

SEEBURG

STEREO HIGH FIDELITY AMPLIFIER

TYPE SHFA1

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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 and two speakers and low-pass networks 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 three millivolts. Both signals are independently amplified, one in the left channel; one in the right channel. Each channel is complete with a speaker and with tone controls and volume control mechanically linked to provide equal and simultaneous positioning.

The output transformer of each channel has a low and high impedance secondary. The low impedance winding drives one of the 16-ohm phonograph speakers to which it is connected through a low-pass network. Connections to this load are through the speaker socket, J104. The high impedance secondary is a 70-volt, C.V. output that terminates at A and B of one of the remote speaker terminal strips. This output drives one of 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 Select-O-Matic Speaker Switch in the phonograph and the loading taps on the external speakers. The Speaker Switch, by means of taps on the low impedance output winding, controls both channels simultaneously. It is calibrated in watts with reference to the power delivered at full output by each output transformer to a 16-ohm phonograph speaker.

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

In the "Test" position of the Speaker Switch, the phonograph speakers are connected to one side of the 6-volt tube heater circuit for a hum test at approximately 3 volts.

Automatic volume compensation is incorporated in this amplifier to compensate for variations in the average volume levels of different records. It makes possible a volume control setting for normal records without danger of blasting or high 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.

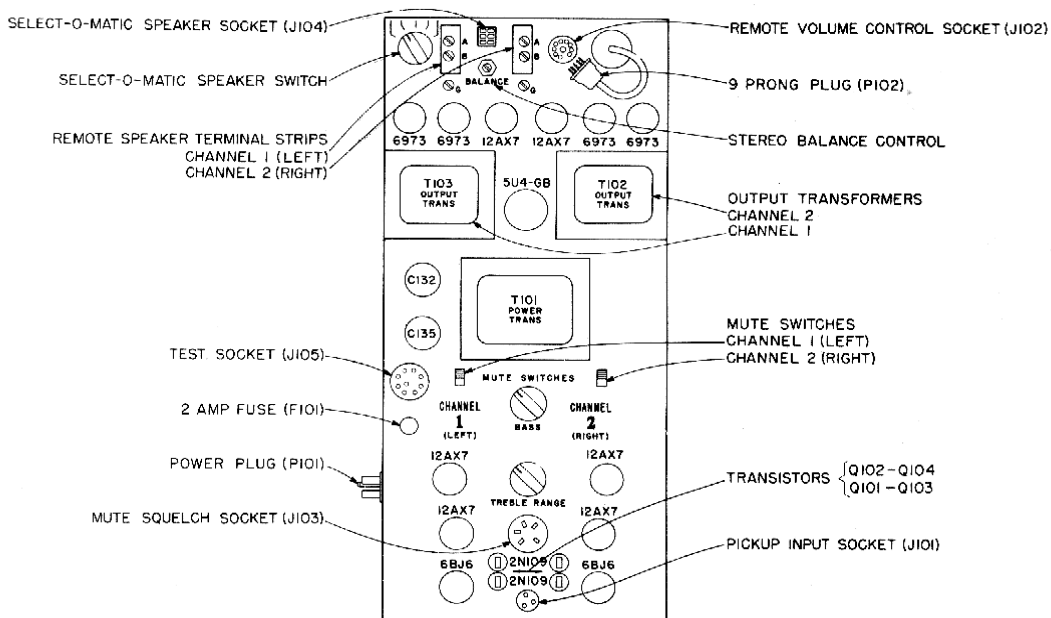


Figure 1

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The selenium rectifiers, CR101 and CR102, have 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 25 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 at the back of the cabinet. Connections for the control are made through a socket and plug on the amplifier chassis. A remote volume control may be used by replacing the plug with the 9-prong plug of a remote volume control, Type RSVC-1.

Heater current for the amplifier tubes is supplied at 6.3 volts from the Selection Receiver. 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, C103, and a three-section filter.

