

INSTRUCTION MANUAL

McINTOSH MODEL C-8 and C-8P

PROFESSIONAL

AUDIO COMPENSATORS

Serial No. 10600 and above

McINTOSH LABORATORY, INC.
2 Chambers St. Binghamton, N. Y.
U.S.A.

INSTRUCTIONAL MANUAL
McINTOSH MODEL C-8 and C-8P
PROFESSIONAL
AUDIO COMPENSATORS

The McIntosh Audio Compensator is a complete control unit for professional or home entertainment systems. The Audio Compensator supplies the necessary gain and equalization for use with low level phonograph cartridges as well as the high output of radio tuners.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

Power Source	<u>C-8: Any McIntosh power amplifier</u> <u>C-8P: Self-powered</u>
Output	Main: 2.5 volts with rated input Tape: 0.5 volts with rated input
Input Sensitivity and Impedance	Tape and Tuner: 0.5V., 500K., Mic: 5MV, 100K Phono 1: 5MV, 100K Phono 2: 5MV, variable 6.8K-52K
Frequency Response	See Graphs
Harmonic Distortion	Less than 0.3% at 2.5 volts output, 20-20,000 cycles
Hum and Noise Level	Tape and Tuner: Better than 80 db below output Mic and Phono: Less than 2 microvolts at input terminals (—115dbm)
Size	C-8 and C-8P: 10 1/8" x 3 9/16" x 7 1/2" Front Panel: 11" x 4 1/4" (Knobs project 3/4") D-8A: 6" x 4 7/8" x 2 1/4" (Power supply section of C-8P)
Weight	C-8: 8 lbs. C-8P: 11 lbs., 6 oz.

FRONT PANEL CONTROLS

CONTROL	INPUTS AFFECTED	PURPOSE
Selector	All	Select desired sound source
Volume	All	Control sound level
Aural Compensator	All	Produce loudness contours to compensate for human ear response (Fletcher-Munson effect)
Bass and Treble Tone	All	Continuously variable control of low and high frequencies
Rumble Filter	Mic & Phono	Reduce very low frequency disturbances such as "rumble" and "wow"
Compensation Switches—Bass Treble	Phono Mic & Phono	Provide frequency compensation for phonograph recordings or tape heads

INSTALLATION OF MODEL C-8 and C-8P
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The C-8 or C-8P may be used in its own cabinet or may be easily mounted in any equipment cabinet by using the mounting templates supplied with this manual.

After these units have been secured in their desired location, proceed as follows:

1. Connect speaker to output of power amplifier.
2. Insert power amplifier line cord into one of the Auxiliary A. C. receptacles provided at the rear chassis of the Audio Compensator.
3. C-8: Connect inter-unit cable to socket labeled "PRE-AMP. INPUT" on McIntosh power amplifiers. Adjust gain control fully counterclockwise with MC-30 or MC-60. CAUTION: THE INTER-UNIT CABLE MUST NOT BE REMOVED FROM THE C-8.

C-8P: Insert cable of D-8A power supply into the octal socket on the C-8P. Connect audio cable provided between RETMA pin jack labeled "MAIN OUTPUT" on C-8P and 2.5V input of power amplifier. (Socket labeled "PRE-AMP. INPUT" on McIntosh power amplifiers. Adjust gain control fully counterclockwise with MC-30 or MC-60.)

4. The Audio Compensator output is 2.5 volts with rated input signal and the power amplifier should be adjusted for this input sensitivity. However, any amplifier requiring less than 2.5 volts input may be used since the gain control on the Audio Compensator is located at the output. Reducing this control will not increase either the distortion or noise level.

5. Turn the volume control on the Audio Compensator to "OFF."
6. Insert power cord of the Audio Compensator into a 117 V. A. C. power outlet.
7. Turn the volume control on the Audio Compensator clockwise until the power switch is activated. Allow thirty seconds for warm-up, then advance the volume control to "10."
8. C-8: Adjust the hum reducing potentiometer on the power amplifier for minimum hum.
C-8P: Adjust the hum reducing potentiometer on the power supply for minimum hum.
This adjustment will occur at one end of rotation. The C-8 and C-8P have a D. C. supply for the tube heaters and minimum hum will be achieved when the correct side of this supply is grounded.
9. Turn the volume control on the Audio Compensator to off.
10. Insert inputs into their proper jacks at the back of the Audio Compensator, and all A. C. power cords into the A. C. outlets provided.

