SOLID STATE INTEGRATED AMPLIFIER

# LUXMAN 30

## SERVICE MANUAL

MODEL: L-30 CIRCUIT DESCRIPTION

[Power Supply]

Power supply to main amp: The power supply consists of two parts designed for supply of power to the main amplifier and the pre-amplifier respectively. For the main amplifier driven by a high current load, silicon diode D205 - D208 (Hi-Fi special) are used, and supply voltage values are +35V and -35V.

Power supply to other than main amp: Power sources other than for the main amplifier are obtainable by D203 (1N4003) with the half wave rectification circuit and ripple filter. Supply voltage values at each section are; equalizer stage -37V, tone control stages -27V and intermediate stages -24.5V.

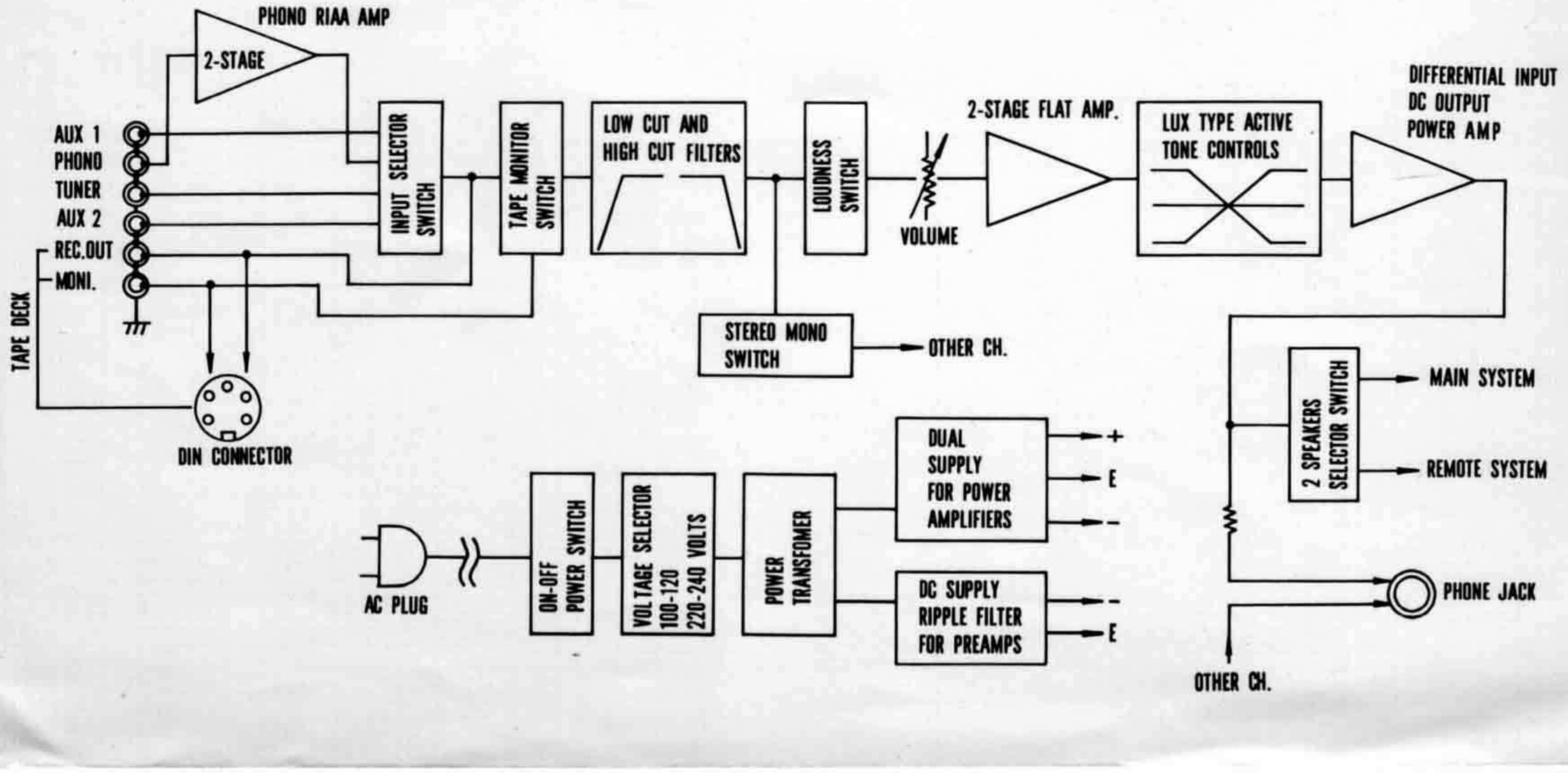
[Pre Amplifier]

The pre-amplifier consists of an equalizer, an intermediate amplifier, and a tone control. The equalizer adopts the Negative Feedback circuit using tow silicon transistors, 2SA836 (Q101), 2SC1345 (Q102) per channel and is designed to provide proper equalization to the input signals. Input signals given through the AUX-1, -2, and TUNER terminals bypass the equalizer and are fed directly to the later stages of this amplifier.

