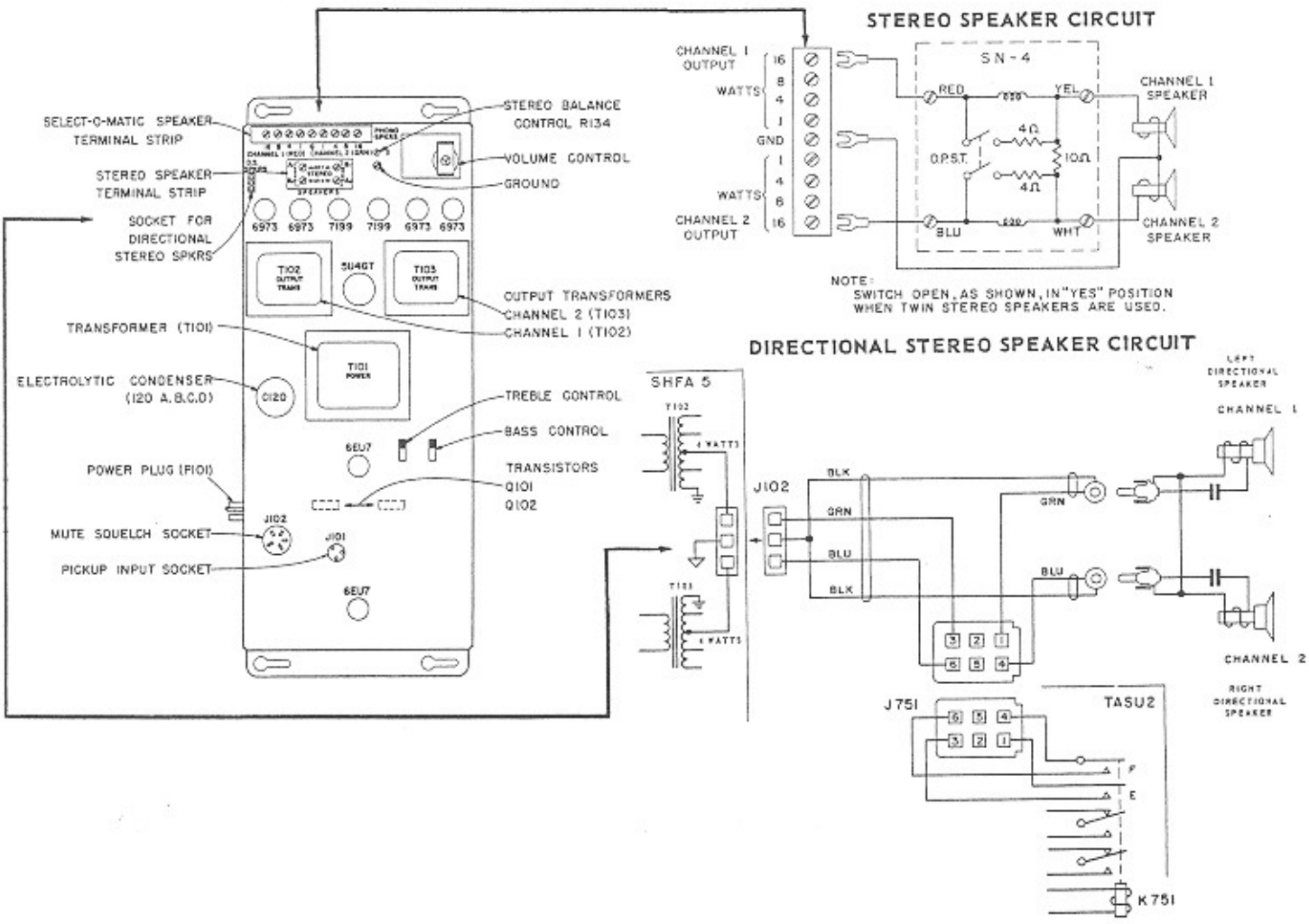
SEEBURG

STEREO HIGH FIDELITY AMPLIFIER, Type SHFA5

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 includes the Seeburg stereo pickup, one or more pairs of Seeburg twin stereo speakers, a pair of directional speakers mounted on the phonograph as well as 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. Each low impedance winding drives a 16-ohm speaker in the phonograph to which it is connected through a low-pass network. Connections to this load are through the speaker terminal board, TB101. The low impedance winding also drives a 16-ohm directional speaker mounted on the phonograph. This speaker has, in its enclosure, a high-pass network with connection made from a 4-watt tap of the transformer through the three pin socket and contacts on the power relay of the Transistorized Auto Speed Unit. The directional speakers are used only when a 33-1/3 rpm record is played. The high impedance secondaries are 70-volt C.V. outputs that terminate at A and B terminals of the remote speaker terminal strip. These outputs drive the side channels of one or more