ROCKMAN SUSTAINOR™

OPERATING MANUAL

TABLE OF CONTENTS

Page

Front Panel Control 2

General Operating Instructions 3

In/Out Connections 4-5

Signal Path Diagram 6-7

Detailed Function Descriptions 8-16

Preamp/Compressor 8

High Frequency Smart Gate 9

Distortion/Filters 10-11

Flow Diagram 12-13

Output 14

Footswitching 15

Effects Loop 16

Specifications 17

Front Panel Controls

Preamp Gain and Clip Led
Adjusts for output levels of different guitars. For best all around sound, adjust slider while playing in CLN or CLN2™ mode, until the CLIP LED flashes on loud chords.

Compression LED's
Show amount of gain reduction, or sustain, T indicates threshold of compression.

Overdrive Threshold
Lights when DIST/EDGE amp does its thing.

Gain Boost
Boosts DIST/EDGE drive levels for increased sustain and distortion.

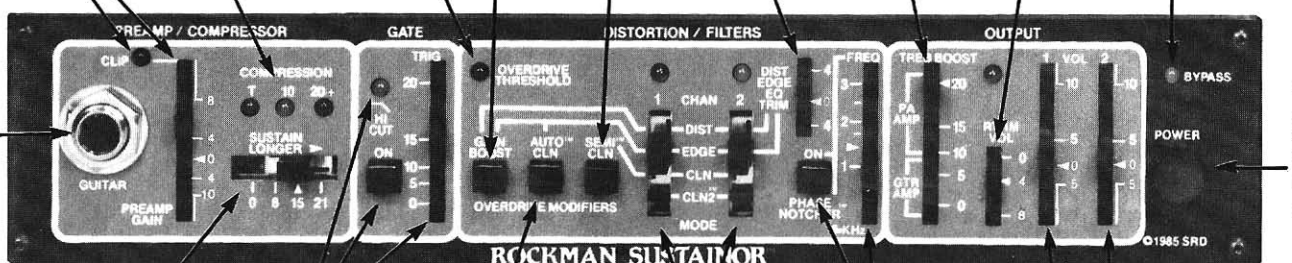
Semi Cln™
Alters the CLN sound, providing light distortion on loud notes and chords.

Dist/Edge EQ Trim
Allows minor adjustment of treble in DIST and EDGE without affecting CLN or CLN 2.

Treble Boost
Provides overall control for treble. Intended as a coarse adjustment to compensate for amp or sound system response.

Rthm Vol
Provides reduced volume for rhythm playing. A footswitch is required to use this function.

Bypass Led
Indicates BYPASS mode. Can be activated only by footswitch.



Guitar Input
Accepts signals from all passive and active guitars, as well as electric keyboards and high impedance mikes.

Power
Turn on SUSTAINOR™ power before your power amp. (If no LED's are lit, unit is off).

Sustain
Controls compressor sustain and stage feedback.
Note: Reduce setting to prevent feedback at loud stage volumes.

Gate-Trig
Slider adjusts sensitivity of the SMART™ GATE. HI CUT LED lights when high frequencies are being cut off (gated). Push button IN to activate.

Auto Cln™
Is available in the EDGE mode. When you reduce your guitar volume to play clean, the SUSTAINOR automatically restores lost treble and volume.

Mode Switches and LED's
Selects one of the four basic processing categories. LED's indicate which switch is active. The switch simultaneously alters signal path, pre- and post-distortion filters, and non-linear circuits. You must use a footswitch to activate CHAN 2.

Phase Notcher™
Utilizes several notches which color the response after all distortion stages. FREQ slider varies the frequency of two upper notches. This circuit can help notch out feedback frequencies. Push button IN to activate.

1 Vol 2
Sliders allow separate output level adjustment for CHAN 1 and CHAN 2.

Note: Controls are arranged in order of Signal Flow - left to right.

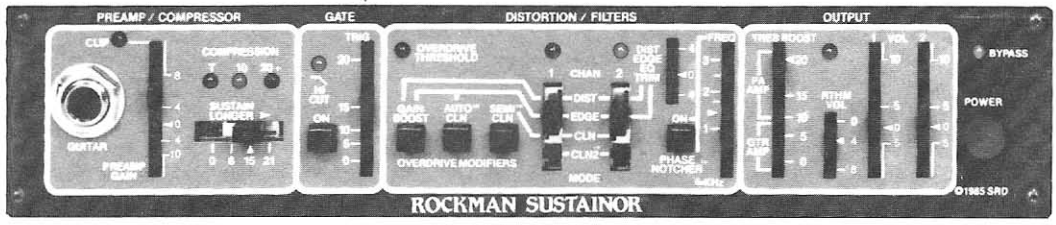
General Operating Instructions

These General Operating Instructions will get you started using your ROCKMAN SUSTAINOR™ right away. We urge you to read the rest of this manual soon, so you will fully understand and be able to better enjoy all the capabilities of this sophisticated signal processor.

1. Check that the ROCKMAN SUSTAINOR power switch is OFF (out); then connect the power cord to an AC outlet. CAUTION: line voltage must match the voltage requirement printed on rear panel of the unit.
2. Push the SUSTAINOR power ON.
3. Connect output jack on rear panel to a power amp, mixing board (line input), or guitar amplifier. When using a guitar amplifier: A) use its low Gain input, B) set its master volume to 10, C) set its volume knob at a low setting, D) set the tone controls to a halfway or neutral setting, and, E) on the SUSTAINOR, set the TREBLE BOOST slider to approximately 10dB.
4. Move all sliders and switches to the normal positions, marked by the small triangles (►), and place all pushbuttons to the OFF (out) position.
5. Plug your guitar into the front input jack.

Now you are ready to play through CHANNEL 1. Select one of the four basic sound categories using the CHAN 1 mode switch, turn your guitar to 10, and play!

