

SEEBURG

HIGH FIDELITY MASTER AMPLIFIER

TYPE HFMA1-L6



HIGH FIDELITY MASTER AMPLIFIER, Type HFMA1-L6

The High Fidelity Master Amplifier, Type HFMA1-L6 is a low distortion, wide frequency range, constant voltage type. It has eight tubes, two of which are 6L6's in a push-pull output stage to supply 25 watts of audio power for operation of the Select-O-Matic speakers and remote speakers.

The output of the low impedance magnetic pickup of the Select-O-Matic "200" mechanism is connected through a single-contact socket to a 5879 voltage amplifier. The 5879 is followed by a 6SN7 dual triode. The first section of the 6SN7 provides additional amplification, the second section is a cathode follower for low impedance input to bass and volume control circuits. A treble control circuit and connections for a muting switch are between the two 6SN7 sections. The output from the volume control is amplified by the first section of a 12AX7. The second section of the 12AX7 is a phase inverter and drives the 6L6 output tubes.

An automatic volume compensator is incorporated in this amplifier. It compensates for the 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 volume due to exceptionally "loud" records. Use of the feature is optional and is controlled by the AVC switch on the amplifier.

The compensator uses a 6SL7GT and a 6SK7 tube. One half of the 6SL7 is an amplifier; the other half serves as a rectifier. The 6SK7 is the compensation control tube. The position of these tubes in the amplifier as well as the other tubes is shown in the block diagram, Figure 2.

Use is made of inverse feedback to obtain output regulation necessary for constant voltage operation and to insure a minimum of distortion and hum. The inverse feedback is supplied from a secondary of the output transformer to the cathode circuit of the amplifier section of the 12AX7.

The output transformer has two secondaries. One of these is for the Select-O-Matic speakers and is tapped for switch control of the power to the speakers. The other is for remote speakers and has taps to a terminal strip to accommodate High Fidelity Remote Speakers.

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 dummy plug on the amplifier chassis. A remote volume control may be used by replacing the dummy plug with the 9-prong plug of a remote volume control, Type MRVC-2. The remote volume control cable may be up to one hundred feet in length without introducing hum, distortion or loss of volume.

