SEEBURG

STEREO HIGH FIDELITY AMPLIFIER, Type SHFA3

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.

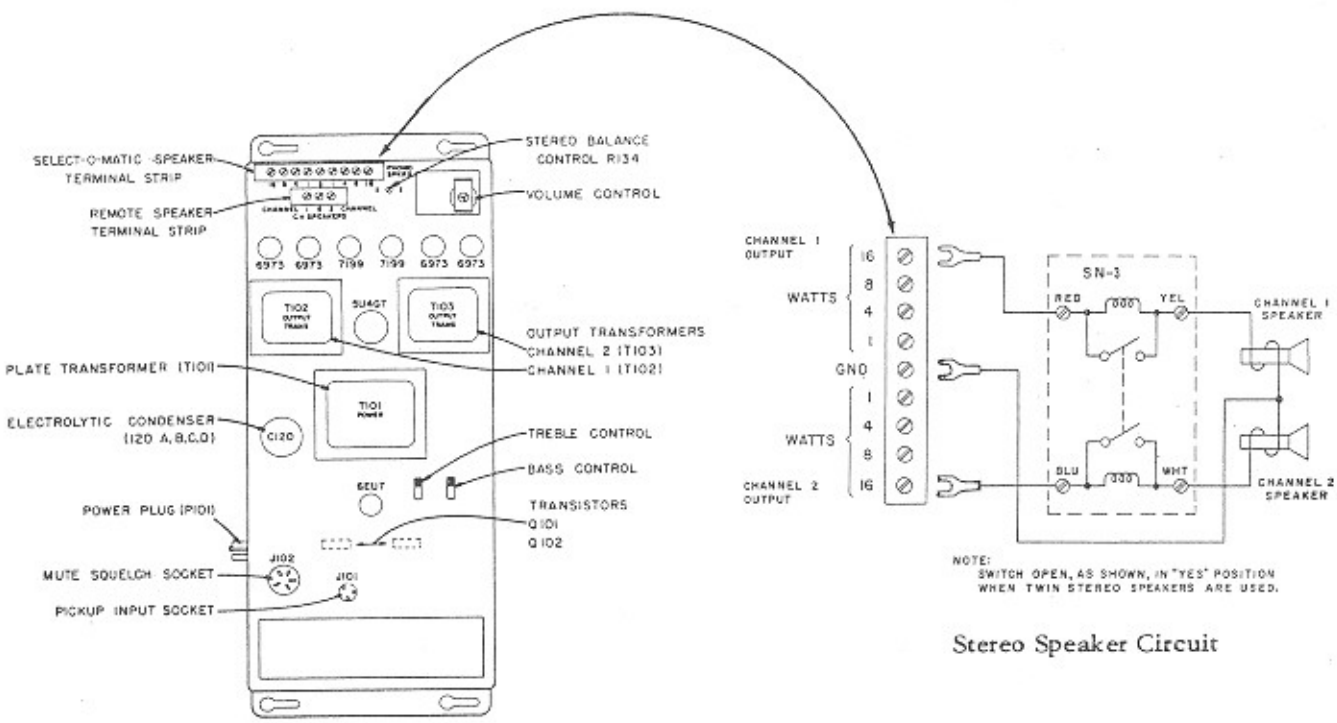
The two output signals of the low impedance magnetic pickup of the Select-O-Matic mechanism are connected to the amplifier through the input socket and have a nominal signal level for each channel of five millivolts. Both signals are independently amplified, one in the left channel, one in the right 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 remote 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 1 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 may be incorporated in this amplifier by addition of a Type AVCU10, Automatic Volume Control unit. It compensates for variations in the average volume levels of different records and makes possible a volume control setting for normal records without danger of "blasting" or high