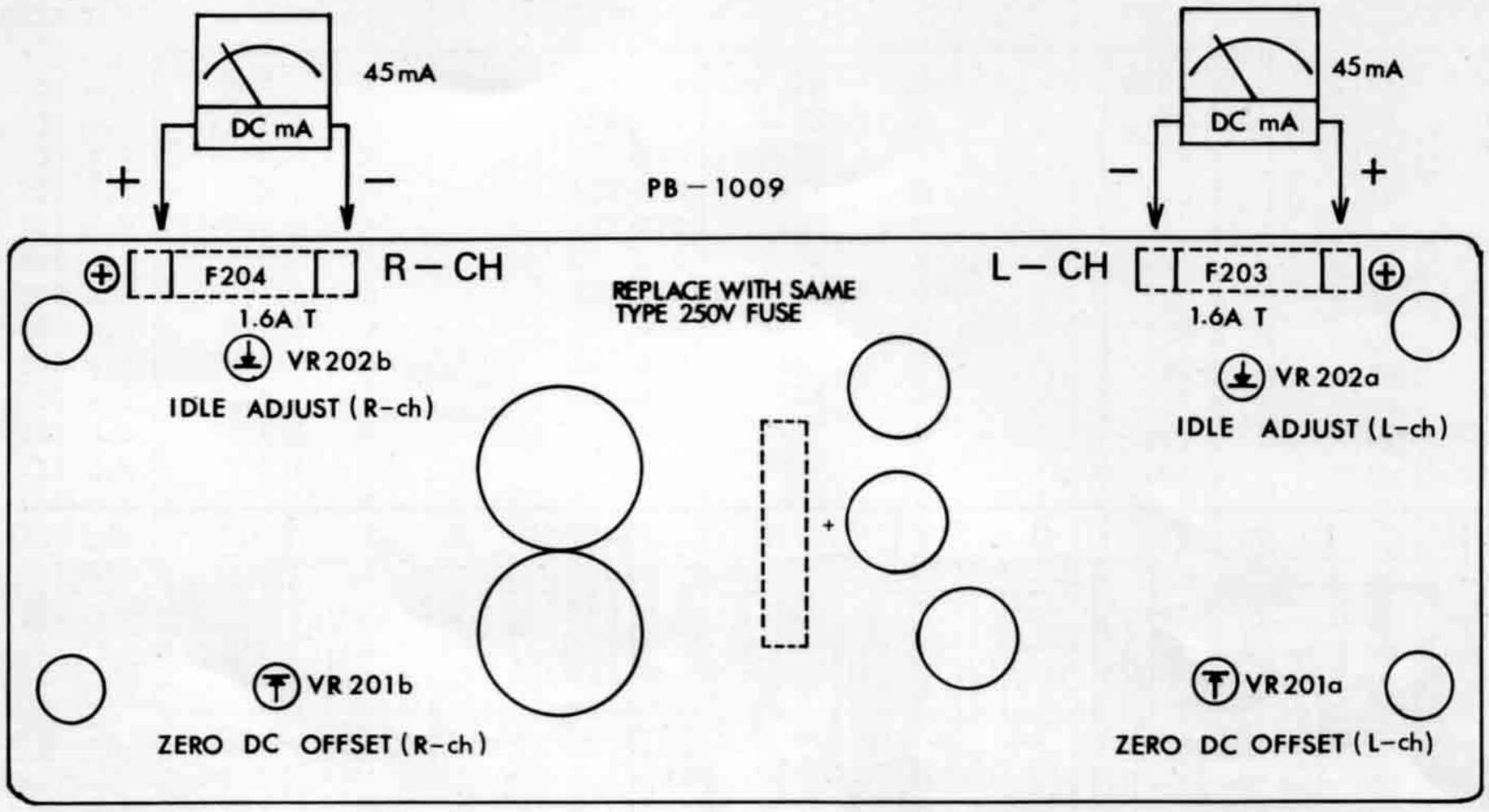
Controls arranged after the equalizer stage are: REC. OUT CONNECTOR, TAPE-MONITOR SWITCH, LOW-CUT FILTER, HIGH-CUT FILTER, MODE SELECTOR, VOLUME CONTROL, and LOUDNESS SWITCH. The intermediate amplifier consisting of Q103 Q104 is a flat amplifier adopting 2-stage Negative Feedback circuit which is designed to boost the equalizer, tuner or AUX. This covers sufficiently the insertion loss by the tone control in the next stage and leads low impedance output to the tone control for its smooth function. The tone control adopts the CB-NF-circuit of Q105. Any desired frequency response can be adjusted by the following controls: Variable resistor VR101 (BASS), and variable resistor VR102 (TREBLE). Major components of the pre-amplifier are arranged on the printed circuit board PB1008.

