

2120

Artist

Valve Guitar System

*Programmable Dual Tube Preamp / Processor
and Foot Controller*

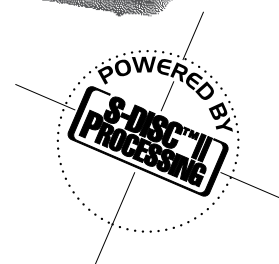
DiGiTech
A TRADITION OF
INNOVATION



User's Guide

Please visit Digitech Electronics on the World Wide Web at <http://www.digitech.com>

H A Harman International Company





CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

U.K. MAINS PLUG WARNING

A moulded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. **NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET.** Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and **MUST** be ASTA approved to BS1362.

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE MUST BE EARTHED.

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the unit's chassis.

CONDUCTOR		WIRE COLOR	
L	Line	Brown	Black
N	Neutral	Blue	White
	Earth Grnd.	Green/Yel.	Green

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

WARNING

FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: To reduce the risk of fire or electric shock, the user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

ELECTROMAGNETIC COMPATIBILITY

This unit conforms to the Product Specifications noted on the **Declaration of Conformity**. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation. Operation of this unit within significant electromagnetic fields should be avoided.
- use only shielded interconnecting cables.

LITHIUM BATTERY WARNING

CAUTION!

This product may contain a lithium battery. There is danger of explosion if the battery is incorrectly replaced. Replace only with an Eveready CR 2032 or equivalent. Make sure the battery is installed with the correct polarity. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved feilagtig håndtering. Utskiftning må kun ske med batteri av samme fabrikat og type. Levér det brukte batteri tilbage til leverandøren.

VAROITUS!

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

WARNING!

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

DECLARATION OF CONFORMITY

Manufacturer's Name: ***Digitech Electronics***
Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, USA

declares that the product:

Product Name: ***2120 VGS Artist Tube Preamp and 2120 FC Foot Controller***
Product Options: All

conforms to the following Product Specifications:

Safety: EN 60065 (1993)
IEC 65 (1985) with Amendments 1, 2 & 3

EMC: EN 55013 (1990)
EN 55020 (1991)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC as amended by Directive 93/68/EEC.

Digitech

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Effective February 25, 1998

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Quick Start

For those of you who prefer to burn now and read later, we've included this Quick Start section to get you up and running.

Connect Cables:

Connect guitar input into the front panel and output cables to the rear jacks. Balanced (tip-ring-sleeve) or unbalanced (tip-sleeve) cables can be used with the output jacks.

Connect Control One Foot Controller

Connect the output of the included DigiTech 2120 FC foot controller to the foot controller jack found on the rear of the 2120. Make sure that connection is made before applying power to the 2120.

WARNING: DO NOT CONNECT ANYTHING BUT THE DIGITECH 2120 FC FOOT CONTROLLER TO THE FOOT CONTROLLER JACK ON THE REAR PANEL! DOING SO MAY DAMAGE THE DEVICE.

If you want to control the 2120 via MIDI, connect your MIDI controller to the MIDI In jack.

Apply Power:

Use the supplied AC power cord to connect the 2120 to an appropriately grounded outlet. Be sure you run all your power cables away from audio cables. This will prevent noise and stray magnetic fields from entering the signal path.

Effects Loop:

Connect any external effects devices (such as an old favorite FX pedal) to the 2120 effects send and return jacks. The FX loop level switch (located on the rear panel) allows you to either boost or cut the level by 6dB by simply pressing the switch in or out.

NOTE: Adjust external devices so that they return the same signal level to the 2120 as they receive from the 2120. This will avoid level changes when switching the effects loop in and out. This signal level relationship is called unity gain.

Adjust Input:

Set the guitar to the loudest operating level that will be used. Make sure your amp is set for a clean sound, that your tone controls are all neutral (flat), and the amplifier's main volume is all the way down. At this point, use the Input knob on the front panel to adjust the Input level to the desired setting, so that the loudest guitar signal occasionally lights the clip LED indicator.

Adjust Output:

Set the 2120 output level to the 12 o'clock position and turn up the amplifier's main volume to the desired level.

Select Program:

Begin playing your guitar, and choose any program using the Program/Effect wheel. User Programs 1-100 are duplicates of the Factory programs. They are user-programmable and you can modify and store them as you want. Factory Programs 1-100 are not user-programmable. Factory Programs 101-124 are Basic programs that represent the 24 effect configurations. All 124 Factory Programs cannot be overwritten.

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Section-1 Introduction

Congratulations...

... you are now the proud owner of a Digitech 2120 VGS Artist Guitar Preamp/Processor. The 2120 VGS Artist Dual-tube multi-effects processor that utilizes two S-DISC II processors which will allow you to create any preamp/multi-effect tone configuration imaginable. Whether it be dual distortion path morphing or up to eight digital effects at a time, the 2120 VGS Artist offers unlimited possibilities. In addition, the 2120 VGS Artist includes the fully programmable 2120 FC Foot Controller and presets written by some of the most respected players today.

This owner's manual is your key to understanding the powerful world of the 2120 VGS Artist. Read it carefully. After you've had time to familiarize yourself with the unit, try experimenting with unusual effect combinations. You are certain to achieve sounds never thought possible before. Good luck, and thank you for choosing Digitech.

Your 2120 VGS Artist was carefully assembled and packaged at the factory. Before you proceed any further, make sure the following items are included:

- *(1) Owner's Manual*
- *(1) Digitech 2120 VGS Artist*
- *(1) Digitech 2120 FC Foot Controller*
- *(1) Power Supply*
- *(1) Digitech warranty card*

Please save all packing materials. They were designed to protect the unit from damage during shipping. In the unlikely event that the unit require service, use only the factory supplied carton to return the unit.

2120 VGS Artist Features:

- *Artist Authored Custom Presets*
- *Dual distortion path routing*
- *Dual Tube Preamp (12AX7)*
- *Full bandwidth effects (20-20kHz)*
- *24-bit signal path, 48-bit internal data path*
- *Up to 8 digital effects at once*
- *Dual S-DISC II ® Processing*
- *Flexible, easy-to-use effect routing*
- *Effects can be repeated in a chain, (e.g. EQ + flange + EQ + pitch shift)*
- *Expanded Delay Times (5.0 Seconds in Full Modules)*
- *Instant module access*
- *Exclusive Dynamic Parameter Control*
- *Programmable Speaker Cabinet Emulator*
- *Chromatic tuner*
- *Full MIDI Implementation*
- *All effects and parameters available for MIDI continuous control*
- *2 Expression Pedal insertion jacks to add external CC pedals for additional assigning options*
- *Fully Programmable Foot Controller*

We at **Digitech** are very proud of our products and back-up each one we sell with the following *warranty*:

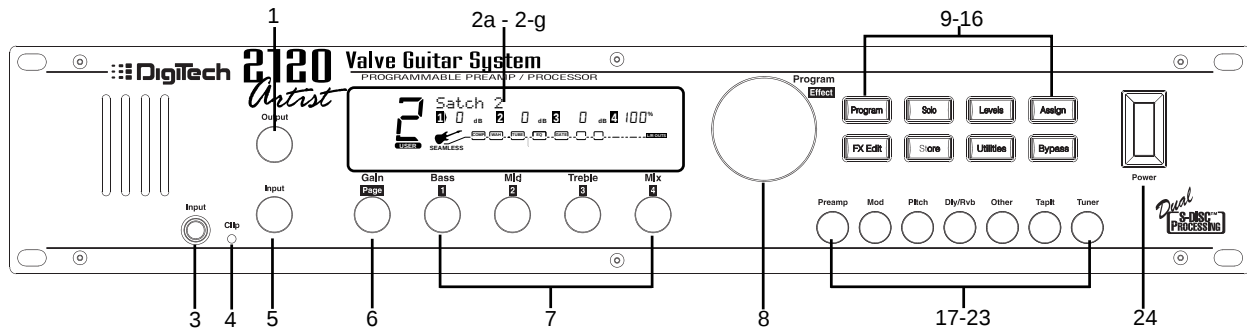
- 1. The warranty registration card must be mailed within ten days after purchase date to validate this warranty.*
- 2. Digitech warrants this product, when used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.*
- 3. Digitech liability under this warranty is limited to repairing or replacing defective materials that show evidence of defect, provided the product is returned to Digitech WITH RETURN AUTHORIZATION, where all parts and labor will be covered up to a period of one year. A Return Authorization number may be obtained from Digitech by telephone. The company shall not be liable for any consequential damage as a result of the product's use in any circuit or assembly.*
- 4. Proof-of-purchase is considered to be the burden of the consumer.*
- 5. Digitech reserves the right to make changes in design, or make additions to, or improvements upon this product without incurring any obligation to install the same on products previously manufactured.*
- 6. The consumer forfeits the benefits of this warranty if the product's main assembly is opened and tampered with by anyone other than a certified Digitech technician or, if the product is used with AC voltages outside of the range suggested by the manufacturer.*
- 7. The foregoing is in lieu of all other warranties, expressed or implied, and Digitech neither assumes nor authorizes any person to assume any obligation or liability in connection with the sale of this product. In no event shall Digitech or its dealers be liable for special or consequential damages or from any delay in the performance of this warranty due to causes beyond their control.*

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NOTE: The information contained in this manual is subject to change at any time without notification. Some information contained in this manual may also be inaccurate due to undocumented changes in the product or operating system since this version of the manual was completed. The information contained in this version of the owner's manual supersedes all previous versions.

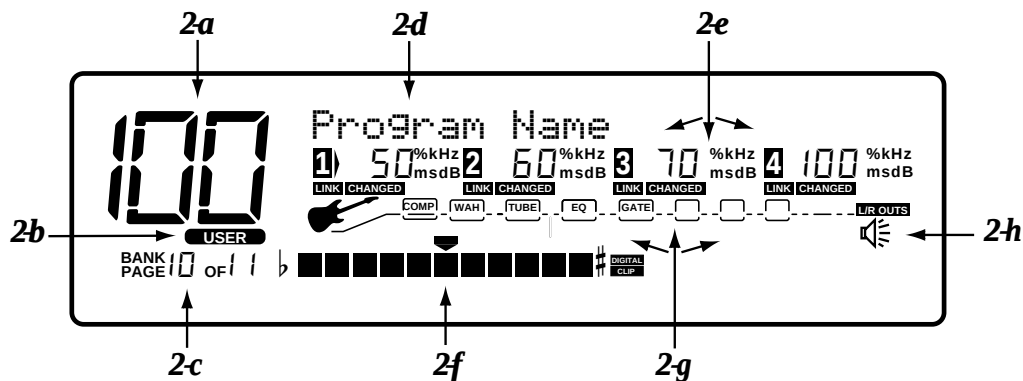
A Quick Tour of the 2120 VGS Artist

The Front Panel



1) **Output Level Knob** - Controls the overall output level of the 2120 VGS.

2) **Display** - This large custom display is where you receive the information you need to move around the operating system. The display has several sections:



2a) **Program Number Indicator** - Three large digits in the upper left corner of the display indicate which Program is currently selected.

2b) **Factory / User Indicators** - Directly below the Program number, the Factory and User Program icons indicate whether the current program resides in either a Factory or User Bank.

2c) **Bank / Page Indicators** - Located in the bottom left corner of the display, the Bank/Page indicators display:

- the Bank number in which the current program resides in Program mode. (This is displayed only when the 2120 FC is connected).
- the Page which is currently selected in various Edit modes.

2d) **Information Line** - Row of 24 characters in the top line of the display gives more detailed information about specific functions and items such as: Program names, Parameter names, and Utility or auxiliary information.

2e) Parameter Data Sections - Immediately below the Information line are four parameter data sections. They correspond with the <1> through <4> knobs on the front panel. Each section displays the current value of the indicated parameter.

A CC indicator in each selection tells whether the indicated parameter is set up to be controlled via a MIDI controller, the 2120 FC or an internal dynamic LFO. When a parameter has been modified, the **CHANGED** icon will appear under the parameter that has been modified and the <Store> button will light to indicate a change has been made to the Program, but not stored.

2f) Input Level / Clip Meters - The Input Level and clip meter is located in the bottom center of the display. This meter shows the Preamp level, and uses a peak detector action to display the highest levels of the preamp. The Clip indicator at the end of the meter, indicates if the the input signal is being clipped at the analog input section (pre-digital) or in the digital effects domain.

2g) Effect Routing Matrix - The Effect routing matrix shows the signal flow of the currently selected program. This matrix includes boxes that represent each effect module along with lines that indicate how those effects are connected to inputs, outputs and each other. If an effect module is bypassed, a line appears through that module's box in the matrix.

When in FX Edit mode, the box that represents the currently selected effect module will flash.

3) Input Jack - Plug Guitar in here.

4) Clip LED -The Clip LED Indicates that the input signal is causing input stage clipping in the 2120 VGS.

5) Input Level Knob - Controls the input level of the 2120 VGS.

6) Gain/Page Knob - Controls the Distortion Gain Parameter either locally or globally. Selection of either Global or Local mode can be found on Page 1 of the Utilities Menu. When the 2120 VGS is in Edit mode, the Page knob is used to scroll through the pages of the selected effect module.

7) Parameter Knobs - Parameter knobs <1> thru <4> are used to:

- change the gain of the EQ (<1> - <3>) and the mix between the Wet and Dry signals (<4>) in Program mode. The EQ and Mix modes can be set to either Local or Global modes on Page 1 of the Utilities.
- change the parameters you want to edit in FX Edit mode.

8) Program/Effect Wheel - Selects Programs in Program mode or changes effect modules in FX Edit mode.

9) Program Button - Toggles between User and Factory banks. A successive press will also return the 2120 VGS to Program mode from other modes.

10) Solo Button - Toggles the SOLO parameter On/Off.

11) Levels Button - Exits current mode and enters Levels mode.

12) Assign Button - Used to assign programs and parameters to the 2120 FC or assign parameters to MIDI controllers.

13) FX Edit Button - Exits current mode and enters FX Edit mode. A successive press will also return the 2120 VGS to Program mode.

14) Store Button - Initiates Store function and indicates changed status.

15) **Utility Button** - Exits current mode and enters Utilities mode.

16) **Bypass Button** - Bypasses the 2120 VGS Preamp and Effects

17-23) FX Library Buttons:

17) **[PreAmp]** - Exits current mode and enters FX edit mode at the Preamp module. Successive presses move to the next available module in the PreAmp section.

18) **[Mod]** - Exits current mode, enters FX Edit mode and selects the first available modulation module of a program. Successive presses move to the next available Modulation effect within the program. Pressing and holding this button automatically loads a Modulation effect into the currently selected effect module.

19) **[Pch]** - Exits current mode, enters FX Edit mode and selects the first available PitchShift or Detune module of a program. Successive presses move to the next available PitchShift or Detune module of a program. Pressing and holding this button automatically loads a detune effect into the currently selected effect module.

20) **[Dly/Rvb]** - Exits current mode, enters FX Edit mode and selects the first available Delay or Reverb module of the program. Successive presses move to the next available Delay or Reverb module of the program. Pressing and holding this button automatically loads a Dly/Rvb effect into the currently selected program.

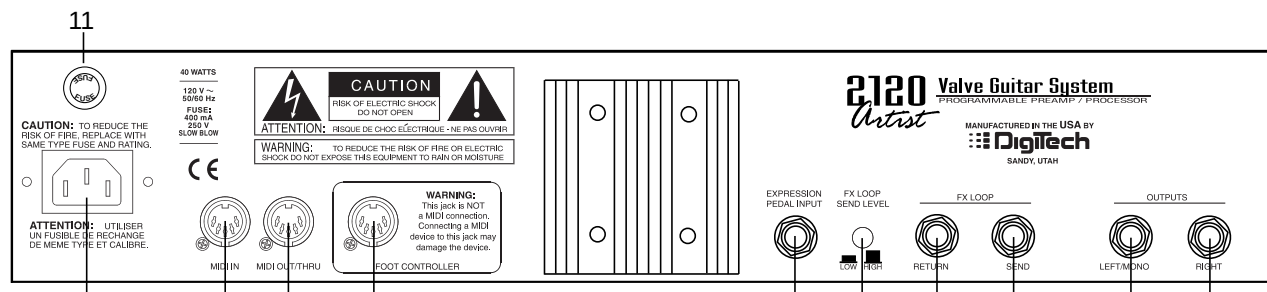
21) **[Other]** - Exits current mode, enters FX Edit mode and selects the effect configuration. Successive presses move to the next available Digital effect module not included in the above selections until finally reaching the Master Mix module.

