ASHLY

# SC-63 / SC-66A · PARAMETRIC EQUALIZERS
# OPERATING INSTRUCTIONS

ASHLY AUDIO INC.

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We thank you for your expression of confidence in Ashly products. The unit you have purchased is protected by a two year warranty. To establish the warranty, be sure to fill out and mail the warranty card attached to your product.

Fill out the information below for your records.

Model Number________________ Serial Number________________

Dealer____________________ Date of Purchase____________

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____________________ Phone____________________

Salesman____________________

Other information:________________________________

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## INTRODUCTION

As soon as reproduced audio appeared on the scene, the need for tone controls was apparent; a common problem has always been loss of frequency extremes. Early equalizers were simple bass and treble controls which were used to extend frequency response a bit. This type of tone control is powerless when dealing with specialized acoustical problems. Movie people of the thirties designed equalizers to deal with mid-range frequencies and used them for specific problems of intelligibility. These "dialogue equalizers" along with other special effects devices such as sound effects filters are examples of equalizers designed to solve specific problems.

Graphic Equalizers were the first universal tone controls, providing a piece-wise approximation of total frequency response. All of these equalizers have a common limitation, some of the characteristics of equalization are fixed. For example, the center frequency and sharpness for each band of a graphic are pre-determined. This leads to an immediate frustration because these characteristics are never exactly appropriate. (What do you do when you need a fader right between two sliders on a graphic?)

In the late sixtys, the first parametric equalizers were developed by George Massenburg at ITI. Parametrics provide independent and continuous adjustment of all three possible characteristics: amplitude, center frequency, and bandwidth. As a result, virtually any desired frequency response may be obtained with no restrictions imposed by the equalizer itself.

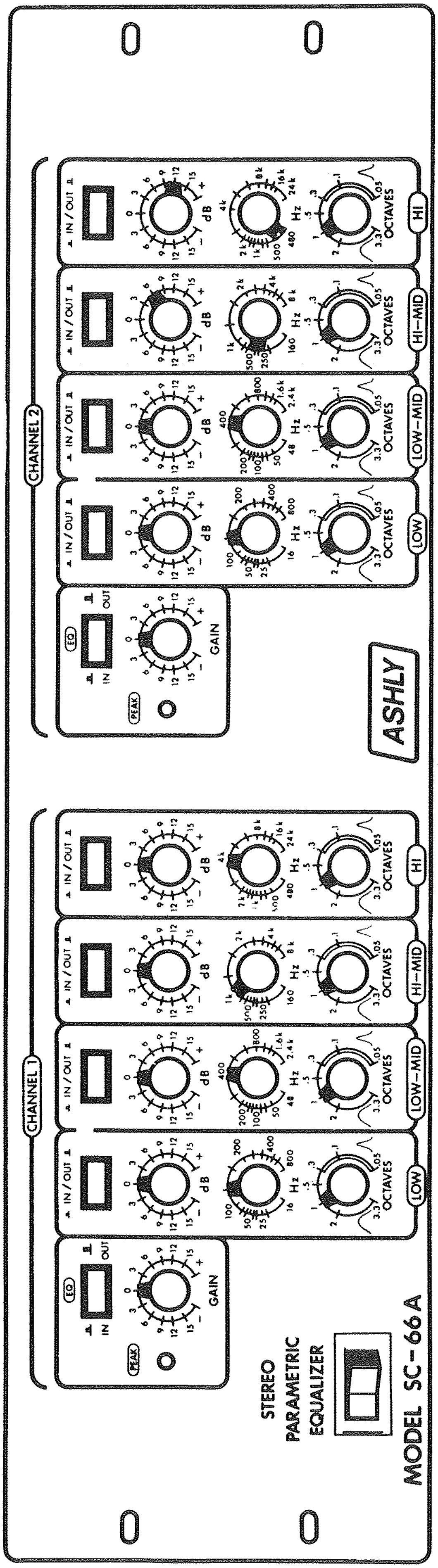
The Ashly Audio SC-63 and SC-66A parametric equalizers are the result of years of research and development. They are the most flexible and powerful tool yet developed for modifying audio frequency response. As such, they can solve audio problems previously considered insurmountable, and can provide tone control action to exactly suit particular needs. Of course, they also require a greater understanding of the equalization process than simpler tone controls.

We ask that you please read this instruction manual thoroughly before operation so that you may realize all the features and benefits that the SC-63 and SC-66A parametric equalizers have to offer.

## UNPACKING

As a part of our system of quality control every Ashly product is carefully inspected before leaving the factory to ensure flawless appearance. After unpacking, please inspect for any physical damage. Save the shipping carton and all packing materials, as they were carefully designed to reduce to a minimum the possibility of transportation damage should the unit again require packing and shipping. In the event that damage has occurred, immediately notify your dealer so that a written claim to cover the damages can be initiated.

THE RIGHT TO ANY CLAIM AGAINST A PUBLIC CARRIER CAN BE FORFEITED IF THE CARRIER IS NOT NOTIFIED PROMPTLY AND IF THE SHIPPING CARTON AND PACKING MATERIALS ARE NOT AVAILABLE FOR INSPECTION BY THE CARRIER. SAVE ALL PACKING MATERIALS UNTIL THE CLAIM HAS BEEN SETTLED.


STEREO
PARAMETRIC
EQUALIZER
MODEL SC-66A
ASHLY
CHANNEL 1
CHANNEL 2
PEAK
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LOW
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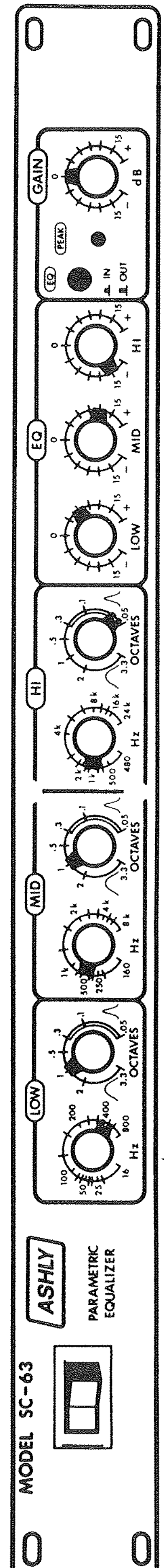