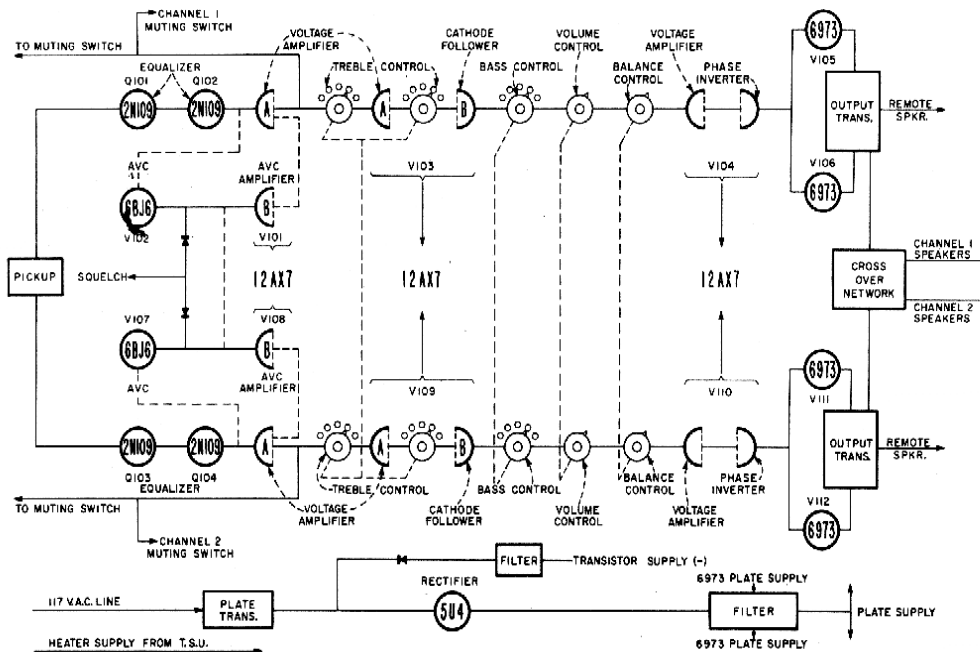


Figure 2 Block Diagram