INPUT CONNECTING PROCEDURE

The inherent hum and noise voltages applied to the input of the Audio Compensator are —115 DBM, or less than 2 microvolts. To avoid lowering the signal to hum ratio of the Audio Compensator, by adding hum voltages to the input, extreme care must be taken in its installation. We offer the following recommendations as a guide to installation:

1. Connect inputs of Audio Compensator as outlined on the table below:

CHANNEL	INPUT (FOR 2.5V OUTPUT)	GAIN	INPUT IMPEDANCE	USE
TAPE AND TUNER	0.5V	15db	500K	Radio or TV Tuners, Tape recorders with self-contained equalizers.
MIC	5MV	53db	100K	Low impedance microphone in conjunction with an input transformer such as McIntosh M-107.
PHONO 1	5MV	53db	100K	Magnetic phonograph cartridges. Tape recorder without self-contained equalizers (tape heads).
PHONO 2	5MV	53db	Variable 6.8K-52K	Magnetic or constant amplitude phonograph cartridges. Tape heads.

2. The Audio Compensator and magnetic phonograph cartridges should be mounted at least two feet from power transformers.
3. Inter-unit cables provide a complete ground system. Alternate ground wires create ground loops which will usually increase hum level.
4. The 12AX7 tubes used in the Audio Compensator are heated with D. C. The hum adjust control on the power source for these units requires an initial adjustment to correctly balance the D. C. supply. Correct adjustment will occur at one end of rotation and will be evident by the absence of hum.
5. Grounding the turntable motor frame to the Audio Compensator chassis near the input jacks may reduce the hum level on the phonograph channels. Do not use the shield on lead from cartridge for this connection.

All channels of the Audio Compensator have an input level control which should be used to reduce signal input in excess of their rated value (see specifications). Proper adjustment of these controls will allow switching channels without a change in volume.

If the input signal voltage is unknown the level controls may be adjusted as follows:

1. Turn the level control off (fully counterclockwise).
2. Set the main volume control at "7."
3. Adjust the gain control for a reasonably loud listening level.
4. If a highly efficient speaker system is used, the level adjustment should be made with the volume control at "5."

Tape and Tuner Channels:

These channels each have an input impedance of 500,000 ohms and sensitivity of 0.5 volts. The flat frequency response of these channels may be modified by the Tone or Aural Compensator controls as desired.

Mic Channel:

This channel has an input impedance of 100,000 ohms and sensitivity of 5MV. It is intended to be used with a low impedance microphone in conjunction with a suitable input transformer. The flat frequency response of this channel may be modified with any front panel control excepting the Bass Compensation switches.

Phono 1 Channel:

This channel has an input impedance of 100,000 ohms and sensitivity of 5MV. It is frequency compensated for use with magnetic phonograph cartridges or tape heads. This high input impedance is suitable for operation with the Audax phonograph cartridge, or the input impedance may be lowered by connecting a resistor across the input of the following values:

Desired Impedance	Resistor Across Input
100K	None
50K (47K)	100K
27K	36K
12K	15K

Phono 2 Channel:

This channel is the same as Phono 1, except that a variable load control has been provided which varies the input impedance from 6.8K to 52K. This control incorporates a switch which is activated in the extreme counterclockwise position. In this position the input is terminated for use with constant amplitude cartridges.

The following table lists recommended termination for several cartridges:

CARTRIDGE	ADJUST LOAD CONTROL	CARTRIDGE	ADJUST LOAD CONTROL
Pickering (200 Series)	27K	E. S. L. with input transformer	27K
Pickering Fluxvalve	47K	FM type cartridges—	CA (FM on
G.E. variable reluctance	47K	crystal or ceramic	some units)
Fairchild (input transformer not necessary)	47K	Audax—Use Phono 1 Channel	

The signal from tape heads may be connected directly to one of the phono channels and the Audio Compensator used for equalization of the recorded tape. The NARTB tape playback curve (see graphs) may be reproduced as follows: Depress the Bass Compensation switch labeled "950," adjust the Bass tone control to —1 and the Treble tone control to —2.5.