[Main Amplifier]

The main amplifier is of full stage direct coupling, one stage differential amplification, predriving and fully complementary circuits. The power transistors Q207 2SD371(NPN) and Q309 2SB531(PNP) (2-transistor per channel) are fitted over to the heat sink inside the chassis. All circuit components are assembled to the printed circuit board PB1009. The differential amplifier is consisted of Q201 and Q202, the pre-driving stage of Q203, and the driver transistors, Q205 and Q206. Besides the above transistors, capacitors, resistors, and semi-fixed volume controls are integrated in the circuit.



## IDLE ADJUST & ZERO DC OFFSET




1. Idle Adjust

VR 202a (L-ch) and VR202b (R-ch) on PB1009 are semifixed potentiometer for quiescent current adjustment of the power transistors.

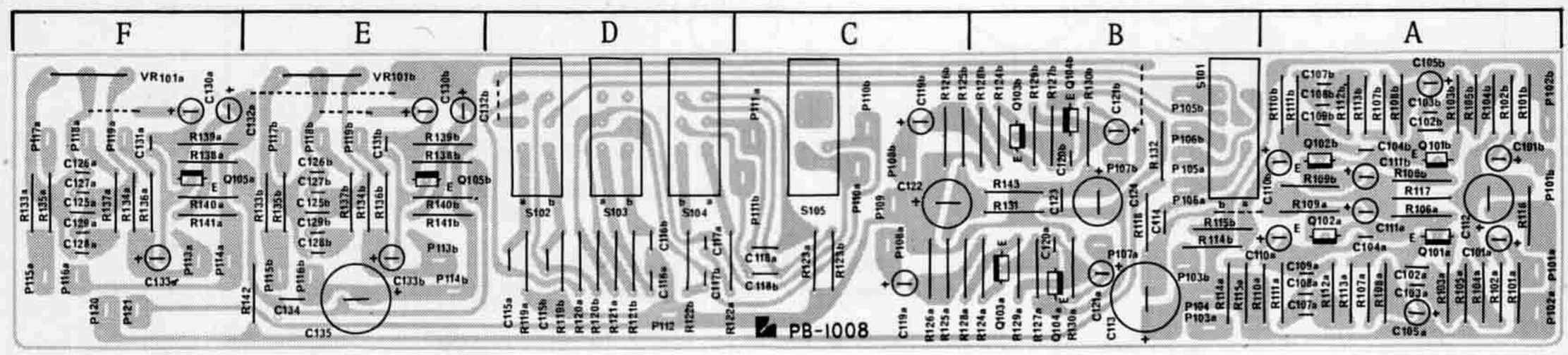
First, remove both fuses of F203 (L-ch) and F204 (R-ch), and then insert a DC ammeter between the fuse grips. ( ⊕ for the edge-side grip)

After one minute of POWER-ON, adjust VR202a and VR202b respectively to have 45mA reading on the meter.