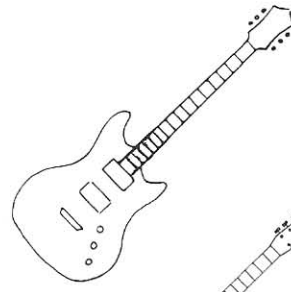
To activate footswitchable features, use the ROCKMAN™ FOOTSWITCH or any standard push on/push off footswitch.



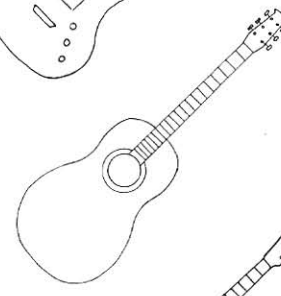
FRONT PANEL

REAR PANEL

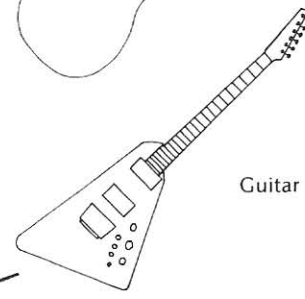
In/Out



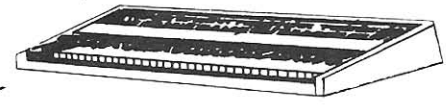
All electric guitars, with passive or active pickups



Acoustic guitar with pickups



Guitar Synthesizer

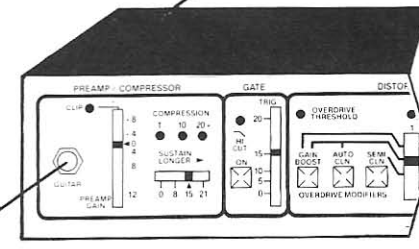


Synth, Electric Piano or Organ

See EFFECTS LOOP instructions (pg. 16) for best connection of effects pedals and other processors.

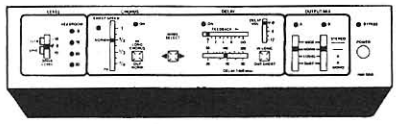
INPUT

Impedance over 2MΩ
Max Level 3.3Vrms
(+10 dBv)



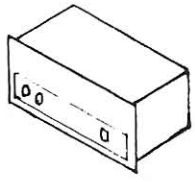
ROCKMAN

Connections

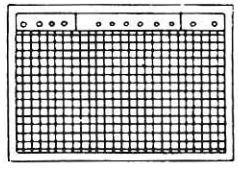


The ROCKMAN™ CHORUS/DELAY provides stereo outputs for the best ROCKMAN sound!

