

# Sound Shaper Two



OWNERS MANUAL



## SPECIFICATIONS

<b>CONTROL RANGE</b>	± 12 dB Min.
<b>FREQUENCY RESPONSE</b>	5 Hz to 100KHz ± 1 dB
<b>CONTROL FREQUENCIES</b>	30, 50, 90, 160, 300, 500, 900, 1600, 3000, 5000, 9000, 16000 Hz
<b>GAIN</b>	Unity ± 1 dB
<b>OUTPUT</b>	9 Volts RMS Min. into 10 KOHM Load
<b>HARMONIC DISTORTION</b>	0.02% at 1 Volt Output (20—20 KHz)
<b>INTERMODULATION DISTORTION</b>	0.02% at 1 Volt Output
<b>HUM &amp; NOISE</b>	85 dB Below 1 Volt (Input Shorted)
<b>OUTPUT LOAD</b>	10 KOHMS or Greater
<b>OUTPUT IMPEDANCE</b>	10 OHMS at 1 KHz
<b>INPUT IMPEDANCE</b>	75 KOHMS
<b>INPUTS</b>	2 Main, 2 Tape Monitor
<b>OUTPUTS</b>	2 Main, 2 Tape Out
<b>ACCESSORY POWER OUTLET</b>	Unswitched 200 Watts
<b>CONTROLS</b>	Power, Line-Record, Monitor, EQ-Bypass, Meter, 24 Frequency Controls (12 Per Channel) with Center "0" Detent for Setting to Flat Response
<b>SEMICONDUCTORS</b>	12 Transistors, 20 Diodes, 2 Integrated Circuits (1 C's)
<b>DIMENSIONS</b>	16-3/8" Wide (416 MM) x 6-3/4" Deep (172 MM) x 6-1/4" High (159 MM)
<b>SHIPPING WEIGHT</b>	13 LBS (6 KG)
<b>POWER CONSUMPTION</b>	120 V AC 50/60 Hz 15 Watts Export (220/240 Volts 50/60 Hz 15 Watts)
<b>ACCESSORIES AVAILABLE</b>	Sound Level Meter SLM-100 Including Test Record R-100 (1/3 Octave Pink Noise) and 20 Foot Interconnecting Audio Cable.

In the space provided below record the Serial Number located on the back of the SOUND SHAPER TWO cabinet.

SOUND SHAPER TWO Stereo Frequency Equalizer MODEL SS-2  
SER. NO. \_\_\_\_\_ retain this number for future references.

## CONGRATULATIONS!

Audio Dynamics Corporation (ADC) is proud to provide the ultimate value in design and development of a Stereo Frequency Equalizer, the "SOUND SHAPER TWO", for your greater listening pleasure.

The "SOUND SHAPER TWO", a multi-stage, narrow band frequency balance control provides an almost infinite number of possible frequency response variations which allow you to match your speakers to your room, dramatically improve, reduce, or eliminate inadequacies in your high fidelity music system, tailor the reproduction of music to your personal preference and listening enjoyment.

Here are a few ways your "SOUND SHAPER TWO" can enhance your sound system.

Any system suffering from rumble or low frequency overload can be remedied by attenuating the lower-most controls of the multi-band equalizer. With little in the way of fundamentals below 30 Hz, it is unlikely you will miss any of the music.

Problems with scratches and other record surface noise or even tape hiss can be eliminated or reduced by bringing down the control level at 9 KHz. Even Dolby processed tapes or encoded FM Broadcasts can be compensated for the boosted highs.

Tonal quality of Broadcast Stations that attenuate or accentuate either highs or lows can be equalized to personal listening pleasure. High performance recording tapes that require special equalization in playback can be accommodated by appropriately adjusting the controls on the "SOUND SHAPER TWO".

Phono cartridge or speaker inadequacies can be corrected for pleasurable listening. Find the proper slide control on your "SOUND SHAPER TWO" and move it up or down a few dB.

Bring life back to your 78's and other old records by improving the lows and highs, correcting for strident midrange and unbearable scratchiness at the top end.

There are times when you may want to hear a vocalist who is being drowned out by the instrumentation. Perhaps you like guitar or some other instrument and prefer it a little louder. Whatever it is, whatever you may want to subdue or bring out, the "SOUND SHAPER TWO" slide controls can be adjusted to tailor the response to your taste.

The Musical Spectrum Chart Fig. 7 will help you understand which controls affect what instruments. Using it as a guide you can successfully achieve tonal quality to your personal preference. More importantly, after you have properly readjusted a recording, you can make the changes permanent by making an equalized tape.

Along with the excellent styling, your "SOUND SHAPER TWO" has been carefully engineered to give you trouble-free performance and many years of listening enjoyment.

## **INSTALLATION:**

As with other quality sound equipment, adequate ventilation will extend the trouble-free life of your equalizer. You should not install this unit in an overly confined area along with other heat generating equipment.

Connect the line cord to an AC Outlet providing the proper voltage. 120 V AC 50/60 Hz (Export Version 220/240 V AC 50/60 Hz). The power consumed is 15 Watts and if available, the switched accessory outlet of your amplifier may be used to turn the unit "ON" or "OFF" with your sound systems main power switch.