MODEL SC-63
ASHLY
PARAMETRIC
EQUALIZER
LOW
MID
HI
EQ
GAIN
PEAK
IN
OUT
dB
Hz
OCTAVES

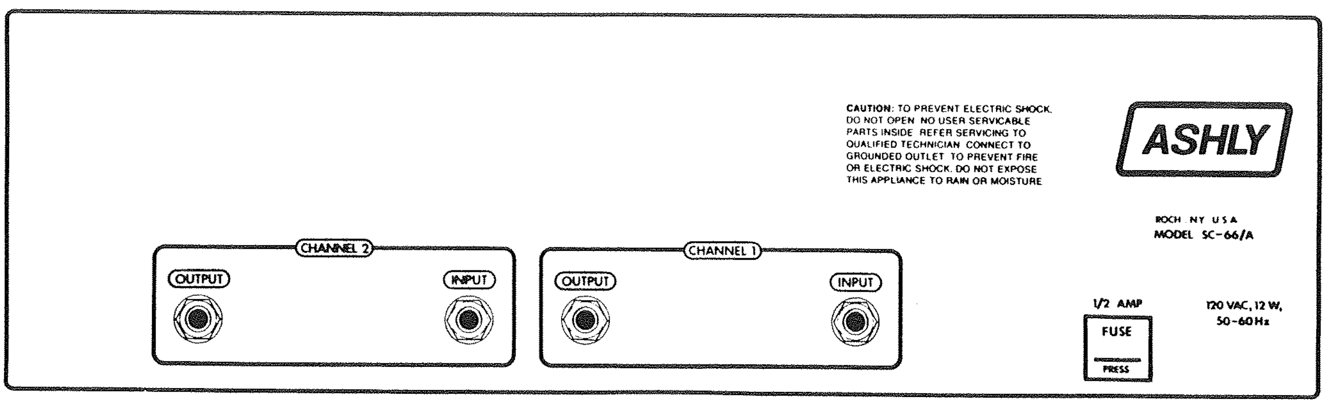
## INPUT, OUTPUT, AND POWER CONNECTIONS

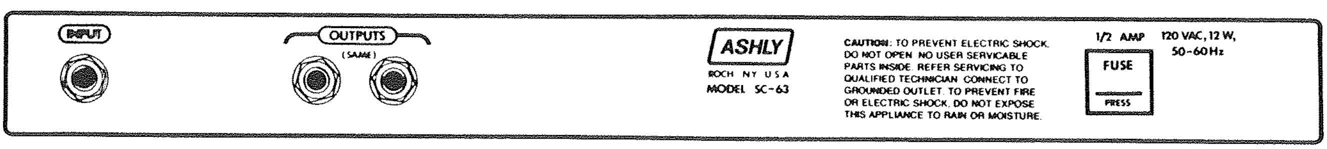
This equalizer should be connected to a 3 wire grounded outlet supplying 120 Volts, 50-60 Hz. Power consumption is 12 watts.

The **INPUT** is a 10K ohm active balanced type on a standard stereo phone plug. The (+) or in-phase connection is on the tip and the (-) or out-of-phase connection is on the ring. When feeding the equalizer from unbalanced sources, connect the signal hot to the tip (+) and the signal ground to the ring (-). To use the input as a common unbalanced type, simply use a mono phone plug in the usual way. (See Definition Of Terms, "Wiring", page 17.)

The **OUTPUT** connections are standard 1/4" phone jacks and mate with a standard phone plug such as a switchcraft 280. For rack mounted unbalanced audio systems the output ground may be separated from the case ground by using a stereo phone plug for the output connection. The output ground is then wired to the ring of the stereo phone plug for the output connection. The output ground is then wired to the ring of the stereo plugs rather than the sleeve. In this manner, **ground loops** in the rack may be **eliminated.** This output can be fed to a balanced input by wiring the (+) input to the tip, the (-) input to the ring, and the shield to ground.

If this equalizer is used in a monaural system, channels 1 and 2 of the SC-66A may be cascaded to utilize all eight bands of equalization. Connect the input signal to channel 1 input, connect channel 1 output to channel 2 input, and take the output signal from channel 2 output. If the audio ground plug isolation is needed for rack mounting, use a stereo phone plug jumper to connect channels 1 and 2.



## EXPLANATION OF PARAMETRIC EQ AND OUR CONTROLS

A Parametric Equalizer consists of several filter sections connected together each capable of continuous and independent adjustment of: (1) AMPLITUDE, (2) CENTER FREQUENCY, and (3) BANDWIDTH.

On the SC-66A, these controls are mounted vertically below individual in/out switches, see figure A.

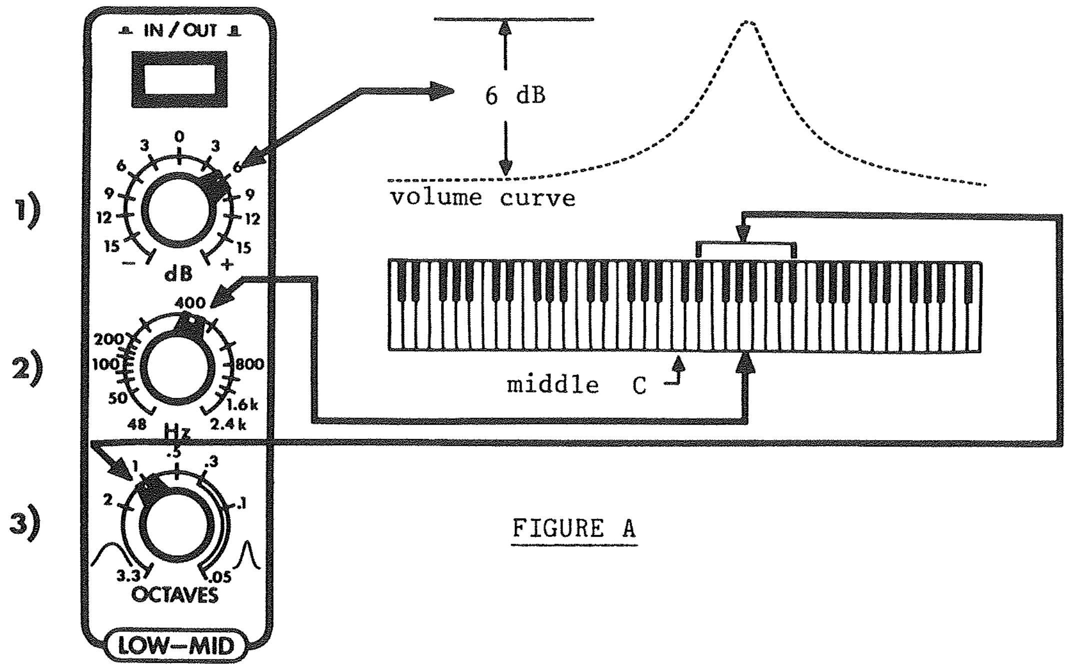



FIGURE A

On the SC-63, these controls are mounted horizontally with center frequency and bandwidth controls grouped together and amplitude controls for three bands grouped together, see figure A-1.

