

PRO G.A.P.™

Programmable Guitar Preamp

with Virtual Tube Circuitry™

Version 2.0

INSTRUCTION MANUAL

*Featuring 5 Factory Presets Designed by Steve Lukather
and 5 Factory Presets Designed by Allan Holdsworth*

May be covered by one or more of the following.
U.S. Patents #4538297, 4647876, 4696044,
4745309, 4881047, 4893099.
Other patents pending.
Foreign patents pending.



CONTENTS

1. INTRODUCTION.....	1
A. PRECAUTIONS.....	1
B. POWER REQUIREMENTS.....	1
C. OPERATING TEMPERATURE.....	1
2. QUICK REFERENCE.....	2
3. FRONT PANEL.....	3
4. REAR PANEL.....	6
5. CONNECTIONS.....	8
A. USING THE PRO G.A.P. WITH GUITAR AMPLIFIERS.....	8
B. USING THE PRO G.A.P. WITH A STEREO POWER AMP.....	9
C. USING THE PRO G.A.P. DIRECTLY INTO A MIXER.....	10
D. USING THE FOOTSWITCH, LOOP AND CONTROL FUNCTIONS.....	11
6. BASIC FORMAT.....	12
A. PREDISTORTION EQ SECTION.....	12
B. DISTORTION SECTION.....	12
C. POSTDISTORTION EQ SECTION.....	13
D. HUSH SECTION.....	13
E. OUTPUT SECTION.....	14
F. LOOP FUNCTION.....	15
G. CONTROL FUNCTION (C1).....	15
H. MIDI FORMAT.....	15
I. FACTORY SETUP.....	16
7. OPERATING THE PRO G.A.P.....	17
A. POWER UP.....	17
B. RECALLING A STORED PRESET.....	17
C. CHANGING ADJUSTABLE PARAMETER VALUES.....	18
D. STORING CHANGED PARAMETER VALUES.....	18
E. EDITING A PRESET TITLE.....	20
F. STORING A "POWER ON" PRESET.....	21
8. MIDI OPERATION.....	22
A. MAPPING STATUS.....	22
B. PROGRAM MAPPING.....	23
C. CONTROLLER MAPPING.....	24
D. MIDI CHANNEL NUMBER.....	26
E. FOOTSWITCH TYPE SELECTION.....	27
F. FACTORY RESTORE.....	28
9. FACTORY PRESETS.....	29
10. MIDI IMPLEMENTATION.....	31
11. SPECIFICATIONS.....	32

1. INTRODUCTION

The Rocktron PROGAP is a professional MIDI programmable guitar preamp with features unsurpassed by any guitar preamp. The PROGAP can produce an infinite array of clean and distorted sounds into two outputs, one full range for direct use with mixing consoles or sound systems, and a second pair of outputs designed to drive a power amp and speaker cabinet.

The PROGAP also features a programmable HUSH™ (Rocktron's single ended noise reduction), as well as Rocktron's AGX™ (Automatic Gain Expansion) circuitry, which provides noise free performance.

This operating manual will introduce you to the PROGAP and its various functions. After reading this manual carefully, keep it for future reference.

After removing your PROGAP from the box, save all packing materials in case it becomes necessary to ship the unit.

A. PRECAUTIONS

NOTE: IT IS VERY IMPORTANT THAT YOU READ THIS SECTION TO PROVIDE YEARS OF TROUBLE FREE USE. THIS UNIT REQUIRES CAREFUL HANDLING.

All warnings on this equipment and in the operating instructions should be adhered to and all operating instructions should be followed.

Do not use this equipment near water. Care should be taken so that objects do not fall and liquids are not spilled into the unit through any openings.

DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT. THIS EQUIPMENT SHOULD BE SERVICED BY QUALIFIED SERVICE PERSONNEL ONLY. DO NOT REMOVE THE COVER FROM THIS EQUIPMENT AT ANY TIME. DO NOT MAKE ANY INTERNAL ADJUSTMENTS OR ADDITIONS TO THIS EQUIPMENT AT ANY TIME. DO NOT TAMPER WITH INTERNAL ELECTRONIC COMPONENTS AT ANY TIME. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY VOID WARRANTY SERVICE TO THIS EQUIPMENT, AS WELL AS CAUSING SHOCK HAZARD.

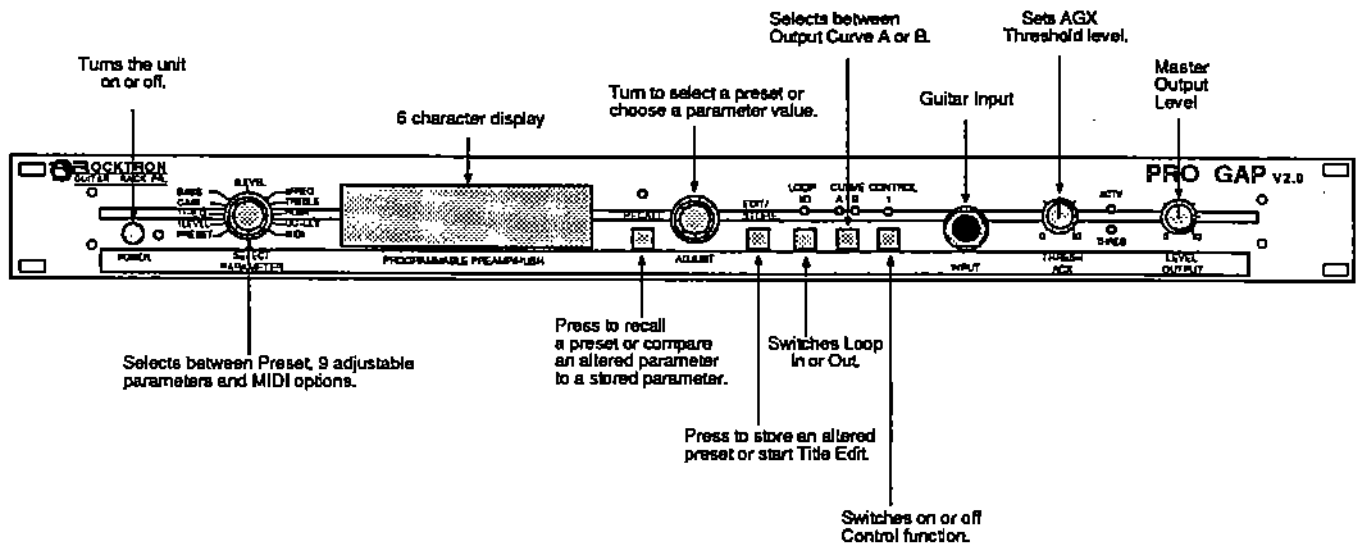
B. POWER REQUIREMENTS

This unit accepts power from the 9VAC/1500mA adaptor supplied with the unit. This 9VAC RMS voltage is internally processed by a voltage doubler, thus generating a $\pm 15V$ to maintain the headroom and sound quality of professional, studio quality equipment. Using an external power source such as this minimizes excessive noise and hum problems often associated with internal transformers, giving the user optimal performance.

C. OPERATING TEMPERATURE

Do not expose this unit to excessive heat. This unit is designed to operate between 32 F and 104 F (0 C and 40 C). This unit may not function properly under extreme temperatures.

2. QUICK REFERENCE



To Change Preset Programs

- Step 1:** Turn SELECT PARAMETER control to preset position. (Full c.c.w.)
- Step 2:** Turn ADJUST control until desired preset number is displayed.
- Step 3:** Press RECALL button. The new preset title will be displayed.

To Change Parameters

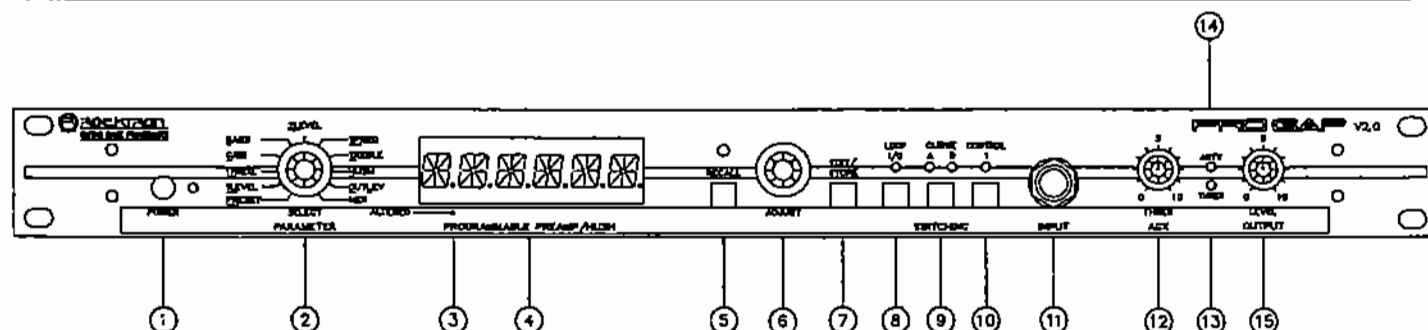
- Step 1:** Turn SELECT PARAMETER control to the position of the desired parameter to be changed. The PROGAP will then display the current setting of the parameter.
- Step 2:** Turn ADJUST control until the desired setting is accomplished (NOTE: It is not necessary to store each individual parameter. You may store the entire program after all changes are made).

To Store New Presets

After altering a preset to the desired sound, or after creating a totally original sound, the PROGAP allows you to store this program into preset numbers 1-96. (Presets 97-128 are factory presets and can not be modified.) NOTE: To store a new preset, the SELECT PARAMETER control must be in one of the positions other than PRESET or MIDI. The PROGAP will not store a program when left in either of these two positions.

- Step 1:** Push the EDIT/STORE button. "ENTER PRESET" will scroll across the display.
- Step 2:** Turn the ADJUST control to the desired preset number you wish to store your new program into.
- Step 3:** Push the EDIT/STORE button. "STORED" will flash across the display, verifying that your program is stored into memory.
- Step 4:** After storing the program, press EDIT/STORE again to copy the title (display reads "TITLE?") into the new preset also. If this is not desired, turn the SELECT PARAMETER control to exit the function.

