

# **SEEBURG**

**STEREO HIGH FIDELITY AMPLIFIER**

**TYPE SHFA4**

# SEEBURG

## STEREO HIGH FIDELITY AMPLIFIER, Type SHFA4

This is a dual channel stereo, low distortion, wide frequency range, constant voltage type amplifier. It is part of the Seeburg stereophonic sound system that also includes the Seeburg stereo pickup, one or more pairs of Seeburg twin stereo speakers, two speakers and a speaker network in the phonograph.

The two output signals of the low impedance magnetic pickup of the Select-O-Matic mechanism are connected to the amplifier through the input socket and have a nominal signal level for each channel of five millivolts. Both signals are independently amplified, one in the left channel, one in the right channel. Each channel is complete with the tone controls and the volume control mechanically linked to provide equal and simultaneous positioning.

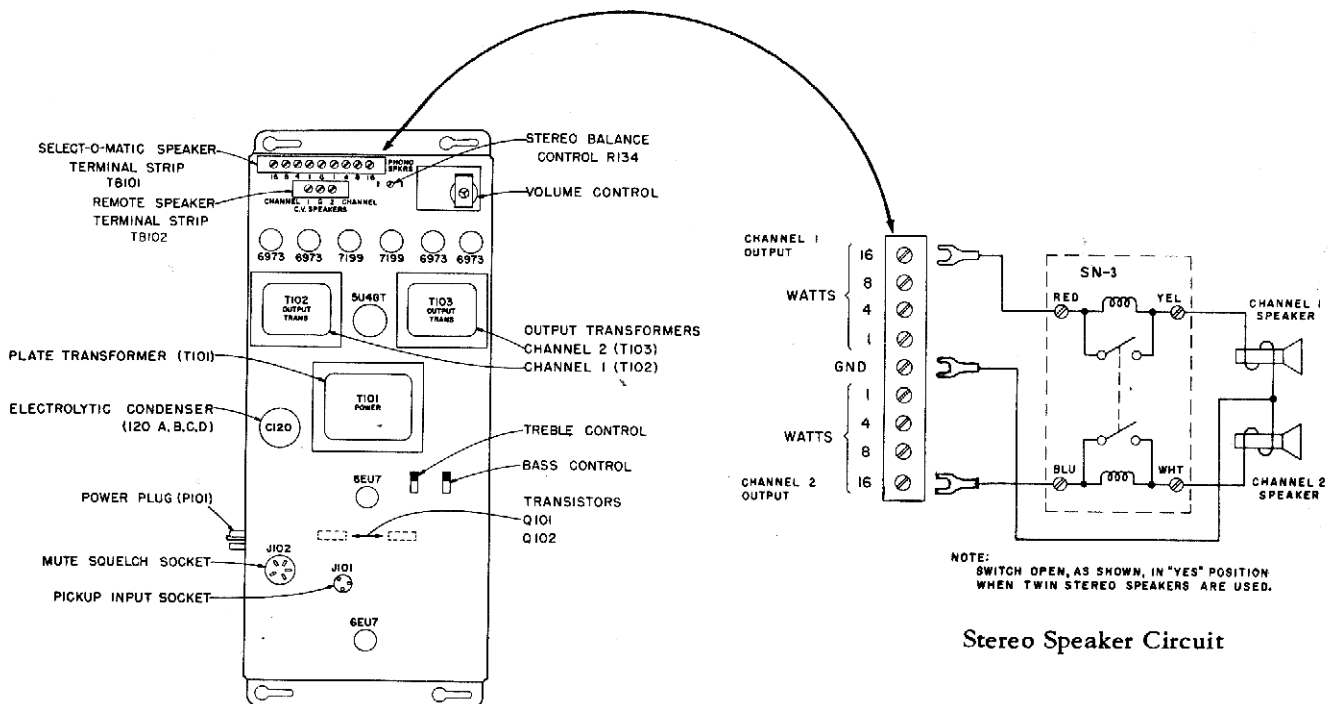
The output transformers of each channel have low and high impedance terminals. The low impedance windings drive a 16 ohm phonograph speaker to which they are connected through a network. Connections to this load are through the speaker terminal board, TB101. The high impedance terminals are 70 volt, C.V. outputs that terminate at channel 1 and channel 2 of the re-

mote speaker terminal strip, TB102. These outputs drive the side channels of one or more external stereo speakers that have, in their cabinets, a high-pass network.