## **CONNECTIONS:**

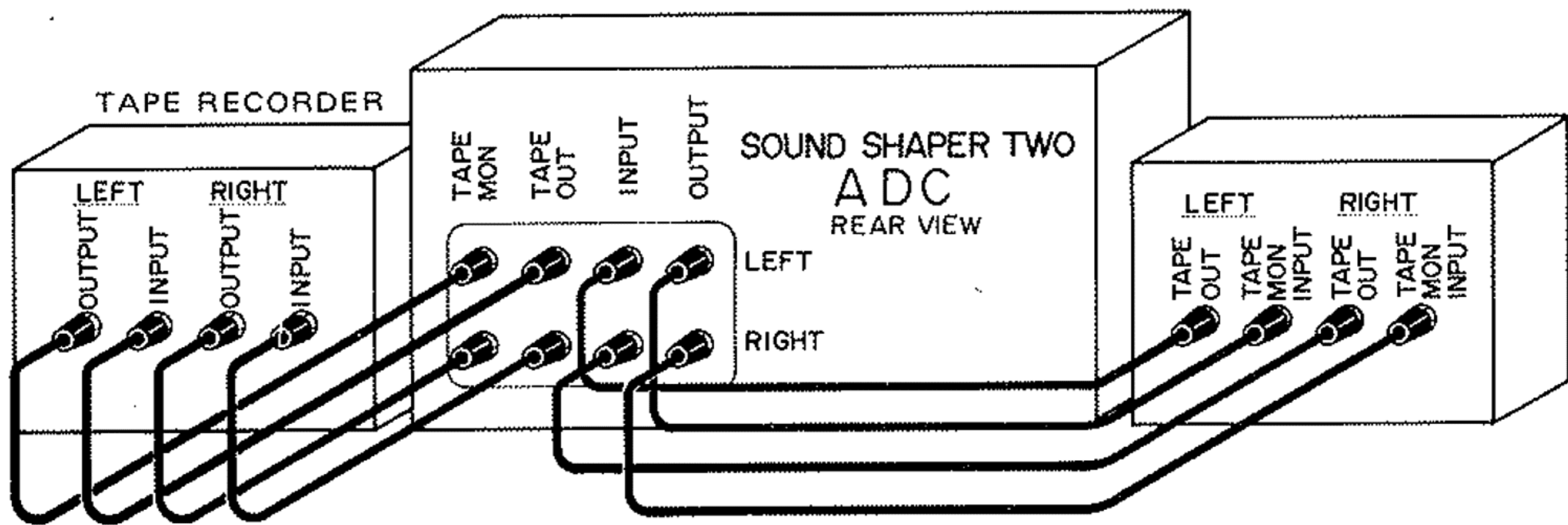
The ADC Sound Shaper Two Stereo Frequency Equalizer can be used with an integrated receiver, integrated amplifier, or with a system employing separate pre-amplifier and amplifier. If your system does not provide a tape monitor function, it will not be possible to connect the Sound Shaper Two without modifying your system. If this is the case, consult your dealer.

The tape recording outputs of your pre-amplifier, integrated pre-amplifier/amplifier, or integrated receiver should be connected to the two input jacks marked left and right input of the Equalizer.

The two outputs marked left and right output of your Equalizer should be connected to the "Tape Monitor" or equivalent tape inputs on your pre-amplifier, integrated pre-amplifier/amplifier, or integrated receiver. If your system incorporates a separate pre-amplifier and amplifier, the Sound Shaper Two may be installed between them. See "CAUTION" on Page 12.

The tape out jacks of your Sound Shaper Two should be connected to the inputs of your tape recorder and the output jacks of your tape recorder connected to the tape monitor jacks of the Sound Shaper Two. Input and Output connections should be made using shielded audio cables with standard phono-type connectors. Observe color coding when connecting to left and right channels of the Equalizer to your audio system. Two pair of audio cables have been included with your Sound Shaper Two for interconnection to your sound system.

Please refer to Figure 1 and Figure 2 for connecting the Sound Shaper Two to your audio system.



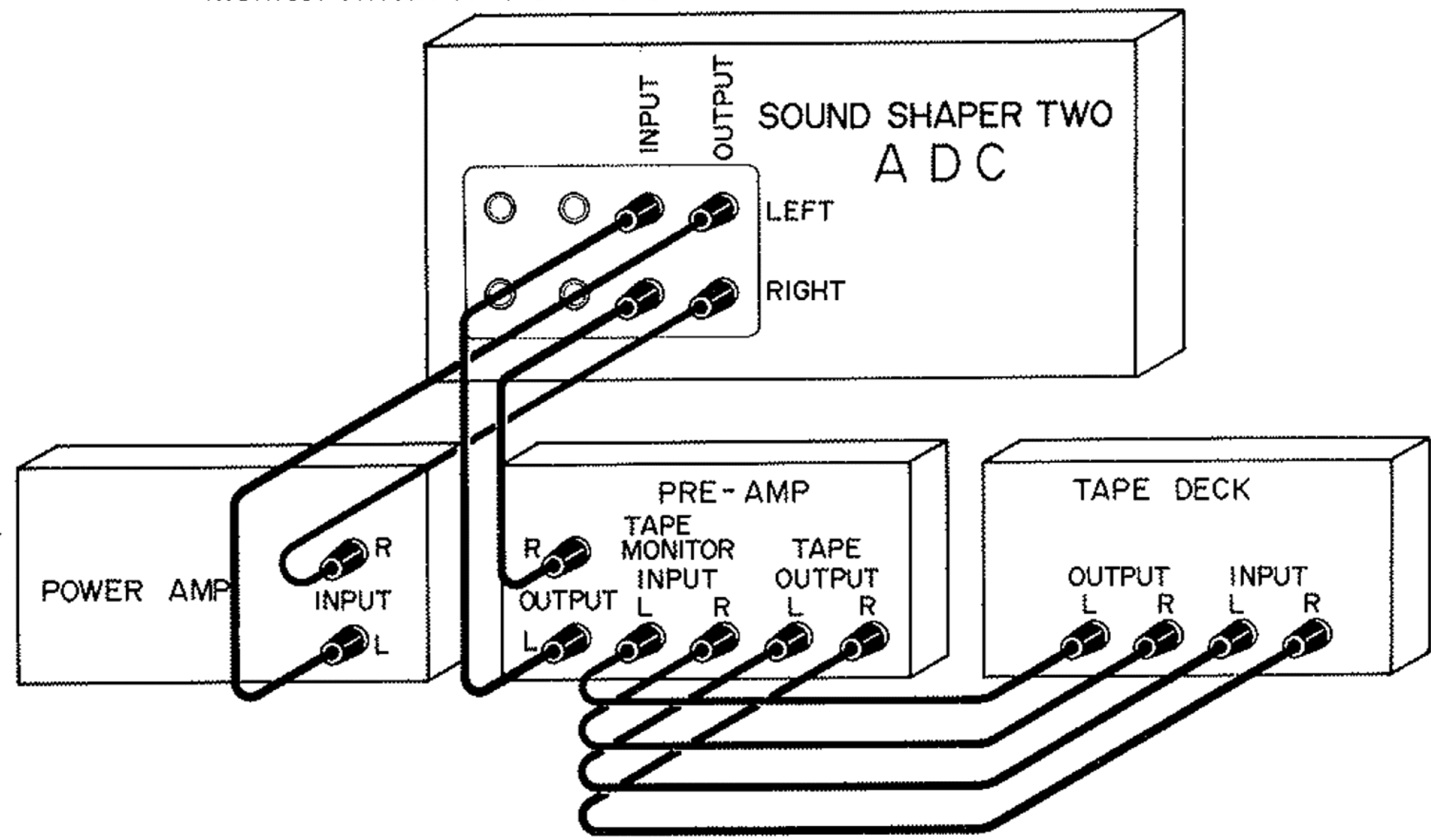
UNIT MUST HAVE A TAPE MONITOR SWITCH WHICH MUST BE LEFT IN THE "TAPE MONITOR" POSITION. THIS SWITCH IS USUALLY FOUND ON THE FRONT PANEL OF THE PRE-AMP, INTEGRATED AMPLIFIER, OR COMPLETE INTEGRATED RECEIVER.