3. FRONT PANEL



(1). .POWER switch and LED:

When the LED is lit, this indicates that the ProGAP is powered and ready for operation.

(2). .SELECT PARAMETER control:

This control allows you to select the Preset function, any of 9 adjustable parameters or the MIDI Options.

Preset Function

PRESET: This displays the preset number followed by it's title. 128 total presets are available (1 - 96 are user programmable, 97 - 128 are unalterable factory presets).

Adjustable Parameters (with 64 incremented positions each)

1LEVEL:	predistortion EQ level	-15dB to +15dB
1FREQ:	predistortion EQ frequency	450Hz to 3.25KHz
GAIN:	gain level	0 (0dB), 0.5dB to 70dB
BASS:	bass level	-18dB to +18dB
2LEVEL:	postdistortion EQ level	-12dB to +12dB
2FREQ:	postdistortion EQ frequency	600Hz to 8KHz
TREBLE:	treble level	-15dB to +15dB
HUSH:	HUSH threshold level	-70dB to 0dB
OUTLEV:	output level	-70dB to +10dB

MIDI Options

MIDI: Mapping Status, Program Mapping, Controller Mapping, MIDI Channel, and Inc/Dec Footswitch Type.

(3). .ALTERED indicator:

The ALTERED indicator is the first decimal point of the first character of the display. When this decimal point is lit, it indicates that the ADJUST control has been turned to a different value (ALTERED value), than the value which is stored in that preset (STORED value).

(4). .DISPLAY panel:

The Display panel consists of six alphanumeric characters of 14 segments each. On initial power up, the LED display will show a brief LED segment test. All LED segments are lit at this time, indicating that all segments are in working order.

(5). . . RECALL button: *function dependent on the SELECT PARAMETER control*

When the SELECT PARAMETER control is in PRESET, the RECALL button is used to recall the displayed preset number.

When the SELECT PARAMETER control is in one of the nine adjustable parameters, (1Level, 1Freq, Gain, etc.), the RECALL button is used as a toggle between the STORED value and the ALTERED value.

When the SELECT PARAMETER control is in MIDI, the MIDI options can be stepped through by using the RECALL button. The options are: mapping status, program mapping, controller mapping, MIDI channel, and inc/dec footswitch type.

(6). . . ADJUST control: *function dependent on the SELECT PARAMETER control*

When the SELECT PARAMETER control is in PRESET, the ADJUST control can be used to select a preset number and to edit preset titles.

When the SELECT PARAMETER control is in one of the nine adjustable parameters, the ADJUST control allows the user to select the different values available for a particular adjustable parameter.

When the SELECT PARAMETER control is in MIDI, the ADJUST control selects the various parameters of the different MIDI options.

(7). . . EDIT/STORE button: *function dependent on the SELECT PARAMETER control*

When the SELECT PARAMETER control is in PRESET, the EDIT/STORE button is used to initiate the title edit function. All 128 preset titles can be edited to whatever the user prefers. (For the 32 set factory presets, the title is the only thing that can be changed.)

When the SELECT PARAMETER control is in one of the nine adjustable parameters, the EDIT/STORE button is used to copy a preset into another preset. It is also used AFTER changing a parameter value when the *changed* value is to be entered into the memory in place of the previous value.

When the SELECT PARAMETER control is in MIDI, use the EDIT/STORE button after entering any MIDI information that is to be STORED (saved) in the memory.

(8). . . LOOP IN/OUT button and LED:

This button is used to manually switch the Loop in or out. The Loop LED will indicate the status of the Loop. The Loop is preset to OFF at the factory. This means that when a preset is called up, the Loop will be OFF. While in a preset, the Loop can be manually switched in or out as needed, as well as switched in or out via a MIDI control change. (Refer to the OPERATIONS sections concerning MIDI Control Changes for more information.) However, unless it is switched to the IN position and STORED in that preset by the user, it will continue to be set to OFF each time the preset is recalled. (For the factory presets 97-128, the Loop can be altered while in one of these presets, but it can NOT be stored on.)

With no device inserted into the Loop, the Loop button can be used as a MUTE button.

(9). . . CURVE A/B button and LED:

This button allows you to select between two output filter curves. Curve A has a brighter, wide open sound while Curve B has smoother characteristics. The LEDs indicate which curve is currently being used.

(10). . .CONTROL 1 button and LED:

This button allows the user to manually turn Control 1 on or off. The Control 1 LED will indicate the status of Control 1. Control 1 is preset to OFF in the factory. This means that when a preset is called up, Control 1 will be OFF. While in a preset, Control 1 can be switched in or out as needed, as well as switched in or out via a MIDI control change. (Refer to the OPERATIONS section concerning MIDI Control Changes for more information.) However, unless Control 1 is manually switched to the IN position and STORED in that preset by the user, it will continue to be set to OFF each time the preset is recalled. (For factory presets 97-128, Control 1 can be altered while in one of these presets, but it can NOT be stored on. Refer to the OPERATIONS section concerning Control Functions.)

(11). . .INPUT jack:

This standard unbalanced mono 1/4" jack is used to provide input to the unit. It is front panel mounted for easy access. Read the SPECIFICATIONS section to determine the maximum input level. Failure to do so will overdrive the unit and may damage the internal circuitry.

(12). . .AGX THRESHOLD control:

The AGX Threshold control sets a point where the automatic gain expander can work at maximum performance. It is adjustable for input signals covering a wide range.

(13). . .THRESHOLD LED:

The Threshold LED indicates that the signal is below the threshold point of the AGX circuit and full expansion is taking place.

(14). . .ACTIVE LED:

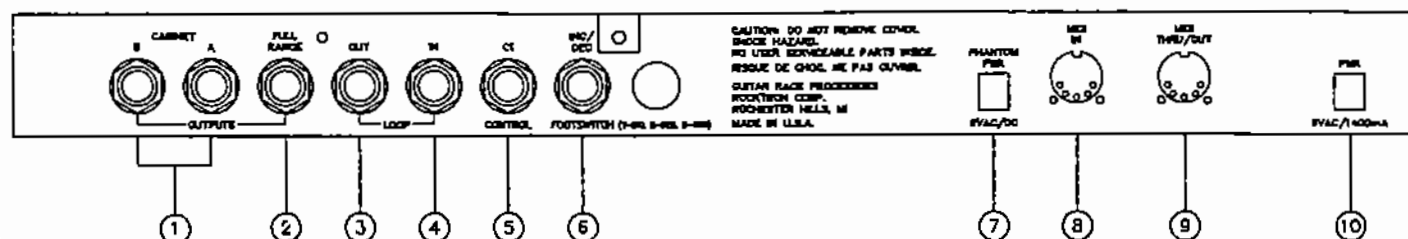
The Active LED indicates that the AGX circuit is activated and is reducing the gain of the preamplifier stage. When the LED is not lit, full gain is resumed.

(15). . .OUTPUT LEVEL control:

(The Output Level control works in conjunction with the OUTLEV parameter of the SELECT PARAMETER control)

The front panel Output Level control adjusts the final level of the signal at the unit's output. (The programmable output level in the SELECT PARAMETERS will set the relative output level of the presets.) The front panel output will work in conjunction with the programmable output level. Full counter clockwise will give ZERO output, full clockwise will give the full relative output level set by the programmable output.

4. REAR PANEL



(1). .CABINET OUTPUT jacks A and B:

These standard 1/4" mono jacks provide outputs for the unit. They are set up for use with a typical guitar amplifier and speaker cabinet.

(2). .FULL RANGE OUTPUT jack:

This standard 1/4" mono jack provides an output for the unit. It is set up for use with a full range system.

(3). .LOOP OUTPUT jack:

This standard 1/4" mono jack provides mono output, which may be used as an input for any external effect or signal processor of multiple daisy-chained combinations..

(4). .LOOP INPUT jack:

This standard mono 1/4" jack accepts the output of any external effect device to insert into the Loop.

(5). .CONTROL 1 jack:

This standard 1/4" mono jack is directly connected to relay contacts. This allows these jacks to be used to control outboard devices which have footswitchable functions.

(6). .FOOTSWITCH jack:

This standard 1/4" stereo jack accepts either a latch or momentary contact type footswitch. To configure this jack for the type of footswitch you wish to use, read the OPERATION section concerning INC/DEC FOOTSWITCH TYPE (MIDI option selection). Use of a dual footswitch (stereo plug) will give the ability to increment or decrement through the presets, while using a single switch (mono plug) will only allow increments. Sleeve = GND Ring = DEC Tip = INC

(7). .PHANTOM POWER jack:

This jack offers the ability to power the Rocktron MIDI Mate Foot Controller from a 7 pin MIDI cable which connects from the MIDI Mate to the MIDI In jack on the rear panel of the PRO G.A.P., eliminating the need to find an AC outlet near where the footpedal would be placed during a performance, or the need to run an extension cord out to the MIDI Mate. Instead of inserting the adaptor into the MIDI Mate POWER jack, plug it into the PHANTOM POWER jack on the PRO G.A.P. This will power the MIDI Mate through pins 6 and 7 of the MIDI cable connecting the two units. A 7 pin MIDI cable must be used and is available from your Rocktron dealer.

(8). . .MIDI IN connector:

This 7 pin din connector must be connected to the MIDI Out Connector of the transmitting MIDI device via a standard MIDI cable, or to the MIDI THRU connector of the preceeding device if the PROGAP is within a chain of MIDI devices. Pins 6 and 7 of this connector carry the phantom power to power the Rocktron MIDI Mate Foot Controller.

(9). . .MIDI THRU/OUT jack:

This standard 5 pin din connector can be connected to the MIDI In Connector of another MIDI device via a standard MIDI cable. There are limitations to the number of devices that can be chained (series connected) in this fashion. For further information, read the MIDI FORMAT section concerning MIDI In and MIDI Thru.

