moog®

THE ROGUE

OWNER'S MANUAL by Herb Deutsch

PRELUDE

Welcome to the world of Moog ®. Your Rogue synthesizer has been musically engineered to be a powerful and versatile instrument. It has the ease of operation that makes it a valuable stage instrument and the variability and potential for unusual effects that makes it equally suited to studio and educational applications.

This manual may be used as both a quick reference to the instrument, and a source of basic information on synthesis in general.

The manual has been designed in three parts:

Part One is a short introduction to the layout of the Rogue, its features and its performance potential. If you are accustomed to using synthesizers, this may be all you ever need!

Part Two consists entirely of sound charts.

Part Three provides those new to synthesizers with a brief description of *Synthesizer Basics* followed by *A Closer Look at The Rogue*. Here you will find an explanation of each of the Rogue's functions.

Once you become comfortable with the controls on the Rogue, explore the instrument to the fullest. Let your creativity be your guide. Use the pitch bend and modulation wheels to add your own personal nuances to the sounds of the instrument.

Enjoy your Rogue synthesizer. Use it productively! Use it musically! Use it creatively!

Herbert A. Deutsch
Director of Marketing

MOOG MUSIC INC.

INITIAL SETUP

Now that you have unpacked THE ROGUE, remember to save the shipping carton and packing materials in case of any long-distance transporting.

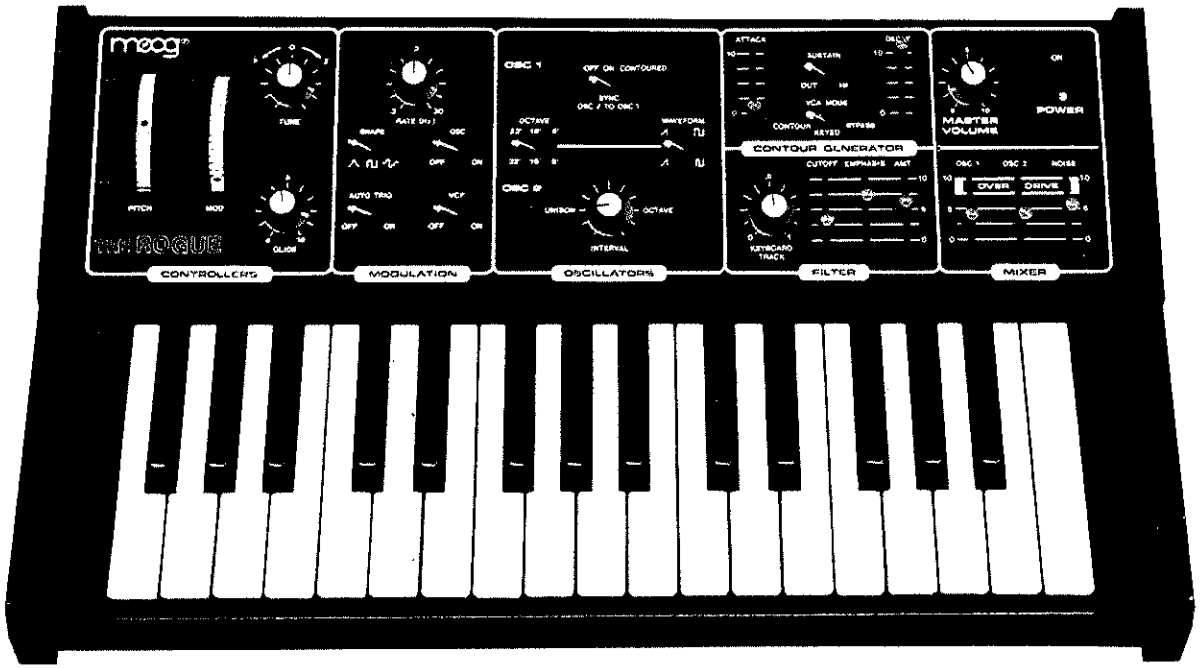
An inexpensive lightweight carrying case is available for THE ROGUE. Ask your local Moog dealer for particulars.

To set up for playing, plug the 24V power supply cord into the POWER IN jack on the rear of THE ROGUE. Plug the power supply into any A.C. outlet.

Using a 1/4" patchcord, connect the AUDIO OUT on the rear of THE ROGUE to your monitoring system or amplifier.

Turn "on" the power.

Always allow a few minutes for any synthesizer to warm prior to tuning up.



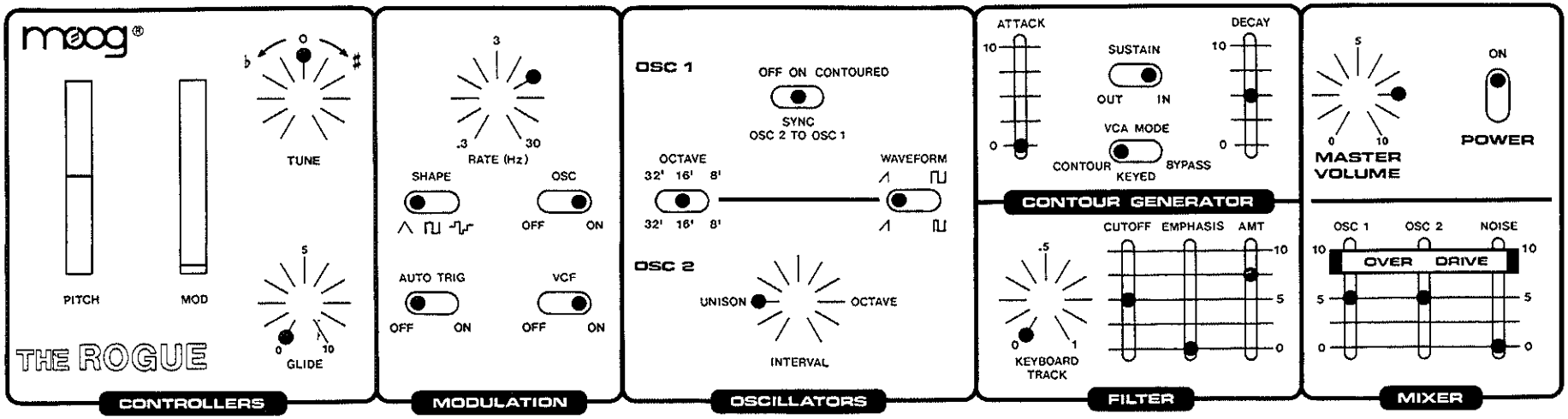
PART ONE

THE ROGUE AT A GLANCE

If you are familiar with the concepts of analog synthesizers, learning to use THE ROGUE should be an easy matter. For this reason, Part One of this manual will be short and to the point.

BASIC SOUND CHART

Set up the panel as shown for a starting sound:

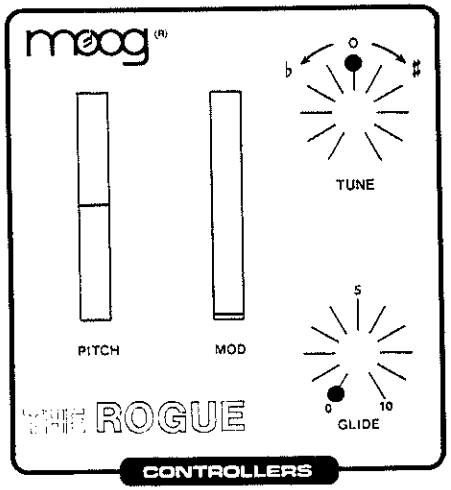


The control panel is laid out in six separate sections:

1. Controllers
2. Modulation
3. Oscillators
4. Contour Generator
5. Filter
6. Mixer and Final Output

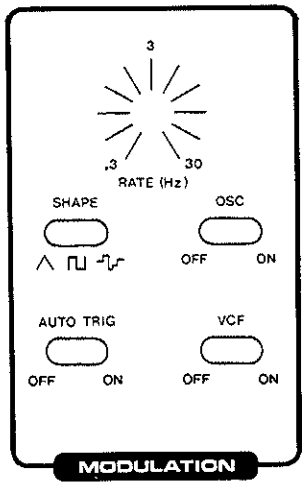
1. Controllers Section

Control Name	Function & Description
TUNE	Master tuning, "flat" counterclockwise; "sharp" clockwise.
GLIDE	Portamento amount and speed ("0" off).
PITCH	Performance control for pitch bending effects.
MOD	Modulation amount. All modulation functions are routed through the MOD wheel.

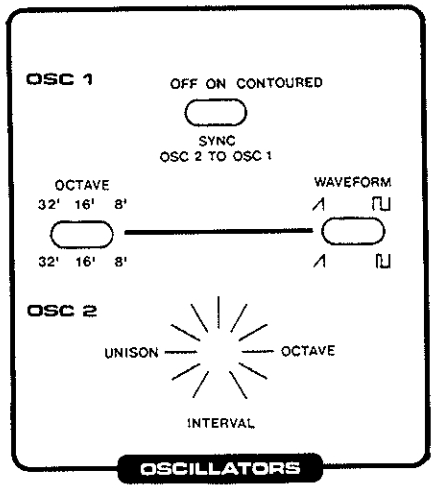


2. Modulation Section

Control Name	Function & Description
RATE	Frequency control for the Low Frequency Oscillator (LFO). Also control for Auto Trigger speed and sample-and-hold speed.
SHAPE	Selector for modulation waveform: Triangular for vibrato, Square for trills, Random staircase for sample-and-hold.
AUTO TRIG	Applies LFO rate to trigger contour generator.
OSC (OFF-ON)	Applies modulation effect (through MOD wheel) to oscillators.
VCF (OFF-ON)	Applies modulation effect (through MOD wheel) to filter.

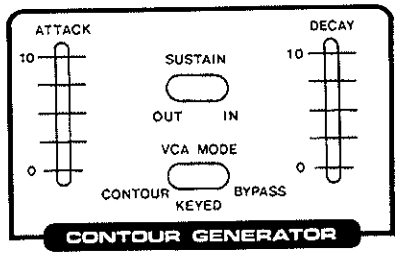


3. Oscillators Section



Control Name	Function & Description
OCTAVE	Three-octave switch simultaneously controls both oscillators.
WAVEFORM	Selector for Sawtooth or Pulse wave (square wave on oscillator one).
SYNC	Three position switch determining the status of the synchronization of Oscillator 2 to Oscillator 1:
	OFF: Synchronization "off", Oscillator 2 may be detuned.
	ON: Oscillator 2 locked into synchronization with Oscillator 1.
	CONTOURED: Same as above, with the voltage generated by the *contour generator* applied as a sweep control to Oscillator 2.
	Note: The *amount* of this voltage is controlled through the filter contour *amount* slider.
INTERVAL	Controls the detuning of Oscillator 2 from Oscillator 1. (Tuning range is approximately a minor 10th.)

4. Contour Generator Section



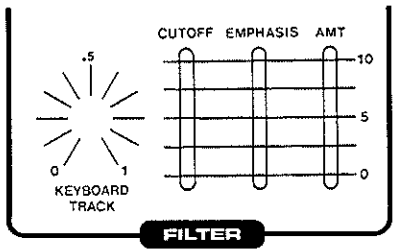
Control Name	Function & Description
ATTACK	Attack time (◿) of generated envelope adjustable from 4 msec to 4 secs.
DECAY	Decay time (◿) of generated envelope adjustable from 10 msec to 15 secs.
SUSTAIN	Full sustain level (▔) is added when switch is "in." This provides a sustained tone while a key is depressed.

4. Contour Generator Section (Continued)

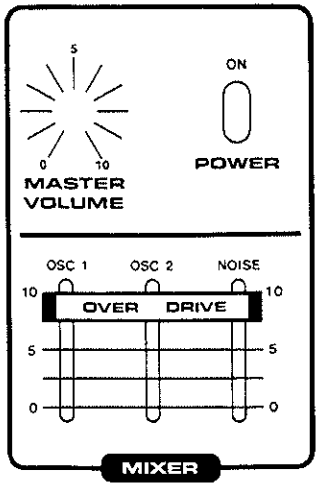
Control Name	Function & Description
VCA MODE	Three position switch determining the status of the Voltage-Controlled Amplifier (VCA). CONTOUR: VCA is operated by contour generator only. KEYED: VCA is turned "on" when a key is depressed and "off" when a key is released. BYPASS: VCA is unconditionally turned "on" therefore bypassing any articulation.