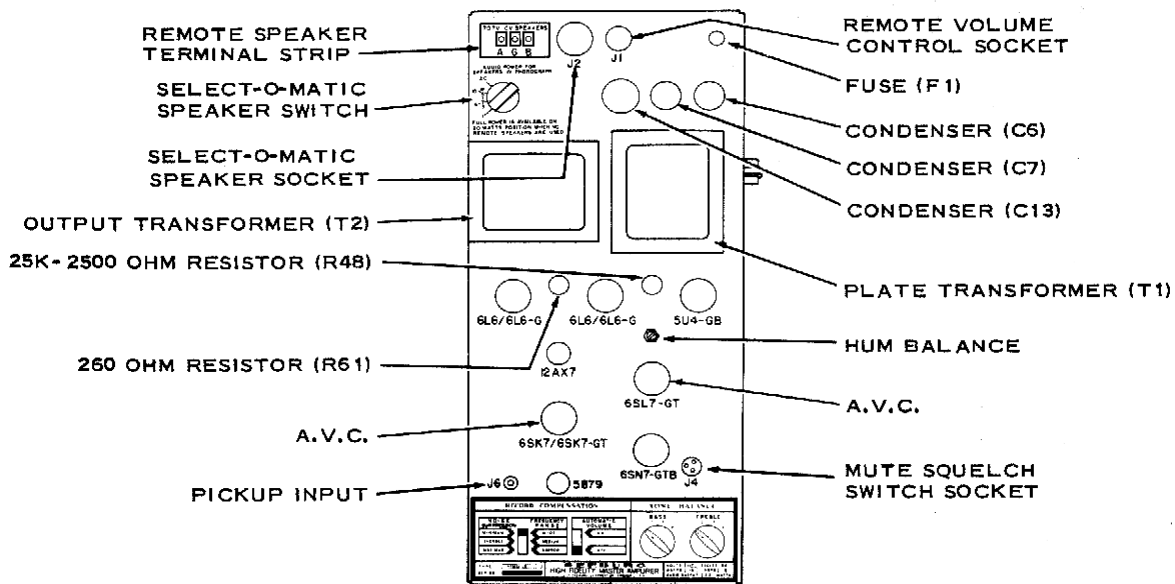


Figure 1. Top View

HIGH FIDELITY MASTER-REMOTE AMPLIFIER, TYPE HFMA1-L6

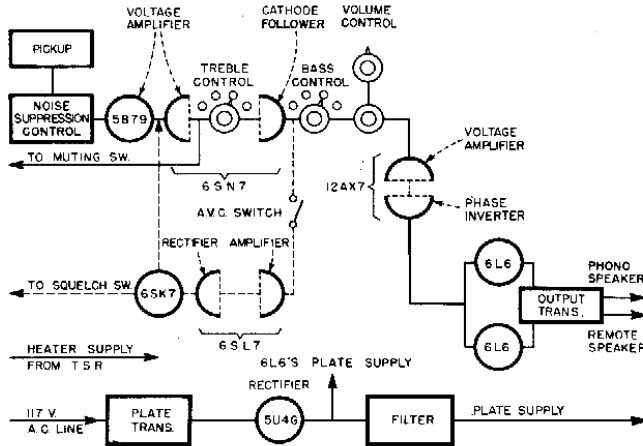


Figure 2. Block Diagram

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 5U4G rectifier. The plate supply transformer primary is protected by a fuse located on the amplifier chassis.

The total amplifier output power of 25 watts can be divided between the Select-O-Matic speakers and remote speakers with the proportions of volume conveniently adjusted by use of the Select-O-Matic Speaker Switch located at the upper end of the amplifier and shown in Figure 3. The switch is set to provide the desired balance of volume between the Select-O-Matic speakers and the remote speakers but the total power (in watts) of all the speakers in use must not exceed 25. The load (in watts) should also not be lower than 25% of the total, (6 watts).

IF NO REMOTE SPEAKERS ARE USED, THE SPEAKER SWITCH MUST BE SET AT THE 20 WATT POSITION.

The terminal strip shown in Figure 4 provides connections for high impedance remote speakers. The high impedance output terminates at A and B and is for 70-volt Constant Voltage Speakers. The G terminal is provided for grounding of shielded speaker lines.

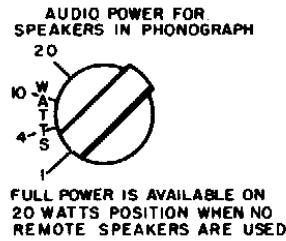


Figure 3.
Speaker Switch

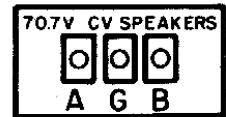


Figure 4.
Terminal Strip

If the total watts of the remote speakers and the Select-O-Matic cabinet speakers exceed 25 watts, an external Seeburg Power Amplifier, may be used to supply part of the load.