Note: Inherently in MIDI there is a limit to the number of devices which can be chained together (series connected). With more than 3 devices, a slight distortion of the MIDI signal can occur (due to signal degradation) which can cause an error in MIDI signal transmission. Should this problem arise, a MIDI box can be used which connects directly to the MIDI device which transmits MIDI information and has multiple connectors for the multiple devices receiving MIDI. MIDI cables should not exceed 50 feet (15 meters) in length.

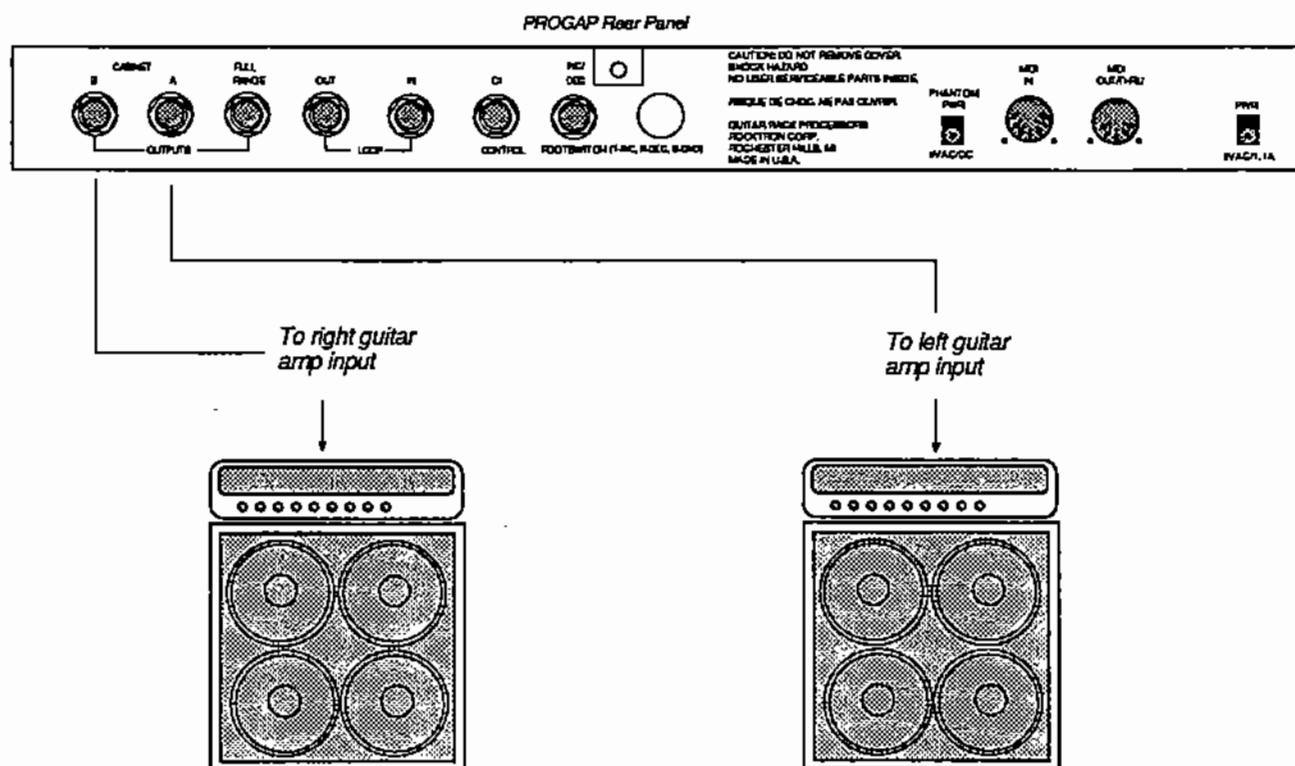
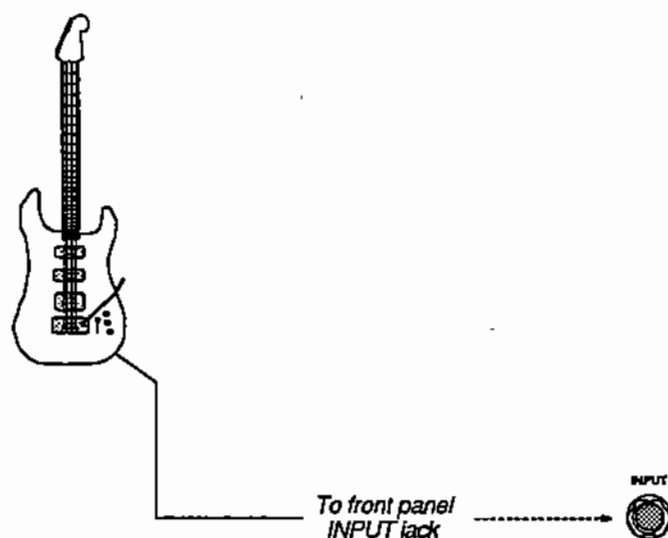
(10). . .PWR jack:

This jack accepts power from the 9VAC/1500mA adaptor supplied with the unit.

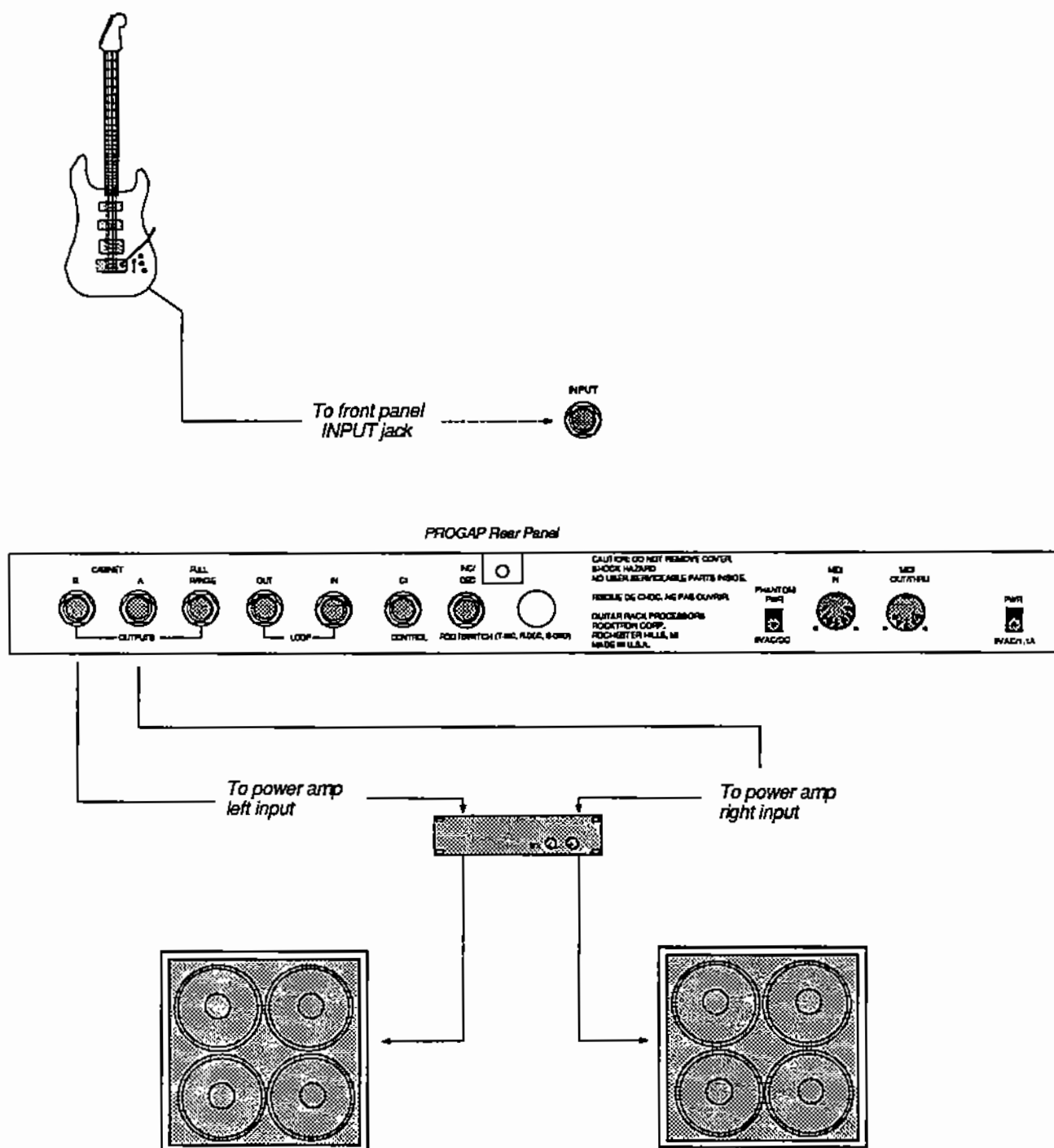
5. CONNECTIONS

When interfacing your PROGAP into your system, it is recommended to always keep it first in the signal chain. Any effect devices (such as reverbs, delays, etc.) should follow the PROGAP before being amplified.