5. Filter Section

Control Name	Function & Description
CUTOFF	Slider for control of cutoff frequency of the Moog ® 24 db/Octave low-pass Voltage-Controlled Filter (VCF).
EMPHASIS	Slider adding emphasis (regenerative feedback at cutoff frequency).
AMT	Slider determining the amount of the *Contour* control voltage to the filter. Also controls the amount of contoured sync sweep.
KEYBOARD TRACK	Rotary pot controlling the amount of keyboard control voltage applied to the filter.for "brightening" higher-frequency notes. Ranges from 0 (off) to 1 (full). When the filter is used as a tone source, tuning to the keyboard is achieved with the keyboard track pot.



6. Mixer and Final Output Section



Control Name	Function & Description
OSC 1	Input level of Oscillator One to Mixer.
OSC 2	Input level of Oscillator Two to Mixer.
NOISE	Input level of noise generator to Mixer.
OVERDRIVE	In upper levels of loudness, a built-in overdrive circuit adds a degree of intermodulation and harmonic distortion to provide "hot" high level sounds. At approximately 5 and below this distortion will not occur.
MASTER VOLUME	Output amount from Mixer.

7. Interface Controls (Rear Panel)

Control Name	Function & Description
AUDIO OUT	For connection to amplifier, etc.
AUDIO IN	Input for using THE ROGUE to process other instruments. May be used to add filter or gating effects to Moog Opus 3 or other organs, brass and string units, etc. (see sound charts pg 18).
TRIG IN/OUT	In/Out control allows THE ROGUE keyboard or auto trigger to trigger other synthesizers. Note: Provides either S-Trig or voltage gate. Trig "In" provides a trigger from external synthesizer or sequencer.
KEYBOARD IN/OUT	In/Out provision for the keyboard control voltage. "Out" allows THE ROGUE keyboard to play an external synthesizer or "load" a digital sequencer. "In" allows an external synthesizer or sequencer to play THE ROGUE.

The interface capabilities of THE ROGUE enable the instrument to be used as an "expansion module" for studio set-ups or composition purposes.

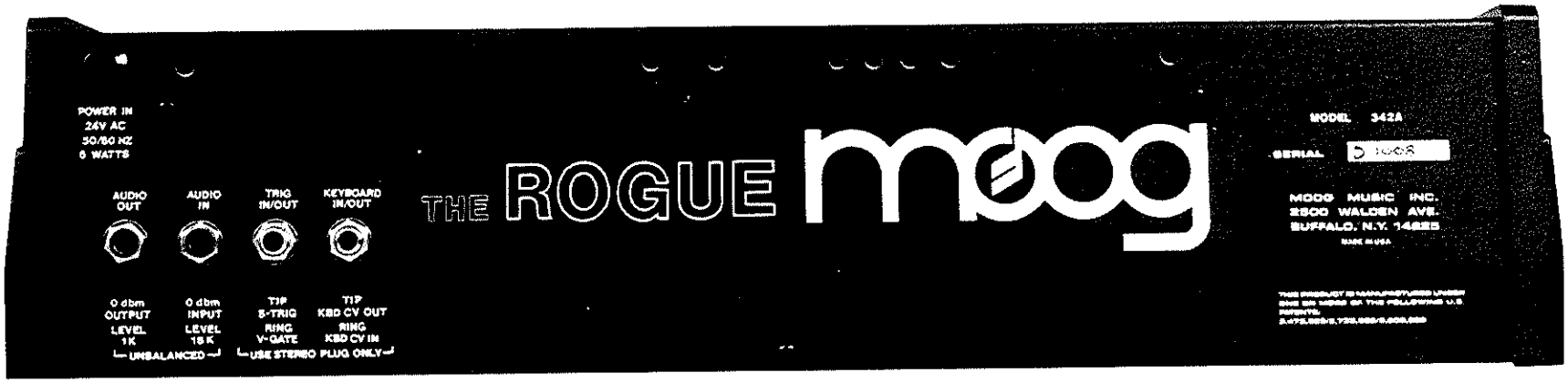
Note: Read the rear panel markings prior to using the interface. Cables must be constructed according to the type of triggering required.

Cable assemblies for interfacing to or from THE ROGUE are available at a small cost from Moog Music Inc.

External interface controls on THE ROGUE may also be used for controlling THE ROGUE from sequencers or computers.

Read the instructions provided on the sequencer prior to inter-connecting.

Computer interfacing requires a digital-analog interface. For information on obtaining a Moog Computer Interface, contact Moog Custom Engineering, Moog Music Inc., 2500 Walden Avenue, Buffalo, New York (U.S.A.) 14225.



SOUND CHARTS

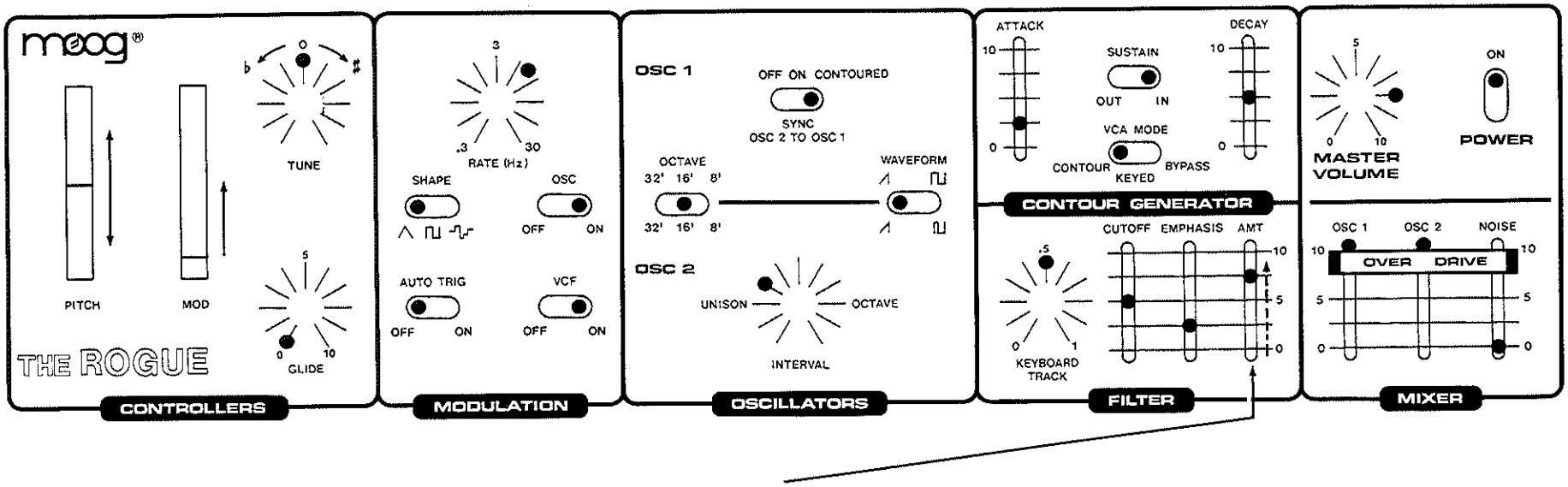
A sound chart is the "picture" of how the front panel of your Rogue looks when you produce a certain sound. These are a handy way to remember sounds and build up libraries of your own sounds. We've included a blank sound chart and it may be photocopied so that you have an endless supply of blank charts for your own experiments (see inside rear cover).

Rogue sound charts are line drawings of the front panel of the instrument. Positions for placing toggle switches, rotary controls and sliders are indicated by the solid dots on the panels.

Follow sound charts very precisely, since in many cases small variations from the original can produce very noticeable sound differences.

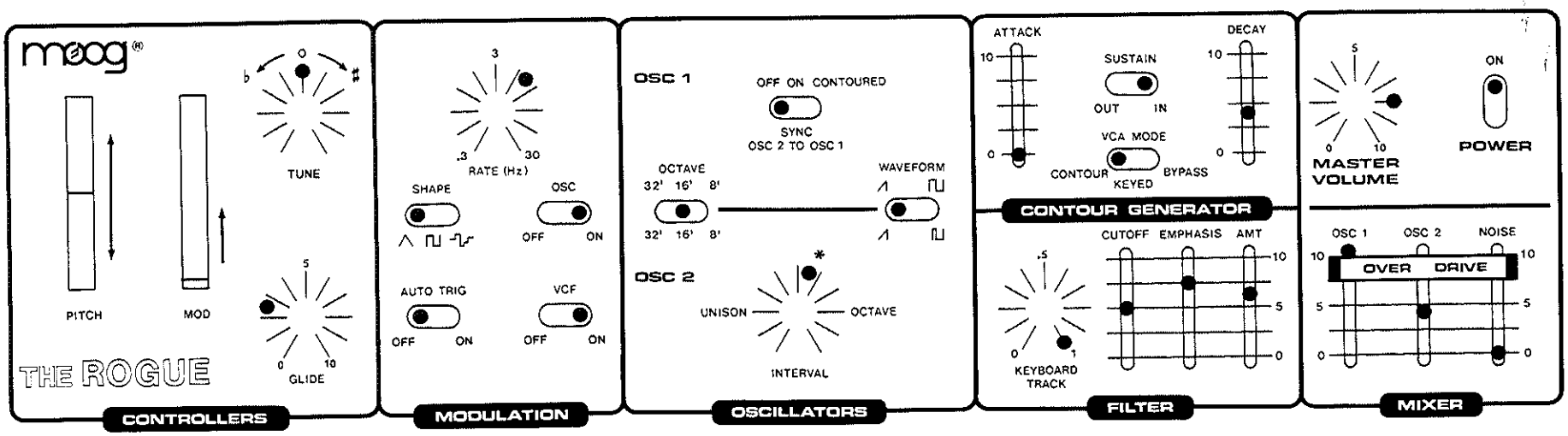
Note: In this section we have included a number of very popular Minimoog and Prodigy sounds.

THE MOOG ROGUE



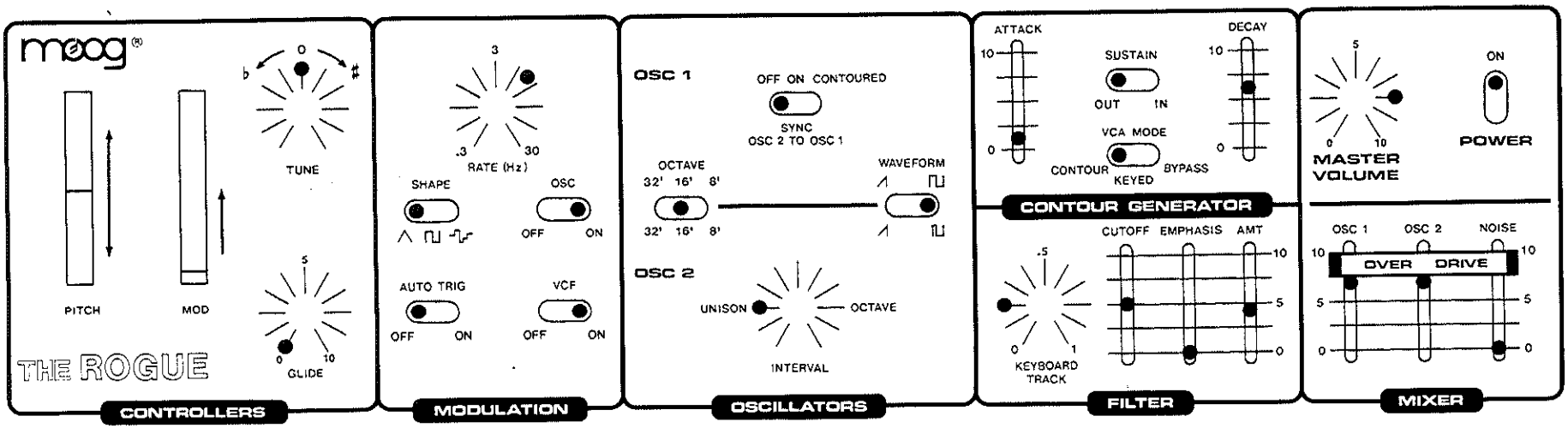
Note: The "scream" effect (contoured sweep of Osc 2 sync) can be enhanced or reduced with the filter *amount* slider.

