

# **SEEBURG**

**STEREO HIGH FIDELITY AMPLIFIER**

**TYPE SHFA3**

# 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.

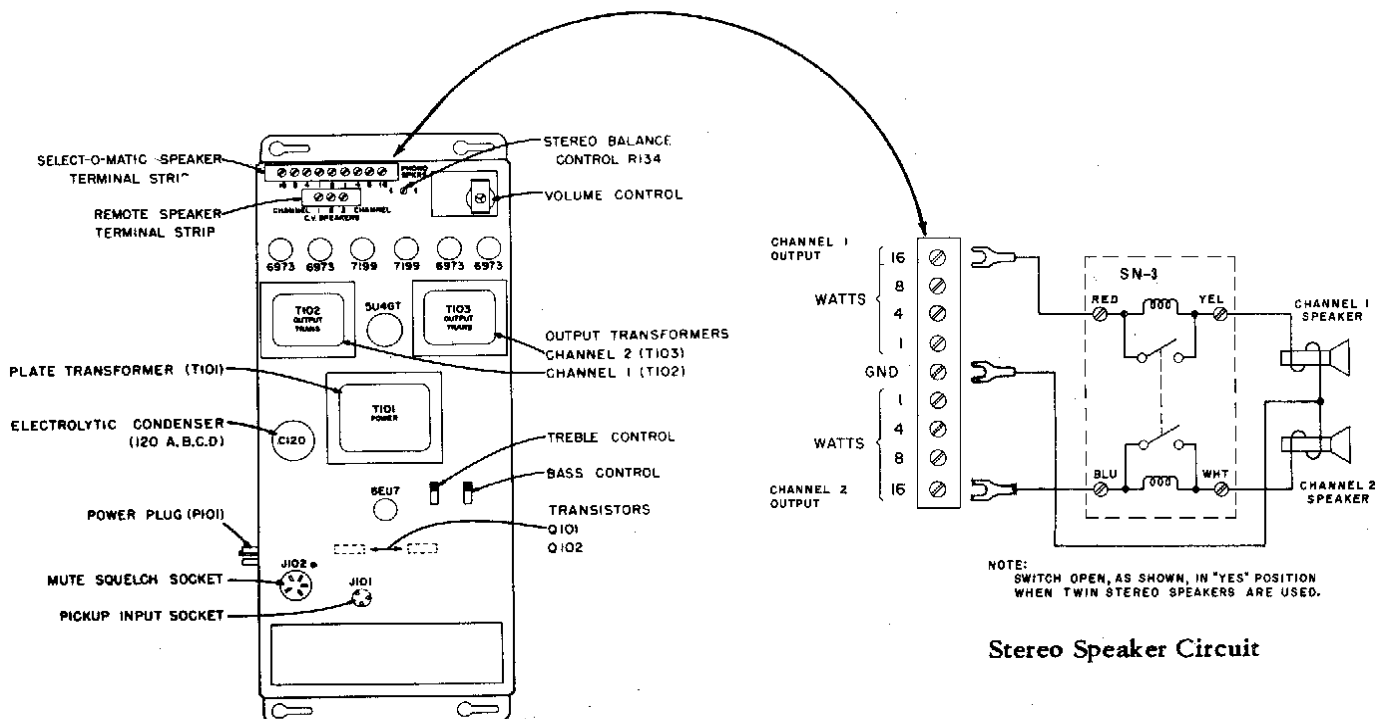
The output transformers of each channel have low and high impedance terminals. The low impedance windings drive a 16 ohm phonograph speaker to which they are connected through a network. Connections to this load are through the speaker terminal board, TB101. The high impedance terminals are 70 volt,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