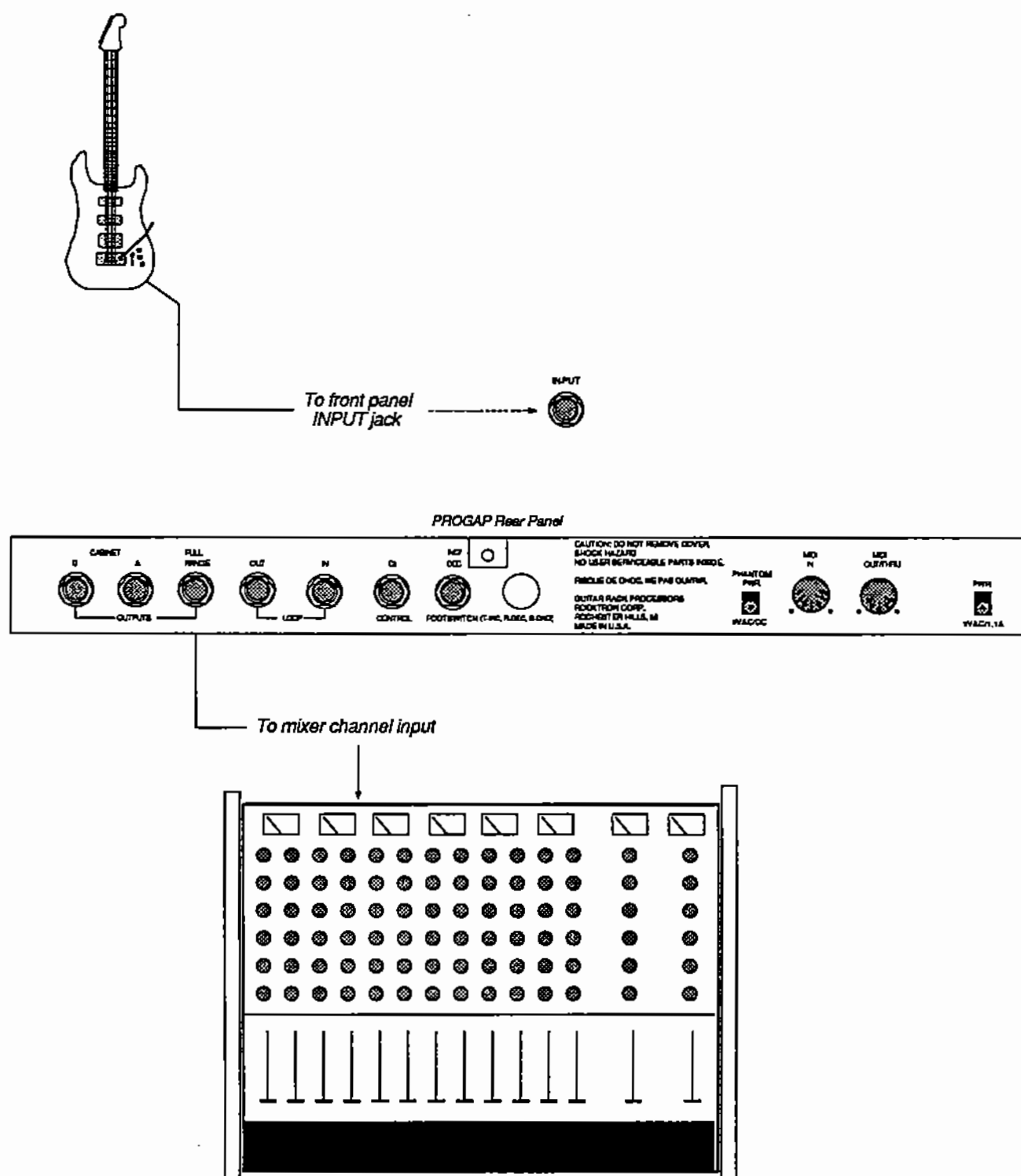
A. Using the PROGAP with guitar amplifiers.



B. Using the PROGAP with a power amp and speaker cabinets.

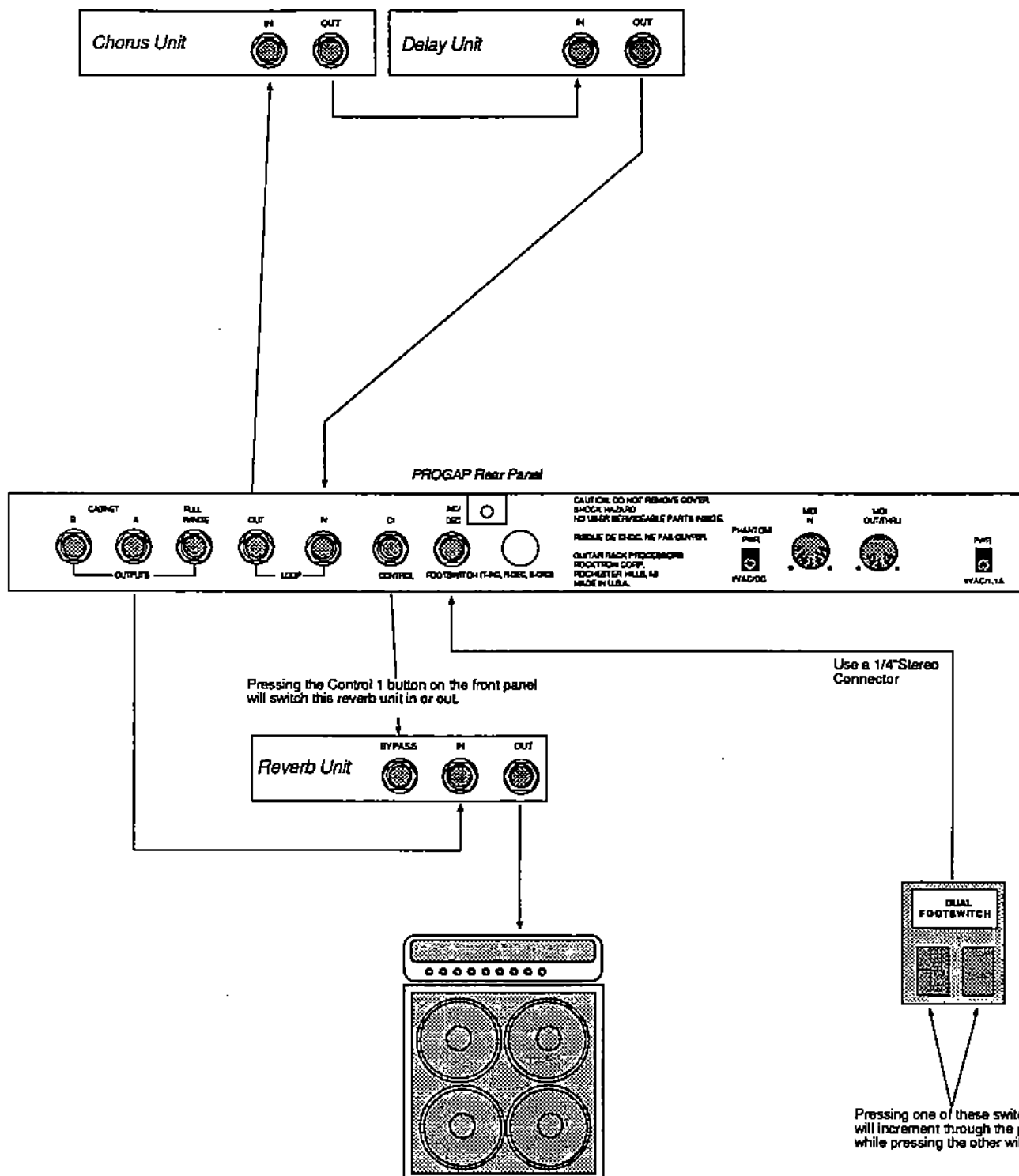


C. Using the PROGAP directly into a mixing console.



D. Using the Inc/Dec Footswitch, Loop and Control functions of the PRO G.A.P.

Pressing the Loop button on the front panel will switch this chorus and delay in and out of the Loop.



6. BASIC FORMAT

A. PREDISTORTION EQ SECTION:

This includes the parameters 1LEVEL 1FREQ

The predistortion EQ section selects the tone for the instrument prior to preamp stage. Considerable tone shaping variations can be achieved by using the 1LEVEL of the SELECT PARAMETER control. This is the mid-frequency cut/boost control, adjustable from -15dB of cut to +15dB of boost. Set this parameter in conjunction with the frequency that you wish the cut or the boost to be centered at. This can be obtained by setting the 1FREQ parameter of the SELECT PARAMETER control. The mid frequency control is adjustable from 450Hz up to 3.25KHz.

B. DISTORTION SECTION:

This includes the parameter GAIN and also the front panel AGX control

The next stage is the distortion section. This section includes the GAIN parameter of the SELECT PARAMETER control as well as the AGX (Automatic Gain Expansion) system on the front panel. The GAIN parameter is adjustable from 0 (0dB of gain) to 70 (70dB of gain). The first increment of gain after "0" is 0.5dB of gain. When switching from the "0" setting to any of the gain settings, a high frequency presence circuit is automatically inserted pre-distortion. This circuit accentuates the top end component of the gain tones, but can also be used to achieve a bright clean tone by using a very low gain setting such as 0.5dB.

The AGX system solves the long standing problem encountered by guitar players when using high gain distortion. No more noise! No more amplification of extraneous signals such as AC line hum, light interference, RF pick-up, and uncontrolled feedback. The guitar player no longer has to sacrifice high gain or volume to achieve a quiet signal. The AGX circuit expands the gain of the amplification circuit only when required based on the input level. When no signal is present, the AGX circuit expands down the amplification level to a point where hum and noise are eliminated. Playing softly allows a clean guitar sound without any noise or distortion that is typically encountered with high gain amplification. Playing with more intensity increases the amplification factor, thus creating more distortion and sustain. The AGX circuit will accurately track the dynamics of the guitar while providing the solution to the noise problem.

SETTING THE AGX

The AGX circuit is simple to use. Start by turning the AGX Threshold control full counter clockwise. Now, create the sound you want by setting the adjustable parameters available in the SELECT PARAMETER control, and set the volume you wish to play at. With the volume control of your guitar up all the way, mute the strings with your hand so that no signal is present. Simply turn the AGX Threshold control clockwise just past the point where both the Active and Threshold LEDs light. All signs of gain and related noise should disappear. The AGX circuit is now set. (Note: some experimenting with the threshold control may be needed to achieve the desired effect.) The effect of the AGX (the gain expansion) is proportional to the amount of gain being used. When the gain is decreased, the AGX is needed less and therefore has less of an effect. However, as the gain increases, the AGX is needed more and therefore it will have a greater effect. The AGX control was not made programmable because the optimum setting may depend on the environment the guitar-preamp system is being used in. It would not be desirable to have to re-program the AGX settings in all the presets each time you performed in a different venue. Since the AGX circuit senses the input of the PROGAP, only one setting is needed for any one guitar in a particular noise setting. As you set up your equipment in a particular environment, the AGX setting needed will not need adjusting until you either change guitars, or change venues.