RECEIVER PRE-AMPLIFIER,  
INTEGRATED AMPLIFIER  
OR  
INTEGRATED RECEIVER

**Figure 1**

Existing connections to program source(s) and speakers not shown.

Monitor switch on the ADC SOUND SHAPER TWO must be in the out position.



POSSIBLE LABELING METHODS FOR TAPE MONITOR CONNECTIONS ON PREAMP, INTEGRATED AMPLIFIER OR INTEGRATED RECEIVERS.

TAPE	IN - OUT
	TO - FROM
RECORD	IN - OUT
	TO - FROM
LINE	IN - OUT
	TO - FROM
MONITOR	IN - OUT

**Figure 2**

If your system has a Preamplifier and a power amplifier and the "line-record" function is not required, or if your system does not have a tape deck, connect the ADC SOUND SHAPER TWO as shown above.

# **OPERATING CONTROLS AND FUNCTION**

## **LINE-RECORD**

When depressed, the program source is equalized before it goes to the tape recorder input. Use this function when recording from a poor quality program source (old records, etc.). When not depressed, the program source is not equalized going into the tape recorder. However, the output of the equalizer to the amplifier and speakers is equalized.

## **"EQ-BYPASS"**

When depressed, the equalizer is disconnected from the system. The "MONITOR" and "METER" buttons will still function when depressed.

## **"MONITOR"**

When depressed, the output from the tape deck is equalized and then heard through your speakers. Use this function to hear recordings as they are being made on your 3 head tape deck and when playing back tapes.

## **"MONITOR" & "EQ-BYPASS"**

If you desire to monitor your source material from tape playback without hearing the equalization, depress "EQ-BYPASS" and "MONITOR".

## **"MONITOR" & LINE RECORD**

Note that if you are recording in "LINE-RECORD" & "MONITOR" the sound you hear is just as it has been recorded. The frequency controls should be adjusted so that the monitored sound is corrected for deficiencies in the program source but not for the room and system response (the monitored audio should sound like a normal unequalized program source).

## **"METER"**

When depressed, the left and right outputs from the Sound Shaper Two are indicated on the dual dB meter. Each scale division on the meter is two dB. The meters have an extremely wide range of  $\pm 12$  dB or 24 dB total and are accurate to within  $\pm 1$  dB from 30 Hz to 16000 Hz.

## **"FREQUENCY SLIDE CONTROLS"**

The front panel has 24 controls, 12 per channel. Each control varies by  $\pm 12$  dB the level of a small range of audio frequencies which are centered around the frequency marked over each control. In order to achieve a smooth response, controls for adjacent frequencies within each channel must interact. For example, the 500 Hz left control will affect the 900 Hz left control. The net effect of such controls set in the same direction (both in boost or both in cut) will be greater than the panel marking indicates. The effect of such controls set in opposite directions (one boost and one cut) will be less than indicated. Refer to Figures 3 through 6 for typical slide control effect.

## "METER ADJUSTMENT" Left & Right

When rotated, these controls vary the sensitivity of the meters. They should be adjusted so that the loudest and softest sounds do not cause the meters to read off scale.

## SLM "JACK"

When used with the SLM-100 sound level meter, pink-noise test record and interconnecting 20 foot audio cable, permits adjustment of your frequency equalizer controls by observing the right channel meter on the equalizer. (Refer to operating instructions included with the SLM-100.)

## USING THE SOUND SHAPER TWO METERS

To measure the response of your system from the phonograph cartridge to the equalizer input, depress the bypass and meter switches and play a test record. Rotate the "METER ADJUSTMENT" controls for 0 dB on the meters at 1000 Hz (900 Hz with the ADC Test Record). Large random meter deflections indicate turntable "RUMBLE" and should be ignored when making frequency response tests. As the various frequencies are played, the meters indicate the system response directly in dB.