22) **[TapIt]** - The TapIt button is used to set the delay tap tempo for precise delay time taps. To use the TapIt button, simply tap the <TapIt> button at the desired tempo and the delay time will automatically recalibrate itself.

23) **[Tuner]** - Exits current mode and enters Tuner mode.

24) **Power Switch** - Turns the unit on and off.

The Rear Panel



- 1) **AC Line Input** - Connect the supplied power cord here.
- 2) **MIDI In** - The MIDI In port allows the 2120 VGS to respond to incoming MIDI messages, including Program Change, Continuous Control, and System Exclusive data.
- 3) **MIDI Out/Thru** - Sends out or passes any MIDI data generated by the 2120 VGS to other devices.
- 4) **Control One Input** - This is a 5-pin DIN plug for connecting the included DigiTech 2120 FC foot controller. Connection of the 2120 FC should be made before the 2120 VGS is turned on.

IMPORTANT: THIS IS NOT A MIDI PORT. CONNECTING A DEVICE OTHER THAN THE DIGITECH 2120 FC TO THE JACK CAN DAMAGE THE UNIT.

- 5) **Expression Pedal Input** - This 1/4" input jack gives you the option of connecting external passive volume control pedals for controlling parameters in the 2120 VGS m.

Notice: When using the 2120 VGS with the 2120 FC foot controller, the 1/4 expression pedal input on the rear of the unit is referred to as EXP 3. When the 2120 VGS is used alone, the expression pedal input becomes known as EXP 1.

- 6) **FX Loop Level Switch** - This switch gives you the option of either standard level (switch out), or a 6 dB cut (switch in) in the fx loop level. This is ideal to use when inserting an FX pedal that may not have the same output level to keep the level even in the chain.
- 7) **FX Send** - This is the effects loop mono send jack. Connect the input of an external effect device here. The send gets its signal immediately following the Analog Wah module. It is a balanced-TRS connector.
- 8) **FX Return** - This is the effects loop return. It is fed back into the signal chain before the distortion sections of the 2120.
- 9) **Left/Mono Output** - This is the left audio output. Use both left and right outputs when you are running in stereo mode. If you are running in mono mode, use the Left output and selectable mono mode in the utilities section. It is a balanced-TRS connector. Page 11 of the Utilities mode gives you the option to select either Stereo or Mono output modes.
- 10) **Right Output** - This is the right audio output for use when running in stereo mode. This is a balanced-TRS connector.
- 11) **AC fuse receptacle** - Direct access to the fuse can be reached here.

Inside the Guitar Preamp

The 2120 VGS offers world famous DigiTech Preamp tones that have become an absolute necessity in the Recording Studio or on Stage.

Compression: Every program of the 2120 VGS has a dynamic range Compression circuit specially designed to be used in guitar applications.

Digitally Controlled analog Wah: Now you can have vintage analog Wah effects at your finger tips and toes. The digitally controlled analog Wah produces true Wah tonal characteristics, while being controlled digitally, thus remaining quiet.

Dual Distortion paths: the 2120 VGS provides you with more tone options by including dual distortion path routing. Within the signal path of the 2120 VGS, you can select which distortion path the signal is routed through. Along with distortion path selection, you can also run the two in parallel, and morph between the two paths. And, if having these options were not enough, the 2120 VGS gives you the ability to combine and pan both Distortion paths to the right and the left at the same time to produce “mammoth” guitar tones.

Dual Tubes and EQ: When the Dual Tube distortion tube path is selected, you have two 12XA7 preamp tubes at your tone disposal, as well as a dedicated 10-band graphic EQ. After the 10-Band EQ, the Dual Tube EQ path is run into the Noise Gate and then into the Speaker Cabinet Emulator, which can be placed before or after the digital effects section.

Solid State and EQ: With the Solid State distortion path selected, you get the versatility of solid state distortions along with the 10-band EQ. From here, the Solid State Distortion path is run into the Noise Gate and then into the Speaker Cabinet Emulator.

Noise Reduction: With the Silencer II noise reduction system, you can hear a pick drop. Back ground noise in recordings will no longer be heard with noise reduction of this caliber.

Programmable Cabinet Emulation: The days of spending hours upon hours trying to mic' a speaker cabinet to get a good sound are now just a thing of the past with the Programmable Cabinet Emulation module in the 2120 VGS. Whether it be live or in the studio, speaker cabinet emulation is possible by simply running directly to the board or to tape.

Digital Effects

When it comes to digital multi effects, Digitech's reputation is second to none. We've been perfecting this art form for almost twenty years, so you know that the 2120 VGS is thoroughly equipped with a pristine, ultra-quiet digital effect section.

Effects include:

- Digital EQ
- Noise Gates
- Reverbs
- Choruses
- Flangers
- Intelligent Pitch Shifters
- Chromatic Pitch Shifters
- Detuners
- Digital Delays
- Smooth Whammy
- Phasers
- Tremolos
- Auto Panners
- Rotary Speaker Emulation
- Long Delays (lower-bandwidth for double delay times)

Up to 8 digital effects at once (Dual S-DISC II configurations) When utilizing a dual S-DISC II configuration, you can link up to 8 digital effects at once from the vast effect palette.

Seamless Program changes (single S-DISC II algorithms): Smooth program changes are a breeze with Seamless program changes. When a program change is made, there is no apparent "drop out" of signal. You can also program the hold and release times so program effects overlap each other at different rates.

Setting and changing seamless program times can be done on Page 4 of the Master mix menu of each program in the Edit mode. Seamless program change time ranges from 0.0 seconds to Infinity for both hold and Ramp times.

Real time Modifiers: Modifiers are unique tools that can be used to dramatically alter your sound based on information from signal amplitude, the settings of a Low Frequency Oscillator (LFO) or MIDI Continuous Controller information.

Every Program in the 2120 VGS has a set of modifiers. Up to 16 Modifier links can be assigned to control parameters. There are three types of Modifiers that can be linked to a parameter: MIDI CCs, LFOs, and Dynamic (signal level dependent).

MIDI CCs: When you use MIDI CCs, your 2120 VGS responds to CC numbers 0-127 and CHP (channel pressure or aftertouch).

For example, you can have a synth's modulation wheel (usually MIDI CC#1) control the in level of a reverb and chorus in one program while the delay feedback may be controlled in another.

LFOs: When you use LFOs, parameter values can be controlled automatically between a defined minimum and maximum setting at a user-definable rate. Your 2120 VGS has 2 user definable LFOs in each program that can be assigned to any parameter.

For example, you can create an auto panner without using an auto panner module. Simply link an effect's output pan parameter to the LFO modifier and the LFO will move that parameter back and forth. This modifier can be a very useful weapon in the ongoing battle of new sound creation. There are two LFOs available in each program that can use unique speeds and waveforms.

Dynamic Modifiers: When you use Dynamic modifiers, the parameter values are controlled in relation to the dynamics of the input signal. The possibilities are nearly endless, and they cannot be duplicated using any other method.

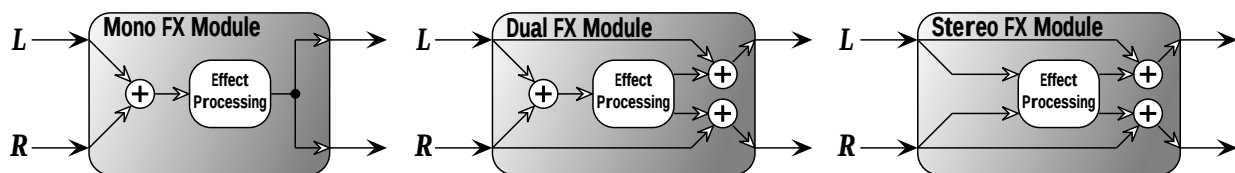
For more information on using modifiers see the "Using Modifiers" section.

Module Types

Each effect in the digital FX section is contained in separate effect blocks referred to as “Modules”. There are three basic types of FX Modules used by the Digital FX section of the 2120 VGS.

- Mono FX module
- Dual FX module
- Stereo FX module

The figure below illustrates how signals are routed through each type of FX module. Although all three modules are shown with stereo inputs, they can still be used with a mono source. The mono source would just be routed to both sides of the module's inputs. Notice how the Dual FX module maintains a stereo image, while the mono FX module always sums the signal

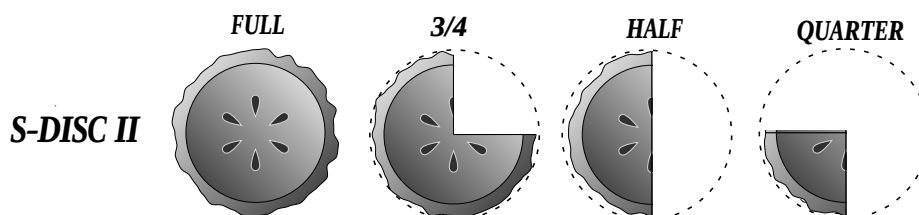


Module Sizes

These modules vary in size ranging from 1/4 size to Full. In order to achieve the nearly endless combinations of effects and routings, we've supplied you with four different module sizes and they are as follows:

- Full (module type = FUL)
- 3/4 (module type = 3-4)
- Half (module type = HLF)
- Quarter (module type = 4th)

Dividing the (2) S-DISC II's processing power allows your 2120 VGS to produce up to 8 digital effects at one time. The figure below represents how each of the S-DISC IIs can be divided to accommodate a wide variety of effect routing.



A Full module type offers effects with more flexibility and power than the Half modules, and so on, but all four sizes of FX modules feature high quality effects, so you don't have to worry if you need to divide the S-DISC II pie four ways. For a complete list of these FX Types please see the Editing modules section. For a complete list of effect configurations please see Appendix on page 68.

Basic Specifications

1 Input and 2 Outputs Balanced (TRS)

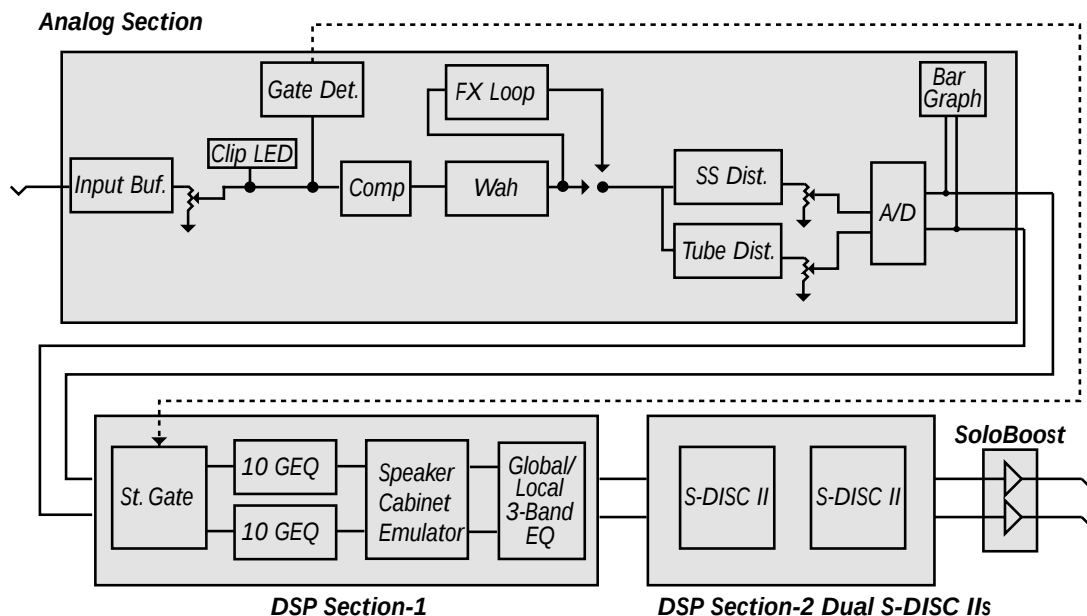
With the 2120 VGS, the input and output are set up in a mono input and stereo or mono output configurations. The input jack of the 2120 VGS is located on the front panel of the unit. The output jacks are TRS (tip-ring-sleeve), and are a Left (mono) and Right output configuration for full stereo separation of effects.

Programmable Mono FX Loop

For those of you that feel the need to add additional effects to the already extensive menu of sounds, the 2120 VGS provides a programmable line level mono programmable FX loop. The signal leaves the unit after the Wah section of the 2120 VGS and returns just before the Dual distortion paths. For a better representation of the FX loop, please refer to the signal flow chart below.

Signal Flow

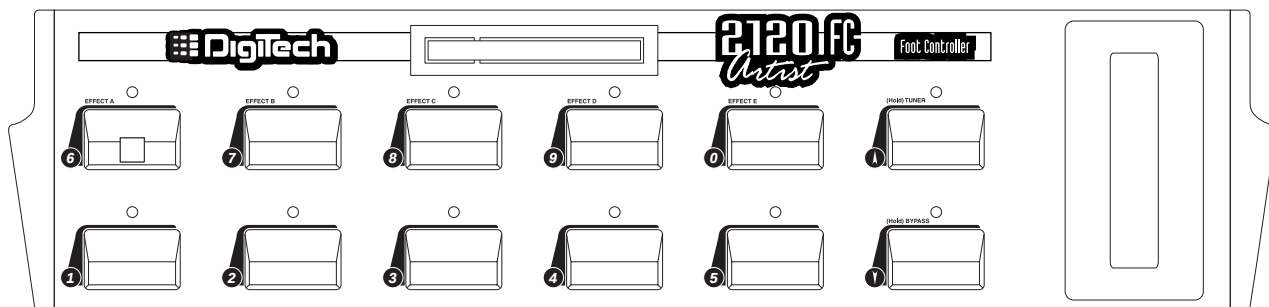
Listed below, is a chart showing the signal flow path of the 2120 VGS. Notice that with the 2120 VGS, you have the choice of selecting either one or both of the Distortion signal paths. Also take notice that a noise reduction system is available in the Analog Preamp section and the first DSP section, making for ultra-quiet performance.



2120 FC Compatibility

The 2120 VGS is an ideal stand alone multi effects processor, but to out-do ourselves, we have made the 2120 VGS compatible to use with the 2120 FC foot controller. The included 2120 FC can help you maximize the potential of your 2120 VGS. Since the 2120 FC “talks” to the 2120 VGS using a proprietary communication protocol, it offers better response time and capabilities not available with conventional MIDI pedalboard controllers.

The 2120 FC includes 12 footswitches for program and parameter control. It also features a built-in Expression pedal. The 2120 FC also gives you the option of adding another expression control (via the external expression pedal jack which is located on the front of the 2120 FC foot controller). Combined with the Expression controller insert (located on the rear panel of the 2120 VGS) this gives you a grand total of 3 Expression controllers. The large 20 character display constantly feeds you important information like program names, CC info, and tuner indicators. For more information on the 2120 FC foot controller, please Section 5.

