

CITATION - A

PROFESSIONAL SOLID STATE STEREO CONTROL CENTER

OPERATION MANUAL

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INTRODUCTION

The Citation A professional solid state stereophonic control center represents the latest major breakthrough in high fidelity design.

When the "Citation Sound" was first introduced a few years ago it became the industry standard and audio authorities agreed that Citation was unsurpassed for professional or home use.

An important new design philosophy was involved in the development of Citation. Harman-Kardon engineers found that performance in the non-audible frequencies strongly influences performance in the audible range. Every Citation instrument reflects this basic design philosophy. Each reproduces frequencies at least two octaves above and below the normal range of hearing. Citation was the finest in high fidelity equipment that the state of the art would permit.

During the past two years a new technology has emerged: transistors. They offer significant benefits including lower heat, lower noise and longer life.

But most important, the transistor removes the limitation on frequency response (bandwidth) imposed by the vacuum tube. For the first time audio engineers can design high fidelity instruments capable of reproducing frequencies in the megacycle range. It is now possible to further advance the state of the art of high fidelity design.

The Citation A — the worlds first professional solid state (transistorized) stereo control center is a brilliant expression of this advanced technology.

It is totally new in concept, design and performance offering virtually unlimited frequency response, unmeasurable distortion and perfect phase linearity throughout the audio range. When you hear it you will share the experience of its creators—the experience of genuine breakthrough and discovery; *the experience of hearing music as you've never heard it before.*

TECHNICAL SPECIFICATIONS

Frequency Response: One to one million cycles per second, +0 —¼ db.

Square Wave Response: Better than 1 microsecond in all function positions. (Tone controls flat). Less than 5% tilt at 5 cycles per second.

Harmonic Distortion: Unmeasurable at 2 volts output from 20-20,000 cycles per second.

Intermodulation Distortion: Less than 0.05% from 40° to 140° Fahrenheit at 2 volts.

Noise: Low level phono: 70 db below rated output at 5 mv. input reference. High level: 85 db below rated output.

Sensitivity: High level input: 0.25 volts. Low level input: 1.5 millivolts.

Rated Output: 2 volts. Six volts maximum.

AC Convenience Outlets: One individually switched for basic amplifier only. Two switched with preamplifier. One unswitched.

On/Off Switches: Two individual power switches. One controls the power for the basic amplifier only, the other, the power for the preamplifier and associated equipment.

Function Selector: Six positions: Auxiliary, tape amp., tuner, phono 1, phono 2, tape head.

Mode Selector: Five positions: Stereo, Blend, A + B, Mon A, Mon B.

Blend Control: Introduces variable amount of crossfeed between channel A and B. One section of control acts as center channel gain control.

Equalization Switches: Separate turnover and rolloff to set individually, the equalization of the low and high frequencies. Turnover: Tape adjust, NARTB, 800/RCA, RIAA, L.P., AES, 78. Rolloff: Tape, 78/FFRR, 10.5/OLD LON, 12/AES, 14/RIAA, 16/LP.

Tone Switches: Professional step type switches for each channel. Electrically out of the circuit in the flat position.

Balance Control: Zero to infinity type; frequency insensitive.

Contour Switch: Compensates for Fletcher-Munson effect at low listening levels.

Channel Reverse Switch: Interchanges channel A and B for proper listening orientation.

Low Cut Filter: Two position: Flat, 75 cycle cut.

High Frequency Filter: Five positions incorporated into treble tone controls. Special non-ringing circuit.

Tape Monitor Switch: Permits monitoring of tape while recording.

Output Receptacles: Four main preamplifier outputs, 2 left, 2 right. One center channel output, Two tape outputs for recording.

Total Number of Transistors: 33

Special Features: Push-button selector switch, stereo headphone receptacle, special front panel tape head controls to trim equalization for any tape head. Cabinet installation from front with escutcheon remaining fastened to preamplifier. Simple attachment to mounting board.

Dimensions: 14⁷/₈" wide x 5⁵/₈" high x 7" deep.

FEATURES

- Separate bass and treble step-type tone controls for each channel. Controls electrically out of the circuit when in the flat position to eliminate phase shift and transient distortion.
- Convenient front panel stereo headphone receptacle.
- Special broadcast-type scratch filter incorporated into treble cut positions for sharp roll-off without ringing.
- Separate turnover and roll-off equalization switches to compensate for all records and tapes.
- Solid state fully regulated power supply employing transistors and zener diodes assure extended low frequency and excellent transient response.
- Individual amplifier and system on/off switches allow listener to turn off power amplifier when using headphones.
- Separate front panel tape head adjust controls permit accurate equalization calibration for tape head wear.
- Low impedance emitter follower output permits the use of long connecting leads without affecting frequency response.
- Glass epoxy modules mounted in computer type rack panel for rigidity, professional appearance and easy accessibility.
- Four ganged, close tracking gain control assures low noise and perfect control of volume.
- Heavy duty potted power transformer.
- Center channel output with separate gain control.
- Push button switches for stereo reverse, contour, tape monitor and low cut filter.