The total output power for each channel can be divided between the phonograph speaker and the external stereo speakers by positioning the phonograph speaker terminals and the loading taps on the external speakers. The phonograph speaker terminals are calibrated in watts with reference to the power delivered at full output by each output transformer to the 16 ohm phonograph speaker load.

The total load of the phonograph speakers as indicated on the speaker terminals and the load of external speakers must not be greater than 20 watts for each channel.

Automatic volume compensation is incorporated in this amplifier to compensate for variations in the average volume levels of different records and make possible a volume control setting for normal records without danger of "blasting" or high volume due to exceptionally loud records.



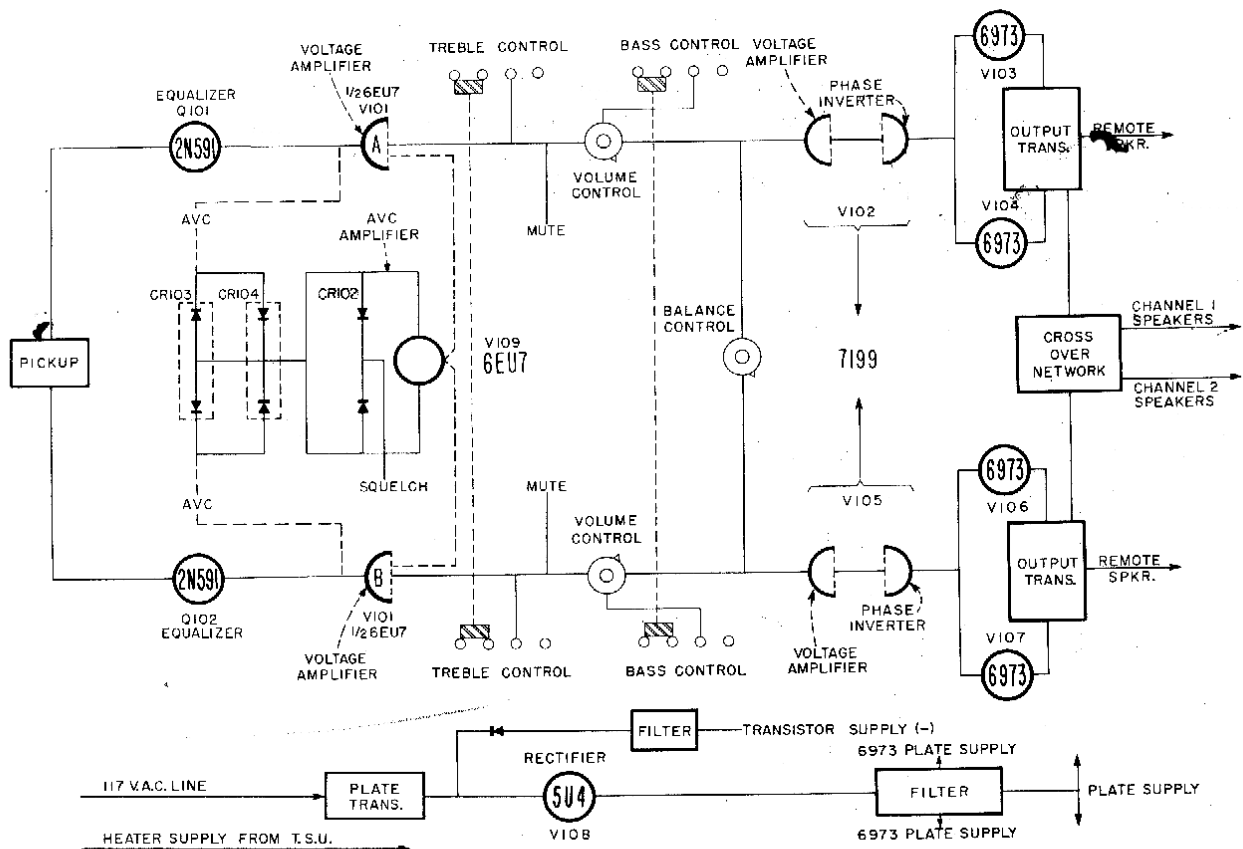
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The output of the 6EU7 (V109), AVC amplifier stage, is rectified by the back-to-back selenium rectifier (CR102) and is applied as a varying DC bias to two pairs of matched selenium diodes (CR103 and CR104). Varying the DC bias on these diodes varies inversely the AC reactance and consequently controls the signal level at grids of the 6EU7 voltage amplifier (V101). The back-to-back selenium rectifier (CR102) rectifies 20 volts supplied from the control circuits of the Select-O-Matic mechanism for squelch operation. The squelch voltage is applied only when a record is not being played.

