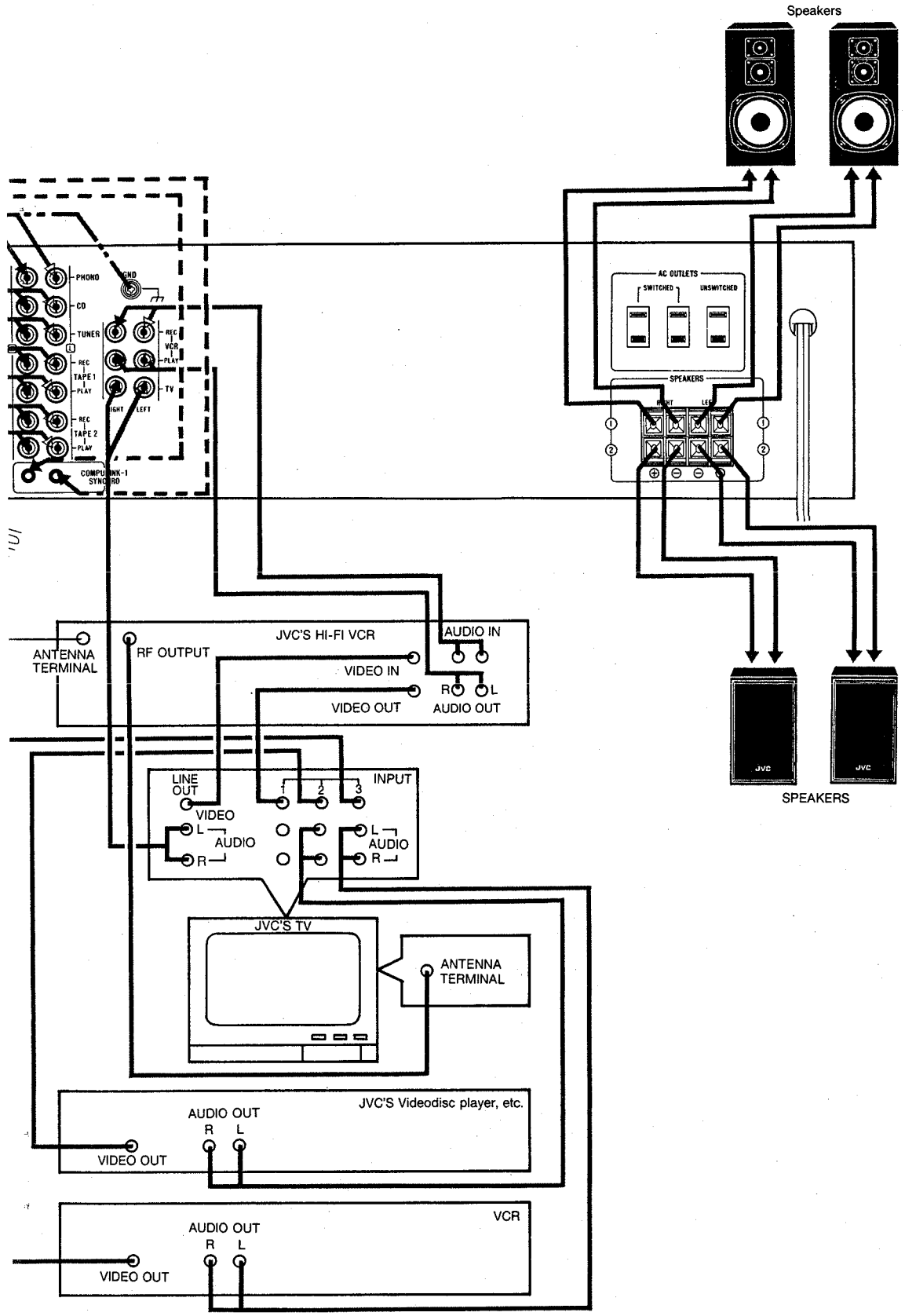
1. **Switch the power off when connecting any component.**
2. **When connecting components, make the correct left and right channel connections. Reversed channels may degrade the stereo effect.**
3. **Connect speakers with correct polarity: (+) to (+) and (-) to (-). Reversed polarity will degrade the stereo effect.**
4. **Connect plugs or wires firmly. Poor contact may result in hum.**
5. **Use speakers with the correct impedance within the value indicated on the rear panel.**
6. **The SWITCHED AC outlets are switched off when the front panel power button is set to STAND BY. Do not connect the power plugs of components which have a total power consumption exceeding the value indicated on the rear panel.**
7. **The UNSWITCHED AC outlet is not switched off when the front panel power button is set to STAND BY. Do not connect the power plugs of components which have a total power consumption exceeding the value indicated on the rear panel.**
8. **Keep the connection cords as far as possible from a TV.**

# CONNECTION EXAMPLE

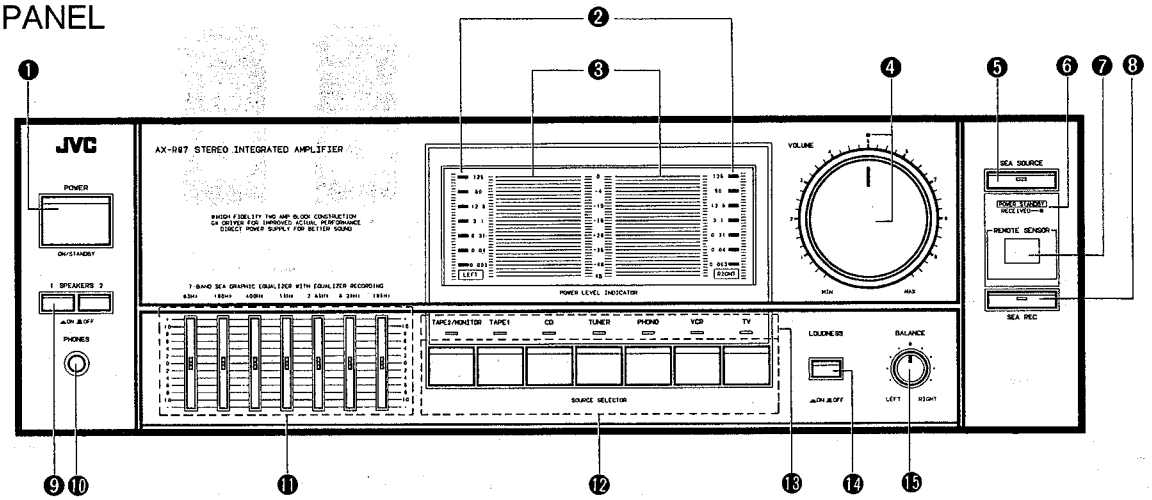



**NOTES FOR AV SYSTEM: WHEN USING WITH AN AV SYSTEM**

1. Since the mutual interference between video and audio equipment causes noise or disordered vision, please be sure to use a coaxial cable for the TV/video antenna.
   Also, keep by all means audio/video connections apart from the TV set.
2. Where the input to the TV is VIDEO 1 which is connected to the VCR, a black-and-white stripe pattern will appear on the TV screen when the VCR is switched to FF, REW or STOP.
   The video noise will sometimes affect the system's audio system as audio noise. When switching to another source, switch the TV input to a source other than VIDEO 1.


Speakers
PHONO
GND
CD
TUNER
REC
TAPE 1
PLAY
REC
TAPE 2
PLAY
REC
VCR
PLAY
TV
RIGHT
LEFT
COMPU LINK-1
SYNCHRO
AC OUTLETS
SWITCHED
UNSWITCHED
SPEAKERS
RIGHT
LEFT
ANTENNA TERMINAL
RF OUTPUT
JVC'S HI-FI VCR
AUDIO IN
VIDEO IN
VIDEO OUT
R
L
AUDIO OUT
SPEAKERS
LINE OUT
INPUT
1
2
3
VIDEO
L
AUDIO
R
JVC'S TV
ANTENNA TERMINAL
JVC'S Videodisc player, etc.
AUDIO OUT
R
L
VIDEO OUT
VCR
AUDIO OUT
R
L
VIDEO OUT

## FRONT PANEL




**❶ POWER**

**ON:** Press to turn the power on. To turn the power off, press it again.

**STAND BY:** When all of the indicators (other than the STAND BY) are turned off, the memory circuit operates and the preset stations and the source selectors are not subject to cancellation or accidental alteration as long as the power cord is plugged into an AC outlet. This situation is called the STAND BY mode. The preset data and the source select data are maintained even in the case of a power failure or when the power cord is disconnected, provided loss of power does not exceed a couple of days.

**Note:**

- **Even when the POWER button is set to STAND BY, this receiver consumes a small amount of electricity (5 watts), To shut the power off completely, disconnect the power cord.**

**❷ POWER LEVEL INDICATOR**

This indicator lights according to the output.

**❸ Power indicator**

When the power button is pressed the indicator will light.

**❹ VOLUME and indicator**

Controls the volume of the speakers and headphones, and this indicator lights when the POWER button has pressed to on.

**❺ SEA SOURCE and indicator**

Press this button to listen to the S.E.A.-compensated sound, and this indicator lights when the SEA SOURCE button has pressed to on.

**❻ POWER STAND BY/RECEIVED indicator**

Connecting the power plug to the AC wall outlet causes this indicator to light, indicating that the unit has been placed in the stand-by mode. The light of this indicator will go out when the power button is turned on. And this indicator will go on while infrared signals are being received from the remote control unit.

**❼ REMOTE SENSOR**

This sensor receives infrared signals from the remote control unit.

**❽ SEA REC and indicator**

Press this button to record S.E.A.-compensated signals, and this indicator lights when the SEA REC button has pressed to on.

**Note:**

- **S.E.A. recording is possible when the TAPE 1 or VCR terminals are used but is not possible when the TAPE 2 terminals are used.**

**❾ SPEAKERS**

**SPEAKERS 1:** Press to switch the speakers connected to the SPEAKERS 1 terminals on or off.

**SPEAKERS 2:** Press to switch the speakers connected to the SPEAKERS 2 terminals on or off.

**Note:**

- **When speakers are connected to only one of the SPEAKERS terminals, press only the SPEAKERS button of the system connected; if both buttons are pressed, sound will not be heard from either speaker system. When two pairs of speakers are connected and either or both SPEAKERS buttons are pressed, sound will be heard from either or both speaker system(s).**

**❿ PHONES (Headphone Jack)**

Plug stereo headphones into this jack for private listening and record monitoring. If you want to listen to sound from the headphones only, press the SPEAKERS buttons to OFF.

**⓫ SEA controls**

The built-in graphic equalizer divides the audio spectrum into seven frequency bands with center frequencies from 63 Hz to 16 kHz at intervals of 4/3 octave.

When the S.E.A. level is set to "0" (center position), frequency response is flat. The response can be varied by ±10 dB by raising or lowering the knob.

**63 Hz:** Raise to emphasize the low bass response of organs, drums, etc. It produces stable and solid sound with emphasis and eliminates the unclear sound response of low frequencies with de-emphasis.

**160 Hz:** Emphasize to obtain a more expanded low sound. De-emphasize to eliminate unclear sound caused by large or nearly empty listening rooms.

**400 Hz:** This frequency range is the base on which music is constructed. Emphasize to put a punch to your music.

**1 kHz:** Most effective in emphasizing or de-emphasizing the human voice. Emphasize to cause the vocalist to be brought to the foreground, or de-emphasize to cause it to recede into the background.
**2.5 kHz:** This frequency stimulates the human ear. If the music sounds hard or metallic, de-emphasize.
**6.3 kHz:** Boost to add clarity to winds and strings. This frequency band varies the tonal expression, influencing the subtleties of the music.
**16 kHz:** Boosting this frequency range properly adds to the delicacy of highs, with cymbals and triangles resounding in a more ear-pleasing manner, and provides a feeling of extension. This frequency band can also be used to compensate for cartridge response since most moving-magnet cartridges have their resonance peaks in the frequency range from 10 kHz to 20 kHz.

**⑫ SOURCE SELECTOR**
**TAPE 2/MONITOR:** Press to listen to a cassette deck connected to the TAPE 2 terminals. Press again, and this button will release this function so that the source selected by another source select button may be heard.

**Note:**
- **Press this button to monitor the recorded sound (listening to the sound just recorded) when using a three-head tape deck.**

**TAPE 1:** Press to listen to a cassette deck connected to TAPE 1 terminals.
**CD:** Press this button to listen to a compact disc player connected to the CD terminals.
**TUNER:** Press this button to listen to a radio broadcast.
**PHONO:** Press to listen to a turntable connected to the PHONO terminals.
**VCR:** Press this button to listen to the sound of the VCR connected to the VCR terminals.
**TV:** Press this button to listen to the sound from the TV connected to the TV terminals.

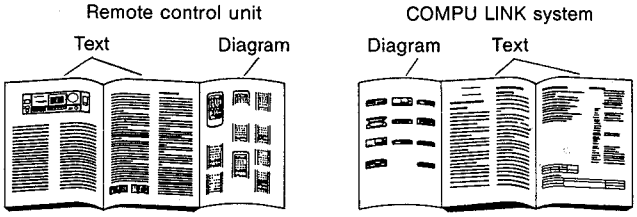
**⑬ SOURCE indicator**
The indicator light corresponding to the source selector button pressed.

**⑭ LOUDNESS**
Press this button to compensate for the ear's lower sensitivity at low listening levels.

**⑮ BALANCE**
Use to adjust the balance between the left and right speakers. Normally set this control to the center click position.

**How to use the instruction book**
When reading the descriptions of items such as the remote control unit, COMPU LINK system, use the instruction book with the corresponding illustration page folded open. (See the figure below.)






# REMOTE CONTROL UNIT (RM-SA97U)

**❶ POWER**
**AUDIO:** Press this button to switch the AX-R97BK's power on or off.
**TV:** For use with the TV. Press this button to switch the TV's power on or off.
**VCR:** For use with the VCR. Press this button to switch the power on or off.

**Note:**
- **Provided one of JVC-specified VCRs or TVs are used, they can be remote-controlled.**
- **Before operating the television or VCR by remote control, be sure to carefully read the television or VCR instruction manual.**

**❷ PLAY MODE**
Press this button for changeover to CD AUTO CHANGER.
**CONTINUE:** press this button to listen to the compact discs loaded in the CD magazine in the loaded (numerical) order regardless of the setting for programmed playback.
**PRGM:** Press this button to listen to the compact discs in programmed order.
**MAG.PRGM:** Press this button to listen to the compact discs in the order of the program previously stored for each magazine.

**❸ CD CHANGER**
These buttons are for use in specifying a disc or track by its number. When so specifying the No. of a particular disc or track, the 10 KEY buttons ❻ must be switched over to serve the changer in advance.
**DISC:** To specify a disc No., press this "DISC" button first and press 10 KEY buttons ❻ ( 1 ~ 7/P ) corresponding to the No. ❻ 7/P button is for use in specifying the disc in PLUS ONE TRAY when the CD changer has that.
**TRACK:** To specify a track No., press this "TRACK" button first and press 10 KEY buttons ❻ ( 1 ~ 10, +10, 0 ) corresponding to the No.

**Notes:**
- **For the proper method of using 10 KEY buttons, see page 7.**
- **To play a compact disc, press ▶ buton ⑩ .**
- **For details on the CD auto changer, consult its instruction book.**

**❹ SOURCE CONTROL**
**FM:** Press this button to listen to an FM broadcast.
**AM:** Press this button to listen to an AM broadcast.
**TV:** Press this button to listen to the TV connected to the TV terminals.
**VCR/VIDEO 1:** Press to listen to the VCR connected to the VCR terminals and select the external input "VIDEO 1" on the TV set at the same time.

**Notes:**
- **Where the input to the TV is VIDEO 1 which is connected to the VCR, a black-and-white stripe pattern will appear on the TV screen when the VCR is switched to FF, REW or STOP. The video noise will sometimes affect the system's audio system as audio noise. When switching to another source, switch the TV input to a source other than VIDEO 1.**
- **Consult instruction book of VCR, VIDEO and TV.**

**❺ SEA SOURCE**
Press this button to listen to the source with S.E.A. compensation.

**❻ 10 KEY ( [1] ~ [10] , [0] , [+10] )**
These buttons are for directly accessing the FM/AM preset stations, or various TV channels, also for selecting the CD track No. or the CD changer disc No. and also the 10 KEY operation for selecting the DAT's piece No.
**TV or VCR:** When the TV (VCR/VIDEO 1) button has been pressed, these button can be used to select TV channels (TV channels of VCR).
**TUNER, CD or DAT:** When the 10 KEY button has been pressed, use this button to assign the CH numbers or track numbers (1 — 10) for a disc which is to be played or programmed. To assign a track number over 10, use a combination of the [+10] button and numeric button.
(Examples)
5: Press numeric button [5] .
10: Press numeric button [10] .
17: Press the [+10] button once and numeric button [7/P].
20: Press the [+10] button once and numeric button [10]. (Possible to press [+10], [+10] and [0] buttons when the component of tuner has [0] button in addition to [+10] button.)
25: Press the [+10] button twice and numeric button [5].

**Notes:**
- **In the case of some TUNER, CD players or DAT decks, only the 10 KEY may be used to set track numbers. When entering single-digit numbers, press the number, such as [3] and wait for 3 seconds. For double-digit numbers, such as "13", press [1], then [3].**
- **For details, consult instruction book of TUNER, TV, VCR, CD player and DAT deck.**

**❼ VIDEO 2/VIDEO 3**
These buttons correspond to the external INPUT terminals on the TV set labeled VIDEO 2 or VIDEO 3.
To watch the video equipment connected to these two pairs of terminals, press one of these two buttons so that the input signal from the TV terminals can be selected easily.

**❽ PRESET CHANNEL**
**FM/AM/TV/VCR:** When the FM, AM, TV, or VCR/VIDEO 1 button has been pressed, a preset station or TV channel can be selected by using these buttons to sequentially scan the available stations or channels in either direction.

**❾ PHONO**
**PHONO ( [ ] ):** Press this button sets the source selector.

**❿ CD**
**CD ( [▶] ):** Press this button to start playing a compact disc.
**STOP ( [■] ):** Press this button to stop playing a compact disc.
**AUTO SEARCH ( [|◀◀], [▶▶|] )**
**( [|◀◀] ):** Press this button to move the pickup to the beginning of the current tune while it is being played. Then, each time this button is pressed, the pickup will skip to the beginning of the previous tune. Keeping this button pressed causes the pickup to skip back continuously.
**( [▶▶|] ):** Press this button to move the pickup to the beginning of the next tune. After this, each time this button is pressed, the pickup moves forward by one tune. Keeping the button pressed causes the pickup to skip forward continuously.
**10 KEY ( [ ] ):** Press this button to use the numeric buttons ❻ for selecting the CD track.

**⓫ TAPE 1**
**TAPE 1 ( [▶] ):** Press this button to start playing a tape in the cassette deck.
**STOP ( [■] ):** Press this button to stop playing the cassette deck.

**⓬ TAPE 2**
Press this button to listen to the source connected to the TAPE 2 terminals and press it again to disengage.

**⓭ DAT**
**DAT ( [▶] ):** Press this button to start a digital audio tape.
**STOP ( [■] ):** Press this button to stop a digital audio tape.
**AUTO SEARCH ( [|◀◀], [▶▶|] )**
**( [|◀◀] ):** Press this button to select the beginning of the previous tune.
**( [▶▶|] ):** Press this button to select the beginning of the forward tune.

**Note:**
- **[|◀◀], [▶▶|] and [|◀], [▶|] have the same function.**

10 KEY ( [ ] ): Press this button to use the numeric buttons ❻ for selecting the DAT music No.

**⓮ EXTERNAL SURROUND CONTROL**
In the case of SURROUND processor (optional) corresponding COMPU LINK of JVC, possible to control the following functions. Connect surround processor (optional) to TAPE 2 terminal.
**MODE:** Press this button to change the surround mode sequentially in order to select your optimum surround effect.
**SURROUND VOLUME [+] [–]:** This button is for use in adjusting the output levels of the front and surround speakers in order to enhance the surround effect.
For detail, consult the instruction book for the surround processor.

**Note:**
- **Consult your nearest JVC dealer for the controllable surround processor by this button.**

**⓯ CONTROL**
**Only for use with COMPU LINK components**
[VCR] : Press this button to operate the VCR connected to the VCR terminals.
[TAPE] : Press this button to operate the cassette deck connected to TAPE 1 terminals.
[DAT] : Press this button to operate the DAT deck connected to TAPE 2 terminals.

**Notes:**
- **Press the TAPE 2 button to listen to a DAT.**
- **How to control JVC COMPU LINK**
  1. **Possible to control only PLAY and STOP in the case of soft logic deck.**
  2. **Possible to control all in the case of full logic deck.**

⑯ **TAPE/VCR/DAT CONTROL (** TAPE or VCR or DAT **)**
**PAUSE/STILL (** II **):** Press this button to pause during playback or recording. To release this function, press the PLAY button.
**STOP (** ■ **):** Press this button to stop operation.
**REC (** ○ **):** Press the PLAY ( ▶ ) button while pressing this button for recording.
( ◀◀ ): For the cassette deck or DAT deck: Press this button to quickly wind the tape from the right to left reel. For the VCR: Press this button to take the VCR from the stop mode to the rewind mode. During playback, press this button for high-speed playback in the reverse direction (Shuttle search).
**PLAY (** ▶ **):** Press this button to play a tape.
( ▶▶ ): For the cassette deck or DAT deck: Press this button to quickly wind the tape from the left to right reel. For the VCR: Press this button to take the VCR from the stop mode to the fast forward mode. During playback, press this button for high-speed playback in the forward direction (Shuttle search).

⑰ **FADE MUTING (** **)**
Press this button to lower the volume in steps. The volume in further decreased each time this button is pressed.

⑱ **VOLUME (** − + **)**
Press the + button to increase the volume and the − button to decrease it. When these buttons are operated, the VOLUME knob of the amplifier rotates to register the new volume level and the indicator blinks.

### How to install the batteries

**Batteries**

- **How to install the batteries**

1. Slide the cover of the battery case in the direction of the arrow to remove it.
2. Install the provided batteries ("AA": UM-3, R6, 1.5 V), with their polarities properly placed.
3. Re-install the cover of the battery case.

- **Battery life**

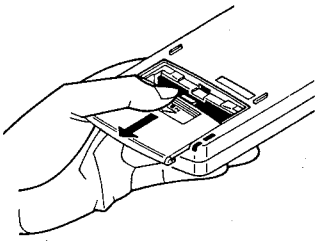
The batteries can be used for an average of 1 year.