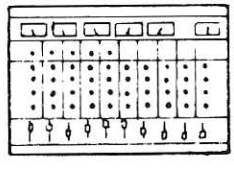
ROCKMAN™
STEREO CHORUS/DELAY



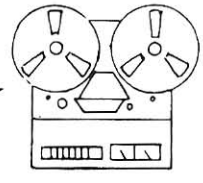
Power Amp



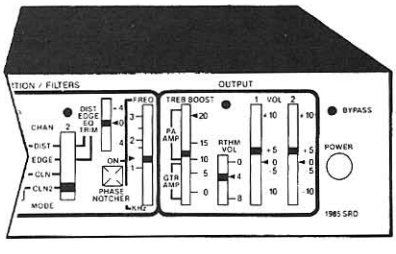
Guitar Amp



Mixer



Tape Deck



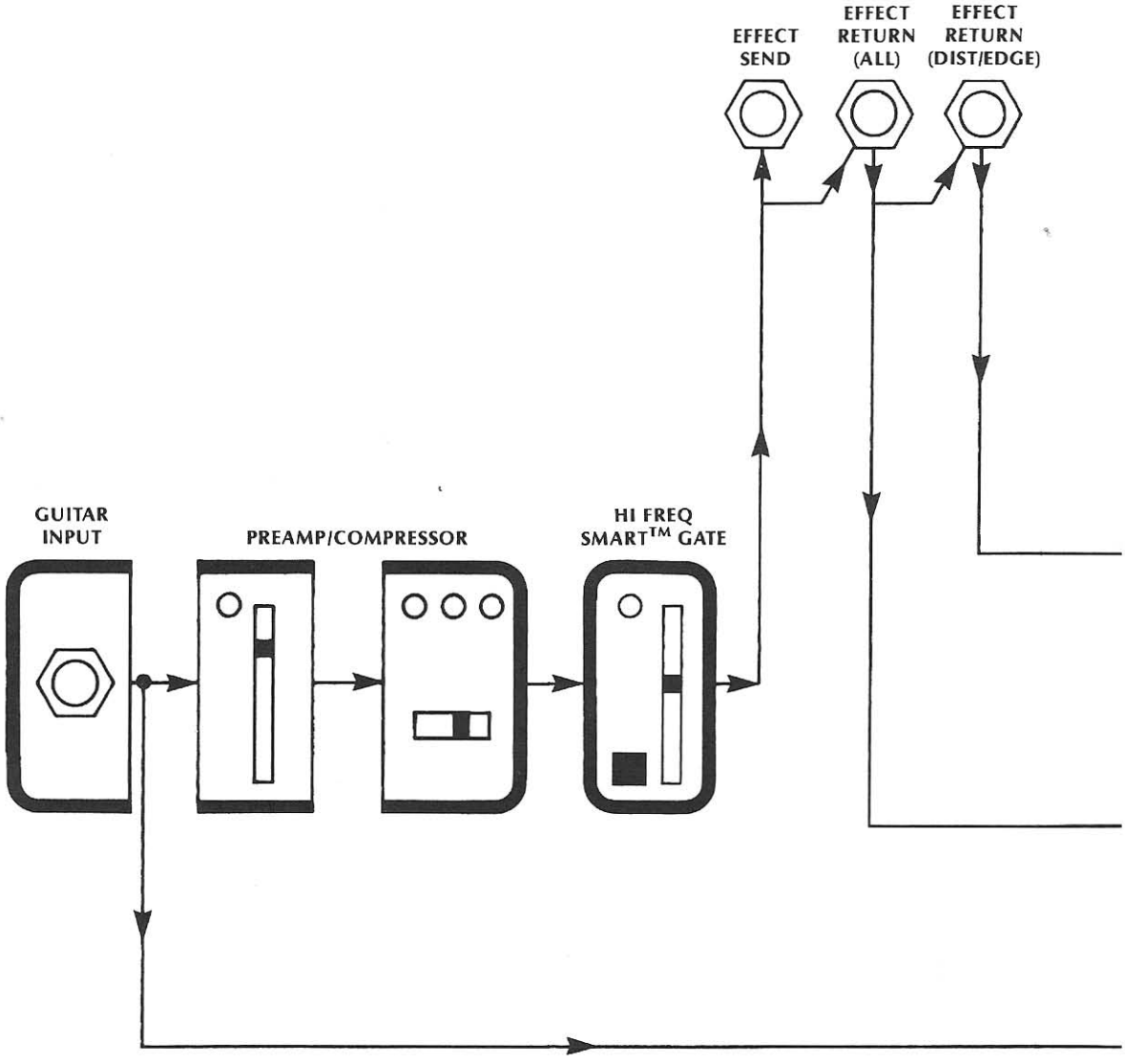
SUSTAINOR™

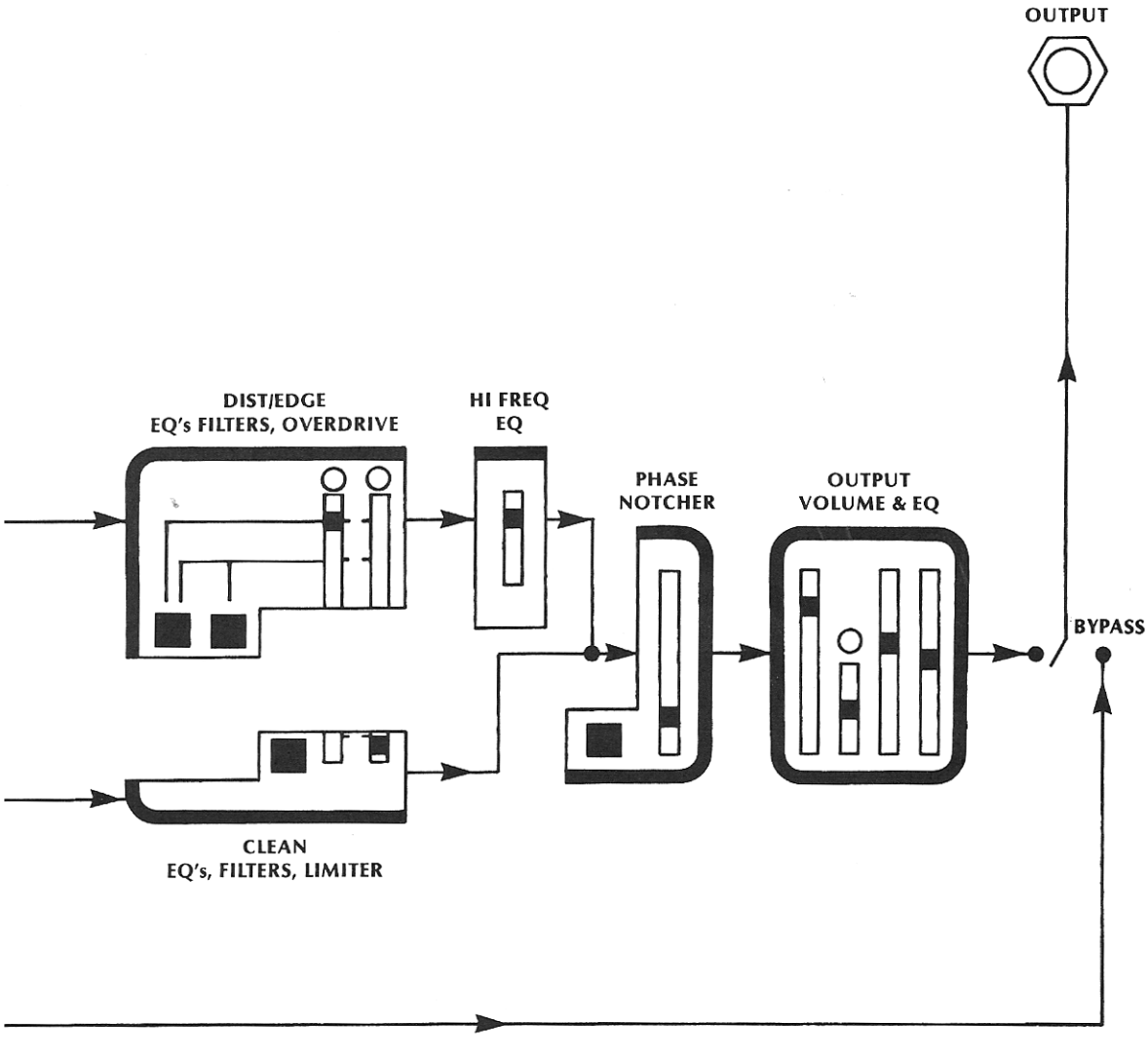
OUTPUT

Impedance 1 KΩ
Max Level 3Vrms (+10 dBv)
Will drive any load over 1KΩ.

Signal Path

The Front Panel controls of the SUSTAINOR are arranged in the same order as the signal - from left to right.




OUTPUT
DIST/EDGE
EQ's FILTERS, OVERDRIVE
HI FREQ
EQ
PHASE
NOTCHER
OUTPUT
VOLUME & EQ
BYPASS
CLEAN
EQ's, FILTERS, LIMITER

Detailed Function Descriptions: Preamp/Compressor

GUITAR INPUT accepts signals from virtually any high impedance source, including standard guitar pickups, active guitar preamps, electric pianos, stage effects devices, etc. For low impedance mics, use a line matching transformer between the device and SUSTAINOR.