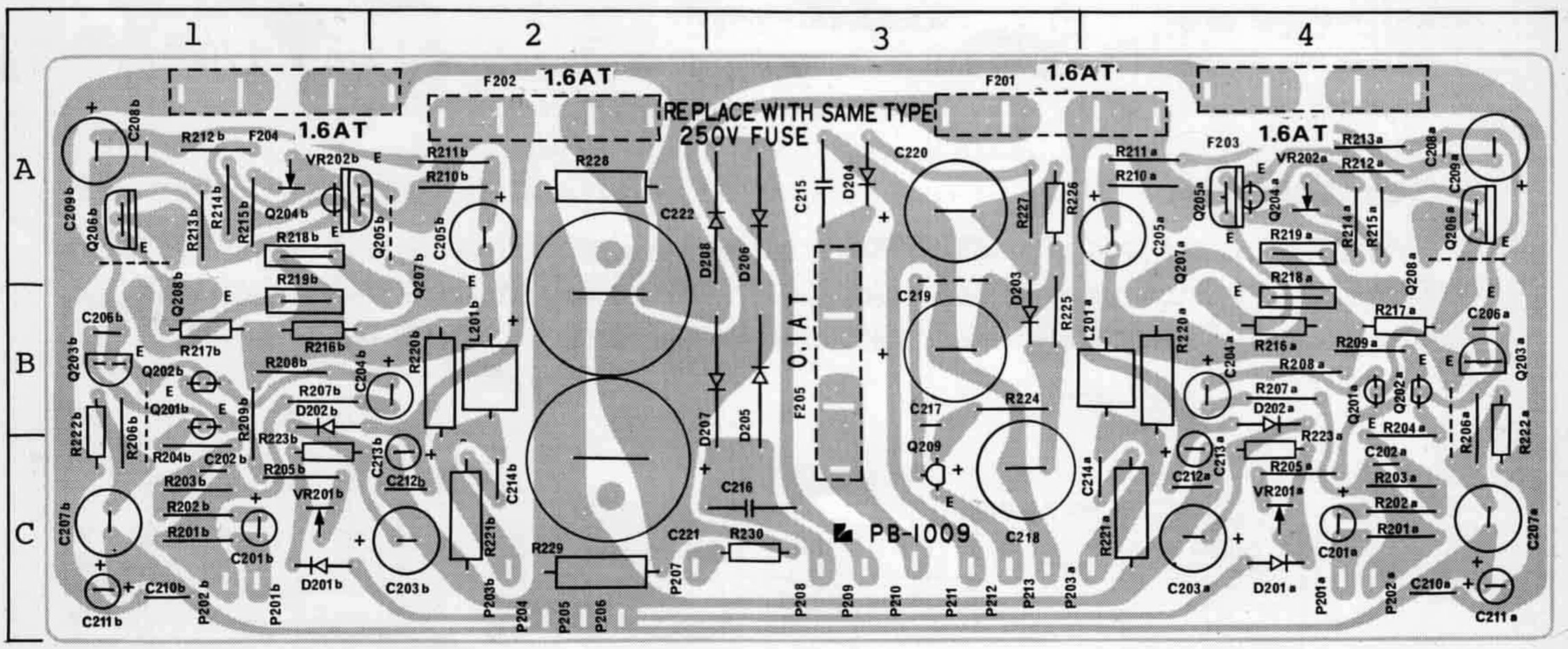
2. Zero DC Offset

VR201a (L-ch) and VR201b (R-ch) on PB1009 are semifixed potentiometers for the Zero DC Offset adjustment of the power amplifier section. Connect a DC milivolt meter to the speaker terminals and adjust VR201a and VR201b respectively. The DC offset voltage should be within ± 50mV.

PB-1008




PB-1009



Replacement Parts List

PB-1008 (Resistors; 1/4W, ±5% unless otherwise noted. L—for Low Noise type.)

SYMBOL NO.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| R101 a,b | 56K | A | R119 a,b | 1M | D | R135 a | 1.5K | F |
| 102 a,b | 2.2K | A | 120 a,b | 6.8K | D | 135 b | 1.5K | E |
| 103 a,b | 1.8K | A | 121 a,b | 1M | D | 136 a | 1.5K | F |
| 104 a,b | 1M L | A | 122 a,b | 27K | D | 136 b | 1.5K | E |
| 105 a,b | 470K L | A | 123 a,b | 12K | C | 137 a | 2.2K | F |
| 106 a,b | 100K L | A | 124 a,b | 2.7K | B | 137 b | 2.2K | E |
| 107 a,b | 820 L | A | 125 a,b | 1M | C | 138 a | 390K | F |
| 108 a,b | 47K L | A | 126 a,b | 470K | C | 138 b | 390K | E |
| 109 a,b | 1.2K | A | 127 a,b | 18K | B | 139 a | 47K | F |
| 110 a,b | 8.2K | A | 128 a,b | 1K | C | 139 b | 47K | E |
| 111 a,b | 820K L | A | 129 a,b | 4.7K | B | 140 a | 5.6K | F |
| 112 a,b | 39K L | A | 130 a,b | 330K | B | 140 b | 5.6K | E |
| 113 a,b | 470 | A | 131 | 47K | B | 141 a | 1K | F |
| 114 a,b | 470 | B | 132 | 3.3K | B | 141 b | 1K | E |
| 115 a,b | 330K | B | 133 a | 18K | F | 142 | 3.3K | E |
| 116 | 15K | A | 133 b | 18K | E | 143 | 33K | B |
| 117 | 39K | A | 134 a | 18K | F | (144 a,b | 1M back) | |
| 118 | 680 | B | 134 b | 18K | E | | | |

PB-1008 (Capacitors; P—polyester film, C—ceramic, E—electrolytic L.R. - low leakage type)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C101 a,b | 3.3uF | 25V | E | L.R. | A | C125 a | 0.027uF | 50V | P | ±10% | F |
| 102 a,b | 150pF | 50V | C | | A | 125 b | 0.027uF | 50V | P | " | E |
| 103 a,b | 33pF | 50V | C | | A | 126 a | 0.001uF | 50V | P | " | F |
| 104 a,b | 4.7pF | 50V | C | | A | 126 b | 0.001uF | 50V | P | " | E |
| 105 a,b | 10uF | 16V | E | | A | 127 a | 0.001uF | 50V | P | " | F |
| 107 a,b | 1000pF | 50V | P | ±5% | A | 127 b | 0.001uF | 50V | P | " | E |
| 108 a,b | 1000pF | 50V | P | " | A | 128 a | 1500pF | 50V | P | " | F |
| 109 a,b | 6800pF | 50V | P | " | A | 128 b | 1500pF | 50V | P | " | E |
| 110 a,b | 0.47uF | 50V | E | L.R. | A | 129 a | 1500pF | 50V | P | " | F |
| 111 a,b | 47uF | 10V | E | | A | 129 b | 1500pF | 50V | P | " | E |
| 112 | 220uF | 16V | E | | A | 130 a | 3.3uF | 25V | E | L.R. | F |
| 113 | 100uF | 50V | E | | B | 130 b | 3.3uF | 25V | E | L.R. | E |
| 114 | 0.022uF | 50V | C | ±10% | B | 131 a | 10pF | 50V | C | | F |
| 115 a,b | 0.033uF | 50V | P | " | D | 131 b | 10pF | 50V | C | | E |
| 116 a,b | 3900pF | 50V | P | " | D | 132 a | 47uF | 10V | E | | F |
| 117 a,b | 470pF | 50V | P | | D | 132 b | 47uF | 10V | E | | E |
| 118 a,b | 0.033uF | 50V | P | ±10% | C | 133 a | 3.3uF | 25V | E | L.R. | F |
| 119 a,b | 1uF | 50V | E | L.R. | C | 133 b | 3.3uF | 25V | E | L.R. | E |
| 120 a,b | 10pF | 50V | C | | B | 134 | 0.022uF | 50V | C | ±10% | E |
| 121 a,b | 3.3uF | 25V | E | L.R. | B | 135 | 220uF | 35V | E | | E |
| 122 | 100uF | 16V | E | | C | | | | | | |
| 123 | 0.022uF | 50V | C | ±10% | B | | | | | | |
| 124 | 100uF | 35V | E | | B | | | | | | |