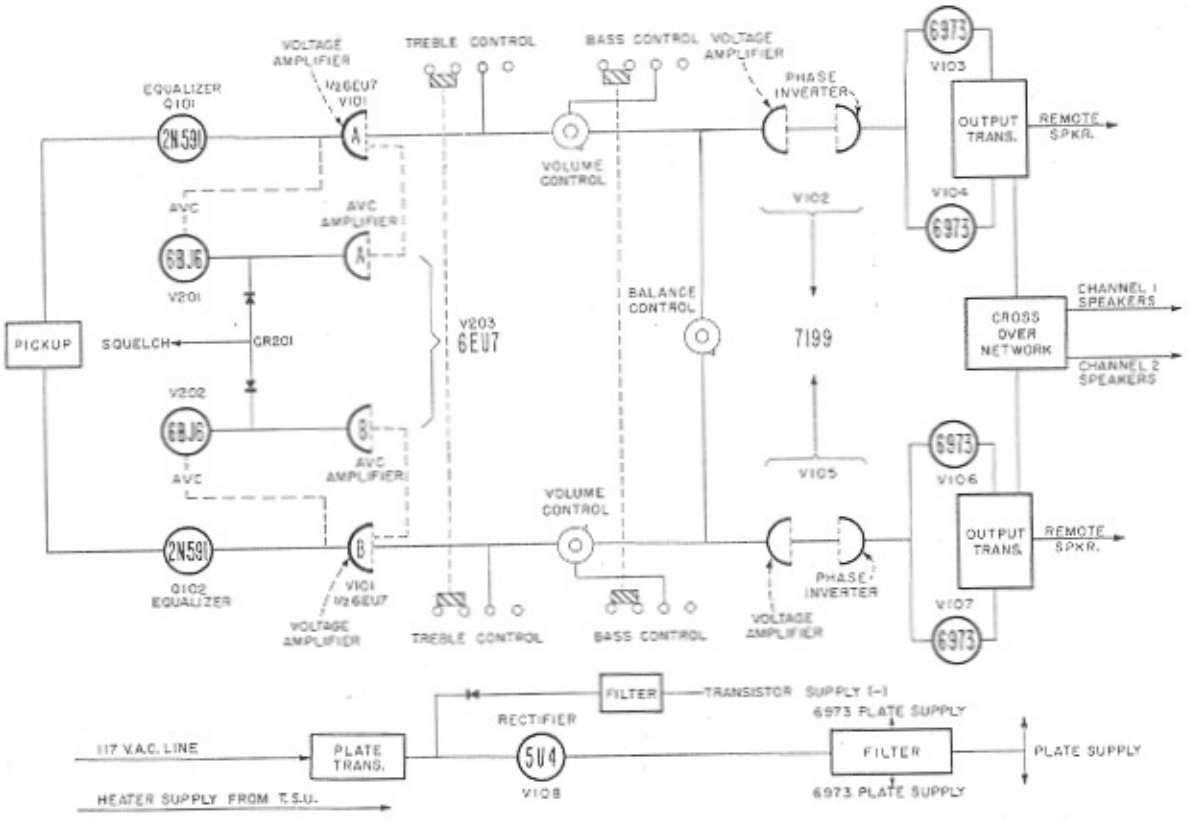
Stereo Speaker Circuit

volume due to exceptionally loud records.

A 6BJ6 tube is used for compensation control in each channel. Use of AVC is optional and may be suspended by removal of both 6BJ6 tubes. The back-to-back selenium rectifier, CR201, has two functions. They rectify the output of the AVC amplifiers of each channel for variable grid bias for the 6BJ6 control tubes and also rectify 20 volts supplied from the control circuits of the Select-O-Matic mechanism for squelch operation. The squelch voltage from the mechanism is applied only when a record is not being played.