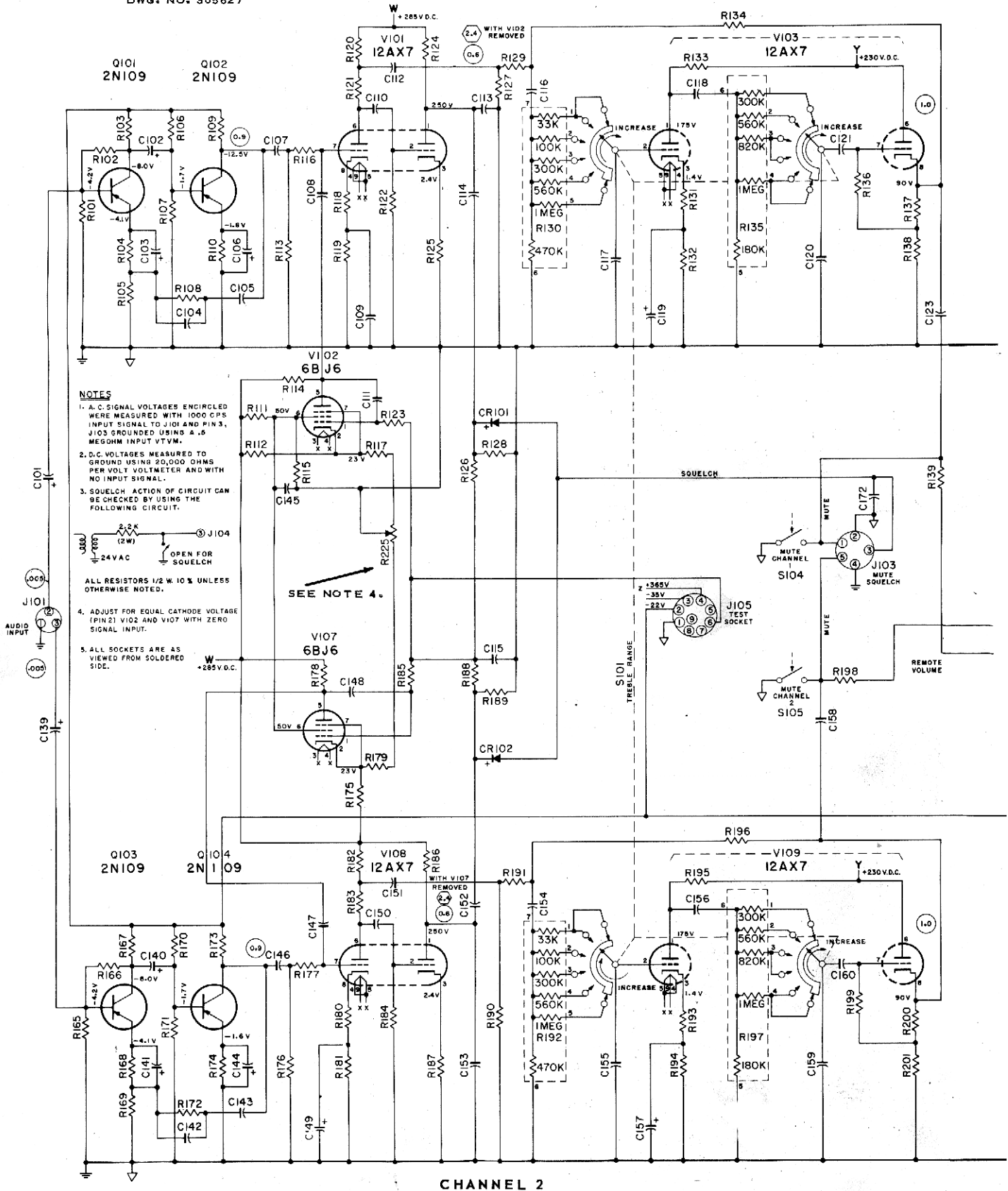
STEREO HIGH FIDELITY AMPLIFIER, Type SHFA1