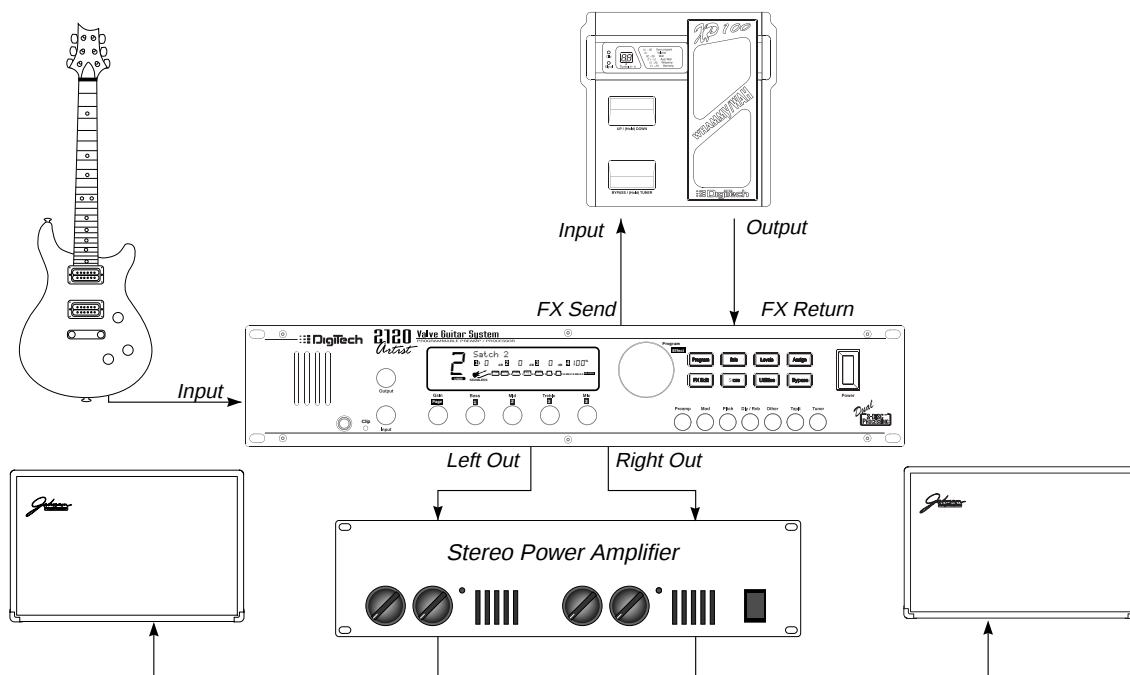


Section -2 Setting Up

Making Connections

Because of its flexibility, your 2120 VGS can be connected in several different ways to meet the requirements of specific applications. The following diagrams offer some ways your 2120 VGS can be connected.

NOTE: In all the diagrams we have shown use of the external FX loop (this is of course, optional).



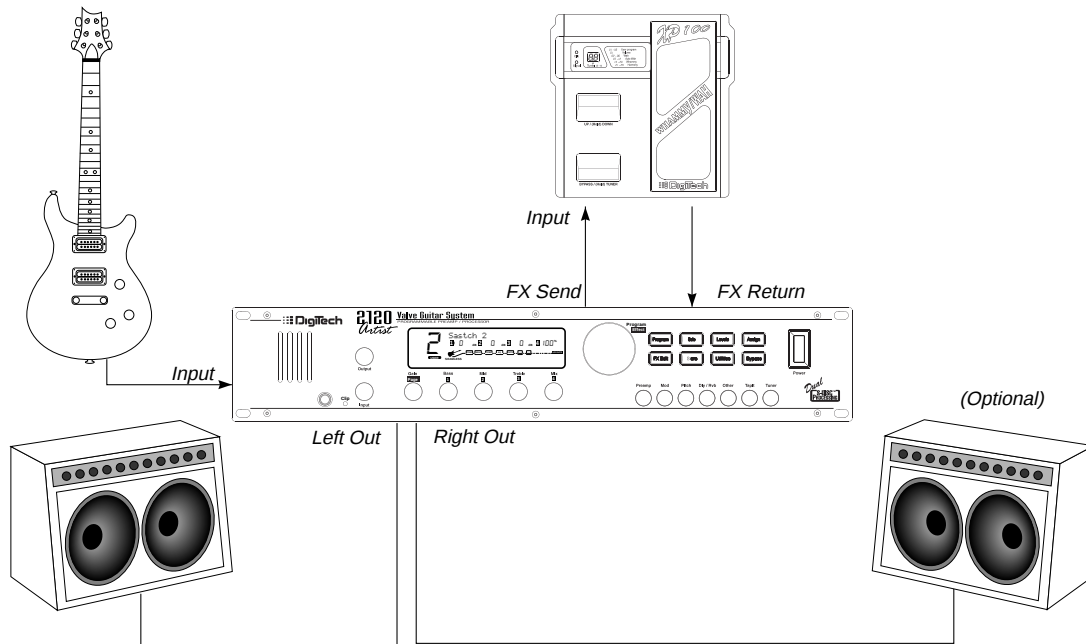
2120 VGS into a Stereo Power Amp

This is the ideal 2120 VGS Set up. From the output jack of the guitar, run the cable into the Input jack on the front panel of the 2120 VGS. At this point (if you so choose) you can utilize the mono Fx loop of the unit by running out of the fx send of the 2120 VGS into the desired unit being used. From there, run from the output (or send) of the chosen unit back into the Fx return jack of the 2120 VGS.

At this point, run out of both the Left and Right output jacks of the 2120 VGS into the respective inputs of the stereo power amp. From the Stereo power Amp, run out of the Left and Right outputs into the chosen speaker cabinets.

This is an ideal opportunity to see and hear how the masters of stereo effects have outdone themselves in achieving mind-boggling stereo separation. Stereo Delays, Phasers, Tremolos, and Auto panners will produce effects in this set-up that are simply out of this world.

When using a guitar system set-up such as this, it is always a good idea to make sure all connections are secure. Be sure to keep the levels of sending and receiving unit even so they do not have a tendency to clip (or distort) the inputs of each unit.



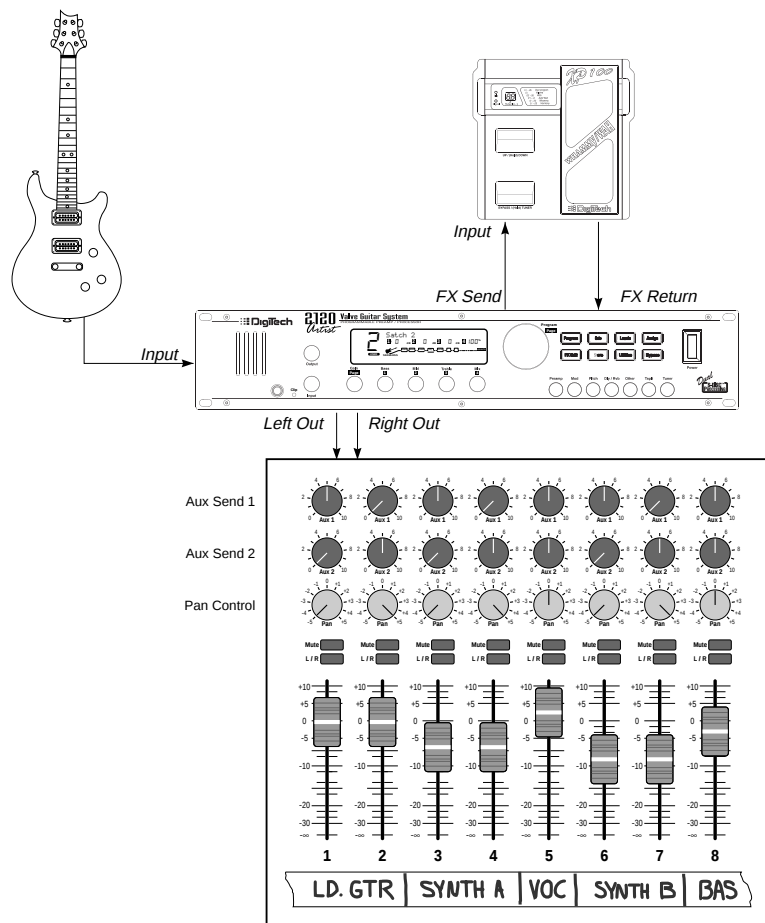
2120 VGS into a Pair of Combo Amps

Using a set-up similar to the one shown above will give you the chance to optimize the potential of both the 2120 VGS and the combo amplifiers.

The best signal route for a combination such as this one, is to first run out of the guitar output into the input jack of the 2120 VGS. Then, if you prefer to use an additional effect unit in the signal path, you can utilize the programmable mono FX loop of the 2120 VGS. In doing this, you will want to run from the fx send of the 2120 VGS into the selected effect unit. From the chosen effect unit, run out of either its output back into the FX return of the 2120 VGS. From the 2120 VGS, you will now want run out of both the left and right outputs of the 2120 VGS into the input jacks of both combo amps.

You will be able to achieve lush, smooth stereo effects, while retaining the great amp tones of both the 2120 VGS and the Combo Amps.

As usual, make sure that all of the connections are good and solid when making the connections. It is also a good idea to make sure that the signal levels going from one unit to the other are even. Meaning that the output level going into the input of the receiving unit is not set so high that it distorts (or clips) the input section. Always remember that the better your rig sounds clean, the better your 2120 VGS will sound.



2120 VGS Running Direct with the Programmable Cabinet Emulator

To use the **Programmable Speaker Cabinet Emulator**, simply enter the Edit mode of the selected Program and scroll to Page 2 of the Master Mix menu module after the last effect module. From here, the 2120 VGS gives you the options of activating the Cabinet Emulator, selecting defaults and/or placing the Cabinet Emulator either Pre Digital (Preamp Only are affected), or Post Digital (the Preamp and Effects are affected). These selections can be made by using the <2> or <3> knobs.

So let's cut out the middleman (speaker cabinet), and run from the guitar output into input jack of the 2120 VGS. From this point, you now have the option of utilizing the Programmable Mono FX loop that is offered in the 2120 VGS. To use the FX loop, run from the FX send of the 2120 VGS, into either input or FX return of the selected effects unit. Now, run out of either the output or the FX send of the chosen unit back into the FX return of the 2120 VGS.

At this point, you will want to run from either Left or Right outputs (or both for a stereo mix), into the selected inputs of the mixer. Pan the mixer channels hard Left and Right to achieve true stereo separation.

Notice that once the Programmable Speaker Cabinet Emulator is turned On, the Speaker icon will appear in the display.

Getting Around In the Operating System

The menu structure of your 2120 VGS was specifically designed to be easy to use. The display shows the information you need, but to make things even easier for you, illumination of the front panel buttons offers additional operating information.

The front panel buttons give you information in one of two ways:

- 1 - If the button is dim, its function is inactive. Pressing an a dim button causes it to light brightly and its function becomes the active item in the display.
- 2 - If the button is bright, its function is active. Pressing an active button (other than the **<Program>** button) reselects the already active item in the display.

Program Mode

Program mode allows you to scroll through the Factory and User Programs using the **<Program/Effect>** wheel. When the 2120 VGS is turned on, it sets itself to Program mode. Program mode is active when the **<Program>** button is lit and a Program name is present on the Information line (top line) of the display.

FX Edit Mode

This mode allows you to edit:

1. Effect configurations
2. Preamp modules
3. FX modules
4. The Output mode module

Use the **<Edit>** button to enter the FX Edit mode and then to select the next module for editing.

A helpful hint: If you look at the Effect Routing Matrix while you press the FX **<Edit>** button, the currently selected module will flash.

Your 2120 VGS uses the **<Program/Effect>** wheel to select FX modules. Once a module is selected, it uses “Pages” to navigate within an effect. A “Page” is a group of up to four effect parameters that appear on the screen at one time. Use the **<Gain/Page>** knob to move through the Pages in the menu. Note that as you scroll through the Pages, the Page indicator in the lower left corner of the display changes to show the currently displayed Page number.

Utilities Mode

Access to all of the menu pages of the utility mode can be made by simply pressing the **<Utilities>** button located on the front panel of the unit. From this point, the display will tell you that you are in the Utilities library and you can scroll through the options of the utilities menu by simply turning the **<Page>** knob.

Levels Mode

Adjustments to the Preamp (Tube or Solid State), DSP, and Master levels can be made by simply pressing the **<Levels>** button to access the

levels menu, then you make the adjustments until your ears and level indicators are happy.

Assign Mode

Assign mode is used for linking programs and parameters to the Foot controller, MIDI, LFOs and Dynamic modifiers. Once the 2120 VGS is in assign mode, all modifier assignments (Foot Controller, MIDI, LFO and Dynamic links) can be made from this point. Access to this function is located on the front panel or in the utilities pages within the 2120 VGS.

Output Module Functions

The Output Module of the 2120 VGS gives you assignment control over crucial aspects of your sounds. The Menus of the Output module include: Master Mix (Page 1), Cabinet Emulator Settings (Page 2), Solo button assignment (Page 3), Volume pedal assignment (Page 4) and Seamless Program Time changes (Page 4).

To access the Output module of the 2120 VGS, from Program mode press either the **<Edit>** button and turn the **<Program/Effect>** until the Master Mix module flashes. If you wish to cut out a step or two in this process, simply press the **<Other>** button until the Master Mix module flashes.

Once you are at the Master Mix module, you simply use the **<Page>** knob to move to the various editing pages of the Output module.

To leave the Output module section, simply press the **<Program>** button. Always make sure to store any changes made to the selected program.

Getting Sounds

The following sections will help provide you with some quick and easy tips and recommendations for getting the optimal tones out of your 2120 VGS.

Input and Output Adjustments

The best setting for the input control is to use the **<Input>** knob so you have strong signal coming into the 2120 VGS occasionally lighting the clip LED. As far as setting the Output level, let your ears be the judge. But, if you can't hear the rest of the band, chances are that you need to back off on the output level of the 2120 VGS or the input of your amplifier(s).

Gain Adjustments

To adjust the gain in the Tube or Distortion section, either turn the **<Gain>** knob on the front panel or press the **<Edit>** button to put you in Edit mode. Now use the **<Program/Effect>** wheel to scroll to the Tube or Distortion module. From this point, turn the **<Page>** knob to move to Page 2 of 2 of the Tube or Distortion module. Your gain settings range from 0 to 100, so this gives you plenty of room for great tones in between.

EQ and Mix Adjustments

Adjusting the global EQ is as easy as grabbing the knob and turning it. The <1> knob controls the level of the bass frequencies, the <2> knob controls the level of the mids, and the <3> knob controls the highs. In Program mode the level of each frequency band is displayed on the screen. Global EQ settings range from -12 to 12. For more information on the Global/Local EQ and Mix, see page 31.

Wet/Dry Mix Adjustments

To change the mix of dry and wet signal use the <4> knob. Mix settings range from 0 (all dry) to 100% (all wet). The Mix knob really comes in handy when playing live because the acoustics of any room will change throughout a gig due to changes in crowd size, humidity, temperature, and other variable factors. As the room acoustics change, you can easily adjust the level of your effects accordingly with the turn of a knob. The Master Mix of each program can be modified in the Master Mix menu while in edit mode by either pressing the <Edit> button then scrolling through the program pages. Or, simply press the <Other> button until this menu is reached.

Program levels

To adjust the overall level of a program push the <LEVELS> button. Then use the <1> knob to either bypass or activate the Tube or Solid State levels. At this point, you now want to use the <2> knob to adjust the level of the selected distortion. This controls the Preamp levels into the digital section. If the **CLIP** indicator lights, lower these levels. From here, you will now want to use the <3> knob to set the DSP level. This controls the Preamp levels in the digital domain. If the **DIGITAL CLIP** indicator lights, lower these levels. Last but not least, knob <4>. This controls the Master program level. All of these levels range from 0 (off) to 100%.

Using The Solo Button

The exclusive Solo button feature in the 2120 VGS gives you the ability to boost your solos instantly live or in the studio with just the press of a button.

How does this work? With the unique Solo Button feature engaged (either via the Front panel control, or the included 2120 FC foot controller), you get an additional 6dB of boost at the output of the 2120 VGS. This feature is also ideal to use in the studio (or live) to give you a little extra punch for solos.

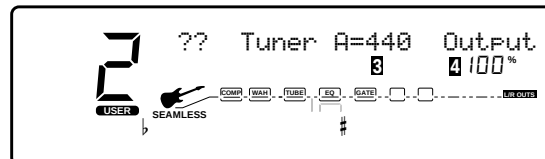
To assign the Solo button function, simply press the <Solo> button once then store. If you wish to link it to a footswitch, access can be made in Page 3 of the Master Mix menu in the Utilities menu.