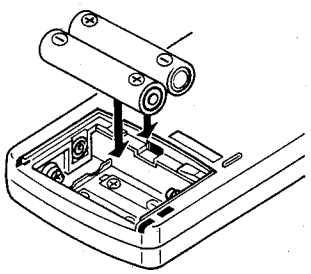
- **Battery replacement time**

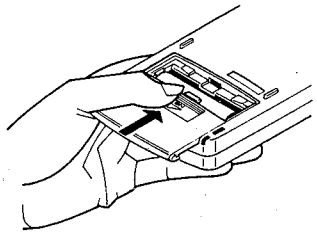
When the distance at which the remote control unit functions begins to decrease, replace both batteries ("AA": UM-3, R6, 1.5 V).

- **How to operate the remote control unit**

When the remote control unit is directly in line with the remote sensor of this unit, the remote control unit may be used from as far away as seven meters. But, when it is being used from a position one side or the other, this distance will be shortened.







## OPERATION

**Before use**
Connect each component correctly, then plug the power cord to an AC wall outlet.

**Basic operation**
1. Press the POWER button to on.
2. Select the speaker system with the SPEAKERS buttons.
3. Proceed through the steps described below according to your purpose.
4. Adjust the volume and balance you require.
5. Use the SEA buttons to obtain the tone you wish to hear.

**Listening to broadcasts**
1. Press the TUNER button so that the TUNER indicator lights.
2. Operate the tuner as described in its operation manual.

**Listening to records**
1. Press the PHONO button so that the PHONO indicator lights.
2. Operate the turntable as described in its operation manual.

**Notes:**
- **Use a turntable with an MM cartridge.**
- **If your turntable has a separate ground lead, connect it to the GND terminal.**

**Listening to compact discs**

1. Press the CD button so that the CD indicator lights.
2. Operate the CD player as described in its operation manual.

**Listening to tapes**

1. Press the TAPE 1 or TAPE 2/MONITOR button so that the TAPE 1 or TAPE 2/MONITOR indicator lights.
2. Operate the cassette deck for playback as described in its operation manual.

**Watching and listening to TV**

1. Press the TV button so that the TV indicator lights.
2. Operate the TV as described in its operation manual.

**Watching and listening to a VCR**

1. Press the VCR button.
2. Operate the VCR for playback as described in its operation manual.

**Recording tapes**

**— Recording from records —**

1. Press the PHONO button so that the PHONO indicator lights.
2. Operate the turntable.
3. Operate the cassette deck for recording.

**Note:**

- **The sound you hear from the speakers or headphones is the source sound, not the recording on the tape.**

**— Recording from other sources (CD, TUNER, VCR, TV) —**

Press the button corresponding to the source to be recorded. All other operations are identical to those when recording from records.

*For S.E.A. recording using the SEA REC button, refer to page 12.

**Tape dubbing**

To dub tapes, connect two tape decks. One for playback and the other for recording. You can dub from the tape deck (connected to the TAPE 2 terminals) onto the tape deck (connected to the TAPE 1 REC terminals) and vice versa.

**— Dubbing from Tape 1 to Tape 2 —**

1. Activate the TAPE 1 button and the TAPE 1 indicator lights.
2. Operate the tape deck (connected to the TAPE 1 PLAY terminals) for playback.
3. Operate the tape deck (connected to the TAPE 2 terminals) for recording.

**— Dubbing from Tape 2 to Tape 1 —**

1. Activate the TAPE 2/MONITOR button and the TAPE 2/MONITOR indicator lights.
2. Operate the tape deck (connected to the TAPE 2 terminals) for playback.
3. Operate the tape deck (connected to the TAPE 1 REC terminals) for recording.

**Notes:**

- **When dubbing from the tape deck (connected to TAPE 2 terminals) onto the other tape deck, select the SOURCE SELECTOR button other than "TAPE 1".**
- **While playing back a tape on the tape deck (connected to TAPE 2 terminals), you can not record another source onto the component (connected to TAPE 1 REC terminals).**
- **When recording or dubbing tapes, the source sound will be heard from the speakers or headphones. (Not the sound being recorded on the tape.)**
- **The S.E.A. recording is not applicable to the tape deck (connected to the TAPE 2 terminals).**

**How to operate the monitor while recording on the tape deck**

1. Connect the 3-head tape deck to the TAPE 2 terminals.
2. Make sure to connect the signal cords to the PLAY and REC terminals, and remove the remote cable connected to the tape deck.
3. Select a source from which you want to record by depressing the SOURCE selector button on this unit.
4. Operate the tape deck for recording as described in its operation manual.
5. By playing the source component, you can record on the tape deck.
6. While recording on the tape deck, the recorded sound can be heard by depressing the TAPE 2/MONITOR button on this unit or that of the remote control unit.

**Using stereo headphones**

Stereo headphones can be plugged into the front panel jack.
The signal from this jack is independent of the speakers.

1. Plug stereo headphones into this jack for private listening.
2. To listen through headphones while listening to the speakers, press the appropriate SPEAKERS button to ON( ▬ ).

## HOW TO USE THE REMOTE CONTROL UNIT (RM-SA97U)

- The "COMPU LINK" component system is composed of the following: tuner, CD player, cassette deck, record player and DAT deck, all using COMPU LINK 1/SYNCHRO terminals for connection.
- Each "COMPU LINK" component can be put in operation by merely operating the button on the remote control unit: it is not necessary to press the source selector button on the amplifier.
- Example: A component is playing when you set the target component in playback by pressing the PLAY button (of the remote control unit): as you press the PLAY button, the other component will automatically stop playing.

**Notes:**

- **When the DAT deck is playing, it will not stop playing even if other components are started. And vice versa, if a component other than the DAT deck is playing and the DAT is then started the component that was playing will not stop.**
- **If the component already in playback happens to be device not covered by "COMPU LINK", it will keep on playing back in the above case. To stop that non-COMPU LINK device (which may be a VCR, video deck, TV or sound processor), press its STOP button.**
- The remote control unit works best when it is held level and aimed straight at the remote sensor of the amplifier.
  If the signal emitted by the control unit is received by two or more components. The recipients may hesitate to start up. In this case, keep pressing the button until all of the target components start. If the target components are wide apart, they may not be able to receive the emitted signal simultaneously, so that some of them may remain still. In such case, re-aim the control unit to the remote sensor of each still component and press the button.
- The remote control unit has no memory capability. Thus, programming by using memory, if desired, must be effected at the component, which may be a tuner, CD player or DAT player.

**Turning ON and OFF of power supply (Fig. 6)**

❶ POWER [AUDIO]: Press this button to turn ON the amplifier, and press it again to turn it OFF.

❶ POWER [VCR]: Pres this button to turn ON the VCR, and press it again to turn it OFF.

❶ POWER [TV]: Press this button to turn ON the TV, and press it again to turn it OFF.

**To listen to radio broadcast, FM or AM (Fig. 7)**

1. ❹ [FM] or [AM]: Pressing this button (FM or AM) sets these buttons in FM or AM mode, 10 KEY: [1] ~ [10], [+10], [0].

   **Note:**

   - **The amplifier source selector automatically switches over to "TUNER" and the tuner will indicate "FM" or "AM".**

2. ❻ [1] ~ [10], [+10], [0]: Of the preset channels, programmed in the tuner, check the number of the channel of your choice, and press the button corresponding to that channel number. Examples:
   Channels 1 ~ 10:
   For Channel 5, press numeric button [5].
   For Channel 10, press numeric button [10].
   Channel 17: Press [+10] button once and then numeric button [7/P].
   Channel 20: Press [+10] button once and then numeric button [10].
   Channel 25: Press [+10] button twice and then numeric button [5].
3. ❽ PRESET CHANNEL [−] [+]: These buttons are for incrementing or decrementing the number. That is, selecting the next channel above or below the currently selected channel.

**To listen to TV broadcast (Fig. 8)**

Turn power ON in each component involved.

1. ❹ [TV]: Pressing this button switches the source selector automatically to TV. (TARGET → AMPLIFIER)
   ❹ [TV]: VCR goes into TV mode by pressing this button. (TARGET → VCR)
   ❹ [TV]: TV goes into TV mode by pressing this button. (TARGET → TV)

   **Notes:**

   - **For remote control or VCR and TV, refer to page 11.**
   - **These buttons automatically shift to TV mode: ❻ 10 KEY, ❽ PRESET CHANNEL [−] [+].**

2. ❻ [1] ~ [9], [0] (When you select VCR or TV on the remote control): Press the button for the desired TV channel. Depending on the VCR or TV used, it may be necessary to press the [0] button first to select a one-digit number. (See Ex.)

   **Note:**

   - **For details of operation, refer to the instruction book of the VCR or TV.**

   **< Examples >**

   4: Press [4]. Or, press [0] then [4].
   13: Press [1], then [3].

3. ❽ PRESET CHANNEL [−] [+]: For shifting the channel selection upward or downward. Each push of the button selects the channel immediately next to the current channel.

**To play phono (Fig. 9)**

❾ PHONO [ ]: Pressing the button switches the source selector to "PHONO".

**Note:**

- **When the turntable is connected by "COMPU LINK", it will start playing automatically at the time you press ❾ button.**

**To play cassette deck (Fig. 9)**

1. ⓫ TAPE 1 [▶]: Pressing the button switches the source selector to "TAPE 1", depending on the button you press, and playback starts.
2. ⓫ STOP [■]: Pressing this button stops the cassette deck.

**To play CD or DAT (Fig. 10)**

⓾ or ⓭ 10 KEY [ ]: To select a track by number on the CD or a program by the number on the DAT deck, press this button first and then press the ❻ 10 KEY [1] ~ [10], [+10], [0] buttons for the selected number.

1. ⓾ CD [▶] or ⓭ DAT [▶]: Pressing this button commences play back.

   **Note:**

   - **To listen to music with a DAT deck connected to TAPE 2 terminal, press ⓬ TAPE 2 button first and press ⓭ DAT [▶] button.**

2. ⓾ or ⓭ STOP [■]: Press this button to stop the performance.
3. AUTO SEARCH ( [⏮] ): Pressing this button interrupts the selection being played and returns to the start of that selection.
   AUTO SEARCH ( [⏭] ): Pressing this button interrupts the music and brings the CD or tape to the start of the next selection.

   **Note:**

   - **Press once to advance to the next selection. For fast forward, keep pressing this button.**

**CD AUTO CHANGER operation (Fig. 11)**

**❷ PLAY MODE**

[CONTINUE]: Pressing this button plays the discs in the magazine sequentially, starting with Disc 1, regardless of the program.

[PRGM]: Press this button to play the discs in programmed sequence.

[MAG. PRGM]: Set your magazine in place and press this button: the discs will be played back in the sequence programmed in the magazine.
Function of MAG. PRGM isn't operated in the case of some CD players then consult instruction book of CD auto changer.

**❸ CD CHANGER**

Pressing DISK or TRACK button assigns ❻ 10 KEY for use in CD changing.

[DISC] + ❻ **10 KEY**: Press this key to specify a disc by its number in the magazine. In the case, press ❸ DISC button before operating 10 key function.

[TRACK] + ❻ **10 KEY**: Press this key to specify a track by its number in the magazine. In the case, press ❸ TRACK button before operating 10 key function.

**Notes:**

- **To understand 10 KEY operation, refer to page 7.**
- **For detail, consult the instruction book of the CD auto changer.**

**SURROUND CONTROL (Fig. 11)**

This control is for the surround processor (optional) connected to TAPE 2 terminal. For surround control, press ⓬ TAPE 2 [ ] button first and then the following:

⓮ [MODE]: Press this button to shift the surround processor's selector from its current mode to another.

⓮ **SURROUND VOLUME** [−] [+]: For raising or lowering the output levels of the front and surround speakers, in order to enhance the surround effect. Pressing [−] button lowers and pressing [+] button raises the volume.

**Note:**

- **For detail, consult the instruction book of the surround processor.**

**Control the COMPU LINK cassette deck and "DAT deck" without changing the "SOURCE SELECTOR" of the amplifier. See the Note**. (Fig. 12)**

1. ⓯ **CONTROL** [TAPE] **or** [DAT]: Pressing [TAPE] button or [DAT] button makes the control button ⓰ serve the cassette deck or the DAT deck, respectively.
2. ⓰ **PLAY** [▶]: Pressing this button starts the cassette or DAT deck for playback.
3. ⓰ **STOP** [■]: Pressing this button stops the cassette or DAT deck to interrupt the playback.
4. ⓰ **PAUSE/STILL** [II]: Pressing this button pauses the cassette or DAT deck in playback operation. When starting the playback press ⓰ **PLAY** [▶] button again.
5. ⓰ [◀◀]: Pressing this button sets the tape in rapid winding into the left cassette reel.
   ⓰ [▶▶]: Pressing this button sets the tape in rapid winding into the right cassette reel.
   ⓰ **REC** [○] + **PLAY** [▶]: Pressing [▶] button while keeping [○] button pressed commences recording.
   ⓰ **REC** [○] + **PAUSE/STILL** [II]: Pressing these buttons, [○] and [II], at the same time pauses the recording operation. Pressing ⓰ **PLAY** [▶] button resumes the recording operation that has been interrupted by pause.

**Notes:**

* **By operating the remote control unit, you can select the "TAPE 2" of the amplifier. But the cassette recorder (named "TAPE 2") will not start playing. To play the TAPE 2, press its PLAY button.**

** **To play the DAT deck, connect it to the TAPE 2 terminals of the amplifier. Press the ⓬ TAPE 2 [ ] button, ⓯ [DAT] and operate the button ⓰.**

**Note:**

- **In the case of cassette deck, some aren't activated.**

**Video cassette recorder playback (Fig. 13)**

1. ❹ **VCR/VIDEO 1** [ ]: Pressing this button switches the source selector over automatically to VCR.
2. ❹ **VCR/VIDEO 1** [ ] **(TARGET → TV):** This is for switching the TV's "INPUT SELECT" to VIDEO 1 or VCR.

   **Notes:**

   - **When the VCR is set to the fast forward, rewind or stop mode, selecting the VIDEO signals from the TV LINE OUT terminals (for VIDEO) may cause black and white stripes on TV screen.**
   - **Consult instruction book of the corresponding components.**
3. ⓰ **PLAY** [▶] **(TARGET → VCR):** Pressing this button sets the VCR in playback operation.

   **Notes:**

   - **In this case, the on-going play is not stopped. If you wish to stop, take the action required.**
   - **It takes a few seconds for a pictures to appear on TV screen.**
4. ⓰ **STOP** [■] **(TARGET → VCR):** For stopping VCR.
5. ❽ **PRESET CHANNEL** [−] — [+] **(TARGET → VCR):** For switching the VCR tuner's channel upward or downward.

**How to control the VCR without making any selection with the amplifier's source selector (Fig. 13)**

1. ⓯ **CONTROL** [VCR]: Pressing this button makes the control button ⓰ serve the VCR.
2. ⓰ **PLAY** [▶] **(TARGET → VCR):** Pressing this button starts the VCR in playback.

   **Notes:**

   - **In this case, the on-going play is not stopped. If you wish to stop it, take the action required.**
   - **When selecting the component connected to the "TAPE 2" terminals, press the TAPE 2 button.**
     **If a cassette deck is connected to these terminals, since tape playback cannot be started with the remote control button, press the PLAY button of the cassette deck.**
   - **When playing a DAT deck, connect it to the "TAPE 2" terminals, and connect the remote cable.**
     **To start, press the TAPE 2 button then press the DAT CONTROL button.**
   - **When connecting the cassette deck to the TAPE 2 terminal, do not connect the remote cable.**
3. ⓯ **STOP** [■] **(TARGET → VCR):** For stopping the VCR.
4. ⓰ **PAUSE/STILL** [II] **(TARGET → VCR):** Pressing this button while the VCR is in playback switches its mode to STILL.
   ⓰ **PLAY** [▶] **(TARGET → VCR):** Pressing this button resumes the recording operation that has been interrupted by pause.
5. ⓰ [◀◀] **(TARGET → VCR):** Press this button to rewind the tape.
   ⓰ [▶▶] **(TARGET → VCR):** Press this button to set the tape in rapid forward motion. When the tape is in the PLAY mode, these two buttons can be used for selecting the "SHUTTLE SEARCH".
   ⓰ **REC** [○] + **PLAY** [▶] **(TARGET → VCR):** To start, recording, press [▶] button while keeping [○] button pressed.
   ⓰ **REC** [○] + **PAUSE/STILL** [II] **(TARGET → VCR):** Pressing these buttons, [○] and [II], at the same time pauses the recording operation. (Recording can be resumed at anytime.)

**Switch the audio and video signals from the video equipment (connected to the TV set). (Fig. 13)**

❼ [VIDEO 2] **or** [VIDEO 3]: The "SOUND SELECT" of the Amplifier selects the "TV".

❼ [VIDEO 2] **or** [VIDEO 3] **(TARGET → TV):** The "INPUT SELECT" of the TV set selects the "VIDEO 2" or "VIDEO 3".

**Move volume up or down (Fig. 14)**

⓲ **VOLUME** [− ] [ +] : The sound volume is increased or decreased gradually.

**Mute the sound (Fig. 14)**

⓲ **FADE MUTING** [ ] : The volume is further decreased each time this button is pressed.

# OPERATION OF THE S.E.A. GRAPHIC EQUALIZER

**Compensation for room acoustics**

The frequency response of the listening area varies depending on the room's shape or furnishings, and the position of the listener in the room. Each listening position in the room provides the listener with a different set of frequency responses, as a result of different degrees of reverberation, reflection, echo, and absorption affecting each frequency.

The S.E.A. system can function to make the sound response of a room flat by emphasizing those frequencies having a high degree of absorption and de-emphasizing those frequencies having a high degree of reflection.

The frequency ranges affected by "absorption" and "reflection" are narrow; therefore, it is only necessary to compensate the corresponding frequency band.

Since conventional tone control systems simply adjust the highs and lows centered around the frequency of 1 kHz, they are both imprecise and incomplete.

This unit monitors and equalizes seven separate audio frequency bands, thus allowing you to make the necessary adjustments in the precisely appropriate frequency bands in order to compensate for the acoustic response of a room and any listening position in it.

**Custom sound processing**

When a studio recording is made, the sound signals are processed to produce sound that is unique to a particular group or orchestra. With this unit you can do this at home — producing sound tailored exactly to your taste by emphasizing or de-emphasizing various parts of the music.

**S.E.A. recording**

The S.E.A. graphic equalizer tailors the sound to your own particular taste and compensates for room acoustics or system characteristics, as described above. This unit is equipped with an SEA REC button which makes it possible to record with the added effect of the S.E.A.

**Operation**

1. Set the S.E.A. pattern as required.
2. Press the SEA REC button.
3. Proceed in the same way as in normal recording.

**Notes:**

- **When if you turn the VOLUME control the amplifier during S.E.A. recording, the recording level will not be affected.**
- **S.E.A. recording is possible when using the TAPE 1 terminals and the VCR terminals, but not when using the TAPE 2 terminals.**

RM-SA97U

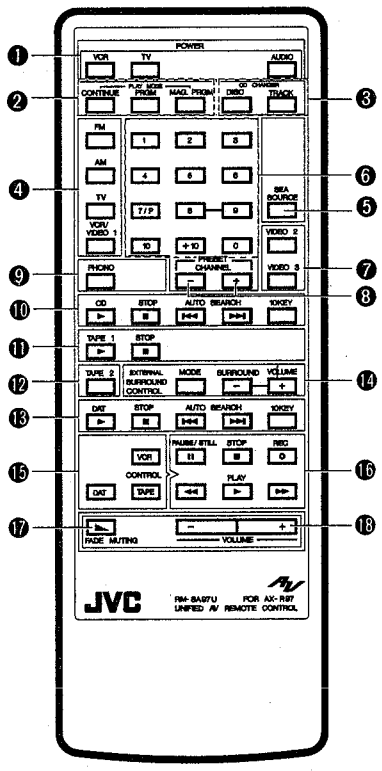


Fig. 5

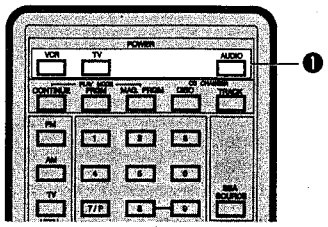


Fig. 6

FM/AM broadcast

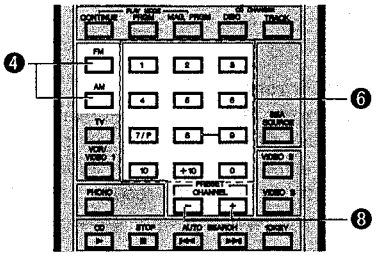


Fig. 7

TV broadcast

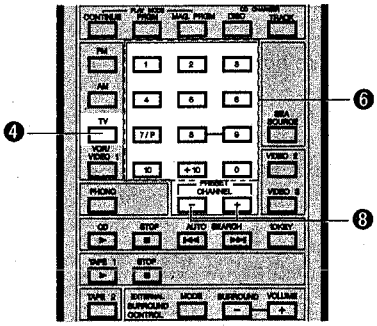


Fig. 8

Turntable or cassette deck (TAPE 1)