Item	Part No.	Part Name	Item	Part No.	Part Name
C101	87657	4 MFD 15 V. Lytic	C161	86303	.15 MFD $\pm 10\%$ 50 V. Mylar
C102	87657	4 MFD 15 V. Lytic	C162	86303	.15 MFD $\pm 10\%$ 50 V. Mylar
C103	87659	50 MFD 6 V. Lytic	C163	86303	.15 MFD $\pm 10\%$ 50 V. Mylar
C104	86309	1000 MMF $\pm 10\%$ 500 V. Ceramic	C164	86303	.15 MFD $\pm 10\%$ 50 V. Mylar
C105	86212	.01 MFD 400V.	C165	86303	.15 MFD $\pm 10\%$ 50 V. Mylar
	*86213	.005 MFD $\pm 10\%$ 400 V.	C166	86303	.15 MFD $\pm 10\%$ 50 V. Mylar
C106	87670	200 MFD 6 V. Lytic	C167	87668	20 MFD 75 V. Lytic
C107	86235	.05 MFD $\pm 20\%$ 200 V. Paper	C168	87669	65 MFD 40 V. Lytic
C108	86300	.22 MFD $\pm 20\%$ 400 V. Paper	C169	86212	.01 400 V. Paper
C109	87659	50 MFD 6V. Lytic	C170	87669	65 MFD 40 V. Lytic
C110	86213	.005 MFD $\pm 10\%$ 400 V. Paper	C171	87659	50 MFD 6 V. Lytic
C111	86212	.01 MFD $\pm 10\%$ 400 V. Paper	C172	86140	.05 MFD $\pm 10\%$ 400 V. Paper
C112	86140	.05 MFD $\pm 10\%$ 400 V. Paper	C173	86241	33 MMFD 500 V. Ceramic
C113	86270	680MMFD $\pm 10\%$ 500 V. Ceramic	C174	86243	150 MMF 500 V. Ceramic
C114	86212	.01 MFD $\pm 10\%$ 400 V. Paper	C175	86146	.05 MFD $\pm 10\%$ 600 V. Paper
C115	86318	1 MFD $\pm 10\%$ 200 V. Paper	C176	86146	.05 MFD $\pm 10\%$ 600 V. Paper
C116	86207	.001 MFD $\pm 10\%$ 200 V. Paper	C177	86313	.01 MFD $\pm 20\%$ 500 V. Ceramic
C117	86268	470 MFD $\pm 10\%$ 500 V. Ceramic	C178	86313	.01 MFD $\pm 20\%$ 500 V. Ceramic
C118	86213	.005 MFD $\pm 10\%$ 400 V. Paper	CR101		
C119	87659	50 MFD 6 V. Lytic	CR102	309115	Selenium Diode (AVC)
C120	86243	150MMFD $\pm 10\%$ 500 V. Ceramic	CR103	305636	Selenium Diode Bias
C121	86213	.005 MFD $\pm 10\%$ 400 V. Paper	F101	303087	Fuse 2A SLO BLO
C122	86313	.01 MFD $\pm 20\%$ 500 V. Ceramic	J101	12034	Input
C123	86297	.5 MFD $\pm 10\%$ 200 V. Paper	J102	84305	Remote Vol. Socket
C124	86303	.15 MFD $\pm 10\%$ 50 V. Mylar	J103	84283	Mute Squelch (5 Pin)
C125	86303	.15 MFD $\pm 10\%$ 50 V. Mylar	J104	305632	Output 941750 Contacts (5)
C126	86303	.15 MFD $\pm 10\%$ 50 V. Mylar		941750	
C127	86303	.15 MFD $\pm 10\%$ 50 V. Mylar	J105	84311	Test
C128	86303	.15 MFD $\pm 10\%$ 50 V. Mylar	L101	305615	Choke
C129	86303	.15 MFD $\pm 10\%$ 50 V. Mylar	P101	300007	Pwr. Input
C130	86212	.01 MFD 400 V. Paper	P102	305634	Plug - 9 Pin Cap 305633
C131	87659	50 MFD 6 V. Lytic	Q101-104		
C132	87667	90 MFD 500 V. Lytic		308950	2N109
C133	86140	.05 MFD $\pm 10\%$ 400 V. Paper	R101	82637	15K $\pm 5\%$ $\frac{1}{2}$ Watt
