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Star of America
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SRA

integrated amplifier

service manual

This manual is a guide to adjustment methods, diagrams and parts list for SRA-12S.

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2

STAX

OUTLINE OF CIRCUITRY ADJUSTMENT PROCEDURE

The Stax SRA-12S is a high quality pre-amplifier as well as an integrated amplifier for Earspeakers.

It consists of the pre-amplifier section comprising an equalizer and an inter-stage amplifiers, and the main amplifier section for use with the Earspeaker. Employing more than 50 transistors, FETs or diodes, the SRA-12S is an ultra high fidelity amplifier, a crystal of advanced technologies.

Each section is constant-current driven and the signal circuitry is based on a FET differential operational DC amplification with large NFB (Negative feedback). Both static and dynamic characteristics are superior throughout the wide range between the DC and over 200 KHz.

The SRA-12S circuitry is completely devoid of elements deleterious to sound quality such as a filter, tone control, loudness control or electrolytic capacitor. Its amplification between the MAG PU input and the preamp output is 60 dB, which means that a 1 V output can be obtained even when a cartridge of 1 mV class is in use.

As a main amplifier for the Earspeaker, the SRA-12S with its 350 V high output can supply sufficient level of distortion free signals which will heighten the Earspeaker's superior features of clarity and presence.

ADJUSTMENT PROCEDURE

Prior to making any adjustments, first set the input selector to MAG-PU, the mode selector to STEREO, the balance control to the central position, and turn the volume level control around to minimum level position.

Stabilized power supply voltage adjustment (PB-450)

1. +15V measurement

Measure the voltage between the + lead of the 1 μ F/50V C454 (Q451 emitter) and ground, using the 20V range of the tester.

2. -15V measurement

Measure the voltage between the - lead of the 1 μ F/50V C455 (Q454 emitter) and ground, using the 20V

range of the tester.

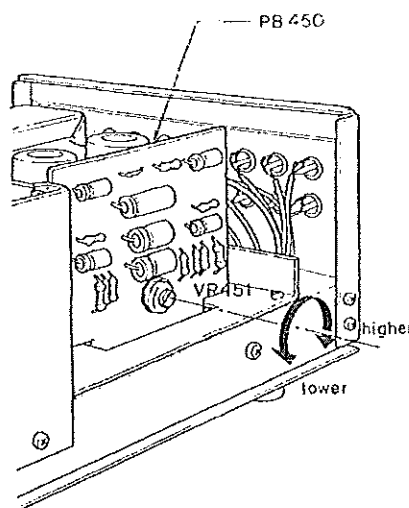
3. If the measured voltage values are smaller than $\pm 15V$, turn VR451 in the clockwise direction to bring the voltages back to $\pm 15V$.
4. If, on the other hand, the measured voltage values are larger than $\pm 15V$, turn VR451 in the counter clockwise direction.
5. If it is still not possible to adjust the voltages back to $\pm 15V$ by this method, check Q451~454 for faulty transistors, and replace if necessary.
6. Use the screw locks to secure the adjusted semi-fixed resistors.

Main amplifier balance adjustment (PB-300)

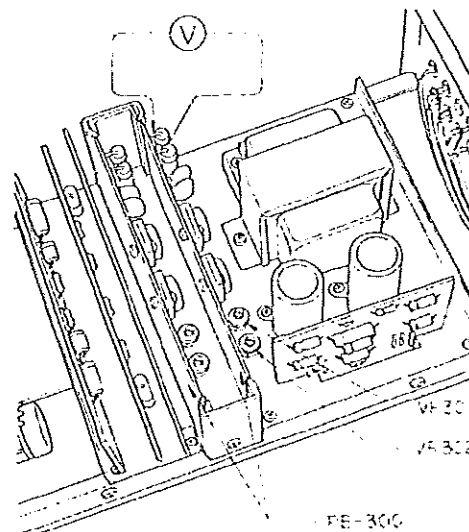
1. Place the probes of the tester (500V range) on the upper parts of R317 and R318 (51k Ω 5W) (Q306 and Q307 collectors) and check for zero potential difference.
(The center zero meter scale of the tester will prove most suitable for this purpose).
2. If there is a potential difference, adjust VR301 until the difference disappears.

