

Equipment Report

McIntosh C-8 Audio Compensator and Mc-30 Power Amplifier—B-J Phono Pickup Arm—General Electric AI-901 Record Filter

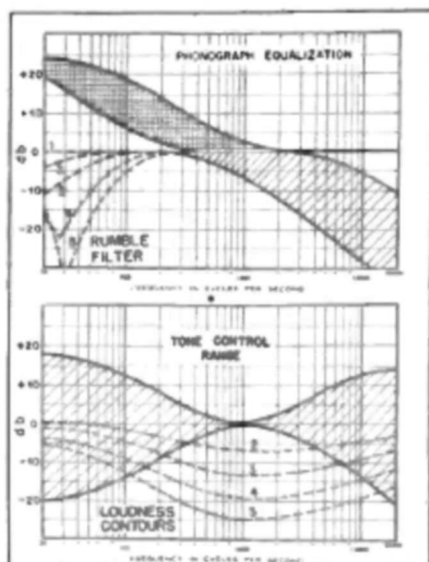


Fig. 1. Performance curves for the McIntosh C-8 Audio Compensator.



Fig. 2. The Audio Compensator, Model C-8.

PROVIDING an almost unlimited variety in response curves, the McIntosh C-8 Audio Compensator is one answer to a desire to accommodate any present or probable future recording curve, as well as to adjust for the acoustics of the listening room, deficiencies in the speaker system, or practically any other condition that may arise.

This unit—which is available either to work with the entire line of McIntosh power amplifiers or with its own small power supply—is equipped with the usual bass, treble, selector, and volume controls, and has in addition a rumble filter control, a loudness compensator switch, five switches to control the turnover frequency, and five switches to control rolloff. That may seem like unduly complicated for the average listener, but there are many who are of the opinion that this unit is the only one which can provide a range of control which is sufficiently wide for the most critical listener. The Compensator is designed to mount in an existing panel, using an opening $10\frac{1}{16} \times 3\frac{5}{8}$ in., or it may be installed in a small cabinet as shown in Fig. 2 and used on a table top if desired. When feeding a McIntosh amplifier, it draws operating power from sockets built into the

power amplifier chassis; if used with the D-8 power supply (in this form, the Compensator is known as C-8P) it will furnish a 2.5-volt output to any other power amplifier.

Referring to the schematic, Fig. 3, it will be seen that there are five input channels. The first two have input impedances of 0.66 meg, and are designed to accommodate high-level inputs, working down to a minimum of 70-mv input for full output. The third channel is designed for low-level inputs, with a minimum of 10 mv for full output. The input impedance of this channel is 0.1 meg. These three channels provide flat amplification from 20 to 20,000 cps, and all panel controls except that for turnover are effective.

Channel 4 is designed for a high-level magnetic cartridge, and is terminated for use with the Pickering models. Changing resistors R_4 and R_7 will permit the use of G.E., Audak, or most other "low-level" cartridges, since normal output may be obtained from an input signal of 10 mv. Channel 5 is equipped with a variable load resistor to accommodate any of the low-level cartridges without any internal changes. The gain is sufficient that full output can be obtained with an input of