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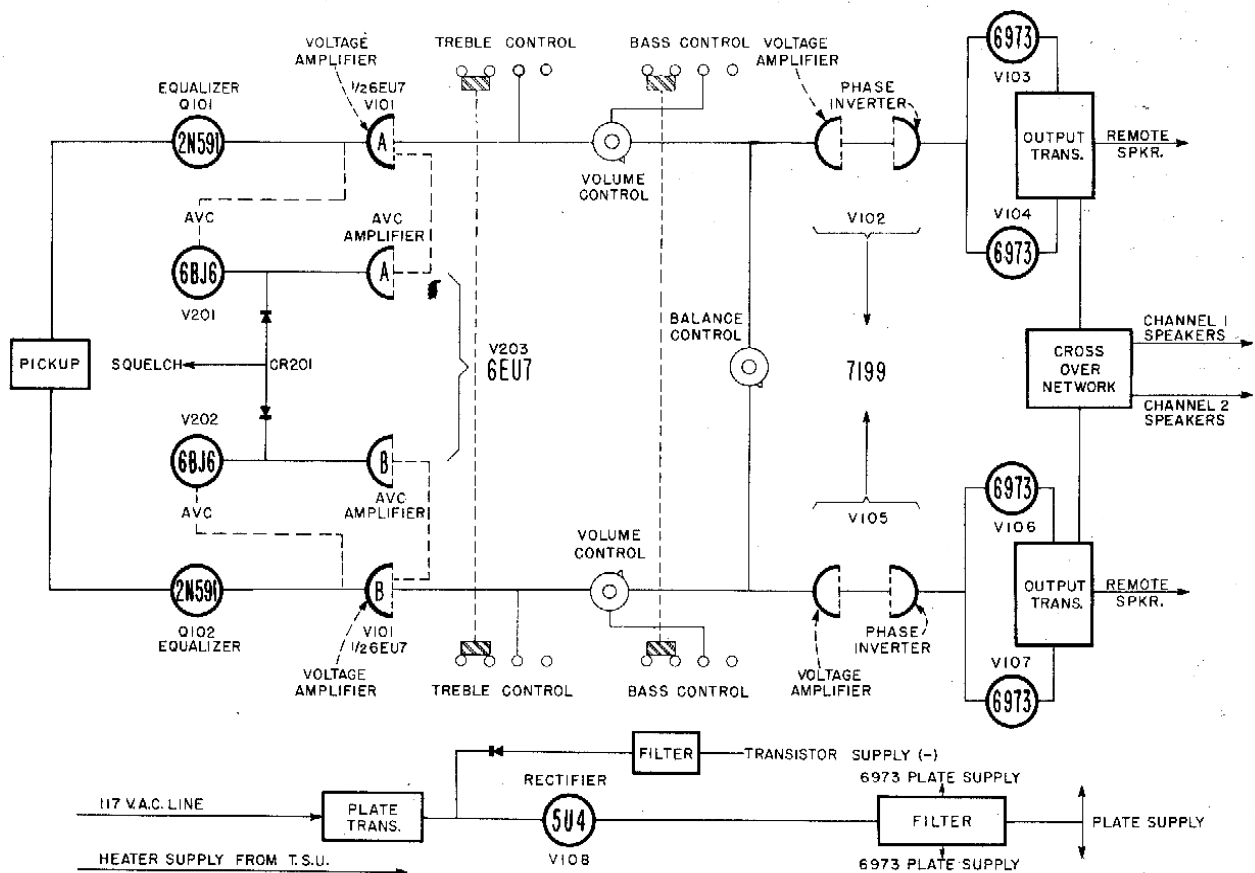
volume due to exceptionally loud records.

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.