external stereo speakers that have, in their enclosures, a high-pass network. External speakers for monaural operation may be connected to the remote speaker terminal strip, terminals A1 and B2 or to A2 and B1.



The total output power for each channel is divided between the directional speakers, the cabinet speakers in the phonograph and the external stereo speakers. The output power to the cabinet speakers in the phonograph and the external stereo speakers can be varied 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 output power to the directional speakers is fixed at 4 watts for each channel. The total load of the cabinet speakers in the phonograph as indicated on the speaker terminals and the load of remote speakers must not be greater than 16 watts for each channel.

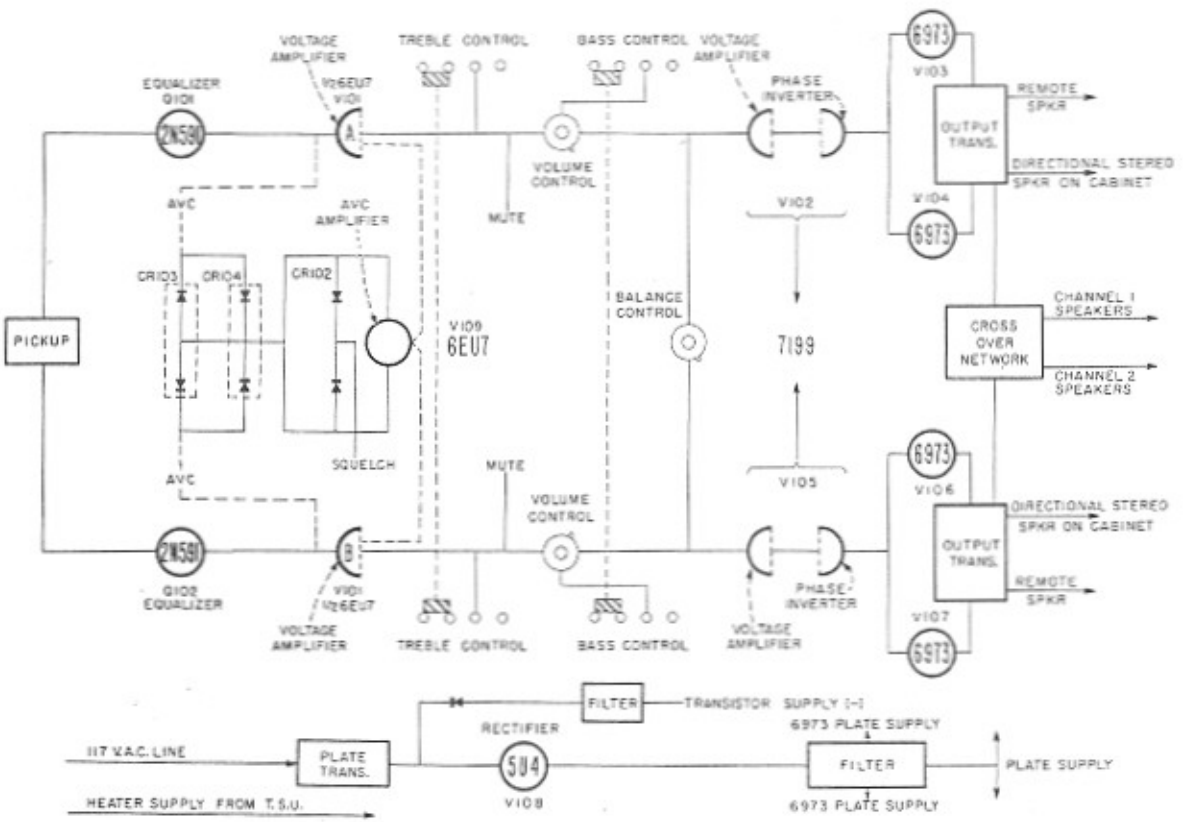
Automatic volume compensation is incorporated in this amplifier to compensate for variations in the average volume levels of different records and make possible a volume control setting for normal records without danger of "blasting" or high volume due to exceptionally loud records.