TECHNICAL DESCRIPTION

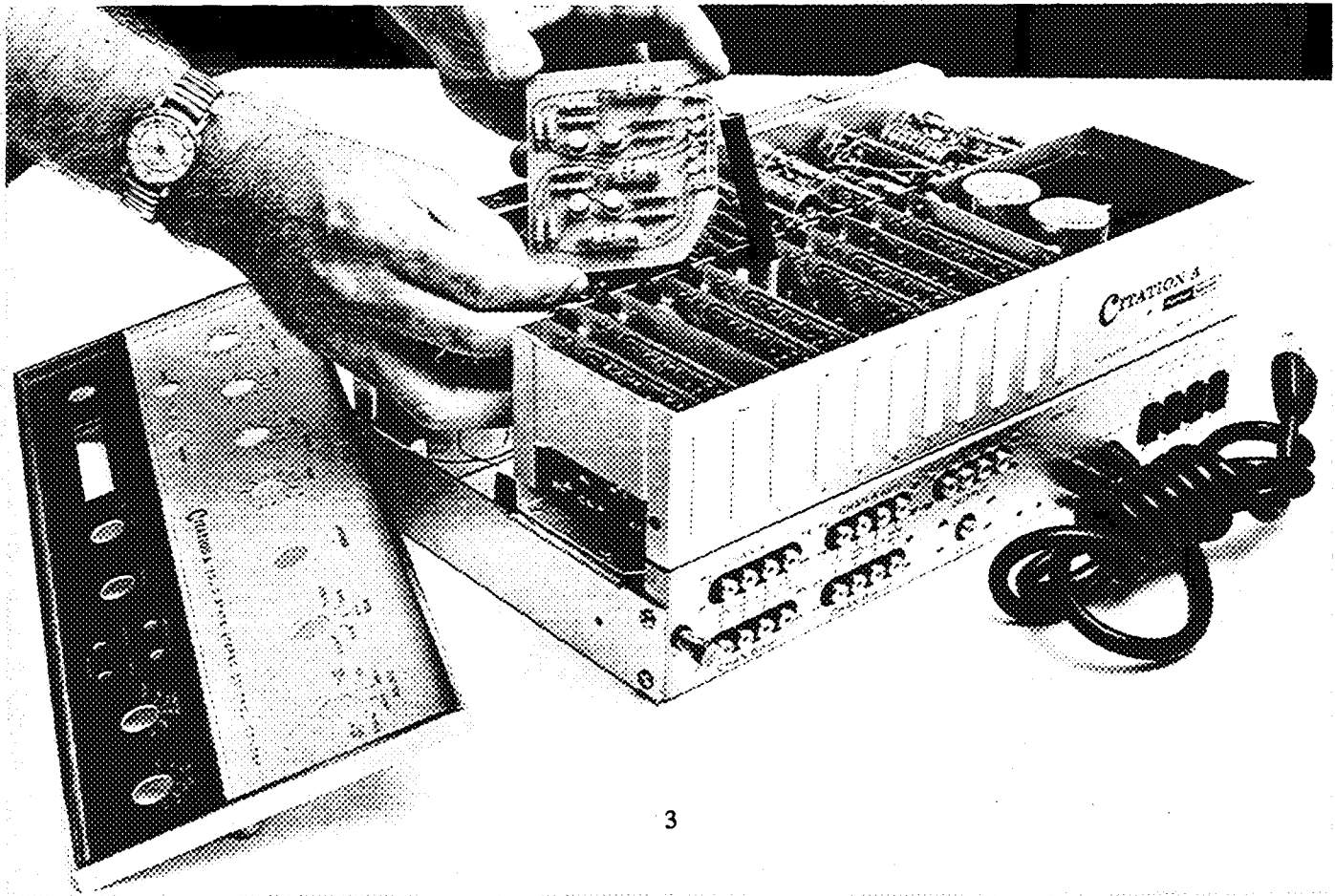
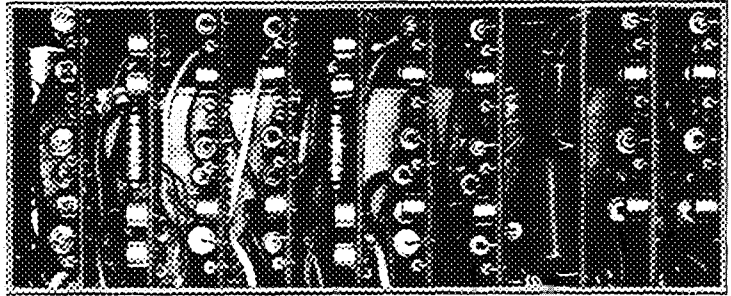
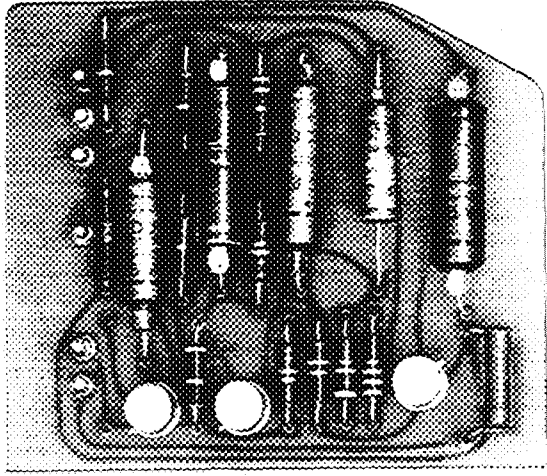
In today's complex age of missiles and computers the use of modular construction is an absolute necessity to guarantee reliability and consistency in meeting performance specifications. Using this technique as the criteria for its design, and working in close co-ordination with the engineers of the Harman-Kardon Data System Division, the Citation A became a reality.

The Citation A consists of eleven modules each mounted on its own separate glass-epoxy board. The

choice of glass-epoxy as the base material for these modules was determined by the fact that it has excellent electrical, mechanical and temperature characteristics and is far superior to many other industrial laminates available.

Each modular board is individually tested to exacting performance specifications.

The computer type rack panel which is incorporated into the Citation A assures mechanical strength, and presents a neat functional package with easy accessibility.



POWER SUPPLY

In order to maintain the stability of a preamplifier with a 1 cps frequency cut off, the power supply of the preamplifier must have perfect regulation.

The Citation A consists of two full wave rectifier systems; one to obtain the positive (+) voltage and one to obtain the negative (-) voltage required by the preamplifier.

The output of the positive half of the rectifier is fed into a transistor voltage regulator circuit utilizing a series type regulator.

The output of the negative half of the rectifier is similarly fed into a duplicate circuit.