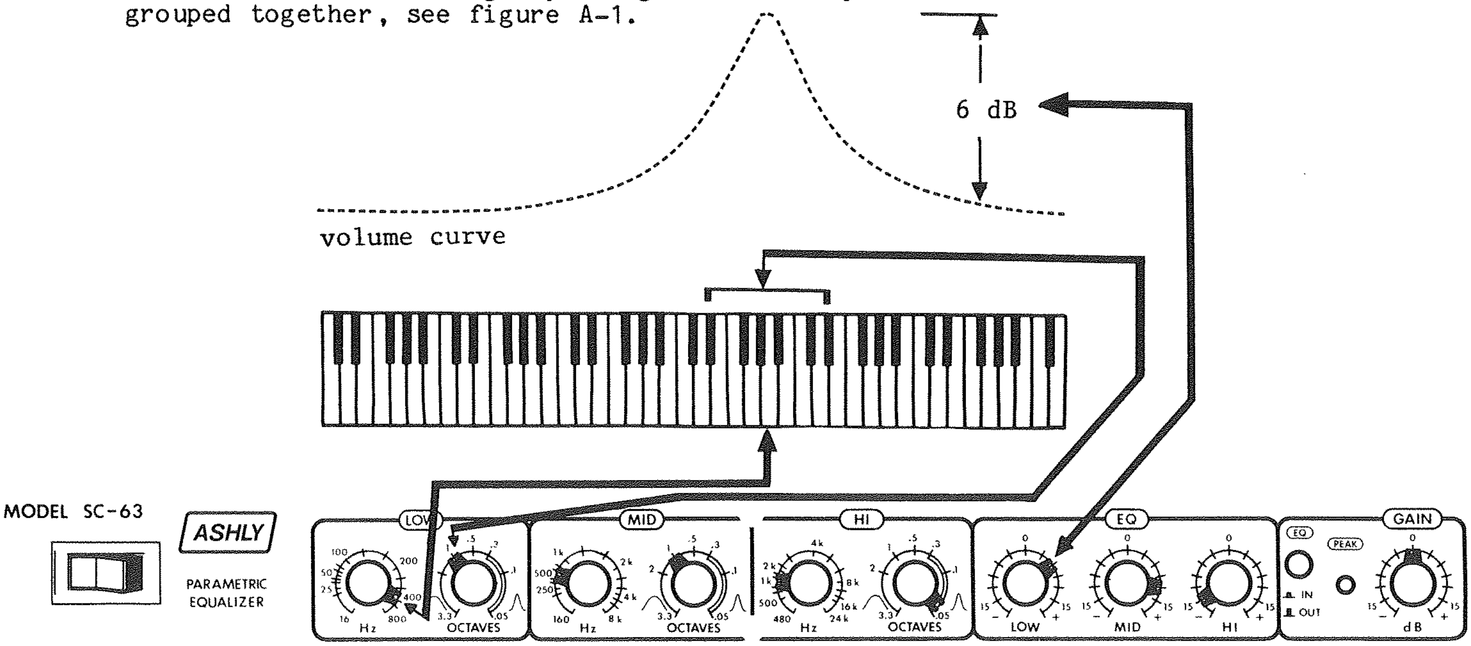



Figure A-1

The (1) AMPLITUDE control (boost-cut) increases or decreases the volume of notes selected by the center frequency and bandwidth controls. Maximum effect is in the middle of those notes. (see volume curve in figures A and A-1)

The (2) **CENTER FREQUENCY** control selects the frequency to be most affected. A clockwise turn moves the frequency up the keyboard, counter clockwise moves it down.

The (3) BANDWIDTH control (sometimes refered to as "Q") selects the number of notes to be affected (approximately 1 to 40). Figure B shows the frequency response plot, above a piano keyboard of a typical octave graphic equalizer with the 500 Hz slider boosted 12 dB.

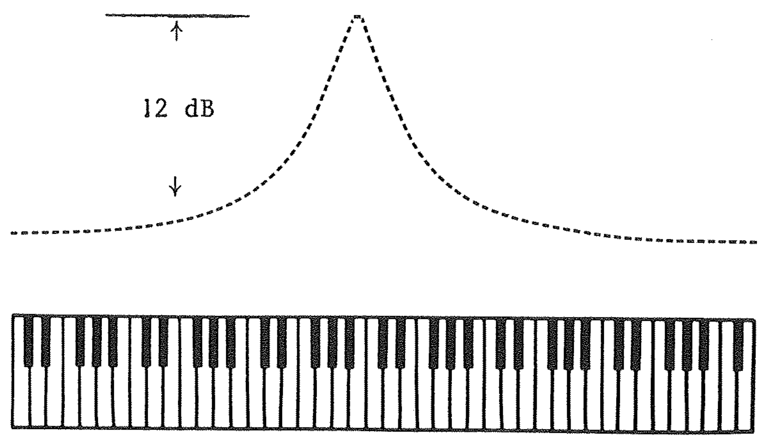



FIGURE B

Practically any frequency response setting of a graphic equalizer can be duplicated with the SC-63 and SC-66A parametrics. To get the same response plot as Figure B, simply set the (1) AMPLITUDE control at 12 dB, the (2) **CENTER FREQUENCY** control at 500 Hz, and the (3) BANDWIDTH control at 1 octave (see figure C).

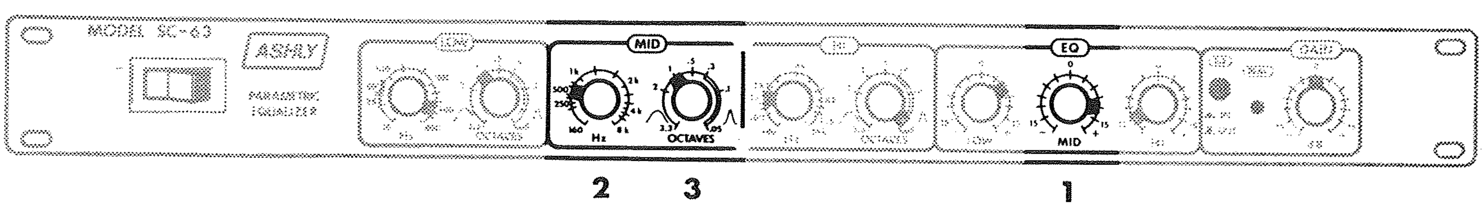



FIGURE C

The net result is: 500 Hz, or approximately the note "B", is boosted 12 dB and the frequencies 1/2 octave above and below 500 Hz (1 octave bandwidth) are boosted 6 dB (half the maximum boost).

The advantage however, is not that we can duplicate what a graphic does, but rather extend our frequency response plot to affect from nearly one note, to forty notes (.05 to 3.3 octaves). See Figure D.