C. POSTDISTORTION EQ SECTION:

This includes the parameters BASS 2LEVEL 2FREQ TREBLE

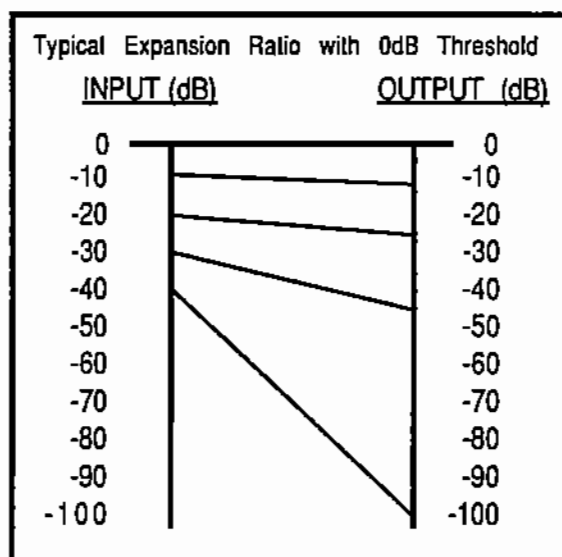
The postdistortion EQ section allows the bass and treble content to be varied individually, as well as providing an adjustable frequency that can be separately cut or boost. The BASS parameter of the SELECT PARAMETER control allows you to select from -18dB of bass cut to +18dB of bass boost. The 2LEVEL parameter sets -12dB of cut to +12dB of boost for the selectable frequency, which is set by the 2FREQ parameter. The postdistortion frequency is adjustable between 600Hz to 8KHz. The TREBLE parameter allows you to set from -15dB of treble cut to +15dB of treble boost.

D. HUSH SECTION:

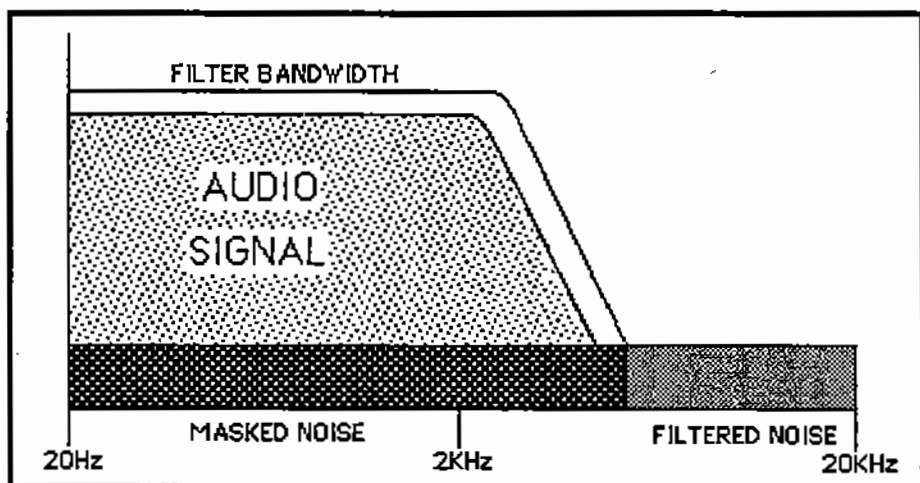
This includes the HUSH parameter.

The HUSH parameter of the SELECT PARAMETER control provides additional noise reduction for optimal noise free operation. The HUSH can be set between -70dB to 0dB. The HUSH is Rocktron's own patented single-ended noise reduction system. The HUSH circuit is comprised of two parts: the expander and the dynamically controlled low pass filter.

The expander operates like an electronic volume control. The design utilizes a voltage controlled amplifier (VCA) circuit which can control the gain between the input and output from unity to 30, 40, or even 50dB of gain reduction. When the input signal is above the user pre-set threshold point, the VCA circuit is at unity gain. This means that the amplitude of the output signal will be equal to the input signal. As the input signal amplitude drops below the user preset threshold point, downward expansion begins. At this point, the VCA operates like an electronic volume control and gradually begins to decrease the output signal level relative to the input signal. For example, if the input signal were to drop below the threshold point by 10dB, the output would drop approximately 12dB. As the input signal drops further below the threshold point, downward expansion increases exponentially. For example, if the input signal dropped 20dB below the threshold point, the output level would drop by approximately 30dB. A drop in the input level by 30dB would cause the output to drop by approximately 60dB, i.e. 30dB of gain reduction. In the absence of any input signal, the expander circuit will reduce the gain so that the noise floor becomes inaudible.



The dynamically controlled low pass filter operates as follows. In the absence of any audio signal, the dynamic filter will close down to the factory preset cut-off point of 800Hz. This means the filter is only allowing frequencies of 800Hz and below to pass through. If an input signal had a bandwidth of from 20Hz to 1KHz, the filter would open far enough to pass up to the 1KHz frequency and its harmonics, while reducing any noise present from approximately 2KHz to 20KHz. If a broad band signal, with frequency components up to 20KHz appears at the input, the dynamic filter would open to its full extreme allowing the bandwidth to open all the way to 40KHz. In simple terms, what this means is that if a signal is present at the input which is primarily bass components, the dynamic filter will reduce any mid or high band noise. However, if the input signal has high frequency components present, the dynamic filter will open to its full extreme to pass the signal and eliminate the possibility of a loss of high end frequency response.



These two processes of downward expansion and dynamic filtering work in unison to produce the highly proficient HUSH noise reduction system.

SETTING THE HUSH

Typically, the HUSH should be set between -50dB and -60dB when using relatively clean tones. For distortion tones, set the HUSH between -50dB and -20dB. The extreme end settings should only be used in very extreme situations. (ie.: When using very noisy distortion programs, set the HUSH threshold above -20dB. When using very clean tones, set the HUSH threshold below -60dB.

E. OUTPUT SECTION:

This includes the QUTLEV parameter, OUTPUT LEVEL control and CURVE A/B button

The PROGAP features two output level controls. The QUTLEV parameter in the SELECT PARAMETER control is programmable and adjustable between -70dB and +10dB. The front panel Output Level control works in conjunction with the programmable output level allowing for quick volume adjustment. Both output controls determine the output signal from the PROGAP preamplifier.

Set the programmable QUTLEV parameter to the relative output level you wish to use. The front panel Output Level control is the "master" control. Full counter clockwise will give ZERO output, and full clockwise will give the relative output level that was set by the programmable QUTLEV parameter.

The Curve A/B button on the front panel allows you to select between two distinct output equalization curves. Curve A has a bright, wide-open sound with characteristics of the heavily modified Marshall™ stacks while Curve B is smoother and less biting as more high frequency information is rolled off.

F. LOOP FUNCTION

The PROGAP has an audio path loop function, where an audio effect or chain of effects can be placed in the audio path of the PROGAP. The loop can also be used as a mute function by placing nothing in the loop jacks and turning the loop on. The on/off status of this loop is programmable, that is, if a preset is stored with the loop on it will be on each time that preset is recalled.

G. CONTROL FUNCTION (C1)

The PROGAP also has a control function, which is simply a relay contact. This control can be used to switch in or out other devices via their footswitch bypass jack. To use this feature, simply connect a 1/4" cable from the "C1" jack on the rear of the PROGAP to the "Footswitch Bypass" on the rear of the effect unit.

The control function on/off status is stored with each preset, meaning that if a preset is stored with the control function "on" it will be on each time that preset is recalled. This function can be altered immediately by pressing the C1 button on the front of the unit. However, it is necessary to STORE that into memory if you wish it to be recalled in a preset.

H. MIDI FORMAT

MIDI stands for Musical Instrument Digital Interface and was established as a specification which would make it possible to exchange information (program changes, expression control, etc.) between different musical equipment. MIDI makes it possible for a user of MIDI compatible equipment to expand a music system and to change system configurations to meet changing requirements. Some MIDI devices have the ability to transmit MIDI, some to receive MIDI and others can both transmit and receive MIDI. A MIDI transmitter originates messages in MIDI format and transmits them. A MIDI receiver accepts messages in MIDI format and executes MIDI commands.

The Rocktron PROGAP is a MIDI receiver. In order for it to receive MIDI information and execute MIDI commands, it is necessary to use the PROGAP in conjunction with a MIDI transmitter device (such as a Rocktron MIDI Mate). The PROGAP is compatible with MIDI transmitters that send MIDI as well as SYSEX (System Exclusive), and MIDI Time Code (MTC). It will respond only to MIDI program changes, and MIDI controller changes. It will not be affected by other MIDI commands or information.

MIDI IN AND MIDI THRU

MIDI information is received through the MIDI In Jack. The MIDI signal received from the MIDI In Jack can be passed on to other MIDI devices by using the MIDI Thru Jack. MIDI receivers can only take the MIDI information and execute the commands, they can not send their own commands out either back to the device transmitting MIDI or to other devices that receive MIDI. The MIDI Thru Jack simply sends the original MIDI input signal that it received from the MIDI In Jack, however there is a limit to the number of devices which can be chained (series connected) in this fashion. With more than three devices, a slight distortion of the MIDI signal can occur, which can cause an error in MIDI signal transmission. Should this problem arise, a MIDI box can be used, which connects directly to the MIDI device which transmits MIDI information, and has multiple connectors for the multiple devices receiving MIDI. MIDI cables should not exceed 50 feet (15 meters) in length.

I. FACTORY SET UP

Your Rocktron PROGAP was set up at the factory in the following set-up. Unless otherwise indicated, these settings are fully changeable, and programmable by the user.

PRESETS

Presets 97 - 128 are factory set, and will NOT allow any changes made to the parameter values, the status of the Loop, Control function or Output Curve to be stored. The titles are changeable. For a list of the parameter values, see the Factory Preset Value Chart. Upon receiving your PROGAP, the factory presets 97 - 128 are repeated through the remaining memory locations (presets 1 - 96). This allows the user to select and modify a program with sound characteristics closest to the user's preference.