PB-1008 (Variable Resistors)

| | | |
|---|---|---|
| VR101 a | 100K-B | F |
| 101 b | 100K-B | E |

PB-1008 (Transistors)

| | | |
|---|---|---|
| Q101 a,b | 2SA836E | A |
| 102 a,b | 2SC1345E | A |
| 103 a,b | 2SA836E | B |
| 104 a,b | 2SC1345E | B |
| 105 a | 2SA836E | F |
| 105 b | 2SA836E | E |

PB-1009 (Resistors; 1/4W, ±5% unless otherwise noted F.P. - Flame Proof type)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R201 a | 330K | | 4C | R210 a | 1.8K | | 4A | R219 a | 0.33 | 3W | 4A |
| 201 b | 330K | | 1C | 210 b | 1.8K | | 2A | 219 b | 0.33 | 3W | 1A |
| 202 a | 3.3K | | 4C | 211 a | 3.9K | | 4A | 220 a | 4.7 | 1W | 4B |
| 202 b | 3.3K | | 1C | 211 b | 3.9K | | 2A | 220 b | 4.7 | 1W | 2B |
| 203 a | 33K | | 4C | 212 a | 47 | | 4A | 221 a | 15 | | 4C |
| 203 b | 33K | | 1C | 212 b | 47 | | 1A | 221 b | 15 | | 1C |
| 204 a | 1K | | 4B | 213 a | 47 | | 4A | 222 a | 100 | 1/2W F.P. | 4B |
| 204 b | 1K | | 1C | 213 b | 47 | | 1A | 222 b | 100 | 1/2W F.P. | 1B |
| 205 a | 5.6K | | 4C | 214 a | 1.8K | | 4A | 223 a | 1.5K | 1/2W | 4C |
| 205 b | 5.6K | | 1C | 214 b | 1.8K | | 1A | 223 b | 1.5K | 1/2W | 1C |
| 206 a | 1.2K | | 4B | 215 a | 560 | | 4A | 224 | 1K | | 3B |
| 206 b | 1.2K | | 1B | 215 b | 560 | | 1A | 225 | 10K | | 3B |
| 207 a | 1.5K | | 4B | 216 a | 100 | 1/2W F.P. | 4B | 226 | 100 | 1/2W F.P. | 3A |
| 207 b | 1.5K | | 1B | 216 b | 100 | 1/2W F.P. | 1B | 227 | 12 | | 3A |
| 208 a | 33K | | 4B | 217 a | 100 | 1/2W F.P. | 4B | 228 | 4.7K | 1W | 2A |
| 208 b | 33K | | 1B | 217 b | 100 | 1/2W F.P. | 1B | 229 | 4.7K | 1W | 2C |
| 209 a | 470K | | 4B | 218 a | 0.33 | 3W ±10% | 4B | 230 | 3.3K | 1/2W | 3C |
| 209 b | 470K | | 1B | 218 b | 0.33 | 3W ±10% | 1A | | | | |

PB-1009 (Capacitors; C ceramic, E electrolytic L.R. - low leakage type)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C201 a | 3.3uF | E | 25V | L.R. | 4C | C211 a | 1uF | E | 50V | | 4C |
| 201 b | 3.3uF | E | 25V | L.R. | 1C | 211 b | 1uF | E | 50V | | 1C |
| 202 a | 330pF | C | 50V | | 4C | 212 a | 0.04uF | C | 50V | | 4C |
| 202 b | 330pF | C | 50V | | 1C | 212 b | 0.04uF | C | 50V | | 2C |
| 203 a | 47uF | E | 50V | | 4C | 213 a | 1uF | E | 50V | | 4C |
| 203 b | 47uF | E | 50V | | 2C | 213 b | 1uF | E | 50V | | 2C |
| 204 a | 47uF | E | 10V | | 4B | 214 a | 0.022uF | C | 50V | | 4C |
| 204 b | 47uF | E | 10V | | 1B | 214 b | 0.022uF | C | 50V | | 2C |
| 205 a | 47uF | E | 35V | | 4A | 215 | 0.01uF | C | 1.4KV | | 3A |
| 205 b | 47uF | E | 35V | | 2A | 216 | 0.01uF | C | 1.4KV | | 3C |
| 206 a | 33pF | C | 50V | | 4B | 217 | 100pF | C | 50V | | 3B |
| 206 b | 33pF | C | 50V | | 1B | 218 | 220uF | E | 50V | | 3C |
| 207 a | 47uF | E | 50V | | 4C | 219 | 220uF | E | 50V | | 3B |
| 207 b | 47uF | E | 50V | | 1C | 220 | 220uF | E | 50V | | 3A |
| 208 a | 0.04uF | C | 25V | | 4A | 221 | 3300uF | E | 50V | | 2C |
| 208 b | 0.04uF | C | 25V | | 1A | 222 | 3300uF | E | 50V | | 2A |
| 210 a | 0.04uF | C | 50V | | 4C | | | | | | |
| 210 b | 0.04uF | C | 50V | | 1C | | | | | | |