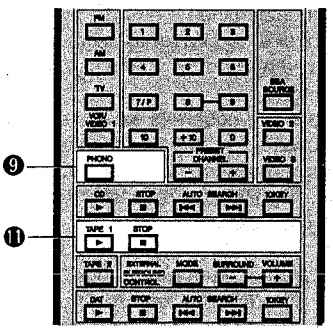


Fig. 9

CD player or DAT deck

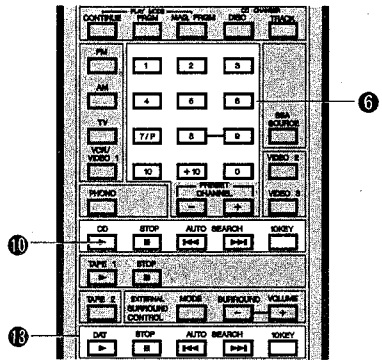


Fig. 10

CD AUTO CHANGER
SURROUND CONTROL

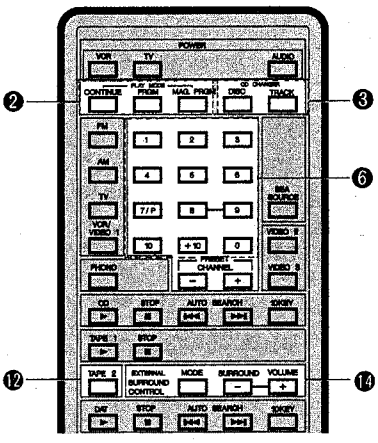


Fig. 11

CONTROL TAPE 1 or DAT

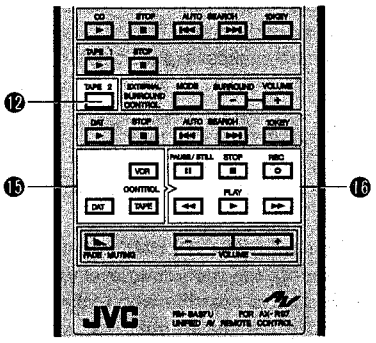


Fig. 12

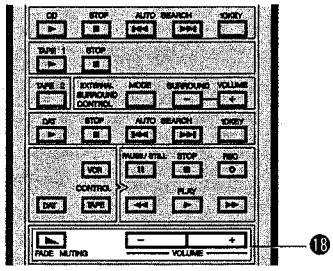


Fig. 14

VCR

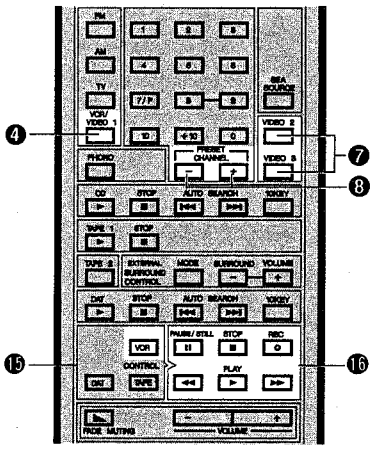


Fig. 13

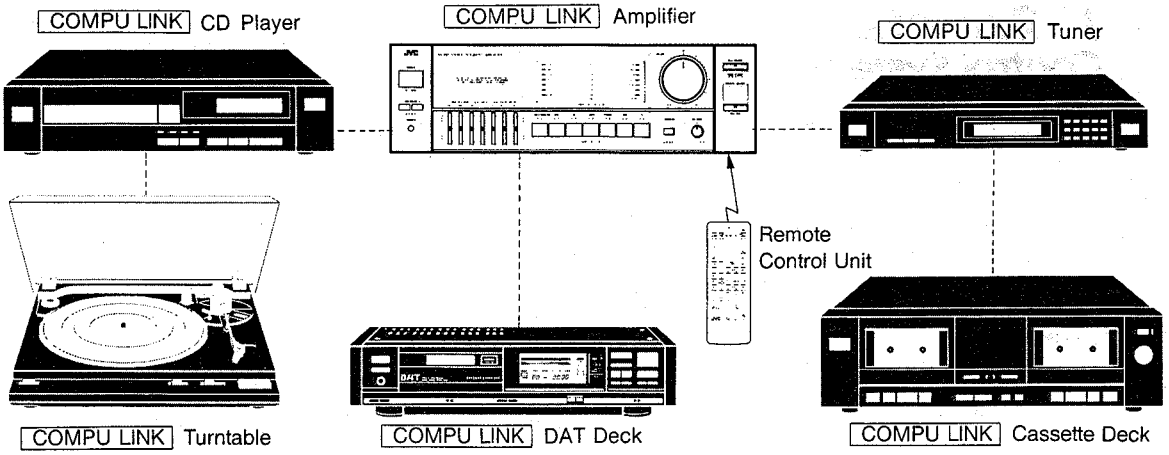



Fig. 15

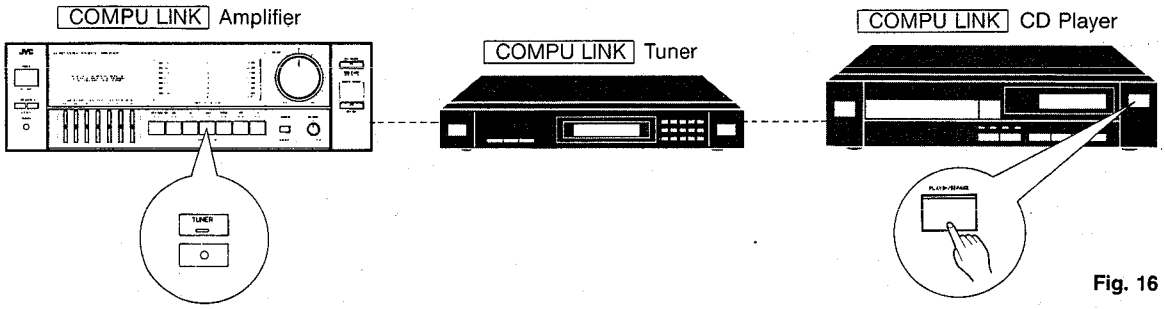



Fig. 16

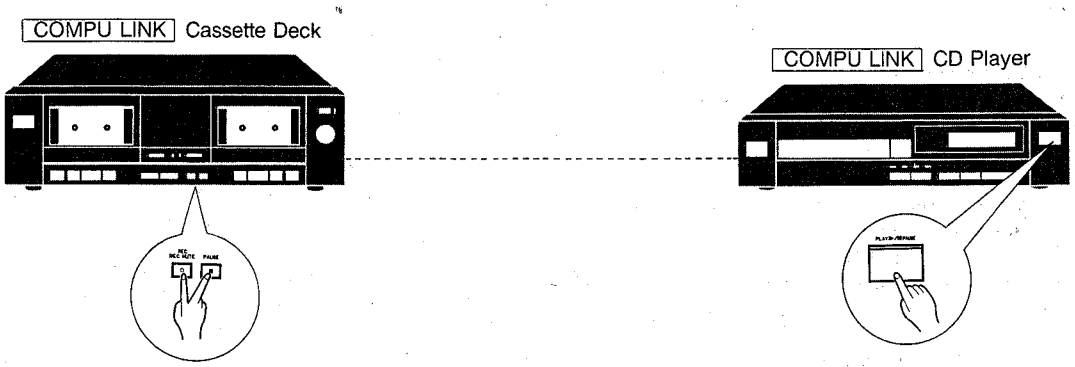



Fig. 17

COMPU LINK
Remote
Control System

## COMPU LINK REMOTE CONTROL SYSTEM

The COMPU LINK REMOTE CONTROL SYSTEM was developed by JVC. You can control each COMPU LINK component from the remote control unit, and also perform the following advanced operations with ease.

**Automatic source selection.**

If the attached remote cable is used to connect this unit to other JVC components with COMPU LINK-1/SYNCHRO terminals, sources can be switched with just one touch of the unit's source selector buttons and the corresponding component will start to play automatically. The source select button of the remote control unit or the appropriate component's activation button may also be used.

When switching from one component to another, such as a cassette deck, turntable or CD player, the previous component will stop playing after about five seconds.

**Synchronized recording**

Synchronized recording refers to the process whereby a cassette deck automatically commences recording, in synchronization with the CD player or turntable.

Set the cassette deck to the REC/PAUSE mode according to the procedures in the instruction manual.

When synchronously recording the CD player, push the PLAY button on the CD player.

The cassette deck enters the record mode the moment the CD player starts and synchronized recording commences.

Synchronized recording stops automatically when the CD player stops playing.

To cancel synchronized recording, push the STOP button of the CD player, turntable or cassette deck.

**Notes:**

- **When the REC/PAUSE mode is set to PAUSE after depressing the REC and PLAY bussons simultaneously, synchronized recording is not possible. For details, refer to your cassette deck's instruction manual.**
- **Abnormal operation will result if the power supply of one of the components is interrupted during synchronized recording. If this happens, push the activation button again to restart.**
- **Ensure that the COMPU LINK-1/SYNCHRO terminal of each component is connected with the attached remote cable. Be sure to read the instruction manual for each component very carefully.**
- **The source is locked to CD or PHONO position during synchronized recording to avoid accidental stops or changing to another source. To change the source, first cancel synchronized recording.**

**CAUTION:**

- **When a component (such as a cassette deck) is connected to the TAPE 2 terminals of the amplifier, do not connect the SYNCHRO terminals of such component to any other component with a remote cable.**
- **Connect the remote cable of a DAT to the COMPU LINK-1/SYNCHRO terminals of this unit.**

## GUIDE TO COMPU LINK REMOTE CONTROL SYSTEM

The COMPU LINK Remote Control System was developed by JVC for the remote control of entire stereo systems made up from COMPU LINK components. By operating the handheld remote control unit, you can control all the components of your COMPU LINK system, performing such advanced operations as automatic source selection and synchronized recording.

The following is a brief explanation of the system's major functions; we encourage you to operate the remote control yourself to experience how flexible the systems is.

1. **Remote Control of Each Component (Fig. 15)**
   The functions of the following front-panel buttons are generated by the remote control unit.

| | |
|---|---|
| CD player: | PLAY, STOP, AUTO SEARCH, TRACK SELECT |
| CD Auto Changer: | PLAY MODE (CONTINUE, PROGRAM, MAGAZINE·PROGRAM) DISK, TRACK SELECT |
| Tuner: | BAND SELECT, PRESET CHANNEL NO. SELECTION |
| Cassette Deck: | PLAY, STOP, FAST FORWARD, REWIND, PAUSE, RECORD |
| DAT Deck: | PLAY, STOP, AUTO SEARCH, PROGRAM NO. SELECT |
| Turntable: | Only for source selection |
| SEA Graphic Equalizer: | SEA SOURCE |

2. **Automatic Source Selection (Fig. 16)**
   By pressing the required source button on the amplifier or remote control unit, the corresponding source component will automatically start playing. Source selection can also by performed by simply pressing the PLAY button of the required source component. The new source component will start immediately and within a few seconds after switching over to the required source component, the previous source component will stop.

3. **Synchronized Recording (Fig. 17)**
   By using the cassette deck together with the CD player or turntable, you can easily perform synchronized recording. The following describes synchronized recording using a CD player.

1) Load the required compact disc and the tape on which you want to record.
2) Set the cassette deck to the REC/PAUSE mode.
3) Press the PLAY button of the CD player or the CD button of the remote control unit or amplifier; the CD player and cassette deck will start simultaneously for synchronized recording.

- When set to the REC/PAUSE mode by pressing the PAUSE button after pressing the REC and PLAY buttons simultaneously, synchronized recording is not possible. For details, refer to your cassette deck's instruction manual.
- You can program the order of the tracks you want to record. For details, refer to the CD player's instruction manual.
- When the order of tracks to be recorded has been programmed, blank gaps of about 4 seconds are automatically left between tunes. These gaps make it possible to use music scanning when playing back the tape.

# Removal Procedures

## ■ Removing the Top Cover

1. Remove six screws.
2. Remove the top cover by lifting up its rear section and pulling it backward while holding it on incline.

## ■ Removing the Front Panel

1. Remove the top cover.
2. Remove three tapping screws on the upper part of the front panels and three tapping screws from the lower part.
3. Pull out the volume knob and remove the front panel.

## ■ Removing the Power Transistors

1. Remove the top cover.
2. Remove the seventeen tapping screws fixing the bottom cover, then take out the bottom cover. (Also remove those tapping screws fixing the rubber foot pieces from the rear side of the unit.)
3. Unsolder the power transistors.
4. Remove the nuts fixing the power transistors by a spanner, etc.

## ■ Removing the AC Priminary PC Board (ENH-122-2)

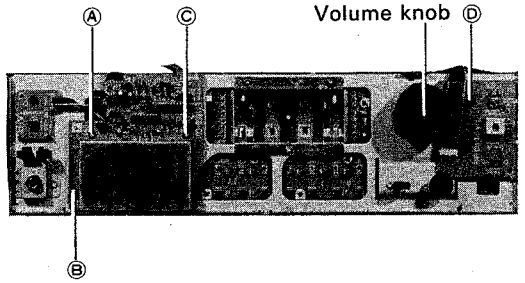
1. Remove the top cover.
2. Remove two screws retaining the AC Priminary PC Board and two screws fixing AC outlets on the rear panel.
3. Pull the AC Priminary PCB toward the front panel and raise the board while holding it on incline.

## ■ Removing the SEA PC Board (ENF-051-1)

1. Remove the front panel.
2. Remove three tapping screws Ⓐ – Ⓒ retaining the SEA PC Board.

## ■ Removing the SEA REC/Source Select PC Board (ENF-051-2)

1. Remove the front panel.
2. Remove the plastic rivet Ⓓ.
3. Remove the SEA REC/Source PC Board by pulling it out upward.




## ■ Removing the LOUDNESS Knob

1. Set the LOUDNESS switch to OFF.
2. Draw out the LOUDNESS knob towards you.

**Note:** Unless the knob is drawn out after the OFF setting, the switch will be broken during work.

## ■ Removing the Source Select & Level Indicator PC Board (ENE-053-2)

1. Remove the top cover.
2. Take out the VOLUME knob.
3. Remove the front panel.
4. Disconnect the SEA PC board (ENF-051-1) and the SEA REC/source select PC board (ENF-051-2).
5. With the LOUDNESS switch set to OFF, take out the *LOUDNESS knob. Then, take out the BALANCE knob.
6. Remove the hexagonal nuts fixing the VR shafts and also the BALANCE VR shaft. Subsequently, disconnect the motor VR board (ENE-053-3) from the chassis.
7. Remove the *two screws fixing the LOUDNESS switch to the front chassis.
8. Remove the eight plastic rivets fixing the board.
9. Remove the three tapping screws fixing the front chassis.
10. Where necessary, undo such wire fixtures as tie bands, etc.

## ■ Removing the Source Select PC Board (ENE-053-1)

1. Remove the four tapping screws fixing the pin jack.
2. Disconnect the board from the fastener by which the board is installed on the chassis.
3. Disconnect flat wires from J805 and J806.

# Adjustment Procedures

## ■ Power Amplifier Idling Current Adjustment

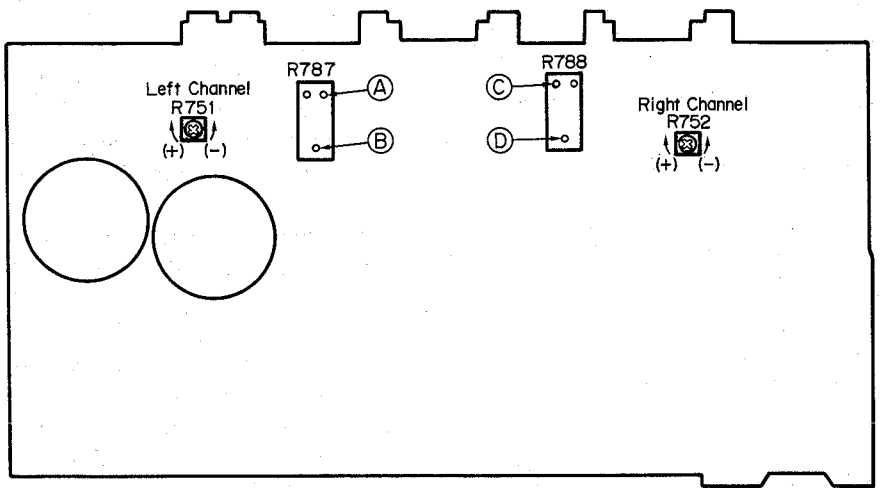



**Fig. 3**

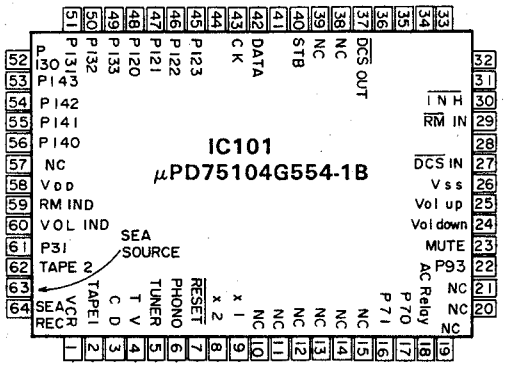
1. Before tuning on the power, turn the semi-fixed resistors (R751 for L channel and R752 for R channel) of the power amplifier circuit board fully counterclockwise.
2. Adjust the semi-fixed resistor (R751 and R752) so that the voltage at the following test points of the power amplifier circuit board is within a range of 0.1 mV ~ 0.2 mV after the power is turned on.
   L channel: Measure the voltage between test point Ⓐ (emitter of Q769) and output at the test point Ⓑ.
   R channel: Measure the voltage between test point Ⓒ (emitter of Q770) and output at the test point Ⓓ.
3. Readjust resistors R751 and R752 about 5 minutes after the power is turned on (the heatsink temperature must be sufficiently high) so that the voltage at the test points becomes 2 mV.
   Confirm that the voltage does not vary when the heatsink temperature increases further.

**Note: Be sure to perform the measurement with the probes and cabinet of the measuring equipment separated from the grounding terminals of AX-R97BK/AX-R97XBK or other measuring equipment.**

# Explanation of LSI

## ■ μPD75104G554-1B (IC101): System Controller

(1) External diagram



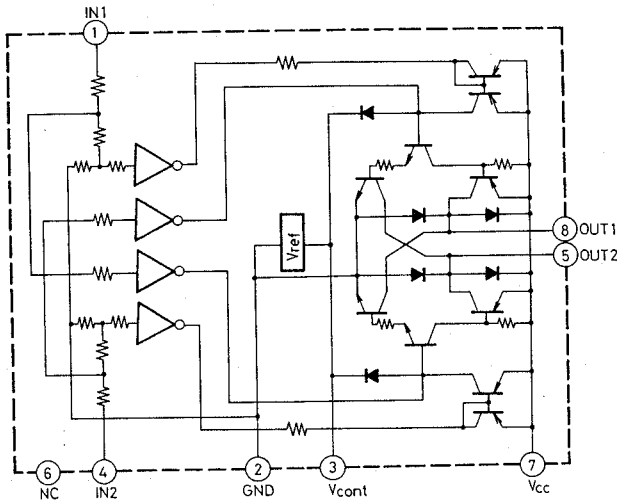

(2) Pin Functions

| Pin No. | Symbol | I/O | Terminal Function |
|---|---|---|---|
| 1 | P41 | O | VCR (LED) |
| 2 | P40 | O | TAPE 1 (LED) |
| 3 | P53 | O | CD (LED) |
| 4 | P52 | O | TV (LED) |
| 5 | P51 | O | TUNER (LED) |
| 6 | P50 | O | PHONO (LED) |
| 7 | RESET | I | RESET INPUT |
| 8 | X2 | – | CLOCK RESONATOR |
| 9 | X1 | – | CLOCK RESONATOR |
| 10 | P63 | – | ——— |
| 11 | P62 | – | ——— |
| 12 | P61 | – | ——— |
| 13 | P60 | – | ——— |
| 14 | P73 | – | ——— |
| 15 | P72 | – | ——— |
| 16 | P71 | O | KEY OUT |
| 17 | P70 | O | KEY OUT |
| 18 | P83 | O | AC relay ON/OFF |
| 19 | P82 | – | ——— |
| 20 | P81 | O | ——— |
| 21 | P80 | O | ——— |
| 22 | P93 | – | ——— |
| 23 | P92 | O | MUTE |
| 24 | P91 | O | VOL DOWN |
| 25 | P90 | O | VOL UP |
| 26 | Vss | – | ——— |
| 27 | P13/INT3 | I | DCS IN |
| 28 | P12/INT2 | – | GND |
| 29 | P11/INT1 | I | RM IN |
| 30 | PIO/INTO | I | INH |
| 31 | PTH03 | – | GND |
| 32 | PTH02 | – | GND |

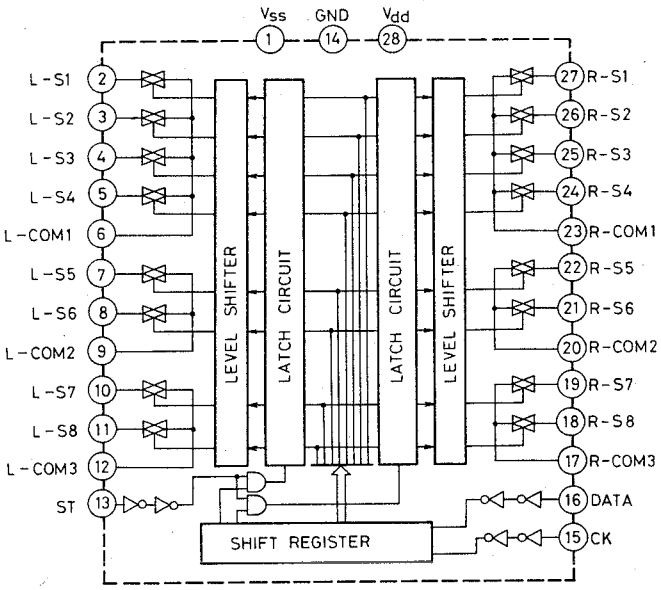
| Pin No. | Symbol | I/O | Terminal Function |
|---|---|---|---|
| 33 | PTH01 | – | GND |
| 34 | PTH00 | – | GND |
| 35 | T10 | – | GND |
| 36 | T11 | – | GND |
| 37 | P23 | O | DCS OUT |
| 38 | P22 | – | ——— |
| 39 | P21 | – | ——— |
| 40 | P20/PT00 | O | ANALOG SW. STB |
| 41 | P03/S1 | – | GND |
| 42 | P02/PT00 | O | ANALOG SW. DATA |
| 43 | P01/SCK | O | ANALOG SW. CK |
| 44 | P00/INT4 | – | GND |
| 45 | P123 | I | VDD PULL UP |
| 46 | P122 | I | KEY IN |
| 47 | P121 | I | KEY IN |
| 48 | P120 | I | KEY IN |
| 49 | P133 | I | KEY IN |
| 50 | P132 | I | KEY IN |
| 51 | P131 | I | KEY IN |
| 52 | P130 | I | KEY IN |
| 53 | P143 | I | TEST (active H) |
| 54 | P142 | I | CS3 (PULL DOWN) |
| 55 | P141 | I | CS2 (PULL UP) |
| 56 | P140 | I | CSI (PULL DOWN) |
| 57 | NC | – | ——— |
| 58 | Vdd | – | ——— |
| 59 | P33 | O | RM IND (LED) |
| 60 | P32 | O | VOL IND (LED) |
| 61 | P31 | O | PULL UP |
| 62 | P30 | O | TAPE 2 (LED) |
| 63 | P43 | O | SEA SOURCE (LED) |
| 64 | P42 | O | SEA REC (LED) |

# Internal Block Diagram of ICs

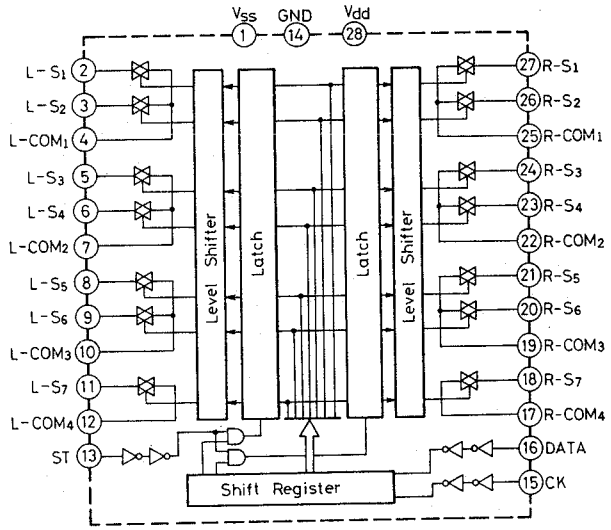
## ■ LB1639 (IC201)