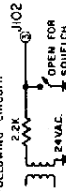
Block Diagram.

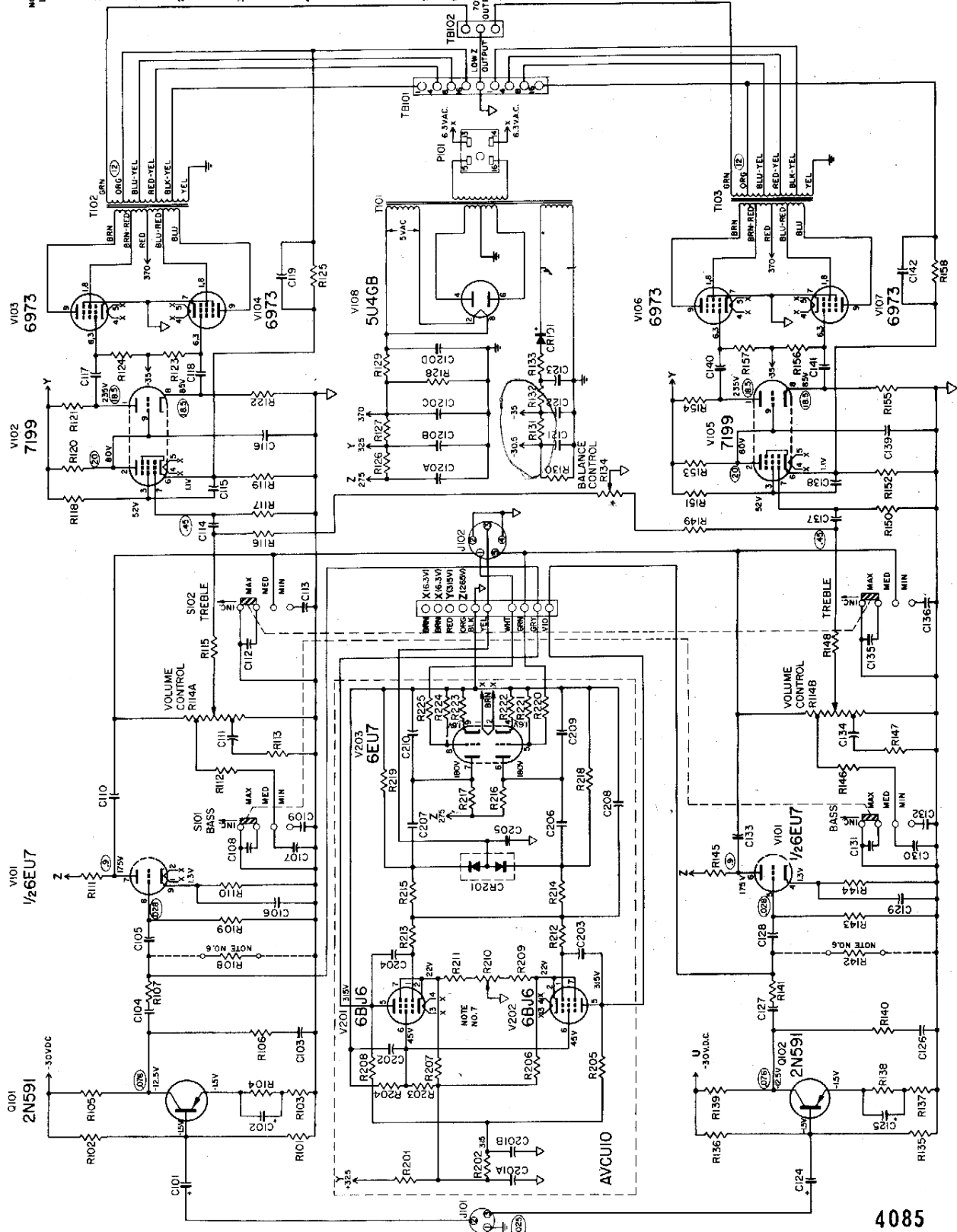
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PART NO. 305828