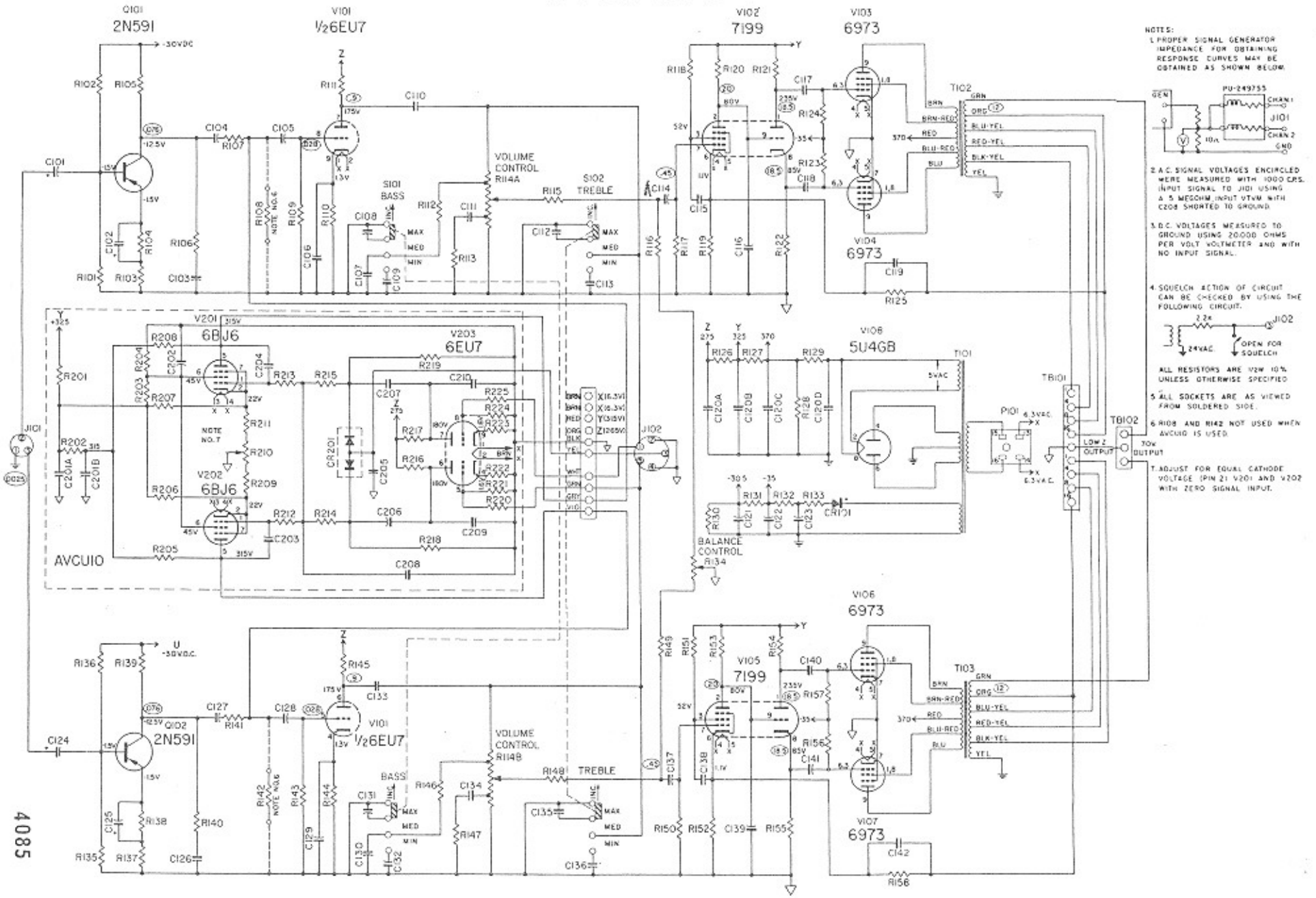
The volume control adjusts the level of sound from the Select-O-Matic speaker and the remote speakers. It is located on the amplifier so it is accessible from the back of the cabinet. A powered remote volume control, Type PRVC2, may be used by the installation of a motor on the amplifier volume control. 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, CR102, and a three-section filter.



Block Diagram.

PART NO. 305826



NOTES:

1. PROPER SIGNAL GENERATOR IMPEDANCE FOR OBTAINING RESPONSE CURVES MAY BE OBTAINED AS SHOWN BELOW.

2. A.C. SIGNAL VOLTAGES ENCIRCLED WERE MEASURED WITH 1000 CPS. INPUT SIGNAL TO J101 USING A 5 MEGOHM INPUT VTVM WITH C208 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.

ALL RESISTORS ARE ½W 10% UNLESS OTHERWISE SPECIFIED.