OUTPUT CONNECTIONS

Three outputs are provided: one tape and two main outputs.

The tape output may be used for recording tape from any source connected to the Audio Compensator. The Selector switch, Bass and Treble compensation switches, and Rumble Filter are effective at this output. Adjustment of the Bass and Treble tone controls, Aural Compensator and Volume control may be made for monitoring and will not affect the recorded signal. The tape output delivers a signal of 0.5 volts.

The main outputs are available at the octal socket between pins #1 and #2 (pin #1 is ground), and at the RETMA pin jack labeled "MAIN OUTPUT." The inter-unit cable connecting the C-8 to any McIntosh power amplifier uses the octal socket output. The pin jack output may be used for driving a second power amplifier if so desired.

The main and tape output jacks are fed from cathode followers. The input impedance of devices connected to these outputs should be 50,000 ohms or greater, and the capacitive reactance of audio cables connecting these devices should not be less than 8,000 ohms at 20,000 cycles. This is the reactance of a capacity of 1000 mmf. Audio cable having a capacity of 25 mmf per foot may be 40 feet long, 13.5 mmf per foot cable may be 75 feet long.

PIN NO.	V1 DC VOLTS	RESISTANCE
1	108V	500K
2	0.	0-100K
3	1.02	4.3K
4	0.	—
5	10.7	—
6	108.	450K
7	0.	1M
8	1.16	1.8K
9	—	—

PIN NO.	V2 DC VOLTS	RESISTANCE
1	185V	120K
2	108.	450K
3	111.	400K
4	10.7	—
5	0.	—
6	185.	120K
7	19.	1.1M
8	57.	100K
9	—	—

