

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.

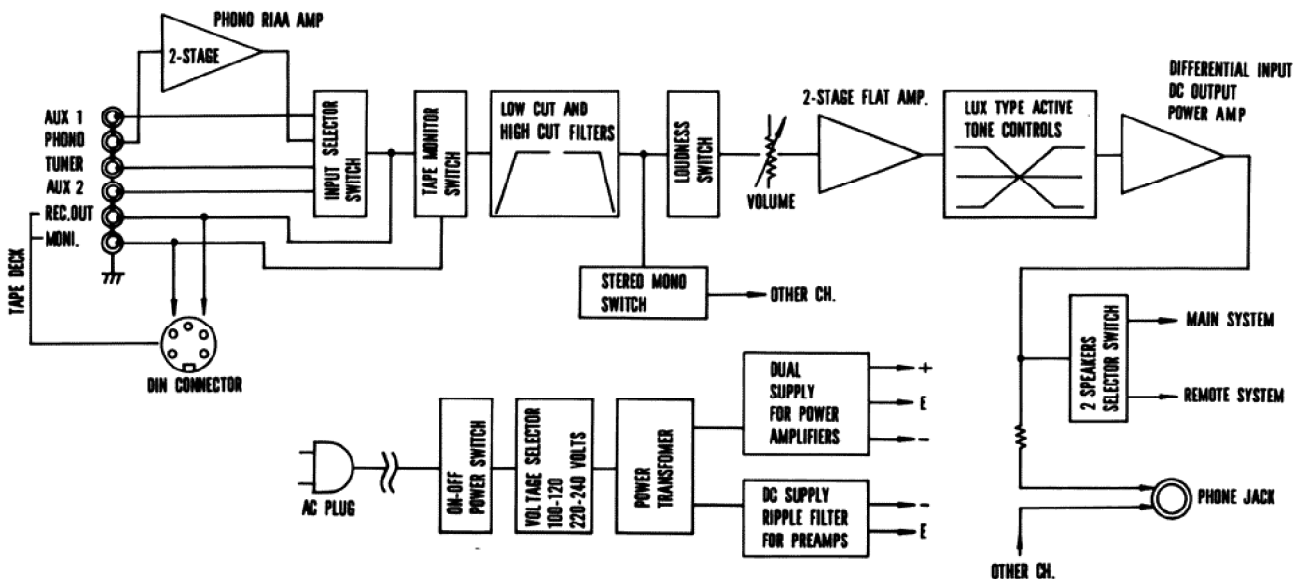
[Pre Amplifier]

The pre-amplifier consists of an equalizer, an intermediate amplifier, and a tone control. The equalizer adopts the Negative Feedback circuit using two 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.

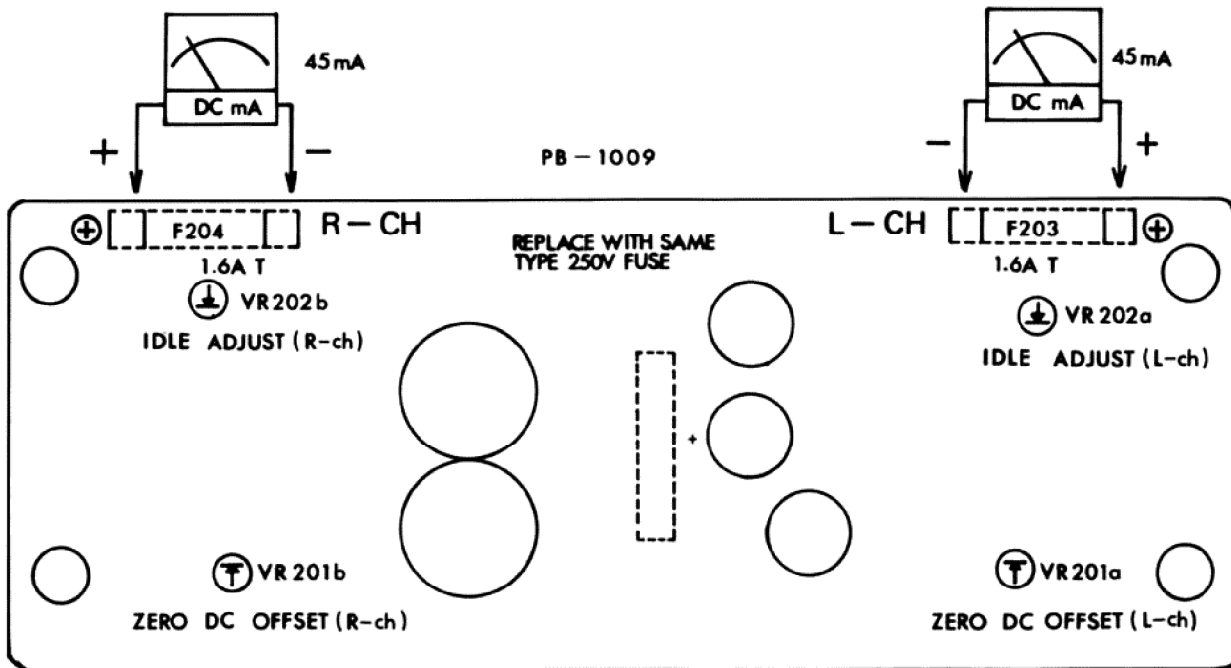
Controls arranged after the equalizer stage are: REC. OUT CONNECTOR, TAPE-MONITOR SWITCH, LOW-CUT FILTER, HIGH-CUT FILTER, MODE SELECTOR, VOLUME CONTROL, and LOUDNESS SWITCH. The intermediate amplifier consisting of Q103 Q104 is a flat amplifier adopting 2-stage Negative Feedback circuit which is designed 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.