Using the Tuner

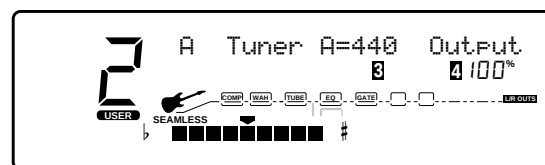
When using the Tuner of the 2120 VGS, it can be accessed one of two ways. Either by pressing the **<Tuner>** button on the front panel or using the included 2120 FC foot controller. The following, explains both modes of operation.

Front Panel

1. Press the **<Tuner>** button. The display reads:



2. As you play a note on the guitar, the top line will tell you which note you are playing, while the meter will show you if you are flat or sharp. If the meter is moving right, the note you are playing is sharp. If the meter moves left, you are flat. The goal is to tune your guitar so that the meter stops moving, and the display will lock-in, indicating that you are in tune. Once you start playing the selected note, the display will read as follows:



3. Press the **<Tuner>** button again to exit the Tuner mode.

Reference and Output

The 2120 VGS gives you the option of changing the Tuning reference from F# to 453, by simply turning the **<3>** knob while the 2120 is in Tuner mode. Another feature available in the 2120 VGS Tuner mode, is the ability to set the amount of signal that is passed to the output while tuning. This has a range from 0 (mute) to 100%. The output can be changed by turning the **<4>** to the desired level while the 2120 VGS is in Tuner mode.

2120 FC Tuner Mode

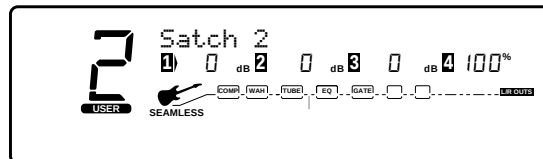
To access the Tuner mode using the 2120 FC foot controller, press and hold the **<Bank Up/Tuner>** footswitch to engage tuner mode on the 2120 FC.

1. As you play a note on the guitar, the indicator in the display of the 2120 FC will move either to the right, or the left. If the indicator is moving right, the note you are playing is sharp. If the indicator moves left, you are flat. The goal is to tune your guitar so that the indicator stops in the middle and the display locks-in, indicating you are in tune.
2. In both methods of tuning, the tuner is referenced to A=440Hz. If you prefer tuning sharp or flat according to the A reference, use the **<3>** knob to select a new reference. This can be set as high as A=453Hz or as low as A=427Hz. The tuner can also be used for alternate tuning references where A=Ab (meaning you play an A note, but the tuner will tune to A flat). It is possible to tune as low as A=Gb.
3. Press any footswitch on the 2120 FC to exit the Tuner mode.

Section - 3 Editing Programs

Selecting A Program

When you first turn on your 2120 VGS, it boots up in Program mode and the display will appear something like this:



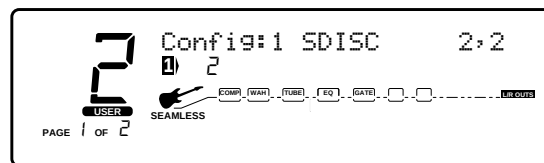
To select a Program, do the following:

1. Make sure Program mode is selected (the **<Program>** button will be brightly lit). If the **<Program>** button is dim, press it once to return to Program mode.
2. Use the **<Program>** button to select the Program bank (Factory or User). Each successive press of the **<Program>** button toggles between the Factory and User bank of programs.
3. Using the **<Program/Effect>** wheel, scroll to the program you want to hear.

Selecting Effect Configurations

The 2120 VGS gives you the ability to select any one of the twenty-four different effect routing configurations within the selected program. The procedure to do so is as follows:

1. From Program mode, press the **<Other>** button. The display appears something like this:

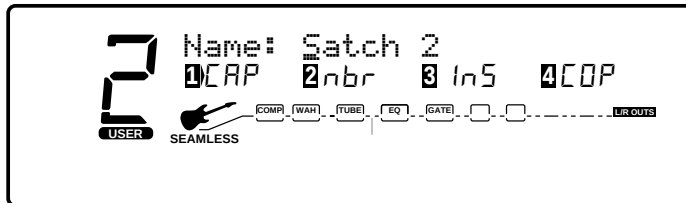


2. Notice that the entire digital effects screen is flashing. At this point turn the **<1>** knob under the display to select any one of the twenty-four different effect routing configurations available in the 2120 VGS. Once you have the desired Effect configuration selected, you can load the effect modules you need for your particular program needs. press the **<Store>** button to save any changes. Pressing the **<Program>** button will return you to Program mode.

Storing/Naming Programs

Before we get into editing programs and creating your own, let's learn how to store changes so you won't lose any modifications you'll want to keep. The Store procedure allows you to rename, relocate and save any modifications you have made to Programs so that they can be recalled later.

1. Press the **<Store>** button once. The display shows the current program name (which may look something like this):



A cursor appears under the first character of the Program name

Naming the Program

1. Using the **<Program/Effect>** wheel, change the character to the one you want in the selected position.
2. When the correct character is displayed in that position, use the **<Page>** knob to scroll the cursor to the next character you want to change.
3. Use the **<1>** knob to change the letter's case. The **<2>** knob is used to select numbers, The **<3>** knob is used to insert spaces. The **<4>** knob is used to copy and paste characters.
4. To copy a character, position the cursor under the character you want to copy (using the **<Page>** knob), then turn the **<4>** knob clockwise. To paste the copied character, position the cursor where you want to paste the character, then turn the **<4>** knob counter-clockwise.
5. To abort the Store and Name procedure, push either the **<Program>** button to take you to Program mode, the **<Edit>** button to take you to FX Edit mode, or the **<Utilities>** button to take you to Utility mode, depending upon which mode you want to enter.

Storing the Program

- When you have the name how you want it, press the **<Store>** button again. The top line of the display reads:

Store To: [Program Name]

This screen allows you to select the location of the new program. Note that when the program is stored, it is stored in the User bank of Programs because Factory programs cannot be overwritten.

1. Use the **<2>** knob or the **<Program/Effect>** wheel to select the User program number where you want to store the new program.
2. Press the **<Store>** button again. The top line of the display briefly reads:

STORING PROGRAM TO ##

after which you are taken to the Program you just stored.

The newly created User program is now loaded, and can now be recalled at any time.

3. To abort the Store procedure, push either the **<Program>** button to take you to Program mode, the **<Edit>** button to take you to FX Edit mode, or the **<Utilities>** button to take you to Utility mode, depending upon which mode you want to enter.

Editing a Program

It is extremely easy to create custom Effect programs because your 2120 VGS gives you access to a complete library of professionally developed effects ("Defaults"). An example of this editing procedure is as follows:

- From Program mode, press the **<Pitch>** button. The display will appear something like this:



When you enter FX Edit mode, the first page of every FX module allows you to:

- 1) Bypass that effect module (by turning it on or off) using the **<1>** knob.
- 2) Select an effect module (Only in the digital effect section), using the **<2>** knob.
- 3) Store the Default using the **<3>** knob (for more info on storing Defaults, see pg. 24)
- 4) Select a Default for the selected Effect module using the **<4>** knob.

Selecting/Changing Effect Modules

Each program can be comprised of up to eight digital effects (in addition to the Preamp section). You can scroll through the modules in each program two different ways:

1. By pressing the **<Edit>** button to enter FX Edit mode and using the **<Program/Effect>** wheel to scroll through the different modules, or
2. By using the FX Library buttons. Pressing the **<Preamp>** button takes you directly to the first module in the preamp section. Subsequent presses will scroll you through the successive modules in the preamp section. Likewise, pushing the **<Dly/Rvb>** button takes you directly to the first module in the Digital FX section which has a delay or reverb loaded in it. Subsequent pushes of the button scrolls you through subsequent modules that are loaded with a delay or reverb (assuming there are more delays or reverbs loaded in the program of course.)

Once you reach a module you want to change (ie: you want to swap a delay for a reverb), use the **<2>** knob to select a new effect. Or, to instantly load a desired effect press either the **<Mod>**, **<Pitch>**, **<Dly/Rvb>**, or **<Other>** buttons depending on the type of desired effect and the selected effect will instantly be loaded.

Selecting a Default

Once you have selected the effect you want in the program (ie: St Pitch), you can quickly scroll through several different St Pitch defaults stored in your 2120 VGS's library.

Example:

There are 7 Stereo Pitch Shifter defaults to choose from. Some Factory programs use these Default settings. So, if you like the Pitch shifter that is being used in Factory program #4, and would like to use it in Program #98, simply scroll to the Stereo Pitch Shifter module, then use the <4> knob to recall the default (which happens to be F4-Octave Up) in Program #4. This eliminates the need to change all the parameters from one program to the another.

For a list of all the FX modules and their Defaults, see page 28.

Adjusting the Module's Parameters

The parameters of every module can be accessed through a series of pages. You adjust the input level of a particular module from Edit page 2. If you're not already in Edit mode, press the <Edit> button. You can then use the <Program/Effect> wheel to scroll to the module you want to change (ie: St Pitch). Using the <Page> knob, scroll to page 2. You can now change the individual module's input level using the <1> knob. Settings range from 0 (off) to 100%. You can change all of the other parameters in a similar manner.

Custom Defaults

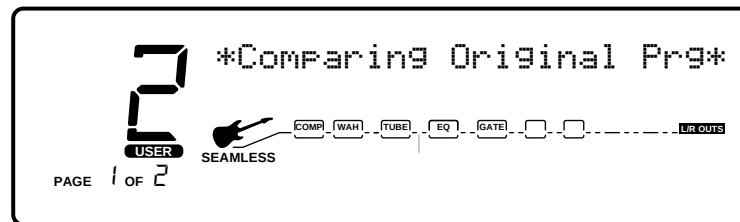
Once you have tweaked the parameters of an effect module, you can store it off as part of the program. Once it is stored off, it becomes a custom default for that program, but is not added to the User default library. To save the settings as User Defaults, please see pg. 25.

Comparing Changes

During the course of editing programs, you may find that you want to compare the edited version of the program to the original, stored version. Fortunately, your 2120 VGS provides you with this valuable A/B feature in the Compare function.

To compare an edited Program with the original Stored version, do the following:

1. While in FX edit mode, press the **<Edit>** button once. The top line of the display reads:



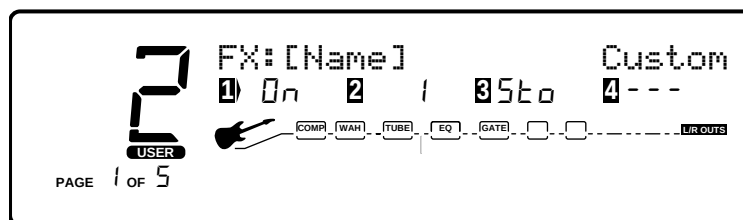
When this message is displayed, the stored Program is temporarily loaded and active.

2. To return to the edited version, press the **<Program>** button to get to Program mode or the **<Edit>** button to get back to FX Edit mode.

Storing/Naming Defaults

The Storing procedure allows you to rename, relocate and save any modifications you have made to Defaults so that they can be accessed easily later in other programs.

1. When you have satisfactorily altered an Effect default (or created a new one), scroll back to Page 1 of the effect module you are editing (if you're not already there). The display will appear something like this:



2. From Page 1 of the FX edit menu, turn the **<3>** knob clockwise. You will then be able to name your new default.

Naming the Default

1. Using the **<Program/Effect>** wheel, change the character to the one you want in the selected position.
2. When the correct character is displayed in that position, use the **<Page>** knob to scroll the cursor to the next character you want to change.
3. Use the **<1>** to change the letter's case. Use the **<2>** knob to select numbers. The **<3>** knob is used to insert spaces. The **<4>** knob is used to copy and paste characters.
4. To copy a character, position the cursor under the character you want to copy (using the **<Page>** knob), then turn the **<4>** knob clockwise. To paste the copied character, position the cursor where you want to paste the character, then turn the **<4>** knob counter-clockwise.
5. To abort the procedure, push either the **<Program>** button to take you to Program mode, the **<Edit>** button to take you to FX Edit mode, or the **<Utilities>** button to take you to Utility mode, depending upon which mode you want to enter.

Storing the Default

1. When you have the name as you want it to read, press the **<Store>** button. The top line of the display reads:

Store To: [Name]

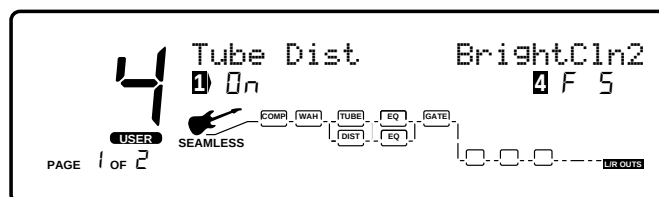
This screen allows you to select the location of the new User default. Note that when the Default is stored, it is stored in the User bank of Defaults because Factory defaults cannot be overwritten.

2. Use the **<2>** knob to select the Default number where you want to store the new default.
3. Press **<Store>** again. The Default is saved off and you now prompted to store these changes to the program. If you wish to store these changes to the program, press the **<Store>** button again, otherwise, press the **<FX Edit>** button.
4. To abort the procedure, push either the **<Program>** button to take you to Program mode, the **<Edit>** button to take you to FX Edit mode, or the **<Utilities>** button to take you to Utility mode, depending upon which mode you want to enter.

Editing a Module

Your 2120 VGS comes loaded with a vast menu of Factory Effect Defaults for your use. In any given situation, however, you may want to make minor adjustments to the selected module. The parameters of each Effect module are reached through a series of pages.

1. Press the **<Edit>** button. The display looks something like this:



2. When you first enter FX edit mode (by pressing the **<Edit>** button), you are taken to the Tube distortion module in the Preamp section. Turn the **<Program/Effect>** wheel to scroll through the modules until you reach a digital effect module. Notice that as you scroll through the different modules, the currently selected module will flash in the Effect routing matrix. Once you have reached a module in the digital effects section that you want to edit, use the **<Page>** knob to scroll through the modules parameters.

Notice: Anytime a change is made to either an Effect module or Default, the **Changed** icon will appear directly below the effected parameter within the module or default.

Scrolling through a Module's Pages

Notice in the bottom left corner (just under the program number) that the display indicates which page you are on and the total number of pages within the module. Each page allows you to access up to four parameters using the **<1>** - **<4>** knobs.

Example:

To scroll through the parameter pages of an effect module, press the **<Edit>** button. Once this button is lit, use the **<Program/Effect>** wheel to scroll to an effect module. At this point use the **<Page>** button to scroll through the parameters of the effect module.

For a description of all the FX modules and their parameters, see pages 27-47.

Section - 4 Effects and Parameters

Digital Effect Module Size and Type

With all of the work that these digital effect modules do for your sound, they have a tendency to work up an appetite. So, they consume their food from the FX pies chart referred to on page 9.

Since some of these effect modules have a larger appetite than the others, they require more pie. To help divide up the pie, we have provided you with a chart below that tells you what size of effect block that each will fit in. This helpful chart will also let you know if the selected module is either a Mono, Stereo, or Dual type effect module.

Note: The Effect module size will always be displayed in Page 1 of the selected effect module next to the number 2 icon located in the display.

