SEEBURG

MASTER-REMOTE AMPLIFIER

TYPE MRA5-L6

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HIGH FIDELITY MASTER-REMOTE AMPLIFIER,

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The Master-Remote Amplifier, Type MRA5-L6 is a low distortion, wide frequency range, constant voltage type designed for use in the Select-O-Matic "100". 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 "100" 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. A 4-position AVC Switch provides a choice of degree of volume compensation from zero (off) to more than 20 db compression.

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 7-prong plug of a remote volume control, Type MRVC-1 or DRVC-1. The remote volume control cable may be up to one hundred feet in length without introducing hum, distortion or loss of volume.

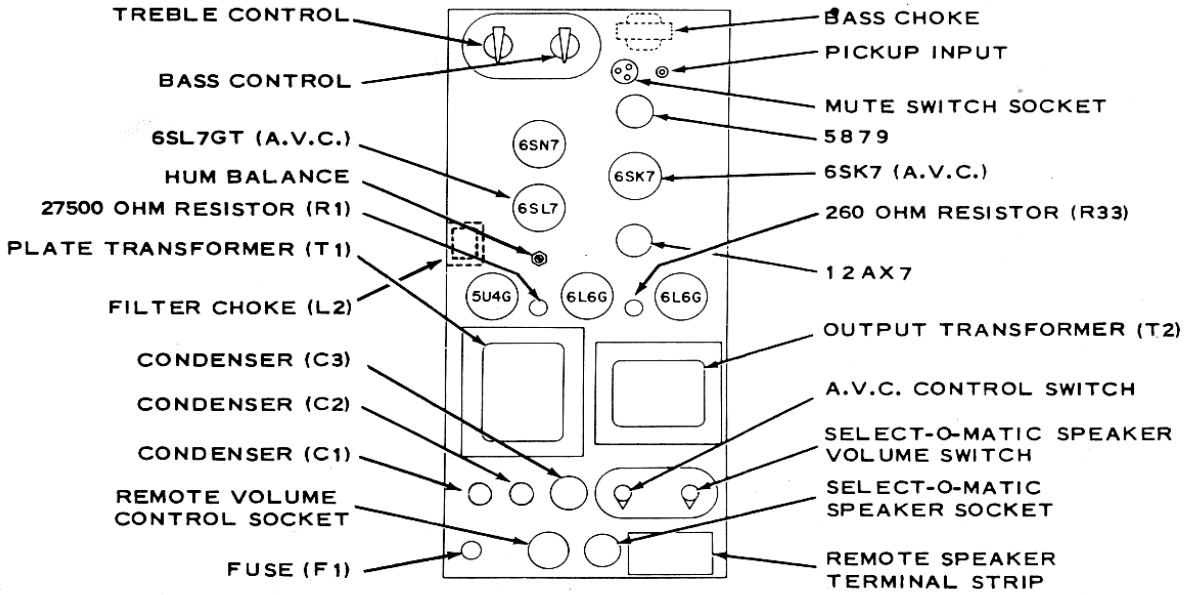

Figure 1. Top View – Master-Remote Amplifier, Type MRA5-L6

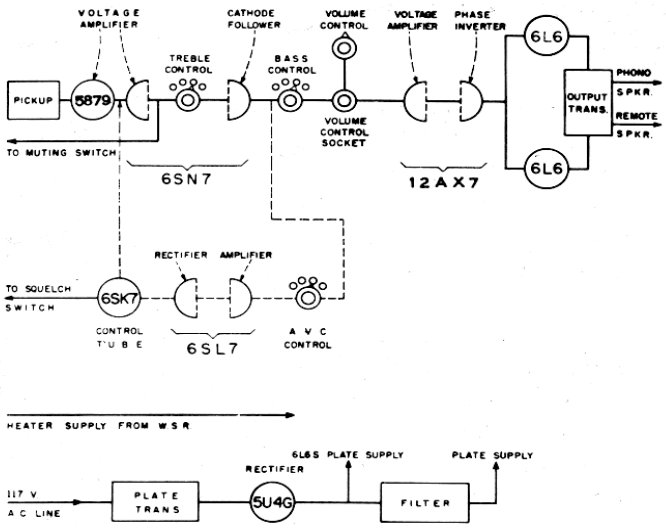

Figure 2. Block Diagram – Type MRA5-L6

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 lower 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 25 WATT POSITION.

The terminal strip shown in Figure 4 provides connections for high or low impedance remote speakers. The high impedance output terminates at A and B and is for 70-volt Constant Voltage Speakers. The low impedance output terminates at L and G and is for speakers that use inputs directly to the voice coils.