The meters may also be used to measure stereo balance when the "METER ADJUSTMENT" controls are in the maximum position. If the meters read off scale, it will be necessary to set the "METER ADJUSTMENT" controls as follows: Reverse the left and right leads to the Sound Shaper Two input. Play a 1000 Hz or 900 Hz test record tone at normal listening level. Set the left "METER ADJUSTMENT" control for 0 dB on the left meter. Again reverse the left and right input leads (left to left and right to right) and replay the same test record tone. Adjust the right "METER ADJUSTMENT" control for 0 dB on right dB meter.

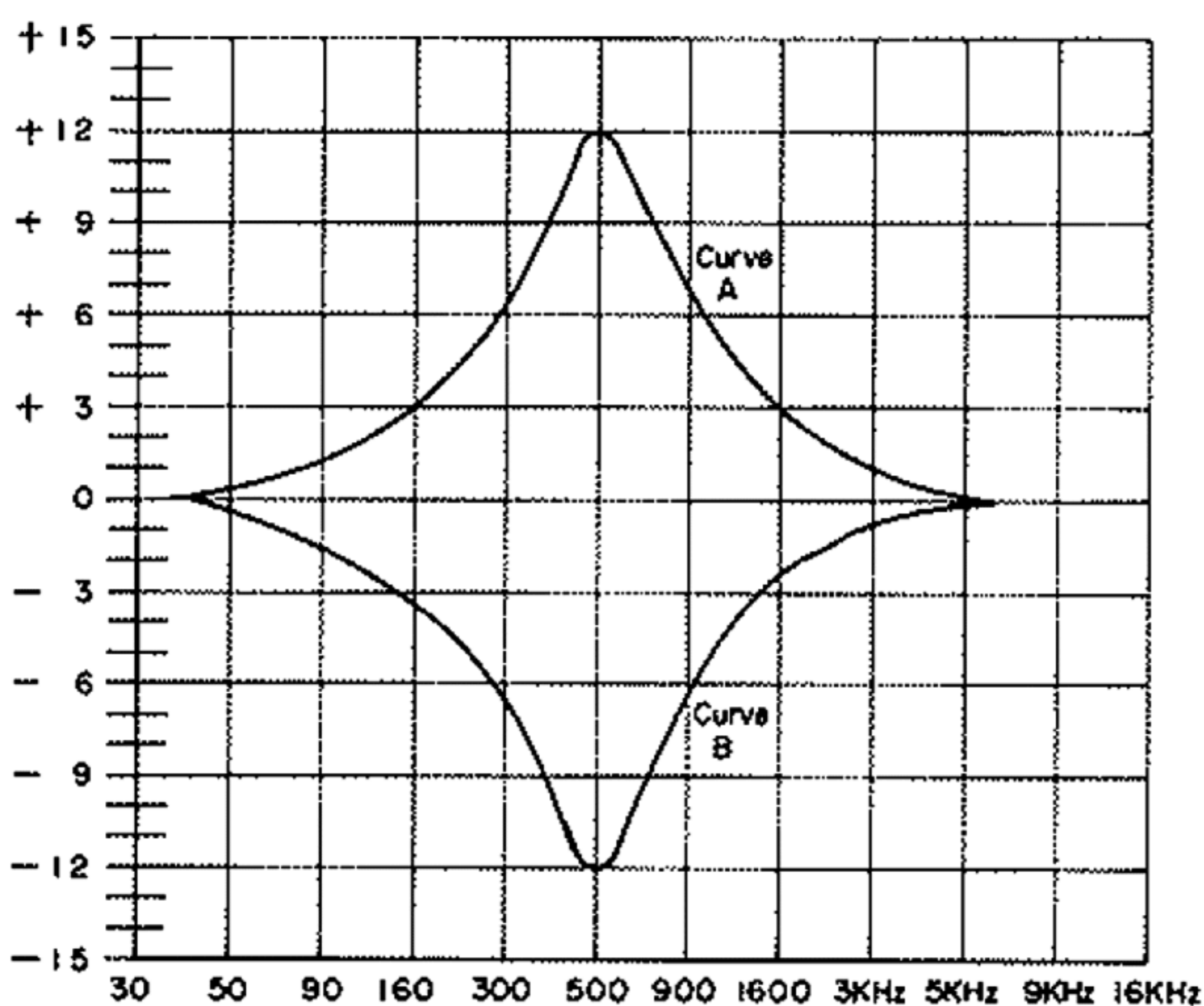
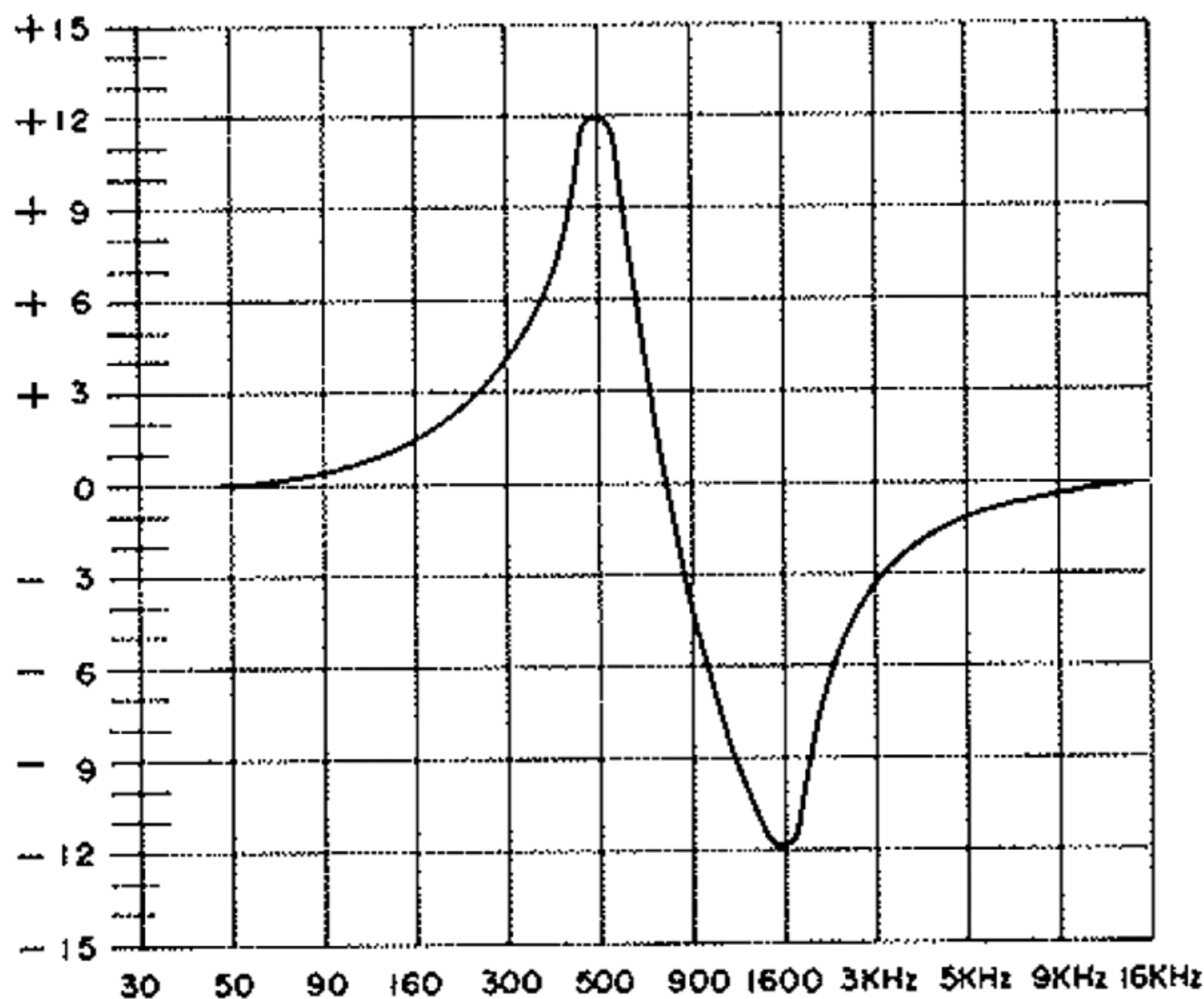