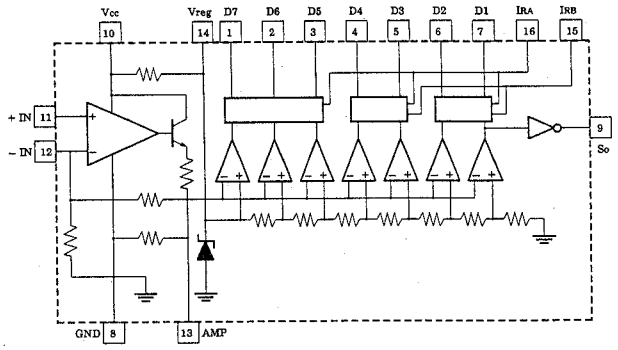

## ■ TC9164N (IC302)



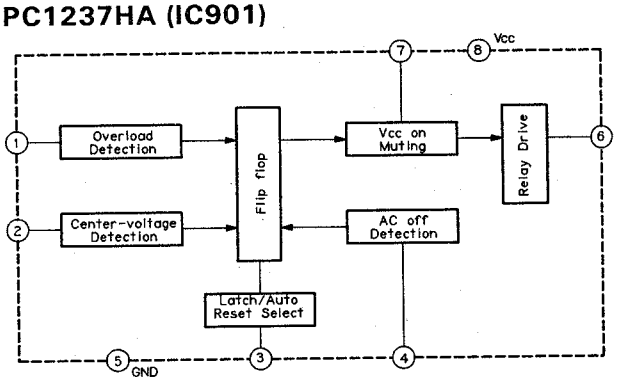

## ■ TC9162N (IC303)



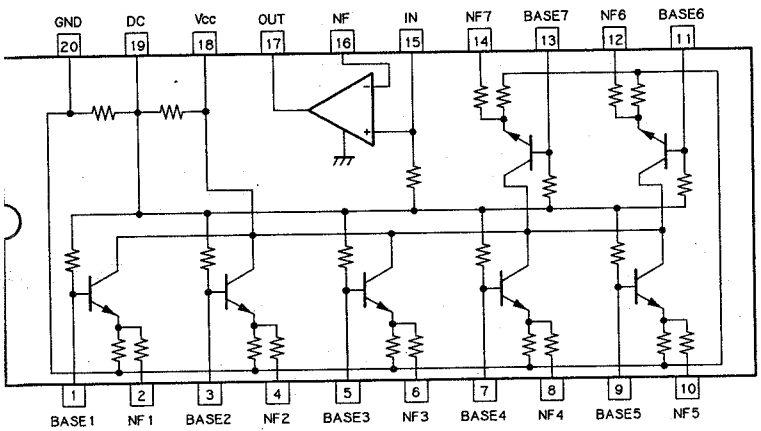

## ■ IR2E19 (IC401, IC402)




## ■ μPC1237HA (IC901)

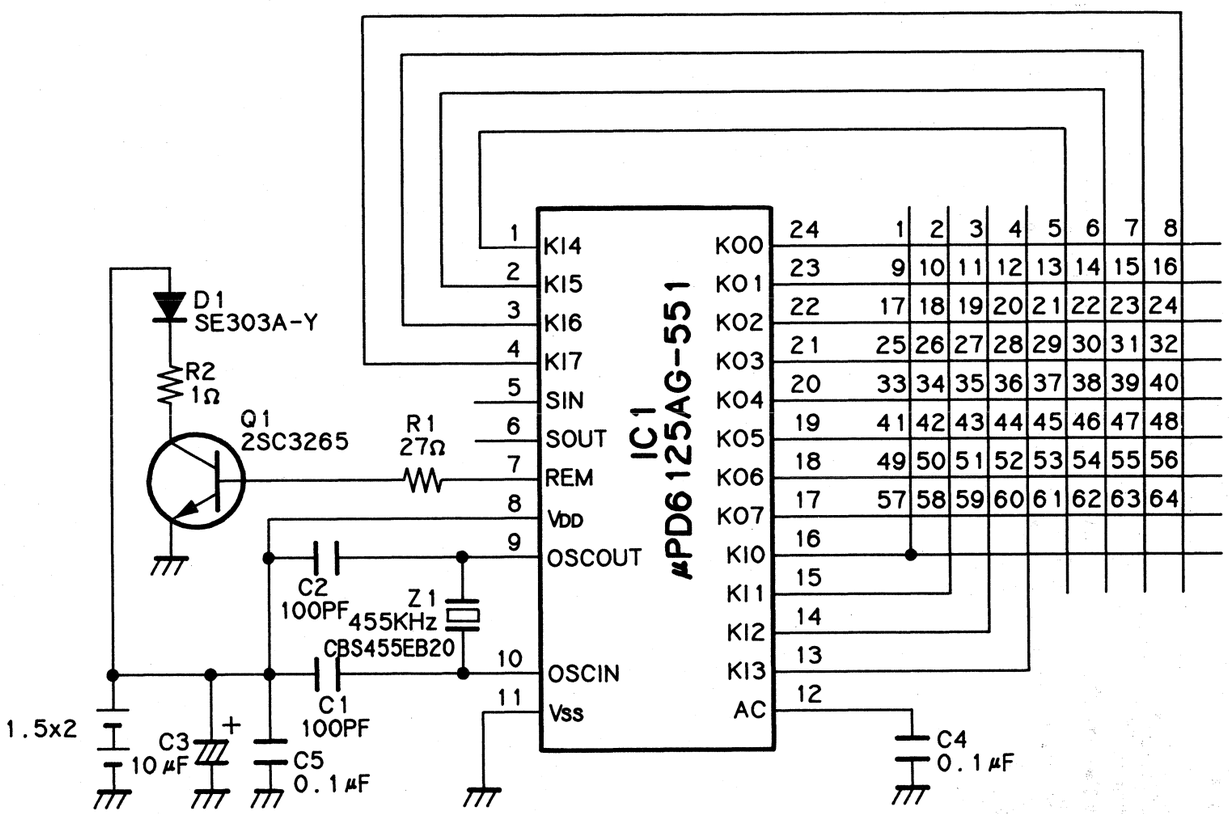



## ■ LA3607S (IC501, IC502)

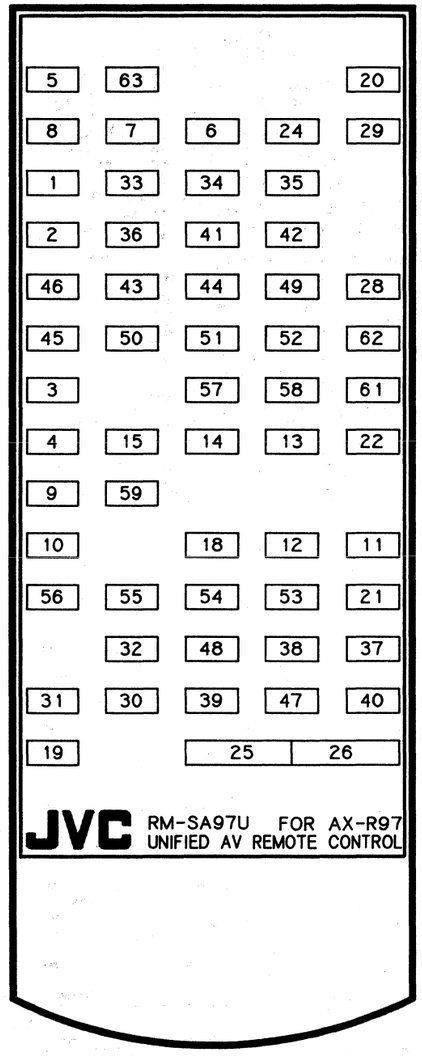


# Remote Control Unit (RM-SA97U)

## ■ Schematic Diagram

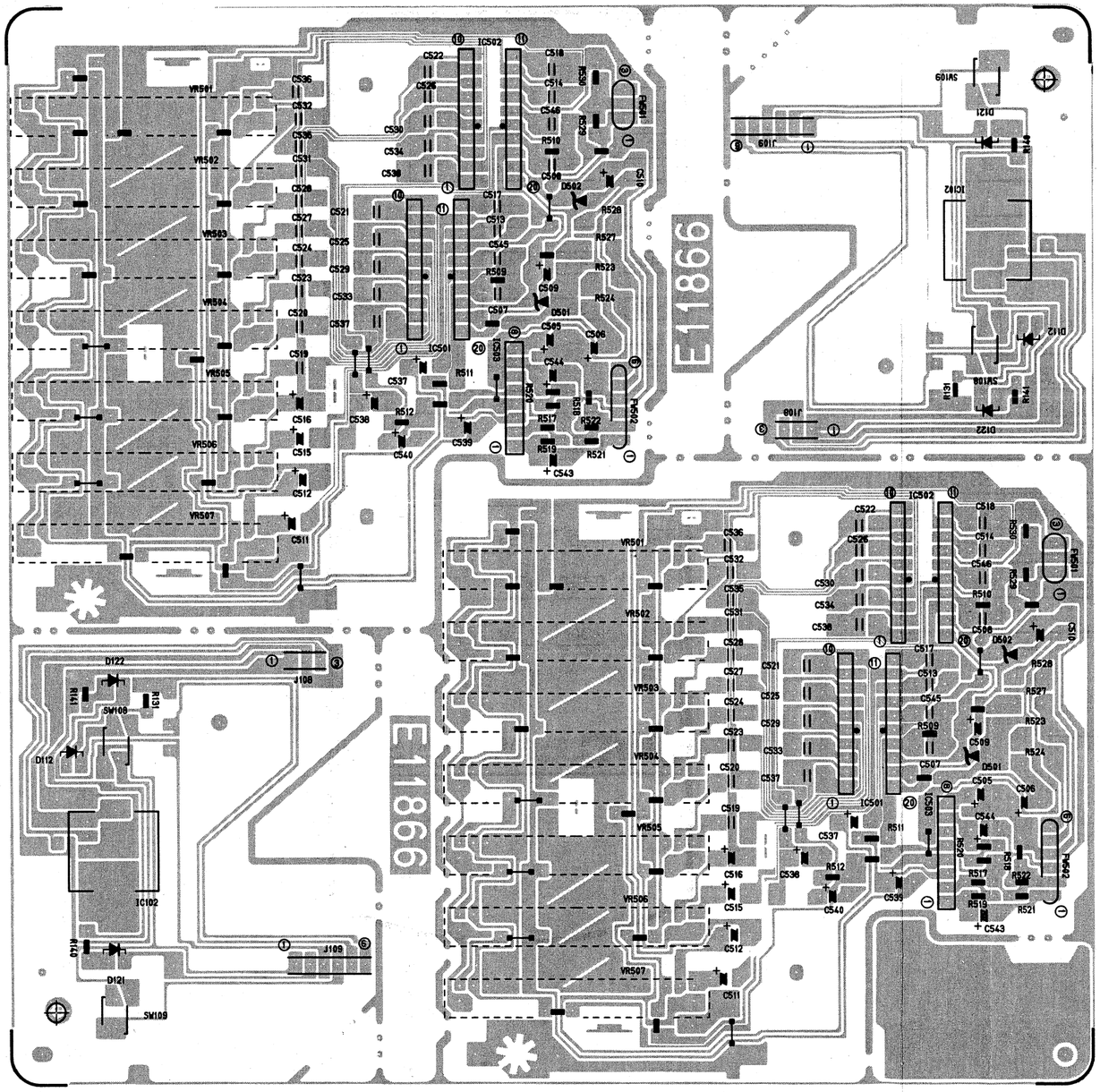



## ■ Key Layout

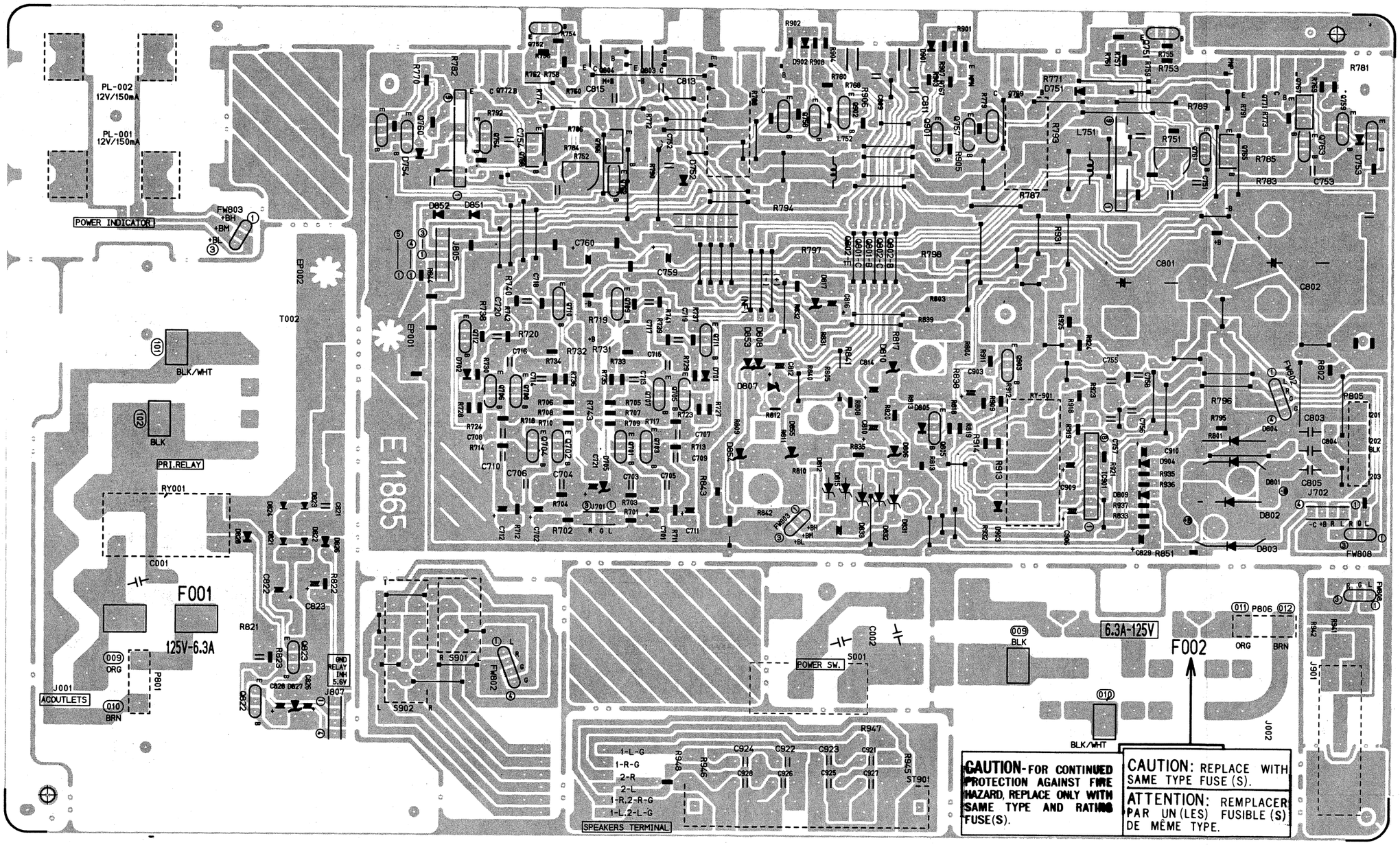


# Printed Circuit Board Ass'y

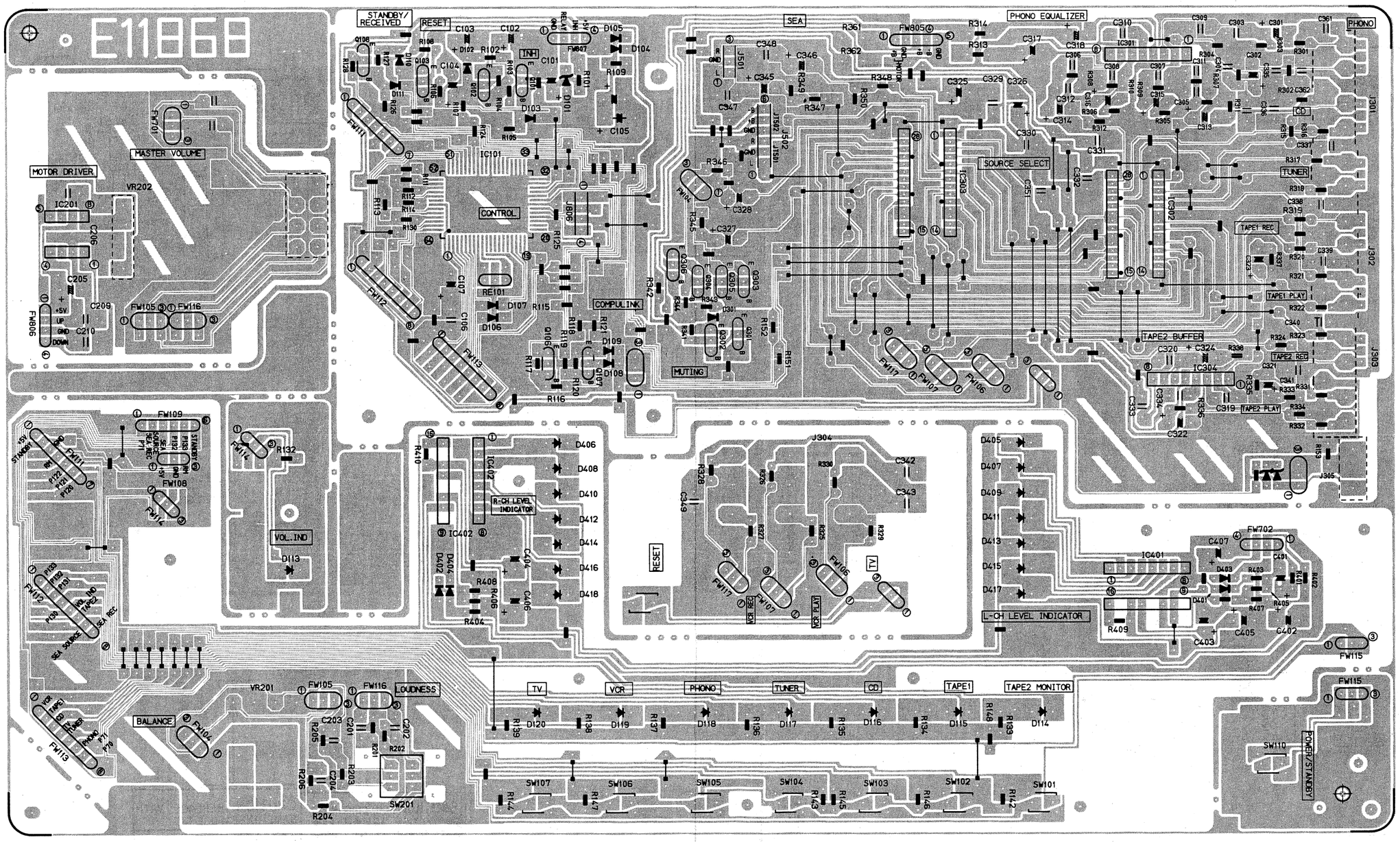
## ■ SEA PC Board Ass'y (ENF-051)



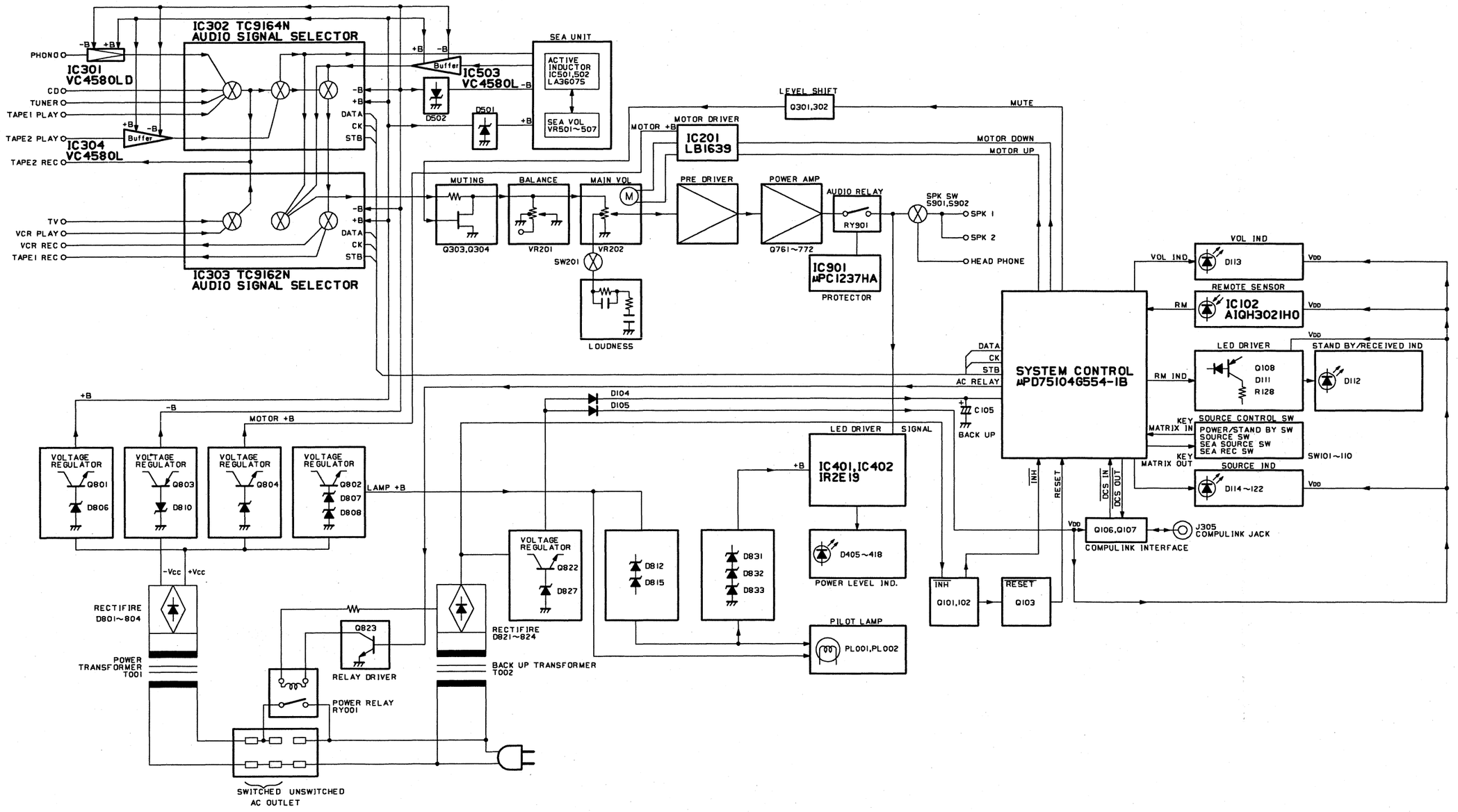
## ■ Power Amplifier P.C. Board Ass'y (ENH-122)