Use of AVC is optional, and the AVC action may be disabled by removal of the 6EU7 (V109) tube.

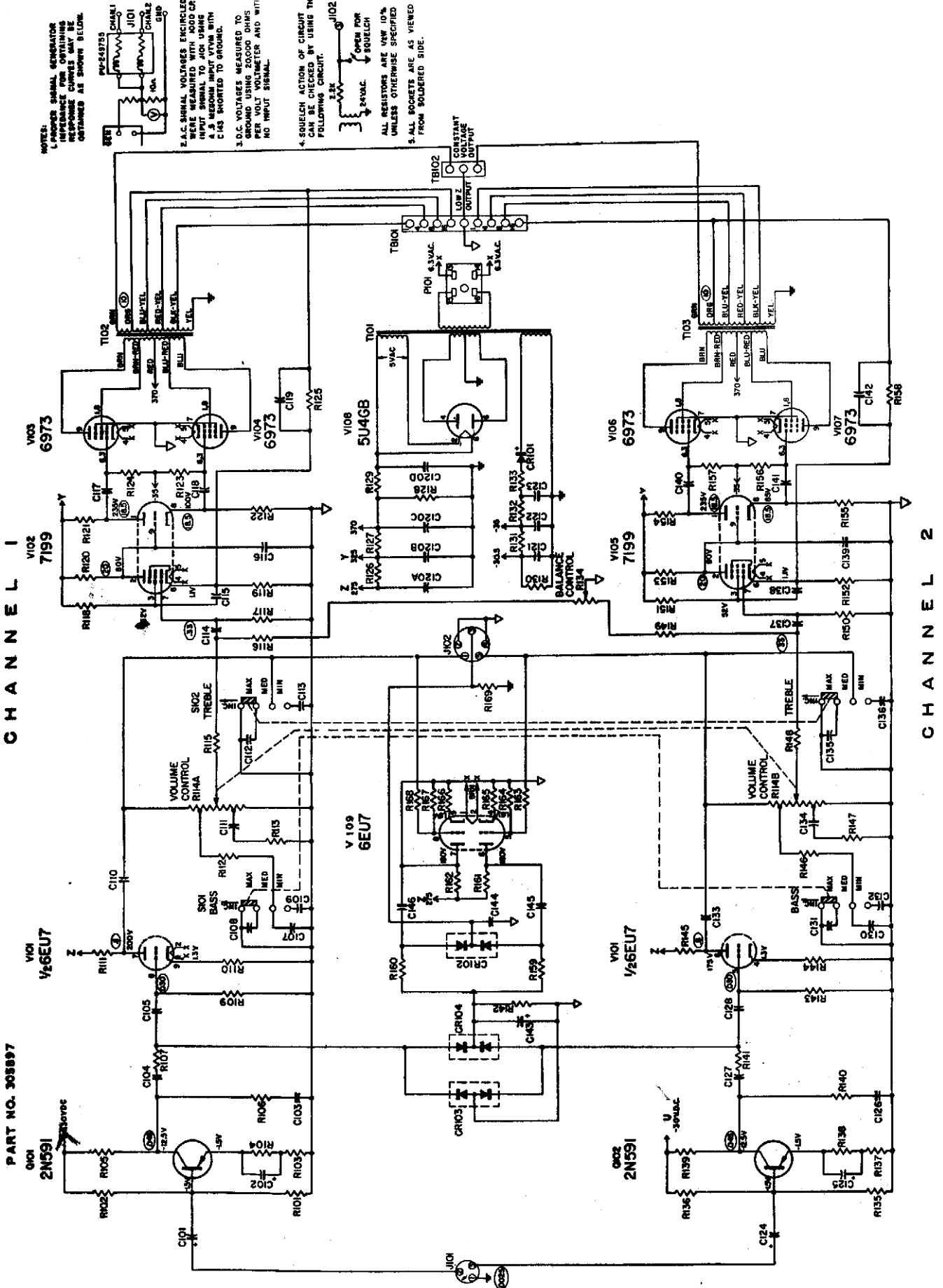
The volume control adjusts the level of sound from the Select-O-Matic speaker and the remote speakers. It is located on the amplifier so it is accessible from the back of the cabinet. A powered remote volume control, Type PRVC2, may be used by the installation of a motor on the amplifier volume control. The motor is remotely controlled to increase or decrease the phonograph volume.