PREAMP GAIN and the CLIP LED are designed to optimize the level sent to the SUSTAINOR main compressor. Select CLN or CLN2 mode and move gain slider up until LED flashes momentarily on loud chords; this allows maximum compression without excessive distortion when using CLEAN or CLEAN 2 sounds.

NOTES:

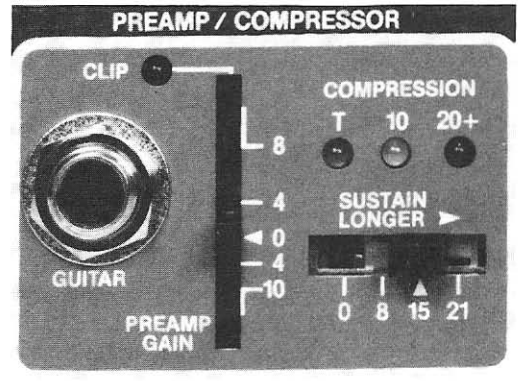
- It is normal for the CLIP LED to flash when either EDGE or DISTORTION mode is being used.
- If you don't plan on playing in CLEAN modes, GAIN may be pushed as high as you wish. Excessive GAIN settings will not harm the unit.
- Devices with high output levels may clip preamp buffer, which might cause unwanted distortion. If CLIP LED flashes often when playing in CLN or CLN2 and GAIN is already set at −4 or lower, the input signal must be reduced at its source. Lowering the guitar pickup slightly is the best way to reduce level. It will improve sustain by reducing magnetic "drag" on the strings. This also applies to "active" pickups which sometimes clip their own electronics.
- If you don't want a lot of sustain, GAIN may be reduced a few dB for improved distortion specs, but reducing too far will sacrifice signal to noise spec.
- PREAMP GAIN may be used for fine gain adjustments (±2 or 3 dB) in all modes.

The MAIN COMPRESSOR is a unique, proprietary circuit designed specifically for guitar processing. It has several unusual features which cannot be duplicated with any combination of studio or stage devices that we are aware of.

The SUSTAIN switch is the primary compressor control, and is used to adjust sustain time in all modes. It controls acoustic feedback at high stage volumes. The switch also increases or reduces distortion harmonics when the SUSTAINOR is creating partially distorted sounds. 15, the recommended normal setting, provides roughly 15 dB of gain reduction to the instrument's signal. This is perceived as a large increase in sustain over an unprocessed guitar signal.

The COMPRESSION LED's indicate the action of the compressor. T indicates the threshold of compression at about 2 dB gain reduction. 10 indicates moderate compression at 10 dB gain reduction, and 20+ shows high compression, over 20 dB gain reduction. The amount of gain reduction is determined by the signal level entering the compressor, as controlled by the SUSTAIN switch, the PREAMP GAIN slider, and the instrument's signal level.

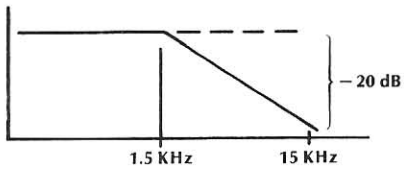
- For very long sustain, set to 21. This may cause some noticeable distortion in CLEAN modes, depending on the guitar.
- If unwanted acoustical feedback occurs at loud stage levels, reduce SUSTAIN control setting, not OUTPUT VOL. A small reduction in PREAMP GAIN will also help. Activating GAIN BOOST will aggravate feedback problems.
- To eliminate compression, set sustain to 0 and reduce PREAMP GAIN if required. This will provide a very linear and quiet signal with SUSTAINOR EQ, but no additional sustain. When reducing sustain to 0, output volume is automatically compensated, to avoid excessive perceived volume loss.

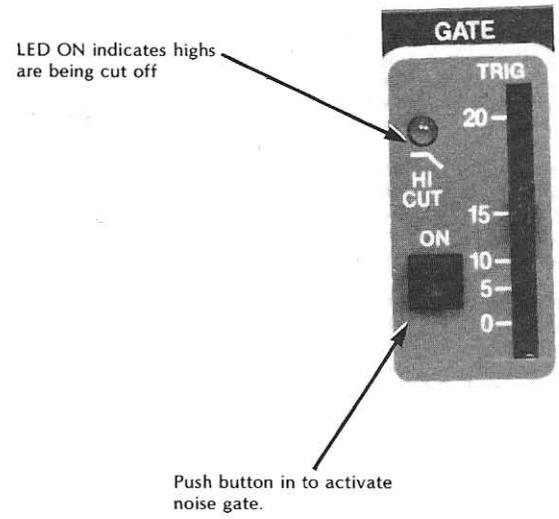


High Frequency Smart™ Gate

This SMART GATE is tailored specifically to remove high frequency noise (hiss or buzz). The upper half of the audio spectrum is rolled off at 6 dB/octave above 1.5 KHz when no high frequencies are present in the signal. This leaves the fundamental and low harmonics unaltered for their full sustain. The noise gate will not only minimize compressor hiss pumping at high sustain settings, but will also help remove hiss and buzz from single coil pickups, or any effects plugged between the SUSTAINOR and the guitar.

This is no ordinary noise gate - it is smart enough to automatically turn off hiss slowly when notes are held, and quickly when notes are stopped short. It will not cut off the end of your notes or be fooled into letting noise through if you bump the guitar strings inadvertently. Attack time of the gate is extremely fast and will not degrade transients.