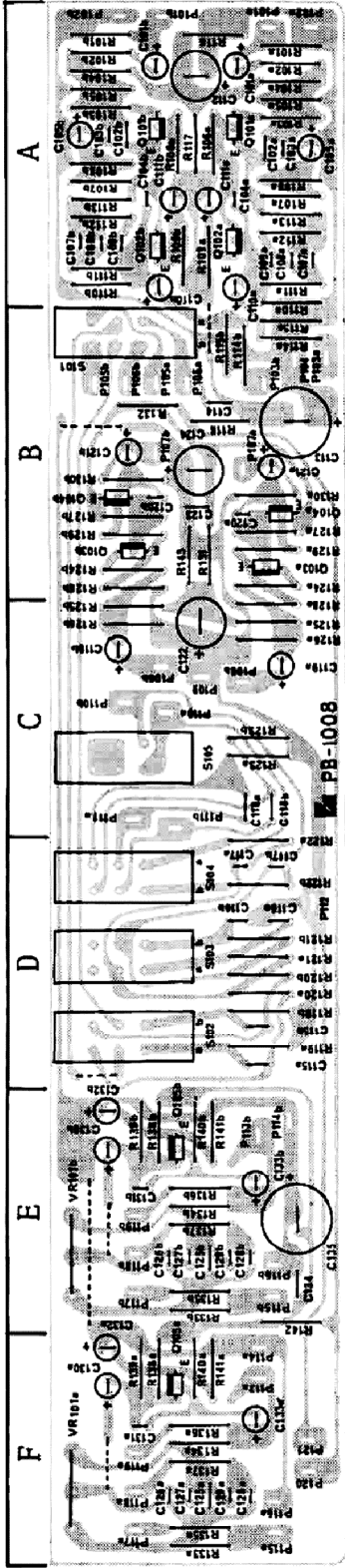
First, remove both fuses of F203 (L-ch) and F204 (R-ch), and then insert a DC ammeter between the fuse grips. (⊕ for the edge-side grip)