PB-1009 (Transistors)

| | | | | | |
|---|---|---|---|---|---|
| Q201 a | 2SA750(1)DA | 4B | Q205 b | 2SC1626 Y | 2A |
| 201 b | 2SA750(1)DA | 1B | 206 a | 2SA816 Y | 4A |
| 202 a | 2SA750(1)DA | 4B | 206 b | 2SA816 Y | 1A |
| 202 b | 2SA750(1)DA | 1B | 207 a | 2SD371 O | 4A |
| 203 a | 2SC1951-2 | 4B | 207 b | 2SD371 O | 2A |
| 203 b | 2SC1951-2 | 1B | 208 a | 2SB531 O | 4A |
| 204 a | 2SC945P | 4A | 208 b | 2SB531 O | 1B |
| 204 b | 2SC945P | 1A | 209 | 2SA836 E | 3C |
| 205 a | 2SC1626Y | 4A | | | |

PB-1009 (Diodes)

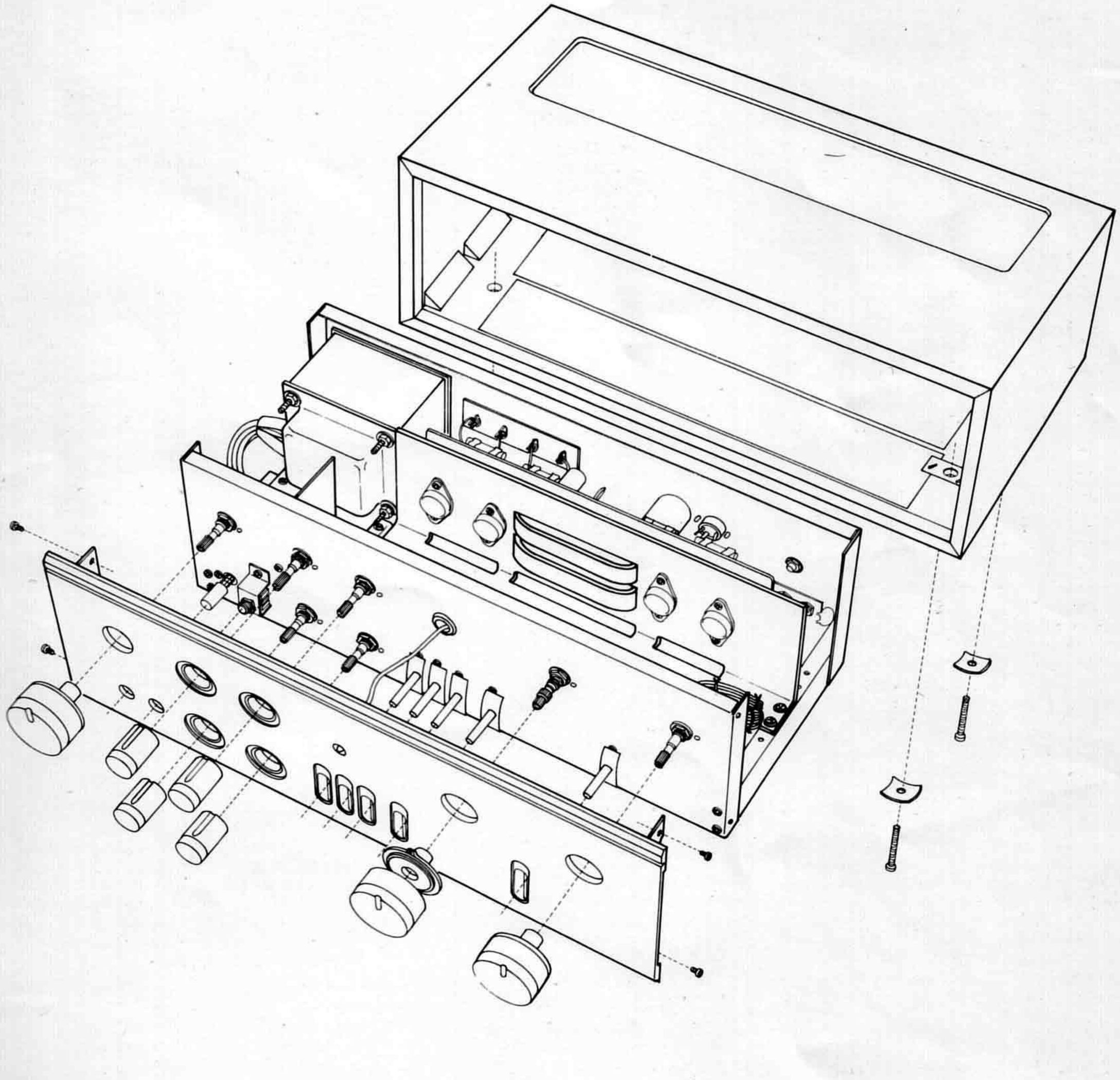
| | | | | | |
|---|---|---|---|---|---|
| D201 a | WZ120 | 4C | D204 | 1N4003 | 3A |
| 201 b | WZ120 | 1C | 205 | HiFi special | 3A |
| 202 a | 1N4002 | 4B | 206 | HiFi special | 3A |
| 202 b | 1N4002 | 1B | 207 | HiFi special | 3B |
| 203 | 1N4002 | 3B | 208 | HiFi special | 3A |