3. Switch the tester to a lower measuring range to further check the absence of a potential difference.
4. Check the voltage between the upper part of R317 (51k Ω 5W) (Q306 collector) and ground using the 500V range of the tester. The voltage should be within $\pm 10V$ of 290V.
5. Check the voltage between the upper part of R318 (51k Ω 5W) (Q307 collector) and ground, again using the 500V range of the tester. This voltage also should be within $\pm 10V$ of 290V.
6. If the voltage in either case is too low or too high, adjust VR302 to bring the voltages back to 290V.
7. Place the probes on the upper part of R317 and R318 (51k Ω 5W), and re-adjust VR301 to eliminate any potential difference.
8. Use the screw locks to secure the adjusted semi-fixed resistors.
9. The above procedure refers to the adjustment of the left channel only. The right channel is also adjusted by the same procedure.

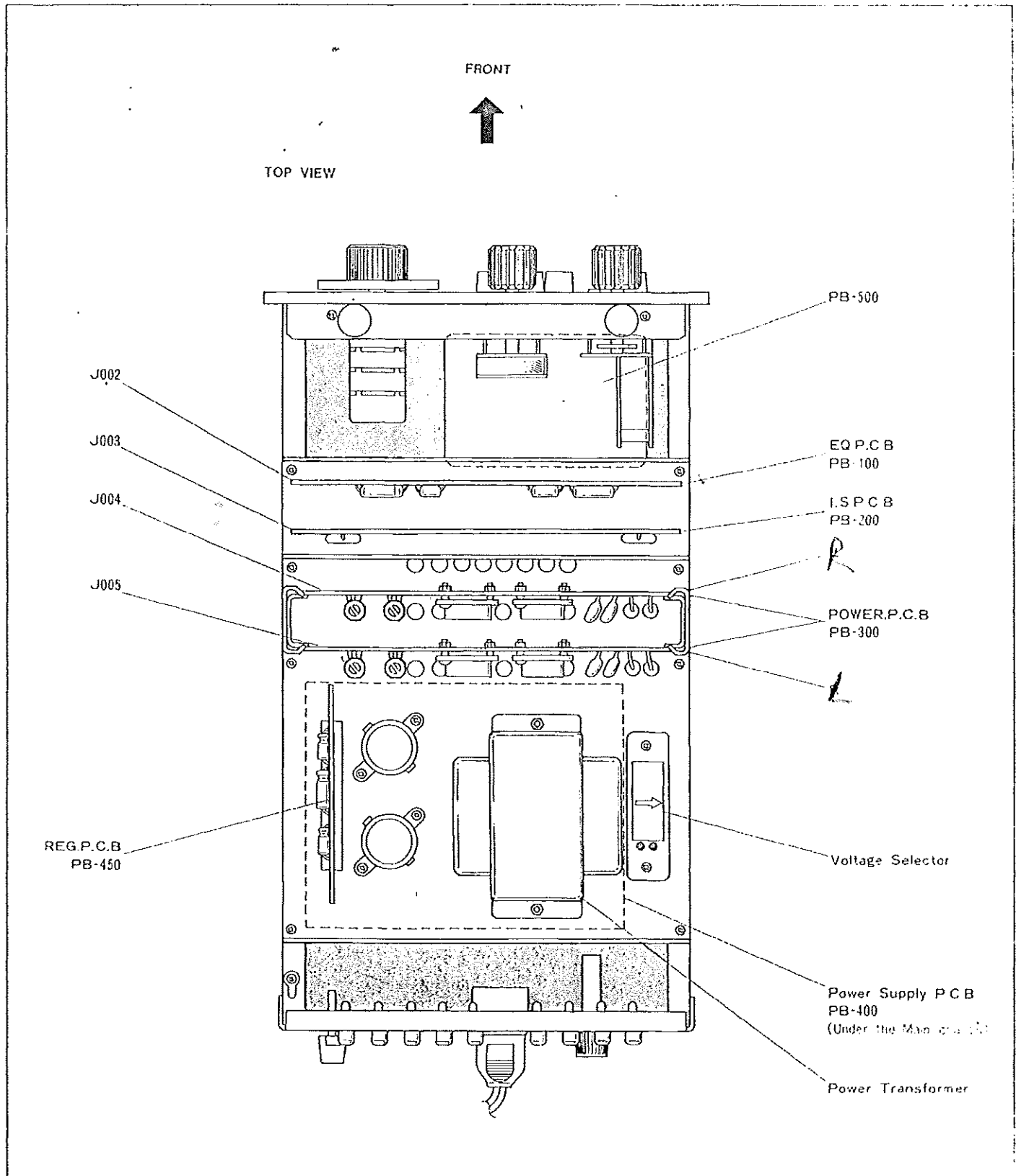
PB-450



PB-300

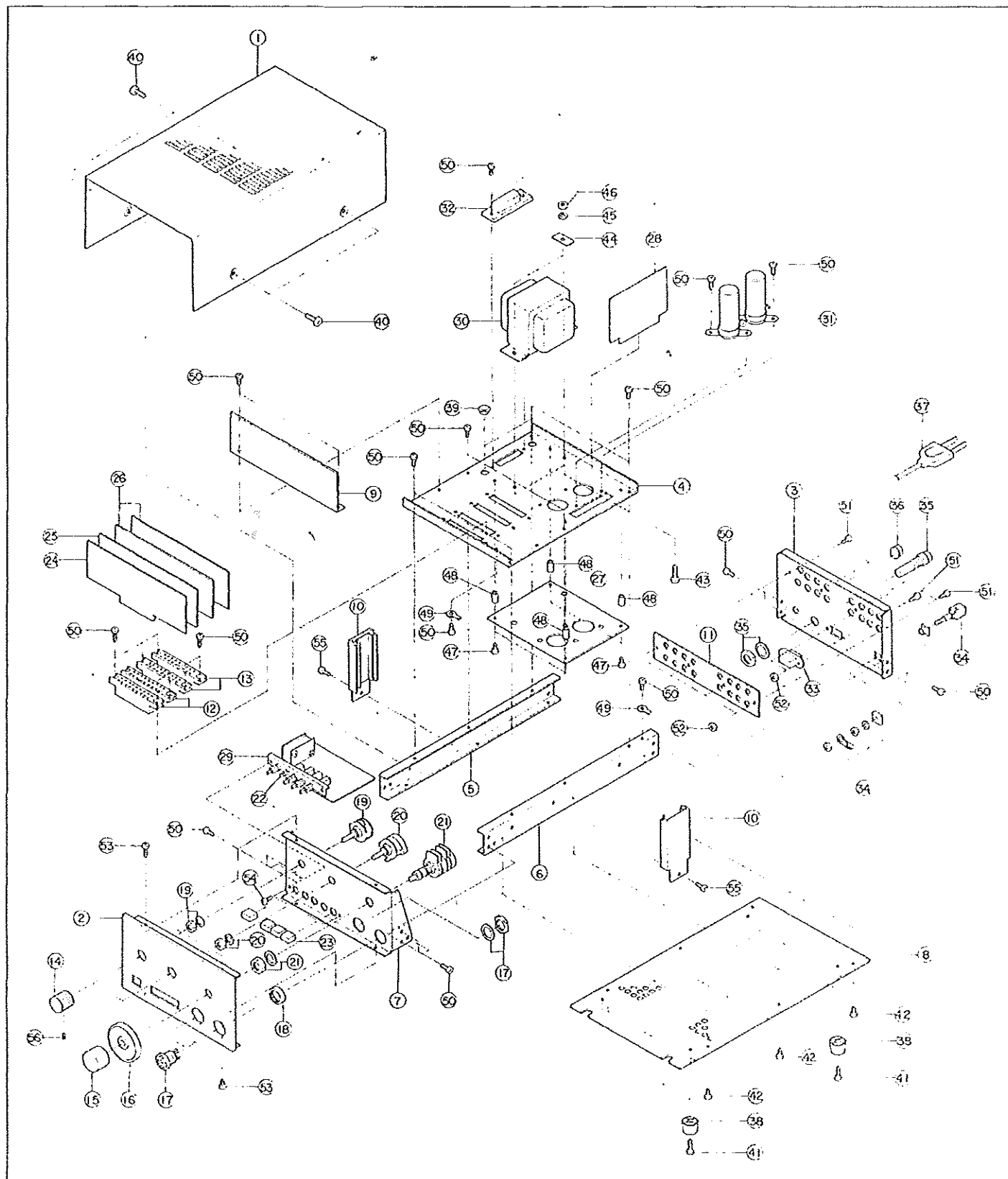