Variations in either line voltage or load currents can cause voltage fluctuations in a non-regulated supply.

The purpose of the regulator is to maintain a constant output at all times regardless of any changes in the line or load.

The supply also consists of four zener diodes which is a device which is operated in its reverse breakdown region.

The characteristics of these devices are such, that when operated in this region the voltage obtained across the diode is always constant.

They are then used to provide the precise operating voltages for the various circuits within the preamplifier.

AMPLIFIER MODULE

There are seven individual amplifier modules in the Citation A. The basic purpose of the module is to act as a stage of gain by amplifying the audio signal, and to isolate various functional stages such as tone controls, equalization networks, etc.

The module has a gain of 33 db (45 times), a rise time of 0.3 microseconds (flat to 3.5 mc) and a low frequency tilt of less than 1% (5 cycle square wave).

Its characteristics also include a low output impedance, approximately 50 ohms and a high input impedance, approximately 500,000 ohms.

Each module utilizes 34 db of overall feedback which results in unmeasurable distortion.

EMITTER FOLLOWER MODULE

The Emitter Follower is essentially used as an impedance transformer or impedance matching device, whenever a high impedance generator or source is required to feed a low impedance circuit.

The module has an input impedance of approximately 15,000 ohms and output impedance of approximately 50 ohms. It has no distortion, no gain and an unlimited frequency response due to 100% feedback.

The module includes the use of a special balanced type transistor circuit which allows the realization of unlimited frequency response due to the elimination of output coupling capacitors.

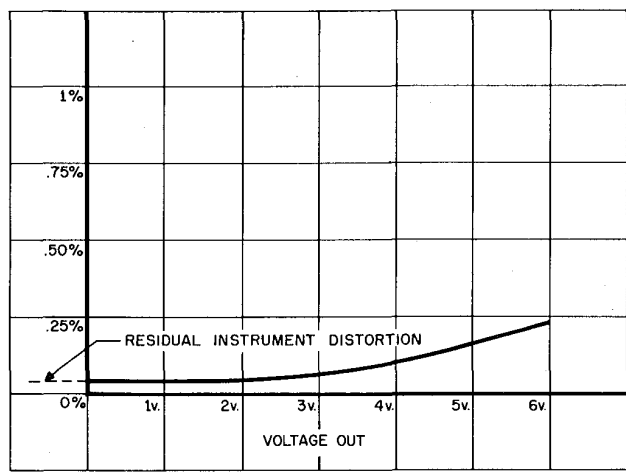
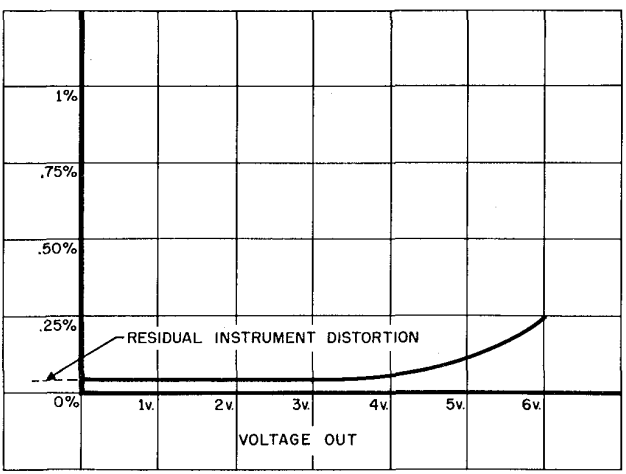
TIME DELAY MODULE

The basic purpose of the time delay is to insure that the preamplifier is disconnected from the basic amplifier until all the energy storing elements within the device have reached a steady state condition.

This is especially required on transistor units with extremely low frequency response because of the size of the coupling capacitors used on the amplifier modules.

When the preamplifier is first turned on there is approximately a 20 second time delay during which time the preamplifier is energized but no signal appears at the output terminals.

The type of relay used is a highly reliable, hermetically sealed, reed type device designed for high speed computer operation.



————— HARMONIC DISTORTION

REPRESENTATIVE CITATION A CURVES

————— INTERMODULATION DISTORTION

REPRESENTATIVE CITATION A CURVES

UNPACKING

After unpacking the Citation A, inspect it carefully for signs of transit damage. If damage is visible, notify your dealer at once. If the unit was shipped to you, notify the transportation company without delay. Please note that only the recipient can recover from the carrier for damages incurred during shipping.

WARRANTY

This warranty applies only to Harman-Kardon factory-wired sets. For the warranty and service policy applicable to Citation kits, see the Kit Construction book.

For a period of 2 years following the original date of purchase, all parts supplied with Harman-Kardon Citation units are guaranteed by the manufacturer to be free from defects in material and workmanship when put to normal use and service. This guaranty is specifically limited to the following conditions:

- (1) To validate the warranty, the warranty card accompanying each unit must be filled out completely and returned to the factory immediately following the date of purchase.
- (2) Harman-Kardon reserves the right to substitute replacement parts for any which may be found defective.
- (3) The warranty is effective only as to parts which are defective at the time of sale or become defective as the result of normal operation during the 2 year period following the date of sale.
- (4) This warranty is limited to those parts which are returned to the factory transportation prepaid, and in the judgment of Harman-Kardon are found defective under the terms of this warranty.

This warranty is in lieu of all other warranties, expressed or implied and of all other obligations on the part of Harman-Kardon. Harman-Kardon neither assumes nor authorizes any one else to assume for it any other liability in connection with the sale of this instrument.

NOTE: It is necessary to receive factory authorization before returning a set for repair. Write directly to us describing the specific difficulty, model and serial number of your unit. At times, by performing certain checks on your own you can save the expense of shipping the set to a warranty station or to the factory.

We reserve the right to refuse a unit at our factory or warranty station unless previous authorization has been given.