5. ALL SOCKETS ARE AS VIEWED FROM SOLDERED SIDE.

6. R108 AND R142 NOT USED WHEN AVCUIO IS USED.

7. ADJUST FOR EQUAL CATHODE VOLTAGE (PIN 2) V201 AND V202 WITH ZERO SIGNAL INPUT.

STEREO HIGH FIDELITY AMPLIFIER, Type SHFA3

4085

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	86140	0.05 Mfd. 10% 400 V. Paper
C105	86212	0.01 Mfd. 10% 400 V. Paper
C106	86334	0.1 Mfd. 10% 50 V. Mylar
C107	86332	0.0068 Mfd. 10% 50 V. Mylar
C108	86326	0.01 Mfd. 100 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
C122	87691	50 Mfd. 60 V. Lytic
C123	87690	20 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	86140	0.05 Mfd. 10% 400 V. Paper
C128	86212	0.01 Mfd. 10% 400 V. Paper
C129	86334	0.1 Mfd. 10% 50 V. Mylar
C130	86332	0.0068 Mfd. 10% 50 V. Mylar
C131	86326	0.01 Mfd. 100 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
C201A	87688	50 Mfd 400 V. Lytic
C201B		50 Mfd 400 V. Lytic
C202	86140	0.05 Mfd 10% 400 V. Paper
C203	86212	0.01 Mfd 10% 400 V. Paper
C204	86212	0.01 Mfd 10% 400 V. Paper
C205	86313	0.01 Mfd 500 V. Ceramic
C206	86212	0.01 Mfd 10% 400 V. Paper
C207	86212	0.01 Mfd 10% 400 V. Paper
C208	86342	1.5 Mfd 200 V. Mylar
C209	86270	680 Mmfd 500 V. Ceramic
C210	86270	680 Mmfd 500 V. Ceramic
CR101	309390	Selenium Diode
CR201	309391	Full Wave Selenium
J101	12034	Input Socket
J102	84283	Mute Squelch 5 Pin
P101	300007	Power Input
Q101	309404	2N591 Transistor
Q102	309404	2N591 Transistor
R101	82635	12,000 Ohm 5%
R102	82616	220,000 Ohm 5%
R103	82617	47 Ohm 5%
R104	82626	3,900 Ohm 5%
R105	82676	47,000 Ohm 5%
R106	82625	3,600 Ohm 5%
R107	82698	150,000 Ohm 5%
R108	82775	39,000 Ohm 5%
R109	82456	470,000 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. SECTION
R115	*82616	220,000 Ohm
R116	82449	120,000 Ohm
R117	82460	1 Meg. Ohm
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	82801	12,000 Ohm 2 W.
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	82635	12,000 Ohm 5%
R136	82616	220,000 Ohm 5%
R137	82617	47 Ohm 5%
R138	82626	3,900 Ohm 5%
R139	82676	47,000 Ohm 5%
R140	82625	3,600 Ohm 5%
R141	82698	150,000 Ohm 5%
R142	82775	39,000 Ohm 5%
R143	82456	470,000 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
R149	82449	120,000 Ohm
R150	82460	1 Meg Ohm
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%
R201	82421	560 Ohm
R202	82436	10,000 Ohm 10%
R203	82454	330,000 Ohm
R204	82796	51,000 Ohm
R205	82698	150,000 Ohm 5%
R206	82847	68,000 Ohm 2 W. 5%
R207	82847	68,000 Ohm 2 W. 5%
R208	82698	150,000 Ohm 5%
R209	82999	4,300 Ohm 5%
R210	305674	1500 Balance Cont.
R211	82999	4,300 Ohm 5%
R212	82470	6.8 Meg Ohm
R213	82470	6.8 Meg Ohm
R214	82470	6.8 Meg Ohm
R215	82470	6.8 Meg Ohm
R216	82675	82,000 Ohm 5%
R217	82675	82,000 Ohm 5%
R218	82506	22 Meg Ohm
R219	82506	22 Meg Ohm
R220	82666	100,000 Ohm 5%
R221	82460	1 Meg Ohm
R222	82663	1,500 Ohm
R223	82663	1,500 Ohm
R224	82460	1 Meg Ohm
R225	82666	100,000 Ohm 5%
S101	305830	Bass Range 2P3T
S102	305830	Treble Range 2P3T
T101	305814	Power Transformer
T102	305816	Audio Transformer
T103	305817	Audio Transformer
TB101	305832	Terminal Board 9 Lug
TB102	305831	Terminal Board 3 Lug
V101	308646	6EU7
V102	308647	7199
V103	308026	6973
V104	308026	6973
V105	308647	7199
V106	308026	6973
V107	308026	6973
V108	308506	5U4GB
V201	308603	6BJ6
V202	308603	6BJ6
V203	308646	6EU7

* R111 AND R145 SHOULD BE 100K; R115 AND R148 SHOULD BE 220K; R125 AND R158 SHOULD BE 18K.

Issue 2 THE SEEBURG CORPORATION, CHICAGO 22, ILL.