## ■ Front Control P.C. Board Ass'y (ENE-053)



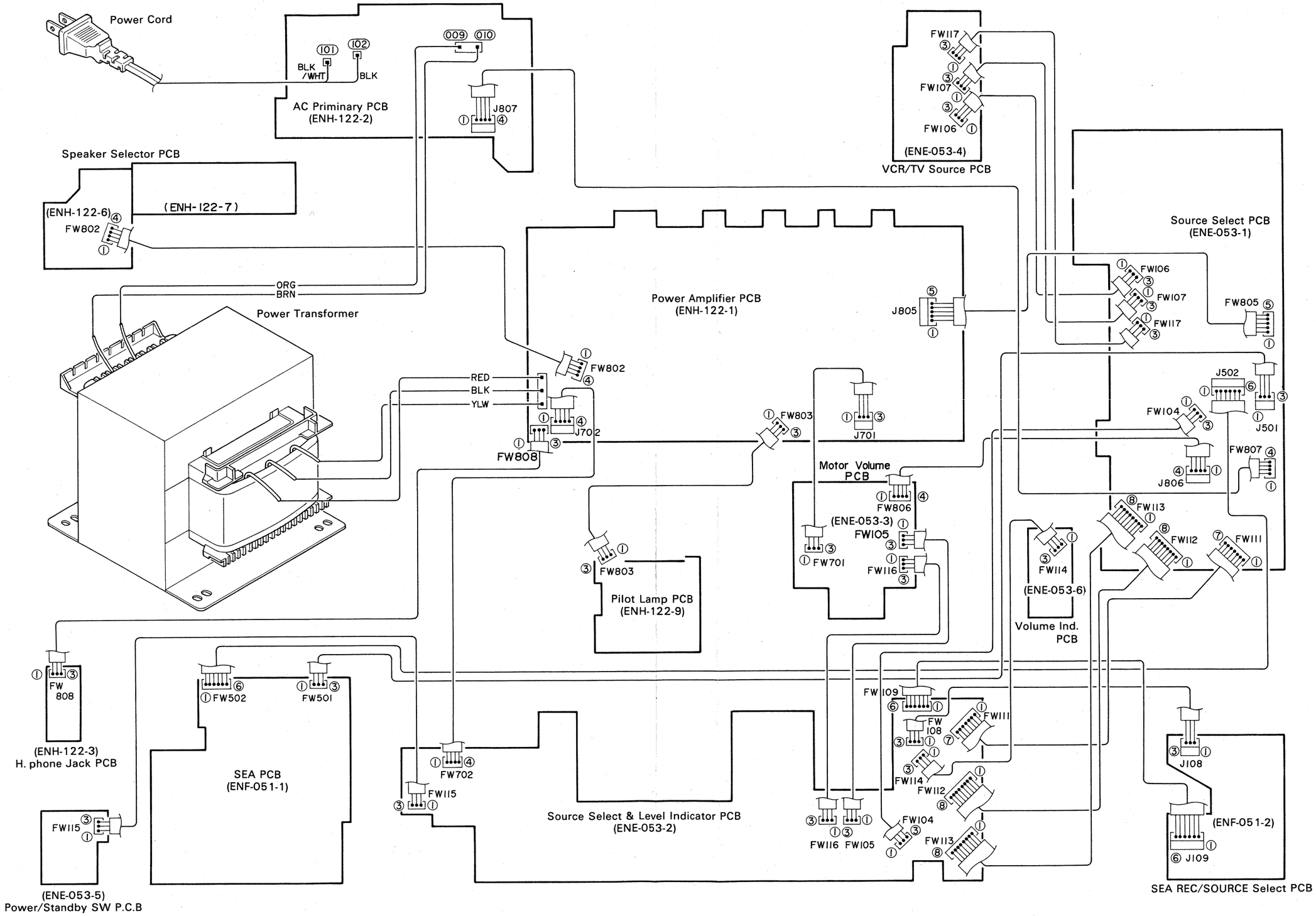
# Block Diagram




(No. 20079)

| | |
|---|---|
| AX-R97BK<br>AX-R97XBK | AX-R97BK<br>AX-R97XBK |

## Connection Diagram

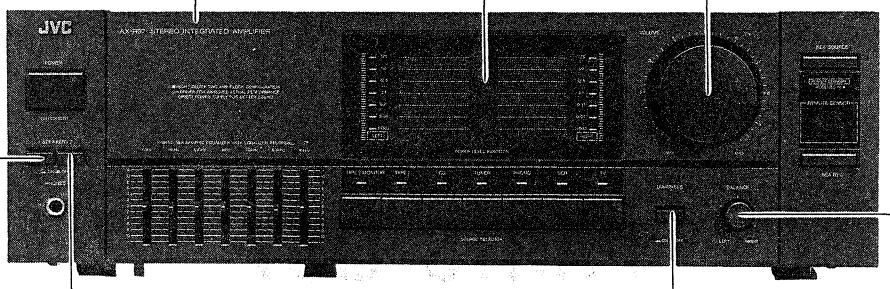


# PARTS LIST

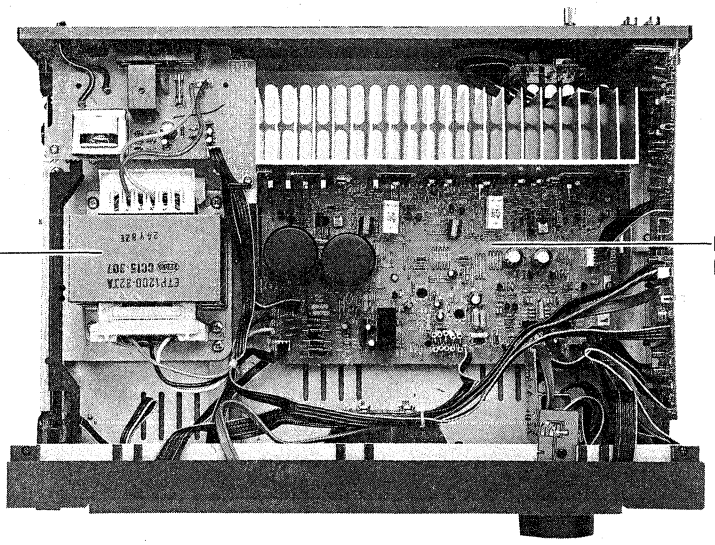
## Contents

# Main Parts Locations

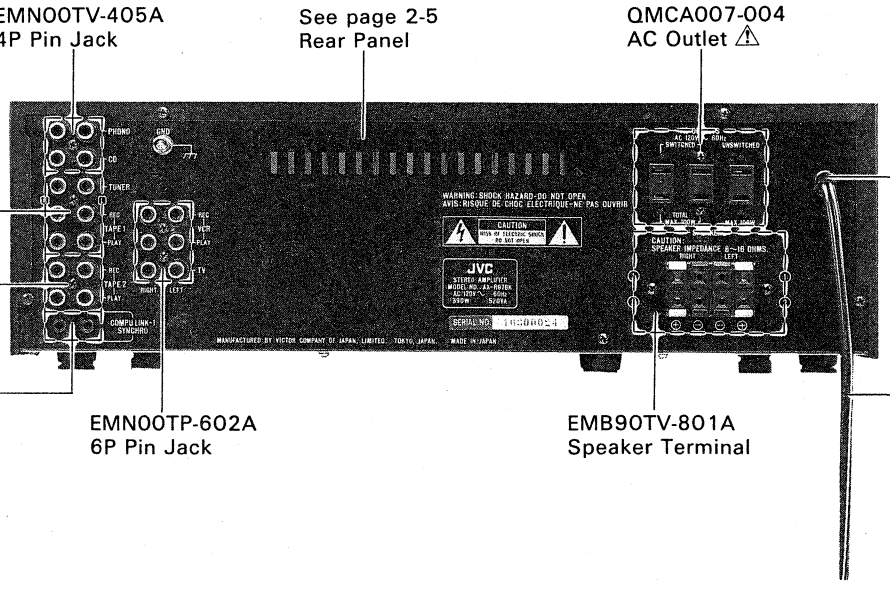
## ■ Front View



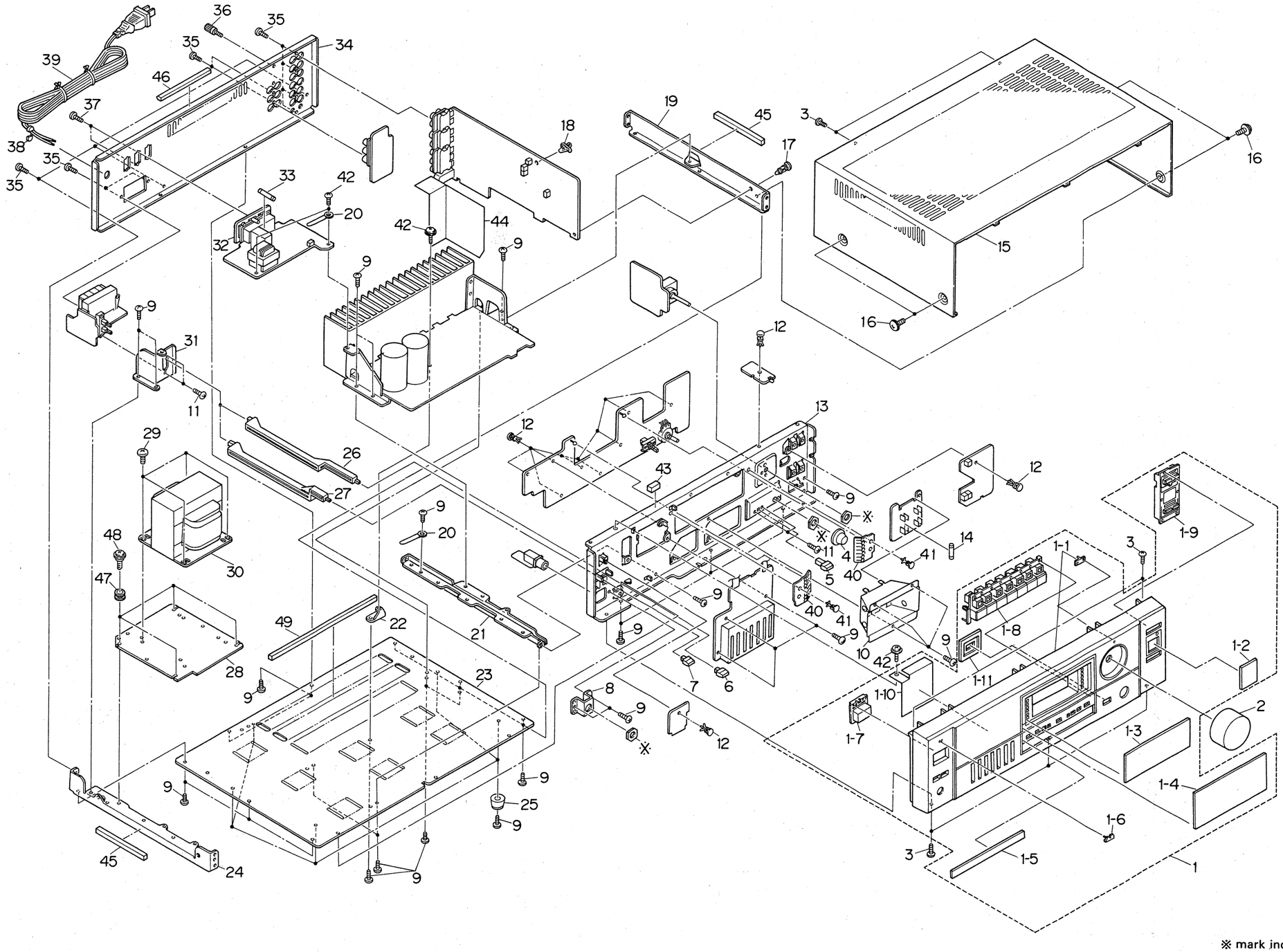

## ■ Top View




## ■ Rear View



# Exploded View and Parts List



# Printed Circuit Board Ass'y and Parts List

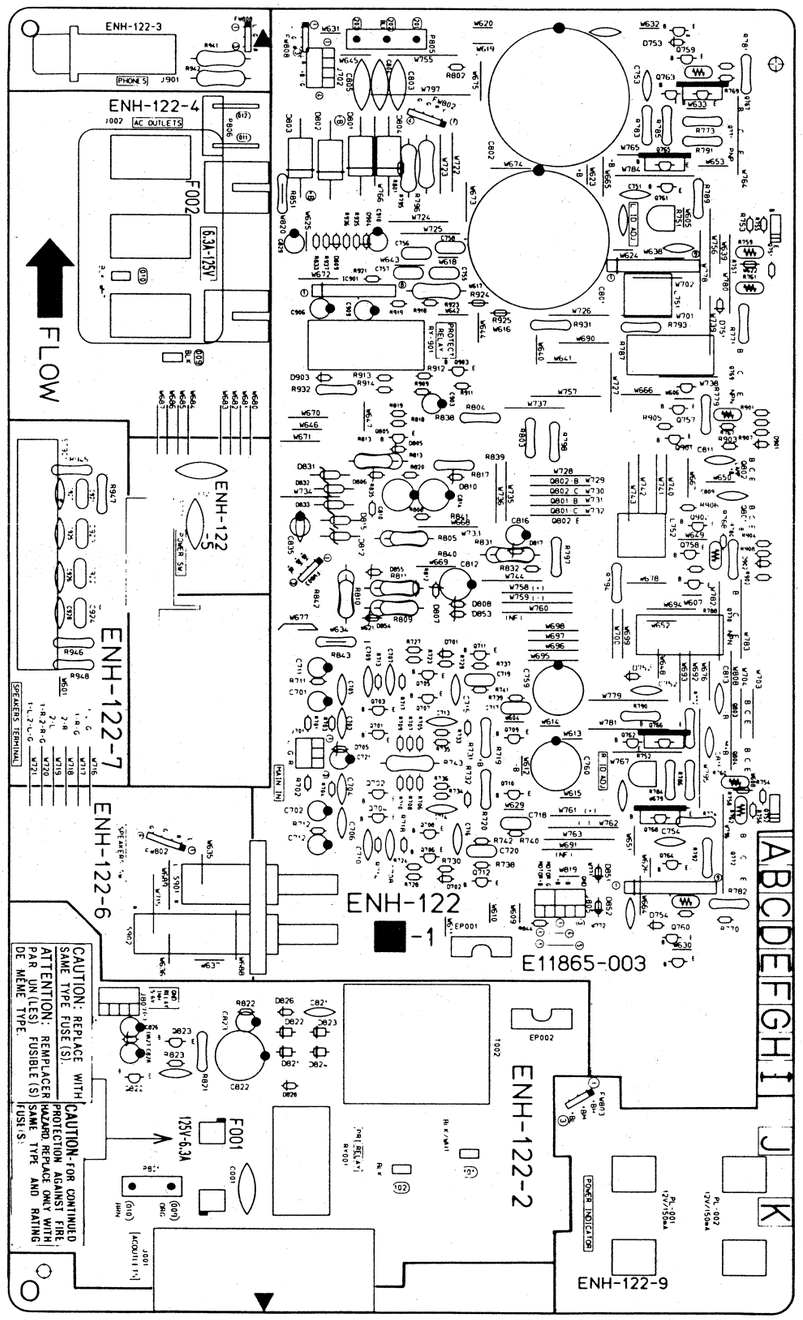
## ■ENH-122 □ Power Amplifier PC Board Ass'y

**Note:** ENH-122 □ varies according to the areas employed. See note (1) when placing an order.

| ⚠ | Item | Part Number | Part Name | Q'ty | Description | Areas |
|---|---|---|---|---|---|---|
| | 1 | EFP-AXR97BKJ | Front Panel Ass'y | 1 | | J |
| | | EFP-AXR97XBKC | Front Panel Ass'y | 1 | | C |
| | 1-1 | E11900-001SA | Front Panel | 1 | | J |
| | | E11900-003SA | Front Panel | 1 | | C |
| | 1-2 | E75120-001 | Plate | 1 | | |
| | 1-3 | E75112-001 | Indicator Sheet | 1 | | |
| | 1-4 | E75110-001 | Window Screen | 1 | | |
| | 1-5 | E75114-001 | Plate | 1 | | |
| | 1-6 | E72968-001 | JVC Mark | 1 | | |
| | 1-7 | E305741-001 | Power Button | 1 | | |
| | 1-8 | E305796-001 | Push Button | 1 | | |
| | 1-9 | E306077-001 | Push Button Ass'y | 1 | | |
| | 1-10 | E306159-001 | Shield Cover | 1 | | |
| | 1-11 | E75345-001 | Escutcheon | 1 | | |
| | 2 | E305797-001 | Volume Knob | 1 | | |
| | 3 | SBSG3008M | Screw | 7 | | |
| | 4 | E75016-002 | Knob | 1 | Balance | |
| | 5 | E75073-003 | Push Button | 1 | Loudness | |
| | 6 | E75073-002 | Push Button | 1 | SPK-2 | |
| | 7 | E75073-001 | Push Button | 1 | SPK-1 | |
| | 8 | E75123-001 | Hed Phone Bracket | 1 | | |
| | 9 | SBSG3008CC | Screw | 38 | | |
| | 10 | E305807-001 | Reflector | 1 | | |
| | 11 | SBST3006CC | Screw | 4 | | |
| | 12 | E48729-008 | Plastic Rivet | 11 | | |
| ⚠ | 13 | E11902-001 | Front Bracket | 1 | | |
| ⚠ | 14 | ELP4101-003 | Fuse Lamp | 2 | PL001,002 | |
| | 15 | E26269-001 | Metal Cover | 1 | | |
| | 16 | E61660-004 | Special Screw | 4 | | |
| | 17 | E303216-001 | Fastener | 1 | | |
| | 18 | E69384-002 | Fastener | 1 | | |
| | 19 | E305801-001 | Side Bracket | 1 | Right | |
| | 20 | PU49485-1 | Wire Clamp | 2 | | |
| | 21 | E305802-001 | Center Bracket | 1 | | |
| | 22 | E68587-008 | Bracket | 1 | | |
| | 23 | E26268-001 | Bottom Cover | 1 | | |
| | 24 | E305800-001 | Side Bracket | 1 | Left | |
| | 25 | E47227-011 | Foot | 5 | | |
| | 26 | E305808-001 | Push Shaft | 1 | | |
| | 27 | E305808-002 | Push Shaft | 1 | | |
| | 28 | E305803-001 | Trans Bracket | 1 | | |
| | 29 | E65389-004 | Special Screw | 4 | | |
| ⚠ | 30 | ETP1200-32JA | Power Transformer | 1 | | |
| | 31 | E305799-001 | Switch Bracket | 1 | | |
| | 32 | E69589-010 | Spacer | 1 | | J |
| ⚠ | 33 | QMF51U1-6R3 | Fuse | 1 | F001 | |
| | 34 | E26270-001 | Rear Panel | 1 | | J |
| | | E26270-003 | Rear Panel | 1 | | C |
| | 35 | E73273-001 | Screw | 11 | | |
| | 36 | E70078-001 | GND Terminal | 1 | | |
| ⚠ | 37 | SDSG3008M | Screw | 2 | | |
| ⚠ | 38 | QHS3876-162 | Cord Stopper | 1 | | |
| ⚠ | 39 | EMP0001-004 | Power Cord | 1 | | |
| | 40 | E75316-002 | L.E.D. Sheet | 2 | | |
| | 41 | E48729-009 | Plastic Rivet | 2 | | |
| | 42 | GBSG3008CC | Screw | 1 | | |
| | 43 | EXO020010R60S10 | Spacer | 4 | | |
| | 44 | E306158-001 | Protect Sheet | 1 | | |
| | 45 | EXO075005N40S02 | Spacer | 2 | | |
| | 46 | EXO100005N20S02 | Spacer | 1 | | |
| | 47 | E66509-004 | Rubber Bushing | 4 | | |
| | 48 | E75322-001 | Special Screw | 4 | | |
| | 49 | EXO255005N60S02 | Spacer | 1 | | |

⚠: Safety Parts

| The Marks for Designated Areas | |
|---|---|
| J·····the U.S.A. | C·····Canada |



**Note (1)**

| PC Board Ass'y | Designated Areas |
|---|---|
| ENH-122 [A] | the U.S.A. |
| ENH-122 [B] | Canada |

TRANSISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | Q701 | 2SC2240(A,B) | SILICON | TOSHIBA | |
| | Q702 | 2SC2240(A,B) | SILICON | TOSHIBA | |
| | Q703 | 2SC2240(A,B) | SILICON | TOSHIBA | |
| | Q704 | 2SC2240(A,B) | SILICON | TOSHIBA | |
| | Q705 | 2SA1038(S,E) | SILICON | ROHM | |
| | Q706 | 2SA1038(S,E) | SILICON | ROHM | |
| | Q707 | 2SA933LN(R,S) | SILICON | ROHM | |
| | Q708 | 2SA933LN(R,S) | SILICON | ROHM | |
| | Q709 | 2SA1038(S,E) | SILICON | ROHM | |
| | Q710 | 2SA1038(S,E) | SILICON | ROHM | |
| | Q711 | 2SC2389(S,E) | SILICON | ROHM | |
| | Q712 | 2SC2389(S,E) | SILICON | ROHM | |
| | Q751 | 2SD636(Q,R) | SILICON | MATSUSHITA | |
| | Q752 | 2SD636(Q,R) | SILICON | MATSUSHITA | |
| | Q757 | 2SC1740S(R,S) | SILICON | ROHM | |
| | Q758 | 2SC1740S(R,S) | SILICON | ROHM | |
| | Q759 | 2SA933S(R,S) | SILICON | ROHM | |
| | Q760 | 2SA933S(R,S) | SILICON | ROHM | |
| | Q761 | 2SC2389(S) | SILICON | ROHM | |
| | Q762 | 2SC2389(S) | SILICON | ROHM | |
| | Q763 | 2SA1038(S) | SILICON | ROHM | |
| | Q764 | 2SA1038(S) | SILICON | ROHM | |
| | Q765 | 2SD1763A(DE) | SILICON | ROHM | |
| | Q766 | 2SD1763A(DE) | SILICON | ROHM | |
| | Q767 | 2SB1186A(DE) | SILICON | ROHM | |
| | Q768 | 2SB1186A(DE) | SILICON | ROHM | |
| | Q769 | 2SD2155LB(R,O) | SILICON | TOSHIBA | |
| | Q770 | 2SD2155LB(R,O) | SILICON | TOSHIBA | |
| | Q771 | 2SB1429LB(R,O) | SILICON | TOSHIBA | |
| | Q772 | 2SB1429LB(R,O) | SILICON | TOSHIBA | |
| | Q801 | 2SD1944(J,K) | SILICON | ROHM | |
| | Q802 | 2SD1944(J,K) | SILICON | ROHM | |
| | Q803 | 2SB1133(R,S) | SILICON | SANYO | |
| | Q804 | 2SD1944(J,K) | SILICON | ROHM | |
| | Q822 | 2SC2235(O,Y) | SILICON | TOSHIBA | |
| | Q823 | DTC114YS | SILICON | ROHM | |
| | Q901 | 2SC2389(S,E) | SILICON | ROHM | |
| | Q902 | 2SC2389(S,E) | SILICON | ROHM | |
| | Q903 | 2SA1038(S,E) | SILICON | ROHM | |