INSTALLATION PROCEDURE

Ventilation

The Citation A is well ventilated in itself, but sufficient space must be allowed around it to permit proper air flow. Install it in a manner to allow for unrestricted circulation. Do not cut off the air supply by putting books or other objects on or against it. Do not place the preamplifier directly above the power amplifier.

Installation

The Citation A may be easily installed in your cabinet by following the simple instructions on the mounting template supplied. Alternatively, a furniture-finished hardwood enclosure is available from your dealer as an optional extra.

Power Amplifier Connection

The Citation A Preamplifier was specifically designed for operation with any Citation Stereo Power Amplifier. However, it is eminently suited to driving any other stereo power amplifier, or a pair of monophonic power amplifiers. If two monophonic amplifiers are used, it is strongly suggested that they be a matched pair.

Two pairs of preamplifier output receptacles are provided. These can be used to drive two entirely separate stereo power amplifiers in different locations. Shielded leads with standard plugs are used for making the connections. These can be obtained from your dealer in the lengths required. Because the Citation A uses low-impedance emitter followers at the outputs, the power amplifier may be placed in any location up to forty feet from the Citation A.

When using a Citation Power Amplifier, connect from the Citation A CHANNEL A OUTPUT receptacle (either one) to the amplifier CHANNEL A INPUT. Then connect a second shielded lead from either of the Citation A CHANNEL B OUTPUT receptacles to the amplifier CHANNEL B INPUT. The remaining pair of Citation A output receptacles, A and B, can be used to drive a second stereo amplifier. If you are using a pair of monophonic amplifiers with the Citation A, connect one of the preamplifier CHANNEL A outputs and one of the CHANNEL B outputs to the inputs of these amplifiers.

If "center fill" is required in your stereo system, a monophonic amplifier can be added. Simply connect a shielded lead from the Citation A receptacle marked CENTER OUT to the input of the third-channel amplifier. This channel can also be used to provide remote monophonic operation.

Follow the instructions provided with your amplifier to connect your speakers. Do not turn on the equipment until you have made these connections.

Tape Head Playback Connection

Connect a pair of shielded leads from your stereo tape deck to the A and B TAPE HD input receptacles on the INPUT CHANNEL strip at the rear of the Citation A. A monophonic tape deck can be connected to either of these inputs. If your tape player has its own preamplifier, do *not* use the TAPE HD inputs. The next paragraph describes this type of connection.

Tape Recorder Playback Connection

Connect the outputs of your stereo tape recorder to the A and B TAPE AMP input receptacles on the INPUT CHANNEL strip at the rear of the Citation A. The output of a monophonic tape recorder can be connected to either the A or B TAPE AMP input.

Tape Recorder Recording Connection

Provision is made on the Citation A to permit the recording of any program material. Connect the left input of your stereo tape recorder to the TAPE OUT receptacle A on the Citation A, and connect the right recorder input to TAPE OUT receptacle B. A monophonic recorder can be connected to either of the TAPE OUT receptacles. These connections should be kept as short as possible to avoid loss of treble response.

Tuner Connection

Connect a pair of shielded leads from the FM multiplex output receptacles of your stereo tuner to the Citation A TUNER Channel A and B receptacles.

If you are using a monophonic AM/FM tuner, connect it to the Chanel A TUNER receptacle.

Record Player Connection

A stereo record player has two shielded output leads. If your record player uses a magnetic stereo cartridge, connect to the PHO 1 MAG receptacles, A and B, on the INPUT CHANNEL strip at the rear of the Citation A. If your reord player uses a ceramic or crystal stereo cartridge, connect to the PHO 2 receptacles, A and B, marked CER-XTL on the INPUT CHANNEL strip. The additional pair of PHO 2 receptacles, A and B, marked MAG can be used for an additional record player with a magnetic stereo cartridge; however, only

one pair of the PHO 2 receptacles can be used at a time. Thus, if you have two record players, one with a ceramic or a crystal cartridge and the other with a magnetic cartridge, the first would be connected to the PHO 2 input receptacles and the second to the PHO 1 receptacles. The choice between the two is then made by means of the FUNCTION switch on the front panel.

A monophonic cartridge of the magnetic type can be connected to either the A or B input receptacle of either PHO 1 MAG or PHO 2 MAG. Use either of the PHO 2 CER-XTL receptacles for a monophonic cartridge of the ceramic or crystal type.

Auxiliary Input Connections

A pair of high-level input receptacles, marked AUX on the INPUT CHANNEL strip, is provided for connecting an additional program source. This is for use in more complicated systems where a second tape player, telephone line, or other input source is desired.

Power Connections

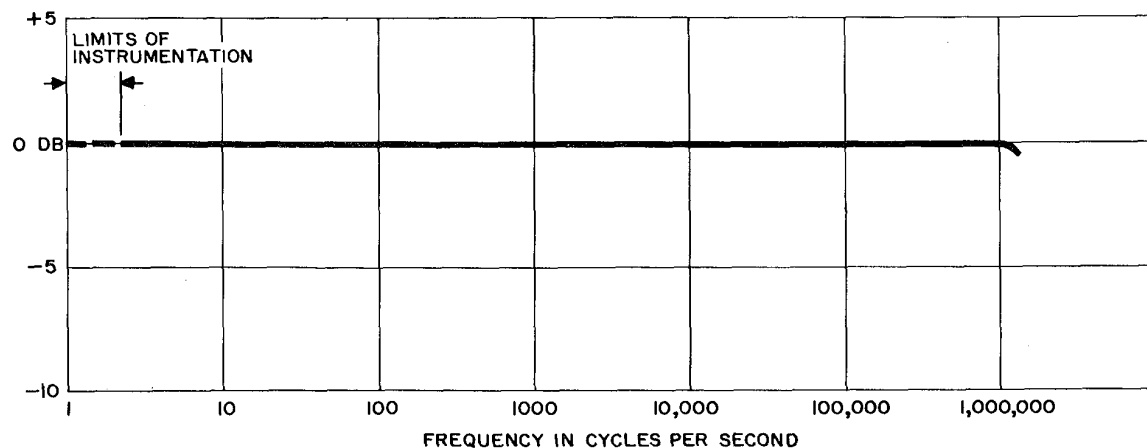
Plug the AC cord into any outlet furnishing 105-125 volts 50 or 60 cycle AC current. Four AC convenience outlets are provided on the rear deck of the Citation A, one being live at all times and three live only when the power switches are on.