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

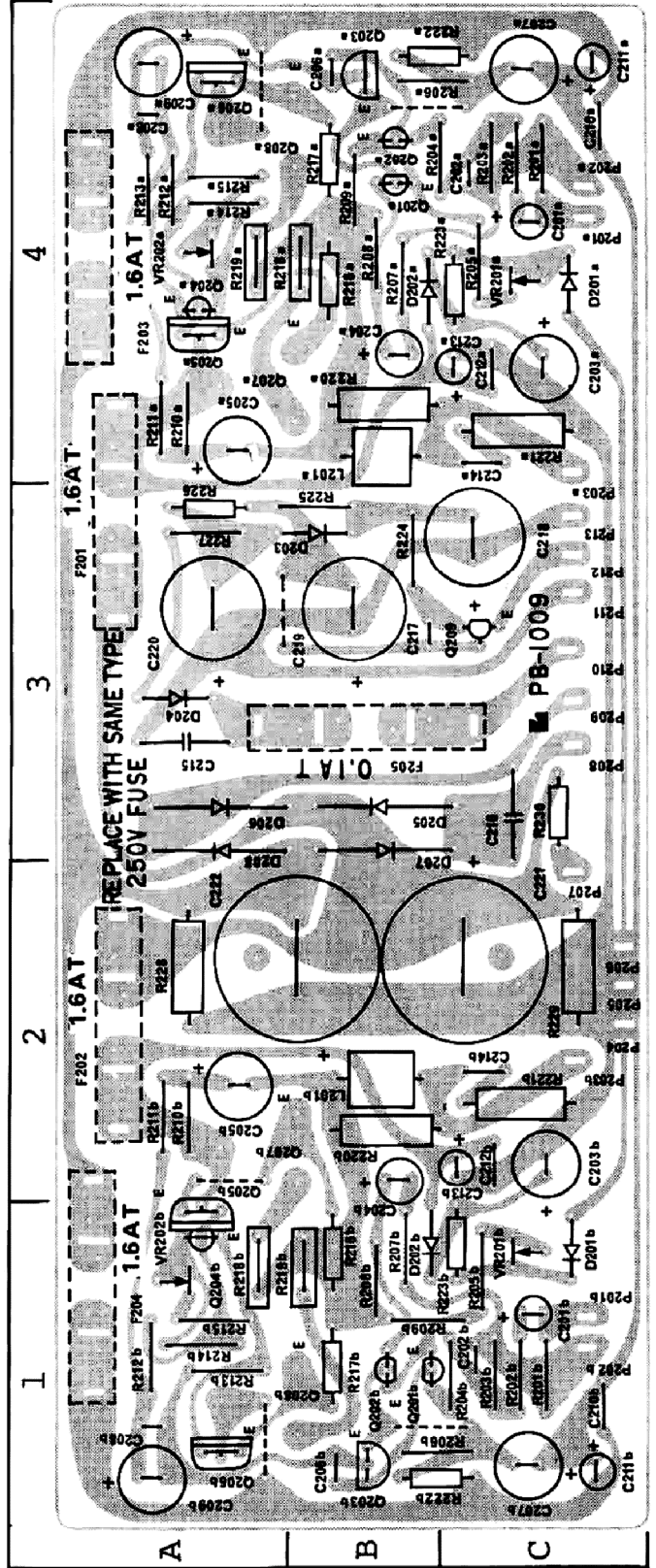
2. Zero DC Offset

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 millivolt meter to the speaker terminals and adjust VR201a and VR201b respectively. The DC offset voltage should be within $\pm 50\text{mV}$.

PB-1008



PB-1009



Replacement Parts List

PB-1008 (Resistors; 1/4W, $\pm 5\%$ 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	$\pm 10\%$	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	$\pm 5\%$	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	$\pm 10\%$	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	$\pm 10\%$	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	$\pm 10\%$	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	$\pm 10\%$	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.	226	100	1/2W F.P.	3A
207 b	1.5K	1B	216 b	100	1/2W F.P.	227	12		3A
208 a	33K	4B	217 a	100	1/2W F.P.	228	4.7K	1W	2A
208 b	33K	1B	217 b	100	1/2W F.P.	229	4.7K	1W	2C
209 a	470K	4B	218 a	0.33	3W [±] 10%	230	3.3K	1/2W	3C
209 b	470K	1B	218 b	0.33	3W [±] 10%				

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)