Other controls on the SC-66A (see front panel layout on page 3) include; power switch, master equalization in/out switches, (NOTE: Switch winks to green when depressed to "in" position. The switch winks to black in the out position, sets the gain to unity and defeats all equalization in the channel) individual equalization in/out switches, (NOTE: Switch winks to amber when depressed to "in" position and affects only the band below it) gain control to compensate for insertion gain or loss due to the equalization process (+15 dB), "peak" indicator light (one for each channel) monitors all potential overload points in the channel and illuminates when the level at one of these points reaches 6 dB below clipping.

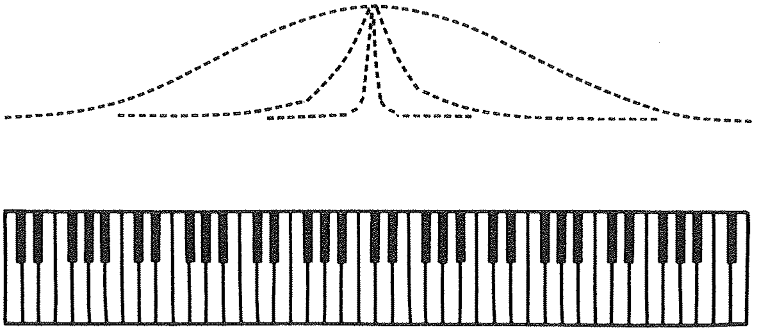


FIGURE D

## FEEDBACK SUPRESSION STEP BY STEP SETUP INSTRUCTIONS

1. Set all gain controls on your parametric to 0, and make sure your master equalization in/out switch(s) are in the out position.

2. Set all equalization controls on your mixer to flat.

3. Make sure no microphone is pointing directly into a speaker.

4. If you have a limiter, adjust its threshold to hold feedback at a low level.

5. Estimate the relative volume relationships between your vocal microphones with individual channel sliders on your mixer, and use the master fader on your mixer to bring the system into feedback. Make sure all other channel faders are turned down. Do not let the feedback go uncontrolled or you might damage your high frequency drivers!!

6. Match the first prominant feedback note with an instrument or your ears, and check the note against the frequency number on page 20, and reduce system gain back to about 6 dB before feedback.

7. Select the most appropriate control band (LOW, MID, HI).

8. Set your center frequency control to about an octave below the frequency number you select.

9. Set the bandwidth control to full sharp (full clockwise).

10. Set the amplitude control of the chosen band to +6 dB.

11. Depress the master equalization in/out switch, and the appropriate band in/out switch (SC-66A only), to the in position.

12. Very slowly rotate the center frequency control towards the selected feedback frequency until feedback occurs. If feedback does not occur, increase system gain and repeat step 11.

13. Repeat step 12 until you are sure you have the control centered on exactly the desired frequency.

14. Move the amplitude control from +6 dB to -6 dB.

15. Increase the gain on your mixer until the next feedback sounds. If the same feedback frequency occurs again, reset the amplitude control to -9 or more, as needed.

16. Repeat steps 6 thru 15 to notch out new feedback frequencies for maximum gain before feedback.

## NARROW BAND STEP BY STEP SETUP INSTRUCTIONS

1. Set all gain controls on your parametric to 0, and make sure your master equalization in/out switch(s) are in the out position.

2. Set all equalization controls to flat.

3. Switch out all other equalization devices.

4. Estimate the problem frequency area (use the chart on page 20 for help).

5. Select the most appropriate control band (LOW, MID, HI).

6. Set your center frequency control to about an octave below the frequency number selected.

7. Set the bandwidth control to .1 or sharper depending on what you are trying to correct.

8. Set the amplitude control of the chosen band to +6 dB.

9. Depress the master equalization in/out switch, and the appropriate band in/out switch (SC-66A only) to the in position.

10. Very slowly rotate the center frequency control towards the estimated problem area until it is emphasized.

11. Repeat step 10 until you are sure you have the control centered on exactly the desired frequency.

12. Re-adjust the amplitude control down from +6 to the (-) side until the desired response is achieved. (Re-adjustment of the bandwidth control may also be necessary)

## MEDIUM TO WIDE BAND STEP BY STEP SETUP INSTRUCTIONS

1. First, determine the frequency area of your problem.
2. Decide how wide a spread of frequencies are involved. (see chart on p. 20)
3. Determine whether your problem is an excess or a deficiency of a frequency range.
4. Set the bandwidth control in accordance with #2 (usually from .5 to 3 octaves).
5. Set the amplitude control to accentuate your problem as determined in #3 either +6 dB or -6 dB.
6. Turn the center frequency control until your problem seems to be at its worst (re-adjustment of the bandwidth control may be necessary).
7. Reset the amplitude control to correct your problem.

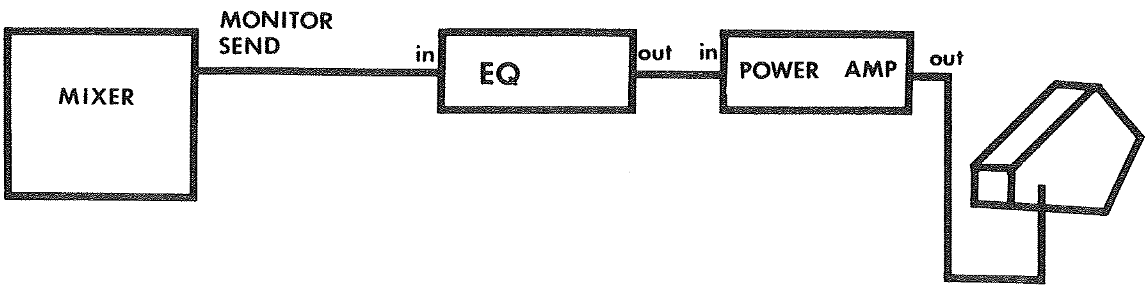
## APPLICATION AND OPERATION FOR SOUND REINFORCEMENT

**ITEM:** Monitor System Feedback Control

Probably one of the most widely used functions of parametric equalizers is in the control of feedback. The SC-63 and SC-66A's controls make it easy to locate and notch out feedback frequencies. It is necessary however, to first be able to understand the relationship between a given pitch and its corresponding frequency number.

For this reason, the graph on page 20 showing a standard piano keyboard and music score with the indicated frequencies should be refered to and memorized, especially if the only test equipment you have are your ears.

The illustration below diagrams a typical monitor system hook-up. After the addition of an SC-63 or SC-66A to your monitor system, it is possible to get 4 dB to 10 dB of additional gain before feedback. Use the narrow band step by step setup instructions on page 8 as a guide to get you started. The actual procedure you use may differ greatly after months of experimenting and use!