Plug the power cord of your Citation basic (or other basic amplifier) into the switched outlet marked AMPL only. Plug the power cord of your tuner or tape recorder into either of the other switched outlets. The heavy-duty Citation A power switches will then control the preamplifier and the associated equipment.

Plug the power cord of a turntable or record changer into the unswitched receptacle; these devices are best controlled by their own switches, in order to avoid the possibility of flats on idler wheels.

Ground Connections

It may be desirable to provide a common ground between the Citation A preamplifier and any associated equipment. This can be accomplished by using the special terminal marked "GND" on the rear deck of the chassis.



CITATION A FREQUENCY RESPONSE, 0 db = 2.00 VOLTS
MEASURED AT AUX INPUT, 600Ω GENERATOR

L5317220

OPERATION

Description of the Controls

Each control in a well designed and honestly considered high fidelity instrument has a specific useful function. A brief explanatory note on the relationship of the various front panel controls will doubtlessly prove useful in organizing and clarifying them for you.

Power Switches

The Citation A contains two heavy duty rotary power switches. One switch system is used to control the preamplifier and all associated equipment, with the exception of the record player, which should be controlled by its own switch. The other switch (power AMP) is used to control the power amplifier only, should you wish to turn the amplifier off when listening with headphones. Both of these switches have individual indicator lights on the front panel.

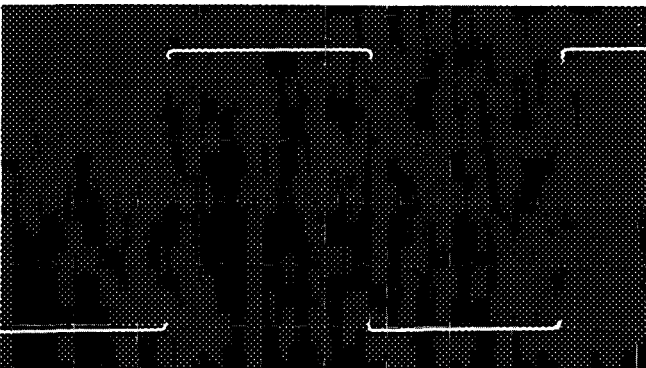
Gain Control

The GAIN control adjusts the volume level of any program material fed into your stereo system. It is a four section, close tracking control which simultaneously adjusts both channels. Its effect can be modified by the CONTOUR switch.

Contour Switch

One of the limitations of human hearing is its tendency to lose sensitivity to the very low pitched sounds, as the program sound level is reduced. It is this characteristic (known as the Fletcher-Munson effect) which causes one to play music programs at high listening level in order to experience the full rich tone available from fine modern recordings. The Harman-Kardon CONTOUR switch compensates for the Fletcher-Munson effect, thus eliminating high listening levels as a requisite for full enjoyment of reproduced music.

REPRESENTATIVE CITATION A SQUARE WAVE 20 C.P.S.



ACTUAL OSCILLOSCOPE PHOTOGRAPH

For low-level listening throw the CONTOUR switch either IN or OUT depending on your listening preference. You will note how the low frequencies become more apparent while the volume level remains unchanged when the CONTOUR switch is IN.

Balance Control

The nature of stereo reproduction is such that it requires two identical channels to attain the highest degree of faithfulness and spatial distribution. Any variation in the efficiency of one channel as compared to the other will disturb this relationship. Since there may be slight differences between the two speakers, the tape heads, etc., the Citation A includes a control to balance one channel against the other. Sufficient range is covered by this control to permit rebalancing of the overall system even in cases where major unbalance exists. This control may be set anywhere within its range to attain system balance. It does not necessarily have to be set in the exact vertical position.

When the BALANCE control is properly set, the apparent sound source will lie in a broad area between the two speakers. When the BALANCE control is rotated to the right the sound will move to the right and when the control is rotated to the left, the sound will move to the left.

Mode Switch

The MODE switch selects between stereo operation, where a stereo program source is available, and monophonic operation utilizing the full power of both channels and both speakers when the program source is monophonic only.

This switch has five positions. STEREO is the normal position for all stereo use of the system. BLEND is a second stereo position, which permits inclusion of the BLEND control in two channel systems to eliminate "hole in the middle" effect.

The A & B position is used in a full stereo system when playing monophonic records or tape. MON A and MON B positions are used when the amplifiers and speakers are in full stereo connection, but the tuner or other input device is monophonic only and is connected to Channel A or Channel B inputs, respectively. Under these conditions, the combined power of both channels is utilized.