THAT MOOG® SOUND (Minimoog Sound)

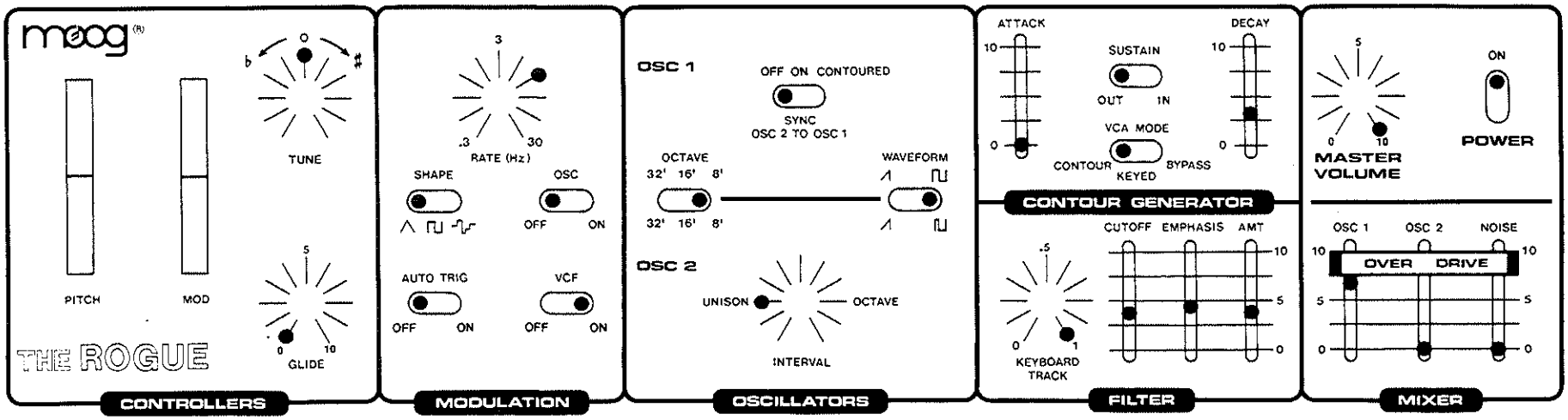


* Tune to a perfect fifth.

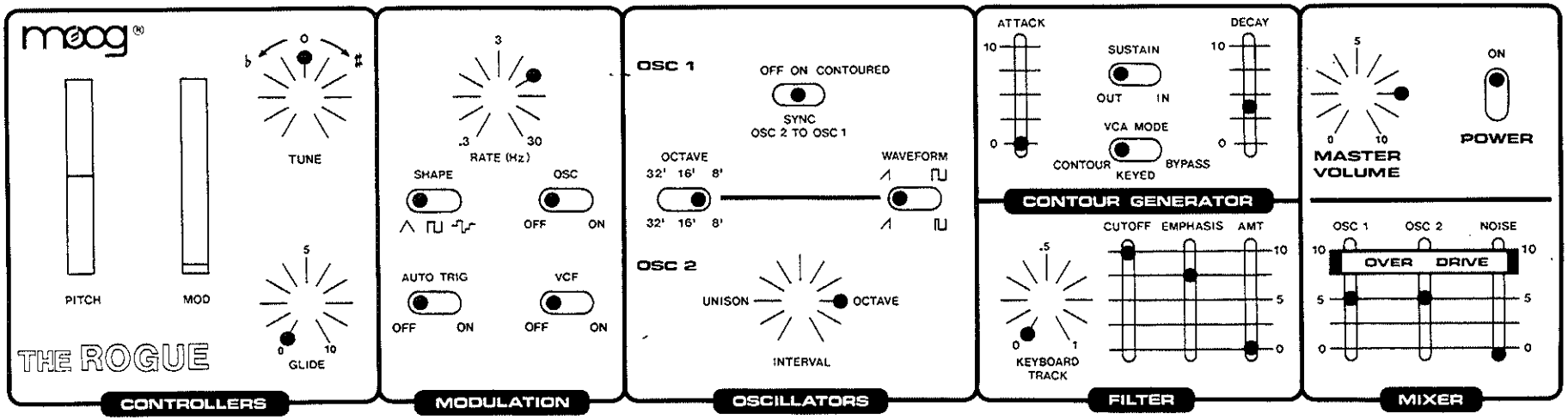
ELECTRIC GUITAR (Minimoog Sound)

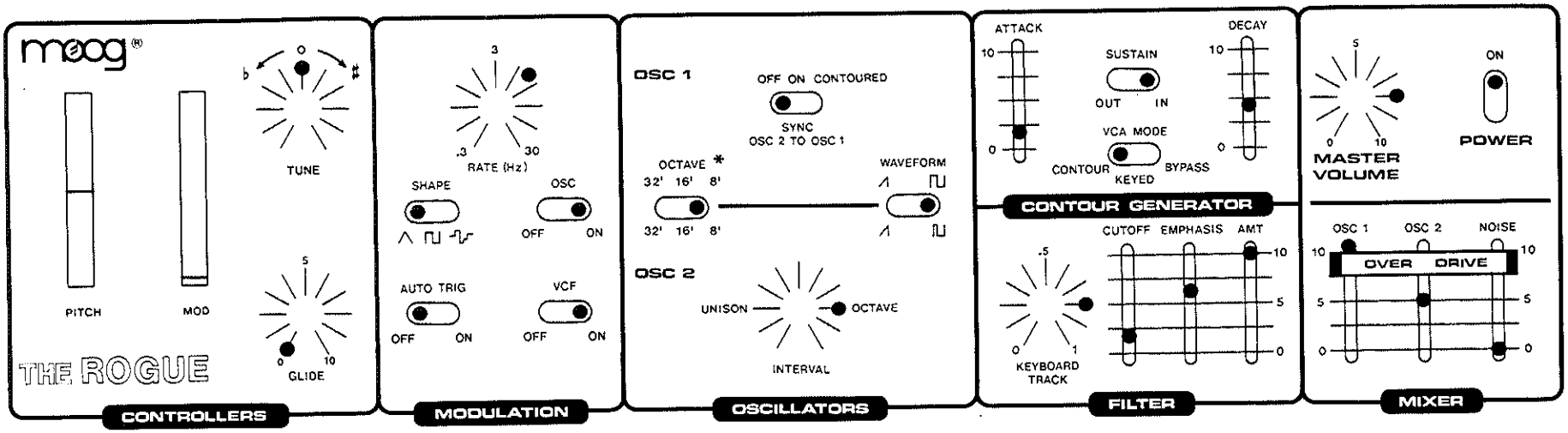


ELECTRIC PIANO



HARPSICHORD

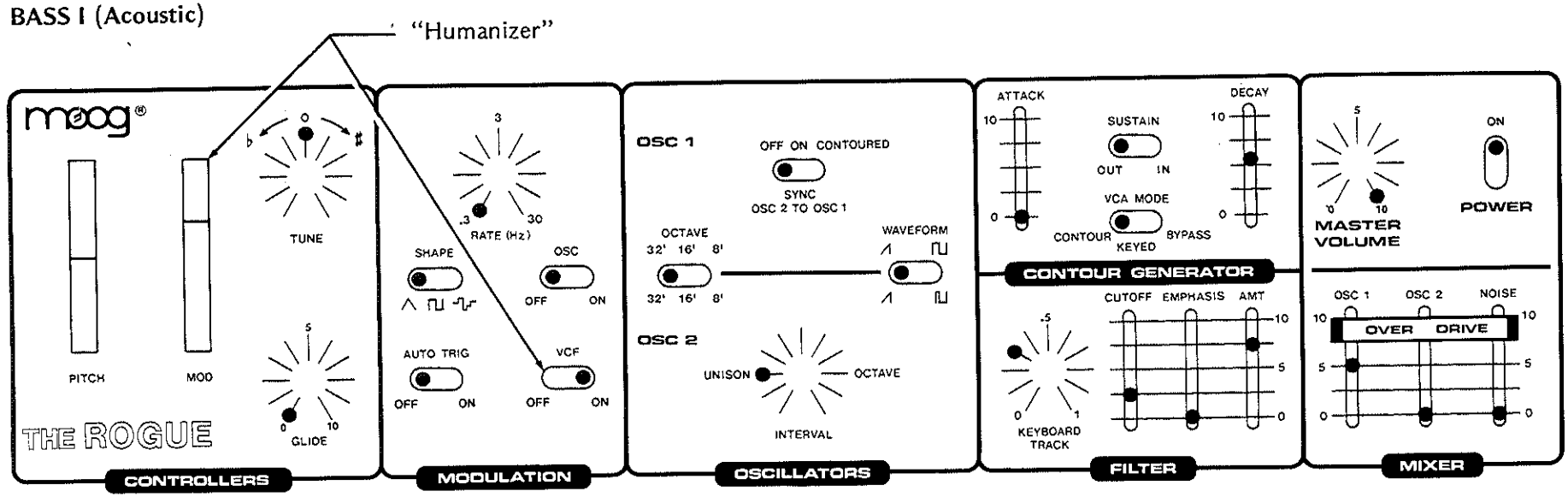




* This sound works equally well on all octaves.

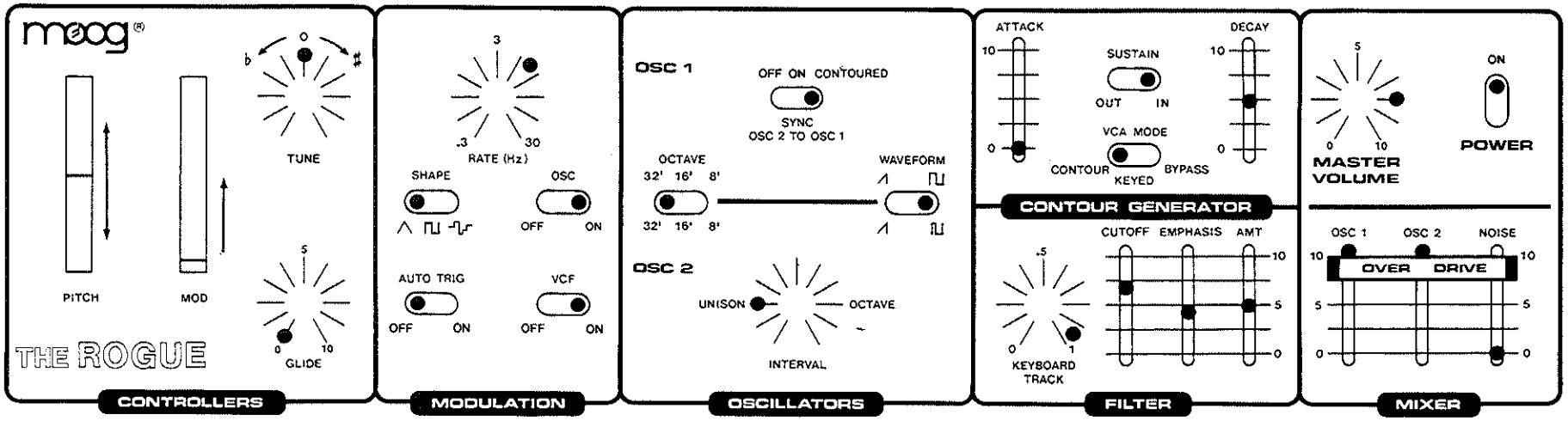
Note: With SUSTAIN switched "in," it is possible to articulate notes differently by playing in a detached manner (lift fingers immediately) or in a sustained manner.