A TYPICAL MONITOR SYSTEM SIGNAL PATH

ITEM: Front System Speaker or Room Resonance Problems and Feedback Control

Once you become familiar with the controls on your parametric, you will find it much easier to get the desired results from your system. Use the narrow band step by step setup instructions on page 8 as a guide to get you started.

**NOTE:** The maximum volume of your monitors and front system before feedback should be determined if the steps on page 8 are followed. If you are still not satisfied, here are some suggestions that might help:

Place all main system speakers and monitors such that they do not "see" any microphones that are to be fed to them.

Keep all guitar and keyboard stage amps away from vocal microphones.

Keep your stage volume as low as possible so your sound person has something to work with out front.

Work vocal microphones as close as possible.

When you can't hear yourself, have everyone else turn down rather than you turning up. You have already determined the maximum volume of your PA system, and if your fellow band members feel they can't turn down any more, collect donations to pay for upgrading your present system, ie; separate mixes for monitor speakers, more directional microphones, better speakers, etc.

ITEM: Shaping The Overall Sound Of Your System To Improve Response

Many PA systems use several bands of graphic equalization for frequency response adjustment. For many situations, one band of parametric equalization could achieve better results.

Say, for example, that the response of a high powered horn and driver that you are using has a noticeable 3 dB rise in the frequency area from around 1,100 Hz to 3,500 Hz. If you attempted to correct your problem with a 1/3 octave graphic equalizer, you would need to move five separate controls. Visually, what looks like a nice smooth curve on the front controls of a graphic, turns out to be a very bumpy curve as illustrated below.

This occurs because each control has a fixed bandwidth. Combinations of filters can not generate the smooth curve of one variable filter.

Using one band of parametric with the frequency control set in the middle of the problem area (approx. 2,200 Hz), the bandwidth control at 2 octaves, and the amplitude control set at -3 dB, you get a frequency response plot that will more accurately correct the problem.

Broad bandwidth problems are much easier to solve with an Ashly parametric equalizer. On a graphic you can be trying to manipulate as many as 10 to 15 controls to find the right response. In fact, in many instances a graphic equalizer can't correct the problem anyway simply by the nature of its design.

Use the medium to wide band step by step setup instructions on page 9 to assist you in correcting your problem. Remember to give careful consideration determining your problem, rather than trying to find a problem that may not exist!

## OPERATION FOR USE AS AN INSTRUMENT TONE CONTROL

Graphic type equalizers, while initially easier to operate, can not be as accurate as the SC-63 and SC-66A parametric equalizers. A parametric equalizer gives unrestricted control of all the notes your instrument can produce. The chart on page 20 shows the relationship between the notes you play and the corresponding frequency number. There should be very little guess work in deciding how you want to equalize your instrument once this chart is used. Most musicians are already familiar with the terminology A = 440 Hz. By learning the numbers of other notes, you take the guess work out of knowing where to set the controls on your parametric.

A common problem with many instruments is uneven response from low to high notes. On string instruments you usually have one or more strings that are not as loud, when picked or bowed, as the other strings. On wind instruments; mouthpieces, reeds, and even weather changes can alter response. Most keyboard players really have response problems!!

A general rule to follow is: listen carefully to your instrument and determine what the response problems are. Try first, to correct them with conventional means! Use equalization as a last resort, unless you are trying to achieve special effects. The less equalization you use, the easier it will be to get the "right" sound every time.

Use the narrow and medium to wide band setup suggestions on pages 8 & 9 to get started.

Patch your equalizer into your system after the pre-amplification stage. Most instrument pick-ups and direct outputs have too low a level to properly drive the input of the SC-63 or SC-66A. An effects loop will work well, or if you are feeding a mixer, use a direct in/out patch point on the channel.

## APPLICATION AND OPERATION FOR RECORDING

The SC-63 and SC-66A can be used to augment or replace existing equalizers, and compensate for system inadequacies. Experimentation with the SC-63 and SC-66A will yield better results if the set up suggestions, trouble shooting information and reference graph information in this manual is read.

**ITEM:** Critical Monitor Speaker Response Adjustment

Most control room monitor speakers have fairly smooth frequency response. However, room acoustics can radically alter the freqency response you hear. By using an SC-63 or SC-66A patched in before the monitor speakers amplifier (or electronic crossover, if applies) you can compensate for room resonances or dead spots. For exact results, some type of realtime analyzer, or scope with a frequency sweep should be used.

**ITEM:** Individual Input Channel Equalization

Most mixing consoles offer some type of equalization for each channel. Unless it is a full parametric type, it can not offer the complete flexability of the SC-63 or SC-66A. If your mixer does have a parametric type equalization section, the SC-63 or SC-66A will add more flexability with a minimum of expense.

Many mixers have individual channel direct in/out patch points that will interface with the SC-63 and SC-66A. If yours does not, a simple modification can usually be done by a qualified technician.

Use the SC-63 or SC-66A to give instruments, playing in the same range, individuality. (ie; boost the fundamental frequencies of one instrument and the harmonics of the other) By becoming familiar with the chart on page 20, guess work will be minimized.

Use the setup suggestions on pages 7 - 9 as a general guide.

**ITEM:** Obtaining Better Results From Reverb And Effects Units

By patching an SC-63 or SC-66A right before a reverb or effects unit, you can minimize high and low frequency loss. Boost those ranges before they go into a reverb or effects unit to compensate for losses. Isolating frequency ranges that go into an effects unit can also make an effect more pronounced.

## APPLICATION AND OPERATION FOR BROADCASTING

**ITEM:** Announcer Voice Enhancement

Only full parametric type equalization as offered by the SC-63 and SC-66A can modify voice frequencies accurately.

Patch in an SC-63 or SC-66A after the voice microphone has been pre-amplified. Determine the frequency range of the announcers voice (100 Hz to 500 Hz fundamental, 800 Hz to 2,500 Hz presence area). Cut frequencies above and below, and boost fundamentals for warmth, or boost the presence area for definition. Experiment with bandwidth settings to match the exact range of the announcers voice.

Sibilance problems (8,000 to 12,000 Hz range) can be notched out without affecting the overall sound. Use the step by step instructions on page 8 as a guide.

**ITEM:** Record Wear Equalization Correction

After several plays, a record loses its high frequency response. The SC-63 and SC-66A can be tuned to bring back some of that lost high frequency without altering frequencies that are still ok. Use the setup suggestions on page 9 as a guide.

## APPLICATION AND OPERATION FOR DISCOTHEQUES

Graphic type equalizers, while initially easier to operate, can not offer the unrestricted tone control of the SC-63 and SC-66A. Old time radio effects, bass guitar emphasis, frequency selected voice over effects, and modified speaker response curve settings represent only a few of the many possibilities. Experimentation with the SC-63 and SC-66A should only be done after you are completely familiar with all the controls.