Function Switch

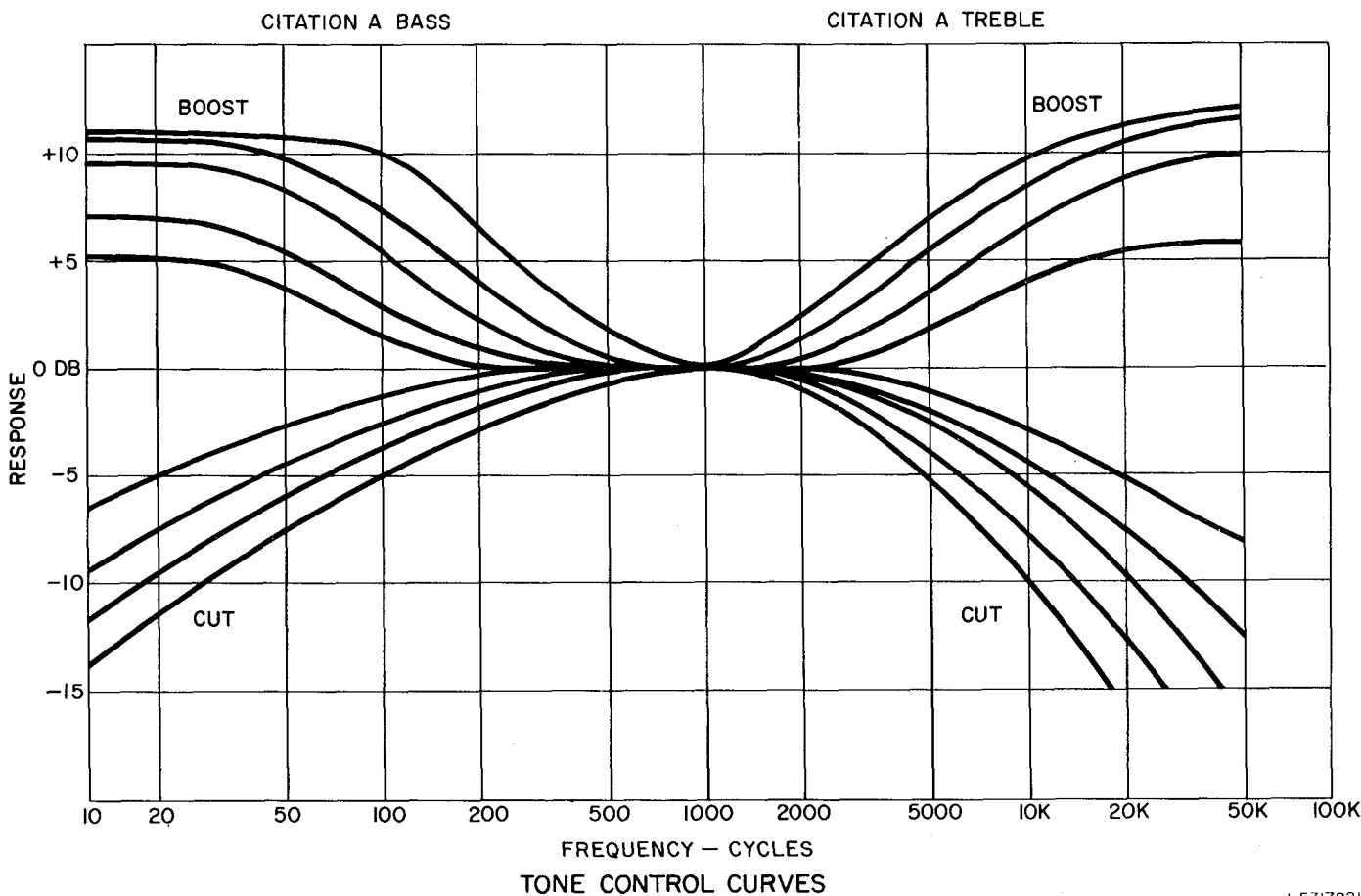
The FUNCTION switch selects the desired type of program source and has six positions. It permits the choice of either of two record players or two tape players, a tuner, or any program source connected to the AUX (auxiliary) input receptacles. Since the switch acts on both channels simultaneously, it controls six pairs of inputs for stereo or twelve individual inputs for monophonic operation.

Tone Controls

Individual BASS and TREBLE controls are provided for each channel to make it possible to balance the tone quality of one channel against the other. This, of course, is of major importance only if the two speakers, two program sources or room acoustics are unbalanced. For most stereo listening, however the tone settings of both channels will be the same. A further application of the separate controls is in monophonic listening, to make it easy to switch from one monophonic source operating through Channel A to another

operating through Channel B, having the tone settings previously adjusted.

Note that the tone controls are professional-type switches. Each control has a zero position, where it is completely disconnected from the circuit, thereby eliminating any inherent transient distortion and phase shift. All other positions have a carefully computed hinge point, slope and contour, to provide specific benefits. Once the most satisfactory setting of these controls has been determined for any type of input, or for specific recordings, it is easy to return to that setting at any time.



L5317221

Turnover and Rolloff Switches

In order to assure good reproduction of the wide range of frequencies in music and to make necessary adjustments for the limitations of the recording technique, record manufacturers have found it necessary to modify the actual frequency response of the music while it is being recorded. Thus, to avoid overcutting and consequent distortion, a measured and deliberate reduction is effected in low frequency response by selecting a "turnover frequency" and by recording attenuated response below that point. To assure optimum signal-to-noise at the high frequency end when the record is

played at home, the highs are deliberately exaggerated during the recording process. A measured and deliberate boost is effected above a certain frequency. This combination of deliberate exaggeration at the low and high ends of the frequency response can be expressed in a "recording curve". When the record is played a mirror image of that curve should be available so that the ideal "flat" response may be achieved. Since several different recording curves have been used in the past (differing with respect to the turnover points and the degree of emphasis or de-emphasis), a choice of playback curves is provided in the Citation A preamplifier.