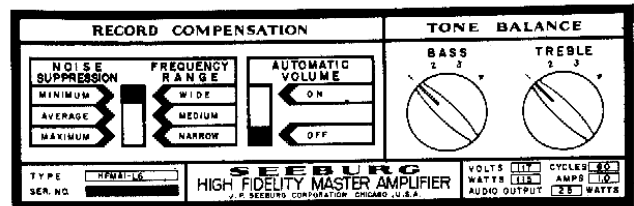


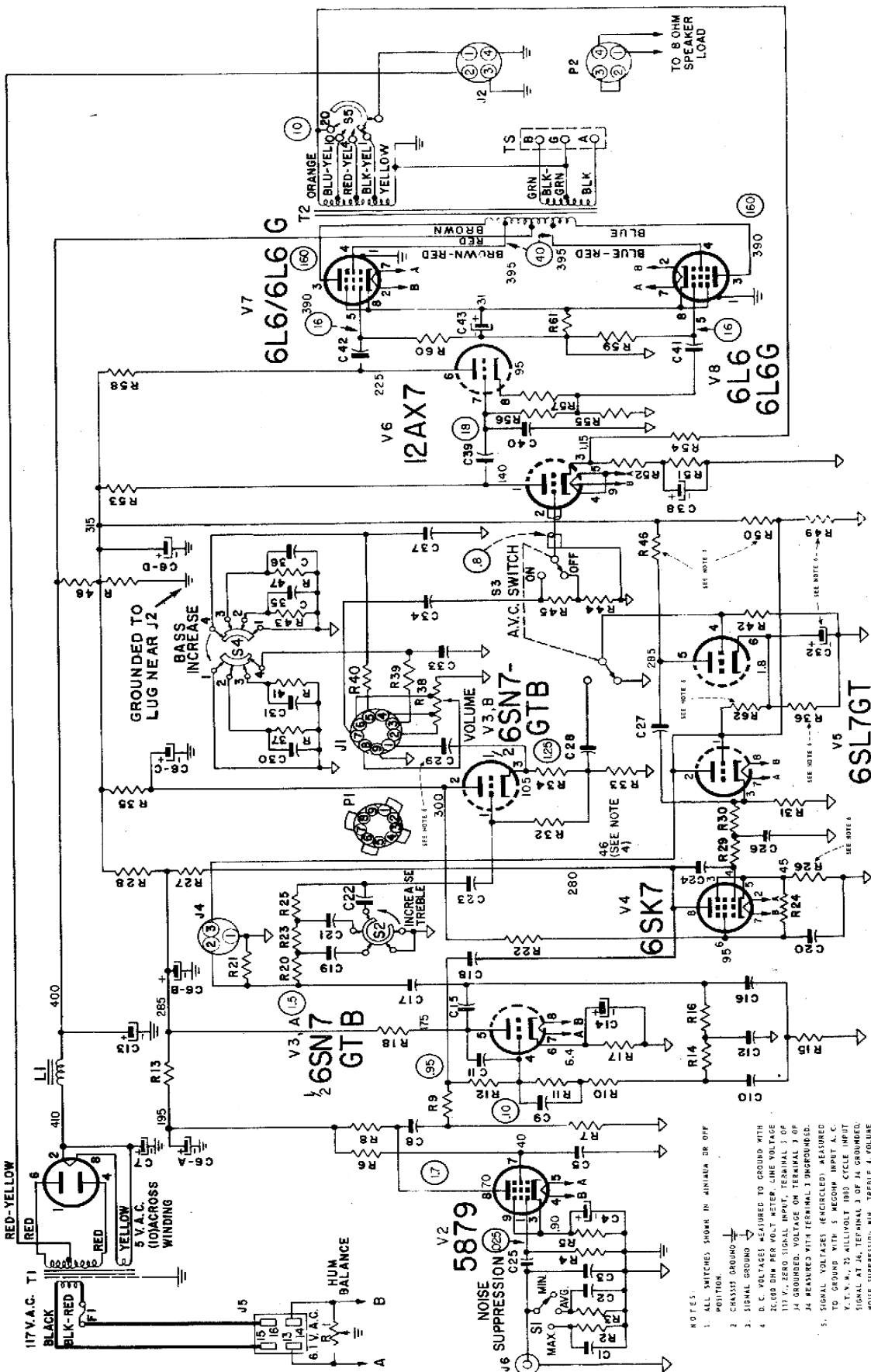
Figure 5. Tone Controls

A three position Noise Suppression Switch controls the frequency range of the amplifier. The switch is set to the position that provides the most satisfactory reproduction consistent with conditions of records to be played.

The Bass and Treble controls are four-position switches with an indicating escutcheon shown in Figure 5. The position of the controls when an amplifier is in normal use is determined by the records being reproduced, the room size and other acoustical conditions. "Flat" response of the amplifier is had with the bass control at 1 and the treble control at 4 but with average conditions and typical records, very realistic reproduction is obtained by setting the bass at 2 and the treble at 3.