**Note:** The SC-63 and SC-66A offer complete equalization control, and this same complete control in the wrong hands can destroy a speaker system.

**ITEM:** Placement Of An SC-63 Or SC-66A In A Discotheque System

The SC-63 or SC-66A must always be patched into a system before the speaker amplification stage, and after the pre-amplification stage of a mixer. (an effects loop or somewhere between your mixer and amplifier will work well) Use only shielded cable for connections to and from the SC-63 and SC-66A.

## APPLICATION AND OPERATION FOR MOTION PICTURE SOUND AND TV

The variability of every equalization parameter offered by the SC-63 and SC-66A make its selection for use in this field an excellent choice. State of the art technology, internal modular design and external rugged construction make the SC-63 and SC-66A reliable and easily serviceable.

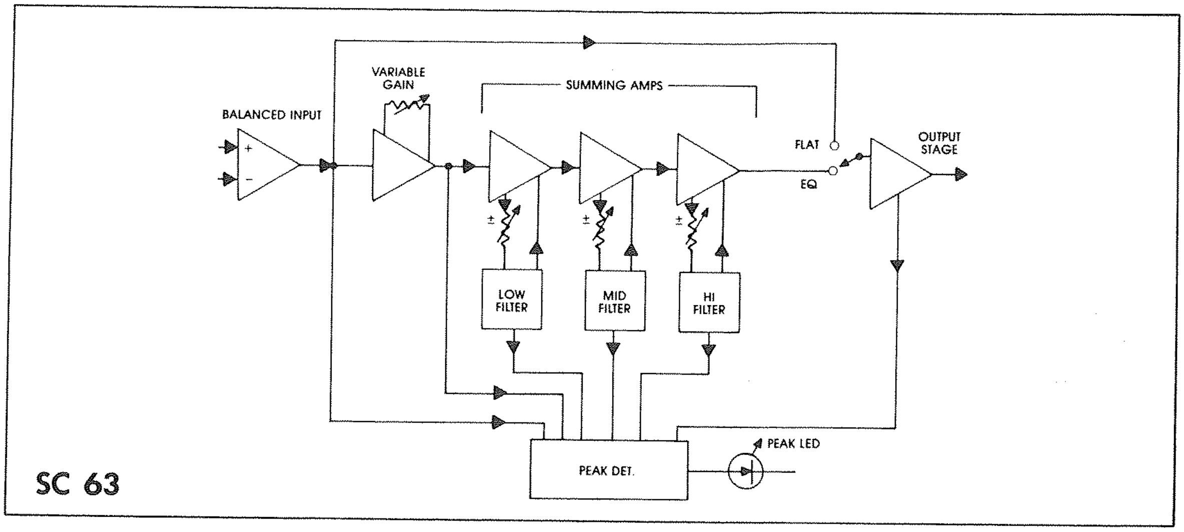
**ITEM:** Removal Of Unwanted Sounds

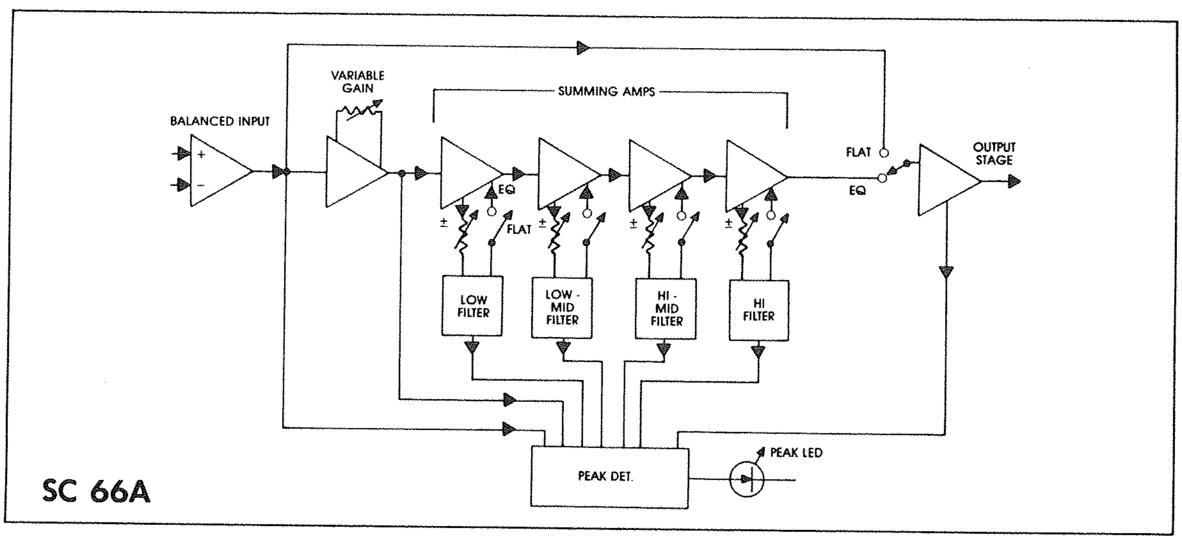
Determine if unwanted sounds cover a very narrow range or a medium to wide range, and use the appropriate set up suggestions on pages 8 and 9.

**ITEM:** Voice Enhancement

See: Application And Operation For Broadcasting on page 12.

Refer to other operating suggestions on pages 9 - 13.




## CIRCUIT DESCRIPTION

The heart (and primary expense) of the SC-66A and SC-63 is a unique bandpass filter circuit. Basically a "state-variable" type, this filter is trimmed and optimized to provide excellent transient response and a wide-range bandwidth adjustment. Each filter in the SC-66A and SC-63 can be tuned over a 50:1 **frequency range (about 5 1/2 octaves)** and a 70:1 bandwidth range with no more than a 2 dB amplitude error at center frequency. At its sharpest setting, the filter has a "Q" of about 35 and generates a response curve with 3 dB points only 1/20 octave apart, making feedback control possible with no audible side effects. The filters are manufactured as individual, plug-in units to make servicing easy.

Each filter is placed in the feedback loop of a summing amplifier to produce the desired frequency response. Since a separate summing amplifier is used for each band, no interaction between bands occurs.

## DEFINITION OF TERMS AS USED IN THIS MANUAL

ACTIVE

Electronic circuits which use devices such as transistors and integrated circuits, and which are capable of voltage and power gain as well as loss. Circuits using only resistors, capacitors, transformers, etc., are referred to as passive.

AMPLITUDE

The voltage level of a signal. May be measured in volts or decibels. Generally corresponds to the volume or intensity of an audio signal.