INTERNAL VIEW



EXPLODED VIEW DIAGRAM

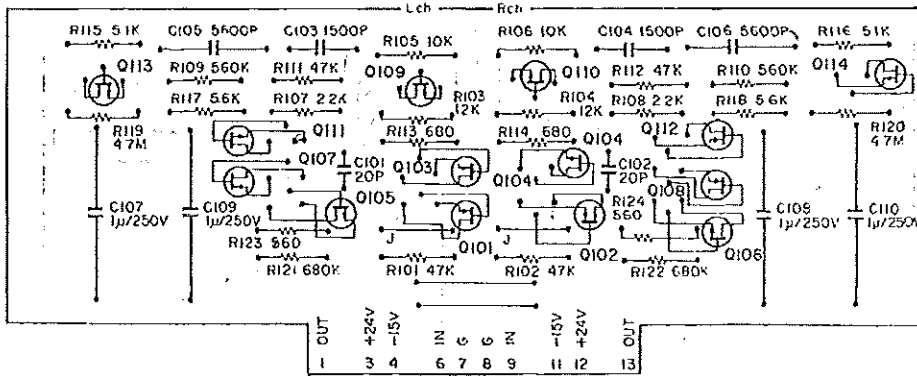
EXPLODED VIEW DIAGRAM



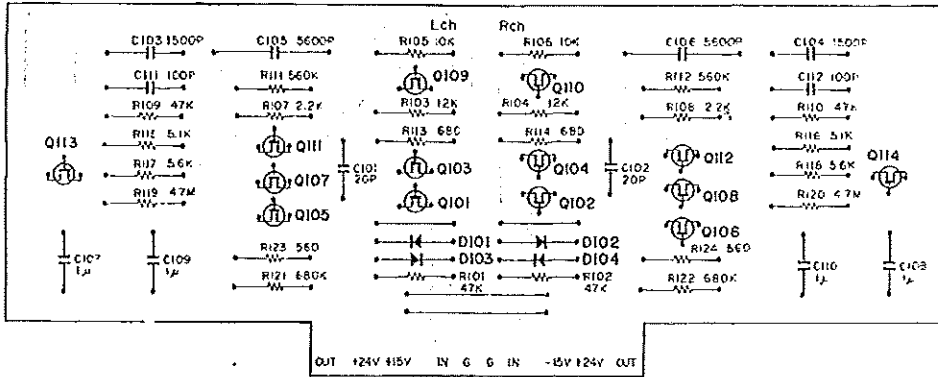
PARTS LIST

Ref. NO.	Part NO.	Description	Notes	Ref. NO.	Part NO.	Description	Notes
1	5142202429	Cover		31	0111074014	Capacitor 100 μ F/350V	
2	5142300110	Front panel		32	4130010004	Voltage selector	
3	5142202151	Rear panel		33	1200120007	AC socket	
4	5142202235	Main chassis		34	1200070105	Ground terminal (Square type)	
5	5142202612	Left support bar		34'		Washer, nut	
6	5142202717	Right support bar		35	4110020001	Fuse holder	
7	5142202020	Front sub panel		35'		Washer, nut	
8	5142202319	Bottom plate		36	3350011308	AC cord bushing	
9	5142202827	Shield plate		37	8122780010	AC cord	
10	5142204206	Circuit board guide		38	3340012002	Foot	
11	1200081809	18-pin jack board		39	3350041302	Cable bushing	
12	1200061404	14-pin multiconnector		40		⊕ screw 4 x 10mm binding head	
13	1200061410	14-pin multiconnector with post		41		⊕ screw 3 x 10mm tapping	