HIGH FIDELITY MASTER AMPLIFIER, TYPE HFMA1-L6

V-1
5U4-GB



- NOTES:
1. ALL SWITCHES SHOWN IN JUMP OR OFF POSITION.
 2. CHASSIS GROUND.
 3. SIGNAL GROUND.
 4. D.C. VOLTAGES MEASURED TO GROUND WITH 20,000 OHM PER VOLT METER. LINE VOLTAGE 110 V., ZERO SIGNAL INPUT, TERMINAL 3 OF J4 GROUND. VOLTAGE ON TERMINAL 3 OF J4 MEASURED WITH TERMINAL 1 UNGROUNDED.
 5. SIGNAL VOLTAGES (ENCIRCLED) MEASURED TO GROUND WITH 5 MEGOHM INPUT A.C. V.T.V.M., 20 MILLIVOLT 1000 CYCLE INPUT SIGNAL AT J4, TERMINAL 3 OF J4 GROUND. NOISE SUPPRESSION - MIN., TREBLE 4, VOLUME MAX., AVC OFF, SPEAKER 20 WATTS.
 6. VALUES FOR C27, R24, R25, R46 AND R48 ARE GIVEN IN PARENTHESES. VALUES IN PARENTHESES COMBINATION WITH R24 MUST BE SELECTED WHEN MARKED (1); VALUES AND R42 ARE USED