Effect Name	Module Type - 4th	Module Type - HLF	Module Type - 3/4	Module Type - Full	Effect Type
Dual Cho	✓	✓	✓	✓	Dual
Quad Cho		✓	✓	✓	Dual
Octal Cho				✓	Dual
Dual Fla	✓	✓	✓	✓	Dual
Dual Pha	✓	✓	✓	✓	Dual
RotarySpkr		✓	✓	✓	Stereo
St Tremolo	✓	✓	✓	✓	Stereo
Auto Pan	✓	✓	✓	✓	Stereo
Dual Dtn	✓	✓	✓	✓	Dual
Quad Dtn		✓	✓	✓	Dual
Octal Dtn				✓	Dual
Smooth Pch			✓	✓	Stereo
Dual Pitch	✓	✓	✓	✓	Dual
Quad Pitch		✓	✓	✓	Dual
Octal Pch				✓	Dual
St Pitch	✓	✓	✓	✓	Stereo
StDual Pch		✓	✓	✓	Stereo
Whammy			✓	✓	Stereo
Harmony			✓	✓	Stereo
Delay	✓	✓	✓	✓	Dual
Dual Delay	✓	✓	✓	✓	Dual
Quad Delay		✓	✓	✓	Dual
Stereo Delay	✓	✓	✓	✓	Stereo
StDual Dly				✓	Stereo
StQuad Dly		✓	✓	✓	Stereo
Long Dly	✓	✓	✓	✓	Dual
Analog Dly	✓	✓	✓	✓	Stereo
StAlog Dly		✓	✓	✓	Stereo

Effect Name	Module Type - 4th	Module Type - HLF	Module Type - 3/4	Module Type - Full	Effect Type
Chorus/Dly	✓	✓	✓	✓	Dual
Flange/Dly	✓	✓	✓	✓	Dual
Pre Delay		✓	✓	✓	Dual
Reverb	✓	✓	✓	✓	Dual
DualReverb		✓	✓	✓	Dual
St Reverb		✓	✓	✓	Stereo
Gated Rvrb	✓	✓	✓	✓	Dual
St Dual Reverb				✓	Stereo
Room Echo				✓	Stereo
Spring Tank			✓	✓	Dual
Auto Wah	✓	✓	✓	✓	Stereo
Compressor	✓	✓	✓	✓	Stereo
GEQ8	✓	✓	✓	✓	Mono
GEQ15		✓	✓	✓	Mono
GEQ31				✓	Mono
St GEQ8		✓	✓	✓	Stereo
St PEQ3	✓	✓	✓	✓	Stereo
PEQ6	✓	✓	✓	✓	Mono
St PEQ6		✓	✓	✓	Stereo
Thru Module	✓	✓	✓	✓	St/Mono

Default List

The Following list contains the names of all of the Effect Defaults in the 2120 VGS Artist.

Preamp

- Blues Rhythm
- Blues Lead
- Rock Man
- Twin Combo
- 1X12 Combo
- Country 1
- Country 2
- British Stack
- American Stack
- Dirty 1X12
- Fusion Lead
- Violin Lead
- Fuzzy Face
- Daddy's Tone
- Double Overdrive
- High Gain Solo
- Sweet Clean Tube
- Big Honk
- Power 1
- Power 2
- Blues Drive
- Power Clean
- Thick Blue
- Solo 1
- Solo 2
- Bright Comp Tube
- Klean Krunch
- T:Dirty-D:Clean
- T:Clean-D:Dirty
- Tube-DistHybrid

Wah

- Toe Heavy
- Linear
- Heel Heavy

Compressor

- Light 1
- Light 2
- Medium 1
- Medium 2
- High
- Max Sustain

Tube Distortion

- Warm Clean 1
- Warm Clean 2
- Warm Clean 3
- Bright Clean 1
- Bright Clean 2
- Bright Clean 3
- Dirty 1
- Dirty 2
- Dirty 3
- Sat Tube 1
- Sat Tube 2
- Sat Tube 3
- SloVibrato
- FstVibrato

Solid State

- Punchy
- Max Crunch
- Hi gain
- Low Fuzz
- Med Fuzz
- "The " Fuzz
- OverDrive1
- OverDrive2
- Chunk 1
- Chunk 2
- Warm Sus 1
- Warm Sus 2
- Warm Sus 3

10-Band EQ T&D

- Lo Boost 1
- Lo Boost 2
- Mid Cut 1
- Mid Cut 2

- Mid Cut 2
- Mid Scoop 1
- Mid Scoop 2
- Mid Boost 1
- HiLo Boost 1
- HiLo Boost 2
- Hi Boost 1
- Hi Boost 2
- Hi Boost 3
- Warm
- Dark
- Honky
- Quack
- Smiley
- Notchy
- Full Body 3
- Nosey
- Punch
- 4X12 Cab

Wah

- Toe Heavy
- Linear
- Heel Heavy

Noise Gate

- Low Thresh
- Med Thresh
- High Thresh
- Slow
- Fast

Choruses

Dual Chorus

- Medium
- Shallow
- MildNWide
- MediumWell
- DeepDepth
- Deep
- Max Depth
- Shimmery
- SloVibrato
- FstVibrato

Quad Chorus

- Medium
- MildNWide
- Medium Well
- Thick
- DeepDepth
- Deep
- Max Depth
- Shimmery
- SloVibrato
- ChorusLeft

Octal Chorus

- Medium
- Shallow
- DeepDepth
- MaxDepth
- Deep
- Shimmery
- SpcScrmblr

Flangers

Dual Flange

- HiSweep30%
- HiSweep70%
- LoSweep30%
- LoSweep70%
- Throaty
- Nasally
- Gonzo
- IntenseL
- Intense R
- FlaChorus1
- FlaChorus2

Stereo Flange

- HiSweep30%
- HiSweep70%
- LoSweep30%
- LoSweep70%
- Throaty
- Nasally
- Gonzo
- IntenseL
- Intense R
- FlaChorus1
- FlaChorus2

Phasers

Dual Phaser

- ShallowSlo
- ShallowFst
- Mild Slow
- Mild Fast
- Medium
- Deep
- Shimmery
- PhaChorus1
- PhaChorus2
- Psychelic

Detuners

Dual Detuner

- -5 Cents
- -12 Cents
- +/-5 Cents
- +/-10 Cents
- Single Vox

Quad Detuner

- Shallow
- Medium
- Wide
- Deep

Pitch Shifters

Whammy

- Octave Up
- Octave Down
- 2ndMin3rd
- 2ndMaj3rd

Smooth Pitch

- ShiftDn-12
- ShiftDn-5
- ShiftDn-24
- ShiftUp+5
- ShiftUp+7
- ShiftUp+12

Dual Pitch

- 5th/OctUp
- 5thUp/OctDn
- Min3/5thUp
- 4thOctDn
- OctUp/Dn
- OctDown/Dn
- 5ths Down
- 1&2OctsUp

Quad Pitch

- MajChord
- MinChord
- Oct/Dtn
- 5th/OctDtn
- 5Octaves

Octal Pitch

- Chord/Det1
- MinChord2
- Oct/Dtn
- 5th/OctDtn
- 5thsOcts

Stereo Dual Pitch

- 5th/OctUp
- Min3rdUp
- 3rd/5th Up
- Min 3rd/5th Up
- 4th/OctDn
- OctUp/Down
- OctDown/Dtn
- 1&2OctsUp

Harmony

- Cmaj3rdUp
- Cmaj6thUp
- Emin3rdUp
- Cmaj6thDn
- Cmaj3rdDn
- Emix3rdUp
- Cmaj5thUp
- 1&2OctsUp

Delays

Delay *

- 5sec/15%
- 2.5sec/15%
- 1sec/15%
- Slapback
- 300msEcho
- 400ms/30%
- 500ms/25%
- 800ms/20%
- 1Sec/0%
- 2.5sec/0%
- 5sec/0%
- Max Repeats

Dual Delay *

- PingPong
- 1SecTicToc
- Doubling
- Slapback
- DoubleSlap
- RoundNRound
- Hard2Tap
- Thick Tap

Quad Delay

- RoundNRnd
- SynchroTap
- RtoL PanTap
- TripleSlow
- Ping Pong
- 400ms Thick
- On the Rise
- Shav&Hrcut
- Horse Trot

Stereo Delay

- 2sec/20%
- 1sec/20%
- CombFilter
- Doubling
- SlapRight
- 400ms/30%
- 500ms/30%
- 600ms/30%
- 1sec/0%
- 2sec/0%

Stereo Dual Delay *

- Skip
- SwingPong
- PingPong1
- PingPong2
- DoubleSlap
- RoundNRnd
- Hard2Tap
- ThickEcho

Stereo Quad Delay *

- RoundNRnd
- SynchroTap
- Ping Pong
- 400msThick
- HorseTrot
- Shav&Hrcut
- Ratatat
- Random

Long Delay *

- 2.8sec/15%
- CombFilter
- Slapback
- 300msEcho
- 400ms/30%
- 500ms/25%
- 800ms/20%
- 1 SecEcho
- MaxRepeats
- 2.8sec/0%

Analog Delay *

- 5sec/25%
- True
- 500ms
- 1 Second
- 2.5 Second
- Soft Echo
- Eternity

Stereo Analog Delay *

- 2sec/25%
- SoftEcho
- Eternity

Multi-FX Mods

Chorus/Delay

- MedChoEcho
- LitChoEcho
- MedChoSlap
- DeepChoDly
- ShimryEcho
- ModDly300ms
- DeepModDly

Flange/Delay

- FlatLitD300
- FlatMedD300
- HeavyFIDly
- LoSweepDly
- ThroatyDly
- DoublGonzo
- Flangbelly

Reverbs

Reverb

- SmoothHall
- Bar'nGrill
- OakFloorRm
- Vocal Reverb
- FoilPlate
- GoldPlate
- Smphny Hall
- RichChmber
- Sanctuary
- Salt Palace
- CmntGarage
- PlutoVerb

Dual Reverb/St Dual

- BrightHall
- LngDrkHall
- ConcrtrHall
- MiniHall
- FlatChambr
- WarmChambr
- Smphny Hall
- BigCathedrl
- SmlCatherl
- GoldPlate
- Thnplate
- VocalPlate
- PercPlate
- StudiAmb
- StudioRoom
- WoodRoom
- FlutterRvb
- Very thin
- CementRoom
- HugeArena

Stereo Reverb

- SmoothHall
- Bar'nGrill
- OakFloorRm
- VocalReverb
- FoilPlate
- GoldPlate
- SmphnyHall
- RichChamber
- Sanctuary
- SaltPalace
- CmntGarage
- PlutoVerb

Gated Reverb

- 100msGated
- 200msDcyEx
- 200msDecay
- 200msGated
- 300msDcyEx
- 300msGated
- SmphnyHall
- RichChamber
- Sanctuary
- SaltPalace
- CmntGarage

Spring Tank Reverb

- Short Decay
- Long Decay
- Wet Spring
- SurfSplash
- Rat&Boing

Room Echo

- WideSlap
- LiveSlap
- Springy
- Stage
- Voxy
- Drum 1
- Drum 2

Other Modules

Pre Delay

- 0ms
- 30ms
- 60ms
- 90ms
- 120ms
- Warm0ms
- Warm60ms
- Warm120ms
- 0msHPass1
- 0msHPass2
- 0msHPass3
- 0msHPass4
- 0msLPass1
- 0msLPass2
- 0msLPass3
- 0msLPass4

Rotary Speaker

- SloLeslie
- MedLeslie
- FastLeslie

Stereo Tremolo

- DeepSlow
- DeepMedium
- DeepFast
- MildSlow
- MildMedium
- MildFast

Auto Pan

- WideSlow
- WideMedium
- Wide Fast
- Narrow Slow
- Narrow Med
- Narrow fast

Auto Wah

- Low Sens
- High Sens

Compressor

- Light
- Medium
- Heavy

Equalizers

8-Band Mono GEQ

- Flat
- Low Pump
- Sizzle
- InvertPhase
- Smiley
- InvertPhase

15-Band Mono GEQ

- Flat
- Low Pump
- Sizzle
- Smiley
- InvertPhase

31-Band Mono GEQ

- Flat
- Low Pump
- Sizzle
- Smiley

8-Band Stereo GEQ

- Flat
- Low Pump
- Sizzle
- Smiley
- InvertPhase

3-Band Stereo PEQ

- Flat
- Low Boost
- Smiley
- PhaseInvertL
- PhaseInvertR
- SmlBoost
- LowNudge
- 60HzNotch

6-Band Mono PEQ

- Flat
- Low Boost
- Smiley
- 60HzNotch
- InvertPhase

6-Band Stereo PEQ

- Flat
- Low Boost
- Smiley
- 60HzNotch
- PhaseInvertL

Thru Module

- Center
- Left Thru
- Right Thru

* Delay Defaults vary from 1/4, 1/2 and Full Module size. The Delay defaults shown are Full module sizes

Effects Library

The following pages offers a complete list of all Preamp and Digital effects available in the 2120 VGS.

Each of the preamp effect modules have 2 parameters in common on the first page:

On/Bypass - Turns the effect module on or bypasses it.

Effect Default - Selects a preset setting for this module

Each of the **Digital Effect Modules** have 3 common parameters on the first page:

On/Bypass - Turns the effect module on or bypasses it.

Effect Module Type - Selects what kind of effect is in this module

Effect Default - Selects a preset setting for the effect type.

Preamp Module

The Preamp module is the heart of the 2120's sound. Basically, the Preamp module is a collection of all the Preamp section's individual modules and their parameter settings (Compressor, Wah, Tube Distortion and EQ, Solid State Distortion and EQ, and Noise Gate) and works in a very similar matter. When you change a Preamp default, it automatically changes parameters in all of the above individual preamp modules to specific settings. This means less work and more play. Here are the parameters specific to the Preamp Module itself:

Default -	This is a collective setting of all the individual preamp module parameter settings that make up the basic tone of your program.
TUBEpan -	This allows you to pan the tube section of the preamp either left or right in the Stereo field.**
DISTpan -	This allows you to pan the distortion section of the preamp either left or right in the Stereo field.**
Mix -	This is the Master effect mix of the program.

You can even save your own custom Preamp defaults that you can pull up in any other program without having to re-program all these individual parameters every time. When saving a custom Preamp default, you are saving the collective parameter settings of all the Preamp module's individual effects along with the Pan settings.

*** The pan settings function differently depending on the Effect Configuration used. If used with a Series or Parallel/Series configuration (one L/R OUTS indicator is lit at the end of the chain), the pan controls the placement of the tube or distortion section through the left or right side of the effects used. If used with a Parallel/Split configuration (two L/R OUTS indicators are lit at the end of the chain), anything panned left goes through the top effect(s) in the configuration and anything panned right goes through the bottom effect(s) of the configuration.*

Pre Amp Effects

Compression

Compression is an invaluable tool in the effect world. It can make or break any recording session or live performance. Compression can take an incredible solo that just seems to be lacking somehow in a recording and bring so much life to it, that it almost jumps off the tape. The way the compressor does this is by turning the signals down as they become louder. After it makes the adjustment to the level, it boosts the overall signal back up. This effect can be used to increase sustain and tighten up guitar signal.

Compression Parameters:

Comp On/Bypass	Turns On or Bypasses the Compressor module
Threshold	Sets the minimum input level at which the compressor will engage. As THRESHOLD is lowered, the compressor engages at lower levels, causing the apparent output level to decrease. Ranges in 1dB steps from -35dB to -5 dB.
Compression Ratio	Controls the amount of gain reduction for a given input signal level. This means that if RATIO is set 2:1, every 2dB increase in input level results in a 1dB increase in compressor output. Likewise, if RATIO is set to 5:1, every 5 dB increase in input level result in a 1 dB output level increase. The higher the RATIO setting, the more compressed the output signal becomes. Ranges from: 1:1 to infinity:1.
Attack	This parameter selects the attack time of the compressor. The attack times range are: Slow, Medium, Fast, and Very Fast
Output Level	This parameter adjusts the overall output level of the compressor. Ranges in .5 dB increments. Range is from OFF to 20.0 dB.

Analog Wah

With the Analog Wah, you get the best of both worlds. This Analog Wah is digitally controlled. What exactly does that mean? This means that you get an dead-on accurate Wah emulation which is controlled via the 2120 VGS's powerful processing. This Wah module is based off of the most popular Wah pedals on available.

Analog Wah Parameters:

ON/Bypass	Turns on or bypasses the Wah module.
Wah Position	Controls the pedal position of the Analog Wah effect module. Ranges from 1 to 128. *An expression pedal must be assigned to this parameter in order for module to operate.
Wah Type	Selects which Wah type is to be used. Selections are: Toe Heavy, Linear, and Heel Heavy.