14	3242322016	Selector knob/mode knob		42		⊕ screw 3 x 10mm	
15	3242325017	Volume knob		43		⊕ screw 4 x 12mm	
16	3242350013	Balance knob		44		Spacer	
17	1200020607	6-pin socket		45		Washer	
18	5142203003	6-pin socket spacer ring		46		4mm nut	
19	3100020510	Rotary switch	Input selector	47		⊕ screw 3 x 12mm binding head	
19'		Washer, nut		48		Spacer	
20	3100040517	Rotary switch	Mode selector	49		Lug	
20'		Washer, nut		50		⊕ screw 3 x 8mm binding head	
21	2342200105	Double axle 4-ganged VR		51		⊕ screw 3 x 6mm binding head	
21'		Washer, nut		52		3mm nut	
22	3142200010	4P push switch		53		⊕ screw 3 x 6mm tapping head	
23		4P push switch screw		54		⊕ screw 3 x 8mm tapping bind head	
24	0842310010	P.C.B. A'ssy PB-100-1		55		⊕ screw 3 x 8mm binding head	
25	0842320017	P.C.B. A'ssy PB-200-1		56		Screw	
26	0842330000	P.C.B. A'ssy PB-300					
27	0842340006	P.C.B. A'ssy PB-400					
28	0842345002	P.C.B. A'ssy PB-450					
29	0842250007	P.C.B. PB-500					
30	9142300114	Power transformer					