Heater current for the amplifier tubes is supplied at 6.3 volts from the Tormat Selector Unit. Plate current for the tubes is from an included plate supply transformer and 5U4GB rectifier. Current for the transistors and bias for the 6973 output tubes is supplied through the rectifier, CR101, and a three-section filter.

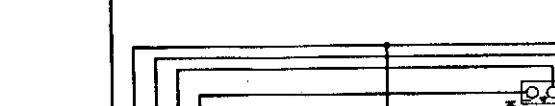


**Block Diagram.**

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- NOTES:**
1. POWER SIGNAL GENERATOR AND RESPONSE CURVES MAY BE OBTAINED AS SHOWN BELOW.
  2. A.C. SIGNAL VOLTAGES ENCLOSED WERE MEASURED WITH 5000 OHMS INPUT SIGNAL TO A/C USING A .5 MEGOHM INPUT VTVM WITH C145 SHORTED TO GROUND.
  3. D.C. VOLTAGES MEASURED TO GROUND USING 20,000 OHMS PER VOLT VOLTMETER AND WITH NO INPUT SIGNAL.
  4. SQUELCH ACTION OF CIRCUIT CAN BE CHECKED BY USING THE FOLLOWING CIRCUIT.
  5. ALL SOCKETS ARE AS VIEWED FROM SOLDERED SIDE.
- ALL RESISTORS ARE 1/4W 10% UNLESS OTHERWISE SPECIFIED