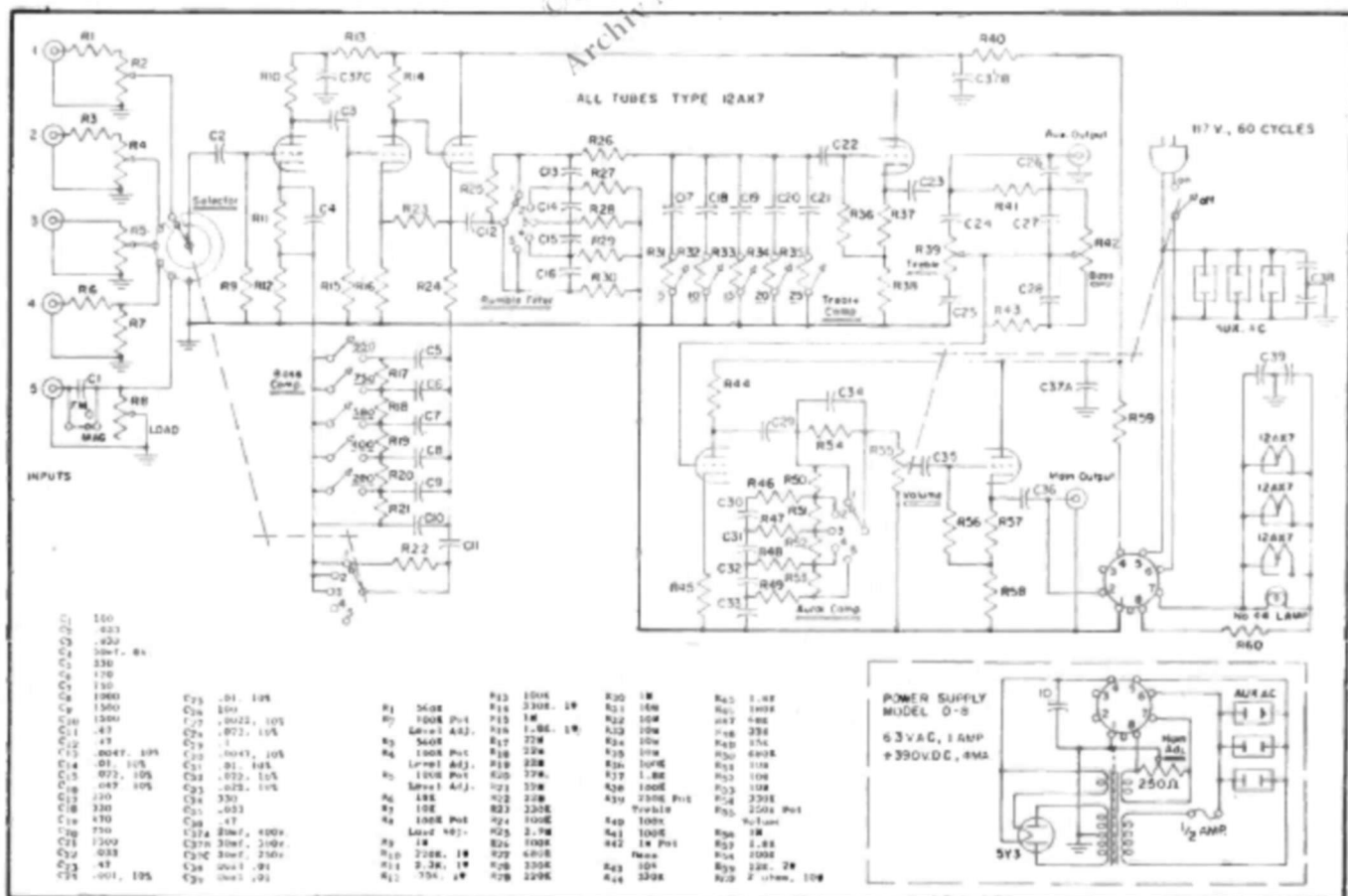


Fig. 3. Schematic of McIntosh Audio Compensator.



Fig. 4. The McIntosh Mc-30 Power Amplifier.

10 mv, which is adequate for Audak and G.E., or for Leak, Fairchild, or Electro Sonic pickups when used with an input transformer. The input impedance may be varied from zero to 0.1 meg, and by operating a slide switch on the rear apron to "F.M.," and the load switch to "100"—representing 0.1 meg—the input will accommodate amplitude-responsive cartridges such as ceramic and crystal types and the Weathers FM pickup. All panel controls are effective with both channels 4 and 5.

The Bass Compensation switches work only with the last two channels, and provide a number of turnover frequencies in discrete steps when only one switch is operated, or for a somewhat wider range when two or more are used. Note that all stages of the compensator are used for all inputs, the signal being reduced in level to apply a maximum of 10 mv. to the grid of the first tube. The selector switch eliminates the frequency-selective components from the feedback around the first tube when set for channels 1, 2, or 3.

Treble compensation is accomplished by adding capacitors to the circuit by means of slide switches—one for each capacitor. Both compensation circuits employ the slide switches, and by this means almost any degree of correction may be obtained by simply operating two or more switches. The phonograph compensation curves are shown in Fig. 1, and while there are five discrete curves available for both bass and treble, the range obtainable is best shown by the shaded portion which indicates a very wide variety of curves.

The Auxiliary output is connected at the cathode of the stage prior to the tone and volume controls, and is therefore not affected by them, although compensation and rumble-filter controls are in the circuit, making it possible to dub from phonograph records to tape, for example, with the proper equalization.

The main output—also from a cathode follower—can be influenced by the aural or loudness compensator as well as the volume, bass, and treble controls. The curves for the rumble filter indicate that this would be useful in applications where bass response from a high-quality speaker system made the rumble objectionable. Tone-control and loudness-compensation curves are also shown in Fig. 1.

The Compensator is equipped with three a.c. outlets for phono motor, tape recorder, power amplifier, or any other devices intended to operate with the input unit.

Figure 4 shows the power amplifier, Model Mc-30. Performance curves for this

model are not shown, since frequency response is (naturally) flat from 20 to well over 20,000 cps and no controls are provided, and IM distortion remained below 0.4 per cent to over 40 watts output (equivalent sine-wave output, which is the method used in all of these Equipment Reports). This value is well beyond the limits of our standard graph sheets.