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.

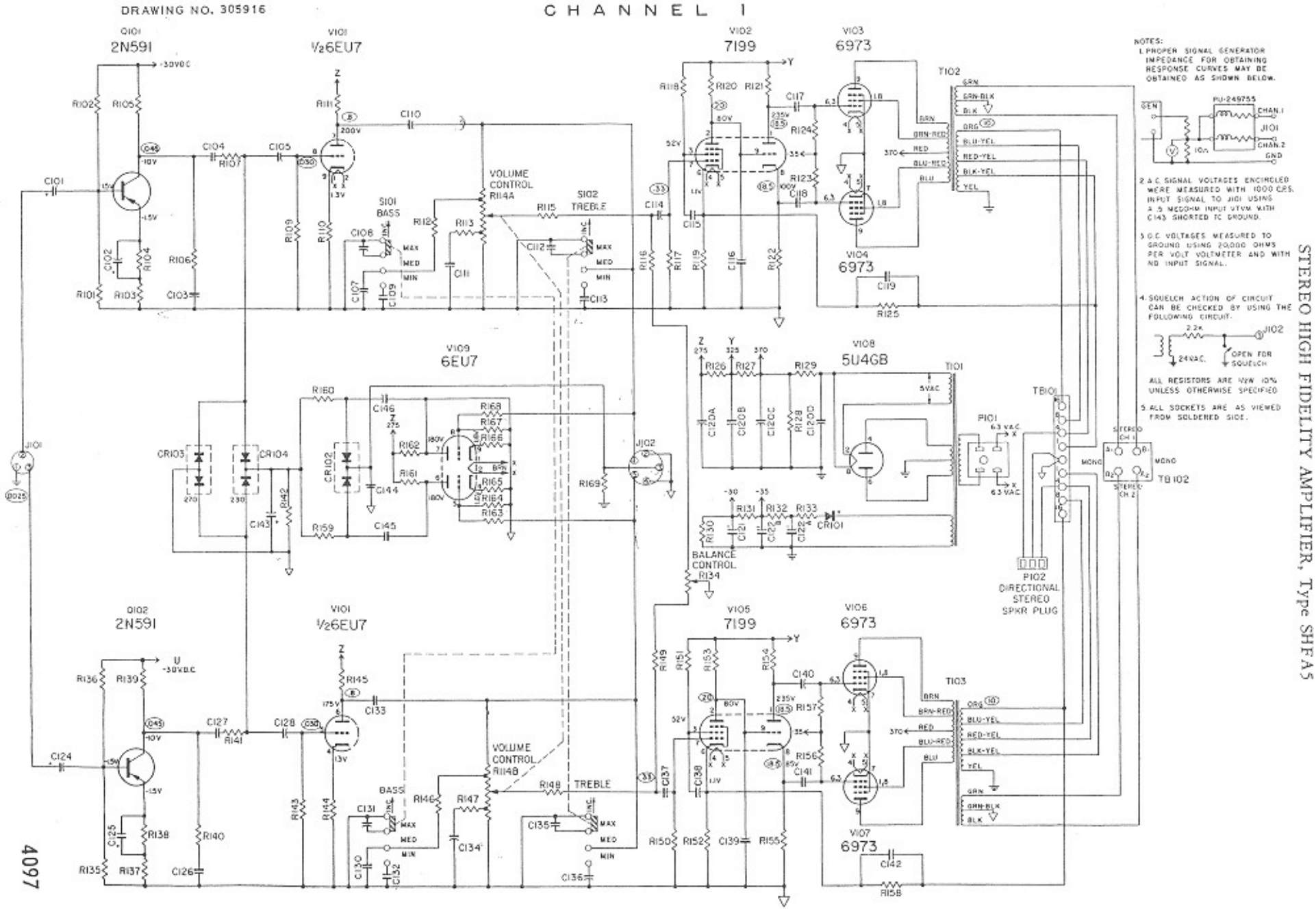
Use of AVC is optional, and the AVC action may be disabled by removal of the 6EU7 (V109) tube.