PART NO. 308897

STEREO HIGH FIDELITY AMPLIFIER, Type SHFA4

PARTS LIST

Item	Part No.	Description	Item	Part No.	Description	Item	Part No.	Description
C101	87697	9 Mfd. 6 V. Lytic	C138	86140	.05 Mfd. 10% 400 V. Paper	R116	82449	120,000 Ohm
C102	87696	50 Mfd. 6 V. Lytic	C139	86289	3.3 Mmfd 500 V. Ceramic	R117	82460	1 Meg Ohm
C103	86327	.047 Mfd. 10% 50 V. Mylar	C140	86146	.05 Mfd. 10% 600 V. Paper	R118	82459	820,000 Ohm
C104	86235	.05 Mfd. 10% 200 V. Paper	C141	86146	.05 Mfd. 10% 600 V. Paper	R119	82423	820 Ohm
C105	86212	.01 Mfd. 10% 400 V. Paper	C142	86243	150 Mmfd. 500 V. Ceramic	R120	82452	220,000 Ohm
C107	86332	.0068 Mfd 10% 50 V. Mylar	C143	87710	200 Mfd. -15 -40% Lytic	R121	82811	15,000 Ohm 2 Watt 5%
C108	86326	.01 Mfd. 100 V. Mylar	C144	86313	.01 Mfd. 500 V. Ceramic	R122	82811	15,000 Ohm 2 Watt 5%
C109	86327	.047 Mfd. 10% 50 V. Mylar	C145	86313	.01 Mfd. 500 V. Ceramic	R123	82696	270,000 Ohm 5%
C110	86140	.05 Mfd. 10% 400 V. Paper	C146	86313	.01 Mfd. 500 V. Ceramic	R124	82696	270,000 Ohm 5%
C111	86332	.0068 Mfd. 10% 50 V. Mylar	CR101	309390	Selenium Diode	R125	82638	18,000 Ohm 5%
C112	86309	.001 Mfd. 10% 500 V. Ceramic	CR102	309399	Selenium Diode	R126	82689	12,000 Ohm 1 Watt 10%
C113	86340	.003 Mfd. 10% 500 V. Ceramic	CR103	309398	Selenium Diode	R127	81213	2,000 Ohm 3 Watt
C114	86212	.01 Mfd. 10% 400 V. Paper	CR104	309397	Selenium Diode	R128	81199	25,000 Ohm 10 Watt
C115	86140	.05 Mfd. 10% 400 V. Paper	J101	12034	Input Socket	R129	81173	100 Ohm 7 Watt
C116	86289	3.3 Mmfd. 500 V. Ceramic	J102	84283	Mute Squelch 5 Pin	R130	82634	10,000 Ohm 5%
C117	86146	.05 Mfd. 10% 600 V. Paper	P101	300007	Power Input	R131	82620	1,000 Ohm 5%
C118	86146	.05 Mfd. 10% 600 V. Paper	Q101	309404	2N591 Transistor	R132	82626	3,900 Ohm 5%
C119	86243	150 Mmfd. 500 V. Ceramic	Q101	309404	2N591 Transistor	R133	82418	330 Ohm
C120A		20 Mfd. 400 V. Lytic	R101	308962	12,000 Ohm 5%	R134	305833	Balance Control (1 Meg.)
C120B		20 Mfd. 400 V. Lytic	R102	308961	220,000 Ohm 5%	R135	82635	12,000 Ohm 5%
C120C	87689	40 Mfd. 400 V. Lytic	R103	82656	150 Ohm 5%	R136	82616	220,000 Ohm 5%
C120D		40 Mfd. 450 V. Lytic	R104	82626	3,900 Ohm 5%	R137	82656	150 Ohm 5%
C121	87691	50 Mfd. 60 V. Lytic	R105	308960	47,000 Ohm 5%	R138	82626	3,900 Ohm 5%
C122	87691	50 Mfd. 60 V. Lytic	R106	82625	3,600 Ohm 5%	R139	82676	47,000 Ohm 5%
C123	87690	20 Mfd. 75 V. Lytic	R107	82676	47,000 Ohm 5%	R140	82625	3,600 Ohm 5%
C124	87697	9 Mfd. 6 V. Lytic	R109	82456	470,000 Ohm	R141	82676	47,000 Ohm 5%
C125	87696	50 Mfd. 6 V. Lytic	R110	82571	1,300 Ohm 5%	R142	82452	220,000 Ohm 10%
C126	86327	.047 Mfd. 10% 50 V. Mylar	R111	82666	100,000 Ohm 5%	R143	82456	470,000 Ohm
C127	86235	.05 Mfd. 10% 200 V. Paper	R112	82441	27,000 Ohm	R144	82671	1,300 Ohm 5%
C128	86212	.01 Mfd. 10% 400 V. Paper	R113	82441	27,000 Ohm	R145	82666	100,000 Ohm 5%
C130	86332	.0068 Mfd. 10% 50 V. Mylar	R114	305821	Volume Control (1 Meg. each Section)	R146	82441	27,000 Ohm
C131	86326	.01 Mfd. 100 V. Mylar	R115	82616	220,000 Ohm	R147	82441	27,000 Ohm
C132	86327	.047 Mfd. 10% 50 V. Mylar				R148	82616	220,000 Ohm
C133	86140	.05 Mfd. 10% 400 V. Paper				R149	82449	120,000 Ohm
C134	86332	.0068 Mfd. 10% 50 V. Mylar				R150	82460	1 Meg. Ohm
C135	86309	.001 Mfd. 10% 500 V. Ceramic				R151	82459	820,000 Ohm
C136	86340	.003 Mfd. 10% 500 V. Ceramic				R152	82423	820 Ohm
C137	86212	.01 Mfd. 10% 400 V. Paper				R153	82452	220,000 Ohm
R154	82811	15,000 Ohm 2 Watt 5%						
R155	82811	15,000 Ohm 2 Watt 5%						
R156	82696	270,000 Ohm 5%						
R157	82696	270,000 Ohm 5%						
R158	82638	18,000 Ohm 5%						
R159	82641	30,000 Ohm 1/2 Watt 5%						
R160	82641	30,000 Ohm 1/2 Watt 5%						
R161	82775	39,000 Ohm 1/2 Watt 5%						
R162	82775	39,000 Ohm 1/2 Watt 5%						
R163	82448	100,000 Ohm 1/2 Watt 10%						
R164	82460	1 Meg. Ohm						
R165	82612	2,000 Ohm 1/2 Watt 5%						
R166	82612	2,000 Ohm 1/2 Watt 5%						
R167	82460	1 Meg. Ohm						
R168	82448	100,000 Ohm 1/2 Watt 10%						
R169	82430	3,300 Ohm 1/2 Watt 10%						
S101	305830	Bass Range 2 P3T						
S102	305830	Treble Range 2P3T						
T101	305814	Power Transformer						
T102	305816	Audio Transformer						
T103	305817	Audio Transformer						
TB101	305832	Terminal Board 9 Lugs						
TB102	305831	Terminal Board 3 Lugs						
V101	308646	6EU7						
V102	308647	7199						
V103	308026	6973						
V104	308026	6973						
V105	308647	7199						
V106	308026	6973						
V107	308026	6973						
V108	308506	5U4GB						
V109	308646	6EU7						