HiFi ENGINE®

For more Hi-Fi manuals and set-up information
please visit www.hifiengine.com

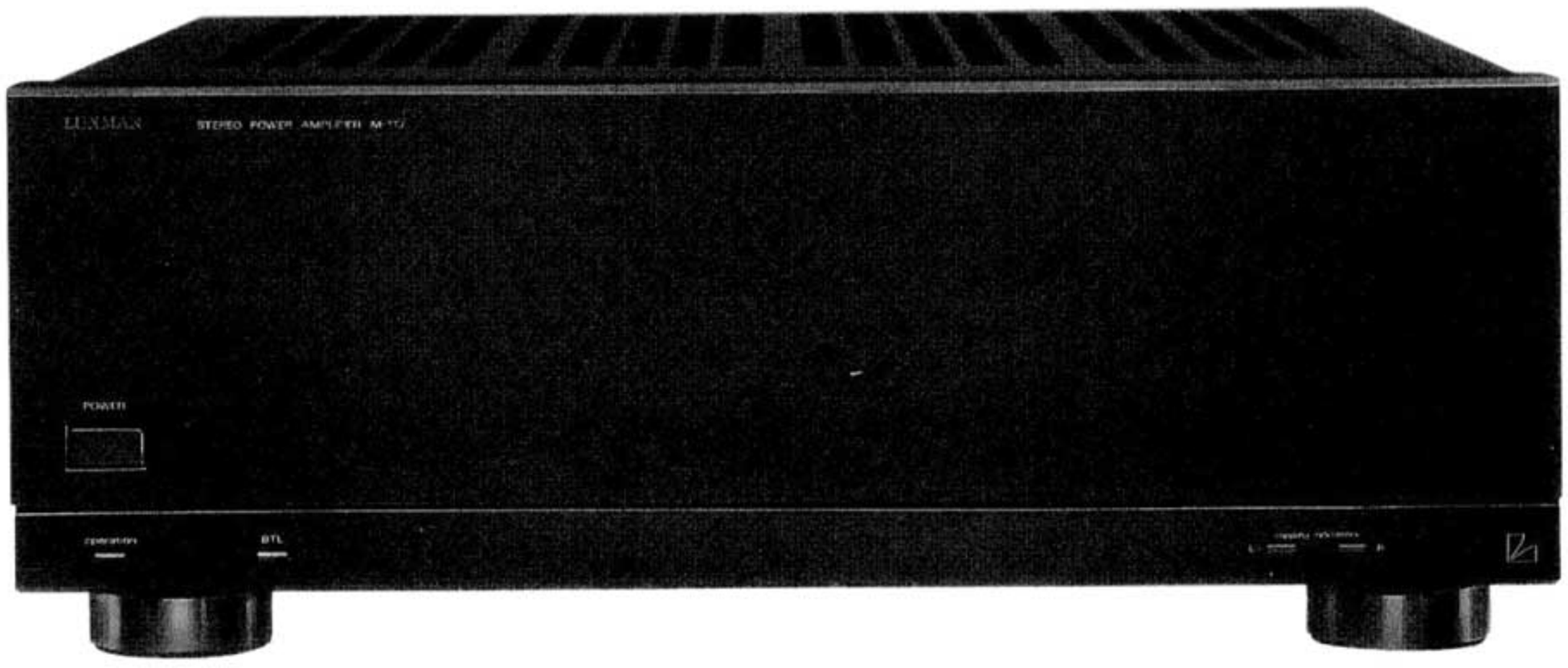
# SERVICE MANUAL

## Stereo Integlated Amplifier

# M-117

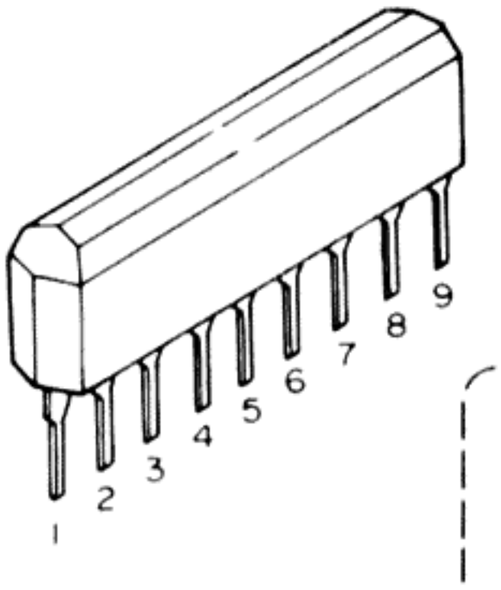