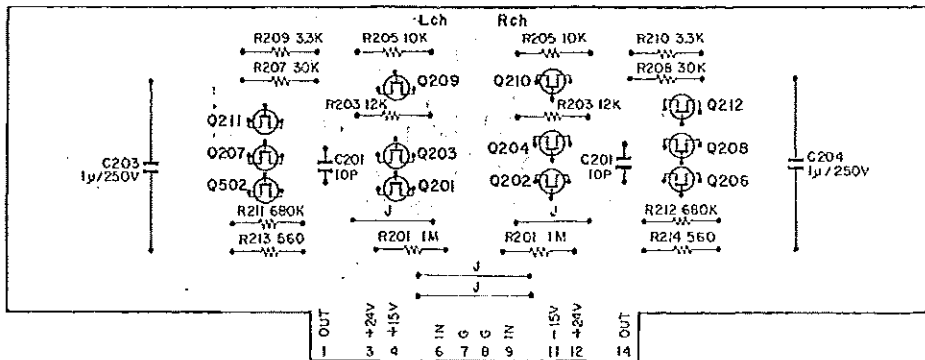
PB-100-1



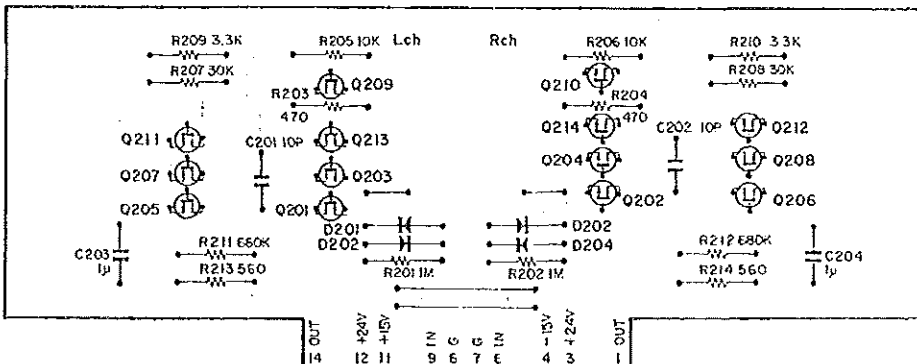
PB-100-2



PB-200-1



PB-200-2



PB-100-01

Ref. NO.	Part NO.	Description
	0842310010	PB-100-01 A'ssy
	0842310017	P.C.B.
Q101~104	1855000130	2SK30A-0
Q105, 106	1855000125	2SK30A-R
Q107, 108	1866000106	2N2608
Q109~112	1855000151	2SK30A-GR
R101, 102	0673473217	Resistor 47K Ω $\frac{1}{4}$ W Metal Film
R103, 104	0673123214	Resistor 12K Ω $\frac{1}{4}$ W Metal Film
R105, 106	0681103315	Resistor 10K Ω $\frac{1}{4}$ W Carbon
R107, 108	0673222218	Resistor 27K Ω $\frac{1}{4}$ W Metal Film
R109, 110	0673564210	Resistor 560K Ω $\frac{1}{4}$ W Metal Film
R111, 112	0673473217	Resistor 47K Ω $\frac{1}{4}$ W Metal Film
R113, 114	0673681212	Resistor 680 Ω $\frac{1}{4}$ W Metal Film
R115, 116	0681512319	Resistor 5.1K Ω $\frac{1}{4}$ W Carbon
R117, 118	0681562310	Resistor 5.6K Ω $\frac{1}{4}$ W Carbon
R119, 120	0681475416	Resistor 4.7M Ω $\frac{1}{4}$ W Carbon
R121, 122	0681684310	Resistor 680K Ω $\frac{1}{4}$ W Carbon
R123, 124	0681561316	Resistor 560 Ω $\frac{1}{4}$ W Carbon
C101, 102	0142002012	Capacitor 20pF Styrol
C103, 104	0145622011	Capacitor 5600pF Styrol
C105, 106	0141522013	Capacitor 1500pF Styrol
C107, 108	0151052012	Capacitor 1 μ F/250V MF
C109, 110	0151052012	Capacitor 1 μ F/250V MF
C111, 112	0151052012	Capacitor 1μF/100V MF
C113		Capacitor 0.01 μ F ceramic