I. C. S

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | IC901 | UPC1237HA | I.C. | RYOUSAN | |

DIODES

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | D701 | 1SS133 | SILICON | ROHM | |
| | D702 | 1SS133 | SILICON | ROHM | |
| | D705 | MTZ18JC | ZENER | ROHM | |
| | D751 | 1SS133 | SILICON | ROHM | |
| | D752 | 1SS133 | SILICON | ROHM | |
| | D753 | 1SS133 | SILICON | ROHM | |
| | D754 | 1SS133 | SILICON | ROHM | |
| | D801 | 30DL2FC | SILICON | NIHONINTER | |
| | D802 | 30DL2FC | SILICON | NIHONINTER | |
| | D803 | 30DL2FC | SILICON | NIHONINTER | |

DIODES

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | D804 | 30DL2FC | SILICON | NIHONINTER | |
| | D806 | MTZ16JC | ZENER | ROHM | |
| | D807 | MTZ18JC | ZENER | ROHM | |
| | D808 | MTZ20JC | ZENER | ROHM | |
| | D810 | MTZ16JC | ZENER | ROHM | |
| | D812 | RD11EB3 | ZENER | NEC | |
| | D815 | RD11EB3 | ZENER | NEC | |
| | D817 | MTZ5.6JC | ZENER | ROHM | |
| | D821 | ERA15-02L19 | SILICON | KYOUDOU | |
| | D822 | ERA15-02L19 | SILICON | KYOUDOU | |
| | D823 | ERA15-02L19 | SILICON | KYOUDOU | |
| | D824 | ERA15-02L19 | SILICON | KYOUDOU | |
| | D826 | 1SS133 | SILICON | ROHM | |
| | D827 | MTZ6.2JC | ZENER | ROHM | |
| | D828 | 1SS133 | SILICON | ROHM | |
| | D831 | RD5.1FB3 | ZENER | RYOUSAN | |
| | D832 | RD5.1FB3 | ZENER | RYOUSAN | |
| | D833 | RD5.1FB3 | ZENER | RYOUSAN | |
| | D851 | 1SS133 | SILICON | ROHM | |
| | D853 | MTZ24JC | ZENER | ROHM | |
| | D854 | MTZ13JC | ZENER | ROHM | |
| | D901 | 1SS133 | SILICON | ROHM | |
| | D902 | 1SS133 | SILICON | ROHM | |
| | D903 | 1SS133 | SILICON | ROHM | |
| | D904 | 1SS133 | SILICON | ROHM | |

CAPACITORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | C001 | QCZ9019-472 | 4700PF | | CERAMIC | |
| | C701 | EEZ1005-106 | 10MF | 100V | ELECTRO | |
| | C702 | EEZ1005-106 | 10MF | 100V | ELECTRO | |
| | C703 | QCS21HJ-271 | 270PF | 50V | CERAMIC | |
| | C704 | QCS21HJ-271 | 270PF | 50V | CERAMIC | |
| | C705 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C706 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C707 | QCY21HK-332 | 3300PF | 50V | CERAMIC | |
| | C708 | QCY21HK-332 | 3300PF | 50V | CERAMIC | |
| | C709 | QCS21HJ-150 | 15PF | 50V | CERAMIC | |
| | C710 | QCS21HJ-150 | 15PF | 50V | CERAMIC | |
| | C711 | QETB1EM-227 | 220MF | 25V | ELECTRO | |
| | C712 | QETB1EM-227 | 220MF | 25V | ELECTRO | |
| | C713 | QCS21HJ-220 | 22PF | 50V | CERAMIC | |
| | C714 | QCS21HJ-220 | 22PF | 50V | CERAMIC | |
| | C715 | QCS21HJ-680 | 68PF | 50V | CERAMIC | |
| | C716 | QCS21HJ-680 | 68PF | 50V | CERAMIC | |
| | C717 | QFN81HJ-822 | 8200PF | 50V | MYLAR | |
| | C718 | QFN81HJ-822 | 8200PF | 50V | MYLAR | |
| | C719 | QFN81HJ-822 | 8200PF | 50V | MYLAR | |
| | C720 | QFN81HJ-822 | 8200PF | 50V | MYLAR | |
| | C721 | QETB1EM-106 | 10MF | 25V | ELECTRO | |
| | C751 | QCS22HJ-470A | 47PF | 500V | CERAMIC | |
| | C752 | QCS22HJ-470A | 47PF | 500V | CERAMIC | |
| | C753 | QCS22HJ-470A | 47PF | 500V | CERAMIC | |
| | C754 | QCS22HJ-470A | 47PF | 500V | CERAMIC | |
| | C755 | QFN81HK-473 | 0.047MF | 50V | MYLAR | |
| | C756 | QFN81HK-473 | 0.047MF | 50V | MYLAR | |
| | C757 | QFN81HK-473 | 0.047MF | 50V | MYLAR | |
| | C758 | QFN81HK-473 | 0.047MF | 50V | MYLAR | |
| | C759 | QETB2AM-107 | 100MF | 100V | ELECTRO | |
| | C760 | QETB2AM-107 | 100MF | 100V | ELECTRO | |
| | C801 | EEW7502-129E | 12000MF | | ELECTRO | |
| | C802 | EEW7502-129E | 12000MF | | ELECTRO | |
| | C803 | QCE22HP-103 | 0.01MF | 500V | CERAMIC | |
| | C804 | QCE22HP-103 | 0.01MF | 500V | CERAMIC | |
| | C805 | QCE22HP-103 | 0.01MF | 500V | CERAMIC | |
| | C809 | QCF21HP-472 | 4700PF | 50V | CERAMIC | |
| | C810 | QETB1EM-476 | 47MF | 25V | ELECTRO | |
| | C811 | QCF21HP-472 | 4700PF | 50V | CERAMIC | |
| | C812 | QETB1HM-107 | 100MF | 50V | ELECTRO | |
| | C813 | QCF21HP-472 | 4700PF | 50V | CERAMIC | |
| | C814 | QETB1EM-476 | 47MF | 25V | ELECTRO | |
| | C815 | QCF21HP-472 | 4700PF | 50V | CERAMIC | |
| | C816 | QETB1CM-476 | 47MF | 16V | ELECTRO | |
| | C821 | QCF21HP-472 | 4700PF | 50V | CERAMIC | |
| | C822 | QETB1CM-477 | 470MF | 16V | ELECTRO | |
| | C823 | QETB1HM-105 | 1MF | 50V | ELECTRO | |
| | C826 | QETB1CM-476 | 47MF | 16V | ELECTRO | |
| | C828 | QETB1AM-107 | 100MF | 10V | ELECTRO | |
| | C903 | QETB1HM-226 | 22MF | 50V | ELECTRO | |
| | C906 | QETB1AM-227 | 220MF | 10V | ELECTRO | |
| | C909 | QETB1CM-226 | 22MF | 16V | ELECTRO | |
| | C910 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |

⚠ : SAFETY PARTS

## RESISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | R701 | QRD167J-222 | 2.2K | 1/6W | CARBON | |
| | R702 | QRD167J-222 | 2.2K | 1/6W | CARBON | |
| | R703 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R704 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R705 | QRD167J-202 | 2K | 1/6W | CARBON | |
| | R706 | QRD167J-202 | 2K | 1/6W | CARBON | |
| | R707 | QRD167J-202 | 2K | 1/6W | CARBON | |
| | R708 | QRD167J-202 | 2K | 1/6W | CARBON | |
| | R709 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R710 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R711 | QRD167J-561 | 560 | 1/6W | CARBON | |
| | R712 | QRD167J-561 | 560 | 1/6W | CARBON | |
| | R713 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R714 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R717 | QRD167J-101 | 100 | 1/6W | CARBON | |
| | R718 | QRD167J-101 | 100 | 1/6W | CARBON | |
| ⚠ | R719 | QRD14CJ-181S | 180 | 1/4W | UNF.CARBON | |
| ⚠ | R720 | QRD14CJ-181S | 180 | 1/4W | UNF.CARBON | |
| | R723 | QRD167J-822 | 8.2K | 1/6W | CARBON | |
| | R724 | QRD167J-822 | 8.2K | 1/6W | CARBON | |
| | R727 | QRD167J-822 | 8.2K | 1/6W | CARBON | |
| | R728 | QRD167J-822 | 8.2K | 1/6W | CARBON | |
| | R729 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R730 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R731 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R732 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R733 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R734 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R735 | QRD167J-333 | 33K | 1/6W | CARBON | |
| | R736 | QRD167J-333 | 33K | 1/6W | CARBON | |
| | R737 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R738 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R739 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R740 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R741 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R742 | QRD167J-123 | 12K | 1/6W | CARBON | |
| ⚠ | R743 | QRG022J-562A | 5.6K | 2W | O.M.FILM | |
| | R751 | QVPA601-501A | 500 | | VARIABLE | |
| | R752 | QVPA601-501A | 500 | | VARIABLE | |
| | R753 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R754 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R755 | QRD167J-391 | 390 | 1/6W | CARBON | |
| | R756 | QRD167J-391 | 390 | 1/6W | CARBON | |
| | R767 | QRD167J-161 | 160 | 1/6W | CARBON | |
| | R768 | QRD167J-161 | 160 | 1/6W | CARBON | |
| | R769 | QRD167J-161 | 160 | 1/6W | CARBON | |
| | R770 | QRD167J-161 | 160 | 1/6W | CARBON | |
| ⚠ | R771 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R772 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R773 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R774 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R779 | QRD14CJ-331S | 330 | 1/4W | UNF.CARBON | |
| ⚠ | R780 | QRD14CJ-331S | 330 | 1/4W | UNF.CARBON | |
| ⚠ | R781 | QRD14CJ-331S | 330 | 1/4W | UNF.CARBON | |
| ⚠ | R782 | QRD14CJ-331S | 330 | 1/4W | UNF.CARBON | |
| ⚠ | R783 | QRD14CJ-272S | 2.7K | 1/4W | UNF.CARBON | |
| ⚠ | R784 | QRD14CJ-272S | 2.7K | 1/4W | UNF.CARBON | |
| ⚠ | R785 | QRD14CJ-271S | 270 | 1/4W | UNF.CARBON | |
| ⚠ | R786 | QRD14CJ-271S | 270 | 1/4W | UNF.CARBON | |
| ⚠ | R787 | ERF032K-R22 | 0.22 | 3W | CEMENT | |
| ⚠ | R788 | ERF032K-R22 | 0.22 | 3W | CEMENT | |
| ⚠ | R789 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R790 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R791 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| ⚠ | R792 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| | R793 | QRD12CJ-330S | 33 | 1/2W | R.NETWORK | |
| | R794 | QRD12CJ-330S | 33 | 1/2W | R.NETWORK | |
| ⚠ | R795 | QRG022J-100A | 10 | 2W | O.M.FILM | |
| ⚠ | R796 | QRG022J-100A | 10 | 2W | O.M.FILM | |
| ⚠ | R797 | QRD14CJ-330S | 33 | 1/4W | UNF.CARBON | |
| ⚠ | R798 | QRD14CJ-330S | 33 | 1/4W | UNF.CARBON | |
| | R801 | QRD167J-114 | 110K | 1/6W | CARBON | |
| | R802 | QRD167J-114 | 110K | 1/6W | CARBON | |
| | R803 | QRD12CJ-4R7S | 4.7 | 1/2W | R.NETWORK | |
| ⚠ | R804 | QRD14CJ-390S | 39 | 1/4W | UNF.CARBON | |
| | R808 | QRD167J-273 | 27K | 1/6W | CARBON | |
| ⚠ | R809 | QRG022J-271A | 270 | 2W | O.M.FILM | |
| ⚠ | R810 | QRG022J-271A | 270 | 2W | O.M.FILM | |
| ⚠ | R811 | QRG022J-271A | 270 | 2W | O.M.FILM | |
| | R812 | QRD167J-123 | 12K | 1/6W | CARBON | |

## RESISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| ⚠ | R813 | QRG022J-391A | 390 | 2W | O.M.FILM | |
| | R817 | QRD12CJ-123S | 12K | 1/2W | R.NETWORK | |
| ⚠ | R821 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| | R822 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R823 | QRD167J-821 | 820 | 1/6W | CARBON | |
| ⚠ | R831 | QRG012J-220A | 22 | 1W | O.M.FILM | |
| | R832 | QRD167J-333 | 33K | 1/6W | CARBON | |
| ⚠ | R843 | QRD14CJ-100S | 10 | 1/4W | UNF.CARBON | |
| | R844 | QRD167J-272 | 2.7K | 1/6W | CARBON | |
| | R901 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R902 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R903 | QRD167J-562 | 5.6K | 1/6W | CARBON | |
| | R904 | QRD167J-562 | 5.6K | 1/6W | CARBON | |
| | R905 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R906 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R907 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R908 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R909 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R911 | QRD167J-332 | 3.3K | 1/6W | CARBON | |
| | R912 | QRD167J-473 | 47K | 1/6W | CARBON | |
| | R913 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R914 | QRD167J-823 | 82K | 1/6W | CARBON | |
| | R918 | QRD167J-822 | 8.2K | 1/6W | CARBON | |
| | R919 | QRD167J-822 | 8.2K | 1/6W | CARBON | |
| | R921 | QRD167J-204 | 200K | 1/6W | CARBON | |
| ⚠ | R923 | QRG022J-182A | 1.8K | 2W | O.M.FILM | |
| ⚠ | R931 | QRD14CJ-101S | 100 | 1/4W | UNF.CARBON | |
| | R932 | QRD12CJ-822S | 8.2K | 1/2W | R.NETWORK | |
| | R935 | QRD167J-562 | 5.6K | 1/6W | CARBON | |
| | R936 | QRD167J-393 | 39K | 1/6W | CARBON | |
| | R937 | QRD167J-153 | 15K | 1/6W | CARBON | |
| ⚠ | R941 | QRG022J-471A | 470 | 2W | O.M.FILM | |
| ⚠ | R942 | QRG022J-471A | 470 | 2W | O.M.FILM | |

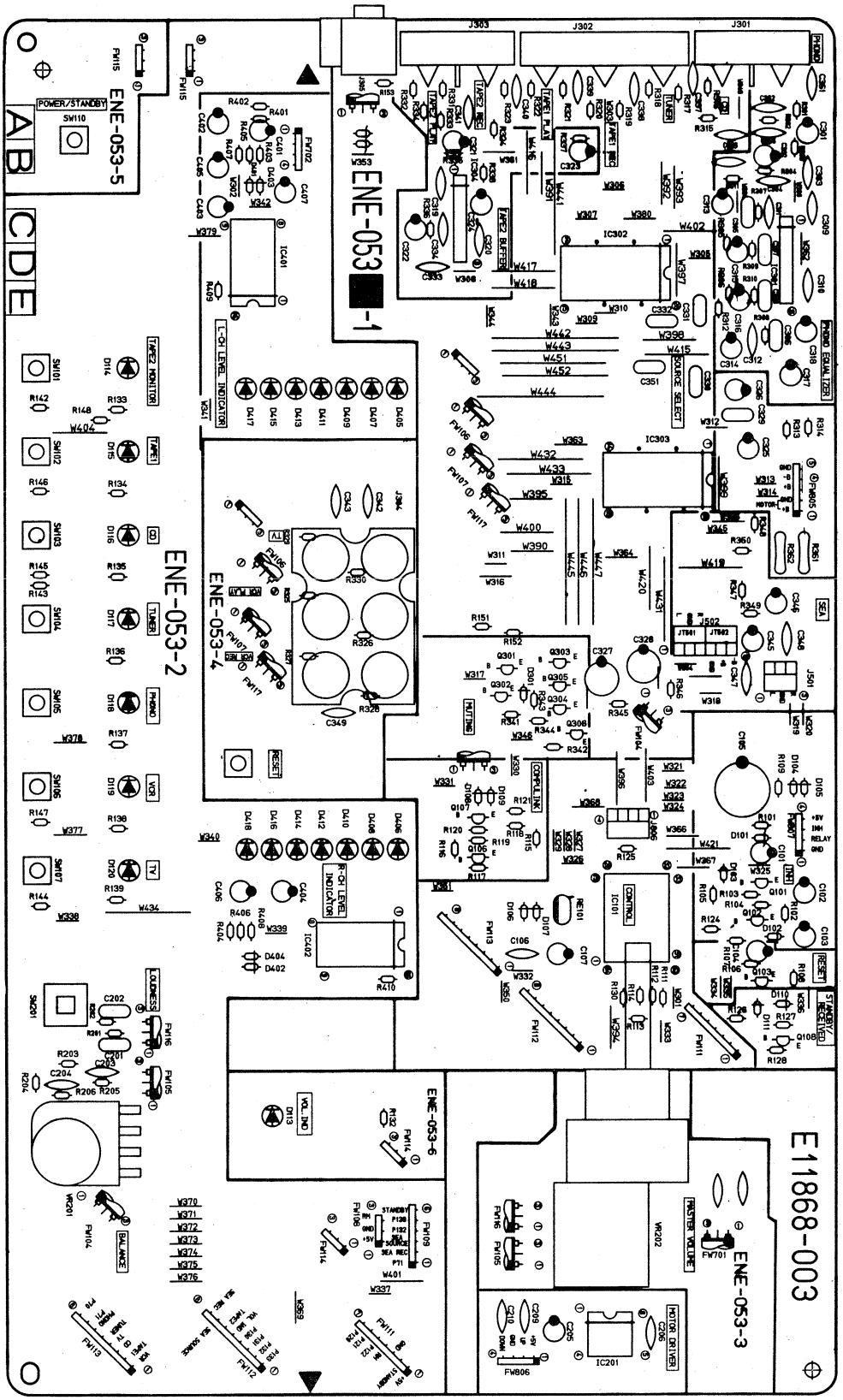
## OTHERS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | AREA |
|---|---|---|---|---|
| | | EMG7331-002U | FUSE CLIP | |
| | | EMG7331-002 | FUSE CLIP | |
| | | E11865-003 | CIRCUIT BOARD | |
| | | E300209-027 | HEAT SINK | |
| | | E305804-001 | INSTRUCTION BOOK | |
| | | E305805-001 | INSTRUCTION BOOK | |
| | | E48269-001 | SPACER | |
| | | E48269-001 | SPACER | |
| | | E65508-002 | TAB | |
| | | E73525-003 | SCREW | |
| | | SBSB3008CC | SCREW | |
| ⚠ | J001 | QMCA007-004 | AC OUTLET | |
| | J701 | EMV7122-003 | CONNECTOR | |
| | J702 | EMV7122-004 | CONNECTOR | |
| | J805 | EMV7122-005 | CONNECTOR | |
| | J807 | EMV7122-004 | CONNECTOR | |
| | J901 | QMS6A40-021 | HEADPHONE JACK | |
| | L751 | EQL0001-1R0 | INDUCTOR | |
| | L752 | EQL0001-1R0 | INDUCTOR | |
| | P801 | E67764-202 | WRAPPING TERMINAL | |
| | P805 | E67764-103 | WRAPPING TERMINAL | |
| | S901 | QST4231-E01 | PUSH SWITCH | |
| | S902 | QST4231-E01 | PUSH SWITCH | |
| ⚠ | T002 | ETP1000-42JA | POWER TRANSFORMER | |
| | EP001 | E70859-001 | EARTH PLATE | |
| | EP002 | E70859-001 | EARTH PLATE | |
| | FW802 | EWR14B-30SS | FLAT WIRE | |
| | FW803 | EWR33B-20SST | FLAT WIRE | |
| | FW808 | EWR33B-20SST | FLAT WIRE | |
| | PL001 | E45524-002 | FUSE CLIP | |
| | PL002 | E45524-002 | FUSE CLIP | |
| | RY001 | ESK1D12-115 | RELAY | |
| | RY901 | ESK5D24-218 | RELAY | |
| | ST901 | EMB90TV-801A | SPEAKER TERMINAL | |

⚠ : SAFETY PARTS

## ■ ENE-053 □ Front Control PC Board Ass'y

**Note:** ENE-053 □ varies according to the areas employed. See note (1) when placing an order.



Note (1)

| PC Board Ass'y | Designated Areas |
|---|---|
| ENE-053 [A] | the U.S.A. |
| ENE-053 [B] | Canada |

TRANSISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | Q101 | DTC144ES | SILICON | ROHM | |
| | Q102 | 2SC458(C,D) | SILICON | HITACHI | |
| | Q103 | 2SC458(C,D) | SILICON | HITACHI | |
| | Q106 | 2SC458(C,D) | SILICON | HITACHI | |
| | Q107 | 2SC458(C,D) | SILICON | HITACHI | |
| | Q108 | DTA114YS | SILICON | ROHM | |
| | Q301 | DTC144ES | SILICON | ROHM | |
| | Q302 | DTA114YS | SILICON | ROHM | |
| | Q303 | 2SK105(H) | F.E.T | NEC | |
| | Q304 | 2SK105(H) | F.E.T | NEC | |

I. C. S

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | IC101 | UPD75104G554-1B | I.C. | NEC | |
| | IC201 | LB1639-CV | I.C. | SANYO | |
| | IC301 | VC4580LD | I.C. | JRC | |
| | IC302 | TC9164N | I.C. | TOSHIBA | |
| | IC303 | TC9162N | I.C. | TOSHIBA | |
| | IC304 | VC4580L | I.C. | JRC | |
| | IC401 | IR2E19 | I.C. | SHARP | |
| | IC402 | IR2E19 | I.C. | SHARP | |