## — REVISED —

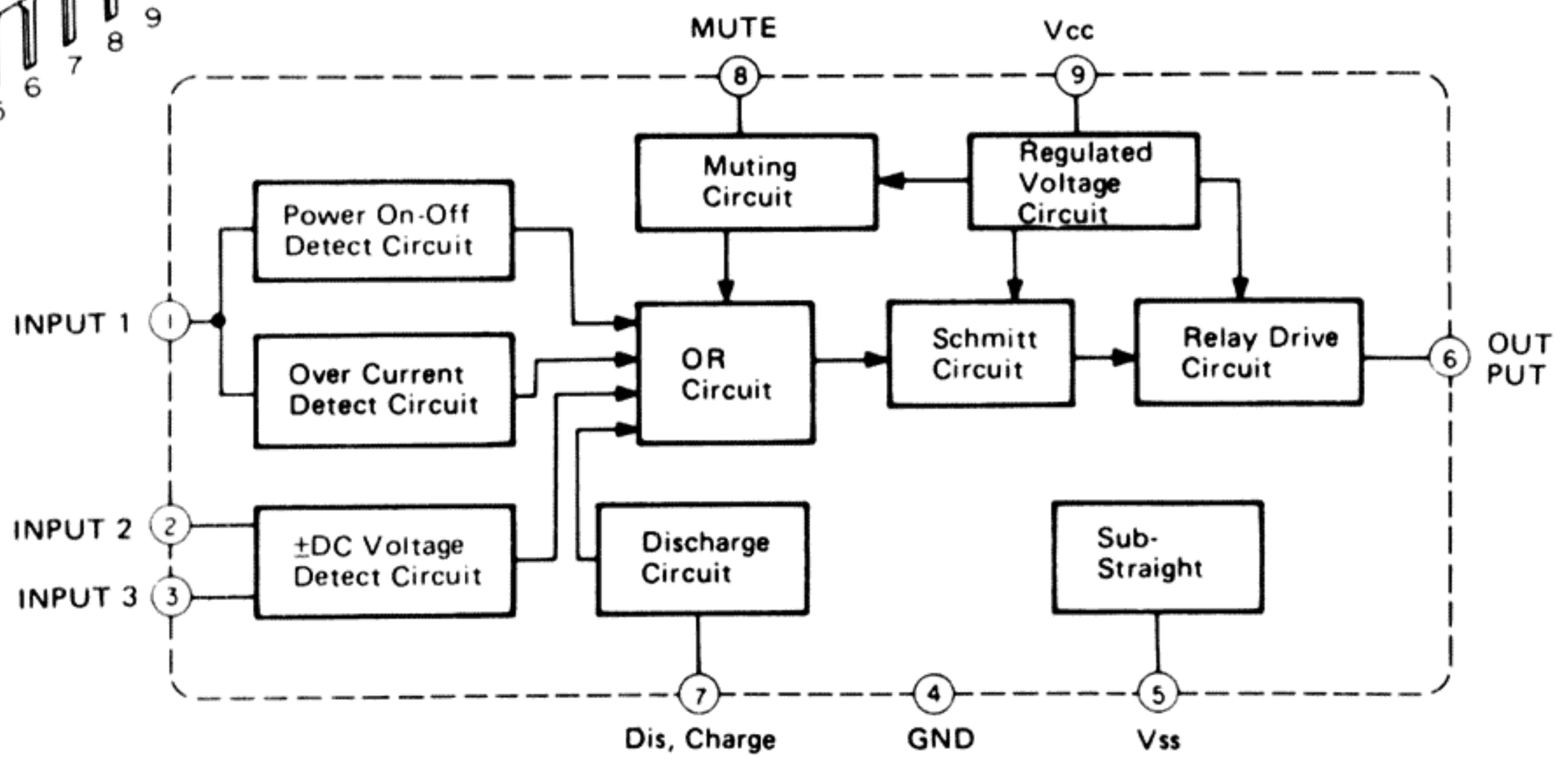
- Serial Numbers after
  No.81210651 – A for M-117 (North American) model
- Concerning the contents not to be given in this manual,
  refer to the service manual (68P92578F02)