PB-100-02

Ref. NO.	Part NO.	Description
	0842310024	PB-100-02 A'ssy
	0842310022	P.C.B.
Q101~104	1855000235	2SK68A-L
Q105, 106	1855000125	2SK30A-R
Q107, 108	1766000200	2N5460
Q109~112	1855000151	2SK30A-GR
D101~104	1930000504	1S1553
R101, 102	0673473217	Resistor 47K Ω $\frac{1}{4}$ W Metal Film
R103, 104	0673123214	Resistor 12K Ω $\frac{1}{4}$ W Metal Film
R105, 106	0681103315	Resistor 10K Ω $\frac{1}{4}$ W Carbon
R107, 108	0673222218	Resistor 27K Ω $\frac{1}{4}$ W Metal Film
R109, 110	0673564210	Resistor 560K Ω $\frac{1}{4}$ W Metal Film
R111, 112	0673473217	Resistor 47K Ω $\frac{1}{4}$ W Metal Film
R113, 114	0673681212	Resistor 680 Ω $\frac{1}{4}$ W Metal Film
R115, 116	0681512319	Resistor 5.1K Ω $\frac{1}{4}$ W Carbon
R117, 118	0681562310	Resistor 5.6K Ω $\frac{1}{4}$ W Carbon
R119, 120	0681475416	Resistor 4.7M Ω $\frac{1}{4}$ W Carbon
R121, 122	0681684310	Resistor 680K Ω $\frac{1}{4}$ W Carbon
R123, 124	0681561316	Resistor 560 Ω $\frac{1}{4}$ W Carbon
C101, 102	0142002012	Capacitor 20pF Styrol
C103, 104	0145622011	Capacitor 5600pF Styrol
C105, 106	0141522019	Capacitor 1500pF Styrol
C107, 108	0151052012	Capacitor 1 μ F/100V Polycarbonate
C109, 110	0151052012	Capacitor 1 μ F/100V Polycarbonate
C111, 112	0141012014	Capacitor 100pF Styrol
C113, 114	0143322017	Capacitor 3300pF Styrol
C115		Capacitor 3300pF Styrol