A 16-ohm speaker connected to L and G will draw 8 watts; two 16-ohm speakers in parallel or an 8-ohm speaker will draw 16 watts. Because the total load on the amplifier must not be more than 25 watts, the load connected to L and G is limited to a maximum of the equivalent of three parallel connected 16-ohm speakers. If it is necessary to connect low impedance speakers representing a load greater than 25 watts or if the low impedance load plus that taken from the 70-volt CV terminals and the Select-O-Matic cabinet speakers is greater than 25 watts, a transformer must be used to reflect a correct load ratio from the low impedance speakers.

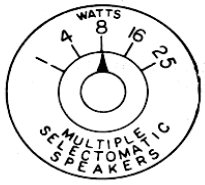

Figure 3.
Speaker Switch

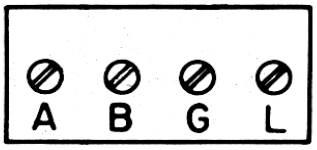

Figure 4.
Terminal Strip

If the total watts of the remote speakers and the Select-O-Matic cabinet speakers exceed 25 watts, an external Power Amplifier, *Seeburg Type HFA1-L6* may be used to supply part of the load.

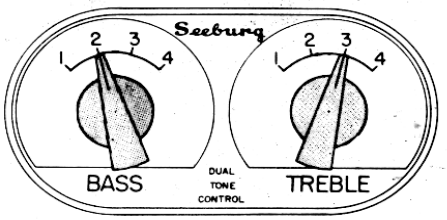

Figure 5. Tone Controls

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 2 and the treble control at 3 but with average conditions and typical records, very realistic reproduction is obtained by setting the bass at 3 and the treble at 3.

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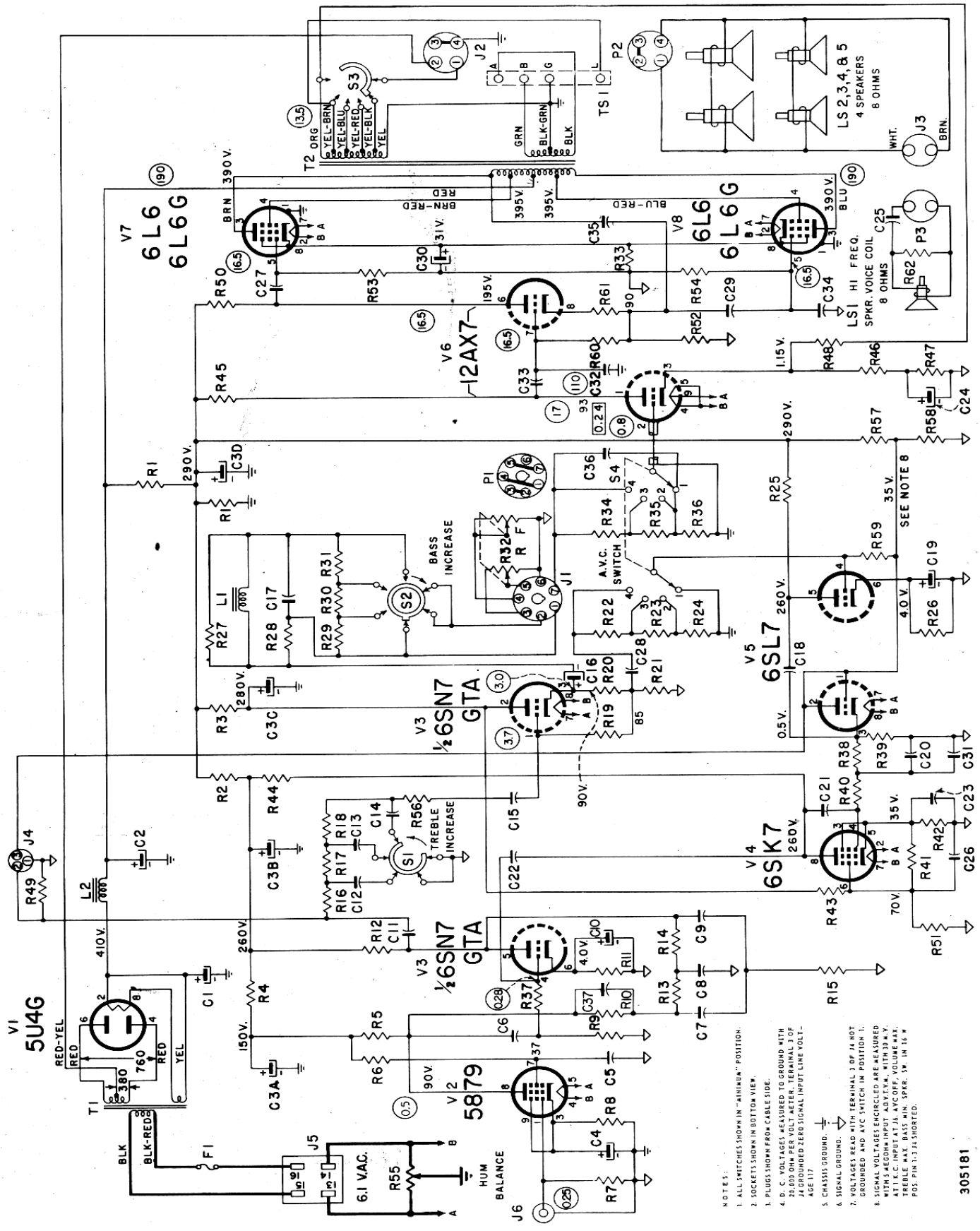