CHANNEL 1

CHANNEL 2

- NOTES:**
1. PROPER SIGNAL GENERATOR AND LOAD CONNECTIONS AND RESPONSE CURVES MAY BE OBTAINED AS SHOWN BELOW.
  2. A.C. SIGNAL VOLTAGES ENCIRCLED WERE MEASURED WITH 1000 CFS. INPUT SIGNAL TO J101 USING RESISTOR WITH C208 SHORTED TO GROUND.
  3. D.C. VOLTAGES MEASURED TO GROUND USING 20000 OHMS PER VOLT VOLTMETER AND WITH NO-INPUT SIGNAL.
  4. SQUELCH ACTION OF CIRCUIT CAN BE CHECKED BY USING THE FOLLOWING CIRCUIT.
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5. ALL RESISTORS ARE 1/2W 10% UNLESS OTHERWISE SPECIFIED.
  6. ALL SOCKETS ARE AS VIEWED FROM SOLDERED SIDE.
  7. 6R108 AND 6R142 NOT USED WHEN AVCU10 IS USED.
  8. ADJUST FOR EQUAL CATHODE VOLTAGE (PIN 2) V101 AND V102 WITH ZERO SIGNAL INPUT.



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PARTS LIST

Item	Part No.	Description	Item	Part No.	Description	Item	Part No.	Description
C101	87697	9 Mfd. 6 V. Lytic	R120	82452	220,000 Ohm	R205	82698	150,000 Ohm 5%
C102	87696	50 Mfd. 6 V. Lytic	R121	82811	15,000 Ohm 2 W. 5%	R206	82847	68,000 Ohm 2 W. 5%
C103	86327	0.047 Mfd. 10% 50 V. Mylar	R122	82811	15,000 Ohm 2 W. 5%	R207	82847	68,000 Ohm 2 W. 5%
C104	86140	0.05 Mfd. 10% 400 V. Paper	R123	82696	270,000 Ohm 5%	R208	82698	150,000 Ohm 5%
C105	86212	0.01 Mfd. 10% 400 V. Paper	R124	82696	270,000 Ohm 5%	R209	82999	4,300 Ohm 5%
C106	86334	0.1 Mfd. 10% 50 V. Mylar	R125	* 82638	18,000 Ohm 5%	R210	305674	1500 Balance Cont.
C107	86332	0.0068 Mfd. 10% 50 V. Mylar	R126	82801	12,000 Ohm 2 W.	R211	82999	4,300 Ohm 5%
C108	86326	0.01 Mfd. 100 V. Mylar	R127	81213	2,000 Ohm 3 W.	R212	82470	6.8 Meg Ohm
C109	86327	0.047 Mfd. 10% 50 V. Mylar	R128	81199	25,000 Ohm 10 W.	R213	82470	6.8 Meg Ohm
C110	86140	0.05 Mfd. 10% 400 V. Paper	R129	81173	100 Ohm 7 W.	R214	82470	6.8 Meg Ohm
C111	86332	0.0068 Mfd. 10% 50 V. Mylar	R130	82634	10,000 Ohm 5%	R215	82470	6.8 Meg Ohm
C112	86309	0.001 Mfd. 10% 500 V. Ceramic	R131	82620	1,000 Ohm 5%	R216	82675	82,000 Ohm 5%
C113	86340	0.003 Mfd. 10% 500 V. Ceramic	R132	82626	3,900 Ohm 5%	R217	82675	82,000 Ohm 5%
C114	86212	0.01 Mfd. 10% 400 V. Paper	R133	82418	330 Ohm	R218	82506	22 Meg Ohm
C115	86140	0.05 Mfd. 10% 400 V. Paper	R134	305833	Balance Control (1 MEG)	R219	82506	22 Meg Ohm
C116	86289	3.3 Mmfd. 500 V. Ceramic	R135	82635	12,000 Ohm 5%	R220	82666	100,000 Ohm 5%
C117	86146	0.05 Mfd. 10% 600 V. Paper	R136	82616	220,000 Ohm 5%	R221	82460	1 Meg Ohm
C118	86146	0.05 Mfd. 10% 600 V. Paper	R137	82617	47 Ohm 5%	R222	82663	1,500 Ohm
C119	86243	150 Mmfd. 500 V. Ceramic	R138	82626	3,900 Ohm 5%	R223	82663	1,500 Ohm
C120A	87689	20 Mfd. 400 V. Lytic	R139	82676	47,000 Ohm 5%	R224	82460	1 Meg Ohm
C120B	87689	20 Mfd. 400 V. Lytic	R140	82625	3,600 Ohm 5%	R225	82666	100,000 Ohm 5%
C120C	87689	40 Mfd. 400 V. Lytic	R141	82698	150,000 Ohm 5%	S101	305830	Bass Range 2P3T
C120D	87689	40 Mfd. 450 V. Lytic	R142	82775	39,000 Ohm 5%	S102	305830	Treble Range 2P3T
C121	87691	50 Mfd. 60 V. Lytic	R143	82456	470,000 Ohm	T101	305814	Power Transformer
C122	87691	50 Mfd. 60 V. Lytic	R144	82671	1,300 Ohm 5%	T102	305816	Audio Transformer
C123	87690	20 Mfd. 75 V. Lytic	R145	* 82666	100,000 Ohm 5%	T103	305817	Audio Transformer
C124	87697	9 Mfd. 6 V. Lytic	R146	82441	27,000 Ohm	TB101	305832	Terminal Board 9 Lug
C125	87696	50 Mfd. 6 V. Lytic	R147	82441	27,000 Ohm	TB102	305831	Terminal Board 3 Lug
C126	86327	0.047 Mfd. 10% 50 V. Mylar	R148	* 82616	220,000 Ohm	V101	308646	6EU7
C127	86140	0.05 Mfd. 10% 400 V. Paper	R149	82449	120,000 Ohm	V102	308647	7199
C128	86212	0.01 Mfd. 10% 400 V. Paper	R150	82460	1 Meg Ohm	V103	308026	6973
C129	86334	0.1 Mfd. 10% 50 V. Mylar	R151	82459	820,000 Ohm	V104	308026	6973
C130	86332	0.0068 Mfd. 10% 50 V. Mylar	R152	82423	820 Ohm	V105	308647	7199
C131	86326	0.01 Mfd. 100 V. Mylar	R153	82452	220,000 Ohm	V106	308026	6973
C132	86327	0.047 Mfd. 50 V. Mylar	R154	82811	15,000 Ohm 2 W. 5%	V107	308026	6973
C133	86140	0.05 Mfd. 10% 400 V. Paper	R155	82811	15,000 Ohm 2 W. 5%	V108	308506	5U4GB
C134	86332	0.0068 Mfd. 10% 50 V. Mylar	R156	82696	270,000 Ohm 5%	V201	308603	6B16
C135	86309	0.001 Mfd. 10% 500 V. Ceramic	R157	82696	270,000 Ohm 5%	V202	308603	6B16
C136	86340	0.003 Mfd. 10% 500 V. Ceramic	R158	* 82638	18,000 Ohm 5%	V203	308646	6EU7
C137	86212	0.01 Mfd. 10% 400 V. Paper	R201	82421	560 Ohm			
C138	86140	0.05 Mfd. 10% 400 V. Paper	R202	82436	10,000 Ohm 10%			
C139	86289	3.3 Mmfd. 500 V. Ceramic	R203	82454	330,000 Ohm			
C140	86146	0.05 Mfd. 10% 600 V. Paper	R204	82796	51,000 Ohm			

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