LOOP AND CONTROL FUNCTIONS

The Loop, Control function and Curve A/B are set to OFF in all presets.

MIDI OPTIONS

Mapping Status is set to OFF.

Program Mapping is set to a one to one correspondence. (1=1, 2=2, 24=24, etc.)

Controller Mapping is set as follows: (usable mapping from 0-120, and OFF)

Controller Number	Parameter
0	1LEVEL Upper Limit +15dB Lower Limit -15dB
1	1FREQ Upper Limit 3.25KHz Lower Limit 450Hz
2	GAIN Upper Limit 70dB Lower Limit 0dB
3	BASS Upper Limit +18dB Lower Limit -18dB
4	2LEVEL Upper Limit +12dB Lower Limit -12dB
5	2FREQ Upper Limit 8KHz Lower Limit 600Hz
6	TREBLE Upper Limit +15dB Lower Limit -15dB
7	HUSH Upper Limit 0dB Lower Limit -70dB
8	OUTLEV Upper Limit +10dB Lower Limit -70dB
9	LOOP
10	CURVE A/B
11	C1 (Control 1)

MIDI Channel Number is set to OMNI (which will receive on ALL channels).

Inc/Dec Footswitch Type is set to LATCH type.

"Power On" preset is preset #1

These are the settings your PROGAP will be set to upon receiving it from the factory. The PROGAP will otherwise be set (upon subsequent power up) to the programmable setting change that the user has made.

7. OPERATING THE PRO G.A.P.

A. Power Up

When the PROGAP is initially powered on, the LED display will show a brief (about 1 second) LED segment test. All LED segments are lit briefly indicating that all segments are working. The message "ROCK-TRON PROGAP" will scroll (and continue to scroll) until the SELECT PARAMETER or ADJUST controls are turned, or the RECALL or EDIT/STORE buttons are pressed.

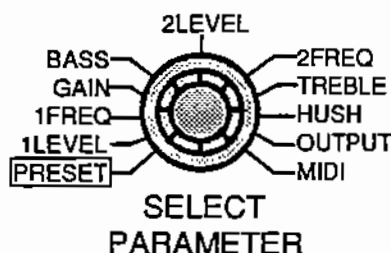
B. Recalling a Stored Preset

"PRESET" is a particular position of the SELECT PARAMETER control of the PROG.A.P. There are eleven positions in the SELECT PARAMETER control. Full counter clockwise is PRESET, which selects preset number and title. There are 128 different presets available to recall. Initially factory presets 97 - 128 are repeated through the remaining memory locations (presets 1 - 96). Each individual preset stores a selected value for nine adjustable parameters. These nine stored values in each preset are what creates the sound or tone for that particular preset. Presets 97 - 128 are factory presets and cannot be stored over.

Step 1: To RECALL a particular preset, turn the SELECT PARAMETER control full counter clockwise. This position is PRESET. The display will flash "PRESET", then, "PR" and the preset number currently being used will flash for about two seconds, and then the preset title will appear on the display.

DISPLAY SHOWS:

BURN



Step 2: To change to a different preset than what is currently displayed, turn the ADJUST control until the number of the desired preset is displayed. The selected preset number and title will continue to flash alternately.

DISPLAY SHOWS:

ALLAN2

Flashes



ADJUST

Step 3: To recall the selected flashing preset, press the RECALL button. Pressing this button will change the preset to the new preset number and title.

DISPLAY SHOWS:

ALLAN2

Stops flashing

RECALL



Note: To CANCEL the RECALL mode, either turn the ADJUST control back to the original preset number, or turn the SELECT PARAMETER control clockwise into another setting. No change will take place as long as the RECALL button is not pressed.

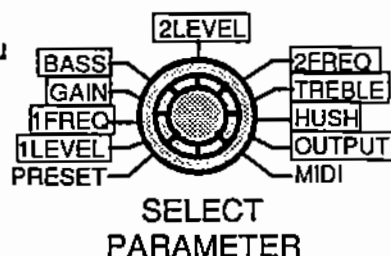
C. Changing Adjustable Parameter Values

One position clockwise of PRESET (full counter clockwise), is the first of the next nine positions of the SELECT PARAMETER control that are adjustable parameters for modifying the sound or tone of a particular preset. Each parameter is displayed when the SELECT PARAMETER control is turned to it's position. (Refer to the BASIC FORMAT section for information on what stage of the PROGAP each parameter adjusts).

Step 1: To change a parameter value, first select which parameter you wish to change via the SELECT PARAMETER control.

DISPLAY SHOWS:

GAIN



Step 2: After the display flashes the parameter title, it will show an abbreviation of the parameter title and the value currently stored for the recalled preset. Turning the ADJUST control will immediately modify the parameter value and the ALTERED indicator will light (indicating that the value currently displayed is not the stored value).

DISPLAY SHOWS:

G. 60

Altered Indicator



ADJUST

Step 3: After the parameter value has been changed, pressing the RECALL button will allow you to compare between the stored parameter value and the altered value.

DISPLAY SHOWS:

G 70

Alternates between stored and altered value.

RECALL



D. Storing Changed Parameter Values

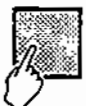
Step 1: To store changed parameter values, press the EDIT/STORE button while viewing any of the parameters on the display. This will initiate the "Store" procedure and "ENTER PRESET" will scroll across the display.

DISPLAY SHOWS:

Scrolls

ENTER

EDIT/
STORE



Step 2: After "ENTER PRESET" has completed scrolling, the display will then alternate flashing the current preset number and current title. Use the ADJUST control to select which preset you wish to store the new parameter values into.

DISPLAY SHOWS:

PR 88

Continues to flash preset number and title alternately.



ADJUST

Step 3: When the desired preset number is selected, press the EDIT/STORE button to store the new parameter values and complete the store procedure. "STORED" will flash on the display before showing the preset number the title. *If the EDIT/STORE button is pressed before "ENTER PRESET" has completed scrolling, no store will take place. Press the EDIT/STORE button a third time to store.*

DISPLAY SHOWS:

STORED

EDIT/
STORE



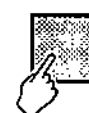
Note: If the current preset is a factory preset, "ENTER PRESET" will continue to scroll until the ADJUST knob is turned. To cancel the store procedure once it has been initiated, turn the SELECT PARAMETER control and "CANCEL" will be displayed. The PROG.A.P. will then return to the status it was in before the EDIT/STORE button was pressed.

Step 4: At this point, the altered values are stored into the new preset number and the display will show "TITLE?". This allows you to also copy the title from the altered preset into the new preset. "TITLE" will only be displayed when storing into a new preset number. To copy the title, press the EDIT/STORE button.

DISPLAY SHOWS:

TITLE ?

EDIT/
STORE



Step 5: The display will now show "STORED" again and the store procedure will be completed.

DISPLAY SHOWS:

STORED

Note: If you do not wish to copy the title from the altered preset, simply turn the SELECT PARAMETER control as the display shows "TITLE?" to exit the store procedure.

E. Editing a Preset Title

All 128 preset titles of the ProGAP can be changed (including the factory presets 97 - 128).

Step 1: While the title of the preset is displayed, press the EDIT/STORE button to start the Title Edit mode. "TITLE EDIT" will scroll across the display.

DISPLAY SHOWS:



EDIT/
STORE



Step 2: After "TITLE EDIT" scrolls across the display, the current title will appear with the decimal point of the first character flashing. Turn the ADJUST control to change the first character of the title.

DISPLAY SHOWS:



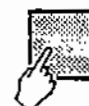
ADJUST

Step 3: When the desired character is selected, press the EDIT/STORE button to store the character and begin editing the next character. The flashing decimal will now advance to the next character (each time the EDIT/STORE button is pressed, the flashing decimal will advance to the next character). The EDIT/STORE button must be pressed to store each character.

DISPLAY SHOWS:



EDIT/
STORE



To end Title Editing, press the RECALL button or turn the SELECT PARAMETER control.

F. Storing a "Power On" Preset

It is possible with the PROGAP to choose a particular preset that the unit will always recall when it is turned on.

Step 1: To store a "Power On" preset, simply recall the preset you want the PROGAP to recall when it is turned on.

DISPLAY SHOWS:

PR 32

Step 2: Next turn the SELECT PARAMETER control to the "MIDI" position.

DISPLAY SHOWS:

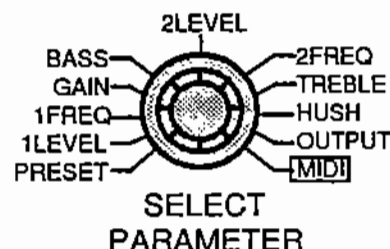
MIDI

Step 3: Press the EDIT/STORE button to complete the procedure. "STORED" will flash on the display and the selected preset will now be recalled each time the PROGAP is turned on.

DISPLAY SHOWS:

STORED

RECALL



SELECT
PARAMETER

EDIT/
STORE



8. MIDI OPERATION

The most clockwise position of the SELECT PARAMETER control is MIDI. The MIDI options available are mapping status, program mapping, controller mapping, MIDI channel number, and inc/dec footswitch type. These options may be stepped through by pressing the RECALL button repeatedly. At each option, the status can be viewed. By turning the SELECT PARAMETER control counter clockwise while in any mode but the program mapping or controller mapping, you will exit the MIDI options.

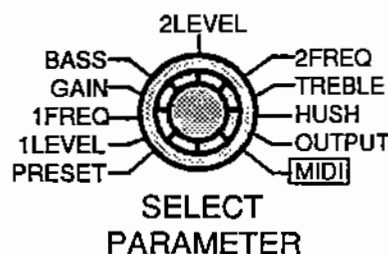
A. Mapping Status

Mapping status turns the program mapping ON or OFF. When the program mapping is OFF and a MIDI program change is initiated, the preset number recalled is the program number sent via MIDI. When the program mapping is ON and a MIDI program change is initiated, the program number sent via MIDI is mapped to a preset number and that preset is recalled by the PROGAP.