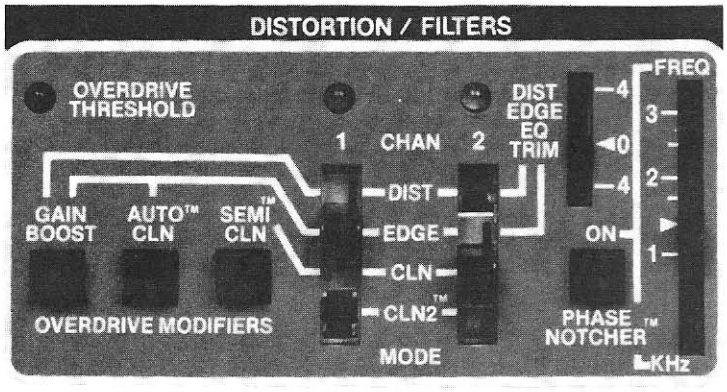




TRIG (TRIGGER) slider sets the sensitivity of the gate's threshold. Setting at 0 will cause the gate to wait until the end of the note to begin cutting highs. If your guitar or other equipment is noisy, the gate will not close at all with TRIG set at 0. Setting at MAX will cause the gate to cut highs while notes are still playing. To adjust: In a CLEAN mode, with TRIG at 0, play a chord. Listen for noise as the notes die out. Move TRIG slider up from bottom so that hiss is suppressed before notes have completely died out. Yellow LED lights when hiss is being suppressed.

Distortion/Filter
Operation of Controls

The DISTORTION/FILTERS section contains controls for creating guitar sounds from very clean to very distorted. The primary controls are the two vertical MODE switches which select among four basic guitar sounds. The OVERDRIVE MODIFIER buttons provide variations of these sounds. The EQ TRIM and PHASE NOTCHER circuits provide variable EQ after the mode circuitry.



The MODE switch (DIST/EDGE/CLN/CLN2) is the most important control. It divides the spectrum of guitar sounds into four categories. When the mode is changed, numerous parameters of EQ, gain, compression and distortion, throughout the circuits, are altered. This virtually rewires the internal components for each category of sound.

- DIST - Provides high energy overdrive with heavy mid pre-emphasis.
- EDGE - Provides a partial overdrive sound with less mid pre-emphasis and sustain.
- CLN - Provides clean sound with good sustain and overall EQ similar to DIST and EDGE.
- CLN2 - Provides clean sound with good sustain and a bright, natural EQ.

The two MODE switches allow presetting two different sound categories. Only one switch is active at a time, as indicated by the LED's. A footswitch is required to switch between channels; without a footswitch CHANNEL 1 is always active.

The DISTORTION THRESHOLD LED lights when playing in EDGE or DIST if the guitar signal is hot enough to produce distortion.

The OVERDRIVE MODIFIERS:

GAIN BOOST - Boosts the signal fed to the DIST and EDGE distortion generators. DIST becomes a super high sustain sound by adding 7 dB extra gain for high energy leads or power chords. EDGE turns into a second high energy sound with a midrange boost of approximately 14 dB. This altered EQ and gain makes the EDGE sound similar to normal DIST and is suitable for high energy rhythm playing. If excessive acoustic feedback occurs at loud stage volumes, disengage GAIN BOOST or reduce compressor SUSTAIN setting. The GAIN BOOST has no effect on either CLN or CLN2.

AUTO CLN - Allows you to change from a distorted sound to a clean sound simply by adjusting your guitar volume knob. Unlike typical guitar/amp response, volume and treble will not disappear as you turn down your guitar's level.

- AUTO CLN works only in the EDGE mode.
- For loud signals (guitar turned up), EDGE is unaltered.
- For softer signals (guitar turned down), treble and volume are automatically boosted to restore losses that are inherent whenever guitar volume is reduced.
- AUTO CLN will still operate when GAIN BOOST is on, but the clean sound will have slightly more midrange.

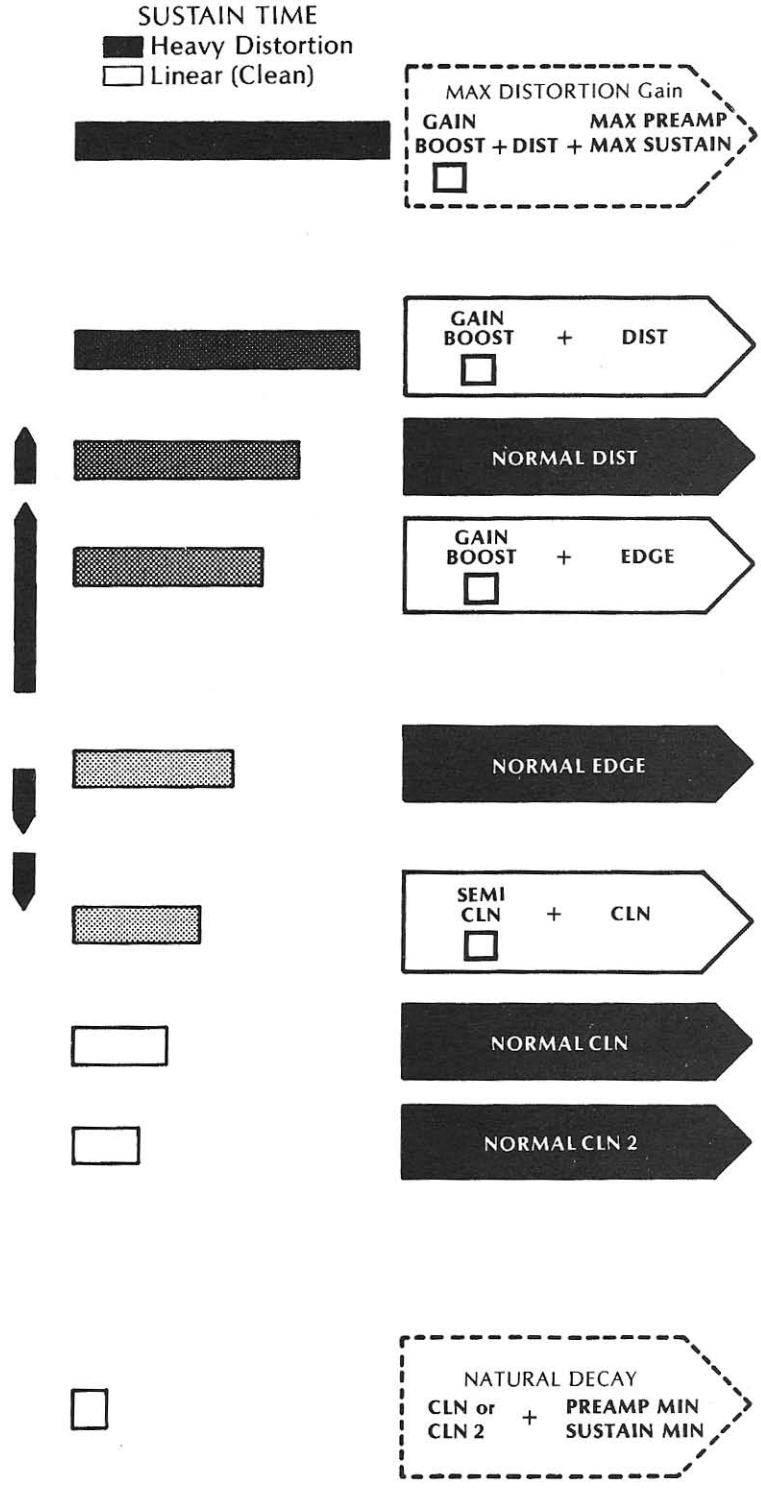
SEMI CLN - Adds a touch of distortion and extra sustain to the normal CLEAN sound. This feature alters EQ and gain before routing the signal through a subtle distortion stage. The SEMI CLEAN sound works only in CLN mode.