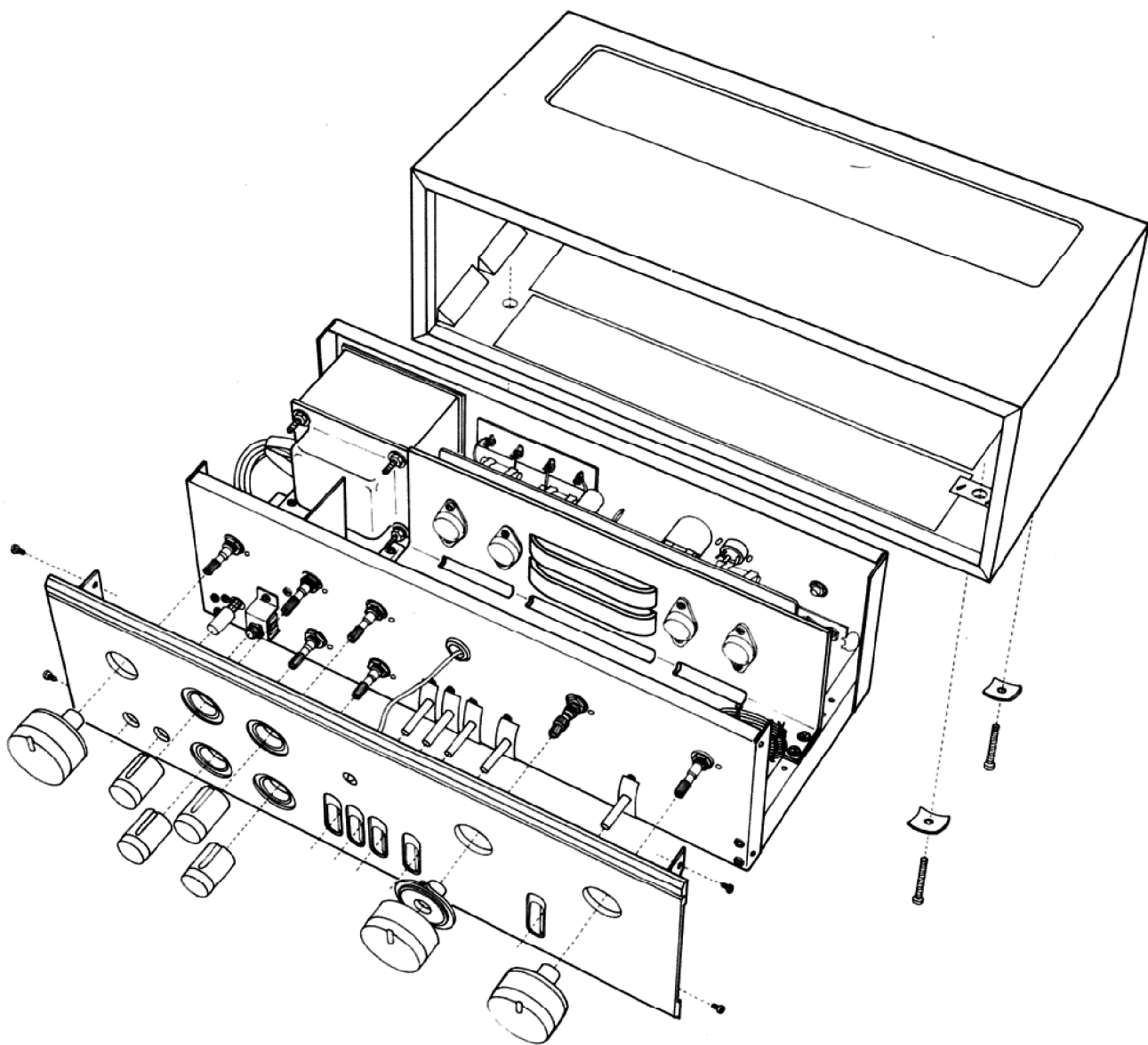
D201 a	WZ120	4C	D204	1N4003	3A
201 b	WZ120	1C	205	HiFi special	3A
202 a	1N4002	4B	206	HiFi special	3A
202 b	1N4002	1B	207	HiFi special	3B
203	1N4002	3B	208	HiFi special	3A

