CARY Audio Design INC.

cad-75 ia

OPERATING MANUAL

NOTE:

Before installing your new CAD-75IA, please read this manual carefully as it will inform you of the CAD-75IA's specifications, proper installation procedures and operation procedures. Also included in this manual are guidelines on how to properly service and care for your new CAD-75IA.

MAY 1993

CAD-75-I
INTEGRATED STEREO AMPLIFIER

Congratulations! You have purchased one of the most exotic integrated stereo audio amplifiers available. The CAD-75-I integrated stereo amplifier redefines the characteristics and operating parameters of a true "high-end" amplifier. Careful design, parts selection and proper circuit topologies contribute to incredible reliability and enjoyment.

For the technically minded, a review of the circuit is in order. Your new CAD-75-I operates in a class AB mode utilizing regulated fixed bias on the 6550 output tubes. The 6550 output tubes are operating in a push-pull configuration utilizing the simple but effective system of a tapped-screen "ultra-linear" circuit. The ultra-linear circuit combines the advantages of triodes and pentodes, thus providing greater sensitivity, extremely low distortion and improved transient response. The output transformer in your CAD-75-I is the most important component in the amplifier and has been specifically designed by Cary Audio for use in the CAD-75-I. Negative feedback is used to reduce the noise floor and improve the speaker damping characteristics. Only 3 dB of feedback is utilized since the output transformer and circuit design was originally designed without feedback. The phase inverter is a 12AU7 cathode-coupled design utilizing negative cathode bias voltage. The preamplifier section of the CAD-75-I is a current source single-ended 12AX7 in direct coupled mode. The power supply features a 150% duty cycle EI laminate power transformer. The high voltage section features full wave rectification (not cheap voltage doublers used in many amplifiers) to a PI-L capacitive network. The full wave rectification is provided by two 5U4/CV378 rectifier tubes. The use of tube rectification is an assurance of slow B+ turn on during tube warm-up. To avoid AC hum, the input and phase inverter tubes have 12 VDC regulated filament voltage. This will prevent AC ripple voltage from capacitively being coupled to electrodes in the gain stage of the 12AX7 and 12AU7. The input signal from the volume control is direct coupled (DC) to the first grid of the 12AX7. There are no coupling capacitors in line with the input signal on the CAD-75-I. A block diagram of your new CAD-75-I has been provided in this manual for your reference.

A great deal of attention during design of your new CAD-75-I was concentrated on the "overload recovery" ability of the amplifier. The ability of an amplifier to instantly recover from clipping is much more important than is commonly believed. In the power war of amplifier manufacturers the mentality is focused on high and then even higher power output to solve the clipping problem. When in reality the most critical aspect is how fast of a recovery an amplifier can achieve after overload. With the incredible dynamic range of live and in turn recorded music, even 2,000 watts of power is not enough. Most of the music being listened to in an average

listening room is only requiring about 3 watts of power. It is on the transients of loud low frequency program material that tremendous signal voltages will appear at the input of the amplifier. It is in this situation that the overload recovery ability of an amplifier is of critical concern. The CAD-75-I extols its merits in the ability to handle transients and instantaneously recover from brief or even extended overloads. The CAD-75-I will overload symmetrically at any frequency in the audio bandpass. The CAD-75-I will also yield faithful reproduction of extremely low frequencies at full output levels. Power transformer, power supply regulation and output transformer design and careful shaping of the overall frequency response curve all play a very important part in the ability of the CAD-75-I to recover quickly when overloaded. If one were to monitor the high voltage rail voltage (430 VDC) of a CAD-75-I during soft and also loud music passages it will be found there is no more than a volt or so change from soft to loud passages.

Another technical feature of your new CAD-75-I amplifier is stability. The CAD-75-I may be operated with no load (without speaker) without damage to the amplifier, output transformer or tubes.

The most exciting feature of the CAD-75-I, aside from how compact and gorgeous it looks, is the delightful, sensual beauty of the music it recreates. The first thing that will strike you about your new CAD-75-I integrated amplifier is the incredible transparency and resolution of detail in the music. The CAD-75-I's sensual nature is best revealed in the sense of life it displays in female vocalists.

Your new CAD-75-I integrated amplifier presents music with such presence and directness, you'll be drawn into the music hour after musically satisfying hour. This is the result of circuit techniques, which eliminate any discernable crossover notch at low levels, and also contributes to the freedom from listening fatigue. The CAD-75-I will draw you in even further as you realize how lucid and utterly uncolored neutrality reveals delicate nuances in the sound stage.