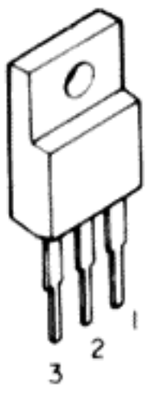
# Semi-Conductor Lead Identifications

TA7317P: IC301

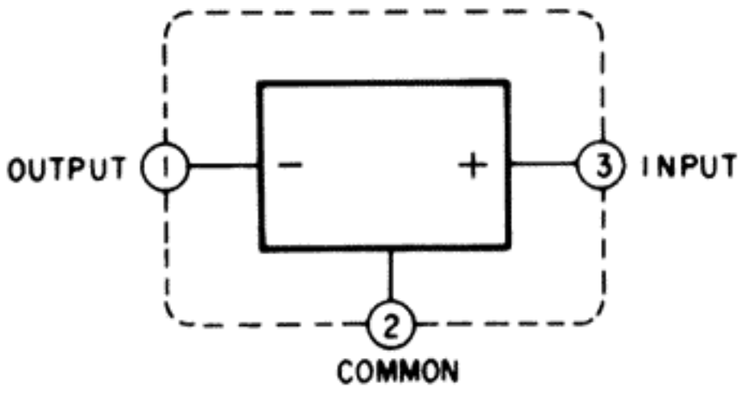



NJM78M12A: IC302

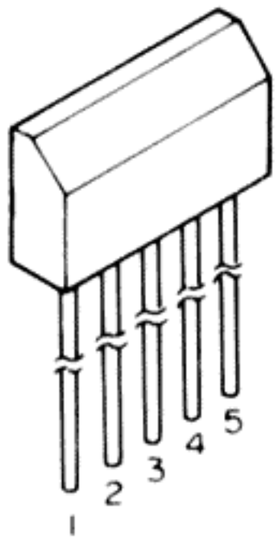



1. Output
2. Common
3. Input




2SA995 :Q101,201

2SC2291:Q102,202




1. Emitter 1
2. Collector 1
3. Base (Common)
4. Collector 2
5. Emitter 2

2SA1208:Q103,104,203,204


1. Emitter
2. Collector
3. Base

4. Removal of Main-Amp(R) P.C. Board

(1) After removal of Heatsink(R) remove twenty tow screws marked " * " as shown in Figure 6.

NOTE:Take care of handling each transistors when removing the Main-Amp(R) P.C. Board.

5. Removal of Heatsink(L) and Main-Amp(L) P.C. Board

(1) Remove in the same way above mentioned.