PIN NO.	V3 DC VOLTS	RESISTANCE
1	135.	370K
2	0.	110K
3	1.22	1.6K
4	0.	—
5	10.7	—
6	345.	10K
7	36.	1.1M
8	122.	110K
9	—	—

GUARANTEE

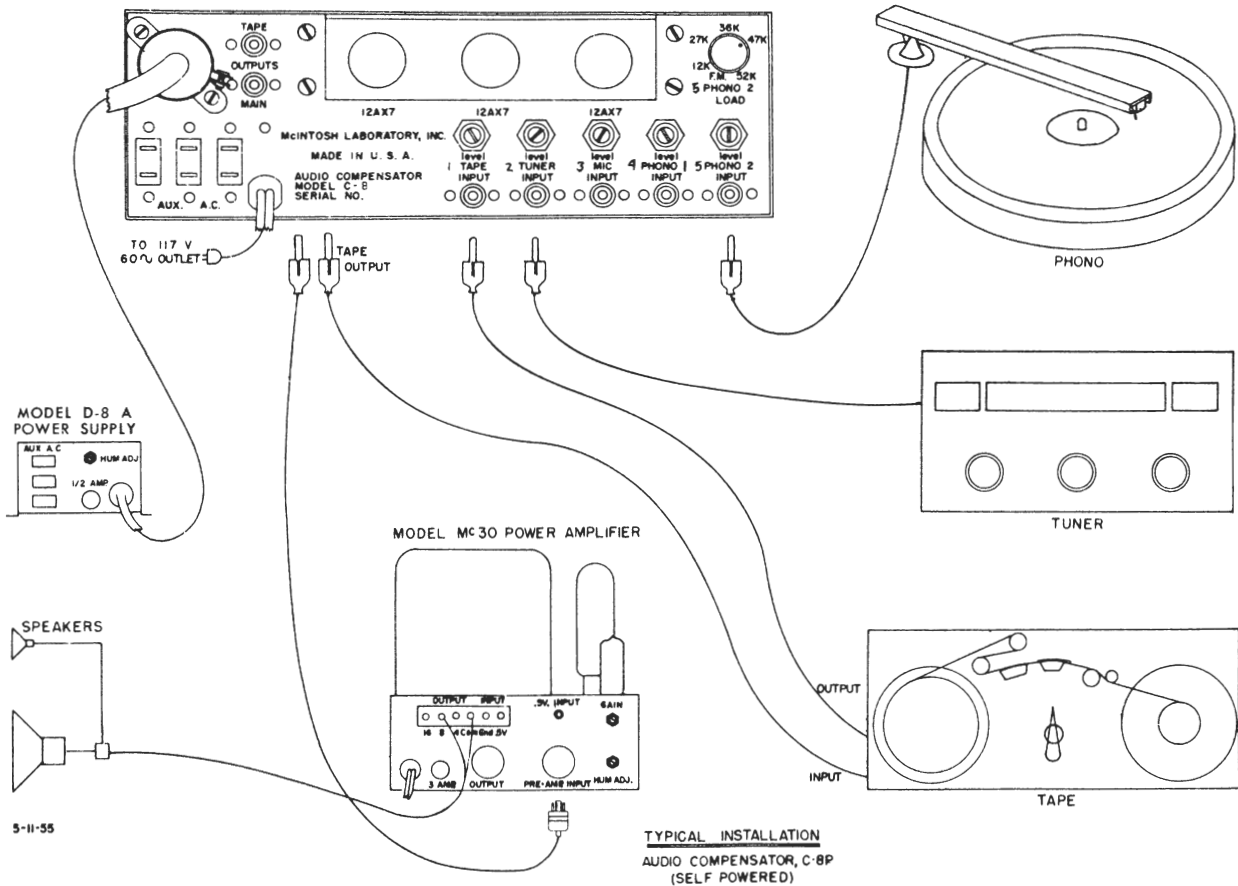
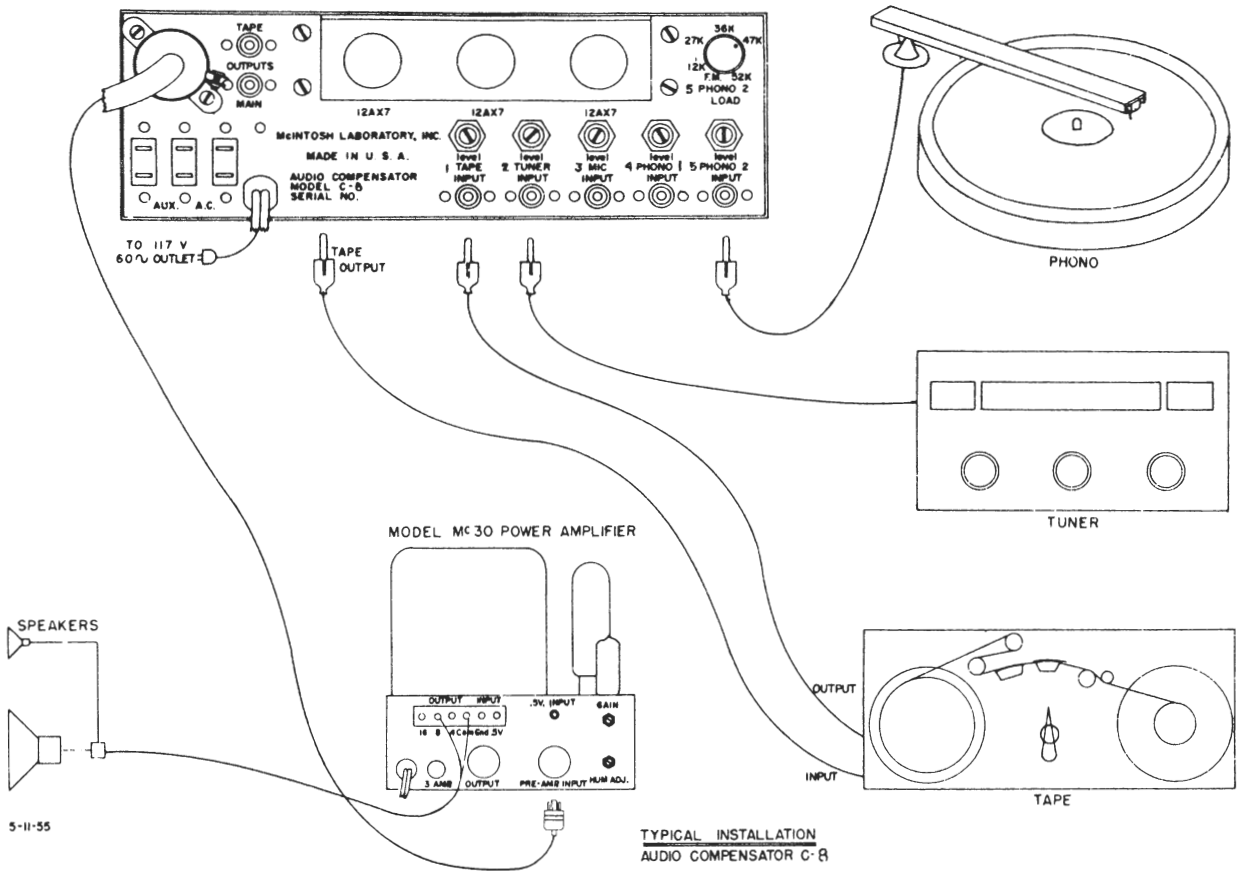
We guarantee the performance of this equipment and the mechanical and electrical workmanship to be free of serious defects for a period of 90 days. This guarantee does not extend to components damaged by improper use, nor does it extend to transportation to and from the factory.