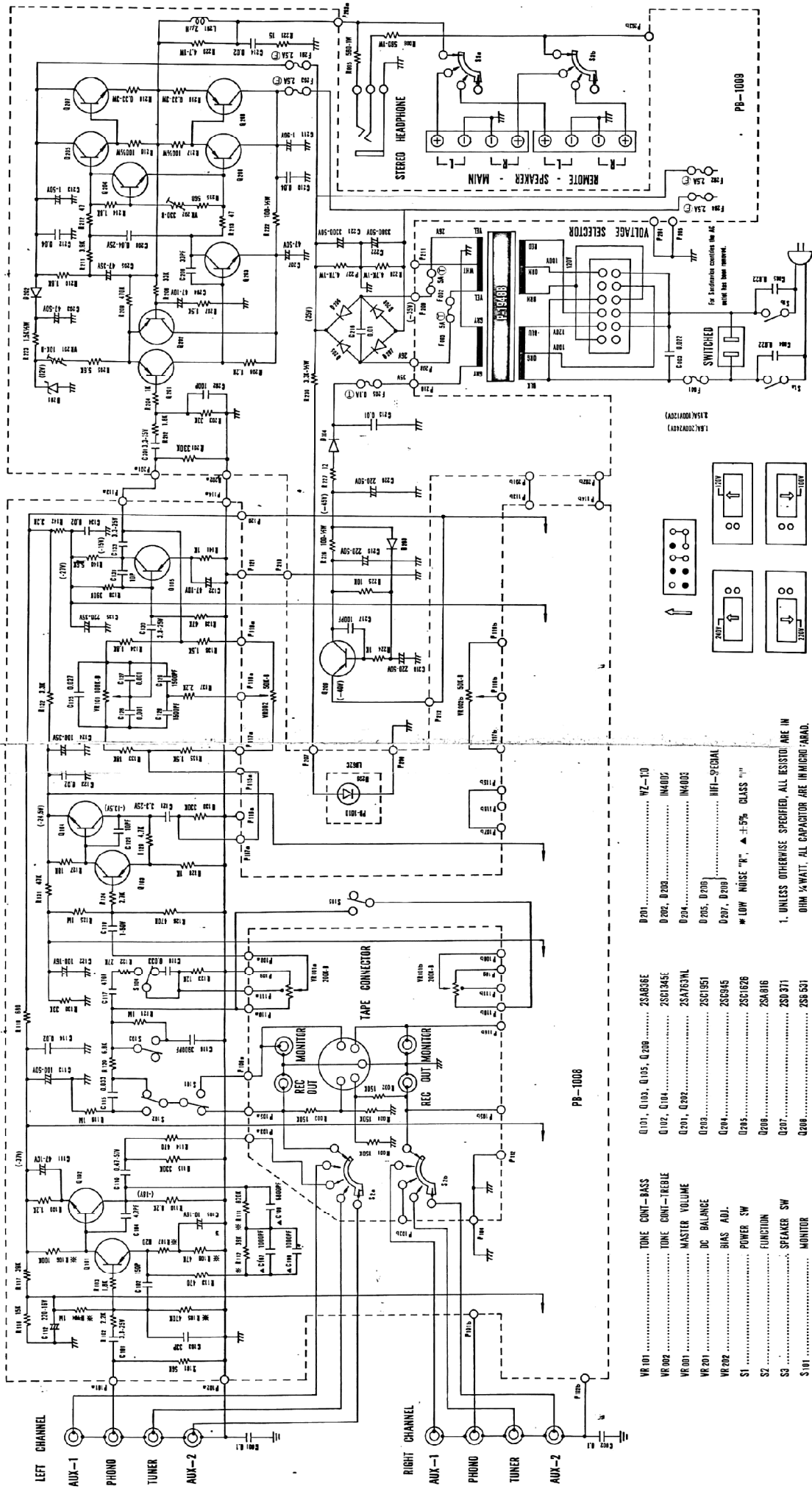
PB-1009 (Variable Resistors)

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



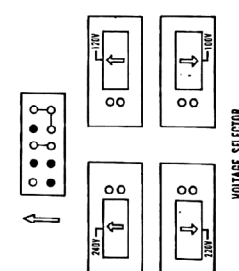


- VR 201..... TONE CONT.-BASS
- VR 202..... TONE CONT.-TREBLE
- VR 203..... MASTER VOLUME
- VR 204..... DC BALANCE
- VR 205..... BIAS ADJ.
- S1..... POWER SW
- S2..... FUNCTION
- S3..... SPEAKER SW
- S101..... MONITOR
- S102..... LOW CUT FILTER
- S103..... HIGH CUT FILTER
- S104..... LOUNESS
- S105..... MODE SW

- Q101, Q102, Q103, Q209..... 2S816E
- Q104..... 2S817A5E
- Q201, Q202..... 2S817A5E
- Q203..... 2S819E1
- Q204..... 2S819A5
- Q205..... 2S816E2E
- Q206..... 2S816E
- Q207..... 2S816E
- Q208..... 2S817
- Q209..... 2S818

- D201..... WZ-10
- D202, D203..... 1M40D5
- D204..... 1M40D5
- D205, D206..... 1M1-SPECIAL
- D207, D208..... * LOW NOISE "R", Δ \pm 5% CLASS "I"

- 1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE SPECIFIED.
- 2. TRANSISTOR AND DIODES MAY BE REPLACED WITH ANY TYPE HAVING COMPARABLE RATINGS.
- 3. DUE TO CONTINUED IMPROVEMENTS IN DESIGN, THE RIGHT TO ALTER THE CIRCUIT OR SPECIFICATIONS.



VOLTAGE SELECTOR