DIST/EDGE EQ TRIM - Adjusts treble after the DIST/EDGE distortion stage without affecting the CLEAN modes. DIST/EDGE brightness can be matched to CLN/CLN2, with this variable 3 KHz shelf EQ. The normal setting is indicated by the triangle (◄). Overall treble is controlled with the TREBLE BOOST slider located in the OUTPUT Section.

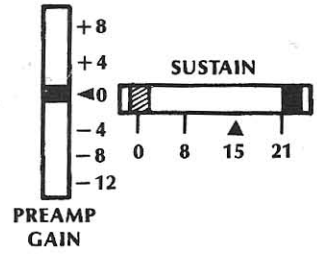
PHASE NOTCHER - Mimics the desirable phase cancellation patterns of miked multi-speaker cabinets without actually needing the extra equipment (especially useful when going direct).

Multiple notches are provided including two variable notches whose frequencies are adjusted by the FREQ slider. One variable notch ranges from 800 Hz to 3 KHz. The other ranges from 2 KHz to 7 KHz. Exact details of the PHASE NOTCHER are proprietary and are not available at this time. The scale on the FREQ slider corresponds to the lower variable notch, and a recommended setting is marked by the triangle (◄). The adjustable notches can also be set to reduce squealing feedback problems.

Controlling SUSTAIN and DISTORTION with the SUSTAINOR



The SUSTAIN switch is the primary coarse gain control. Using this will boost or cut sustain time in all modes. It will increase or reduce distortion in all overdrive modes. This allows you to get distortion/sustain levels in between the MODE presets.



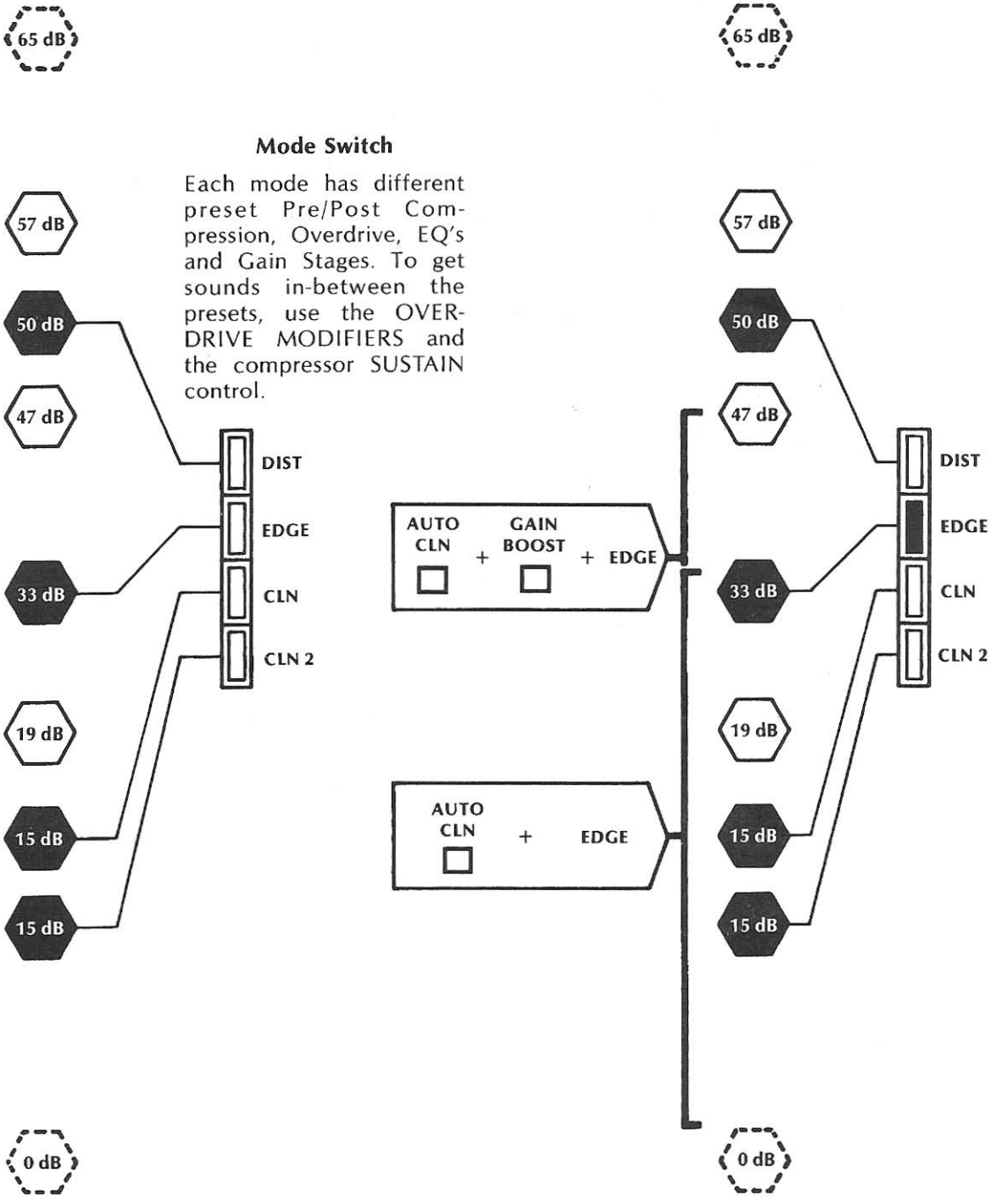
The PREAMP GAIN slider can be used for fine gain adjustments in all modes. It will also provide +8 dB extra gain if needed in overdrive modes. However, excessive gain can cause unwanted distortion in clean modes.