BASS I (Acoustic)



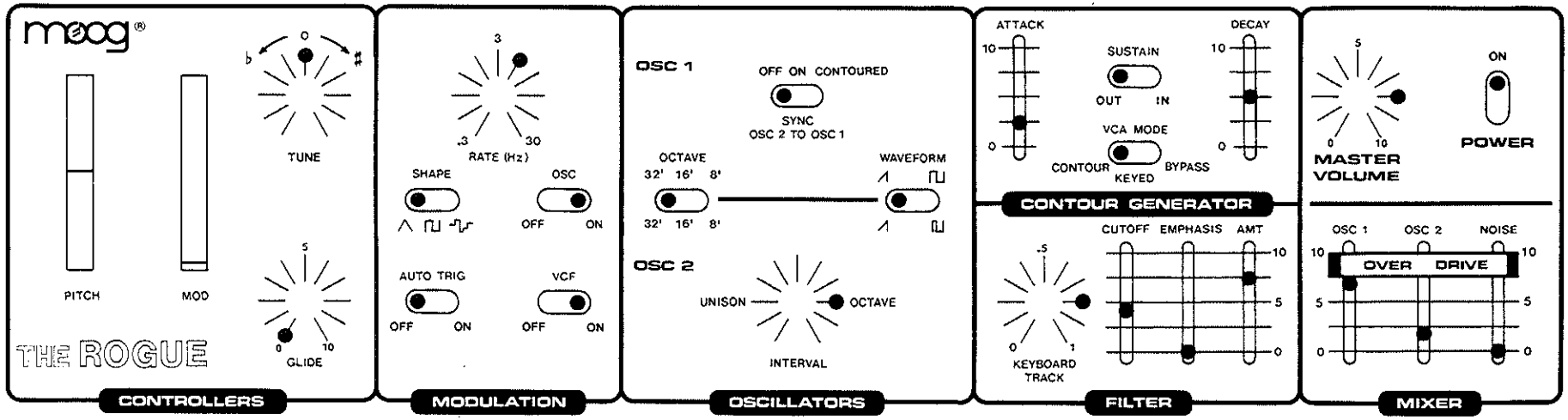
Note: "Humanizer" adds slight tone color changes (slow filter cutoff modulation) while the bass line is being played.

BASS II – ROGUE POWERBASS

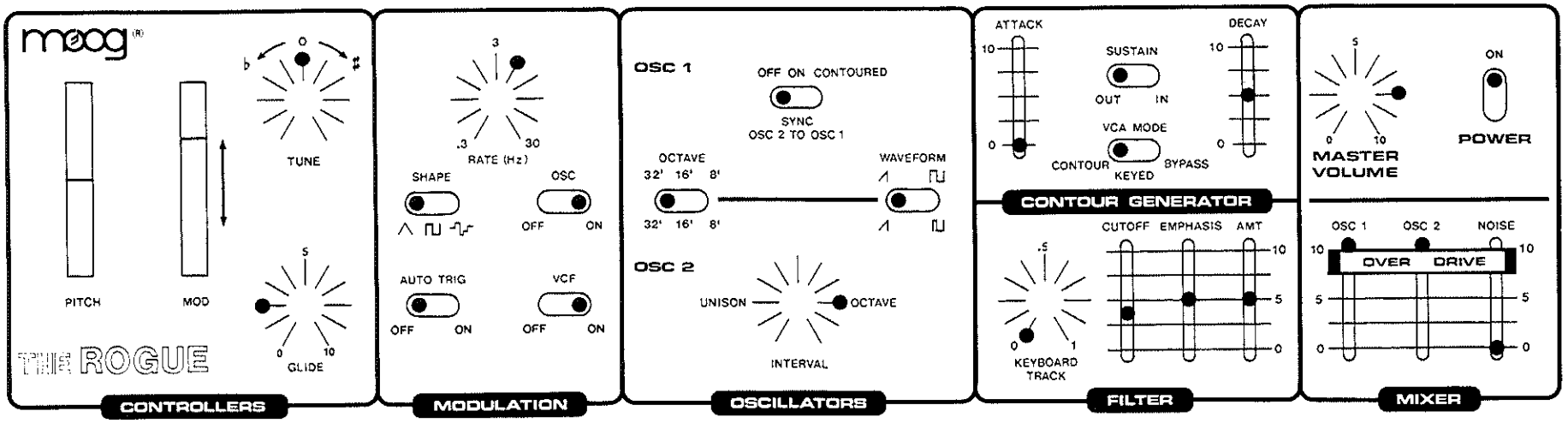


"Rogue Powerbass" uses the overdrive circuitry as well as the coutoured sync sweep. It is best heard through a bass amp . . . and watch the master volume!

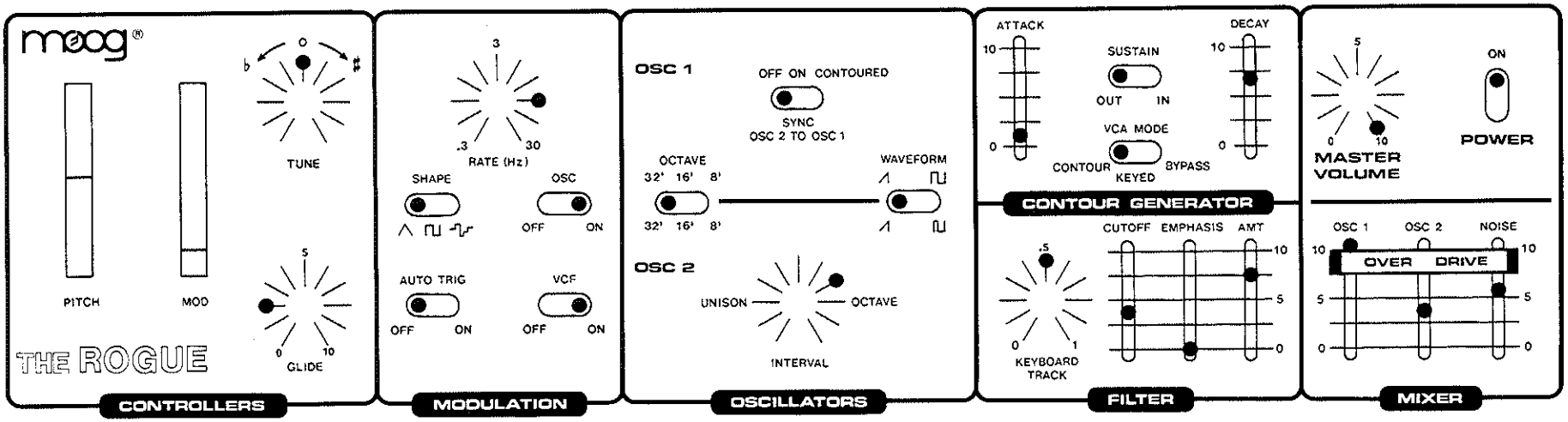
BASS III – TUBA (Prodigy Sound)



FRANKENFUNK (Prodigy Sound)

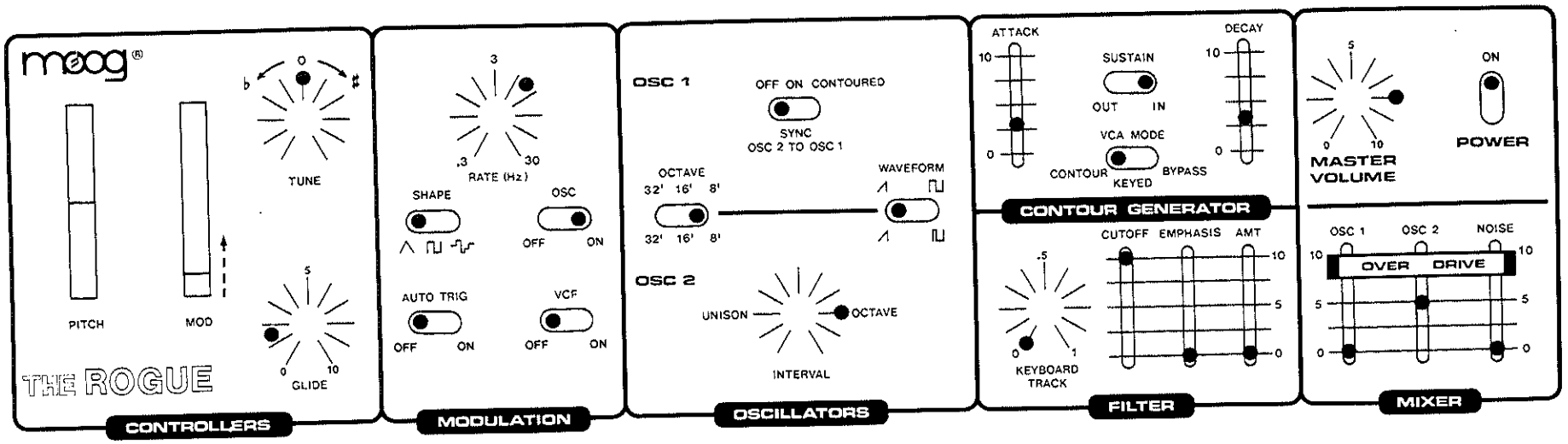


TYMPANI

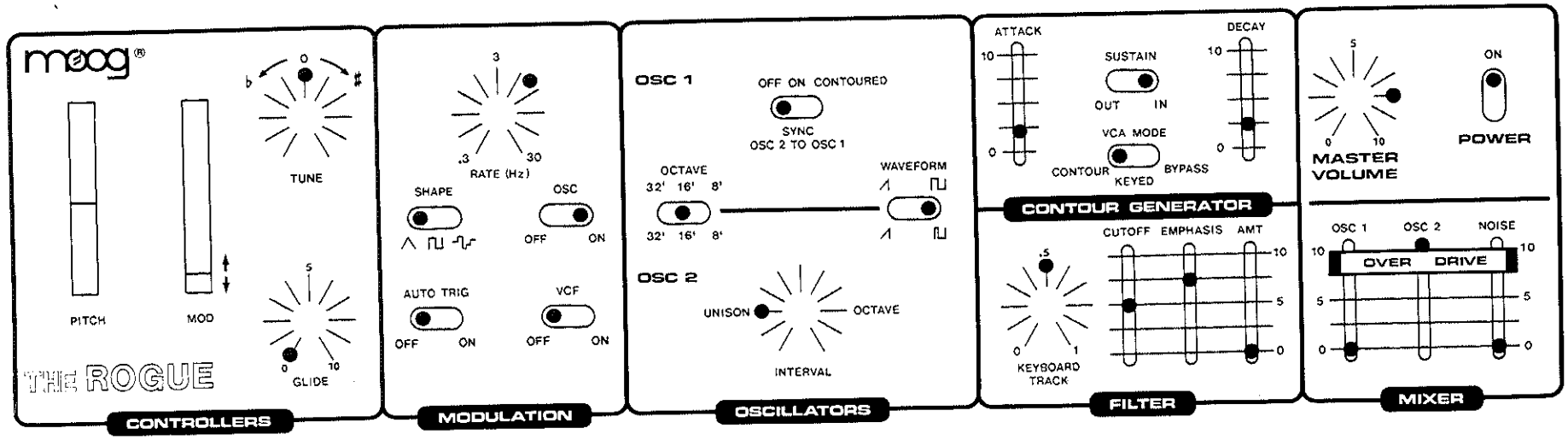


Notes: 1. Play only low octave of the keyboard.
2. For "roll" effect, switch on AUTO TRIG.