C134	86241	33 MFD 500V. Ceramic	R102	82637	15K $\pm 5\%$ $\frac{1}{2}$ Watt
C135A	87666	40 MFD 450 V. Lytic	R103	82637	15K $\pm 5\%$ $\frac{1}{2}$ Watt
C135B		30 MFD 450 V. Lytic	R104	82630	6.8K $\pm 5\%$ $\frac{1}{2}$ Watt
C135C		30 MFD 450 V. Lytic	R105	82618	100 $\pm 5\%$ $\frac{1}{2}$ Watt
C136	86243	150 MMF 500 V. Ceramic		* 82688	390 $\pm 5\%$ $\frac{1}{2}$ Watt
C137	86146	.05 MFD $\pm 10\%$ 600 V. Paper	R106	82616	220K $\pm 5\%$ $\frac{1}{2}$ Watt
C138	86146	.05 MFD $\pm 10\%$ 600 V. Paper	R107	82697	20K $\pm 5\%$ $\frac{1}{2}$ Watt
C139	87657	4 MFD 15 V. Lytic	R108	82640	27K $\pm 5\%$ $\frac{1}{2}$ Watt
C140	87657	4 MFD 15 V. Lytic		* 82676	47K $\pm 5\%$ $\frac{1}{2}$ Watt
C141	87659	50 MFD 6 V. Lytic	R109	82637	15K $\pm 5\%$ $\frac{1}{2}$ Watt
C142	86309	1000 MMFD 500 V. Ceramic	R110	82670	2.7K $\pm 5\%$ $\frac{1}{2}$ Watt
C143	86212	.01 400 V. Paper	R111	82454	330K $\pm 10\%$ $\frac{1}{2}$ Watt
	* 86213	.005 MFD $\pm 10\%$ 400V.	R112	82847	68K $\pm 5\%$ 2 Watt
C144	87670	200 MFD 6 V. Lytic	R113	82456	470K $\pm 10\%$ $\frac{1}{2}$ Watt
C145	86140	.05 MFD 400 V. Paper	R114	82698	150K $\pm 5\%$ $\frac{1}{2}$ Watt
C146	86235	.05 MFD $\pm 20\%$ 200 V. Paper	R115	82447	82K $\pm 10\%$ $\frac{1}{2}$ Watt
C147	86300	.22 MFD $\pm 20\%$ 400 V. Paper	R116	82616	220K $\pm 5\%$ $\frac{1}{2}$ Watt
C148	86212	.01 MFD $\pm 10\%$ 400 V. Paper	R117	82610	6.2K $\pm 5\%$ $\frac{1}{2}$ Watt
C149	87659	50 MFD 6 V. Lytic	R118	82421	560 $\pm 10\%$ $\frac{1}{2}$ Watt
C150	86213	.005 MFD $\pm 10\%$ 400 V. Paper	R119	82422	680 $\pm 10\%$ $\frac{1}{2}$ Watt
C151	86140	.05 MFD $\pm 10\%$ 400 V. Paper	R120	82635	12K $\pm 5\%$ $\frac{1}{2}$ Watt
C152	86212	.01 MFD $\pm 10\%$ 400 V. Paper	R121	82640	27K $\pm 5\%$ $\frac{1}{2}$ Watt
C153	86270	680 MMFD $\pm 10\%$ 500 V. Ceramic	R122	82460	1.0 MEG $\pm 10\%$ $\frac{1}{2}$ Watt
C154	86207	.001 MFD $\pm 10\%$ 200 V. Paper	R123	82470	6.8 MEG $\pm 10\%$ $\frac{1}{2}$ Watt
C155	86268	470 MMFD $\pm 10\%$ 500 V. Ceramic	R124	82793	68K $\pm 5\%$ $\frac{1}{2}$ Watt
C156	86213	.005 MFD $\pm 10\%$ 400 V. Paper	R125	82630	6.8K $\pm 5\%$ $\frac{1}{2}$ Watt
C157	87659	50 MFD 6 V. Lytic	R126	82470	6.8 MEG $\pm 10\%$ $\frac{1}{2}$ Watt
C158	86297	.5 MFD $\pm 10\%$ 200 V. Paper	R127	82449	120K $\pm 10\%$ $\frac{1}{2}$ Watt
C159	86243	150 MMFD $\pm 10\%$ 500 V. Ceramic	R128	82506	22 MEG $\pm 10\%$ $\frac{1}{2}$ Watt
C160	86213	.005 MFD $\pm 10\%$ 400 V. Paper	R129	82666	100K $\pm 5\%$ $\frac{1}{2}$ Watt