Tube Distortions

The days of having to sacrifice reliability for the great tonal characteristics of an old British or American tweed preamps are now just a thing of the past with the tube preamp distortion section of the 2120 VGS. The great thing about the 2120 VGS is, you are not limited to just one preamp sound setting. You can have anything from Vintage Tweed to a British half, to a rectified full stack

Tube Distortion Parameters:

Dist On/Off/Bypass	Turns On or bypasses the Tube distortion module.
Distortion Type	Selects the the type of distortion that is being used in the program. The Tube distortion types include: Warm Clean - Ideal for clean tone, Bright Clean - Great for mellow blues, Dirty Tube - Overdriven blues solos or dirty

Rhythm tones, **Saturated Tube**- Heavily saturated tube amplifier voicing

Distortion Gain Controls the amount of gain being used in the selected distortion type. This parameter value ranges from 0 to 100.

Solid State Distortions

Not only does the 2120 VGS provide you with great Tube preamp tones, but you also have the option of running the Solid State preamp section of the unit. In addition, you also have the ability to run both distortion paths at the same time. The Solid State distortions available in the 2120 VGS offer variety and yet still compliment the Tube distortions.

Solid State Distortion Parameters:

On/Off/Bypass Turns On or bypasses the Solid State distortion module.

Distortion Type This parameter allows you to select which Solid State distortion type is being used. The Solid State Distortion Types are: **Grunge**- Industrial music industry standard, **Fuzz**- Fuzz-face type distortion, **Overdrive** - Classic distortion screamer, and **Heavy Sustain**- Heavily saturated soloing tones.

Distortion Gain Controls the amount gain being used in the in the selected distortion type. This value ranges from 0 to 100.

Tube and Solid State Distortion Path 10-band GEQs

Included in every program of the 2120 VGS Tube and Solid State distortion paths, is a 10-band graphic EQ with 12 dB boost or cut in 1 dB increments. **Note:** This EQ is separate from the Global/Local EQ and EQ effect modules used in Program mode.

Noise Reduction

The Silencer II noise reduction system is definitely going to become your best friend in any recording session or live performance for keeping signals quiet. Along with being quiet, the Noise reduction can be placed in several different spots within the signal path of the 2120 VGS. This feature is great to use when extra noise reduction is needed in different areas.

Noise Reduction Parameters:

Type Selects the type and placement of the noise reduction to be used. Types include: 1. Silencer 1 pre T&D, 2. Silencer II post T&D, 3. Silencer II post Tube, 4. Silencer II post Solid State distortion.

Threshold Set the minimum input level at which the compressor will engage. Ranges from -90 to 0.

Attenuation Adjusts how far the signal is lowered when the gate is closed. Ranges from 1 to 5.

Attack Controls how quickly the gate opens after the signal level reaches Thresh. Range: 1 to 10.

Release Determines how quickly the the gate closes after the signal falls below the Threshold. Ranges from: 1 to 10.

Global/Local EQ and Mix

The Global/Local EQ and Mix selection section of the 2120 VGS is located on the front panel of the 2120 VGS when it is in Program mode. This EQ has two settings: Global EQ and Mix setting effects all programs. Local EQ and Mix settings effect only the currently selected programs. The setting for Global/Local EQ and Mix is found on page 1 of the Utility menu.

Global/Local EQ and Mix Parameters:

Bass	Controls the Mid EQ frequencies either globally or locally in the 2120 VGS and can be changed in 1 dB increments. Ranges from: -12 to 12dB.
Mid	Controls the Mid EQ frequencies either globally or locally in the 2120 VGS and can be changed in 1 dB increments. Ranges from: -12 to 12dB.
Treble	Controls the Treble EQ frequencies either globally or locally in the 2120 VGS and can be changed in 1 dB increments. Ranges from: -12 to 12dB.
Mix	Controls the overall Digital effect mix of the programs in the 2120 VGS. Ranges from 0% to 100%. When Mix is set to Global mode, the <Mix> knob adjusts percentages of the stored mix value of the programs.

Digital Effects

Reverbs

Reverberation is probably the most widely used effect because it allows you to simulate the sound reflection characteristics of almost any kind of room. In a real room, reverb is a result of sound reflecting off room surfaces such as the walls, floor, ceiling, and objects in the room. The materials, size, and shape of the room determine how long these reflections echo and decay before dying out completely. These factors also help determine the audio characteristics of the room, such as how long the high-frequency reverberations ring when compared to the low frequencies, or how much initial "slapback" the room wall produces when a sound hits.

Today's technology allows the 2120 VGS to offer a complete palette of flexible, easy to use reverbs. There are five basic reverbs to choose from:

- 1) **Reverb** - Simple, straight ahead reverb with only the most basic parameters.
- 2) **Dual Reverb** - Multi-dimensional reverb with flexible frequency band-splitting capabilities. The reverb can be divided into primary and secondary stages using selectable High or Low Pass cross-overs.
- 3) **Stereo Reverb** - A true stereo version of the Reverb module.
- 4) **Stereo Dual Reverb** - A true stereo version of the Dual Reverb

- 5) **Gated Reverbs** - A very linear, high energy reverb that can be set to decay, stay flat, or ramp up the reverb decay, creating many unique ambient effects.
- 6) **Room Echo** - A true stereo, multi-tap delay for creating small ambient spaces. The delays are divided into four sections of early reflections. These reflections can be placed anywhere in the stereo field and can be as dense or sparse as necessary. The Room Delay also includes a feedback loop for delay regeneration.

Reverb

Real life reverberation is the result of sound reflecting off surfaces in a room or hall. It can best be described as millions of small echoes that decay over a period of time. The size of the room, the surface type of the walls, or the carpet on the floor all contribute to the way real reverberation behaves and sounds.

When do I use reverb? When recording in the studio, nearly always. Many guitar tracks, for example, are recorded in a very sterile environment (i.e. very dry), but adding reverb can add lush depth to any guitar track.

Why should I use stereo reverb? It is all about sounding natural. Since more and more parts of music are recorded in stereo, it sounds best to help them maintain their original images. Stereo reverb helps maintain that original stereo image. But don't forget that millions of hit recordings were made using mono input reverbs that created a stereo output image. The theory is that sound generally originates from one point in a room, so mono often works just fine. The rule? Don't get caught using too much reverb on your guitar in live situations. Even if the room is small, it still produces some reverb. Too much makes the guitar go away. Let it compliment the room.

Gated Reverb

Gated reverb doesn't behave as naturally as the standard varieties of reverb. Originally, it was created by taking a long, dense reverb and chopping it short with a noise gate. This made for a burst of reverberation energy that could help thicken up a variety of sounds. Digital signal processing techniques improved and soon allowed ways to create similar gated reverb sounds that were far more usable and flexible. Today's gated reverb doesn't get gated at all, it just sounds like it does. It is actually a large burst of delay taps that create the gated reverb sound. This allows you to chose the length of the effect along with different slope shapes.

When do I use gated reverb? Using a gated reverb in a multi effect guitar application is ideal for producing unusual special effects. Using the Gated reverb can give any guitar the "Swell" sounds. This type of reverb is also ideal for producing an effect that is similar to backward masking.

Reverb Parameters:

Note- Not all parameters are available in all Reverb types

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the left/right positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).

Type	Selects the reverb type. Each room type has a different decay range (just as real rooms do), so changing TYPE also changes the decay time of the room. Types are: Studio Room , Wood Room , Vocal Plate , Concert Hall , Plate Reverb , Chamber , Cathedral , Arena , Cement Shelter , and Infinite Spring (for Reverbs), and: Flat Shelf , Decaying Linear , Decaying Logarithmic , Decaying Exponential , Decaying Sine , Reverse Linear , Reverse Logarithmic , Reverse Exponential , Reverse Sine , Peaking Linear , and Peaking Exponential (for Gated Reverbs).
Density	Controls the number of discrete room wall reflections during the early portions of DECAY. Higher settings produce more reflections while low settings yield fewer initial wall echoes. Use this control in conjunction with DISPERSION to build or reduce the thickness of early reflection clusters heard near the beginning of the reverberation. Ranges from 0% to 99%.
Dispersion	Controls the distance (time) between the echoes set by DENSITY. If DENSITY is set low and DISPERSION is set high, the initial room echoes. Dispersion can be heard as discrete echoes followed by smoother room reverberations. Set DISPERSION low for a dense cluster of reflections during the early portions of DECAY. Ranges from 1 to 10.
Diffusion	Simulates the presence of different room materials by controlling the smoothness of reverberations through the course of DECAY. Low DIFFUSION settings are great for simulating hard, flat surfaces while higher DIFFUSION settings can be used to simulate the presence of irregular surfaces in the room such as natural rock masonry or man-made diffusers. Unlike flat surfaces, these materials reflect (diffuse) the sound in many directions because of the irregularity of the surfaces themselves. This builds smoothness over the reverb progression. Ranges from 0% to 99%.
X-Over Type	Selects which crossover type will be used for the Primary Secondary reverb stages. The two crossover types are High Pass (HP) and Low Pass (LP).
X-Over Freq	Selects the frequency where the crossover begins to function. Ranges from 25Hz to 20kHz.
Prim & Secd X-Over	These two Parameters allow the crossover to be turned On or Off for each reverb stage. When Off, that particular stage will be full bandwidth, otherwise its frequency response is limited by the X-Over Type and Frequency parameters.
Prim & Secd Damp	Adjusts how quickly the room absorbs the high-frequency reverberations. In a real room, absorptive materials can be used to dampen the natural high-frequency reverberations of the room. High settings of DAMP cause the reverberations to darken tonally and become less defined over the course of DECAY. Low settings cause less dramatic room effects on the tone of the reverberations. Ranges from 1 to 10.
Low Pass	Selects the frequency above which all frequencies are rolled off. This control can be used to darken the response of bright-sounding gated reverbs. Ranges from 100 Hz to 8 kHz in the Gated Reverb and from 100 Hz to 20 kHz in the Stereo Gated Reverb.
Time	Controls the length of the gated reverb in milliseconds (much like the DECAY control of a normal reverb). Ranges from 25 milliseconds to 300 milliseconds in the Gated Reverb and from 500 milliseconds in the Stereo Gated Reverb.
Blend	Cross-mixes reverberations from the left side into the right side and vice-versa. This can be used to increase the realism of the simulated room by adding reverberations from different parts of the room to each channel. Ranges from 0% to 99%.
Prim & Secd Blend	Adjusts the amount of BLEND for the Primary and Secondary reverb stages. See BLEND above for a complete parameter description.
Decay	Controls the length (RT60) of the room reverberations. This one control could have been divided among Size

and Reflection controls but has been simplified here for easier use. To simulate a large room, use longer DECAY settings. For small rooms, use shorter DECAY settings. For more natural sounding reverbs, you may also want to decrease the DENSITY setting as DECAY is shortened. Ranges from .5 to 23 seconds depending on the Reverb Type currently selected.

Prim & Secd Decay	Controls the length (RT60) for the Primary and Secondary reverberation stages. This Parameter interacts with the SIZE and REFLCT Parameters. Larger SIZE and REFLCT settings will allow longer reverb decay times while smaller settings reduce the length of the reverb decays but produce better small environment emulations. Ranges from .26 to 11 seconds.
Prim & Secd Size	Changes the relative room size of the Primary and Secondary reverb stages. Ranges from 1 to 5.
Prim & Secd Reflect	Controls the simulation of energy loss of sound each time it is reflected. Hard, smooth materials like glass and wood have more reflectivity than softer, more porous materials. This control can be thought of as determining the “liveness” of the room. Ranges from 1 to 10.
Delay A	Sets the length of time before hearing Delay Group A. Ranges from 0 to 120 milliseconds.
Delay B	Sets the length of time before hearing Delay Group A and Delay Group B. Ranges from 0 to 120 milliseconds.
Delay C	Sets the length of time before hearing Delay Group B and Delay Group C. Ranges from 0 to 120 milliseconds.
Delay D	Sets the length of time before hearing Delay Group C and Delay Group D. Ranges from 0 to 120 milliseconds.
Out A - D	Controls the output level of the Delay Groups. Ranges from Off to 100%.
Bal A - D	Controls the left/right balance of the Delay Groups. Ranges from -99 to 99.
Shape	Selects the shape of the output levels for the delay group taps. Shape selections are: Flat , Peak , Decreasing , Increasing , Shelf , and Reverse Shelf .
Spread	Controls the width of the effect’s stereo imaging. Ranges from 1 to 10.
FB: Dly	Sets the amount of time before the delay is fed back in. Ranges from 0 to 170 ms.
Amount	Sets how much delay is fed back into the signal. Ranges from Off to 50%.
Out L - R	Adjusts the overall level of the left/right side of the reverb. Ranges from Off to 100%.
Prim Out L	Adjusts the overall level of the left side of the Primary reverb. Ranges from Off to 100%.
Prim Out R	Adjusts the overall level of the right side of the Primary reverb. Ranges from Off to 100%.
Secd Out L	Adjusts the overall level of left side of the Secondary reverb. Ranges from Off to 100%.
Secd Out R	Adjusts the overall level of the right side of the Secondary reverb. Ranges from Off to 100%.

Choruses and Flangers

Both choruses and flangers use a Low Frequency Oscillator (LFO) to produce their rich, swirling effects. When you change the speed and depth parameters of modulation effects, you’re actually controlling the frequency and amplitude of the LFO. These settings determine the rate and intensity of the modulation effect.

In general, here’s how choruses and flangers work: after entering the module, the source signal is split into two paths. One is allowed to pass through the module unaltered, while the other is delayed and pitch modulated. The modified sound is then sent to the output, along with the original. In Fig. 4-1 below, a sine wave is used to modulate the pitch of the split sound source.

The Dual Chorus creates two different pitch “voices”, while the Octal Chorus creates eight voices for extremely full, rich sounds.

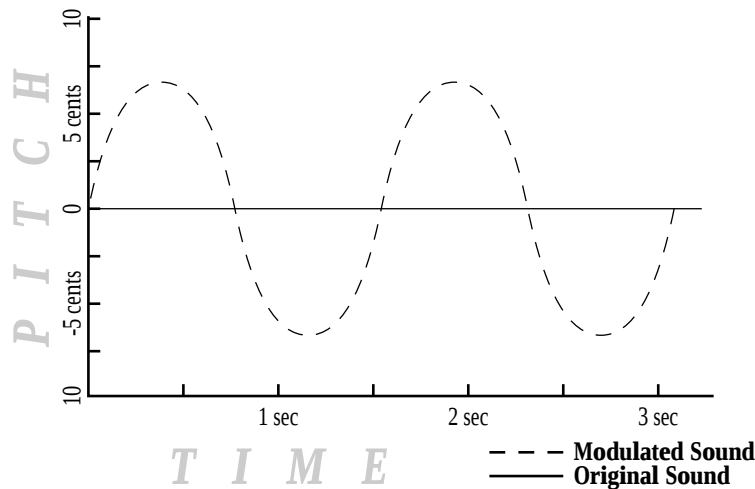


Figure 4-1 Modulation Example

The only difference between choruses and flangers is that flangers use less delay and have a feedback Parameter that sends a portion of the effected signal back to the input of the Module. When the effected signal reaches the input, it is sent through the Module again, building thickness and depth. If you increase the feedback enough, the source begins to lose its own original pitch to the dramatic pitch modulation of the feedback loop.

LFO Waveforms: There are four LFO waveforms available for Choruses, Flangers, Phasers, Tremolos, Auto Panners, and five for Modifier LFOs. They include SINE, TRIangle, SPecial-1, SPecial-2. See figure 4-2 for examples of what these waveforms look like.

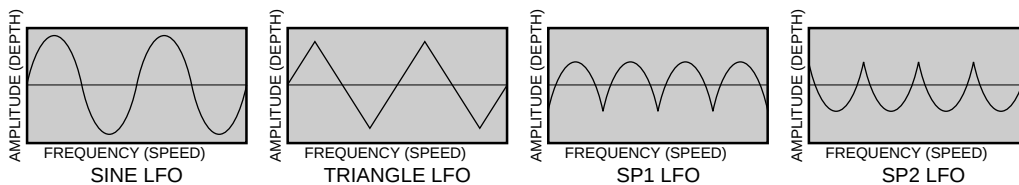


Figure 4-2 LFO Types

Chorus

Chorus is probably the most basic modulation effect. It is really just a very small delay whose time is always changing. As the time is varied, the delayed signals' pitch changes (just like a tape recordings' pitch raises when you play it faster). By moving the time back and forth, you hear a sound that goes in and out of tune. When combined with the original sound, it almost sounds like more than one instrument is playing. The 2120 VGS uses several choruses at once to make huge rich sounds. For example, the octal chorus uses eight chorus voices at once to create an incredible ensemble of sound. Aside from the more obvious speed and depth parameters (which adjust respectively how fast and far the sound goes out of tune), the 2120 VGS allows you to use different waveforms. The waveform defines how it will move in and out of tune. The triangle

waveform is very popular for slow, shallow chorus settings, while the sine waveform works nicely for faster, deeper settings.