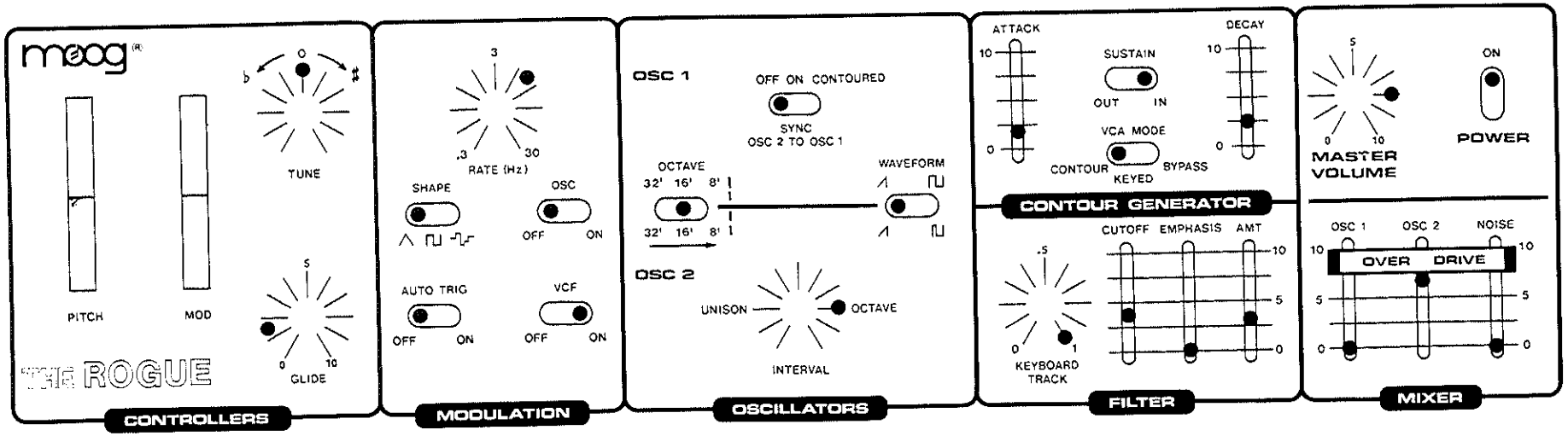
VIOLIN



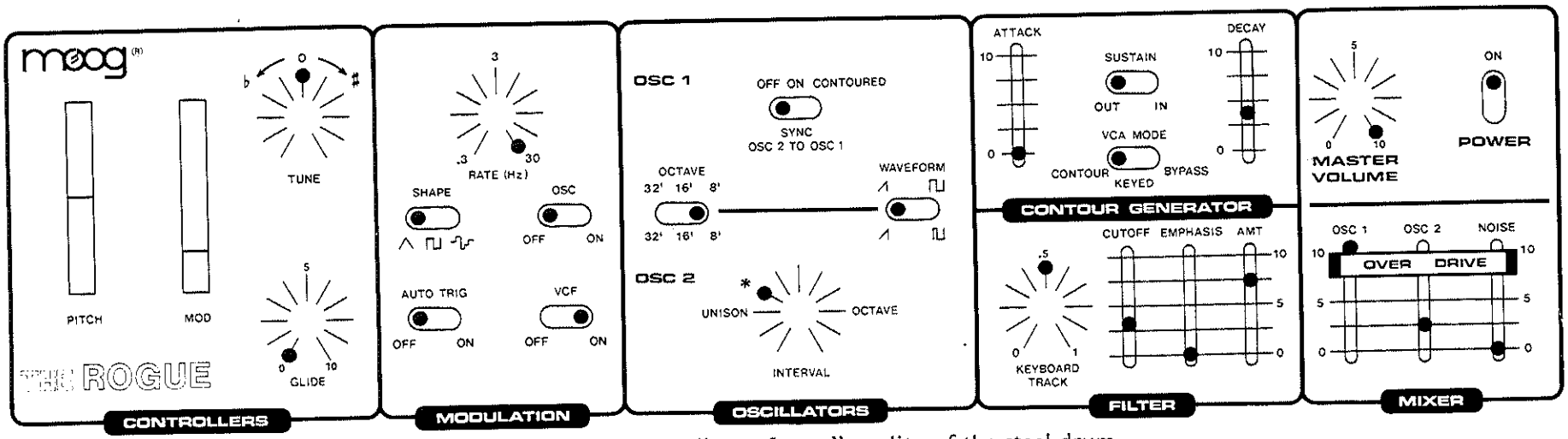
BASSOON



FLUTE

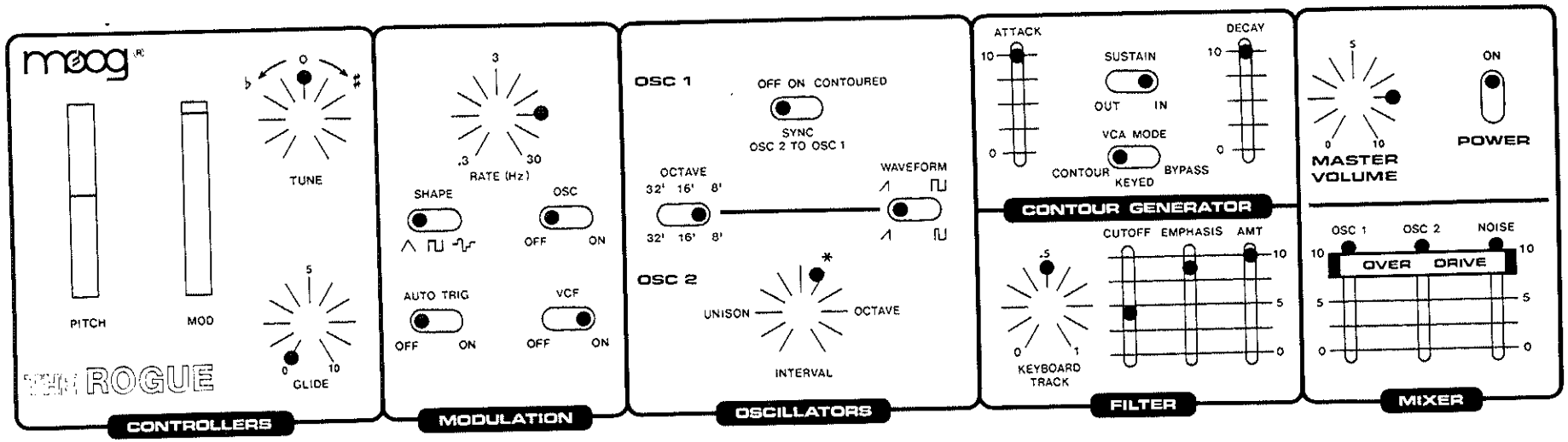


STEEL DRUMS ("Lead Pan")



* Note: Tune Osc 2 a Major 2nd above Osc 1 to produce the "out-of-tune" quality of the steel drum.

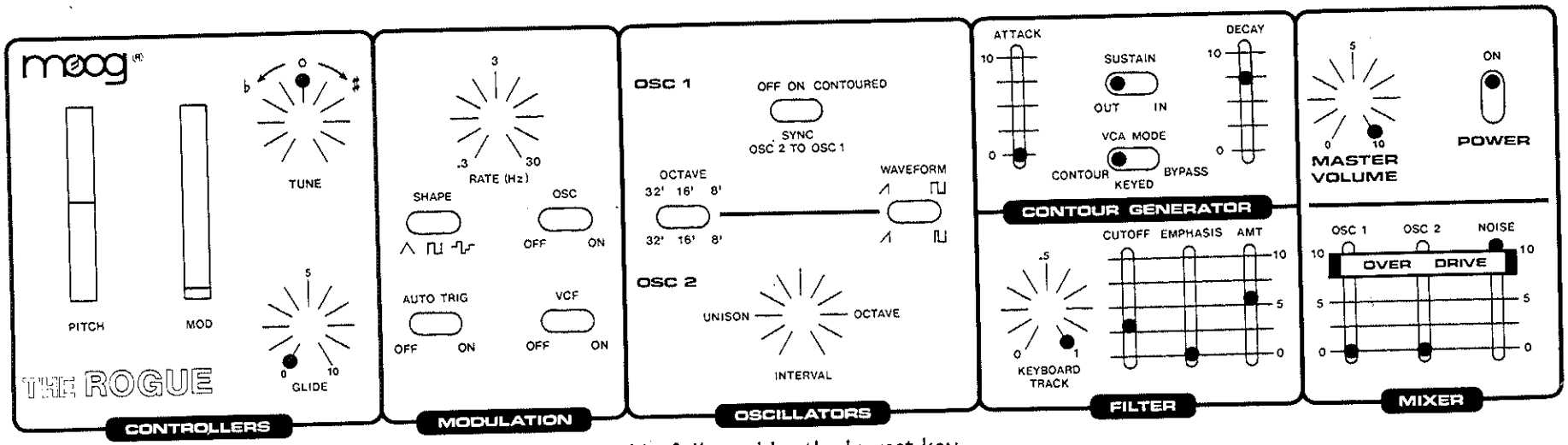
WARP TWO



* Tune to a perfect fifth

Press lowest key for takeoff. Hold it down to reach "warp two" speed. Remove finger from key for landing – or – touch any key and remove finger immediately!

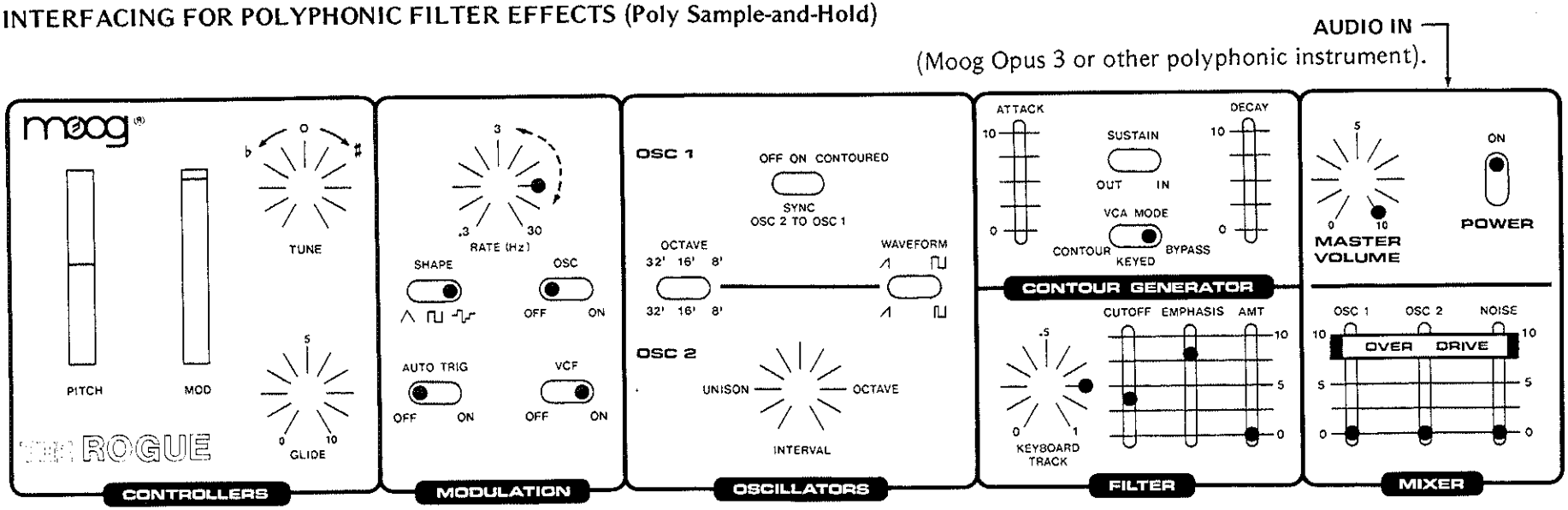
THUNDER (Minimoog Sound)



Play any key in the center area of the keyboard quickly followed by the lowest key.

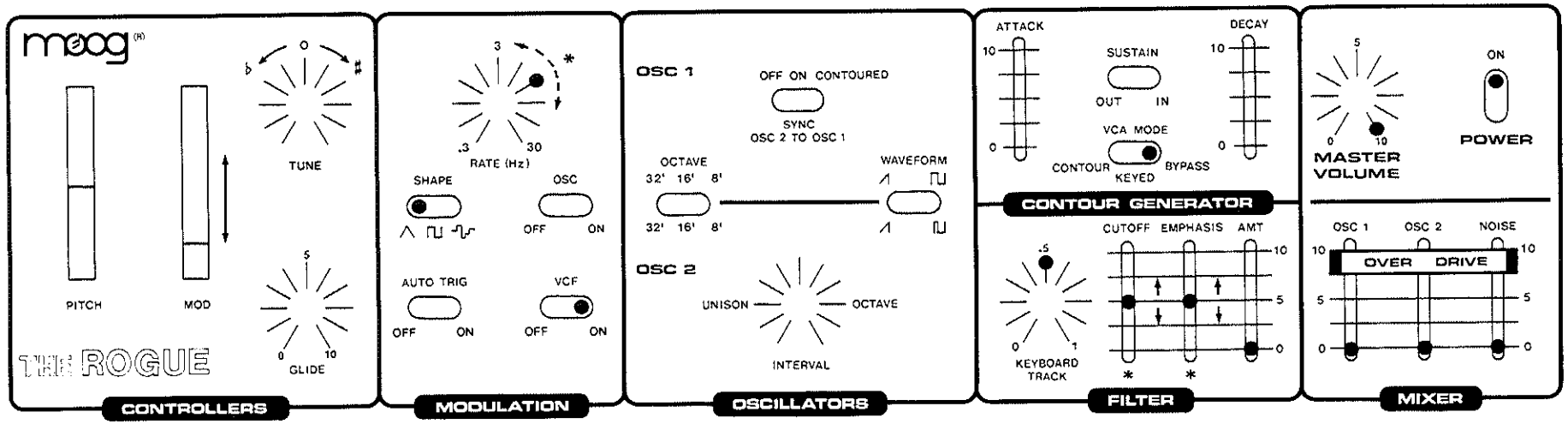
(Controls not indicated on sound chart are not critical to this voice.)