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PARTS LIST

Item	Part No.	Part Name
C1		
C2	87596	40 mfd. 450 V. Lytic
	10832	Electrolytic Mtg. Plate
C3a		10 mfd. 350 V. Lytic
C3b	87612	20 mfd. 350 V. Lytic
C3c		20 mfd. 400 V. Lytic
C3d		40 mfd. 400 V. Lytic
	602125	Electrolytic Mtg. Plate
C4	87598	100 mfd. 6 V. Lytic
C5	**86146	.05 mfd. 600 V. Paper
	86237	.15 mfd. 400 V. Paper
C6	86233	.05 mfd. 400 V. Paper
C7	86213	.005 mfd. 400 V. ± 10% Paper
C8	86212	.01 mfd. 400 V. ± 10% Paper
C9	86213	.005 mfd. 400 V. ± 10% Paper
C10	87568	20 mfd. 25 V. Lytic
C11	86146	.05 mfd. 600 V. Paper
C12	86207	.001 mfd. 200 V. Paper
C13	86207	.001 mfd. 200 V. Paper
C14	86207	.001 mfd. 200 V. Paper
C15	86233	.05 mfd. 400 V. Paper
C16	86230	1 mfd. 200 V. Paper
C17	86231	0.5 mfd. 200 V. Paper
C18	86154	.02 mfd. 600 V. Paper
C19	87568	20 mfd. 25 V. Lytic
C20	86232	0.5 mfd. 200 V. Paper
C21	86212	.01 mfd. 400 V. Paper
C22	86233	.06 mfd. 400 V. ± 10%
C23	87597	10 mfd. 50 V. Lytic
C24	87568	20 mfd. 25 V. Lytic
C25	86218	2 mfd. 200 V. Paper
C26	86233	.05 mfd. 400 V. Paper
C27	86146	.05 mfd. 600 V. Paper
C28	86158	.02 mfd. 200 V. Paper
C29	86146	.05 mfd. 600 V. Paper
C30	87604	25 mfd. 50 V. Lytic
C31	86232	0.5 mfd. 200 V. Paper
C32	85003	50 mmfd. 500 V. Mica
C33	86146	.05 mfd. 600 V. Paper
C34	86221	50 mmfd. 1000 V. Ceramic
C35	86220	5 mmfd. 1000 V. Ceramic
C36	*86222	470 mmfd. 1000 V. Ceramic
C37	▲86238	100 mmfd. ± 10% 1000 V. Ceramic
F1	303087	2 amp. Slo-Blo Fuse
	300061	Fuse Receptacle
J1	84265	Volume Control Socket
J2	305206	Speaker Socket
J3	406349	2 Prong Socket
J4	12034	Mute Socket
	400954	Socket Retainer
J5	300007	Power Connector
J6	300152	Pu Socket
	305022	Insulating Washer
L1	305106	Bass Choke
L2	305205	Filter Choke
P1	305019	Dummy Plug Assembly
P2	F-3150	Speaker Plug
R1	87115	27,500 ohm, tap at 2500 ohm 20 W. 5% W. W.
R2	82776	8200 ohm ± 10% 1 W.
R3	82424	1000 ohm ± 10% 1 W.
R4	82448	0.1 Meg. ± 10% ½ W.
R5	82675	82 K ± 5% ½ W.
R6	82456	.47 Meg. ± 10% ½ W.
R7	*82460	1 Meg. 10% ½ W.
	82444	47 K ± 10% ½ W.
R8	†82677	620 ohm ± 10% ½ W.
	82424	1000 ohm ± 10% ½ W.
R9	82460	1 Meg. ± 10% ½ W.
R10	82455	0.39 Meg. ± 10% ½ W.
R11	82425	1200 ohm ± 10% ½ W.
R12	82676	47 K ohm ± 5% ½ W.
R13	82457	.56 Meg. ± 10% ½ W.
R14	82457	.56 Meg. ± 10% ½ W.
R15	82453	.27 Meg. ± 10% ½ W.