WHEN DO I USE CHORUS? The Chorus effect is so vast in applications, an easier question would probably be “When can’t I use a Chorus. When playing the Blues, turn the Speed and Depth parameters up to produce an almost Lezlie-Type effect. When trying to obtain “Big” rock guitar tone, use the Chorus to thicken-up and add depth to your sound. And, any time your using a clean tone program, guitar always sounds so lush when chorus is added.

Chorus Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the left/right positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Speed	Controls the Low Frequency Oscillator (LFO) speed of the chorus. Ranges from 0.06 to 16.0 Hz.
Depth	Adjusts the intensity of the chorus effect. High settings produce dramatic modulation, while lower settings can be used to produce a more subtle, ambient swirling. Ranges from 0 to 30 milliseconds.
Depth 1 - 2	DEPTH1 adjusts the intensity of chorus voices 1-4. DEPTH2 adjusts the intensity of chorus voices 5-8. Ranges from 0 to 30 milliseconds.
Wander Speed	Controls the secondary LFO speed of chorus voices 5-8. This is a secondary oscillator for voices 5-8 that causes deviations from the oscillation path set by DEPTH2. This control can produce radical new textures when used creatively. Try setting it slightly faster or slower than SPEED. Ranges from 0.06 to 2.0 Hz.
Wander Depth	Adjusts the intensity of the oscillation deviations produced by WANDER SPEED . WANDER DEPTH produces dramatic psycho-acoustic swirling effects when set higher than DEPTH2. Ranges from 0 to 10 milliseconds.
WvFrm	Selects which waveform the LFO follows. Options are: Sine, Triangle, SP1 (special 1), and SP2 (special 2). See figure 4-2
Dly A - B	Controls the delay time of chorus voices A and B. Higher delay time settings produce a more dramatic sweeping sound. Ranges from 0 to 60 milliseconds.
Dly C - D	Controls the delay time of chorus voices C and D. Higher delay time settings produce a more dramatic sweeping sound. Ranges from 0 to 60 milliseconds.
Dly E - H	Controls the delay time of chorus voices E through H. Higher delay time settings produce a more dramatic sweeping sound. Ranges from 0 to 60 milliseconds.
Out A - B	Adjusts the overall level of chorus voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the placement of chorus voice A or B. Ranges from -99 to 99.
Out C - D	Adjusts the overall level of chorus voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the placement of chorus voice C or D in the stereo image. Ranges from -99 to 99.
Out LA - LB	Adjusts the left-side level of chorus voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right-side level of chorus voice A or B. Ranges from Off to 100%.
Spread	Controls the width of the effect’s stereo imaging. The higher the setting, the wider the image. The lower the setting, the more monophonic the effect becomes. Ranges from 1 to 10.

Flanger

A Flanger is just a chorus that loops back into itself, causing what can be described as a tubular sound (since it sounds much like the reflections heard inside a large cement or metal pipe). It is still a modulating effect, so you hear a lot of sweeping movement. This makes the flanger a very colorful effect that can be easily overused if you're not careful. The more you feed the flanger back to itself, the more intense the sound becomes.

When do I use flange? An electric guitar is the first sound that begs for the flanger effect. It works very well with both clean and distorted guitar sounds. By setting the Speed and Depth parameters to higher settings, this will add more depth and body to the overall guitar signal.

Flanger Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Speed	Controls the Low Frequency Oscillator (LFO) speed of the flanger. Ranges from 0.06 to 16.0 Hz.
Depth	Controls the intensity of the flange effect. High settings of DEPTH combined with high settings of FDBCK produce dramatic, synth-like textures. Ranges from 0 to 30 milliseconds.
FdBck	Controls how much of the flanged signal is fed back to the input of the module. The FDBACK parameter is what gives flangers their distinctive voice. Flangers are capable of both positive and negative feedback loops, so experiment to find the sound you like best. Ranges from -99% to 99%.
WvFrm	Selects which waveform the LFO follows. Options for this control include sine, triangle, SP1 (Special 1), and SP2 (Special 2). The sine wave setting is probably the most easily recognized, but the smooth response of the triangle wave or the intensity of SP1 or SP2 typically produce better results. See figure 4-2.
Dly A - B	Controls the delay time of flange voice A or B. Shorter delay times produce a more dramatic, deeper sweeping sound. Ranges from 0 to 60 milliseconds.
Out A - B	Adjusts the overall level of flange voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the stereo soundfield placement of flange voice A or B. Ranges from -99 to 99.
Out L - R	Controls the output level of the left or right side of the flanger. Ranges from Off to 100%.

Phasers

The phaser or "phase shifter" as it is sometimes called, is a classic effect from the 70's that uses phase cancellation to create a warm sweeping effect. The effect is created by making a copy of a signal and moving it in and out of phase while mixing it with the original signal. As it moves, different frequencies are cancelled out creating a smooth curling sound. There is also a feedback control that sends the shifting signal back into the phaser's input. This intensifies the sound even more.

When do I use a phaser? This classic phaser effect is typically used with Guitars. A great example of this can be heard most when you listen to music of the 70's. Guitarists of the day loved their phasers. A phaser is a great effect to use when playing clean and funky rhythms.

Phaser Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Speed	Controls the Low Frequency Oscillator (LFO) speed of the phaser. Ranges from 0.06 to 16.0 Hz.
Depth	Controls the intensity of the phaser effect. High settings of DEPTH combined with high settings of FDBCK produce dramatic, synth-like textures. Ranges from 0 to 30 milliseconds.
FdBck	Controls how much of the flanged signal is fed back to the input of the module. The FDBACK parameter is what gives phasers their distinctive resonating sound. Ranges from -99% to 99%.
WvFrm	Selects which waveform the LFO follows. Options for this control include sine, triangle, SP1 (Special 1), and SP2 (Special 2). The sine wave setting is probably the most easily recognized, but the smooth response of the triangle wave or the intensity of SP1 or SP2 typically produce better results. See figure 4-2.
Out A - B	Adjusts the overall level of phaser voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the stereo soundfield placement of phaser voice A or B. Ranges from -99 to 99.
Out L - R	Controls the output level of the left or right side of the flanger. Ranges from Off to 100%.

Rotary Speaker Simulator

The Rotary Speaker Simulator allows you to emulate the classic rotating speaker sound, without the chiropractic problems that come with moving bulky speaker cabinets. The Rotary speaker is directly responsible for some of the most unique sounds in music. The applications for this effect are so diverse, it can be used to achieve sounds ranging from the Allman Brothers Band to the legendary Stevie Ray Vaughan.

Rotary Speaker Simulator Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right)
Mode	Selects which speed mode the Rotor and Horn are in. Settings are fast or slow.
Spread	Sets the horn stereo microphone spread. Ranges from 0 to 100%.
H - R: Level	Sets the overall level of the Rotor or Horn. Ranges from Off to 100%.
Slo - Fast Hrn Speed	Controls the Low Frequency Oscillator (LFO) speed of the Horn. Ranges from 0.06 to 16.0 Hz.
Slo - Fast Hrn Depth	Controls the intensity of the rotating effect. Ranges from 0 to 30 milliseconds.
Slo - Fast Hrn Doppler	Sets the amount of shifted pitch heard in the Horn. Ranges from 0 to 50 milliseconds.
Slo - Fast Rtr Speed	Controls the Low Frequency Oscillator (LFO) speed of the Rotor. Ranges from 0.06 to 16.0 Hz.
Slo - Fast Rtr Depth	Controls the intensity of the rotating effect. Ranges from 0 to 30 milliseconds.
X-Over	Selects the frequency where the signal is split between the Horn and Rotor. Ranges from 25Hz to 20kHz.

Acceleration: H - R Sets the amount of time that the Rotor and Horn take to come up to their full rotating speed. Ranges from 0 to 10 seconds.

Tremolo and Auto-Panner

Look out, because the popular Tremolo and Auto panner effects of the 50's and 60's are back with a vengeance. These effects that revolutionized "Surf-Style" music can be heard all over the air waves in the 90's. Tremolos and auto panners are similar to one another in that they both use an LFO to modulate input levels to produce vibrato effects.

Tremolo

The word tremolo actually has several definitions in the music world. It basically means that a sound is being modulated in amplitude (the volume is beating or pulsing). It could be emulated by turning a volume knob up and down. But you probably have better things to do than turn a volume control up and down throughout a whole song, so let the 2120 VGS do it for you.

Aside from speed and depth parameters, the tremolo also has an LFO waveform that determines the way a signals' volume is increased and decreased. While the Sine wave is probably the most common to the ear, the Triangle and Special 2 waveforms are progressively more intense.

When do I use tremolo? Tremolo is truly a vintage sound for the guitar, electric piano and organ. Most pronounced on the guitar, you can hear it used on everything from sweet ballads to blues rock 'n roll.

Auto Panner

The auto panner is really just a dual version of a tremolo. It changes the amplitude of the left signal just as a tremolo does, but the amplitude of the right signal is inverse to that of the left signal. This gives the illusion that the signal is moving back and forth between the left and right speakers.

The Auto Panner's Speed typically doesn't get set as fast as the Tremolo since you usually want a sound to move smoothly back and forth in the stereo image. The 2120 VGS auto panner is especially flexible since it can be used for either mono or stereo input sources. When used with a mono source, the signal pans back and forth as described earlier. When a stereo sound source is used, the original stereo image is maintained by moving the volume of the left signal exactly opposite of the right signal. The stereo image fades back and forth between the stereo extremes.

When do I use an auto panner? The auto panner can be a very creative tool. When running your guitar rig in a stereo set-up with the right amount of cabinet separation, the Auto-Panner creates a stereo panning effect that is right out of this world.

Auto panners can also add life to delays or choruses by moving them around instead of just sitting in one place in the mix. Simply place an auto panner module after a delay or chorus module. You don't need to set the auto panner's depth parameter too deep since you just want some gentle movement.

Tremolo & Auto Panner Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Speed	Controls the Low Frequency Oscillator (LFO) speed of the effect. Ranges from 0.06 to 16.0 Hz.
Depth	Controls the intensity of the effect. As DEPTH increases, volume changes become more dramatic. Ranges from 0 to 100%.
WvFrm	Selects which waveform the LFO follows. Options for this control include sine, triangle, SP1 (Special 1), and SP2 (Special 2).

Pitch Shifters

The pitch shifter allows you to move sound from one pitch to another. It accomplishes this by recording a small part of the original sound and then playing it back either faster (to raise the pitch) or slower (to lower the pitch). It does this over and over again to create a new pitch

When do I use pitch shifting? Guitarists are probably the most well known users of pitch shifters. They commonly pitch shift their sound down by an octave to get a deep rumble out of their distortion, or shift it an octave up to emulate a 12 string guitar.

Both guitar and synth players have created some amazing textures by pitch shifting their sound up a fifth (7 semitones). This creates more complex chords out of simple ones (e.g. a basic Cmaj chord sounds like a Cmaj9 chord, or Cmin7 becomes a Cmin11 chord).

Pitch Shifters Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right)
Shift A - B	SHFTA and SHFTB control the pitch intervals between the original note and voices A and B of the pitch shifter. Pitch shifters can be used for a wide variety of effects, including doubling, octave division, and chromatic harmonies. Each Pitch Shifter has a 4-octave range, stepped in semitones from -24 to +24.
Dtn A - B	Controls the detuning amount for pitch-shifted voices A and B. As DTN moves away from zero, dissonance becomes more pronounced. Low DTN settings can be useful for thickening or enhancing the imaging of the source material. Ranges from -50% to 50%.
Shift C - D	See Shift A - B.
Dtn C - D	See Dtn A - B.
Shift E - H	See Shift A - B.
Dtn E - H	See Dtn A - B.
Key	Sets the diatonic key for the harmonies. If the song you are playing is in the key of G Major, you would select G for the scale.
Scale	Sets the scale type for the Harmony you want to hear. Scale types include: Major, Minor, Harmonic Minor, Melodic Minor, Dorian, Mixolydian, Lydian, Lydian Augmented, Major Pentatonic, Minor Pentatonic, Blues, Whole Tone, Half-Whole, and Whole-Half.
Interval	Sets the basic interval of the Harmony. You can choose from one of several Harmony intervals. See the Harmony Interval Charts for reference in the appendix section.
Out A - B	Adjusts the overall level of pitch-shifted voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the placement of pitch-shifted voice A or B in the stereo image. Ranges from -99 (all left) to 99 (all right).
Out C - D	Adjusts the overall level of pitch-shifted voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the placement of pitch-shifted voice C or D in the stereo image. Ranges from -99 (all left) to 99 (all right).

Out E - H	Adjusts the overall level of pitch-shifted voice E through H. Ranges from Off to 100%.
Pan E - H	Controls the placement of pitch-shifted voice E through H in the stereo image. Ranges from -99 (all left) to 99 (all right).
Out L - R	Adjusts the left or right output level of the pitch-shifted voice. Ranges from Off to 100%.
Out LA - LA	Adjusts the left-side level of pitch-shifted voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right-side level of pitch-shifted voice A or B. Ranges from Off to 100%.
Spread	Controls the width of the effect's stereo imaging. The higher the setting, the wider the image. The lower the setting, the more monophonic the effect becomes. Ranges from 1 to 10.

Detuners

The detuner effect does exactly what its name implies; it detunes a sound (moves it out of tune) and allows you to add it to the original sound. The result can be almost chorus-like, but it doesn't move like the chorus effect does. This actually makes the detuner more transparent and not quite as thick as the chorus effect, which in many applications is a good thing (since effects can quickly pile up and clog up great sounding audio).

When do I use a detuner? The detuner falls into the same guidelines as the chorus effect. It works with just about everything; It is ideal for thickening up a rhythm guitar track.

Remember to experiment with the delay parameters if you are looking for a wider detuning sound. Adding 30-60 ms of delay to the detuner's voices that are panned hard to one side (while not delaying the other side) will change the detuner's stereo imaging greatly.

Detuner Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Dtn A - B	Controls the detuning amount for detuner voices A and B. Higher detune settings produce a more dissonant sound. Ranges from -50% to 50%.
Dtn C - D	Controls the detuning amount for detuner voices C and D. Ranges from -50% to 50%.
Dtn E - H	Controls the detuning amount for detuner voices E through H. Ranges from -50% to 50%.
Dly A - B	Controls the amount of time before detuner voices A and B are heard. Higher delay time settings produce a short slapback delay effect. Ranges from 0 to 60 milliseconds.
Dly C - D	Controls the amount of time before detuner voices C and D are heard. Ranges from 0 to 60 milliseconds.
Dly E - H	Controls the amount of time before detuner voices E through H are heard. Ranges from 0 to 60 milliseconds.
Out A - B	Adjusts the overall level of detuner voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the stereo soundfield placement of detuner voice A or B. Ranges from -99 (all left) to 99 (all right).
Out C - D	Adjusts the overall level of detuner voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the stereo soundfield placement of detuner voice C or D. Ranges from -99 (all left) to 99 (all right).
Out LA - LB	Adjusts the left side level of detuner voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right side level of detuner voice A or B. Ranges from Off to 100%.

Spread Controls the width of the effect's stereo imaging. The higher the setting, the wider the image. The lower the setting, the more monophonic the effect becomes. Ranges from 1 to 10.