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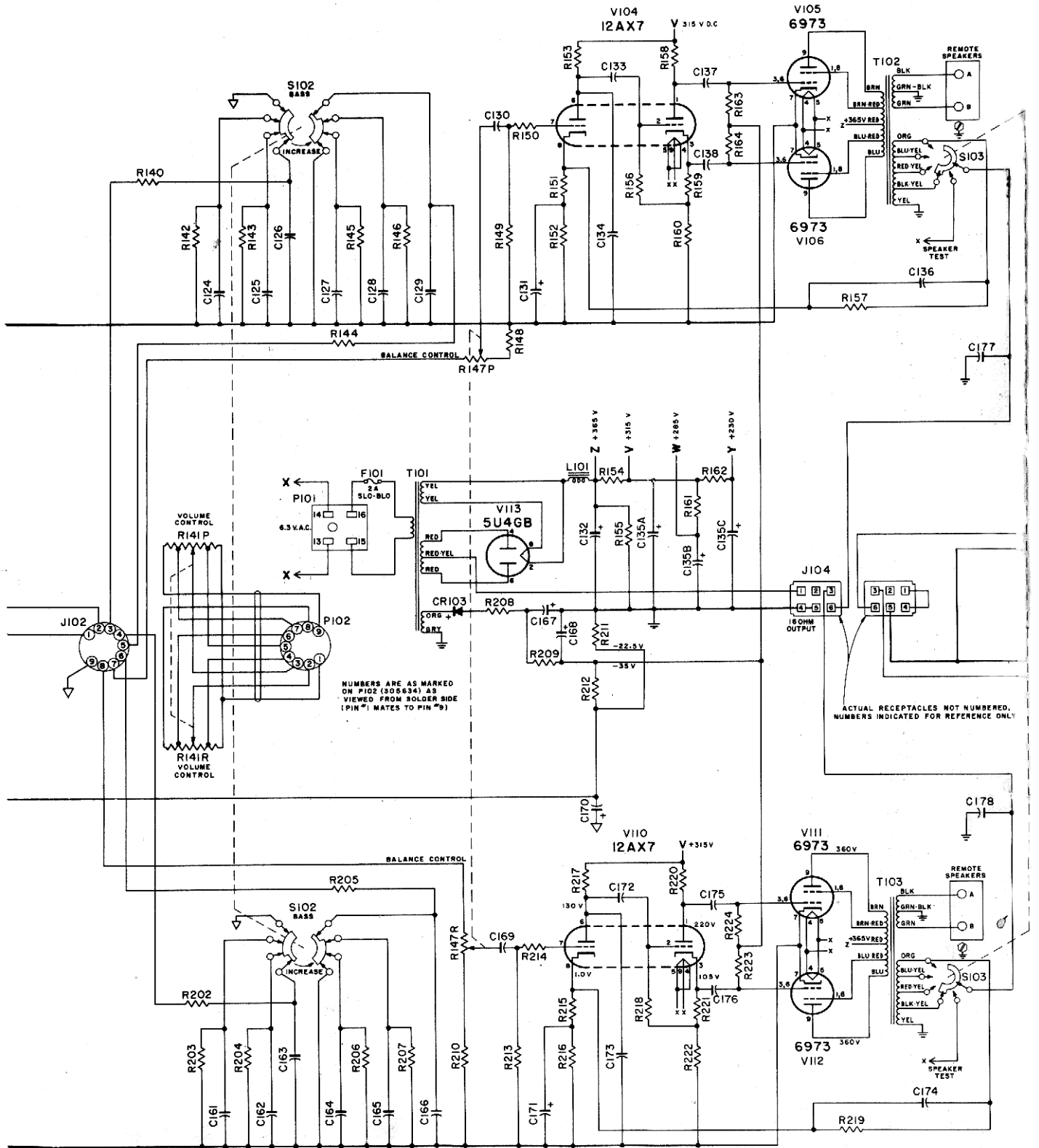
CHANNEL 1