By now, most audio fans are familiar with the McIntosh amplifier circuit. Figure 5 is the schematic of the Mc-30, with the output transformer which provides load for both plate and cathode. Since the transformer has a 1:1 ratio, the same signal voltage exists at both ends of each of the two windings—one being connected to the plates and the other to the cathodes. Note also that the screens are connected to the opposite plates. Thus the signal on the screen and cathode of either output tube is identical, which means that the screens are perfectly bypassed to the cathodes—a condition wherein pentodes and tetrodes operate best. At high powers, the signal on the cathodes is quite high, which necessitates the use of a tube which will withstand a high cathode-heater potential.

The stage line-up in the amplifier consists of a single-ended amplifier tube, followed by a "long-tailed pair" phase splitter, a push-pull amplifier stage, and a cathode follower stage which drives the output tubes.

Feedback from a tertiary winding on the output transformer returns to the cathode of the first stage, and the output is taken from a fourth winding, with 4, 8, and 16-ohm taps being available. A 600-ohm output is provided, being taken from taps on the cathode winding of the output transformer. This output is likely to be several volts above ground (d.c.) since it is taken from a winding in which current is flowing, but for most applications this would not be important.

Construction of these two units is neat and compact, with ready accessibility to all parts. While most high-quality equipment in the audio field seems to show a minimum of need for part replacement, there is always the possibility that such a need may arise, and it is well not to have to "unbuild" the amplifier any more than necessary if a resistor or capacitor has to be changed. Most small components are mounted on resistor boards; in the C-8 both sides of the resistor board may be reached by removing the top and bottom of the unit simultaneously, while in the Mc-30 the resistor board is mounted in a vertical position, and all components may be reached readily when the bottom cover is removed. Octal sockets are used to make interunit connections as well as for output circuits, so that a plug-in installation can be made readily. This offers advantages when the user has occasion to use an amplifier in more than one location—he can simply unplug it and plug it in again whenever he has need to move it.

The first McIntosh amplifiers—50-watt units—were noted for their performance and efficiency. The new 30-watt model seems to live up to that reputation, and it does give excellent listening quality. With the C-8 Audio Compensator, sufficient flexibility is available for any application likely to be encountered.

THE B-J PHONO ARM

Anyone who has ever read anything about the requirements for good phonograph reproduction, minimum distortion, low record and stylus wear, and reduced noise has noted that it is considered desirable for the axis of the pickup to be tangent to the record groove at all times. With conventional arms this is impossible, and it is likewise impossible with any simple arm whose pivot is not at an in-

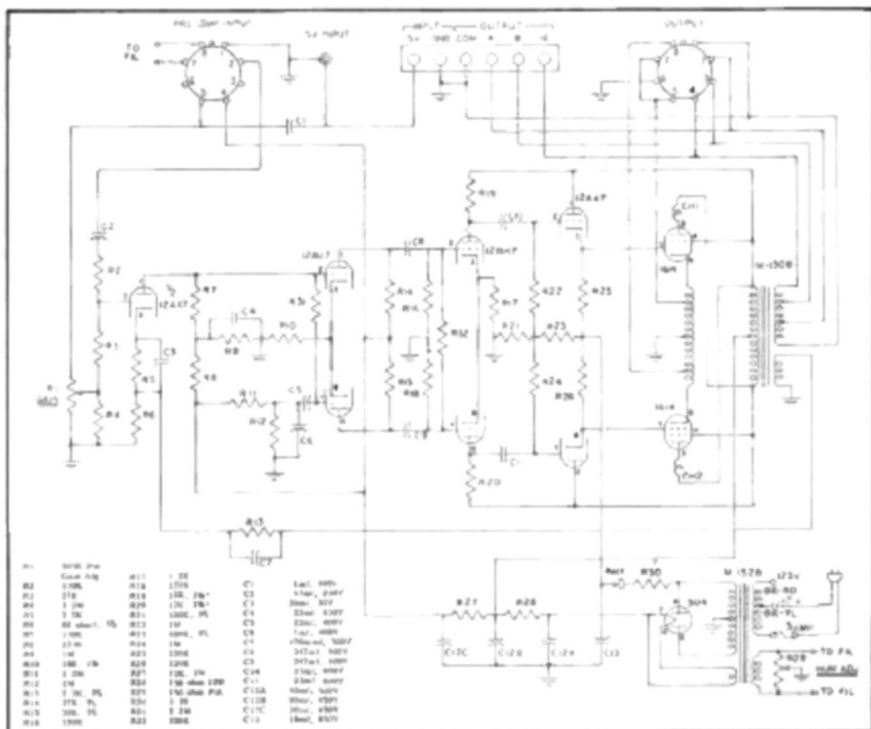


Fig. 5. Schematic of the Mc-30.