Figure 3

Typical ADC SOUND SHAPER TWO  
Freq. Response Curves

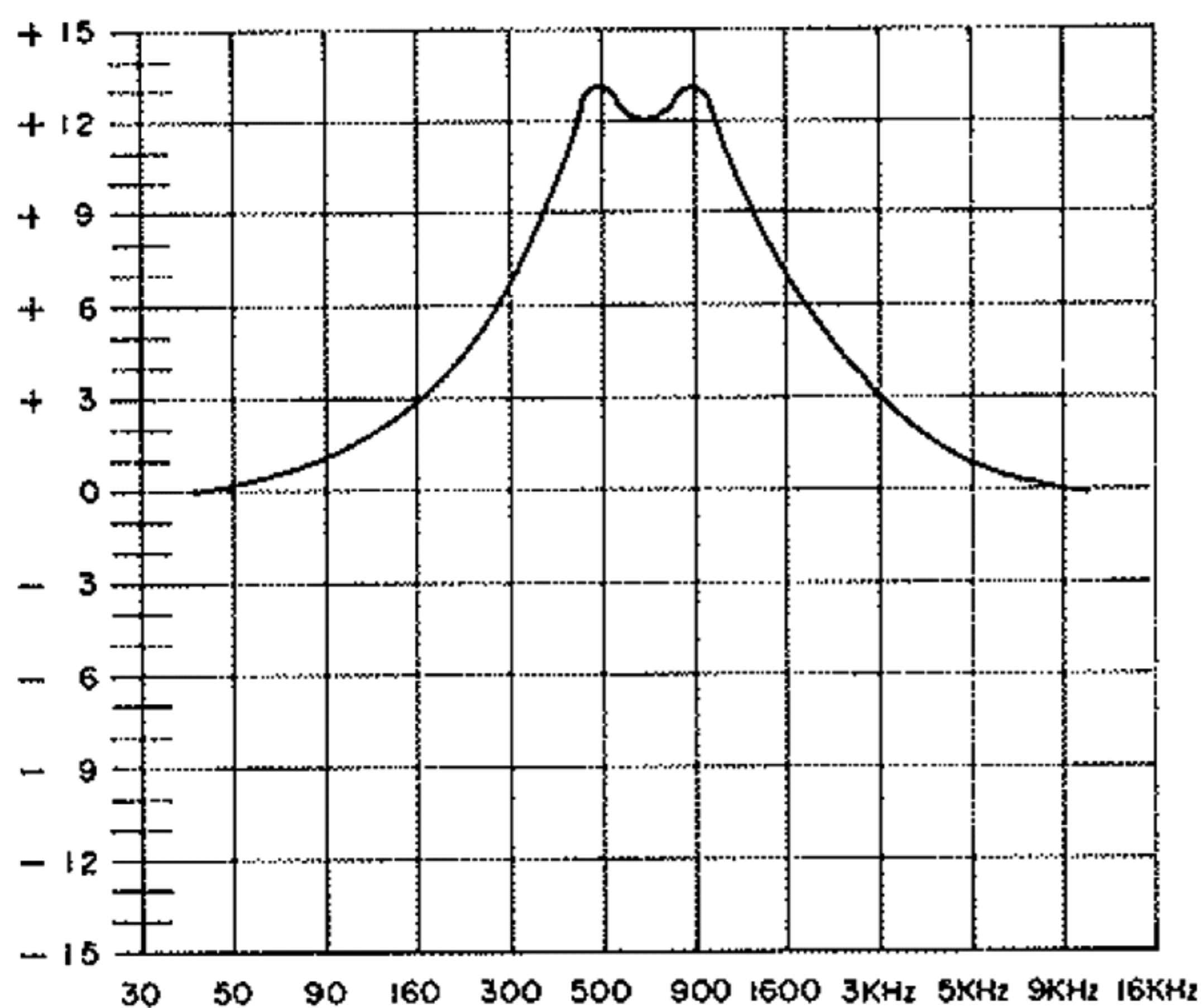
Curve A: 500 Hz Full Boost

Curve B: 500 Hz Full Cut



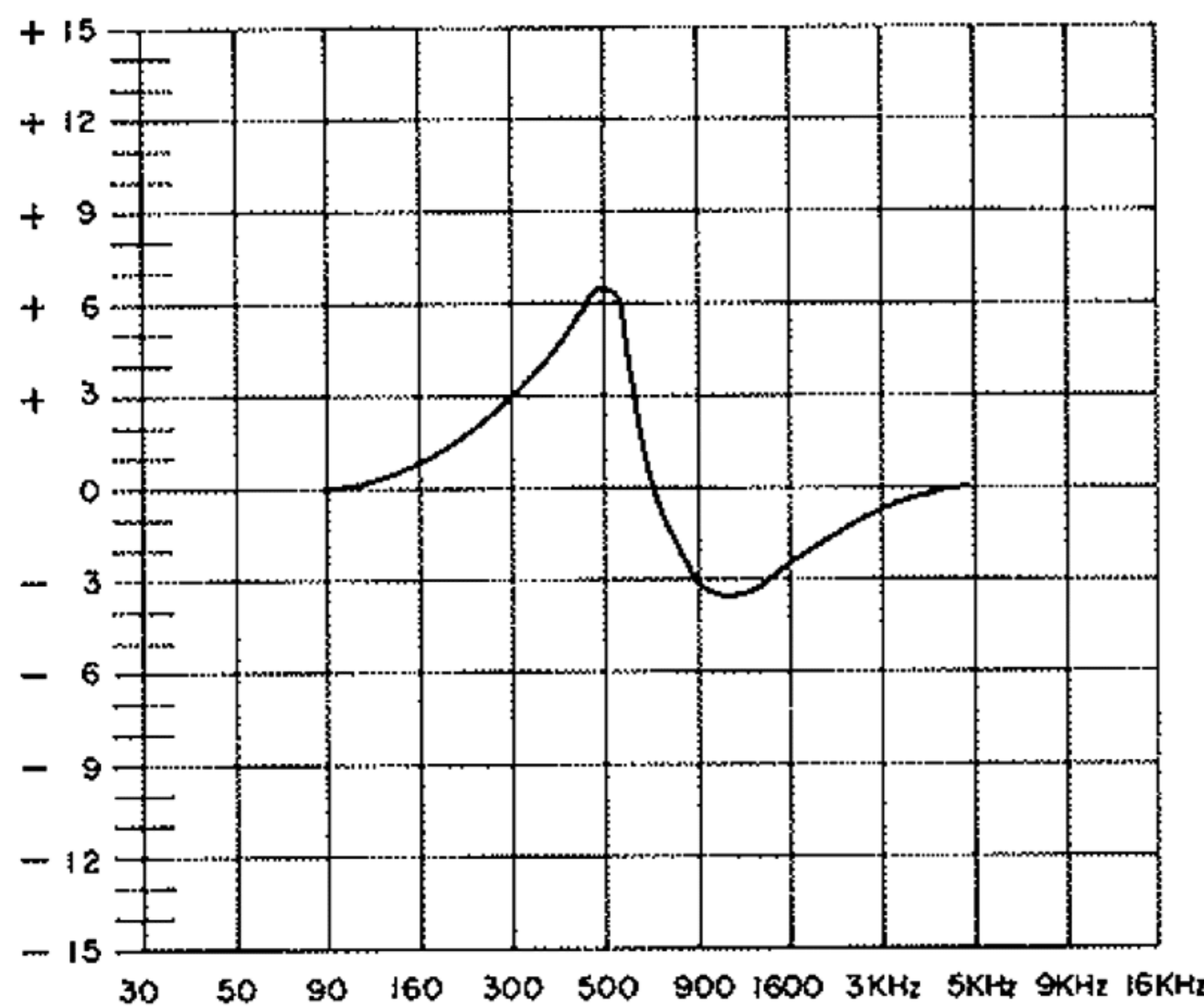
**Figure 4**

Typical ADC SOUND SHAPER TWO  
 Freq. Response Curves  
 500 Hz Full Boost  
 1600 Hz Full Cut



**Figure 5**

Typical ADC SOUND SHAPER TWO  
 Freq. Response Curves  
 500 Hz + 12 dB Boost  
 900 Hz + 12 dB Boost



**Figure 6**

Typical ADC SOUND SHAPER TWO  
 Freq. Response Curves  
 500 Hz + 12 dB Boost  
 900 Hz Full Cut



# THE MUSICAL SPECTRUM

This chart correlates familiar musical instruments with the numerical frequencies that they produce. Given the often talked about musical range of 20 Hz to 20 KHz, it is surprising to see how low musical fundamentals actually are. (Almost all are under 3500 Hz.) It should be understood however that if all instruments were perceived only by their fundamental frequency output (black bands), they would all sound alike. It is the harmonics or overtones (grey bands) that give each individual instrument its character or timbre and set it apart from the rest.