DWG. NO. 305627



STEREO HIGH FIDELITY AMPLIFIER, Type SHFA1

CHANNEL 1



CHANNEL 2

STEREO HIGH FIDELITY AMPLIFIER, Type SHFA1

Item	Part No.	Part Name	Item	Part No.	Part Name
R130	82891	Pec. 6 Resistors	R191	82666	100K ±5% ½ Watt
R131	82798	360 ±5% ½ Watt	R192	82891	Pec. 6 Resistors
R132	82425	1.2K ±10% ½ Watt	R193	82798	360 ±5% ½ Watt
R133	82695	56K ±5% ½ Watt	R194	82425	1.2K ±10% ½ Watt
R134	82691	200K ±5% ½ Watt	R195	82695	56K ±5% ½ Watt
R135	82890	Pec. 5 Resistors	R196	82691	200K ±5% ½ Watt
R136	82464	2.2 MEG ±10% ½ Watt	R197	82890	Pec. 5 Resistors
R137	82421	560 ±10% ½ Watt	R198	82418	330 ±10% ½ Watt
R138	82446	68K ±10% ½ Watt	R199	82464	2.2 MEG. ±10% ½ Watt
R139	82418	330 ±10% ½ Watt	R200	82421	560 ±10% ½ Watt
R140	82425	1.2K ±10% ½ Watt	R201	82446	68K ±10% ½ Watt
R141	305624	Volume Control 25K ea. Sec.	R202	82425	1.2K ±10% ½ Watt
R142	82426	1.5K ±10% ½ Watt	R203	82426	1.5K ±10% ½ Watt
R143	82631	7.5K ±5% ½ Watt	R204	82631	7.5K ±5% ½ Watt
R144	82425	1.2K ±10% ½ Watt	R205	82425	1.2K ±10% ½ Watt
R145	82424	1.0K ±10% ½ Watt	R206	82424	1.0K ±10% ½ Watt
R146	82430	3.3K ±10% ½ Watt	R207	82430	3.3K ±10% ½ Watt
R147	305623	Balance Pot. 50K ea. Sec.	R208	82408	47 ±10% ½ Watt
R148	82437	12K ±10% ½ Watt	R209	82631	7.5 K ±5% ½ Watt
R149	82456	470K ±10% ½ Watt	R210	82437	12K ±10% ½ Watt
R150	82440	22K ±10% ½ Watt	R211	82444	47K ±10% ½ Watt
R151	82659	330 ±5% ½ Watt	R212	82431	3.9K ±10% ½ Watt
R152	82433	5.6K ±10% ½ Watt	R213	82456	470K ±10% ½ Watt
R153	82667	470K ±5% ½ Watt	R214	82440	22K ±10% ½ Watt
R154	81198	3000 ±10% 10 Watt	R215	82659	330 ±5% ½ Watt
R155	81199	25K ±10% 10 Watt	R216	82433	5.6K ±10% ½ Watt
R156	82457	560K ±10% ½ Watt	R217	82667	470K ±5% ½ Watt
R157	82629	5.6K ±5% ½ Watt	R218	82457	560K ±10% ½ Watt
R158	82789	390K ±5% ½ Watt	R219	82629	5.6K ±5% ½ Watt
R159	82433	5.6K ±10% ½ Watt	R220	82789	390K ±5% ½ Watt
R160	82789	390K ±5% ½ Watt	R221	82433	5.6K ±10% ½ Watt
R161	82701	2.7K ±10% 1 Watt	R222	82789	390K ±5% ½ Watt
R162	82439	18K ±10% ½ Watt	R223	82667	470K ±5% ½ Watt
R163	82667	470K ±5% ½ Watt	R224	82667	470K ±5% ½ Watt
R164	82667	470K ±5% ½ Watt	R225	305674	1500 Tap Resistor
R165	82637	15K ±5% ½ Watt	S101	305621	Treble Switch 4P6T
R166	82637	15K ±5% ½ Watt	S102	305622	Bass Switch 4P4T
R167	82637	15K ±5% ½ Watt	S103	305625	Speaker Switch 2P5T
R168	82630	6.8K ±5% ½ Watt	S104	305635	Mute Left Switch
R169	82618	100 ±5% ½ Watt	S105	305635	Mute Right Switch
* R169	82688	390j ±5% ½ Watt.	T101	305619	Power Transformer
R170	82616	220K ±5% ½ Watt	T102	305617	Audio Output
R171	82697	20K ±5% ½ Watt	T103	305618	Audio Output
R172	82640	27K ±5% ½ Watt	TB101-102		
* R172	82676	47K ±5% ½ Watt.	602815		Terminal Board
R173	82637	15K ±5% ½ Watt	V101, V103		
R174	82670	2.7K ±5% ½ Watt	308120		12AX7
R175	82847	68K ±5% 2 Watt	V102	308603	6BJ6
R176	82456	470K ±10% ½ Watt	V104	308120	12AX7
R177	82616	220K ±5% ½ Watt	V105-106		
R178	82698	150K ±5% ½ Watt	308026		6973
R179	82610	6.2K ±5% ½ Watt	V107	308603	6BJ6
R180	82421	560 ±10% ½ Watt	V108-109		
R181	82422	680 ±10% ½ Watt	308120		12AX7
R182	82635	12K ±5% ½ Watt	V110	308120	12AX7
R183	82640	27K ±5% ½ Watt	V111-112		
R184	82460	1 MEG ±10% ½ Watt	308026		6973
R185	82470	6.8 MEG. ±10% ½ Watt	V113	308506	5U4GB
R186	82793	68K ±5% ½ Watt			
R187	82630	6.8K ±5% ½ Watt			
R188	82470	6.8 MEG. ±10% ½ Watt			
R189	82506	22 MEG. ±10% ½ Watt			
R190	82449	120K ±10% ½ Watt			

* Use on Amplifier, Type SHFA1 Code B.