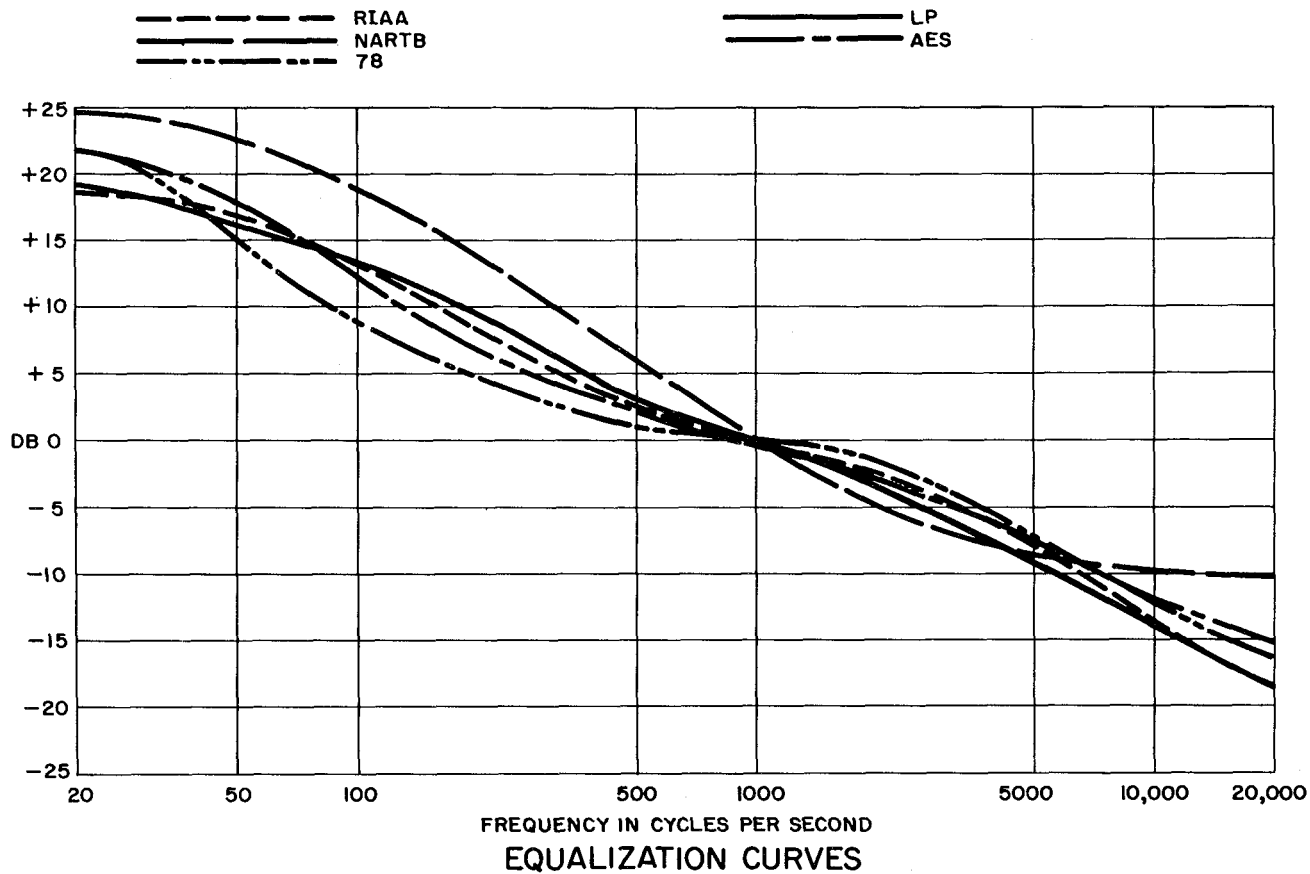
For all stereophonic records set both switches in the RIAA position.

For all other recordings, the proper position may be determined by the marking on the record jacket, by reference to one of the high fidelity magazines, or by trial and error. In general, all old 78 RPM recordings will sound best with both switches set to the 78 position. Extremely worn or noisy discs may sound better with the ROLLOFF switch set to one of the more clockwise positions, however, older American LP's may require the LP setting of both switches, while older European

LP's may require the ROLLOFF switch set to LON (London).

Tape recordings will sound best in most cases with the two controls set to the two tape positions, if the tape player has no preamplifier. If the tape player does have its own preamplifier, these controls will be inoperative and the equalization is provided by the tape playback preamplifier.

The position on the turnover switch labeled "TAPE ADJ" is used when you wish to match a specific tape head to the preamplifier for optimum performance.



L5317219

Tape Equalization Adjust Controls

These controls are used in conjunction with the "TAPE ADJ" position of the turnover switch.

They can be used to exactly match the tape head and connecting cable capacitance to the preamplifier giving optimum results for playback at $7\frac{1}{2}$ and 15 IPS or they may be used to set the preamplifier equalization for $3\frac{3}{4}$ IPS operation.

Lacking a test tape, $3\frac{3}{4}$ IPS performance is obtained with the screwdriver slot of the mid frequency control set vertically and the hi frequency control turned to the full clockwise position. Program listening tests may indicate changes for better listening balance with a particular cable length and head assembly. The $7\frac{1}{2}$ or 15

IPS adjustments can be A-B checked against the fixed equalization position and again a more pleasing listening balance may be obtained in a particular case.

Formal procedures for these adjustments require a test tape and a level indicator meter (VU or A.C. vacuum tube voltmeter).

A "test tape" is a calibrated pre-recorded tape similar in purpose and nature to the more familiar "test records" used for checking phonograph performance. It contains a number of calibrated single tones throughout the audible frequency spectrum. Measurement and adjustment of system performance can be made by playing this tape. Adjustments may be made aurally although much improved accuracy can be obtained by the use of a meter.

The meter may be connected to either one of the output jacks at the rear of the preamplifier or to the headphone jack on the front panel. The stereo reverse switch can be used to transfer between channels. One usually monitors through the loudspeakers to hear and follow the instructions for its use, which are recorded on the tape.

There are generally three sets of signals on a test tape. First a high frequency signal for checking and adjusting the azimuth of the playback head of the tape machine. Second a 250 cycle or 400 cycle tone indicating maximum reording level on the tape and third the series of tones covering the frequency spectrum at a lower signal level (usually -10 V.U.).

If the tape heads are in adjustment, it is only this third series of tones which is of use here. The preamplifier gain control should be set to the reference tone to give a convenient reading on the meter and also a comfortable listening level. This meter reading is considered "zero" and for properly equalized playback response should read the same for each of the series of tones.