Numbers indicate approximate COMPRESSION/OVERDRIVE SUSTAIN in dB with PREAMP GAIN and SUSTAIN normal (▲) except where noted

AUTO CLEAN Operating Range

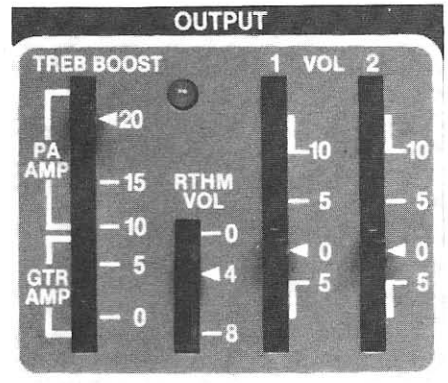
Mode Switch

Each mode has different preset Pre/Post Compression, Overdrive, EQ's and Gain Stages. To get sounds in-between the presets, use the OVERDRIVE MODIFIERS and the compressor SUSTAIN control.



Output Section

This section provides overall EQ and volume control after all compression, limiting and distortion stages.



TREBLE BOOST provides a coarse overall adjustment of frequency response. While not intended as a tone control, its purpose is to roughly match the SUSTAINOR's response to any type of amplification device, from sophisticated sound systems to standard guitar amps. The normal setting (◄) is +20 which provides the proper response for a flat sound system. Guitar amps or speakers with built-in treble emphasis will require a lower setting.

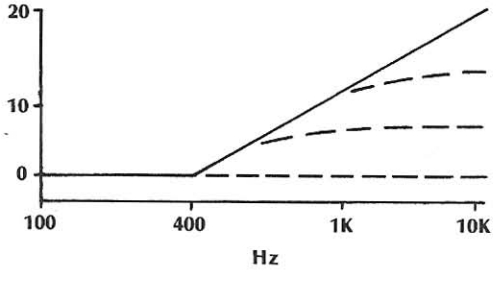
If you are using the SUSTAINOR as a side chain effect, to be switched in or out with the BYPASS function, set TREB BOOST to "0" and adjust upward as required.

OUTPUT VOL is the final volume control on the SUSTAINOR. It can be thought of as a master volume control because it adjusts output level after all distortion and compression stages. Total adjustment range is 15 dB. At the 0 position, (◄) output level is approximately .3Vrms in DIST and 1Vrms in CLEAN, and is a good all around setting for driving most power amps. If you use only DIST or EDGE mode, you may want to boost output volume to drive your amp to full power. The two OUTPUT VOLUME sliders correspond to the two MODE CHANNELS. Only one VOL slider at a time is active, as chosen by footswitch and indicated by the LED's over the MODE switches. When no footswitch is connected, only CHANNEL 1 is active.

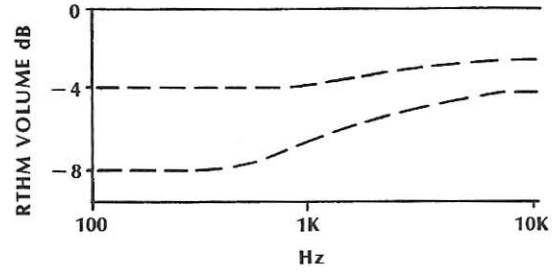
IMPORTANT NOTE: If your power amp or speakers are being driven close to clipping with the SUSTAINOR in DIST or EDGE, you will experience enormous unwanted distortion if you change to a CLEAN mode without lowering your OUTPUT VOL setting. The transient peaks in CLEAN are about 3 times higher than in DIST to get the same "volume"! This fact is a result of physics and the human ear, and the SUSTAINOR provides this 3 times boost when you change modes. So, to play CLEAN at very high volumes will require a much larger power amp than you use for DIST sounds.

RTHM VOL lowers the output volume via footswitching, so that any sound used for solo or leads may be used for background or rhythm parts at a reduced level. The amount of volume reduction is adjustable from 0 to 8 dB. High frequencies are automatically boosted as volume is reduced to compensate for perceived treble loss inherent in human hearing. A typical RTHM VOL setting is indicated by a triangle (◄). A footswitch must be connected to the unit to use the RTHM VOL control. The RTHM VOL LED lights to indicate the reduced volume condition.