Interestingly enough, the human ear is more sensitive to certain octaves in the musical spectrum than to others. Whoever designed this engineering marvel deemed it necessary to tune the ear more toward the midrange frequencies where speech and voice communication occur than to the outer octaves of low bass and high musical overtones. As a result, very small energy changes here will cause a more drastic psychoacoustic effect than larger changes would at the frequency extremes.

In order to discuss the qualitative effects of adjustment in tonal balance, it is best to arbitrarily divide the musical spectrum into five ranges:

**The Bass** (approx. 20–140 Hz). There is little musical material with fundamental frequencies below about 60 Hz, and what is normally perceived as low bass material is actually in the 60–140 Hz range. The very lowest frequency controls can be used to enhance output for the few instruments in that range (organ, contrabassoon, etc.) or they can be used to reduce rumble, acoustic feedback and other low frequency aberrations. A control in what is normally labeled the 60–90 Hz area will usually cause the greatest perceptible changes in “bass response”.

**The Mid-Bass** (approx. 140–400 Hz). An over accentuated mid-bass region will yield a very muddy and “boomy” quality to the music. A system shy of mid-bass will sound hollow and thin. Controls in this region are important for good overall balance.

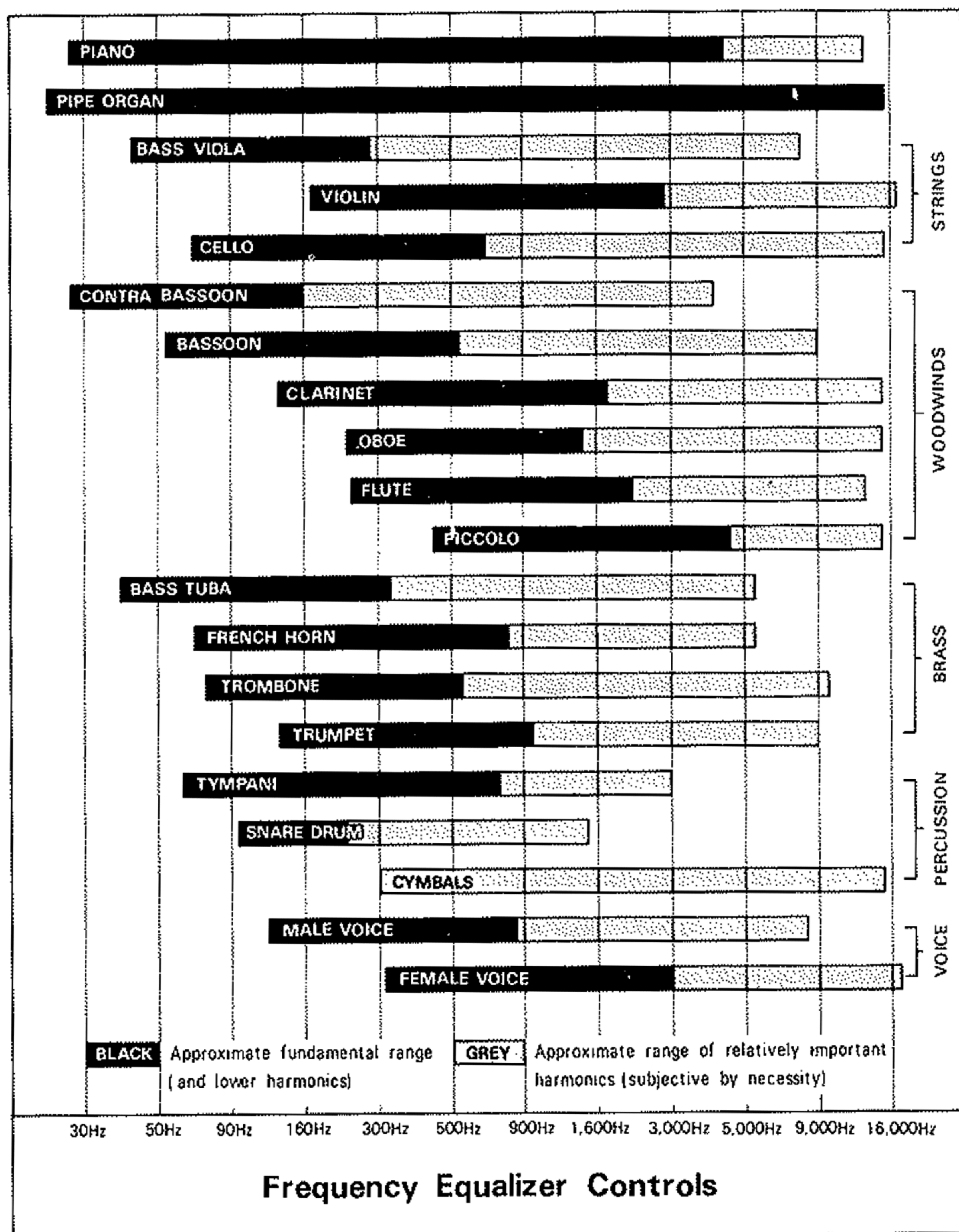
**The Mid-Range** (approx. 400–2600 Hz). As the area where the ear is most sensitive to tonal balance, the mid-range is important in adjusting the qualitative sonic characteristics of your system. There is controversy among engineers and audiophiles as to what the proper balance should be in this range. Moreover, you will find some settings optimum for certain types of music with other settings just right for different types.

**The Upper Mid-Range** (approx. 2600–5200 Hz). Speaker designers often boost output in this range to effect a quality of “presence” to the music. Too much energy, on the other hand, sounds overbearingly harsh and strident. A good balance should be achieved between this and a more muffled sound.