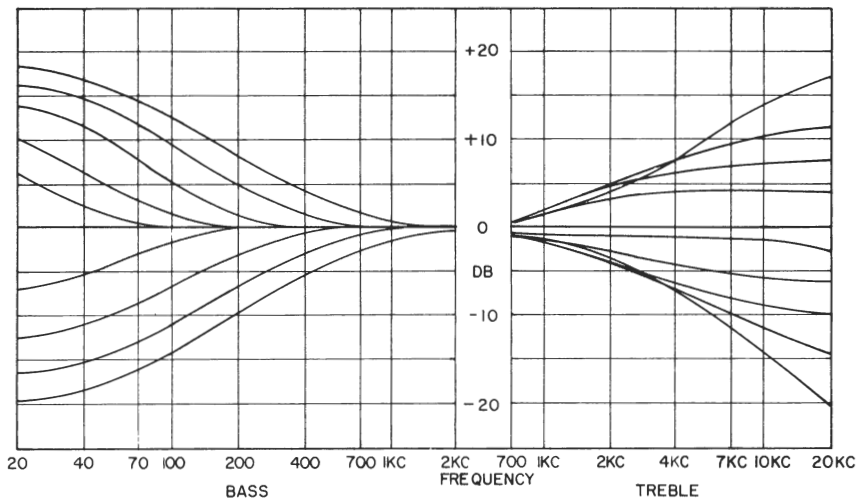
McINTOSH LABORATORY, INC.

2 Chambers St.

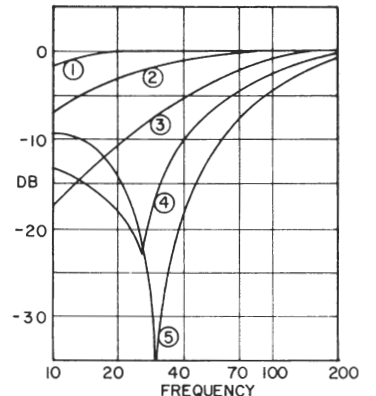
Binghamton, N. Y., U.S.A.

In Canada: Manufactured Under License by McCurdy Radio Industries
22 Front Street West, Toronto, Canada