INTERFACING FOR POLYPHONIC FILTER EFFECTS (Poly Sample-and-Hold)



Controls not indicated on sound chart are not critical for this voice.

INTERFACING FOR POLYPHONIC FILTER EFFECTS (Tremolo)



* Adjust MOD WHEEL, RATE, CUTOFF and EMPHASIS to taste.

Controls not indicated on sound chart are not critical for this voice.

PART THREE

SYNTHESIZER BASICS

What is a Synthesizer?

Robert Moog defined a synthesizer as "an electronic musical instrument that offers the musician direct control over the basic properties of musical sounds . . . "

Many times the term "shaping a sound" is used by people working with electronic music synthesizers. That is another way of saying that the musician has a *direct control* over the musical properties.

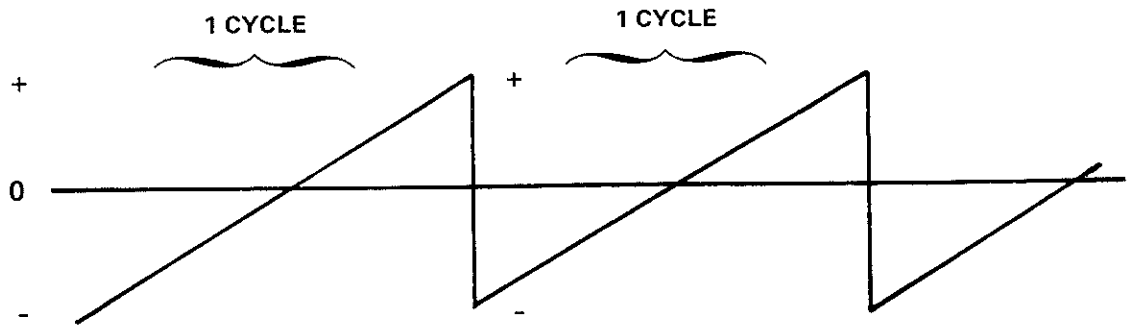
How do you "shape" a sound?

Actually, what you will be doing is shaping an electrical waveform. These waveforms exist when the audio generator (or oscillator) portion of your synthesizer produces a *signal*, a continual flow of alternating current. Alternating means that there is a constant change between negative and positive voltage and this change occurs with a regularity in both shape and speed. The shape of the alternation is called the *waveform* and it determines the *tone color* of the sound. The speed of the alternation is called *frequency* and it determines the *pitch* of the sound. The amount of voltage in the alternation is called *amplitude* and it determines the *loudness* of the sound.

With your synthesizer, you will be able to shape the waveform, control the frequency, and both shape and control the loudness. To put that in musical terms, you will have control over the *tone color, pitch* and *articulation* of any note or sound that you care to produce.

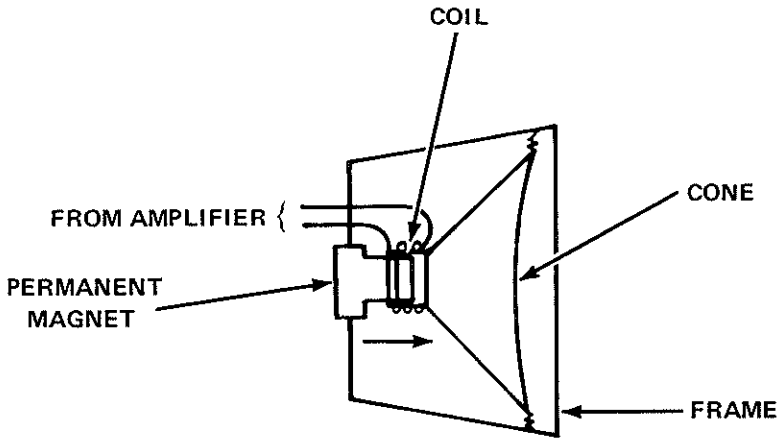
How does all this change from *electronics* to *sound*?

Study the diagram below. It represents a sawtooth wave, one of the very common electrical waveforms that is produced by all synthesizers. The voltage alternates from a negative low to a positive high, and the alternation takes place with an increase in voltage that moves in a straight line between the lowest and highest points. After that, it drops to the low point and begins again. Each time it starts over, a new *cycle* is said to begin. The speed or frequency of this repetition is measured in *cycles per second (cps)*. The term used for cycles per second is *Hertz (Hz)*, named for a German physicist who worked in this field.

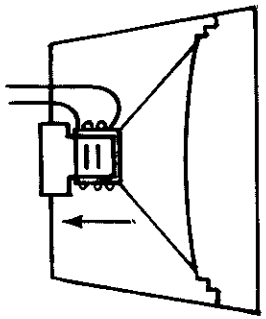


Sound, however, travels as movement through air, and in order for sound to exist, the electrical wave must create some physical movement. This is the job of the *loudspeaker*. Look at the next diagram; it shows the basic structure and function of a loudspeaker.

LOUDSPEAKER – BASIC DIAGRAM



SPEAKER CONE FORWARD



SPEAKER CONE BACK

The cone of a speaker is designed to move back and forth. It is attached to an electromagnet which moves freely within the magnetic field of a permanent magnet. The electromagnet is a simple coil with wires going to it from your amplifier. When the voltage entering the speaker increases, the cone moves forward; when it decreases, the cone moves backward. This back-and-forth movement of the speaker cone varies with the *shape, frequency* and *amplitude* of the electrical waveform.

In short, each waveform applied to the speaker will produce a different sound. You control the waveshapes, so . . .

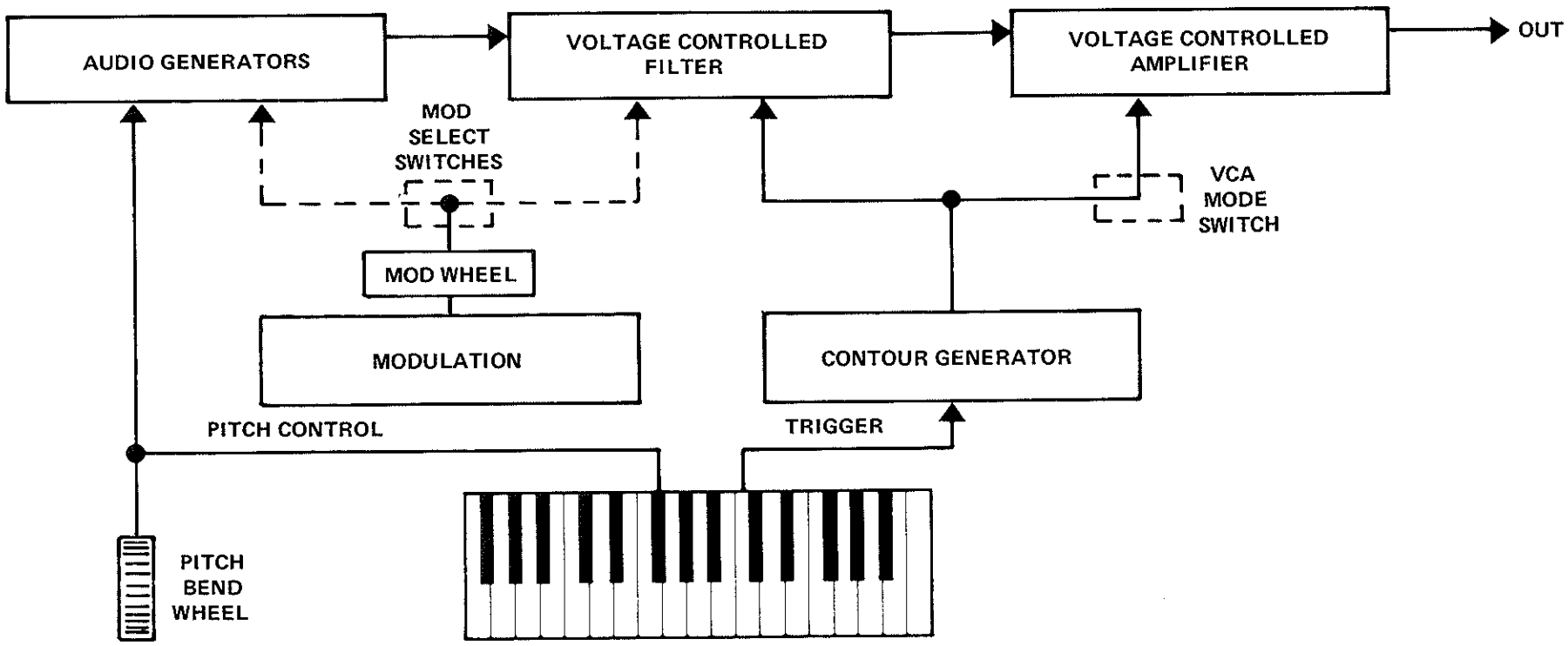
"A SYNTHESIZER IS AN ELECTRONIC MUSICAL INSTRUMENT THAT OFFERS THE MUSICIAN DIRECT CONTROL OVER THE BASIC PROPERTIES OF MUSICAL SOUNDS . . ."

A CLOSER LOOK AT THE ROGUE

How are the functions of the Rogue organized?

The best way to think of any synthesizer's functions is to think of the whole thing as a *modular* instrument. A *module* may best be defined as an individual part that has its own special purpose. To understand and use a synthesizer correctly, you need only to understand each of its modules. The "connecting" of one module to another is easily done with the switches and controls on the Rogue.

BASIC SYNTHESIZER FLOW-CHART



To begin with, there are four basic modules on every synthesizer:

1. Audio Generators (oscillators, noise generator)
2. Modifiers (filter and modulation sections)
3. Articulators (contour generator and voltage-controlled amplifier)
4. Performance Controllers (keyboard, pitch bend wheel)

What are audio generators?

The audio generator portion of the Rogue consists of two oscillators and a noise generator. The *oscillators* produce electrical waveforms with variable shapes and frequencies that you can control for different tone colors or pitches. The *noise generator* produces a non-pitched signal that can be used for percussion, wind or surf sounds and many other effects.

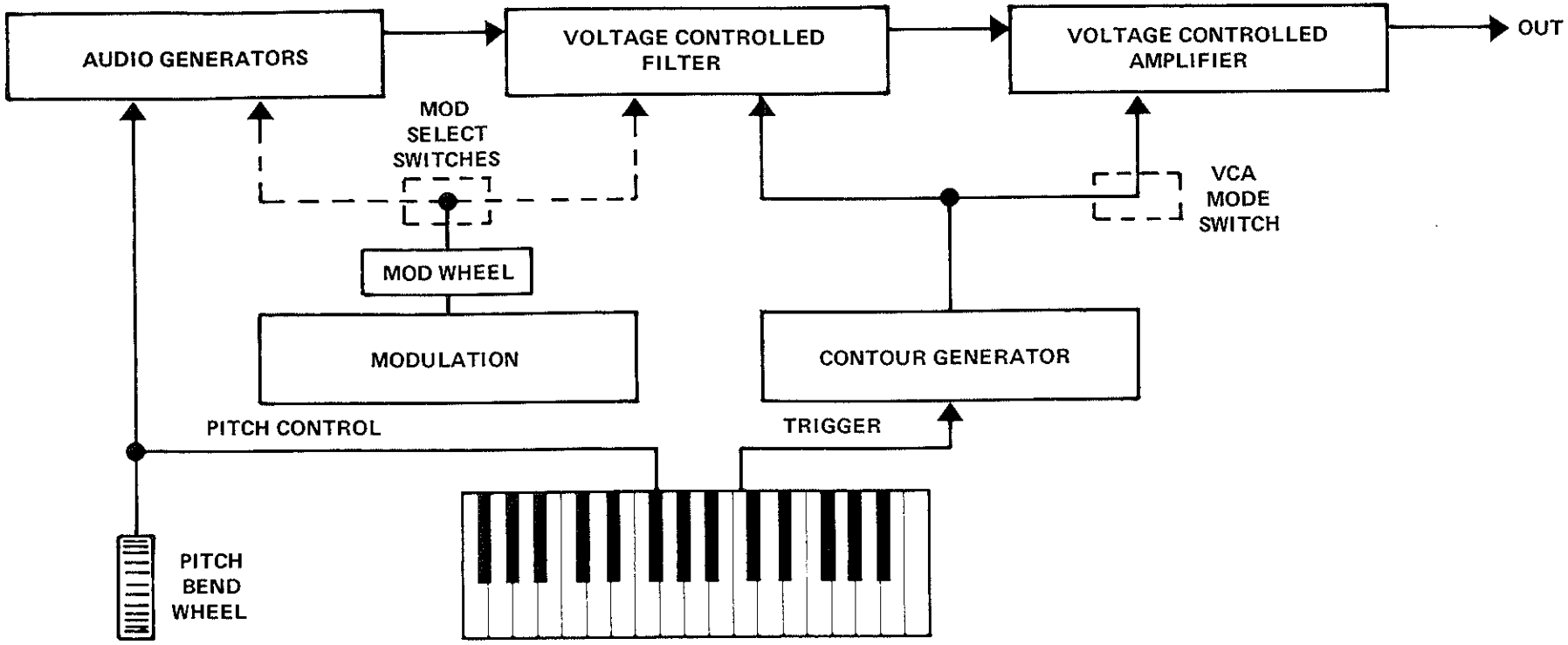
Both oscillators produce sawtooth waveforms ( ). Oscillator one also produces a square wave ( ) and oscillator two produces a narrow pulse wave ().