PB-1009 (Variable Resistors)

| | | |
|---|---|---|
| VR201 a | 10K-B | 4C |
| 201 b | 10K-B | 1C |
| 202 a | 330-B | 4A |
| 202 b | 330-B | 1A |

PB-1009 (Coils)

| | | |
|---|---|---|
| L201 a | 2uH | 4B |
| 201 b | 2uH | 2B |



R132 3.3K
C124 100-35V
C125 0.027
VR101 100K-B
C126 0.001
C127 0.001
C128 1500PF
C129 1500PF
R137 2.2K
R133 18K
R135 1.5K
R134 1.8K
C130 3.3-25V
R136 1.5K
R139 47K
C132 47-10V
R141 1K
C135 220-35V
R138 390K
C131 10P
R140 5.6K
C133 3.3-25V
C134 0.02
R142 3.3K
(-27V)
(-15V)
Q105
P117a
P118a
P119a
P121
P120
P113a
P114a
P202a
VR002 50K-B
P213
P201a
C201 3.3-25V
R202 1.8K
R204 1K
R201 330K
R203 33K
C202 100P
Q201
Q202
D201
(12V)
R223 1.5K½W
D202
VR201 10K-B
C203 47-50V
R205 5.6K
R210 1.8K
C212 0.04
C213 1-50V
R211 3.9K
R212 47
Q205
Q207
Q204
R209 470K
C205 47-35V
C208 0.04-25V
R214 1.8K
R216 100½W
R218 0.33-3W
R208 33K
C206 33PF
R207 1.5K
C204 47-10V
VR202 330-B
R215 560
R217 100½W
R219 0.33-3W
R220 4.7-1W
L201 2μH
C214 0.02
R221 15
F201 2.5A Ⓕ
F203 2.5A Ⓕ
R206 1.2K
Q203
R213 47
Q206
Q208
R222 100-½W
C207 47-50V
C210 0.04
C211 1-50V
P207
R230 3.3K-½W
(35V)
Q209
(-40V)
R226 100-½W
(-45V)
R227 12
D204
C217 100PF
R224 1K
C218 220-50V
R225 10K
C219 220-50V
D203
C220 220-50V
C215 0.01
F205 0.1A Ⓣ
D205
D206
D207
D208
C216 0.01
R227 4.7K-1W
R228 4.7K-1W
C221 3300-50V
C222 3300-50V
35V
26V
P210
P208
(-35V)
P209
P211
F003 5A Ⓣ
F002 5A Ⓣ
26V
GRY
GRY
YEL
WHT
YEL
P-1948B
BLK
ORG
BLU
BRN
ORN