BALANCED

A 3-wire circuit arrangement in which two conductors are designated as signal lines (+ and -), and the third is a shield and chassis ground. The signal lines are of opposite polarity at any given moment, and are of equal potential with respect to ground. Balanced input amplifiers are used on all Ashly SC series products to improve hum and noise rejection. Jumpering signal minus (-) to ground provides an unbalanced input.

CENTER FREQUENCY

The frequency (or pitch) at which a filter is most effective. In a parametric equalizer, it refers to the frequency where a particular boost/cut control has maximum effect.

dB

A unit by which audio levels can be COMPARED. Often thoroughly misunderstood are the concepts that decibels represent the level of a signal compared to some reference level (15 dB cut means a certain level less than a previous level --- the absolute level of the signal need not be known), and that decibels are a logarithmic unit.

Some handy numbers to remember when dealing with decibels:

+3 dB = Double Power
+6 dB = Double Amplitude, Quadruple Power
+10 dB = 10X Power
+20 dB = 10X Amplitude, 100X Power

dBm

A unit of measurement in decibels where 0 dBm = a power level of 1 milliwatt into a 600 ohm load. Originally defined by the telephone company to measure line levels.

dBV

Decibel Volts, an update of the dBm definition where 0 dBV = the same voltage level as 0 dBm, but with no regard to power or impedance. 0 dBV = 0.778 Volts. This unit is much more appropriate for modern audio equipment with high impedance inputs and low impedance outputs.

DISTORTION

Generally refers to ANY modification of an audio signal which produces new frequencies which were not in the original. Examples are harmonic distortion, where a circuit adds overtones to a fundamental signal, and intermodulation or IM distortion, where two frequencies beat together to produce sum and difference frequencies.

FEEDBACK

Generally refers to any process where an output is in some form routed back to an input to establish a loop. Negative feedback tends to be be self stabilizing, while positive feedback causes instability.

FILTER

A circuit designed to pass some frequencies, but not others. There are three general categories of filters: High-pass, band-pass, and low-pass. The high-pass filter passes frequencies above a certain limit, the low-pass passes frequencies below a limit, and the band-pass passes one group of frequencies without passing those above or below. Our equalizer uses band-pass filters, crossovers use high and low-pass filters.

FREQUENCY

The repetition rate of a waveform. Frequency is measured in Hertz. One cycle per second (cps) is one Hertz (Hz). The higher a note on a musical scale, the higher its frequency.

FREQUENCY RESPONSE

Refers to relative gain and loss at various frequencies across the audio band. May be illustrated by a graph called a frequency response plot, usually graphing decibels vs. Hertz or octaves.

HERTZ (Hz)

The unit of frequency measurement. (Formerly called Cycles-per-Second: this explains it perfectly)

HEADROOM

Refers to the increase in level above normal operating level that can be obtained without clipping. Usually expressed in dB.

IMPEDANCE

Essentially the AC equivalent of resistance. It describes the drive capability of an output, or the amount of drive required for an input at any given signal level.

KHz

Kilohertz. 1,000 Hertz.

LEVEL

The magnitude of a signal, expressed in decibels or volts.

LINE LEVEL

Meaning "somewhere around 0dBV" as opposed to MIC level of around -40dBV.

OCTAVE

A logarithmic unit to compare frequencies. +1 Octave means double frequency, -1 Octave means half frequency.

OHM

The unit of electrical resistance or impedance.

PHASE

Describes how well two signals are in step. In-phase means that positive and negative peaks in two signals occur together, while out-of-phase means they do not occur together. Variations in signal timing as well as polarity can make two signals in or out of phase, or anywhere in between. Phase is usually measured in degrees where 0 degrees is in-phase, 180 degrees is out-of-phase, and 90 degrees is in between (sometimes called quadrature).

PREAMPLIFIER

The first stage of amplification, designed to boost very low level signals to line level.

Q

A measurement describing the sharpness or broadness of a filter.

SHELVING
Describes an equalization action where all frequencies above or below a particular frequency are boost or cut.

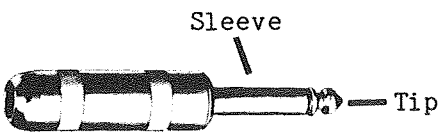
TRANSIENT
A sudden burst of energy in an audio signal, such as a breath blast in a microphone, the sound of a snare drum, or a deep scratch in a record. Transients frequently reach peak levels of 10 to 30 dB above standard operating level, and may cause distortion or even damage to equipment.

UNITY GAIN
Output level = Input level.

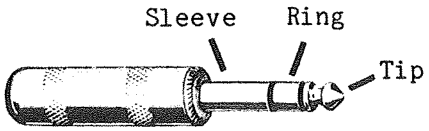
WIRING, PHONE PLUG AND XLR
A stereo phone plug is wired + to the tip, - to the ring, and shield to the sleeve. For a mono phone plug, combine - and shield, and connect both to the sleeve.

An XLR (3 Pin) connector is wired + to pin 3, - to pin 2, and shield to pin 1.

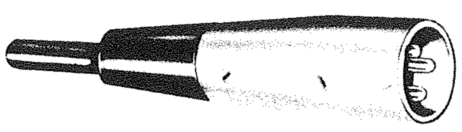
Mono Phone Plug:
(for unbalanced inputs and outputs)




Stereo Phone Plug:
(for balanced inputs and outputs)




XLR Type Connector:
(Male Shown)



## TROUBLE SHOOTING TIPS

NO OUTPUT

Check AC power - is the pilot light on? Check in/out connections, are they reversed? Are you sure you have an input signal?

EQ CONTROLS DO NOT DO ANYTHING

Is the master eq in/out switch in? Maybe the bandwidth setting is too sharp to produce an audible change. Do not expect the center frequency and bandwidth controls to have an effect if the amplitude control is set at "0", or if the in/out switches are switched out.

PEAK LIGHT FLASHES OR STAYS ON ALL THE TIME

If the peak light flashes, the signal level to the equalizer is too high. Turn down the gain. If it is on all the time, disconnect the input and output cables. If it is still on, the unit must be returned for service.

DISTORTED SOUND

This will only be caused by too much signal (which will show on the "peak" light. If the light is not flashing, there is an overload somewhere else in the chain. Adjust the relative gain of each component in your chain to keep everything at a comfortable level.

EXCESSIVE HUM OR NOISE

Hum will usually be caused by a "ground loop" between components. Try using the suggested balanced input and output hook-ups if the other pieces of equipment used in conjunction with your equalizer have balanced inputs and outputs. Noise can be caused by insufficient drive signal. Make sure you are sending a nominal 0 dBV line level signal to the equalizer.