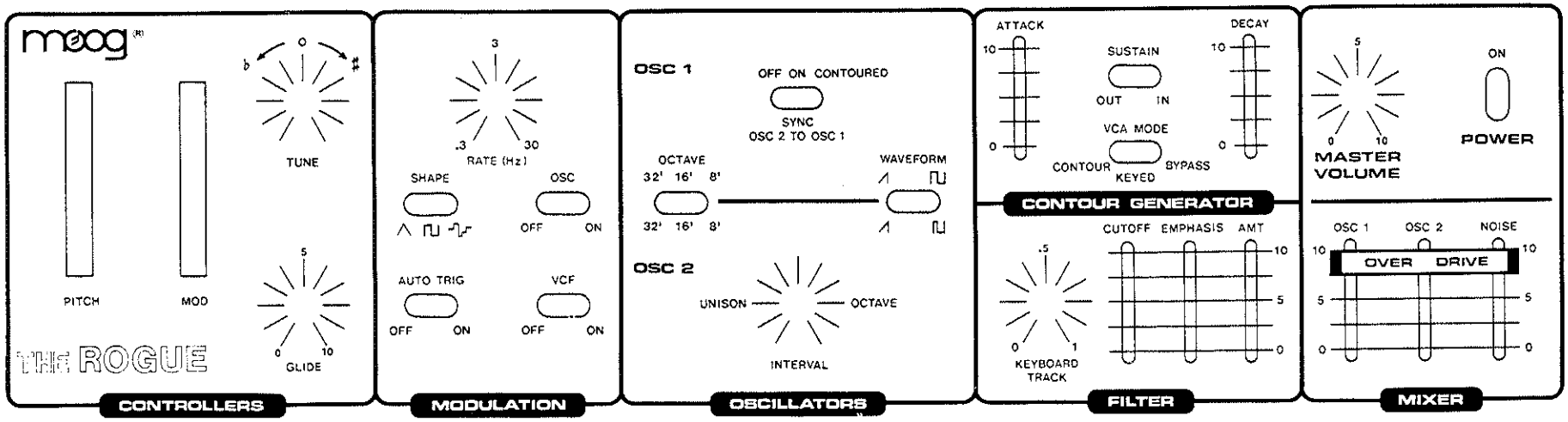
The octave switch provides a 3-octave range for both oscillators. In addition, oscillator two may be tuned up to one octave higher than oscillator one.

The "detuning" of oscillator two is done by first switching the *sync* switch "off," then turning the *interval* knob to the desired position.

When the *sync* switch is turned "on," the pitch of oscillator two will be locked in synchronization to that of oscillator one.

When the *sync* switch is turned to "contoured," the settings on the contour generator will change the spectrum of oscillator two. However, since the two oscillators are locked in synchronization, this frequency sweeping will cause a rapid change in the output waveform, creating unusual "screaming" effects. This is a unique sound on the Rogue; it can be heard clearly on Sound Chart 1 (THE MOOG ROGUE) and Sound Chart 8 (BASS II — ROGUE POWERBASS).





The shading on the above panel shows the location of the audio generator portion of the Rogue.

What are the modifiers?

There are two types of modifiers used on the Rogue, and since each has a very separate purpose, it would be best to look at them one at a time.

1. Filter

This module changes the tone color of the sound produced by the audio generators. It does so by adding or reducing the amounts of high frequencies present in the signal. This is controlled by the "cutoff" slider.

In addition, "emphasis" may be added to increase the effect of the filter's function, and the "cutoff" can be controlled further by the keyboard and contour generator. "Emphasis" amplifies a narrow band of frequencies surrounding the cutoff point.

Raise the "amount" slider to increase the effect of the *contour* on the filter "cutoff."

The "keyboard track" control may be adjusted from "0" (no effect of the notes played on the keyboard is heard in the filter) to "1" (full control of the filter by the keyboard).

A great many unusual tone colors may be produced using the filter, and a complete understanding of its function will give you control over an almost infinite variety of musical sounds.

2. Modulators

Modulation means *change*. The use of the modulators will give you unusual changes in the outputs of the audio generators or filter. As the performer, you will be able to control the amount of these changes, the speed of the changes, and the portions of the synthesizer that may be affected by these changes.

The modulation section of the Rogue provides such effects as *vibrato, tremolo, automatic repetition* and *sample-and-hold.*

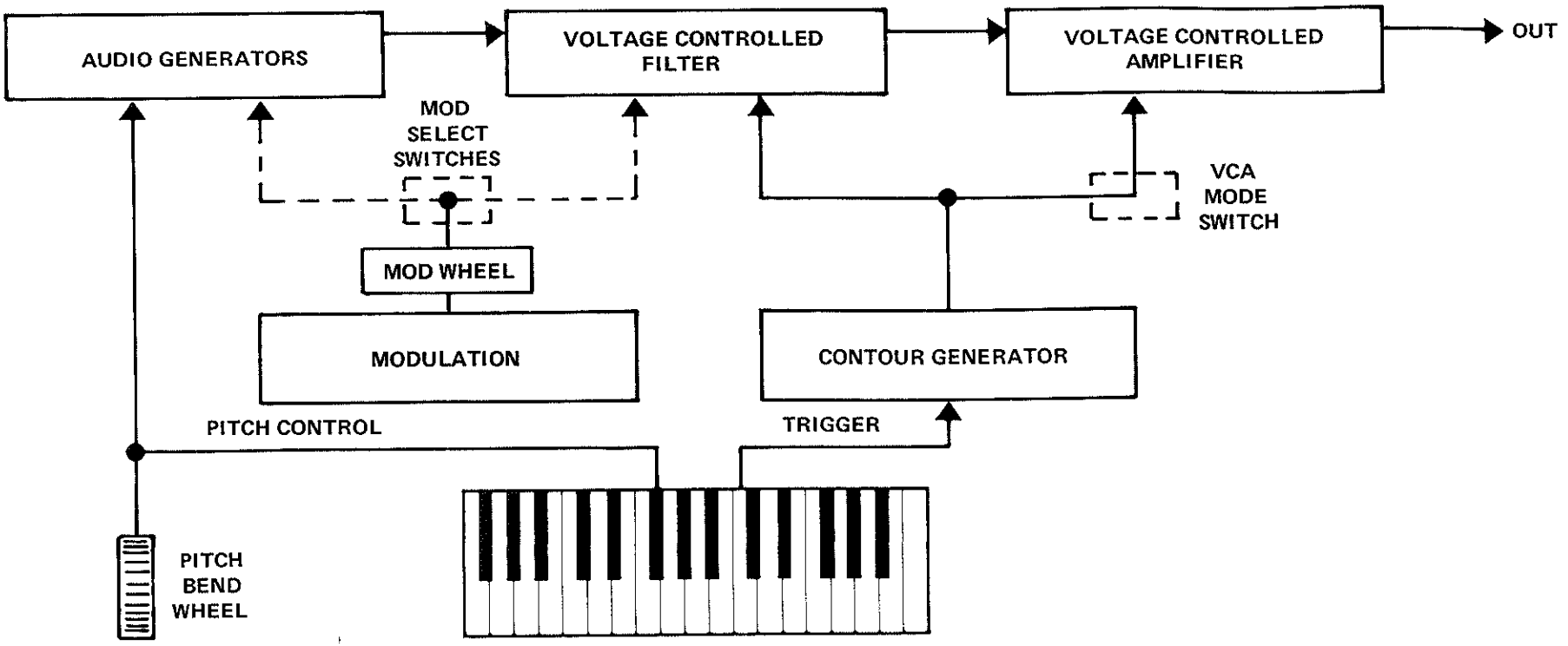
The actual *modulation* is produced by a low-frequency oscillator (LFO) built into the Rogue. You can control its repetition rate with the "rate" knob and its waveshape with the 3-position "shape" switch.

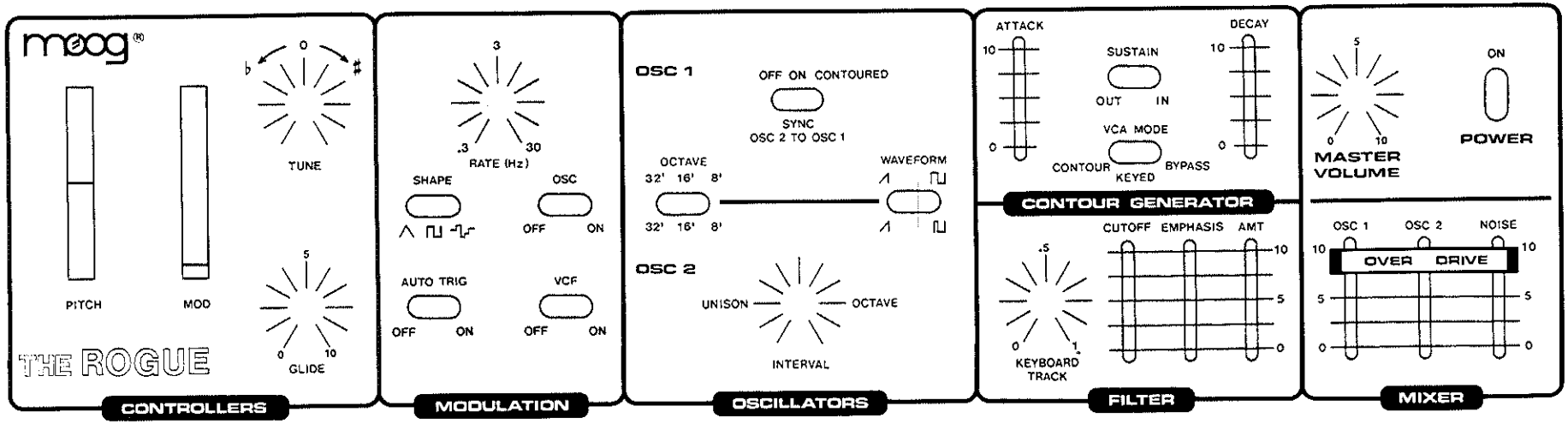
You may then select to apply this modulation effect to *either* the two oscillators for vibrato *or* the filter (VCF) for tremolo, *or both*.

Note: The amount of modulation (amplitude) is controlled by the Mod Wheel. If the wheel is in its lowest position, no modulation effects will be heard.

Auto Trigger will trigger the *contour generator* at each complete cycle of the LFO when turned "on."

For sample-and-hold patterns, select the "random" () shape, turn the Auto Trigger "on," route the modulation to OSC and/or VCF and raise the Mod Wheel fully.





The shading on the above diagram indicates the *modulation* and *filter* portions of the Rogue.

What are articulators?