DIODES

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | D101 | MTZ5.6JC | ZENER | ROHM | |
| | D102 | 1SS133 | SILICON | ROHM | |
| | D103 | 1SS133 | SILICON | ROHM | |
| | D104 | 1SS133 | SILICON | ROHM | |
| | D105 | 1SS133 | SILICON | ROHM | |
| | D106 | 1SS133 | SILICON | ROHM | |
| | D107 | 1SS133 | SILICON | ROHM | |
| | D108 | 1SS133 | SILICON | ROHM | |
| | D109 | 1SS133 | SILICON | ROHM | |
| | D110 | 1SS133 | SILICON | ROHM | |
| | D111 | 1SS133 | SILICON | ROHM | |
| | D113 | SLR-34VC5OF124 | L.E.D. | ROHM | |
| | D114 | SLR-34VC5OF165 | L.E.D. | ROHM | |
| | D115 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D116 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D117 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D118 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D119 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D120 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D301 | 1SS133 | SILICON | ROHM | |
| | D401 | 1SS133 | SILICON | ROHM | |
| | D402 | 1SS133 | SILICON | ROHM | |
| | D403 | 1SS133 | SILICON | ROHM | |
| | D404 | 1SS133 | SILICON | ROHM | |
| | D405 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D406 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D407 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D408 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D409 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D410 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D411 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D412 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D413 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D414 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D415 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D416 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D417 | SLR-34DC5OF165 | L.E.D. | ROHM | |
| | D418 | SLR-34DC5OF165 | L.E.D. | ROHM | |

CAPACITORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | C101 | QETB1HM-225 | 2.2MF | 50V | ELECTRO | |
| | C102 | QETB1HM-106 | 10MF | 50V | ELECTRO | |
| | C103 | QETB1HM-106 | 10MF | 50V | ELECTRO | |
| | C104 | QETB1HM-225 | 2.2MF | 50V | ELECTRO | |
| | C105 | EEZ0503-479 | 47000MF | | ELECTRO | |
| | C106 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C107 | QETB1AM-107 | 100MF | 10V | ELECTRO | |
| | C201 | QFN81HJ-682 | 6800PF | 50V | MYLAR | |
| | C202 | QFN81HJ-682 | 6800PF | 50V | MYLAR | |
| | C203 | QCS21HJ-181 | 180PF | 50V | CERAMIC | |
| | C204 | QCS21HJ-181 | 180PF | 50V | CERAMIC | |
| | C205 | QETB1AM-107 | 100MF | 10V | ELECTRO | |
| | C206 | QCF21HP-473 | 0.047MF | 50V | CERAMIC | |
| | C209 | QCS21HJ-331 | 330PF | 50V | CERAMIC | |
| | C210 | QCS21HJ-331 | 330PF | 50V | CERAMIC | |
| | C301 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C302 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C303 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C304 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C305 | QFN81HJ-182 | 1800PF | 50V | MYLAR | |
| | C306 | QFN81HJ-182 | 1800PF | 50V | MYLAR | |
| | C307 | QFN81HJ-682 | 6800PF | 50V | MYLAR | |
| | C308 | QFN81HJ-682 | 6800PF | 50V | MYLAR | |
| | C309 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C310 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C311 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C312 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C313 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C314 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C315 | QETB1CM-107 | 100MF | 16V | ELECTRO | |
| | C316 | QETB1CM-107 | 100MF | 16V | ELECTRO | |
| | C317 | QETB1EM-476 | 47MF | 25V | ELECTRO | |
| | C318 | QETB1EM-476 | 47MF | 25V | ELECTRO | |
| | C319 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C320 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C321 | QETB1HM-106 | 10MF | 50V | ELECTRO | |
| | C322 | QETB1HM-106 | 10MF | 50V | ELECTRO | |
| | C323 | QETB1HM-106 | 10MF | 50V | ELECTRO | |
| | C324 | QETB1HM-106 | 10MF | 50V | ELECTRO | |
| | C325 | QETB1EM-476 | 47MF | 25V | ELECTRO | |
| | C326 | QETB1EM-476 | 47MF | 25V | ELECTRO | |
| | C327 | EEZ1005-106 | 10MF | 100V | ELECTRO | |
| | C328 | EEZ1005-106 | 10MF | 100V | ELECTRO | |
| | C329 | QFN81HJ-223 | 0.022MF | 50V | MYLAR | |
| | C330 | QFN81HJ-223 | 0.022MF | 50V | MYLAR | |
| | C331 | QFN81HJ-223 | 0.022MF | 50V | MYLAR | |
| | C332 | QFN81HJ-223 | 0.022MF | 50V | MYLAR | |
| | C333 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C334 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C335 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C336 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C337 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C338 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C339 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C340 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C341 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C342 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C343 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C345 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C346 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C347 | QCS21HJ-470 | 47PF | 50V | CERAMIC | |
| | C348 | QCS21HJ-470 | 47PF | 50V | CERAMIC | |
| | C349 | QCF21HP-223 | 0.022MF | 50V | CERAMIC | |
| | C351 | QFN81HJ-223 | 0.022MF | 50V | MYLAR | |
| | C361 | QCS21HJ-331 | 330PF | 50V | CERAMIC | |
| | C362 | QCS21HJ-331 | 330PF | 50V | CERAMIC | |
| | C401 | QEK61HM-475 | 4.7MF | 50V | ELECTRO | |
| | C402 | QEK61HM-475 | 4.7MF | 50V | ELECTRO | |
| | C403 | QEK61EM-106 | 10MF | 25V | ELECTRO | |
| | C404 | QEK61EM-106 | 10MF | 25V | ELECTRO | |
| | C405 | QEK61EM-106 | 10MF | 25V | ELECTRO | |
| | C406 | QEK61EM-106 | 10MF | 25V | ELECTRO | |
| | C407 | QEK61EM-476 | 47MF | 25V | ELECTRO | |

⚠ : SAFETY PARTS

## RESISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | R101 | QRD167J-222 | 2.2K | 1/6W | CARBON | |
| | R102 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R103 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R104 | QRD167J-223 | 22K | 1/6W | CARBON | |
| | R105 | QRD167J-473 | 47K | 1/6W | CARBON | |
| | R106 | QRD167J-223 | 22K | 1/6W | CARBON | |
| | R107 | QRD167J-102 | 1K | 1/6W | CARBON | |
| | R108 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R109 | QRD167J-331 | 330 | 1/6W | CARBON | |
| | R111 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R112 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R113 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R114 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R115 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R116 | QRD167J-473 | 47K | 1/6W | CARBON | |
| | R117 | QRD167J-223 | 22K | 1/6W | CARBON | |
| | R118 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R119 | QRD167J-183 | 18K | 1/6W | CARBON | |
| | R120 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R121 | QRD167J-471 | 470 | 1/6W | CARBON | |
| | R124 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R125 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R126 | QRD167J-473 | 47K | 1/6W | CARBON | |
| | R127 | QRD167J-222 | 2.2K | 1/6W | CARBON | |
| | R128 | QRD167J-271 | 270 | 1/6W | CARBON | |
| | R130 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R132 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R133 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R134 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R135 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R136 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R137 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R138 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R139 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R142 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R143 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R144 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R145 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R146 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R147 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R148 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R151 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R152 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R153 | QRD167J-100 | 10 | 1/6W | CARBON | |
| | R201 | QRD167J-683 | 68K | 1/6W | CARBON | |
| | R202 | QRD167J-683 | 68K | 1/6W | CARBON | |
| | R203 | QRD167J-363 | 36K | 1/6W | CARBON | |
| | R204 | QRD167J-363 | 36K | 1/6W | CARBON | |
| | R205 | QRD167J-105 | 1M | 1/6W | CARBON | |
| | R206 | QRD167J-105 | 1M | 1/6W | CARBON | |
| | R301 | QRD167J-222 | 2.2K | 1/6W | CARBON | |
| | R302 | QRD167J-222 | 2.2K | 1/6W | CARBON | |
| | R303 | QRD167J-473 | 47K | 1/6W | CARBON | |
| | R304 | QRD167J-473 | 47K | 1/6W | CARBON | |
| | R305 | QRD167J-561 | 560 | 1/6W | CARBON | |
| | R306 | QRD167J-561 | 560 | 1/6W | CARBON | |
| | R307 | QRD167J-393 | 39K | 1/6W | CARBON | |
| | R308 | QRD167J-393 | 39K | 1/6W | CARBON | |
| | R309 | QRD167J-474 | 470K | 1/6W | CARBON | |
| | R310 | QRD167J-474 | 470K | 1/6W | CARBON | |
| | R311 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R312 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R313 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R314 | QRD167J-681 | 680 | 1/6W | CARBON | |
| | R315 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R316 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R317 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R318 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R319 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R320 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R321 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R322 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R323 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R324 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R325 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R326 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R327 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R328 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R329 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R330 | QRD167J-221 | 220 | 1/6W | CARBON | |
| | R331 | QRD167J-102 | 1K | 1/6W | CARBON | |

## RESISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | R332 | QRD167J-102 | 1K | 1/6W | CARBON | |
| | R333 | QRD167J-823 | 82K | 1/6W | CARBON | |
| | R334 | QRD167J-823 | 82K | 1/6W | CARBON | |
| | R335 | QRD167J-124 | 120K | 1/6W | CARBON | |
| | R336 | QRD167J-124 | 120K | 1/6W | CARBON | |
| | R337 | QRD167J-474 | 470K | 1/6W | CARBON | |
| | R338 | QRD167J-474 | 470K | 1/6W | CARBON | |
| | R341 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R342 | QRD167J-823 | 82K | 1/6W | CARBON | |
| | R343 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R344 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R345 | QRD167J-332 | 3.3K | 1/6W | CARBON | |
| | R346 | QRD167J-332 | 3.3K | 1/6W | CARBON | |
| | R347 | QRD167J-513 | 51K | 1/6W | CARBON | |
| | R348 | QRD167J-513 | 51K | 1/6W | CARBON | |
| | R349 | QRD167J-105 | 1M | 1/6W | CARBON | |
| | R350 | QRD167J-105 | 1M | 1/6W | CARBON | |
| ⚠ | R361 | QRD14CJ-680S | 68 | 1/4W | UNF.CARBON | |
| ⚠ | R362 | QRD14CJ-680S | 68 | 1/4W | UNF.CARBON | |
| | R401 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R402 | QRD167J-123 | 12K | 1/6W | CARBON | |
| | R403 | QRD167J-471 | 470 | 1/6W | CARBON | |
| | R404 | QRD167J-471 | 470 | 1/6W | CARBON | |
| | R405 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R406 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R407 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R408 | QRD167J-152 | 1.5K | 1/6W | CARBON | |
| | R409 | QRD167J-512 | 5.1K | 1/6W | CARBON | |
| | R410 | QRD167J-512 | 5.1K | 1/6W | CARBON | |
| | VR201 | QVDA87W-EF5B | 250K | | VARIABLE | |
| | VR202 | QVDB94B-EF5B | 250K | | VARIABLE | |

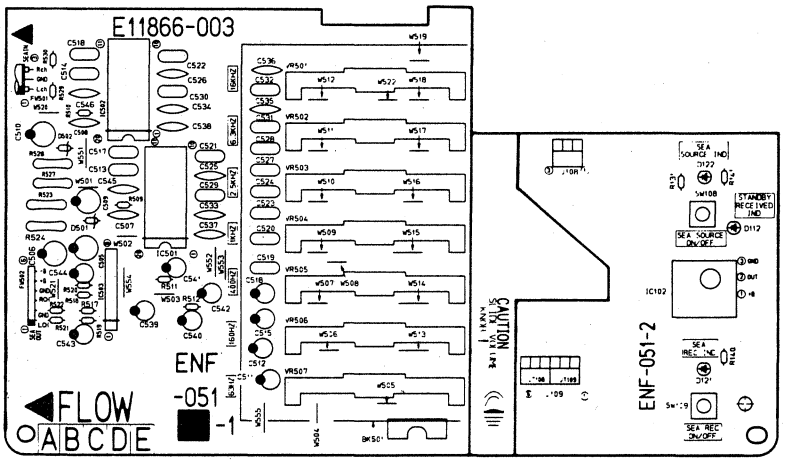
## OTHERS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | AREA |
|---|---|---|---|---|
| | | E11868-003 | CIRCUIT BOARD | |
| | J301 | EMN00TV-405A | 4P PIN JACK | |
| | J302 | EMN00TV-602A | 6P PIN JACK | |
| | J303 | EMN00TV-405A | 4P PIN JACK | |
| | J304 | EMN00TP-602A | 6P PIN JACK | |
| | J305 | QMS3501-021 | MINI JACK | |
| | J501 | EMV7122-003 | CONNECTOR | |
| | J806 | EMV7122-004 | CONNECTOR | |
| | FW104 | EWR23C-25NN | FLAT WIRE | |
| | FW105 | EWR23C-16NN | FLAT WIRE | |
| | FW106 | EWR23C-25NN | FLAT WIRE | |
| | FW107 | EWR23C-25NN | FLAT WIRE | |
| | FW108 | EWR33B-13LST | FLAT WIRE | |
| | FW109 | EWR36B-20LST | FLAT WIRE | |
| | FW111 | EWR37B-20SST | FLAT WIRE | |
| | FW112 | EWR38B-20SST | FLAT WIRE | |
| | FW113 | EWR38B-20SST | FLAT WIRE | |
| | FW114 | EWR33B-10SST | FLAT WIRE | |
| | FW115 | EWR33B-20SST | FLAT WIRE | |
| | FW116 | EWR23C-16NN | FLAT WIRE | |
| | FW117 | EWR23C-25NN | FLAT WIRE | |
| | FW701 | EWR23C-13LN | FLAT WIRE | |
| | FW702 | EWR34B-16LST | FLAT WIRE | |
| | FW805 | EWR35B-13LST | FLAT WIRE | |
| | FW806 | EWR34B-10LST | FLAT WIRE | |
| | FW807 | EWR14B-45LS | FLAT WIRE | |
| | JT501 | EMV7122-003 | CONNECTOR | |
| | JT502 | EMV7122-003 | CONNECTOR | |
| | RE101 | ECX0004-194KM | RESONATOR | |
| | SW101 | ESP0001-018 | TACT SWITCH | |
| | SW102 | ESP0001-018 | TACT SWITCH | |
| | SW103 | ESP0001-018 | TACT SWITCH | |
| | SW104 | ESP0001-018 | TACT SWITCH | |
| | SW105 | ESP0001-018 | TACT SWITCH | |
| | SW106 | ESP0001-018 | TACT SWITCH | |
| | SW107 | ESP0001-018 | TACT SWITCH | |
| | SW110 | ESP0001-018 | TACT SWITCH | |
| | SW201 | QSTL101-E01 | PUSH SWITCH | |

⚠ : SAFETY PARTS

# ■ ENF-051 □ SEA PC Board Ass'y

**Note:** ENF-051 □ varies according to the areas employed. See note (1) when placing an order.




Note (1)

| PC Board Ass'y | Designated Areas |
|---|---|
| ENF-051 [A] | the U.S.A. |
| ENF-051 [B] | Canada |

I. C. S

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | IC102 | A1QH3021HO | I.C. | SHARP | |
| | IC501 | LA3607S | I.C. | SANYO | |
| | IC502 | LA3607S | I.C. | SANYO | |
| | IC503 | VC4580L | I.C. | JRC | |

DIODES

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | MAKER | AREA |
|---|---|---|---|---|---|
| | D112 | SLR-34VC3F | L.E.D. | ROHM | |
| | D121 | SLR-34DC3F | L.E.D. | ROHM | |
| | D122 | SLR-34DC3F | L.E.D. | ROHM | |
| | D501 | MTZ7.5JC | ZENER | ROHM | |
| | D502 | MTZ7.5JC | ZENER | ROHM | |

CAPACITORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | C505 | QETB1EM-226 | 22MF | 25V | ELECTRO | |
| | C506 | QETB1EM-226 | 22MF | 25V | ELECTRO | |
| | C507 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C508 | QCS21HJ-101 | 100PF | 50V | CERAMIC | |
| | C509 | QETB1CM-226 | 22MF | 16V | ELECTRO | |

CAPACITORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | C510 | QETB1CM-226 | 22MF | 16V | ELECTRO | |
| | C511 | QEK61HM-474G | 0.47MF | 50V | ELECTRO | |
| | C512 | QEK61HM-474G | 0.47MF | 50V | ELECTRO | |
| | C513 | QFN81HK-154 | 0.15MF | 50V | MYLAR | |
| | C514 | QFN81HK-154 | 0.15MF | 50V | MYLAR | |
| | C515 | QEK61HM-224G | 0.22MF | 50V | ELECTRO | |
| | C516 | QEK61HM-224G | 0.22MF | 50V | ELECTRO | |
| | C517 | QFN81HK-473 | 0.047MF | 50V | MYLAR | |
| | C518 | QFN81HK-473 | 0.047MF | 50V | MYLAR | |
| | C519 | QFV81HJ-154 | 0.15MF | 50V | T.FILM | |
| | C520 | QFV81HJ-154 | 0.15MF | 50V | T.FILM | |
| | C521 | QFN81HK-103 | 0.01MF | 50V | MYLAR | |
| | C522 | QFN81HK-103 | 0.01MF | 50V | MYLAR | |
| | C523 | QFN81HK-683 | 0.068MF | 50V | MYLAR | |
| | C524 | QFN81HK-683 | 0.068MF | 50V | MYLAR | |
| | C525 | QCY21HK-392 | 3900PF | 50V | CERAMIC | |
| | C526 | QCY21HK-392 | 3900PF | 50V | CERAMIC | |
| | C527 | QFN81HK-273 | 0.027MF | 50V | MYLAR | |
| | C528 | QFN81HK-273 | 0.027MF | 50V | MYLAR | |
| | C529 | QFN81HK-152 | 1500PF | 50V | MYLAR | |
| | C530 | QFN81HK-152 | 1500PF | 50V | MYLAR | |
| | C531 | QFN81HK-103 | 0.01MF | 50V | MYLAR | |
| | C532 | QFN81HK-103 | 0.01MF | 50V | MYLAR | |
| | C533 | QCY21HK-681 | 680PF | 50V | CERAMIC | |
| | C534 | QCY21HK-681 | 680PF | 50V | CERAMIC | |
| | C535 | QCY21HK-562 | 5600PF | 50V | CERAMIC | |
| | C536 | QCY21HK-562 | 5600PF | 50V | CERAMIC | |
| | C537 | QCS21HJ-221 | 220PF | 50V | CERAMIC | |
| | C538 | QCS21HJ-221 | 220PF | 50V | CERAMIC | |
| | C539 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C540 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C541 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C542 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C543 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C544 | QETB1HM-475 | 4.7MF | 50V | ELECTRO | |
| | C545 | QCS21HJ-330 | 33PF | 50V | CERAMIC | |
| | C546 | QCS21HJ-330 | 33PF | 50V | CERAMIC | |

⚠ : SAFETY PARTS

RESISTORS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | | | AREA |
|---|---|---|---|---|---|---|
| | R131 | QRD167J-151 | 150 | 1/6W | CARBON | |
| | R140 | QRD167J-331 | 330 | 1/6W | CARBON | |
| | R141 | QRD167J-331 | 330 | 1/6W | CARBON | |
| | R509 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R510 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R511 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R512 | QRD167J-472 | 4.7K | 1/6W | CARBON | |
| | R517 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R518 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R519 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R520 | QRD167J-103 | 10K | 1/6W | CARBON | |
| | R521 | QRD167J-104 | 100K | 1/6W | CARBON | |
| | R522 | QRD167J-104 | 100K | 1/6W | CARBON | |
| ⚠ | R523 | QRD14CJ-680S | 68 | 1/4W | UNF.CARBON | |
| ⚠ | R524 | QRD14CJ-680S | 68 | 1/4W | UNF.CARBON | |
| | R527 | QRD12CJ-391S | 390 | 1/2W | R.NETWORK | |
| | R528 | QRD12CJ-391S | 390 | 1/2W | R.NETWORK | |
| | R529 | QRD167J-474 | 470K | 1/6W | CARBON | |
| | R530 | QRD167J-474 | 470K | 1/6W | CARBON | |
| | VR501 | QVUB08W-EF5B | 250K | | VARIABLE | |
| | VR502 | QVUB08W-EF5B | 250K | | VARIABLE | |
| | VR503 | QVUB08W-EF5B | 250K | | VARIABLE | |
| | VR504 | QVUB08W-EF5B | 250K | | VARIABLE | |
| | VR505 | QVUB08W-EF5B | 250K | | VARIABLE | |
| | VR506 | QVUB08W-EF5B | 250K | | VARIABLE | |
| | VR507 | QVUB08W-EF5B | 250K | | VARIABLE | |

OTHERS

| ⚠ | ITEM | PART NUMBER | DESCRIPTION | AREA |
|---|---|---|---|---|
| | | E11866-003(S) | CIRCUIT BOARD | |
| | J108 | EMV7122-003 | CONNECTOR | |
| | BK501 | E306036-001 | SHIELD BRACKET | |
| | EP003 | E70859-001 | EARTH PLATE | |
| | FW501 | EWR23C-40LN | FLAT WIRE | |
| | FW502 | EWR36B-45LST | FLAT WIRE | |
| | JT108 | EMV7122-003 | CONNECTOR | |
| | JT109 | EMV7122-003 | CONNECTOR | |
| | SW108 | ESP0001-018 | TACT SWITCH | |
| | SW109 | ESP0001-018 | TACT SWITCH | |