**NOTE:**

UN-SHIELDED CABLES, IMPROPERLY WIRED CONNECTIONS, AND CABLE WITH BROKEN STRANDS (SHORTS ETC.) ARE THE MOST COMMON PROBLEMS.

WHEN IN DOUBT, GET IN TOUCH WITH YOUR ASHLY DEALER, OR CALL THE FACTORY DIRECT - (800)828-6308. In New York State dial (716)544-5191.

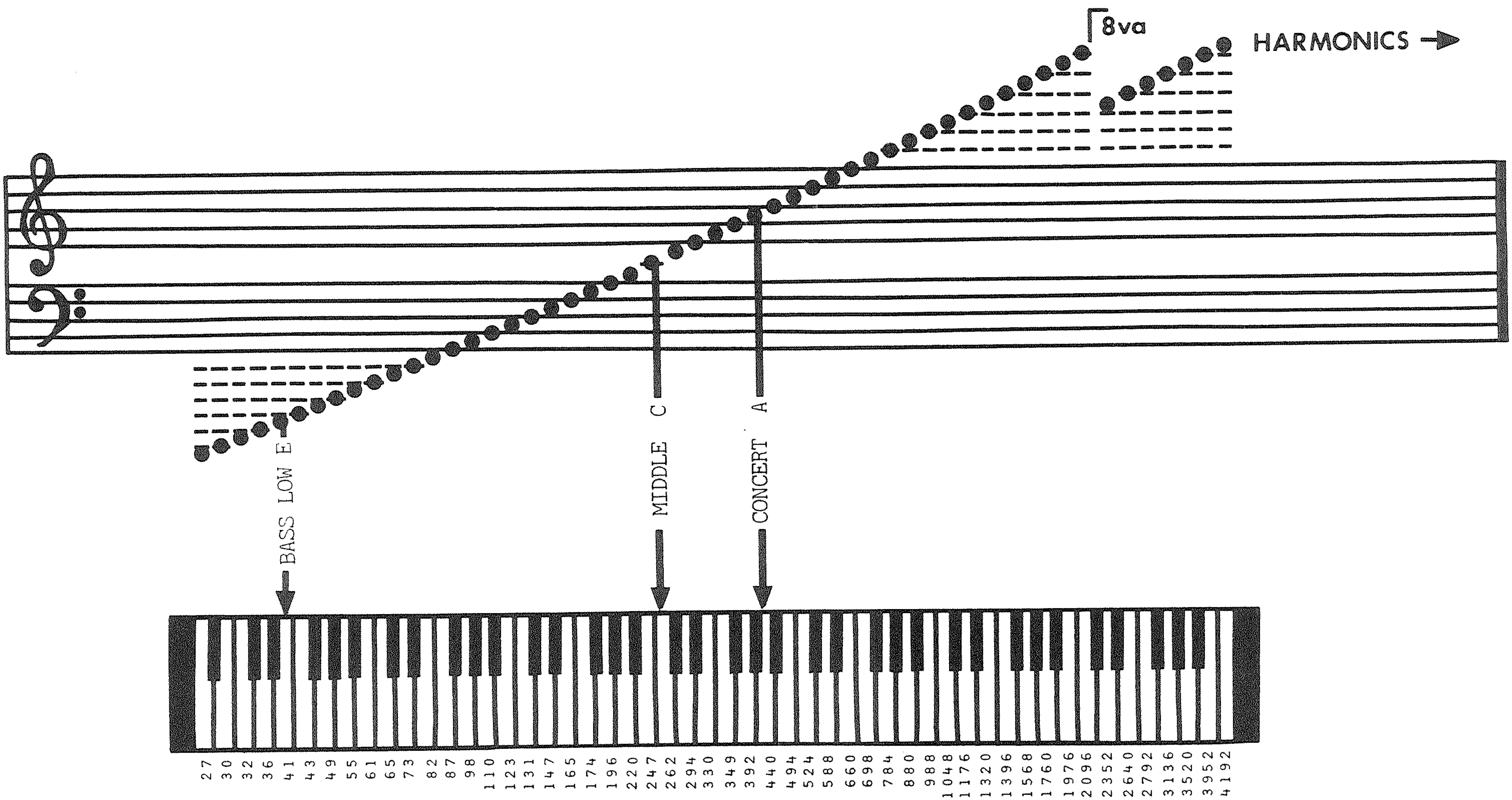
## SPECIFICATIONS

### SC-63

| | |
|---|---|
| CONTROLS | |
| Master | |
| Master Gain | ±15 dB |
| Master Defeat Switch | |
| Per Band | |
| Amplitude | ±15 dB |
| Frequency | |
| (low) | 16Hz-800Hz |
| (mid) | 160Hz-8kHz |
| (high) | 480Hz-24kHz |
| Bandwidth | 3 1/3 oct - 1/20 oct |
| INPUT IMPEDANCE | 10k Ω active balanced bridging |
| OUTPUT IMPEDANCE | 50 Ω, term with 600 Ω or more |
| MAX. IN-OUT LEVEL | +20dBm (+5 dBm at max. boost, full sharp) |
| FREQUENCY RESPONSE | ±.5dB 20Hz-20kHz |
| DISTORTION | < .5% THD, +10 dBV 20Hz-20kHz |
| HUM AND NOISE | -87dBV (eq in) -95dBV (eq out) |
| POWER | 120 VAC, 50-60Hz, 5W |
| SIZE | 19"L x 1 3/4"H x 6"D |
| SHIPPING WEIGHT | 8 lbs. |

### SC-66A

| | |
|---|---|
| CONTROLS | |
| Master | |
| Master Gain | ±15dB |
| Master Defeat Switch | |
| Per Band | |
| Amplitude | ±15 dB |
| Defeat Switch | |
| Frequency | |
| (low) | 16Hz-800Hz |
| (low-mid) | 48Hz-2.4kHz |
| (hi-mid) | 160Hz-8kHz |
| (high) | 480Hz-24kHz |
| Bandwidth | 3 1/3 oct - 1/20 oct |
| INPUT IMPEDANCE | 10k Ω active balanced bridging |
| OUTPUT IMPEDANCE | 50 Ω, term with 600 Ω or more |
| MAX. IN-OUT LEVEL | +20dBm (+5 dBm at max. boost, full sharp) |
| FREQUENCY RESPONSE | ±.5dB 20Hz-20kHz |
| DISTORTION | < .05% THD, +10 dBV 20Hz-20kHz |
| HUM AND NOISE | -87dBV (eq in) -95dBV (eq out) |
| POWER | 120 VAC, 50-60Hz, 5W |
| SIZE | 19"L x 5 1/4"H x 6"D |
| SHIPPING WEIGHT | 12 lbs. |




Actual frequency numbers (Hz) may vary from the above chart.