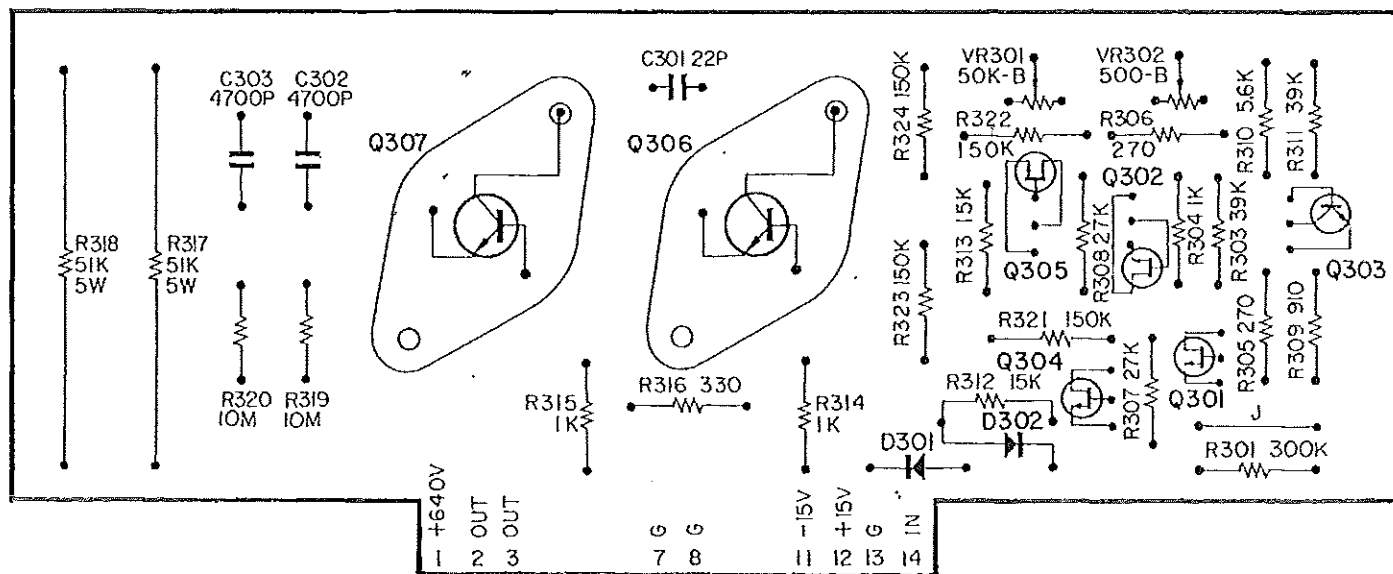
PB-200-01

Ref. NO.	Part NO.	Description
	0842320017	PB-200-01 A'ssy
	0842320015	P.C.B.
Q201~204	1855000130	2SK30A-0
Q205, 206	1855000125	2SK30A-R
Q207, 208	1866000106	2N2608
Q209, 210	1855000151	2SK30A-GR
Q211, 212	1855000151	2SK30A-GR
R201, 202	0681105312	Resistor 1M Ω $\frac{1}{4}$ W Carbon
R203, 204	0673123214	Resistor 12K Ω $\frac{1}{4}$ W Metal Film
R205, 206	0681103315	Resistor 10K Ω $\frac{1}{4}$ W Carbon
R207, 208	0673303212	Resistor 30K Ω $\frac{1}{4}$ W Metal Film
R209, 210	0673332213	Resistor 3.3K Ω $\frac{1}{4}$ W Metal Film
R211, 212	0681684310	Resistor 680K Ω $\frac{1}{4}$ W Carbon
R213, 214	0681561316	Resistor 560 Ω $\frac{1}{4}$ W Carbon
C201, 202	0142002012	Capacitor 10pF Styrol
C203, 204	0151052012	Capacitor 1 μ F/100V MF

PB-200-02

Ref. NO.	Part NO.	Description
	0842320020	PB-200-02 A'ssy
	0842320020	P.C.B.
Q201~204	1855000130	2SK30A-0
Q205, 206	1855000125	2SK30A-R
Q207, 208	1866000200	2N5460
Q209, 210	1855000125	2SK30A-R
Q211, 212	1855000151	2SK30A-GR
Q213, 214	1855000151	2SK30A GR
D201~204	1930000504	1S1553
R201, 202	0681105312	Resistor 1M Ω $\frac{1}{4}$ W Carbon
R203, 204	0673471210	Resistor 470 Ω $\frac{1}{4}$ W Metal Film
R205, 206	0681103315	Resistor 10K Ω $\frac{1}{4}$ W Carbon
R207, 208	0673303212	Resistor 30K Ω $\frac{1}{4}$ W Metal Film
R209, 210	0673332213	Resistor 3.3K Ω $\frac{1}{4}$ W Metal Film
R211, 212	0681684310	Resistor 680K Ω $\frac{1}{4}$ W Carbon
R213, 214	0681561316	Resistor 560 Ω $\frac{1}{4}$ W Carbon
C201, 202	0142002012	Capacitor 10pF Styrol
C203, 204	0151052012	Capacitor 1 μ F/100V Polycarbonate

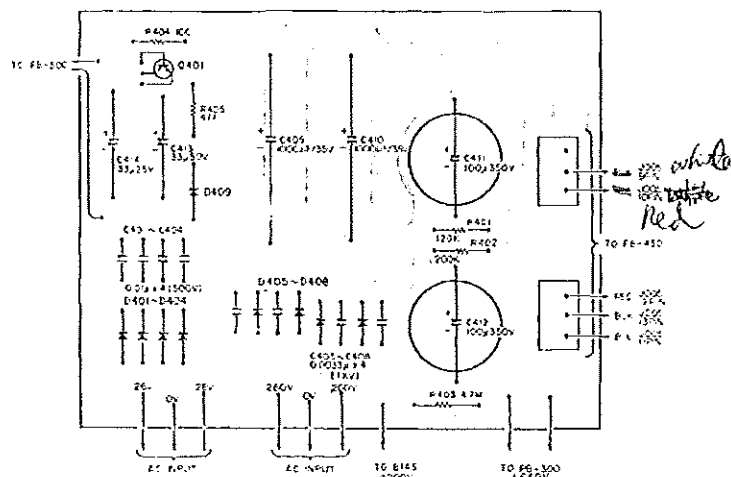
PB-300



* The main amp circuit input protection diodes, D301~D304 are only used in S.NO.N1001~. They are not used in the old model, S.NO.E1001~.