Please read this complete manual for a complete understanding of trouble-free operation, and ENJOY THE MUSIC!

SPECIFICATIONS

Operating the CAD-75-I stereo integrated amplifier is a simple procedure, since each unit is designed for long term stability in virtually any home operating situation. Therefore, if the unit is operated outside the parameters outlined in this owner's manual, damage may result. Please read this manual carefully before putting your new Cary Audio Design CAD-75-I in operation.

The following definitions are applicable to this manual. These definitions must be followed explicitly.

WARNING
HAZARD PRESENTS PERSONAL INJURY OR DEATH

Caution
EQUIPMENT DAMAGE MAY OCCUR BUT NOT PERSONAL INJURY

Note
Proper performance of the amplifier cannot be ensured if disregarded

1.2 Specifications

The following section describes the CAD-75-I basic specifications. Specs are subject to change without notice or obligation.

DIMENSIONS: 7"H x 18"W x 13"D

WEIGHT: 44 lbs.

CIRCUIT TYPE: Push-Pull Ultralinear Amplification in Class AB

POWER OUTPUT: 1KHz sign wave
17 volts RMS across 4 ohms = 72 watts
24.5 volts RMS across 8 ohms = 75 watts

INPUT SENSITIVITY: .250 volts for full output

INPUT IMPEDANCE: 100,000 ohms

NOISE AND HUM: 80dB below rated output

FREQUENCY RESPONSE (at full power output):
20Hz to 30,000Hz + 0 - 0.75dB

DAMPING FACTOR: Greater than 35

TUBES: 2-12AX7 pre-driver preamplifier
2-12AU7 phase inverter
4-6550 push-pull output circuit
2-5U4/CV378 rectifier

TRANSFORMERS: 1-EI laminated core power transformer
2-EI laminated core output transformers
150% duty cycle on all transformers

RESISTORS: 1% metal film

CAPACITORS: Polystyrene and polypropylene

POWER SUPPLY CAPACITORS: Four 1200 MFD @ 450VDC
Total 2400 MFD - 238 joules

AC CORD: 3 conductor shielded detachable

AC POWER REQUIREMENTS: 117 volts AC 50/60Hz
295 watts operate
90 watts in stand-by
234 volts AC 50/60Hz
295 watts operate
90 watts in stand-by

WARM-UP TIME: 3 minutes

BREAK-IN PERIOD: 100 hours of music playing time

FINISH: Black baked on epoxy paint over steel chassis

FRONT PANEL: Machined, anodized aluminum

1.3 Front Panel Features

AC-ON-STAND BY, OPERATE: Rotary switch turns on AC mains and high voltage on "in operate" position

LED: Indicates AC power on

EARPHONE: 3 conductor stereo headphone jack for low impedance earphones

OUTPUT SELECTOR: Switches amplifier output from speakers to earphone listening

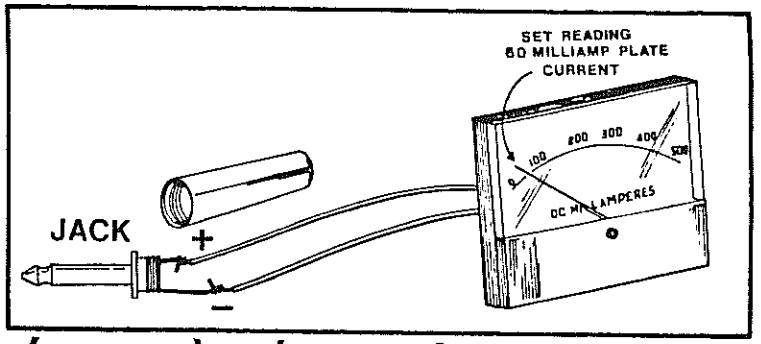
LISTENING LEVEL: Dual precision potentiometer controlling volume of both channels

LEVEL CONTROL L,R: To be used as a balance between left and right channel

INPUT SOURCE: Selection of line inputs for listening

MONITOR: A) Tape monitor for listening to a recording as it is being recorded
B) Mute position eliminates all input amplification - great feature for tone arm placement on record

REAR



METER JACK

METER JACK

cad-75 ia

L

R

60 MA

6550

6550

BIAS ADJUST

1

2

12AU7

12AX7

CV378

CV378

TUBES

60 MA

6550

6550

BIAS ADJUST

3

4

12AX7

12AU7

FRONT