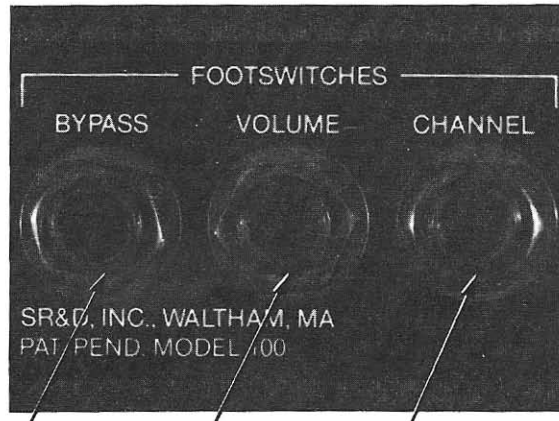
"TREBLE BOOST" RESPONSE



"RTHM VOL"
HIGH FREQ COMPENSATION



Footswitching



CHANNEL

The CHANNEL SELECT footswitch allows remote selection of CHAN 1 mode and volume, or CHAN 2 mode and volume. With no footswitch connected, CHAN 1 is active.

RTHM VOL

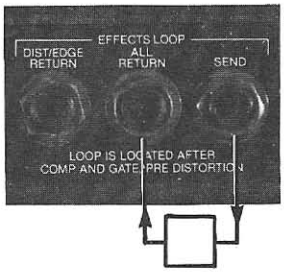
The RTHM VOL footswitch allows remote selection of normal output volume or reduced RTHM VOLUME. With no footpedal connected, volume is always normal.

BYPASS

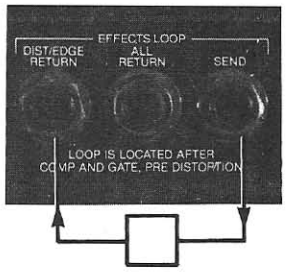
The BYPASS footswitch allows cancelling of all SUSTAINOR processing. In BYPASS mode, the audio signal still passes through a low noise switch circuit, so power to the SUSTAINOR must be on for signal to flow. With no footswitch connected, the unit is always active.

Note: If you are not using your SUSTAINOR as your primary amplifier but wish to occasionally switch it into your system with the bypass footswitch, best results will be obtained with TREB BOOST at a low setting.

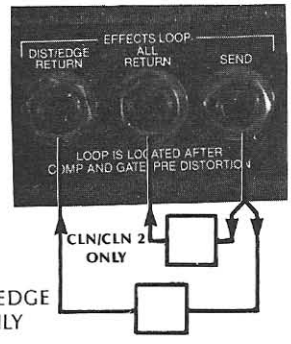
Effects Loop Diagrams



EFFECT FOR ALL SOUNDS



EFFECT ONLY IN DIST/EDGE



DIST/EDGE ONLY

The EFFECTS LOOP jacks provide several options for the connection of external signal processing devices, such as EQ's, flangers, etc. The LOOP is post COMPRESSOR, post SMART GATE, and pre DISTORTION/FILTERS. Inserting effects at this point results in quietest operation, by preventing the amplification of your effects' background noise in the high gain COMPRESSOR stage. The SUSTAINOR provides further noise reduction by employing high frequency pre-emphasis in the effects send and de-emphasis in the effects returns.

The EFFECTS SEND jack provides a post COMPRESSOR signal that is suitable for most effects including "studio" effects. Connect from this jack to the input of any outboard effect.

The ALL RETURN jack provides a high impedance, buffered input. Connect the output of the external effect to this jack. The effect will be "in-line" in all SUSTAINOR modes.

The DIST/EDGE RETURN jack allows automatic control of external effects, through CHANNEL mode switching. Any effect connected here will be active only in DIST and EDGE modes, and bypassed in both CLN modes. This option is useful for customizing your DIST/EDGE sounds with pre-distortion EQ, echo, etc. Connect from this jack to the output of your effect for this feature.

By using a Y'd connector from the EFFECTS SEND jack, you can use two effects loops; one to ALL RETURN, and one to DIST/EDGE return. In this setup, the ALL RETURN becomes a "CLN and CLN 2 ONLY" return.

Note: Use of non-linear effects such as "fuzz tones" in this effects loop is questionable because the pre-emphasis will cause unusual distortion harmonics.

Specifications

INPUT	Impedance	Over 2MΩ
	Maximum Level	3.3Vrms (+10 dBv)
	Gain Adjustment Range	20 dB, continuous
COMPRESSOR	Adjustment Range	21 dB (0, 8, 15, 21)
	Gain Reduction Indicators	Threshold, 10 dB, 20+ dB
	Attack Time	Not for Release
	Release Time	
	Ratio	
SMART GATE	HIGH CUT	
	Frequency Response	−3 dB at 1.5kHz, −20 dB at 15kHz
	Threshold Adjustment Range	20 dB, continuous
	Attack Time	Not for Release
	Release Time	
PHASE NOTCHER	Low Variable Notch	800 Hz, to 3 KHz
	High Variable Notch	2 KHz, to 7 KHz
	Further details cannot be released at this time.	
OUTPUT	Impedance	1 KΩ
	Maximum Level - CLN	3.3Vrms (+10 dBv)
	Maximum Level - DIST/EDGE	1Vrms (0 dBv)
	Volume Adjustment Range	15 dB, continuous
	Treble Boost Range	20 dB at 4 KHz, continuous
	Rhythm Volume Range	8 dB, continuous
EFFECTS SEND	Impedance	1 KΩ
	Max Level	1Vrms
	Min Load Impedance	10 KΩ
EFFECTS RETURNS	Impedance	Over 100 KΩ
	Max Level	1Vrms
DIMENSIONS	8½"W, 5½"D, 1¾"H	(Standard half-rack width)
POWER REQUIREMENT	3W, line voltage as marked on rear panel	
ACCESSORIES Purchased Separately	19" Rockmodule Rackmount (holds two units)	
	Rockman Footswitch	

Specifications subject to change without prior notification.

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