⚠ : SAFETY PARTS

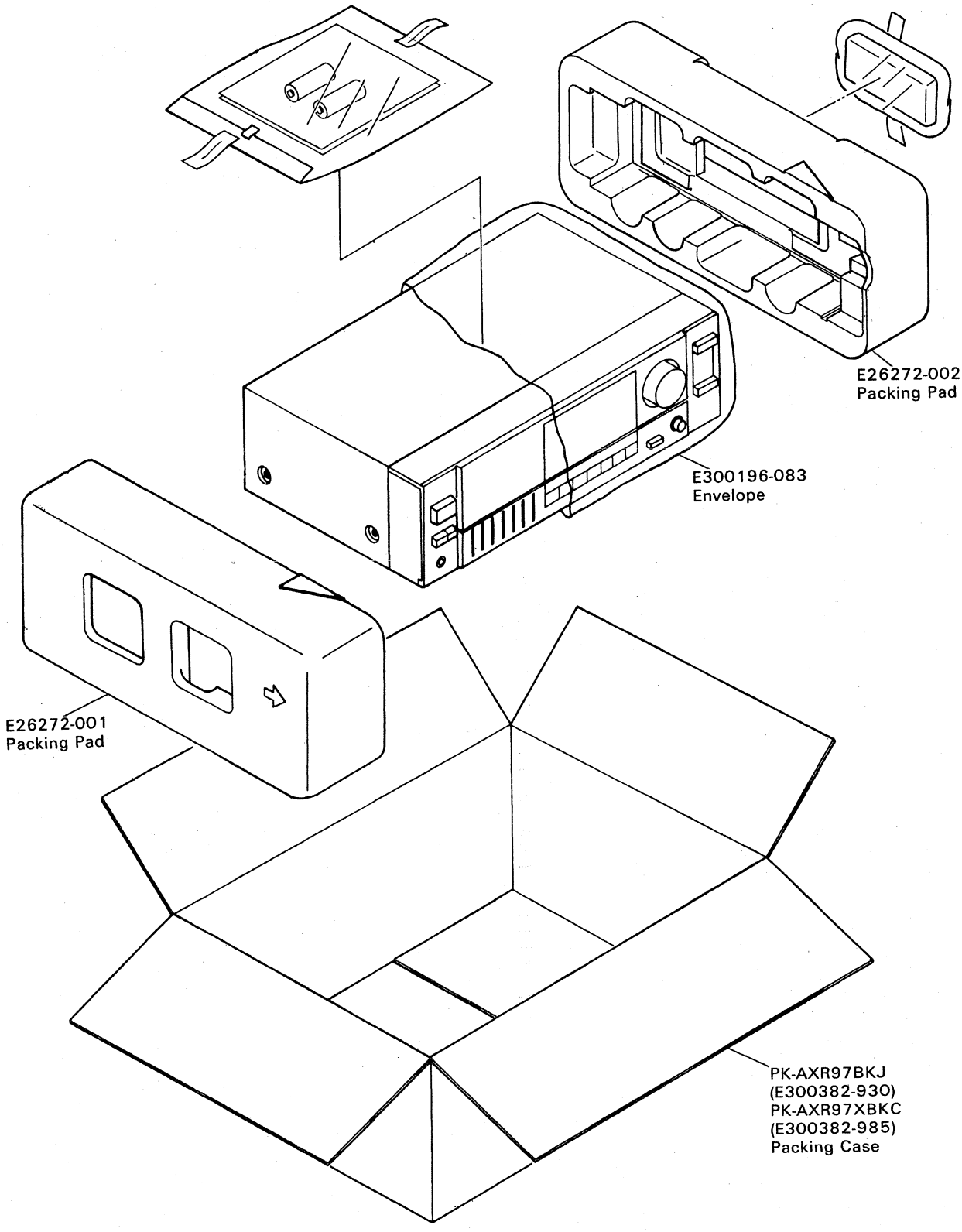
# Accessories List

| ⚠ | Part Number | Part Name | Q'ty | Description | Areas |
|---|---|---|---|---|---|
| | E30580-1500A | Instruction Book | 1 | | J |
| | E30580-1531A | Instruction Book | 1 | | C |
| | BT20025K | Warranty Card | 1 | | C |
| | BT20048C | Warranty Card | 1 | | J |
| | BT20044F | Safety Instruction Sheet | 1 | | J |
| | BT20071A | Service Center List | 1 | | C |
| | BT20108 | Service Information | 1 | | J |
| | E72360-001 | Caution Sheet | 1 | | C |
| | UM-3(DJ)-2PSA | Battery | 1 | | |
| | RM-SA97U | Remote Controler | 1 | | |
| | QPGA025-03505 | Envelope | 1 | | |
| | E66416-003 | Envelope | 1 | | J |

⚠: Safety Parts

| The Marks for Designated Areas | |
|---|---|
| J·····the U.S.A. | C·····Canada |

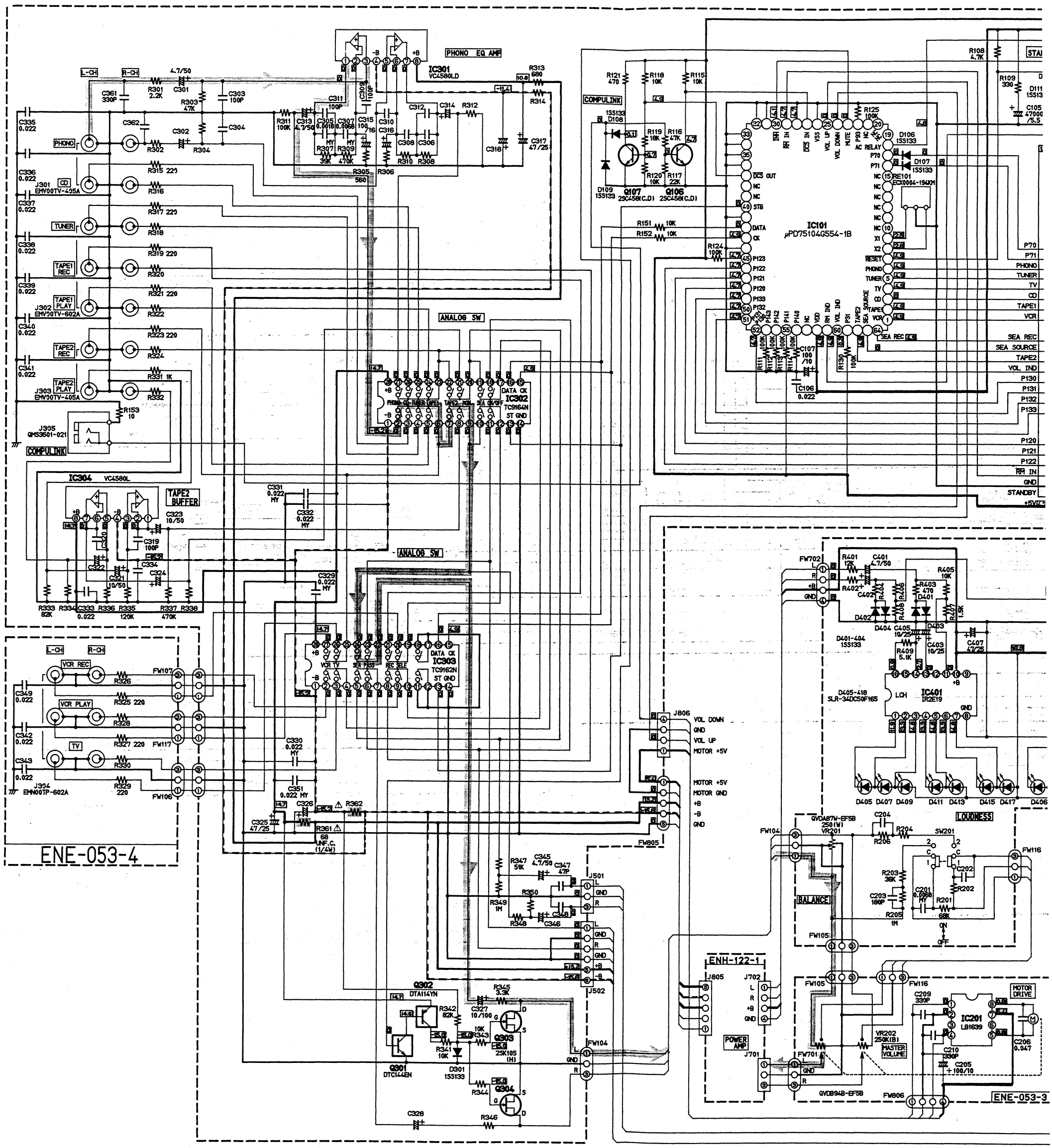
# Packing Materials and Part Numbers

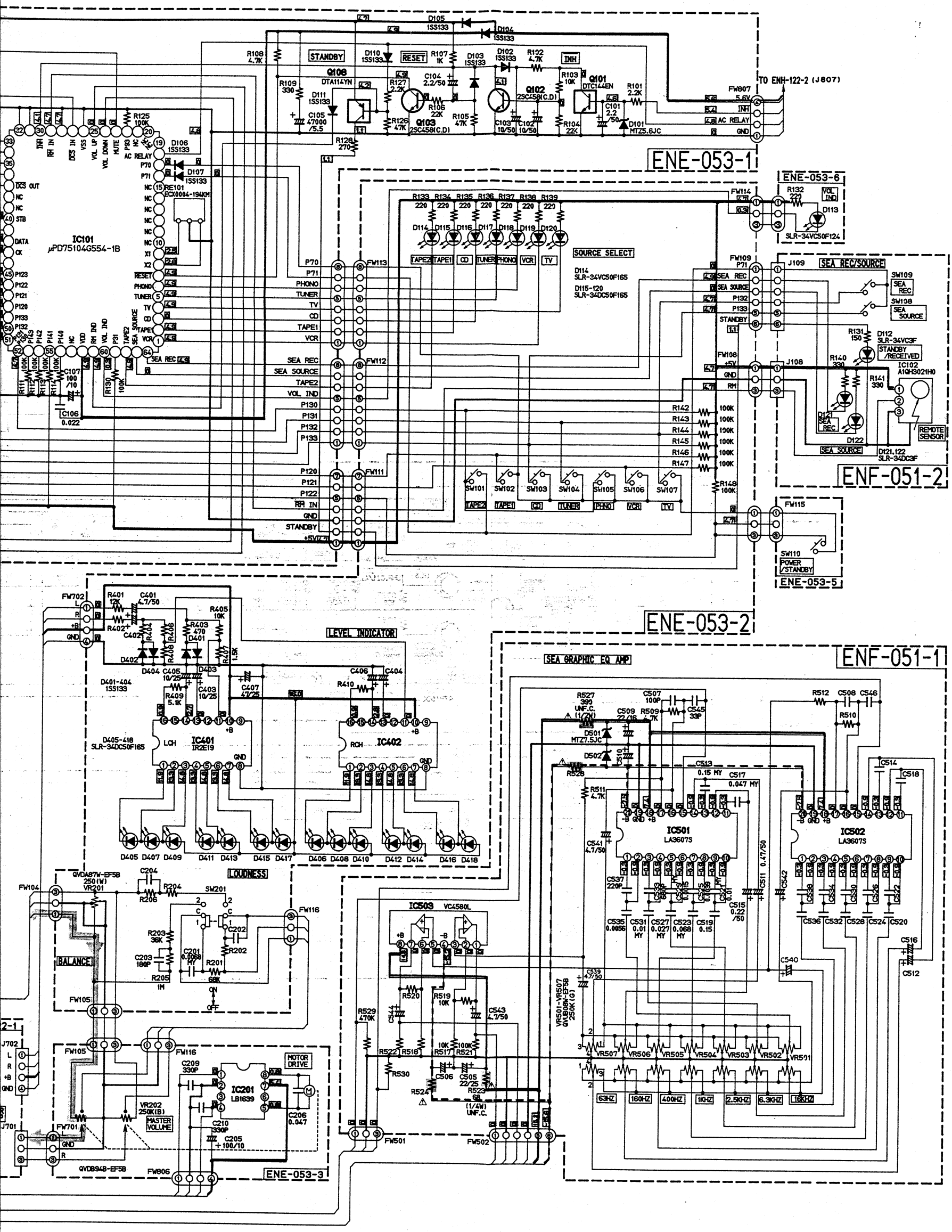



| The Marks for Designated Areas | |
|---|---|
| J.....the U.S.A. | C.....Canada |

# Schematic Diagram

## ■ Source Control Section



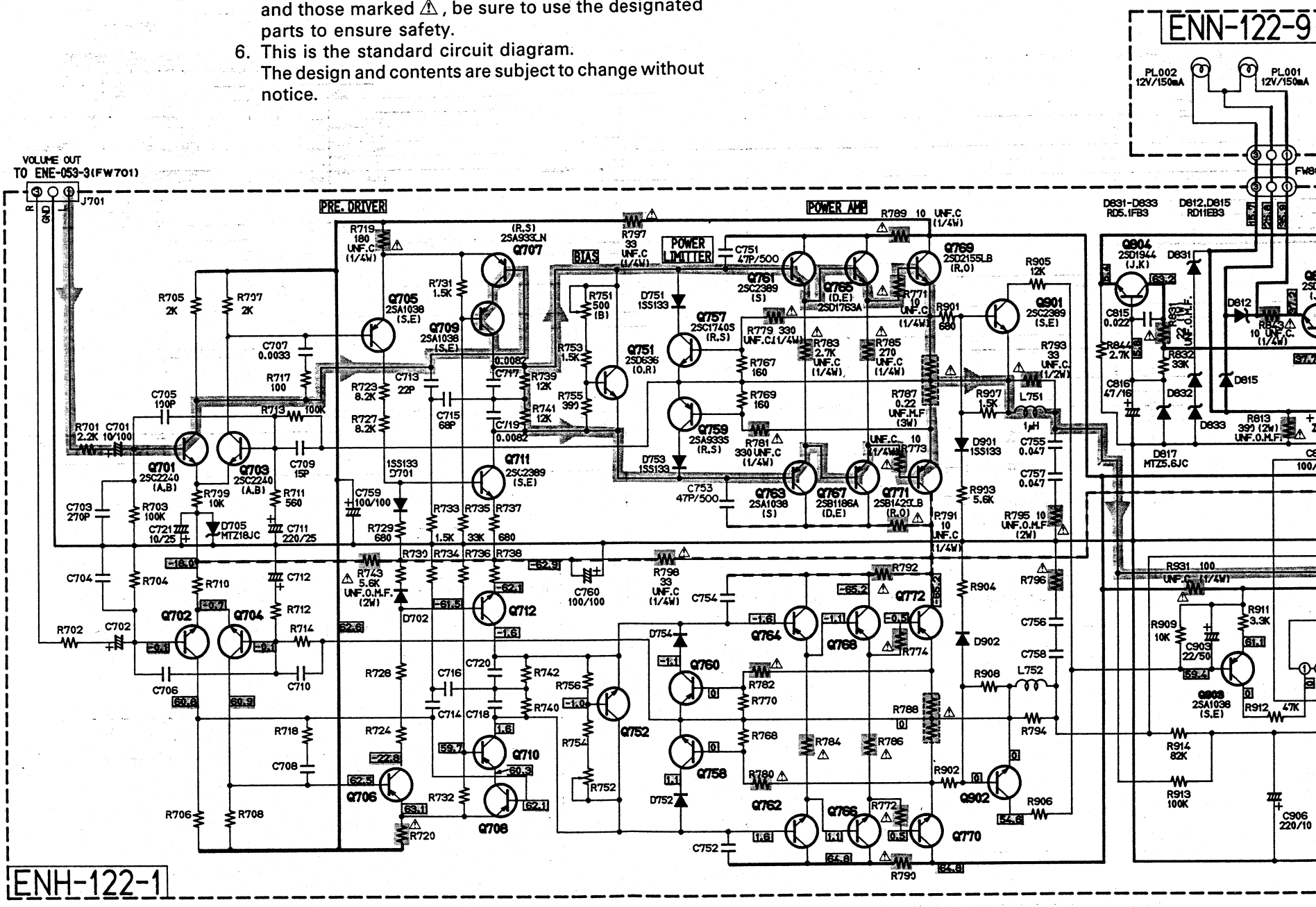

ENE-053-1
ENE-053-6
ENF-051-2
ENE-053-2
ENF-051-1
ENE-053-5
ENE-053-3
IC101
μPD75104G554-1B
IC401
IR2E19
IC402
IC501
LA3607S
IC502
LA3607S
IC503
VC4580L
IC201
LB1639
IC102
A1QH3021H0
SOURCE SELECT
LEVEL INDICATOR
SEA GRAPHIC EQ AMP
LOUDNESS
BALANCE
MASTER VOLUME
MOTOR DRIVE
SEA REC/SOURCE
STANDBY
RESET
INH
TO ENH-122-2 (J807)
TAPE2
TAPE1
CD
TUNER
PHONO
VCR
TV
63HZ
160HZ
400HZ
1KHZ
2.5KHZ
6.3KHZ
16KHZ
REMOTE SENSOR
POWER /STANDBY
STANDBY /RECEIVED

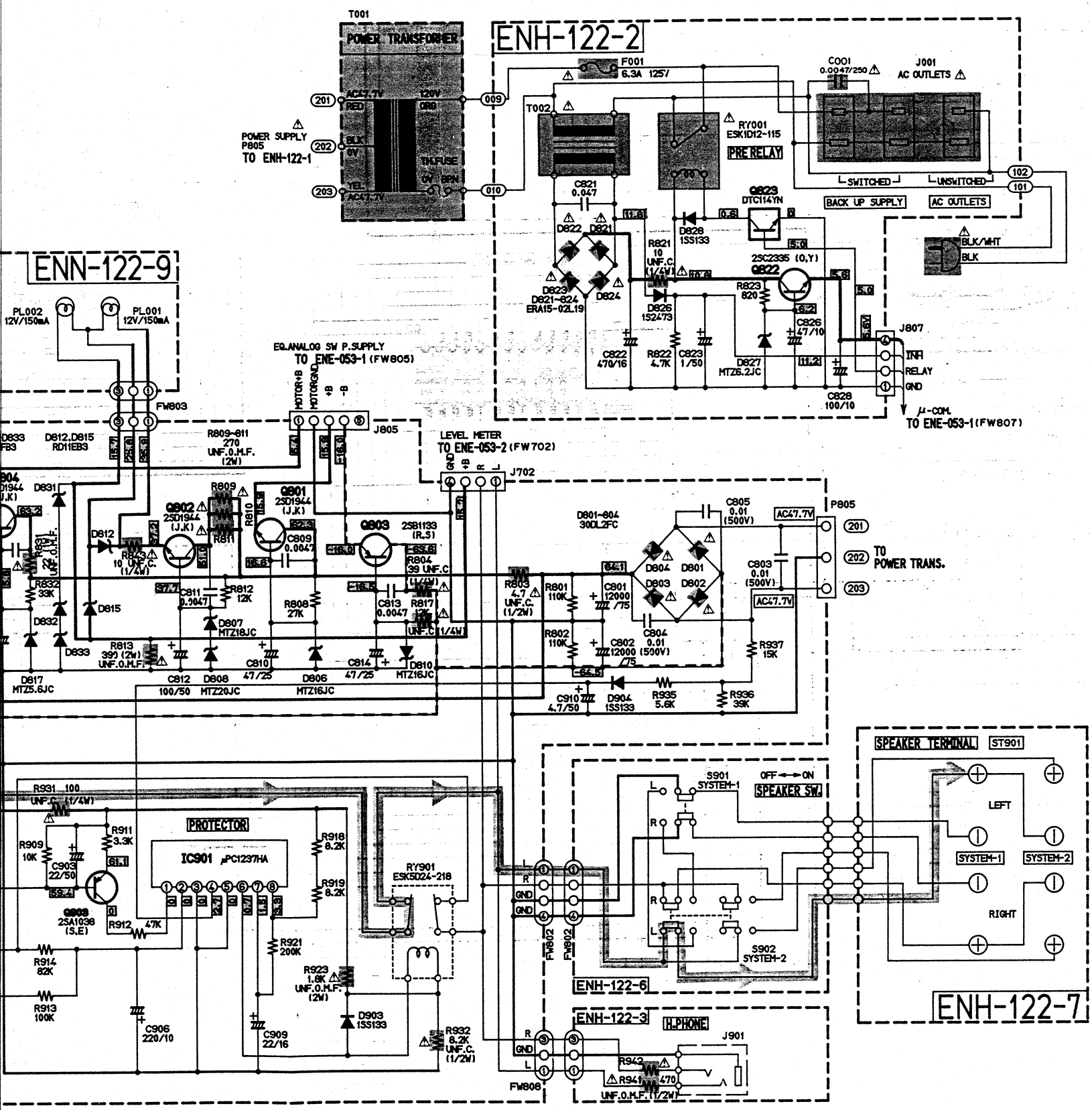
(No. 20079)

## ■ Power Amplifier Section

**Notes:**

1. ——— indicates + B power supply.
2. — — — indicates − B power supply.
3. ▬▬ indicates signal path.
4. ▬▬ shows DC voltage to the chassis with no signal input.
5. When replacing the parts in the darkened are (▬▬) and those marked ⚠, be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram.
   The design and contents are subject to change without notice.




ENH-122-2
T001
POWER TRANSFORMER
AC47.7V
120V
RED
ORG
BLK
0V
THERMOFUSE
YEL
AC47.7V
0V
BRN
201
202
203
009
010
POWER SUPPLY P805
TO ENH-122-1
F001
6.3A 125V
T002
RY001
ESK1D12-115
PRE RELAY
C001
0.0047/250
J001
AC OUTLETS
SWITCHED
UNSWITCHED
102
101
BACK UP SUPPLY
AC OUTLETS
C821
0.047
Q823
DTC114YN
D822
D821
D823
D821~824
ERA15-02L19
D824
D828
1SS133
R821
10
UNF.C.
(1/4W)
D826
1S2473
Q822
2SC2335 (O,Y)
R823
820
C826
47/10
C822
470/16
R822
4.7K
C823
1/50
D827
MTZ6.2JC
C828
100/10
J807
INH
RELAY
GND
μ-COM.
TO ENE-053-1(FW807)
BLK/WHT
BLK
ENN-122-9
PL002
12V/150mA
PL001
12V/150mA
EQ.ANALOG SW P.SUPPLY
TO ENE-053-1 (FW805)
MOTOR+B
MOTORGND
+B
-B
FW803
J805
LEVEL METER
TO ENE-053-2 (FW702)
GND
+B
R
L
J702
D633
FB3
D612.D815
RD11EB3
R809~811
270
UNF.O.M.F.
(2W)
D631
Q802
2SD1944
(J,K)
Q801
2SD1944
(J,K)
Q803
2SB1133
(R,S)
R809
R810
R811
D612
R833
10
UNF.C.
(1/4W)
C809
0.0047
R804
39 UNF.C
(1/4W)
R832
33K
C811
0.0047
R812
12K
D815
D632
D807
MTZ18JC
R809
27K
C813
0.0047
R817
12K
UNF.C (1/4W)
R813
390 (2W)
UNF.O.M.F.
C810
47/25
C814
47/25
D810
MTZ16JC
D817
MTZ5.6JC
C812
100/50
D808
MTZ20JC
D806
MTZ16JC
D801~804
30DL2FC
C805
0.01
(500V)
AC47.7V
P805
201
202
203
TO
POWER TRANS.
D804
D801
D803
D802
C803
0.01
(500V)
AC47.7V
R803
4.7
UNF.C.
(1/2W)
R801
110K
C801
12000
/75
R802
110K
C802
12000 (500V)
/75
C804
0.01
(500V)
R937
15K
C910
4.7/50
D904
1SS133
R935
5.6K
R936
39K
R931 100
UNF.C (1/4W)
PROTECTOR
IC901 μPC1237HA
R909
10K
R911
3.3K
C903
22/50
Q803
2SA1036
(S,E)
R912
47K
R918
8.2K
R919
8.2K
RY901
ESK5024-218
R914
82K
R913
100K
C906
220/10
R921
200K
R923
1.8K
UNF.O.M.F.
(2W)
C909
22/16
D903
1SS133
R932
8.2K
UNF.C.
(1/2W)
FW806
FW802
FW802
R
GND
GND
S901
SYSTEM-1
OFF ⟷ ON
SPEAKER SW.
S902
SYSTEM-2
ENH-122-6
SPEAKER TERMINAL
ST901
LEFT
SYSTEM-1
SYSTEM-2
RIGHT
ENH-122-7
ENH-122-3
H.PHONE
J901
R942
R941
470
UNF.O.M.F.(1/2W)