The High End (approx. 5200–20,000 Hz). The region up to only about 12 KHz or so is what is normally perceived as high frequencies. Adjustment in this range affects the brilliance of music, with too much boost in energy yielding an unpleasant and piercing quality.

The last 8,000 Hz contains very little musical material. And most adults have hearing which rolls off rapidly above 16 or 17KHz. As a consequence, any control in the 14–20 KHz range will have a very subtle effect. It can be used to add a little more dimension to the sound or as a very high frequency noise filter.

### Approximate Frequency Ranges for Musical Instruments and Voice



## CAUTION

If your sound system employs separate components, e.g. Preamplifier and Amplifier and the Equalizer is connected between the output of the preamplifier and input of your power amplifier, it is important that the following procedures be followed:

### 1. Power "on" Sequence

- A. Turn on the Equalizer.
- B. Turn on your Preamplifier.
- C. Turn on your Power Amplifier.

The reverse sequence should be followed in turning your system "Off".

### 2. Switching the Equalizer IN or OUT of the Sound System

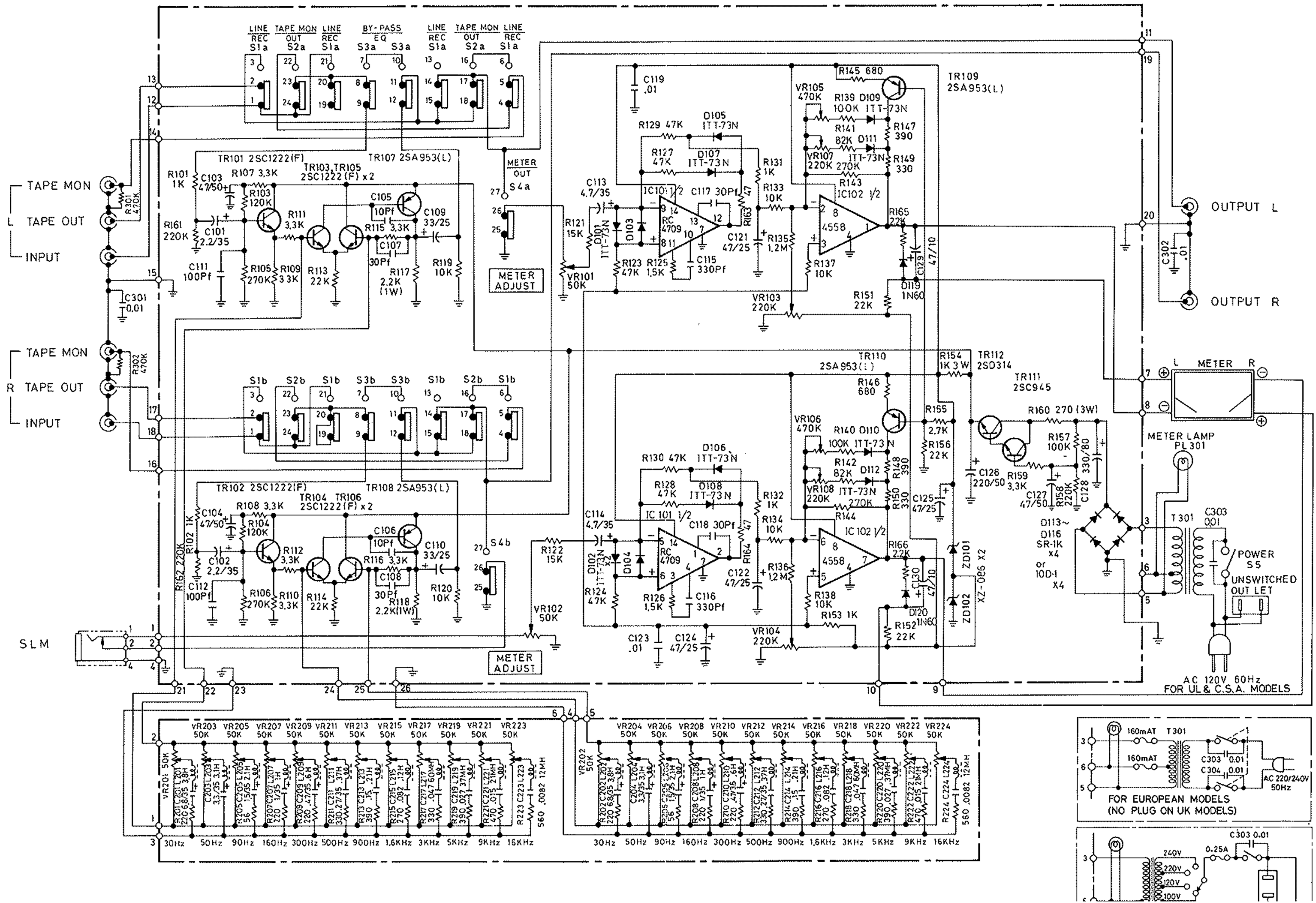
The volume control setting must be reduced before switching the equalizer in or out of the system. Failure to do this will result in excessive volume when the equalizer is introduced into the system and can result in damage to your amplifier or speakers.

## EXPLANATION

All equalizers are designed for unity gain, in other words, the level of signal "OUT" is the same as the level "IN" WHEN ALL FREQUENCY CONTROLS ARE SET AT "0".

If one or several frequency controls are boosted in either or both channels (stereo), the output level from your equalizer will increase within the range of frequencies affected by those controls, thereby, increasing the sound level or power output of your amplifier. Depending on your master volume control setting, this can result in overdriving of your power amplifier and/or speaker system and incurring possible damage.

It is suggested you reduce your master volume control setting of your sound system before switching the equalizer in or out of the system and then restore the master volume control setting to your listening pleasure.





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