HIGH FIDELITY MASTER AMPLIFIER, TYPE HFMA1-L6

PARTS LIST

Item	Part No.	Part Name	Item	Part No.	Part Name
C1	86247	.0068 mfd. 200 V. Paper	R14	82458	680K 10% 1/2 W.
C2	86240	1500 mmfd. 500 V. Ceramic		*82457	560K 10% 1/2 W.
C3	86239	330 mmfd. 500 V. Ceramic	R15	82791	180K 5% 1/2 W.
C4	87598	100 mfd. 6 V. Lytic		*82450	150K 10% 1/2 W.
C5	86237	.15 mfd. 400 V. Paper	R16	82458	680K 10% 1/2 W.
C6a	87612	10 mfd. 350 V. Lytic		*82457	560K 10% 1/2 W.
C6b		20 mfd. 350 V. Lytic	R17	82429	2700 Ohms 10% 1/2 W.
C6c		20 mfd. 400 V. Lytic	R18	82676	47K 5% 1/2 W.
C6d		40 mfd. 400 V. Lytic	R20	82442	33K 10% 1/2 W.
C7	87596	40 mfd. 450 V. Lytic	R21	82457	560K 10% 1/2 W.
C8	86154	.02 mfd. 600 V. Paper	R22	82832	47K 5% 2 W.
	*86212	.01 mfd. 400 V. Paper	R23	82446	68K 10% 1/2 W.
C9	86222	470 mmfd. 1000 V. Ceramic	R24	82635	12K 5% 1/2 W.
C10	86213	.005 mfd. 400 V. Paper	R25	82450	150K 10% 1/2 W.
C11	86263	22 mmfd. 500 V. Ceramic	R26	82634	10K 5% 1/2 W.
	*86242	68 mmfd. 500 V. Ceramic		†82632	8200 Ohms 5% 1/2 W.
C12	86212	.01 mfd. 400 V. Paper	R27	82452	220K 10% 1/2 W.
C13	87596	40 mfd. 450 V. Lytic	R28	82776	8200 Ohms 10% 1 W.
C14	87568	20 mfd. 25 V. Lytic	R29	82460	1 meg. 10% 1/2 W.
C15	86146	.05 mfd. 600 V. Paper	R30	82467	3.9 meg. 10% 1/2 W.
C16	86213	.005 mfd. 400 V. Paper	R31	82468	4.7 meg. 10% 1/2 W.
C17	86212	.01 mfd. 400 V. Paper	R32	82456	470K 10% 1/2 W.
C18	86140	.05 mfd. 400 V. Paper		*82791	180K 10% 1/2 W.
C19	86244	680 mmfd. 500 V. Ceramic	R33	82820	8200 Ohms 10% 2 W.
C20	86140	.05 mfd. 400 V. Paper	R34	82418	330 Ohms 10% 1/2 W.
C21	86239	330 mmfd. 500 V. Ceramic	R35	82424	1000 Ohms 10% 1/2 W.
C22	86243	150 mmfd. 500 V. Ceramic	R36	82432	4700 10% 1/2 W.
C23	86213	.005 mfd. 400 V. Paper		†82640	27K 5% 1/2 W.
C24	86212	.01 mfd. 400 V. Paper	R37	82426	1500 Ohms 10% 1/2 W.
C25	86158	.02 mfd. 200 V. Paper	R38	305193	25K Volume Control
C26	86245	1.0 mfd. 200 V. Paper	R39	82425	1200 Ohms 10% 1/2 W.
C27	86154	.02 mfd. 600 V. Paper	R40	82425	1200 Ohms 10% 1/2 W.
C28	86158	.02 mfd. 200 V. Paper	R41	82631	7500 Ohms 5% 1/2 W.
C29	86246	1.0 mfd. 200 V. Paper	R42	82453	270K 10% 1/2 W.
	†86232	.5 mfd. 200 V. Paper	R43	82424	1000 Ohms 10% 1/2 W.
C30	86248	.15 mfd. 200 V. Paper	R44	82695	56K 5% 1/2 W.
C31	86248	.15 mfd. 200 V. Paper	R45	82989	39K 5% 1/2 W.
C32	87568	20 mfd. 25 V. Lytic	R46	82456	470K 10% 1/2 W.
	†87631	100 mfd. 25 V. Lytic		†82666	100K 5% 1/2 W.
C33	86248	.15 mfd. 200 V. Paper	R47	82430	3.3K 10% 1/2 W.
C34	86235	.05 mfd. 200 V. Paper	R48	81175	25K - 2500 Ohms W. W. 5% 20 W.
	*86158	.02 mfd. 200 V. Paper	R49	82795	36K 5% 1/2 W.
C35	86248	.15 mfd. 200 V. Paper	R50	82616	220K 5% 1/2 W.
C36	86248	.15 mfd. 200 V. Paper		†82681	430K 5% 1/2 W.
C37	86248	.15 mfd. 200 V. Paper	R51	82433	5600 Ohms 10% 1/2 W.
C38	87568	20 mfd. 25 V. Lytic	R52	82659	330 Ohms 5% 1/2 W.
C39	86146	.05 mfd. 600 V. Paper	R53	82667	470K 5% 1/2 W.
C40	86241	33 mmfd. 500 V. Ceramic	R54	82610	6200 Ohms 5% 1/2 W.
C41	86146	.05 mfd. 600 V. Paper	R55	82789	390K 5% 1/2 W.
C42	86146	.05 mfd. 600 V. Paper	R56	82457	560K 10% 1/2 W.
C43	87604	25 mfd. 50 V. Lytic	R57	82433	5600 Ohms 10% 1/2 W.
F1	303087	2A- Sto Blo	R58	82789	390K 5% 1/2 W.
J1	84298	Remote Volume Socket	R59	82453	270K 10% 1/2 W.
J2	305206	Speaker Socket	R60	82453	270K 10% 1/2 W.
J4	12034	Mute Socket	R61	81145	260 Ohms 5% W. W., 10 W.
J5	300007	Power Connector	R62	†82640	27K 5% 1/2 W.
J6	300152	Phono Input	S1	305289	Noise Suppression Switch
L1	305205	Filter Choke	S2	305312	Treble Switch
P1	305316	Dummy Plug Assembly	S3	305288	AVC Switch
R1	602846	75 Ohms, W. W. 1 W.	S4	305311	Bass Switch
R2	82442	33K 10% 1/2 W.	S5	305290	Speaker Switch
R3	82445	56K 10% 1/2 W.	T1	305320	Power Transformer
R4	82452	220 K 10% 1/2 W.	T2	305304	Output Transformer
R5	82424	1000 Ohms 10% 1/2 W.	TS1	305309	Terminal Strip Remote Speaker
R6	82607	750 K 5% 1/2 W.	V1	308506	5U4GB
R7	82460	1 meg. 10% 1/2 W.	V2	308004	5879
R8	82791	180K 5% 1/2 W.	V3	308622	6SN7GTB
R9	82666	100K 5% 1/2 W.	V4	308618	6SK7GT
R10	82679	820K 5% 1/2 W.	V5	308620	6SL7
	*82665	1 meg. 5% 1/2 W.	V6	308120	12AX7
R11	82665	1 meg. 5% 1/2 W.	V7	308612	6L6G
R12	82681	430K 5% 1/2 W.	V8	308612	6L6G
R13	82448	100K 10% 1/2 W.			

* USE ON HIGH FIDELITY MASTER AMPLIFIER, TYPE HFMA1-L6J

† USED ABOVE SERIAL NO. 61650 (APPROX.) - [SEE NOTE 6 ON SCHEMATIC DIAGRAM]