Start with the "mid frequency" controls in the center (slot vertical) and the "hi frequency" controls fully clockwise. As the tape is played adjust the "mid frequency" controls to produce a "zero" reading on the meter at the 5000 cycle test tone.

After the "mid frequency" controls have been set adjust the "hi-frequency" controls to give a "zero" meter reading at a higher frequency tone, usually 10,000 or 12,000 cycles.

Play the tape through to check these adjustments. It may be necessary to make minor re-adjustments of the controls to obtain "flat" frequency response.

If the high frequency control does not permit adjustment to the "zero" level on the meter, the azimuth adjustment of the playback head should be checked. If the hi frequency response is still "down" the cable capacitance of the head leads may be too high for optimum performance. Replacing these leads with "low capacity" cable will improve performance.

NOTE: The tape playback head MUST be cleaned before performing these adjustments.

Low Cut Switch

The LOW-CUT switch has two positions. In the IN position it filters out the very low bass frequencies, to eliminate unwanted elements such as turntable rumble and low frequency acoustic feedback.

The OUT position is for the purist, with the finest of accessory equipment. All filters are removed, and the low frequency response is limited only by the power amplifier. (The Citation II basic amplifier has a low frequency cut off of 2 cycles.)

Blend Control

In a two-channel stereo system, where the room acoustics or too-wide spacing of the speakers cause the sound to come from two sources rather than from one very broad source, a "hole in the middle" effect exists. By setting the MODE switch to the BLEND position, and then rotating the BLEND control, the two apparent sound sources will be electrically "moved together", eliminating the hole in the middle. The BLEND control should be turned up just enough to satisfy the listener—

further increase will degrade the stereo effect by eliminating all separation. Alternately, and as a more professional approach, a third-channel monophonic amplifier and speaker may be installed, the third speaker to be located midway between the first two. (See installation section.) The BLEND control then controls the volume of the third speaker without affecting the other two, and may be adjusted to create the illusion of a wall of music. For this method, the MODE switch is set to the STEREO position.

Channel Reverse Switch

Most of the newly recorded stereo discs are standardized, in that the material recorded by the left microphone will be reproduced by your left speaker, and the material recorded by the right microphone will be reproduced by your right speaker. This was not true of the older stereo recordings. While one company may have presented the orchestra with the bass on the right and the violins on the left, another company may have reversed the procedure. Most music lovers prefer to listen to an orchestra in the same relative orientation as in the concert hall. The channel reverse switch makes this possible by reversing the apparent location of the instruments in an orchestra to duplicate the original setting.

Tape Monitor Switch

Two TAPE OUT put receptacles are provided on the Citation A, to permit making tape recordings of any program being carried by the system. The signals appearing at these receptacles are unmodified by any of the controls, except for the TURNOVER and ROLL-OFF switches, so that the tape recorder can provide its own proper equalization, while the main system is adjusted to the listener's taste. However, if the tape recorder is the professional type, with a third head for monitoring, it is possible to compare the recording with the original while it is being made. Simply push the TAPE MONITOR switch to the IN position to listen to the recording and back to the OUT position to listen to the original.

Stereo Headset Receptacle

The stereo headset receptacle is provided should you desire to listen to your system through headphones rather than with your speakers. It is recommended that the impedance rating of the headphones be 400 ohms or greater. You may use headphones with a lower impedance however the distortion of the preamplifier will be slightly higher. When the stereo headphones are inserted the "POWER AMPL" off/on switch should be thrown to the off position as the amplifier is not necessary for the operation of the headphones.

GENERAL OPERATING NOTES

The many operating controls of the Citation A may at first seem elaborate and complicated. However, each is essential for some specific function, and a little practice and study of these instructions will soon familiarize you with their proper application. Don't be afraid to experiment—as long as the GAIN control is at a reasonably low setting to avoid overloading the speakers or breaking your lease, no damage can be done.

When you have found the most pleasing positions for the tone controls, write them down. Mark your record jackets with the best TURNOVER and ROLLOFF settings.

FUSE

In the event of a potentially damaging failure of components, the Citation A is protected by a ½ amp —3 AG fuse, located on the rear deck. If this fuse blows, replace only with one of the same rating. Replacing with a fuse of a higher rating will not protect the preamplifier, and may result in severe damage, which will not be covered by the factory warranty.

ENCLOSURE

A beautiful walnut enclosure is available as optional equipment for this preamplifier. The enclosure is supplied with complete installation instructions.

REPLACEMENT PARTS LIST

<i>Part Number</i>	<i>Description</i>	<i>Price</i>	<i>Part Number</i>	<i>Description</i>	<i>Price</i>
FT5316625	Power Transformer	\$11.60	ER5316603	Power Switch	2.00
P5316726	Terminal Board (Audio)	1.95	RV5316609	Tape Hd. Equalizing Control	1.25
P5316419	Terminal Board (Power Dist.)	4.30	RV5316610	Tape Hd. Loading Control	1.25
ER5316604	Function Switch	4.55	EP5316445	4 Pos. Push Button Switch	4.95
ER5316607	Mode Switch	2.60	ZCOM2970	Fuse, ½ A	.25
ER5316613	Rolloff Switch	3.35	Z3284115	Silicon Rectifier	1.85
ER5316614	Turnover Switch	4.40	JE5316659	Electrolytic — 2000/50V, 500/30V	5.25
ER5316605	Bass Switch	4.20	JE5316660	Electrolytic — 2000/50V, 500/25V	4.95
ER5316606	Treble Switch	3.00	Z5316778	Zener Diode (10V)	3.55
RV5316608	Blend Control	2.05	Z5316779	Zener Diode (20V)	3.55
RV5316612	Gain Control	14.45	Z5316780	Zener Diode (27V)	3.55
RV5316611	Balance Control	3.15			

RV5316612