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.



STEREO HIGH FIDELITY AMPLIFIER, Type SHFA5

PARTS LIST

Item	Part No.	Description
C101	87697	9 mfd. 6 V. Lytic
C102	87696	50 mfd. 6 V. Lytic
C103	86327	0.047 mfd. 10% 50 V. Mylar
C104	86334	0.1 mfd. 10% 50 V. Mylar
C105	86327	0.047 mfd. 10% 50 V. Mylar
C107	86332	0.0068 mfd. 10% 50 V. Mylar
C108	86326	0.01 mfd. 50 V. Mylar
C109	86327	0.047 mfd. 10% 50 V. Mylar
C110	86140	0.05 mfd. 10% 400 V. Paper
C111	86332	0.0068 mfd. 10% 50 V. Mylar
C112	86309	0.001 mfd. 10% 500 V. Ceramic
C113	86340	0.003 mfd. 10% 500 V. Ceramic
C114	86212	0.01 mfd. 10% 400 V. Paper
C115	86140	0.05 mfd. 10% 400 V. Paper
C116	86289	3.3 mmfd. 500 V. Ceramic
C117	86146	0.05 mfd. 10% 600 V. Paper
C118	86146	0.05 mfd. 10% 600 V. Paper
C119	86243	150 mmfd. 500 V. Ceramic
C120A	87689	20 mfd. 400 V. Lytic
C120B		20 mfd. 400 V. Lytic
C120C		40 mfd. 400 V. Lytic
C120D		40 mfd. 450 V. Lytic
C121	87691	50 mfd. 60 V. Lytic
C122A	87715	20 mfd. 75 V. Lytic
C122B	87715	50 mfd. 75 V. Lytic
C124	87697	9 mfd. 6 V. Lytic
C125	87696	50 mfd. 6 V. Lytic
C126	86327	0.047 mfd. 10% 50 V. Mylar
C127	86334	0.1 mfd. 10% 50 V. Mylar
C128	86327	0.04 mfd. 10% 50 V. Mylar
C130	86332	0.0068 mfd. 10% 50 V. Mylar
C131	86326	0.01 mfd. 50 V. Mylar
C132	86327	0.047 mfd. 50 V. Mylar
C133	86140	0.05 mfd. 10% 400 V. Paper
C134	86332	0.0068 mfd. 10% 50 V. Mylar
C135	86309	0.001 mfd. 10% 500 V. Ceramic
C136	86340	0.003 mfd. 10% 500 V. Ceramic
C137	86212	0.01 mfd. 10% 400 V. Paper
C138	86140	0.05 mfd. 10% 400 V. Paper
C139	86289	3.3 mmfd. 500 V. Ceramic
C140	86146	0.05 mfd. 10% 600 V. Paper
C141	86146	0.05 mfd. 10% 600 V. Paper
C142	86243	150 mmfd. 500 V. Ceramic
C143	87710	200 mfd. −15 +40% Lytic
C144	86313	0.01 mfd. 500 V. Ceramic
C145	86313	0.01 mfd. 500 V. Ceramic
C146	86313	0.01 mfd. 500 V. Ceramic
CR101	309390	Selenium Diode
CR102	309399	Selenium Diode
CR103	309398	Selenium Diode
CR104	309397	Selenium Diode
J101	12034	Input Socket
J102	84283	Mute Squelch 5 Pin
P101	300007	Power Input
P102	803725	D.S. Speaker Plug
	941757	Connector