Item	Part No.	Part Name
R16	82442	33 K ohm ± 10% ½ W.
R17	*82443	39 K ohm ± 10% ½ W.
	82439	18 K ± 10% ½ W.
R18	*82445	56 K ohm ± 10% ½ W.
	82442	33 K ± 10% ½ W.
R19	82453	0.27 Meg. ± 10% ½ W.
R20	82418	330 ohm ± 10% ½ W.
R21	82820	8200 ohm ± 10% 2 W.
R22	82448	.1 Meg. ± 10% ½ W.
R23	82444	47 K ± 10% ½ W.
R24	82442	33 K ± 10% ½ W.
R25	82456	.47 Meg. ± 10% ½ W.
R26	82445	56 K ± 10% ½ W.
R27	82436	10 K ohm ± 10% ½ W.
R28	82432	4700 ohm ± 10% ½ W.
R29	82426	1500 ohm ± 10% ½ W.
R30	82427	1800 ohm ± 10% ½ W.
R31	82428	2200 ohm ± 10% ½ W.
R32a)	302007	16 K ohm Volume
R32b)	302007	5 K ohm Control
	302047	Volume Control Key
	305002	Volume Control Bracket
R33	81145	260 ohm ± 5% W. W.
R34	82642	33 K ± 5% ½ W.
R35	82438	15 K ± 10% ½ W.
R36	82642	33 K ± 5% ½ W.
R37	82666	0.1 Meg. ± 5% ½ W.
R38	82467	3.9 Meg. ± 10% ½ W.
R39	82468	4.7 Meg. ± 10% ½ W.
R40	82460	1 Meg. ± 10% ½ W.
R41	82438	15 K ± 10% ½ W.
R42	82438	15 K ± 10% ½ W.
R43	82445	56 K ± 10% ½ W.
R44	82452	0.22 Meg. ± 10% ½ W.
R45	82667	0.47 Meg. ± 5% ½ W.
R46	82659	330 ohm ± 5% ½ W.
R47	82433	5600 ohm ± 10% ½ W.
R48	††82629	5600 ohm ± 5% ½ W.
	82610	6200 ohm ± 5% ½ W.
R49	82457	0.56 Meg. ± 10% ½ W.
R50	82789	.39 Meg. ± 5% ½ W.
R51	82455	56 K ± 10% ½ W.
R52	82789	.39 Meg. ± 5% ½ W.
R53	82453	0.27 Meg. ± 10% ½ W.
R54	82453	0.27 Meg. ± 10% ½ W.
R55	602846	75 ohm W. W. Hum Bal. 1 W.
R56	††82448	0.1 Meg. ± 10% ½ W.
R57	82460	1 Meg. ± 10% ½ W.
R58	82457	0.56 Meg. ± 10% ½ W.
R59	82453	0.27 Meg. ± 10% ½ W.
R60	82457	.56 Meg. 10% ½ W.
R61	82433	5600 ohm 10% ½ W.
R62	81177	8 ohm 10% 7 W.
LS1	407270	5" Speaker
LS2 LS3)	407290	12" Speaker
LS4 LS5)	407280	8" Speaker
S1	305025	Treble Switch
S2	305026	Bass Switch
S3	305111	Speaker Switch
S4	305107	D. P. 4 Pos. 2 Gang Sw.
T1	305203	Power Transformer
T2	305165	Output Transformer
TS1	305185	Terminals Strip 4 Lugs
	-602046	Tube Clamp
	- 84220	Octal Socket
	-305210	5-lug Terminal Strip
	-305208	11-lug Terminal Strip
	-305209	7-lug Terminal Strip
	-305167	Tone Control Escutcheon
	-305183	Speaker - AVC Escutcheon
	-300076	Tone Control Bar Knob
	-305027	Speaker - AVC Knob

* Used Below Serial No. 41280 ** Used Below Serial No. 42402

† Used Below Serial No. 50000 †† Used Below Serial No. 51596 ▲ Effective With Serial No. 55043