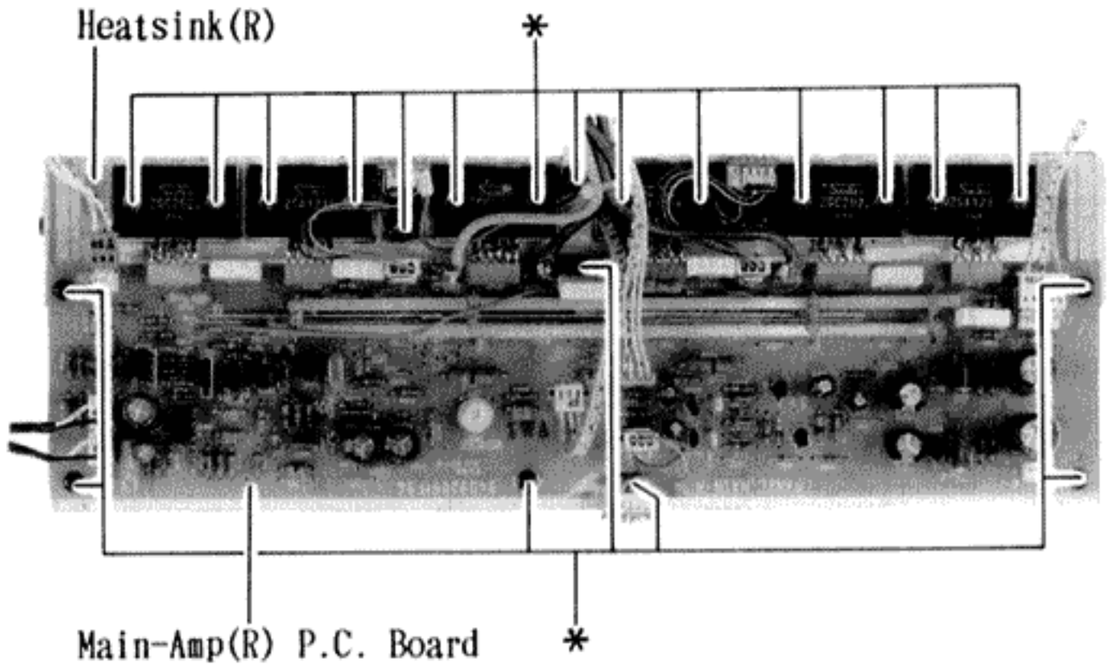



Figure 6

# Adjustment Procedures

1. Connection

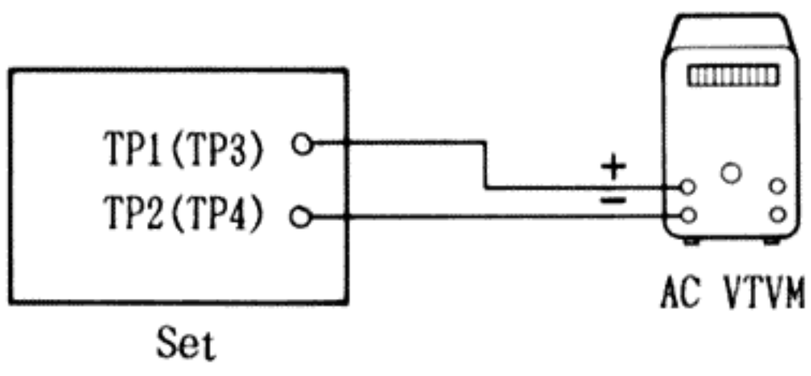



Figure 7

2. Control Setting

Attenuator(Left)····· Minimum  Power Switch ····· ON

Attenuator(Right) ····· Minimum  Others ····· OFF

3. Adjustment Procedure

(1) Idling Adjustment(Figure 7.8 and 9)

Adjust VR101(VR201) so that voltage between TP1(TP3) and TP2(TP4) reaches 4 ±0.5mV