PB-400

PB-400-2



PB-300

PB-400-02

Ref. NO.	Part NO.	Description	Ref. NO.	Part NO.	Description
	0842330000	PB-300 A'ssy		0842340023	PB-400-02 A'ssy
	0842230000	P.C.B.		0842340027	P.C.B.
Q301, 302	1855000130	2SK30A-0	D401~404	1930000200	RA-1Z
Q303	1853000143	2SC734-Y	D405~408	1930000305	1S1830
Q304, 305	1855000151	2SK30A-GR	D409	1930000200	RA-1Z
Q306, 307	1853000206	2SC1167	Q401, 402	1853000143	2SC734-Y
R301	0681304313	Resistor 300K Ω $\frac{1}{4}$ W Carbon	Z401	1950000400	02Z16A
R303, 311	0681393313	Resistor 39K Ω $\frac{1}{4}$ W Carbon	R401	0681124315	Resistor 120K Ω $\frac{1}{4}$ W Carbon
R304	0681102311	Resistor 1K Ω $\frac{1}{4}$ W Carbon	R402	0681204316	Resistor 200K Ω $\frac{1}{4}$ W Carbon
R305, 306	0673271215	Resistor 270 Ω $\frac{1}{4}$ W Metal Film	R403	0681475416	Resistor 4.7M Ω $\frac{1}{4}$ W Carbon
R307, 308	0683273218	Resistor 27K Ω $\frac{1}{4}$ W Metal Film	R404	0681101318	Resistor 100 Ω $\frac{1}{4}$ W Carbon
R309	0681911314	Resistor 910 Ω $\frac{1}{4}$ W Carbon	R405	0681473314	Resistor 47K Ω $\frac{1}{4}$ W Carbon
R310	0681562310	Resistor 5.6K Ω $\frac{1}{4}$ W Carbon	R406	0681392310	Resistor 3.9K Ω $\frac{1}{4}$ W Carbon
R312, 313	0681153316	Resistor 15K Ω $\frac{1}{4}$ W Carbon	R407	0681103315	Resistor 10K Ω $\frac{1}{4}$ W Carbon
R314, 315	0681102311	Resistor 1K Ω $\frac{1}{4}$ W Carbon	C401~404	0131031011	Capacitor 0.01 μ F/500V Ceramic
R316	0681331317	Resistor 330 Ω $\frac{1}{4}$ W Carbon	C405~408	0133321018	Capacitor 0.0033 μ F/1KV Ceramic
R317, 318	0644513310	Resistor 51K Ω $\frac{1}{4}$ W Metal Oxide Film	C409, 410	0112282016	Capacitor 2200 μ F/35V Electrolytic
R319, 320	0681106410	Resistor 10M Ω $\frac{1}{4}$ W Carbon	C413	0111062024	Capacitor 33 μ F/50V Electrolytic
R321, 322	0673154212	Resistor 150K Ω $\frac{1}{4}$ W Metal Film	C414	0111072017	Capacitor 100 μ F/25V Electrolytic
R323, 324	0673154212	Resistor 150K Ω $\frac{1}{4}$ W Metal Film	C415	0113362013	Capacitor 33 μ F/25V Electrolytic
VR301	2283503211	Variable Resistor 50K Ω	C416	0151052012	Capacitor 1 μ F/100V Polycarbonate
VR302	2283501214	Variable Resistor 500 Ω	C417	0121041014	Capacitor 0.1 μ F/250V M.F.
C301	0132201018	Capacitor 22pF Ceramic		1300040105	P.C.B. Terminal
C302, 303	0174721015	Capacitor 4700pF Mica		1200100304	CIS Connector

PB-400

Ref. NO.	Part NO.	Description
	0842340006	PB-400 A'ssy
D401~404	1930000200	RA-1Z
D405~408	1930000305	1S1830
D409	1930000200	RA-1Z
R401	0681124315	Resistor 120K Ω $\frac{1}{4}$ W Carbon
R402	0681204316	Resistor 200K Ω $\frac{1}{4}$ W Carbon
R403	0681475416	Resistor 4.7M Ω $\frac{1}{4}$ W Carbon
R404	0681101318	Resistor 100 Ω $\frac{1}{4}$ W Carbon
R405	0681104319	Resistor 100K Ω $\frac{1}{4}$ W Carbon
C401~404	0131031011	Capacitor 0.01 μ F/500V Ceramic
C405~408	0133321018	Capacitor 0.0033 μ F/1KV Ceramic
C409, 410	0111082015	Capacitor 1000 μ F/35V Electrolytic
C413, C414	0113362029	Capacitor 33 μ F/50V Electrolytic
	1300040105	P.C.B. Terminal
	1200100304	CIS Connector