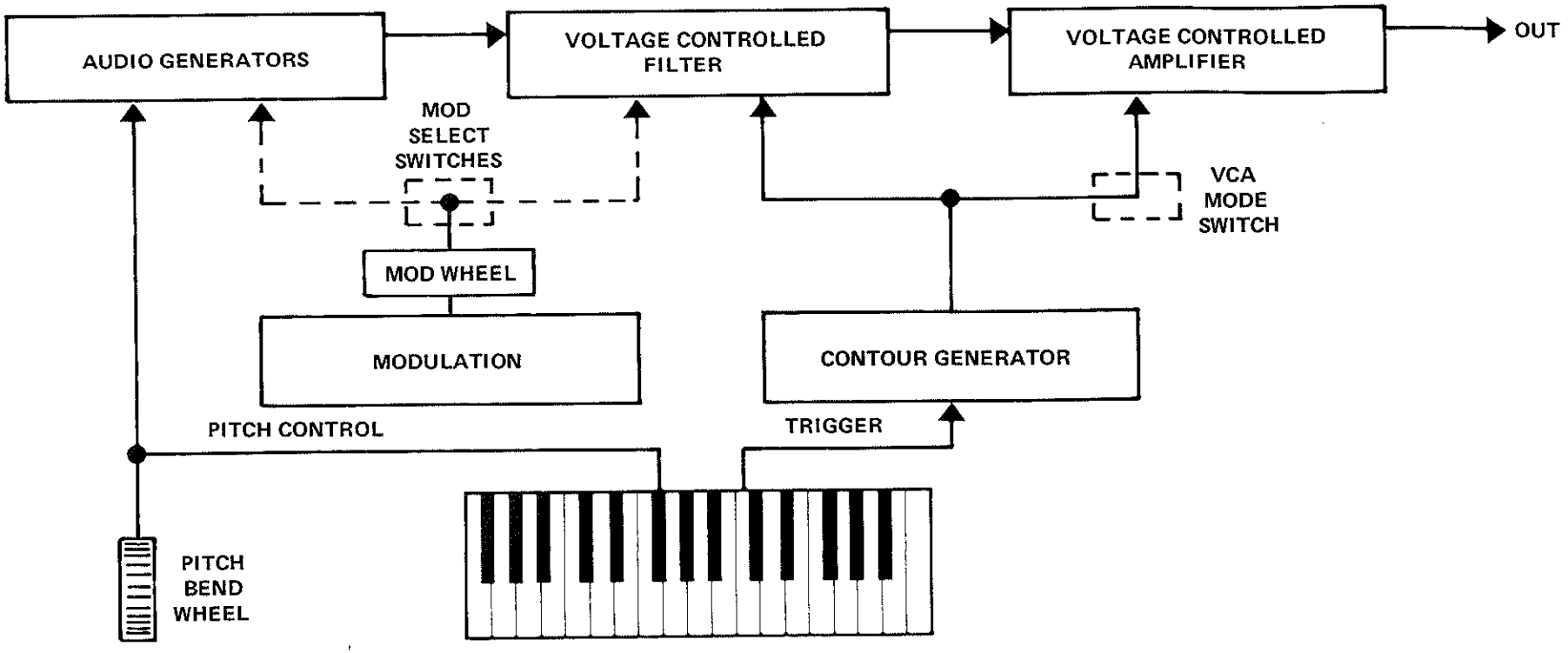
The articulators are those portions of a synthesizer that allow the musician to control the loudness of the instrument, the duration and shape of each tone, and the phrasing desired. On the Rogue, the contour generator controls articulation. It is put into operation each time you depress a key on the keyboard or when triggered by the Auto Trig function.

Sliders allow control of both the *attack* and *decay* times. These may be set from fast (0) to very slow (10).* A *sustain* switch holds maximum loudness while a key is depressed.

The contour may be used to control the filter cutoff. This effect is created by raising the *amount* slider in the filter section.

A 3-position switch labeled *VCA Mode* (1) applies the contour directly to the Rogue's amplifier, (2) allows the amplifier to be turned "on" and "off" by the keyboard alone, or (3) leaves the amplifier "on" at all times.

*Specific attack and decay times are listed in the Rogue specifications on page 32.



The shading on the above diagram shows the location of the articulation portion of the Rogue.

What are the controllers?

The two primary controllers on the Rogue are the *keyboard* and the *pitch wheel*. Each of these will change the frequencies (and therefore the pitches) of the oscillators in the audio portion. The keyboard can also be used to alter the cutoff of the filter. This is controlled by the *keyboard tracking* knob on the filter section. The keyboard is also directly connected to the articulation portion of the instrument so that pitch and articulation are controlled simultaneously.

A *glide* control allows the addition of "portamento" (sliding from note to note) when playing on the keyboard. The amount and speed of the glide is adjustable.

The *tuning* knob controls both oscillators simultaneously.

The *mixer* allows different levels of each oscillator and/or noise to be combined into the final output (master volume control).

Note: When placed at the upper level (7.5 – 10) the mixer will automatically go into "overdrive." This is a distortion circuit built into the instrument. "Overdrive" creates a driving sound similar to, but less dramatic than, that of a "fuzz box" or other guitar processors.

For normal oscillator sound set mixer at approximately 5.

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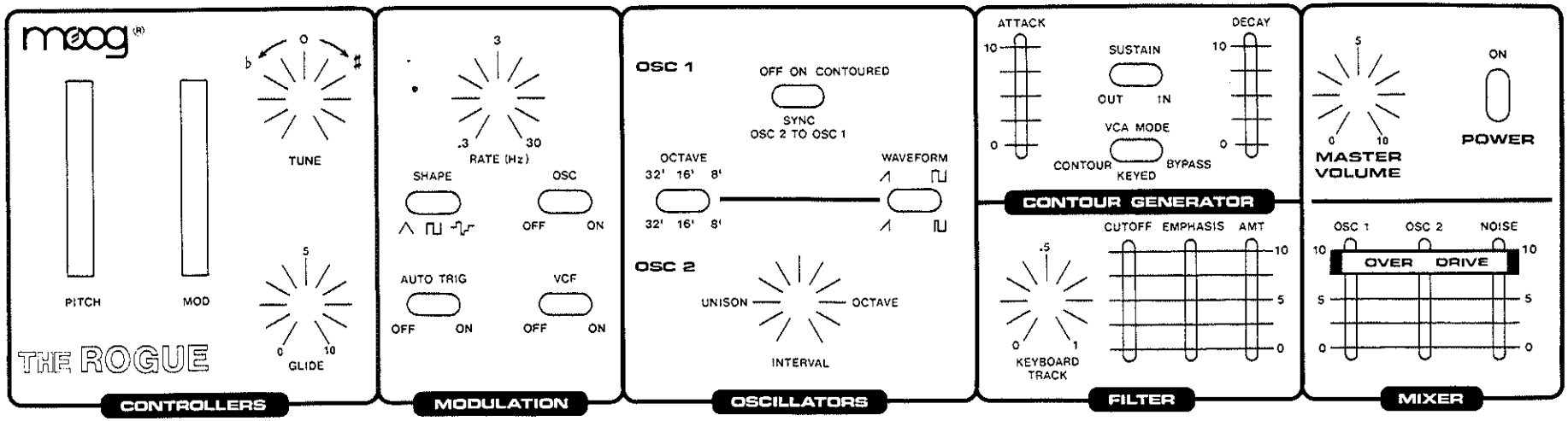

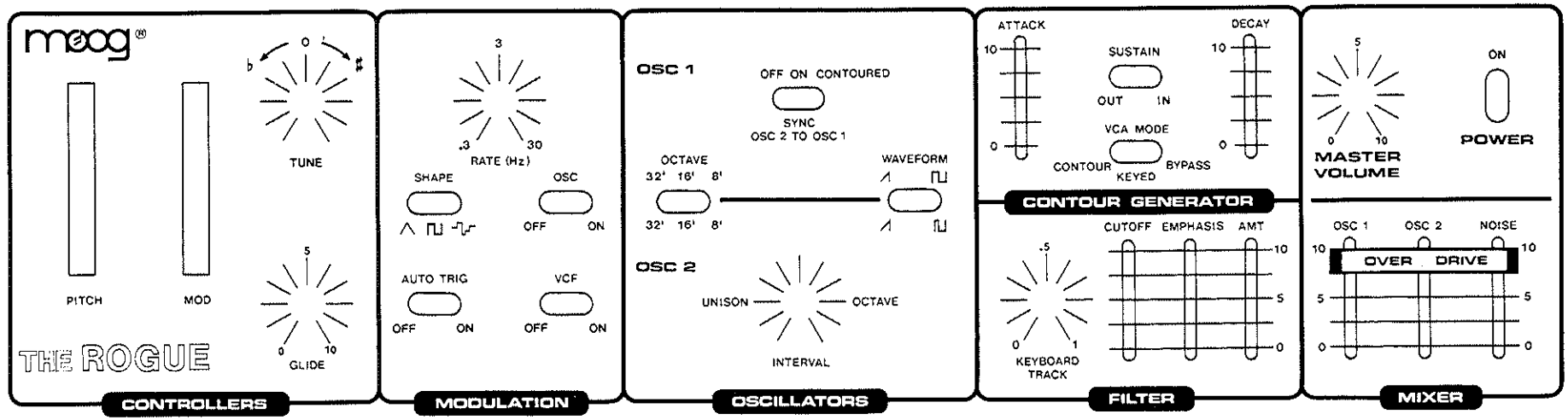

SPECIFICATIONS

Keyboard

Description: 32 note F to C low-note priority
Glide Time: Linear, continuously variable from 5 msec to 2.3 sec (Bottom to top of Keyboard)
Sample & Hold Drift: 4mV/sec maximum

Modulation

Low Frequency Oscillator Rate: Continuously variable from 0.26Hz to 31Hz
Wave Shapes: Triangle, Square, Random (Sample & Hold)
Amount (Square Wave): Oscillator, Zero to 18 Semitones; Filter, Zero to 4 Octaves
Auto Trig: Triggers contour generator at LFO rate

Pitch Wheel

Range greater than ± perfect fifth

Oscillators

Number: Two
Master Tuning Control: ± 2.8 semitones
Reference Frequency: Low F - 43.65Hz ± 0.5Hz
Waveforms: Osc 1 - Sawtooth, square
Osc 2 - Sawtooth, narrow rectangular (Duty Cycle 85% ± 5%)
Octave Footages: 32', 16', 8'
Octave Error: .2% Maximum
Scale Factor Error: 2% Maximum
Range Drift due to Temperature: 10°C to 38°C less than .05%/°C
Osc 2 Interval Range: 16 semitones, ± 3 semitones

Oscillator Synchronization

In the Sync Mode Oscillator 2's sawtooth wave can be reset by itself or by the reset pulse from Oscillator 1. This locks the fundamental frequency of Oscillator 2 to Oscillator 1, generating a complex waveform.
In the "Contoured" sync mode, control voltage from the contour generator is routed only to Oscillator 2.
Contoured Sync range: 4.0 Octaves maximum, ± 2 Octaves

Noise

Type: Pseudorandom digital pink noise

Mixer

When the Oscillator level sliders are set at 5 or higher, the Oscillators overdrive the filter input, producing a small amount of intermodulation distortion - the "Overdrive" sound. Mixer settings below 5 produce normal sound.

Voltage Controlled Low Pass Filter

Type: 24dB/Octave cutoff slope, with variable height resonant peak at cutoff frequency
Range of Cutoff: 20Hz to 40kHz
Keyboard Tracking: Continuously variable, zero to full keyboard voltage
Sweep of cutoff frequency by contour generator: Continuously variable, zero to 6.3 octaves

Contour Generator

Type: Retriggerable unconditional ASR
Attack Time: Continuously variable from 4 msec to 4 sec
Decay/Release Time: Continuously variable from 10 msec to 15 sec
Sustain Level: Switchable, zero or 100% of peak contour

Voltage Controlled Amplifier (VCA)

Audio Output Level: 0dBm
Operating Modes: Contour - VCA is controlled by contour generator
Keyed - VCA fully on when key is depressed, fully off when key is released
By-Pass - VCA fully on

Rear Panel

KB Control Voltage In: 1 V/Octave ± 1%. Input impedance: 100MΩ
KB Control Voltage In: 1 V/Octave ± 1%. Output impedance: .02Ω
S-Trigger In: Switch closure to ground triggers contour generator
S-Trigger Out: Trigger on is switch closure to ground
V-Trigger In: 3 V in Minimum; 60K Ω Input impedance
V-Trigger Out: 10 Volts out; 20K Ω Output impedance
Nominal Audio Input Level: 0dBm (Input impedance = 18K Ω)
Nominal Audio Output Level: 0dBm (Output impedance = 1K Ω unbalanced)

Burn In (Aging)

Before final calibration, units are burned in for 24 hours at ambient of approximately 72°F

Power Requirements

24V AC External Power Supply
Power Consumption: 6 Watts

Dimensions & Weight

Overall Size: 21" wide, 12-1/4" deep, 5-1/4" high (53.3cm wide, 31.1cm deep, 15.3cm high)
Shipping Weight: 16.5 pounds (7.5Kg)

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