Q101	309404	2N591 Transistor
Q102	309404	2N591 Transistor
R101	308962	12,000 ohm 5%
R102	308961	220,000 ohm 5%
R103	82656	150 ohm 5%
R104	82626	3,900 ohm 5%
R105	82695	56,000 ohm 5%
R106	82625	3,600 ohm 5%
R107	82676	47,000 ohm 5%
R109	82448	100,000 ohm
R110	82671	1,300 ohm 5%
R111	82666	100,000 ohm. 5%
R112	82441	27,000 ohm
R113	82441	27,000 ohm
R114	305821	Volume Control 1 meg ea. s~c.
R115	82616	220,000 ohm 5%
R116	82449	120,000 ohm
R117	82460	1 megohm
R118	82459	820,000 ohm
R119	82423	820 ohm
R120	82452	220,000 ohm
R121	82811	15,000 ohm 2 W. 5%
R122	82811	15,000 ohm 2 W. 5%
R123	82696	270,000 ohm 5%
R124	82696	270,000 ohm 5%
R125	82638	18,000 ohm 5%
R126	82869	12,000 ohm 1 W. 10%
R127	81213	2,000 ohm 3 W.
R128	81199	25,000 ohm 10 W.
R129	81173	100 ohm 7 W.
R130	82634	10,000 ohm 5%
R131	82620	1,000 ohm 5%
R132	82626	3,900 ohm 5%
R133	82418	330 ohm
R134	305833	Balance Control (1 meg)
R135	308962	12,000 ohm 5%
R136	308961	220,000 ohm 5%
R137	82656	150 ohm 5%
R138	82626	3,900 ohm 5%
R139	82695	56,000 ohm 5%
R140	82625	3,600 ohm 5%
R141	82676	47,000 ohm 5%
R142	82452	220,000 ohm 10%
R143	82448	100,000 ohm
R144	82671	1,300 ohm 5%
R145	82666	100,000 ohm 5%
R146	82441	27,000 ohm
R147	82441	27,000 ohm
R148	82616	220,000 ohm 5%
R149	82449	120,000 ohm
R150	82460	1 megohm
R151	82459	820,000 ohm
R152	82423	820 ohm
R153	82452	220,000 ohm
R154	82811	15,000 ohm 2 W. 5%
R155	82811	15,000 ohm 2 W. 5%
R156	82696	270,000 ohm 5%
R157	82696	270,000 ohm 5%
R158	82638	18,000 ohm 5%
R159	82641	30,000 ohm ½ W. 5%
R160	82641	30,000 ohm ½ W. 5%
R161	82642	33,000 ohm ½ W. 5%
R162	82642	33,000 ohm ½ W. 5%
R163	82448	100,000 ohm ½ W. 10%
R164	82460	1 megohm
R165	82612	2,000 ohm ½ W. 5%
R166	82612	2,000 ohm ½W. 5%
R167	82460	1 megohm
R168	82448	100,000 ohm ½ W. 10%
R169	82430	3,300 ohm ½ W. 10%
S101	305830	Bass Range 2P3T
S102	305830	Treble Range 2P3T
T101	305814	Power Transformer
T102	305914	Audio Transformer
T103	305915	Audio Transformer
TB101	305832	Terminal Board 9 Lugs
TB102	305913	Terminal Board 4 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