# Adjustment Locations

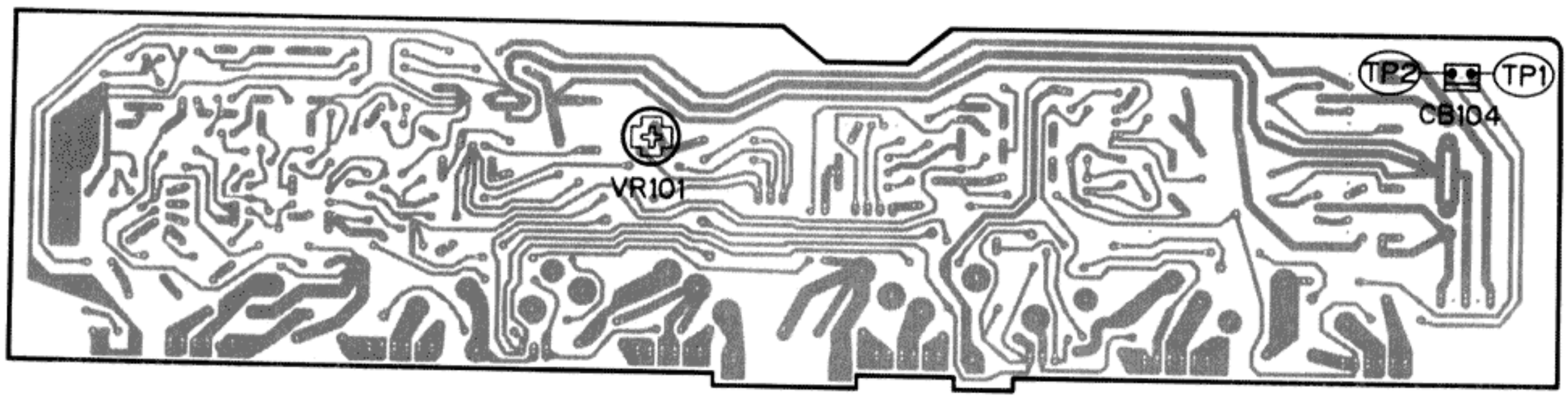
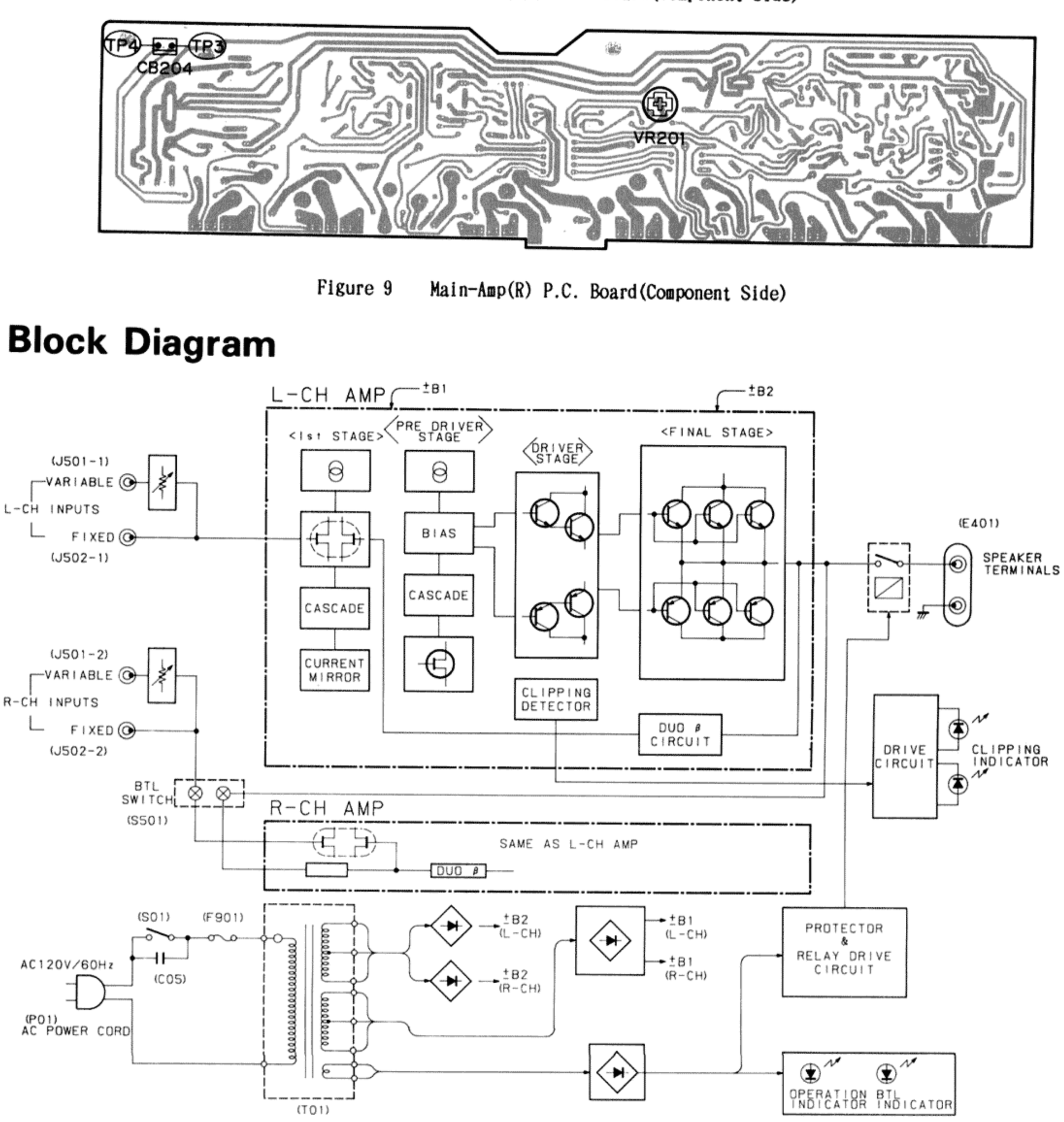



Figure 8 Main-Amp(L) P.C. Board(Component Side)




Figure 9 Main-Amp(R) P.C. Board(Component Side)

# Block Diagram



# Schematic Diagram

| | |
|---|---|
| IC | IC301<br>IC302 |
| Transistors (Q) | Q103 Q104 Q105 Q108 Q122 Q123 Q124 Q113 Q114<br>Q101 Q109 Q106 Q119 Q120 Q121 Q211 Q112 Q118 Q117<br>Q102 Q126 Q107 Q129 Q127 Q125 Q128 Q210 Q116 Q115 Q223 Q229 Q213 Q214<br>Q203 Q204 Q111 Q205 Q208 Q110 Q228 Q222 Q220 Q224 Q212 Q218 Q217<br>Q201 Q206 Q225 Q209<br>Q853 Q851 Q202 Q226 Q207 Q227 Q219 Q216 Q215 Q221<br>Q854 Q855 Q852 |