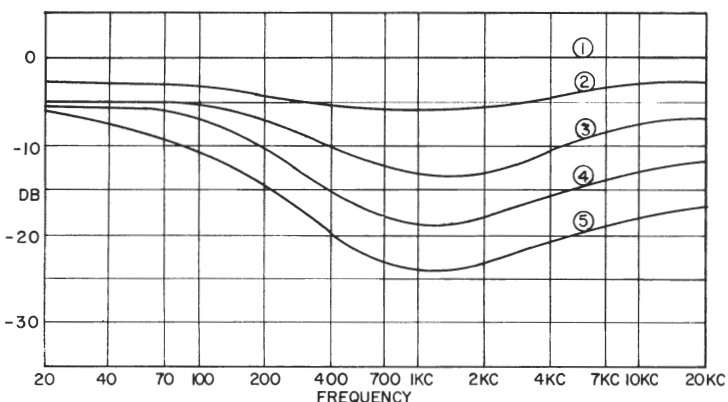




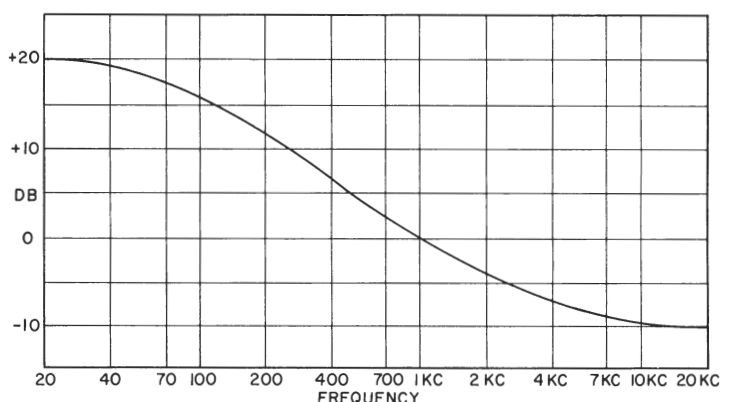
TONE CONTROLS
(ALL CHANNELS)



RUMBLE FILTER
(MIC & PHONO CHANNELS ONLY)

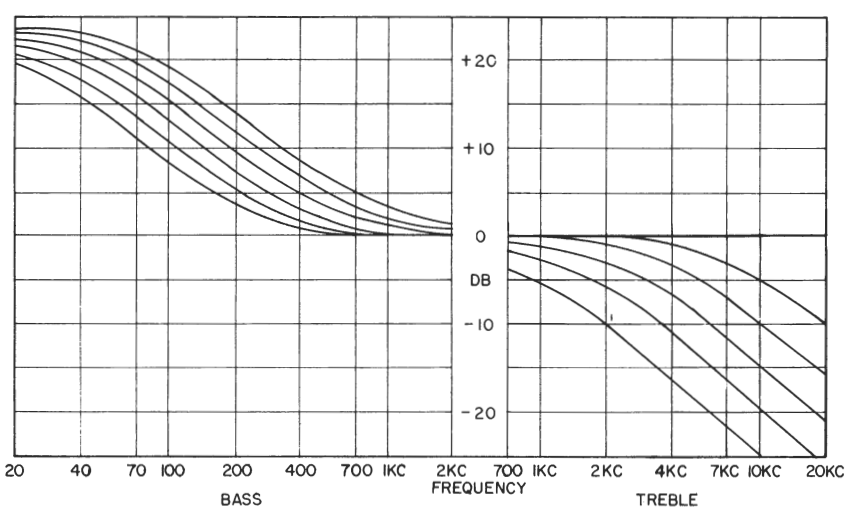


AURAL COMPENSATOR
(ALL CHANNELS)



NARTB TAPE
PLAYBACK COMPENSATION
(PHONO CHANNELS ONLY)