Step 1: To access the Mapping Status option, first turn the SELECT PARAMETER control fully clockwise to "MIDI".

DISPLAY SHOWS:

MIDI

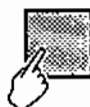


Step 2: Press the RECALL button. The display will scroll "MAPPING STATUS" and then show the current status.

DISPLAY SHOWS:

MAP ON

RECALL



Step 3: The current status can be changed by turning the ADJUST control.

DISPLAY SHOWS:

MAPOFF



ADJUST

Step 4: Press the EDIT/STORE button to save the change. The display will flash "STORED".

DISPLAY SHOWS:

STORED

EDIT/
STORE



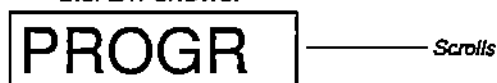
The MIDI options may be exited by turning the SELECT PARAMETER control counter - clockwise while in the Mapping Status option.

B. Program Mapping

The program mapping is initially programmed for a one to one correspondence. (That is, MIDI program number nine is mapped to preset nine, ten to ten, etc.)

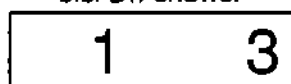
Step 1: To access the Program Mapping option, press the RECALL button a second time while in MIDI. The display will scroll "PROGRAM MAPPING".

DISPLAY SHOWS:



Step 2: After scrolling, the display will show two numbers - the MIDI Program Number on the left and the Preset number to map to on the right. Turn the SELECT PARAMETER control to select the MIDI program number.

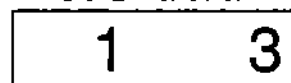
DISPLAY SHOWS:



MIDI Program
Number

Step 3: Use the ADJUST control to select the preset number to map to.

DISPLAY SHOWS:



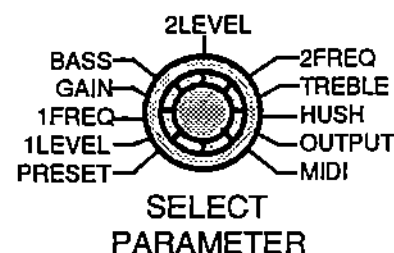
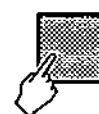
Preset Number

Step 4: Once the desired numbers have been selected, press the EDIT/STORE button to save the change for each altered mapping. the display will flash "STORED" each time you store an altered mapping.

DISPLAY SHOWS:



RECALL



ADJUST



EDIT/
STORE



C. Controller Mapping

The controller mapping will map a PROGAP adjustable parameter to a MIDI controller number, starting at controller zero through controller 120, or OFF. The PROGAP's loop, output curve and control function may also be mapped to a MIDI controller, which can be switched in or out via MIDI control.

These are global settings, which means Controller Mappings are the same for all presets.

The PROGAP Controller Mapping option also lets you store an upper and lower parameter value limit which the controller cannot exceed. Through MIDI control, for example, if you are using an expression pedal with a MIDI Mate sending continuous control changes to control your "1 FREQ" parameter, you can set an upper limit of 1.70K and a lower limit of .77K, even though the parameter range is from .45K to 3.25K. Now when your pedal is at it's heel position the "1 FREQ" parameter will be at .77K, and at the toe position it will be at 1.70K.

Step 1: To access the Controller Mapping option, press the RECALL button a third time while in the MIDI options. The display will scroll "CONTROLLER MAPPING".

DISPLAY SHOWS:

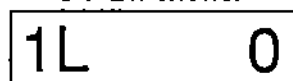


RECALL

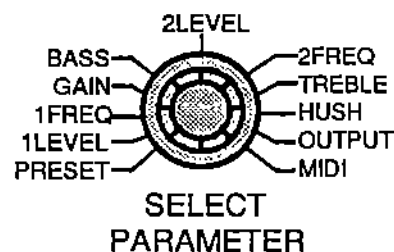


Step 2: After scrolling, the display will show the current status of the Controller Mapping. On the left will be the parameter to be mapped and on the right will be the controller number. The SELECT PARAMETER control will allow you to select the parameter to be mapped.

DISPLAY SHOWS:

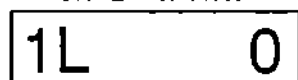


Parameter to be mapped



Step 3: The ADJUST control will allow you to select a controller number for the displayed parameter. Any controller number from 0 - 120, or OFF, may be selected.

DISPLAY SHOWS:



Controller Number



ADJUST

Step 4: After selecting a controller number for the displayed parameter, press the EDIT/STORE button to save it. The display will flash "STORED" briefly.

DISPLAY SHOWS:

STORED

EDIT/
STORE

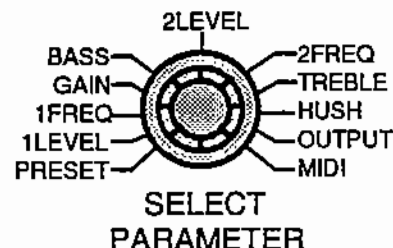


Step 5: After storing the controller number, turn the SELECT PARAMETER control one step clockwise to access the Controller Upper Limit option. This will be designated by a straight line at the top of the character following the parameter title abbreviation.

DISPLAY SHOWS:

1F 3.25

This line designates
Upper Limit



Step 6: The Upper Limit may now be selected using the ADJUST control.

DISPLAY SHOWS:

1F 1.70



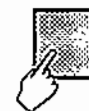
ADJUST

Step 7: After selecting the upper limit press the EDIT/STORE button to save the selected value. "STORED" will flash briefly on the display.

DISPLAY SHOWS:

STORED

EDIT/
STORE

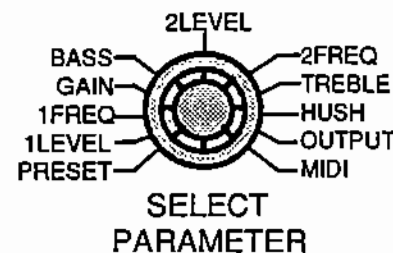


Step 8: Turn the SELECT PARAMETER control one step further clockwise to access the Controller Lower Limit option. This will be designated by a straight line at the bottom of the character following the parameter title abbreviation.

DISPLAY SHOWS:

1F .45

This line designates
Lower Limit



Step 9: You may now select a lower limit using the ADJUST control.

DISPLAY SHOWS:

1F _ .77



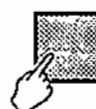
ADJUST

Step 10: After a lower limit has been selected, press the EDIT/STORE button to save the parameter value as the lower limit. "STORED" will flash briefly on the display.

DISPLAY SHOWS:

STORED

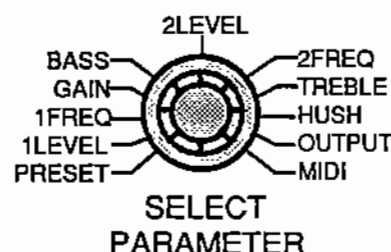
EDIT/
STORE



Step 11: Turning the SELECT PARAMETER control one step further clockwise will access the next parameter to which a controller number can be assigned.

DISPLAY SHOWS:

G 2



SELECT
PARAMETER

Note: If the toe position of the pedal is set to give the minimum value and the heel position set to give the maximum value the pedal will act in reverse.

More than one parameter may be assigned to the same control number in this manner, i.e. one or more parameter value(s) could be increasing as others are decreasing.

Steps 1 through 10 can be repeated for each of the parameters except Output Curve, Control 1 and Loop - which have no Upper and Lower limits.

D. MIDI Channel

The MIDI channel is the channel that the PROGAP will receive MIDI commands on.

Step 1: Pressing the RECALL button a fourth time while in MIDI options will access the MIDI Channel option. The display will scroll "MIDI CHANNEL".

DISPLAY SHOWS:

MIDI CH

Scrolls

RECALL



Step 2: After the scrolling has completed, the display will show the current MIDI channel. This number can be changed by turning the ADJUST control. Any number from 0 to 16 may be selected, as well as OFF (will not receive MIDI commands) and OMNI (receives MIDI commands on all channels).

DISPLAY SHOWS:

C= OMNI

Step 3: After a MIDI channel has been selected, press the EDIT/STORE button. "STORED" will flash on the display briefly.

DISPLAY SHOWS:

STORED

To exit the MIDI Options, turn the SELECT PARAMETER control counter - clockwise.

E. Footswitch Type Selection

The inc/dec footswitch type allows the PROGAP to increment or decrement to the next preset with a simple latch type footswitch or a momentary footswitch.

Step 1: To access the Inc/Dec Footswitch Type option, press the RECALL button a fifth time while in the MIDI options. "INC/DEC FOOTSWITCH TYPE" will scroll across the display.

DISPLAY SHOWS:

INC/DEC

Scrolls

Step 2: After the scrolling has completed, the display will show the current footswitch type. Either latch-type or momentary may be selected. The current type can be changed by turning the ADJUST control.

DISPLAY SHOWS:

MOMENT

Step 3: To save the changed footswitch type, press the EDIT/STORE button. "STORED" will flash on the display briefly.

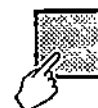
DISPLAY SHOWS:

STORED

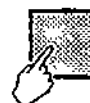


ADJUST

EDIT/
STORE



RECALL



ADJUST

EDIT/
STORE



F. Factory Restore

This procedure allows you to restore the PRO G.A.P. memory to its original condition (as it was shipped from Rocktron).

!!CAUTION !!

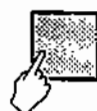
This procedure will permanently erase all user presets (1 - 96) and replace them with the factory presets found in presets (97 - 128). If you have written and stored presets in user presets 1 - 98 which you do not want to lose, make a record of all parameter values before performing the Factory Restore procedure.

Step 1: To perform Factory Restore, first recall preset #128 (preset #128 is the only preset where this function can be found).