NOTES:
1. All resistance values are in ohms, K=1,000
2. All capacitance values are in microfarads, P= 1 / 1,000,000

Voltage Measuring Conditions
- Power Supply Voltage: AC 120V
- Measuring Meter: Digital Volt Meter
- Measuring point reference: Between Ground
- Measuring conditions: No Signal Input

Terminal Voltage

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| IC301 | -0.5V | 0V | 0V | 0V | -0.7V | 1.9V | 0V | 1.2V | 2.7V |
| IC302 | 12.1V | 0V | 17V | | | | | | |

| L | E | C | B |
|---|---|---|---|
| Q101 | -10.85V<br>-10.86V | -79.2V | -11.35V |
| Q102 | -81.5V | -79.2V<br>-80.9V | -80.9V |
| Q103 | 81.2V | 34.1V | 80.7V |
| Q104 | 81.4V | 80.7V | 80.7V |
| Q105 | 80.1V | 1.83V | 79.5V |
| Q106 | -78.6V | -1.84V | -78V |
| Q107 | -81.5V | -43.5V | -81.2V |
| Q108 | 0V | 1.9V | 0V |
| Q109 | 0V | -1.9V | 0V |
| Q110 | 0.6V | 79V | 1.2V |
| Q111 | -0.6V | -79V | -1.2V |
| Q112 | -0.2V | 80.5V | 0V |
| Q113 | 81.6V | 82.8V | 82.2V |
| Q114 | 82.2V | 82.8V | 82.7V |
| Q115 | -82.2V | -82.8V | -82.7V |
| Q116 | -81.6V | -82.8V | -82.2V |
| Q117 | 74.2V | -0.54V | 81.2V |
| Q118 | 12.1V | 0V | 11.9V |
| Q119 | —— | -79V | —— |
| Q120 | —— | -79V | —— |
| Q121 | —— | -79V | —— |
| Q122 | —— | 79V | —— |
| Q123 | —— | 79V | —— |
| Q124 | —— | 79V | —— |
| Q125 | -1.84V | 1.83V | 1.26V |
| Q128 | 1.2V | 79V | 1.8V |
| Q129 | -1.2V | -79V | -1.8V |

| R | E | C | B |
|---|---|---|---|
| Q201 | -10.85V<br>-10.86V | -79.2V | -11.35V |
| Q202 | -81.5V | -79.2V<br>-80.9V | -80.9V |
| Q203 | 81.2V | 34.1V | 80.7V |
| Q204 | 81.4V | 80.7V | 80.7V |
| Q205 | 80.1V | 1.83V | 79.5V |
| Q206 | -78.6V | -1.84V | -78V |
| Q207 | -81.5V | -43.5V | -81.2V |
| Q208 | 0V | 1.9V | 0V |
| Q209 | 0V | -1.9V | 0V |
| Q210 | 0.6V | 79V | 1.2V |
| Q211 | -0.6V | -79V | -1.2V |
| Q212 | -0.2V | 80.5V | 0V |
| Q213 | 81.6V | 82.8V | 82.2V |
| Q214 | 82.2V | 82.8V | 82.7V |
| Q215 | -82.2V | -82.8V | -82.7V |
| Q216 | -81.6V | -82.8V | -82.2V |
| Q217 | 74.2V | -0.54V | 81.2V |
| Q218 | 12.1V | 0V | 11.9V |
| Q219 | —— | -79V | —— |
| Q220 | —— | -79V | —— |
| Q221 | —— | -79V | —— |
| Q222 | —— | 79V | —— |
| Q223 | —— | 79V | —— |
| Q224 | —— | 79V | —— |
| Q225 | -1.84V | 1.83V | 1.26V |
| Q228 | 1.2V | 79V | 1.8V |
| Q229 | -1.2V | -79V | -1.8V |

| S | E | C | B |
|---|---|---|---|
| Q126 | -0.44V | -10.7V | 0V |
| Q127 | -78.6V | -81.2V | -79V |
| Q226 | -0.44V | -10.7V | 0V |
| Q227 | -78.6V | -81.2V | -79V |

| | E | C | B |
|---|---|---|---|
| Q851 | 12V | 0V | 12V |
| Q852 | 12V | 0V | 12V |
| Q853 | 0V | 12V | 0V |
| Q854 | 0V | 12V | 0V |
| Q855 | 0V | 0V | 12V |

CAUTION:
The ⚠ mark, the symbol NO. in a box in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.