RED
100V
120V
120V
VOLTAGE SELECTOR
P204
P205
C003 0.022
F001
1.6A(200V240V)
3.15A(100V120V)
SWITCHED
For Sandinavion countries the AC outlet has been removed.
S1a
S1b
C004 0.022
C005 0.022
F204 2.5A Ⓕ
F202 2.5A Ⓕ
R005 560-1W
R006 560-1W
STEREO HEADPHONE
MAIN
REMOTE - SPEAKER - MA
L
R
S2a
S2b
P203a
P203b
PB-1009
P207
P208
P212
LM62C
VR002b 50K-B
117b
P118b
P119b
P113b
P201b
P114b
P202b
240V
120V
220V
100V
VOLTAGE SELECTOR
PECIAL
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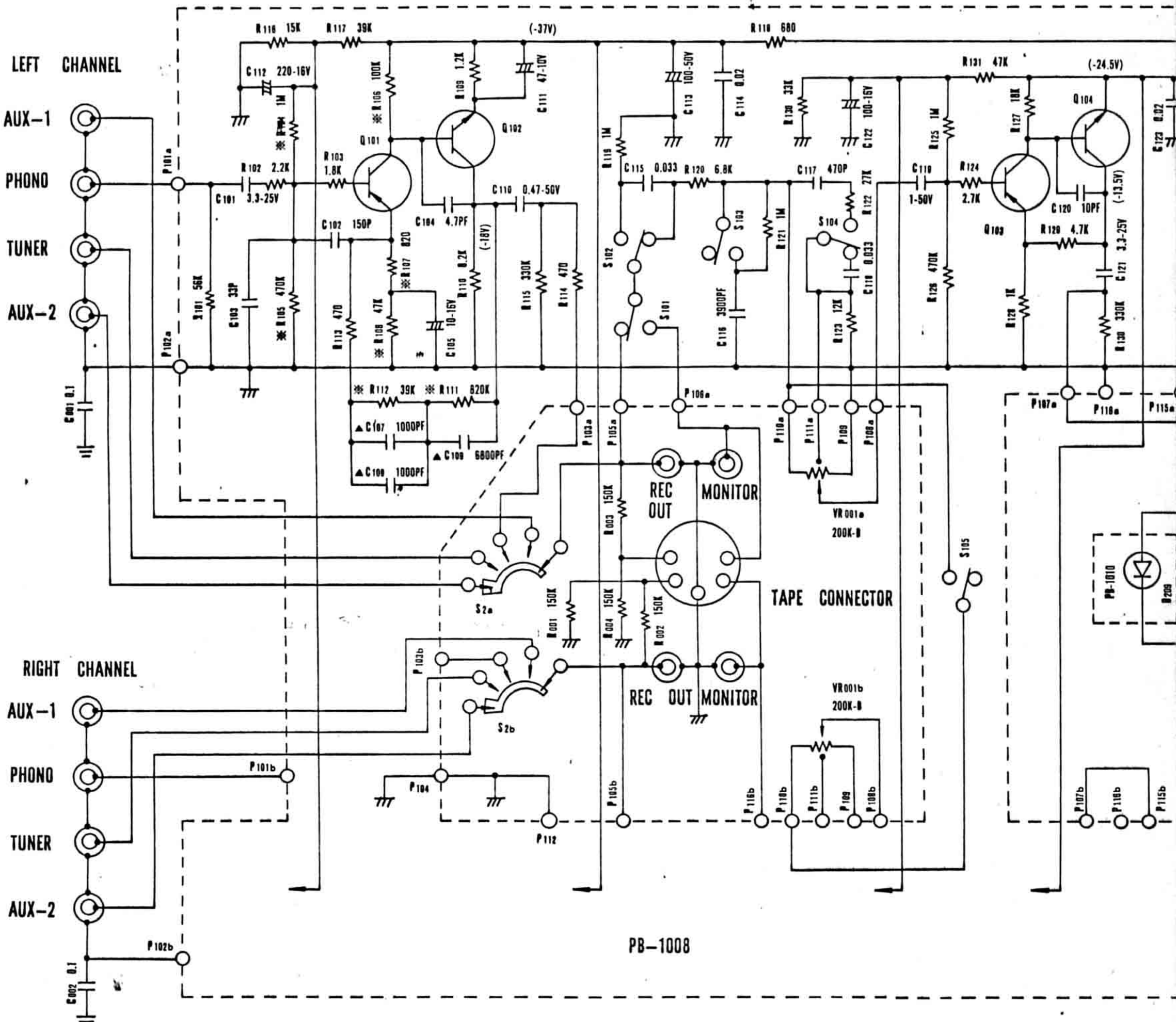


| | | | | | |
|---|---|---|---|---|---|
| VR101 | TONE CONT–BASS | Q101, Q103, Q105, Q209 | 2SA836E | D201 | WZ–1 |
| VR002 | TONE CONT–TREBLE | Q102, Q104 | 2SC1345E | D202, D203 | IN400 |
| VR001 | MASTER VOLUME | Q201, Q202 | 2SA763WL | D204 | IN400 |
| VR201 | DC BALANCE | Q203 | 2SC1951 | D205, D206<br>D207, D208 | HIFI–S |
| VR202 | BIAS ADJ. | Q204 | 2SC945 | | |
| S1 | POWER SW | Q205 | 2SC1626 | | |
| S2 | FUNCTION | Q208 | 2SA816 | | |
| S3 | SPEAKER SW | Q207 | 2SD371 | | |
| S101 | MONITOR | Q208 | 2SB531 | | |
| S102 | LOW CUT FILTER | | | | |
| S103 | HIGH CUT FILTER | | | | |
| S104 | LOUDNESS | | | | |
| S105 | MODE SW | | | | |

✱ LOW NOISE "R", ▲ ±5% CLASS "

1. UNLESS OTHERWISE SPECIFIED, ALL
   OHM ¼ WATT, ALL CAPACITOR ARE IN
2. TRANSISTOR AND DIODES MAY BE REP
   TYPE HAVING COMPARABLE RATINGS.
3. DUE TO CONTINUED IMPROVEMENTS
   RIGHT TO ALTER THE CIRCUIT OR S