DISPLAY SHOWS:

PR 128

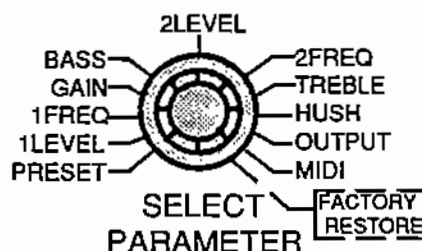
RECALL



Step 2: Turn the SELECT PARAMETER control one step past "MIDI". In preset #128 this is Factory Restore. The display will show "REINIT" (This is short for "REINITIALIZE").

DISPLAY SHOWS:

REINIT



Step 3: Turn the ADJUST control and the display will show "REI 0". Continue turning the ADJUST control until the code number 248 is reached.

DISPLAY SHOWS:

REI 248



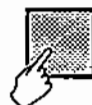
ADJUST

Step 4: Pressing the EDIT/STORE button at this time ***will erase all user presets and replace them with the factory presets!*** Press the EDIT/STORE button to initiate the Factory Restore procedure. The display will show "WAIT" while it is reinitializing.

DISPLAY SHOWS:

WAIT

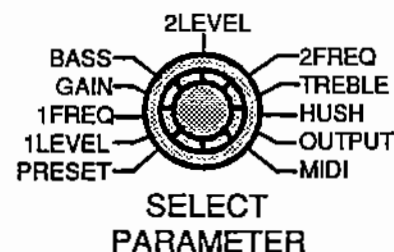
EDIT/
STORE



Step 5: After the reinitialization is complete, the display should read "ERR 0 " meaning "zero errors". Turn the SELECT PARAMETER control to exit the function. Preset #128 will be the current preset.

DISPLAY SHOWS:

ERR 0



Note: If the reinitialization process is completed and any number other than "0" is displayed, the PRO G.A.P. did not reinitialize properly and the original PRO G.A.P. memory has not been fully restored.

Should this condition occur, power the unit down for 10 minutes before attempting to restore again (repeat the process). If restoration is still not completed properly, send the unit back to Rocktron or an authorized Rocktron service center.

9. FACTORY PRESETS

The following page contains a chart of the values for the factory programmed presets.

Steve Lukather designed presets 97 - 101. The Amplifier Output jack was used with presets 1-4 and the Full Range Output jack was used with preset 5. Steve Lukather used **EMG** pickups and a **HH V800** mosfet amplifier. For presets 1-3, he used 4 X 12 **Marshall™** cabinets with vintage 30W **Celestions**. For preset 4, Steve used **EVM12L** cabinets and for preset 5, he used **N510** cabinets.

Allan Holdsworth designed presets 102 - 106. Allan used the Amplifier Output jack of the ProGAP straight into his rig and into guitar cabinets.

Rocktron designed presets 107 - 128. The Amplifier Output was used with all these presets except presets 123 - 127, which used the Full Range Output jack.

Rocktron Corporation would like to extend special thanks to both Steve Lukather and Allan Holdsworth for their time and efforts in designing presets for the ProGAP. We sincerely appreciate their participation.

Marshall is a registered trademark of Jim Marshall, Ltd.

PRESETS		PARAMETER SETTINGS									OUTPUT	
PRESET	TITLE	1LEVEL	1FREQ	GAIN	BASS	2LEVEL	2FREQ	TREBLE	HUSH	OUTLEV	CURVE A/B	JACK USED
97	LUKE 1	9.0	.77	60	12.0	-3.5	.60	14.2	-40	-8.0	B	CABINET
98	LUKE 2	0.0	1.70	29	12.0	-3.0	.65	15.0	-47	-6.0	B	CABINET
99	LUKE 3	-15.0	2.20	50	12.0	3.7	7.40	15.0	-43	-10.0	B	CABINET
100	LUKE 4	0.0	.45	12	12.0	-3.0	.65	15.0	-50	-1.0	B	CABINET
101	LUKE 5	9.0	2.55	35	5.8	-1.8	2.35	10.0	-47	-5.0	---	F.RANGE
102	ALLAN1	15.0	.69	60	0.5	-3.7	8.00	1.0	-40	5.0	B	CABINET
103	ALLAN2	15.0	1.40	0	2.2	12.0	8.00	12.0	-50	2.0	B	CABINET
104	ALLAN3	11.5	3.25	0	1.3	5.0	8.00	15.0	-50	6.0	B	CABINET
105	ALLAN4	15.0	.60	60	0.8	0.7	4.22	0.6	-45	1.5	B	CABINET
106	ALLAN5	15.0	1.60	27	2.2	-3.7	8.00	1.4	-47	2.0	B	CABINET
107	HOT	15.0	.86	57	18.0	10.5	6.55	3.0	-40	-10.0	A	CABINET
108	BLUES1	15.0	.45	51	18.0	0.0	2.35	8.0	-40	-10.0	A	CABINET
109	FUSION	15.0	1.38	33	16.0	6.2	1.67	-3.6	-45	-4.0	B	CABINET
110	CRUNCH	15.0	1.70	50	9.5	9.0	.60	8.40	-37	-10.0	A	CABINET
111	BURN	15.0	.77	60	18.0	-5.8	3.00	10.4	-40	-10.0	A	CABINET
112	CLEAN1	1.1	1.50	0	12.0	12.0	1.20	15.0	-45	-2.0	A	CABINET
113	BLUES2	15.0	.86	26	15.0	10.5	8.00	-1.7	-50	-3.5	B	CABINET
114	RAW	15.0	1.38	50	10.8	9.0	1.67	2.4	-40	-7.0	A	CABINET
115	CLEAN2	-14.5	1.34	.5	18.0	12.0	8.00	15.0	-50	10.0	A	CABINET
116	RIP	0.8	.64	40	8.0	5.5	8.00	4.5	-40	-4.5	B	CABINET
117	CRANK	15.0	1.38	50	13.5	0.0	1.67	10.0	-40	-9.0	A	CABINET
118	CLEAN3	0.0	1.10	0	9.5	12.0	8.00	15.0	-48	8.8	A	CABINET
119	BITE	15.0	3.25	50	10.8	4.5	3.56	5.0	-37	-8.0	A	CABINET
120	DIRTY	15.0	.95	60	13.0	-3.7	1.34	8.0	-40	-6.0	A	CABINET
121	PUNCHY	15.0	1.10	55	17.0	12.0	8.00	4.0	-37	-7.0	B	CABINET
122	EDGE	1.10	1.50	10	18.0	12.0	1.20	15.0	-45	-8.0	A	CABINET
123	DIR 1	5.2	.50	0	9.5	12.0	8.00	15.0	-48	2.6	---	F.RANGE
124	DIR 2	15.0	1.64	50	3.0	-3.7	8.00	3.0	-40	-2.0	---	F.RANGE
125	DIR 3	15.0	2.95	20	17.0	6.0	2.94	10.0	-60	-10.0	---	F.RANGE
126	DIR 4	15.0	1.70	50	14.2	-3.7	8.00	7.4	-40	-10.0	---	F.RANGE
127	DIR 5	-4.9	1.10	0	11.5	9.5	3.22	15.0	-50	5.0	---	F.RANGE
128	BYPASS	0.0	.45	0	0.0	0.0	.60	0.0	-70	0.0	---	F.RANGE

10. MIDI IMPLEMENTATION

(DIGITALLY CONTROLLED PROGRAMMABLE GUITAR PREAMP)

DATE: APRIL 1, 1991

MODEL: PROGAP V2.0

MIDI IMPLEMENTATION CHART

SOFTWARE VERSION: 2.0

	<u>FUNCTION</u>	<u>RECOGNIZED</u>	<u>REMARKS</u>
BASIC CHANNEL	DEFAULT CHANGED	1-16, OMNI, OFF 1-16, OMNI, OFF	MAY BE SAVED IN NONVOLATILE MEMORY
MODE	DEFAULT MESSAGES ALTERED	X X X	
NOTE NUMBER	TRUE VOICE	X	
VELOCITY	NOTE ON NOTE OFF	X X	
AFTER TOUCH	KEYS CHANNEL	X X	
PITCH BEND		X	
CONTROL CHANGE	0	0	PRE EQ. LEVEL
	1	0	PRE EQ. FREQUENCY
	2	0	GAIN LEVEL
	3	0	BASS LEVEL
	4	0	POST EQ. LEVEL
	5	0	POST EQ. FREQUENCY
	6	0	TREBLE LEVEL
	7	0	HUSH THRESHOLD
	8	0	OUTPUT LEVEL
	9	0	LOOP IN/OUT
	10	0	CURVE A/B
	11	0	CONTROL 1 IN/OUT
	0-120, OFF	0	*MAPPED PARAMETER
PROGRAM CHANGE	TRUE NUMBER	0	**PROGRAMS 1-128
SYSTEM EXCLUSIVE		X	
SYSTEM COMMON	SONG POSITION SONG SELECT TUNE REQUEST	X X X	
SYSTEM REAL TIME	CLOCK COMMANDS	X X	
AUX. MESSAGES	LOCAL ON/OFF ALL NOTES OFF ACTIVE SENSING	X X X	
	SYSTEM RESET	X	

NOTES**ACTUAL MIDI PROGRAM VALUE SENT IS 0-127, CORRESPONDING TO PRESETS 1-128.
OPTIONAL IMPLEMENTATION OF PROGRAM MAPPING ALSO AVAILABLE.

* CONTROLLER MAPPING AVAILABLE.

0 : YES X : NO

11. SPECIFICATIONS

INPUT

Input Impedance	470K Ohms
Max. Input	+20dBu
Input Jack	1/4" mono
Footswitch Jack	1/4" stereo
(T=Increment R=Decrement S=Ground)	

DYNAMIC RANGE over 110dB

EFFECTIVE NOISE REDUCTION up to 55dB

OUTPUT

Max. Output Level	+20dBu
Output Impedance	less than 150 Ohms
Amplifier Output Jack	1/4" mono
Full Range Output Jack	1/4" mono

MIDI IN 7-pin DIN

MIDI THRU standard 5-pin DIN

POWER REQUIREMENTS 9 VAC/1500mA

DIMENSIONS 19" x 6" x 1 3/4"

NOTE: 0dBu = 0.775V RMS