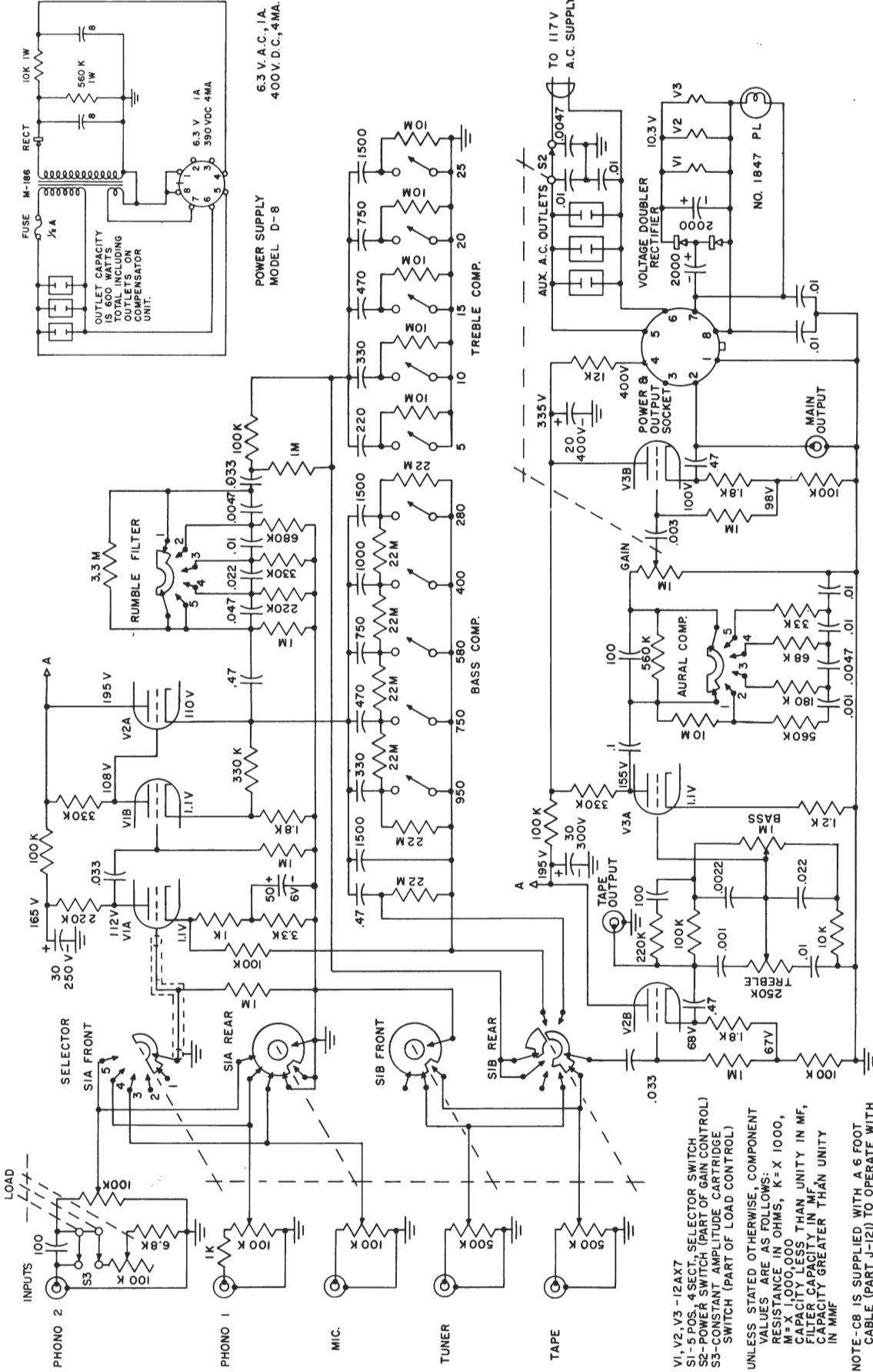
BASS SWITCH "950" DEPRESSED
BASS TONE -1
TREBLE TONE -2.5



(PHONO CHANNELS ONLY) COMPENSATION CONTROLS (MIC & PHONO CHANNELS ONLY)

CONTROL CURVES FOR MODEL C-8
AUDIO COMPENSATOR

McINTOSH LABORATORY, INC.



V1, V2, V3 - 12AX7
 S1 - 5 POS. 4 SECT. SELECTOR SWITCH (PART OF GAIN CONTROL)
 S2 - POWER SWITCH (PART OF GAIN CONTROL)
 S3 - CONSTANT AMPLITUDE CARTRIDGE SWITCH (PART OF LOAD CONTROL)

UNLESS STATED OTHERWISE, COMPONENT VALUES ARE AS FOLLOWS:
 RESISTANCE IN OHMS, K = X 1000,
 M = X 1,000,000
 CAPACITY LESS THAN UNITY IN MF,
 FILTER CAPACITY IN MF,
 CAPACITY GREATER THAN UNITY IN MMF

NOTE-C8 IS SUPPLIED WITH A 6 FOOT CABLE (PART J-121) TO OPERATE WITH AND BE POWERED BY A MCINTOSH POWER AMPLIFIER. PINS 5 AND 6 ON THIS CABLE ARE NOT CONNECTED.

C8-P IS SUPPLIED WITH THE D-8 POWER SUPPLY. THE NECESSARY POWER CABLE IS A PART OF THE D-8.

REVISIONS	
NO.	DATE
1	12-20-56
2	
3	
4	
5	

DRAWN BY: J.W.C. SCALE: DATE: 9-26-56
 CHECKED: APP'D: SAE
 TRACED:

SERIAL NO. 10600 AND UP

McINTOSH LABORATORY, INC.
 320 Water St., Binghamton, N.Y.

D-8A POWER SUPPLY