Delays

A delay produces discrete, repeating echoes of the source material at a specified interval. In digital delays, the input signal is "sampled" or recorded into memory, where it is held for the amount of time you specify with the delay time setting, after which the sample is replayed at the output. The 2120 VGS delays have a feedback meter that is used to send a portion of the delayed signal back to the input to be re-recorded along with new source material. The feedback setting determines how long the delay repeats take to decay to inaudibility.

When do I use delay? When your the Lone Guitarist in a band, the Delay can be your best friend. The Delay repeats can create the illusion that there is more than one guitar being played. One trick to using delays effectively is setting the delays to fall in time with the music. This used to mean grabbing a calculator, dividing 60 by the tempo (beats per minute), then dividing that answer by the desired sub-beats . . . Sound like a hassle? Yeah, we thought so too. So the 2120 takes care of all the calculations for you!

To set the delay time in a program, simply tap the desired delay time using the <TAPIT> button.

Another common use for delay is for stereo imaging. Very small amounts of delay (10-25ms) can be used to make a signal sound like it is panned to one side. This trick works because of the way the brain interprets sounds. When your left ear hears something before the right ear, it thinks that the source of that sound is found somewhere to your left. You can also use delays set at 30-60ms, which spreads a sound to the extremes of the stereo image. Be careful with this technique if your mix has a chance of being listened to in mono.

Delay Parameters:

Note- Not all parameters are available in all Delay modules.

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Dly Time	Sets the maximum delay time available to each delay voice. For example, if DELAYTIME is set to 1000 ms, each delay voice can be set from 0 to 100% of that delay time. Ranges from 0 to 1.4 seconds (Maximum delay times differ between 4th, 3/4, HLF, and FUL module types.) Half bandwidth delay times automatically double the set delay time used.
FdBck	Controls the fade time of the delay repeats. Higher settings take longer to fade out, while a setting of zero could be used to limit the delay to one repeat per voice. The delay provide both positive and negative feedback settings. Ranges from -99% to +99%.
TapIt	Allows you to change DELAYTIME in real-time, by tapping the <TAPIT> button at the tempo you want. Delay voice percentages do not change when using this control.
Smear	Sets the spread of Diffusion of the delay repeats. Ranges from 0 to 100%.
LPF	Selects where the Low Pass Filter is positioned within the Delay module. Positions are: Pre Delay or Post Delay.
Frequency	Selects the Frequency band that appears in the LPF. Ranges from 25 Hz to 20 kHz.
Gain	Controls the output gain of the LPF. Ranges from -12 to 12.
Dly A - D	Controls the percentage of DELAYTIME allocated to delay voices A-D. For example, if DELAYTIME (above) is set to 1000 ms and DLYA is set to 75%, the voice A delay time is 750 ms. Remember, each voice in the module can have any delay time up to 100% of DELAYTIME. Ranges from 0% to 100%.

Out	Adjusts the overall level of the Delay. Ranges from Off to 100%.
Pan	Controls the stereo soundfield placement of the delay. Ranges from -99 (all left) to 99 (all right).
Out L - R	Adjusts the left or right output level of the Delay. Ranges from Off to 100%.
Out A - B	Adjusts the output level of delay voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the stereo soundfield placement of delay voice A or B. Ranges from -99 (all left) to 99 (all right).
Out C - D	Adjusts the output level of delay voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the stereo soundfield placement of delay voice C or D. Ranges from -99 (all left) to 99 (all right).
Out LA - LB	Adjusts the left-side output level of delay voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right-side output level of delay voice A or B. Ranges from Off to 100%.
Out LC - LD	Adjusts the left-side output level of delay voice C or D. Ranges from Off to 100%.
Out RC - RD	Adjusts the right-side output level of delay voice C or D. Ranges from Off to 100%.

Equalizers

The 2120 VGS has a broad selection of equalizer modules to cover virtually any need. If you need bigger guitar tone, the EQs will give it to you. Both mono and stereo modules are available. Remember that mono equalizers connected to stereo sources will always sum the stereo signal together for equalization (thus eliminating the stereo image). If you need to maintain the stereo image, use a stereo equalizer module.

The Parametrics allow you to cover very specific regions of the sound spectrum with extreme precision and control. Up to 6 bands of either stereo, or mono parametric equalization are available. The Graphic equalizers use 1/3, 2/3, or 1 2/3 octave ISO-standard frequency centers. Equalization or EQ is probably one of the most valuable tools the 2120 offers. EQ allows you to change the level of certain frequencies of a sound, and it comes in two different basic flavors: graphic and parametric. Graphic is the most common and easiest to use, but the parametric offers much more flexibility and power.

When do I use EQ? This may seem overly simplistic, but you should use EQ whenever your ears tell you to use it! However, you need to remember that EQ can do more harm than good when not used carefully. The EQ can take that thin and “Clangy” sounding Guitar and add all of the low end in the world that your heart may desire. This can also be used on the other side. If you have a song that needs tight and bright rhythm guitar, you can use the EQ modules to take out the Lows and build up your mids

Graphic Equalizers

Graphic EQs give you control of the levels for fixed or pre-selected frequencies (bands) that are evenly spaced. The 2120 VGS offers 8 and 15 band stereo and mono GEQs and a 31 band mono GEQ. They all cover the complete range of frequencies, but the spacing between the 31 bands is much closer than the 8 bands, therefore offering more exact control of the sound.

Graphic Equalizer Parameters:

Level	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Phase	Inverts the phase of the source signal. Can be set either IN or OUT of phase.
Phase L - R	Inverts the phase of the left or right side of the stereo source signal. Can be set either IN or OUT of phase.

Freq Controls the amount of boost / cut applied to the selected frequency. The GEQ 8 uses 1-1/3 octave ISO standard frequency centers, (Hz) while the GEQ15 and GEQ31 use 2/3 octave and 1/3 octave frequencies. Boost/cut range for each band is from -12 to 12.

Parametric Equalizers

Parametric EQs offer the added flexibility of letting you define the center frequency you want to adjust, and how many frequencies around that center frequency you want to affect. Some of the PEQ modules in the 2120 VGS also include high shelf and low shelf EQ bands. A high shelf allows you select a frequency, and the boost/cut parameter changes the level of all the frequencies above that selected frequency. The low shelf works the same way but works on frequencies below the selected frequency.

Parametric Equalizer Parameters:

Level	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Phase	Inverts the phase of the source signal. Can be set either IN or OUT of phase.
Phase L - R	Inverts the phase of the left or right side of the stereo source signal. Can be set either IN or OUT of phase.
LoShlv Freq	Selects the center frequency of the low-frequency shelving EQ band. Ranges from 25Hz to 20kHz.
LoShlv Level	Adjusts the amount of boost or cut applied to the center frequency of the low-frequency shelving EQ band (selected by LOSHLV FREQ). Ranges from -12 to 12.
Band # Freq	Sets the center frequency of the selected band. 6-band PEQs have four true parametric bands of EQ plus shelving high- and low-frequency controls with variable frequency. Bands 1 and 2 range from 25 Hz to 20 kHz. Bands 3 and 4 range from 1 kHz to 20 kHz.
Band # Width	Controls the bandwidth of the selected frequency. The higher the setting of WIDTH, the more frequency-selective the boost/cut becomes. In other words, with High (narrow) WIDTH settings, frequencies around the selected center frequency are not affected by the LEVEL setting. With Low (Wide) WIDTH settings, frequencies around the center frequency become affected by the setting of LEVEL.
Band # Level	Adjusts the amount of boost or cut applied to the selected frequency. Varies from -12 to 12.
HiShlv Freq	Selects the center frequency of the high-frequency shelving EQ band. Ranges from 1kHz to 20kHz.
HiShlv Level	Adjusts the amount of boost or cut applied to the center frequency of the high-frequency shelving EQ band (selected by HISHLV FREQ). Ranges from -12 to 12.

Multi-Effects Modules

The 2120 VGS Multi Effect Modules allow the User to combine either Delay and Chorus or Delay and Flange within one Effect module block. This is ideal for situations where the User needs to add another effect to the Effect configuration, but is running low on signal processing resources. Within the module, there is a unique parameter that allows you route the signal several different ways between the two effects.

Multi-Effect Module Parameters:

FX: Lvl	Controls the signal input level fed to the module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Route	Selects the route signal path within the Chorus/Delay, and Flange/Delay Multi effects modules. The 3 settings are: 1) Chorus/Flange into Delay with feedback into the Delay 2) Chorus/Flange into Delay with feedback into Chorus/Flange 3) Delay into Chorus/Flange with feedback thru the Chorus/Flange.
Speed	Controls the Low Frequency Oscillator (LFO) Speed of the Chorus or Flanger. Ranges from 0.06 to 16.0 Hz.
Depth	Adjusts the intensity of the Chorus or Flanger effect. Ranges from 0 to 30 milliseconds.
Feedback (Flanger)	Controls how much of the flanged signal is fed back to the input of the Module. The FDBACK Parameter is what gives flangers their distinctive voice. Flangers are capable of both positive and negative feedback loops, so experiment to find the sound you like best. Ranges from -99% to 99%.
WvFrm	Selects which waveform the LFO follow. Options for this control include: Sine, Triangle, SP1 (Special 1), and SP2 (Special 2).
C/F: Delay	Controls the delay time of the Chorus or Flanger voice. Ranges from 0 to 40 milliseconds.
Delay Time	Sets the delay time for the delay tap. Ranges from 0 to 300 milliseconds.
Feedback	Controls the fade time of the delay repeats. Higher settings take longer to fade out, while a setting of zero will limit the delay to one repeat. Ranges from 0 to 99%.
TapIt	Allows you to change the Delay time in real-time by tapping the TAPIT button at the tempo you want. Delay voice percentages do not change when using this control.
Level: C/F/D	Controls the overall output level of each effect block. Ranges from Off to 100%.
Pan: C/F/D	Controls the stereo soundfield placement of each effect block. Ranges from -99 (all left) to 99 (all right).

Whammy Effects

In today's music industry, it seems that every album on the charts, whether it be Country, Rock, Industrial, or Alternative, are using the DigiTech Whammy technology in some shape or form. Whether it be a subtle chorus Detune, or an all out 2 octave Whammy Dive, the Whammy effect is one of the most innovative effects ever designed.

Whammy Effect Parameters:

Whammy On/Off	Turns the Whammy module on or off. When the module is turned off, the signal will only continue to pass through the module if the dry level is turned up.
FX Level	This parameter lets you select the overall FX level mix of the Whammy effect module. Ranges from: Off to 100%.
Dry Level	This parameter lets you select the amount of Dry signal that is included in the Whammy effect. Ranges from: Off

to 100%.

Balance	This parameter allows you to pan the Dry signal either to the Right or the Left in the stereo soundfield. Ranges from Left 99 to Right 99.
Min Shift	This parameter sets the minimum pedal shift level of the Whammy effect. Ranges from: -72 (6 octaves down), to 24 (2 octaves up).
Max Shift	This parameter set the maximum pedal shift level of the Whammy effect. Ranges from: -72 (6 octaves down), to 24 (2 octaves up).
Min Detune	This parameter sets the minimum pedal level of detune effect. Ranges from: -50% (down 50 cents), to 50% (up 50 cents).
Max Detune	This parameter sets the maximum pedal level of detune effect. Ranges from: -50% (down 50 cents), to 50% (up 50 cents).
Pedal	This parameter is used for the assignment of an expression pedal. This parameter also shows the pedal travel range. Ranges from: 0 to 100
Out	This parameter is used to set the overall output level of the Whammy module. Ranges from: 0 to 100%
Pan	This parameter is used for for the position of the Whammy effect in the Stereo soundfield. Ranges from: Left 99 to Right 99.

Auto Wah

The Auto Wah is a great effect use when you want nasally wah-type effect but you don't want to do the leg work. The Auto Wah utilizes a sensitivity detector that reads the input signal, then simulates the action of a wah pedal.

Auto Wah Effect Parameters:

Auto Wah On/Off	Turns the Auto Wah module on or off. When the module is turned off, the signal will continue to pass through the module.
FX Level	This parameter lets you select the overall FX level mix of the Auto Wah Effect module. Ranges from: Off to 100%.
Sensitivity	This parameter adjusts the sensitivity of the detection of the automatic wah. The higher the sensitivity is set, the wider the Wah range is. Ranges from: Off to 100%.

Section - 5 The 2120 FC Foot Controller

Connecting the 2120 FC Foot Controller

Connect Cables: Make sure the power is off before connecting or disconnecting the cable to the 2120 FC. Using a standard 5-pin DIN cable (MIDI-type), connect the 2120 FC to the jack on the rear panel of the 2120 VGS where labeled FOOT CONTROLLER. **DO NOT CONNECT ANYTHING BUT THE 2120 FC FOOT CONTROLLER TO THE FOOT CONTROLLER JACK ON THE REAR PANEL OF THE 2120 VGS! DOING OTHERWISE MAY DAMAGE THE DEVICE. IF MIDI CONTROL IS DESIRED, CONNECT THE MIDI DEVICE(S) TO THE MIDI IN JACK.**

Apply Power: When you turn on the 2120 VGS, the foot controller will also power up.

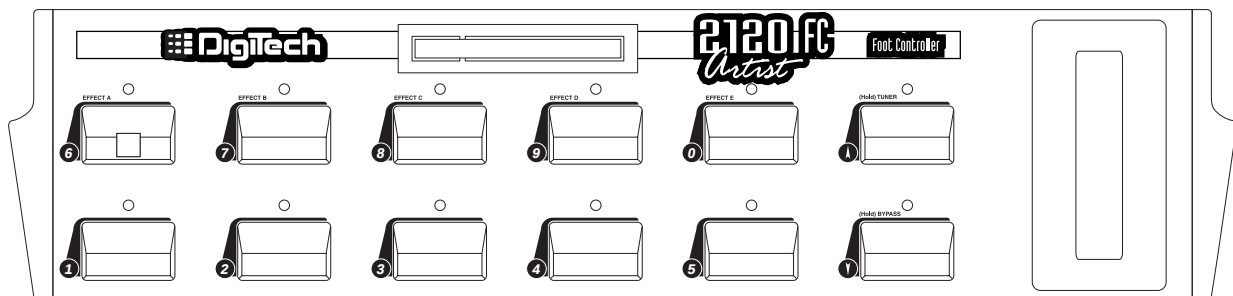
Select Program : Choose any program in the selected bank using the 1-5 footswitches.

Toggle Effects: You can turn effects on and off in a program using the 6-0 footswitches.

Select Bank: You can scroll through the 19 Banks of the 2120 VGS by simply pressing either the <Bank Up> or <Bank Down> footswitch on the 2120 FC. Once a bank is selected, press one of the flashing footswitches and the 2120 VGS will move to the selected bank.

Start-up of the 2120 FC Foot Controller

Front Panel Controls and Functions



The front panel of the 2120 FC consists of a 20 character vacuum-fluorescent display, ten programmable footswitches, a dedicated bypass footswitch, a Select switch, and the built-in continuous controller pedal.

- **1-0 Switches** - Each programmable switch has a number (1-0) and can be programmed to function in one of several ways.
- **Bank Up/ (Hold) Tuner Switch** - This switch lets you move up through the Bank menu and select Banks simply pressing the footswitch once. Successive presses will move up to the next Bank. When the desired Bank is reached, press any of the flashing footswitches and the selected Bank will be activated. When you press and hold the footswitch, the 2120 FC will put the 2120 VGS in Tuner mode.

- **Bank Down/ (Hold) Bypass Switch** - This switch lets you move down through the Bank menu and select Banks simply pressing the footswitch once. Successive presses will move down to the next bank. When the desired banks is reached, press any one of the flashing footswitches and the selected Bank will be activated. When you press and hold the footswitch, the 2120 FC will put the 2120 VGS in Bypass mode.
- **Expression Pedal** - Real-time control of any parameter in the 2120 VGS can be accomplished using the built-in continuous controller pedal (and / or an external Expression pedal). For complete information on continuous controller assignments, please refer to the Advanced Topics section.

Rear Panel Connections



The rear panel of the 2120 FC consists of the control output (for use with the 2120 VGS **only**) and an external continuous controller input if more than one Expression pedal or source is desired.

- **Control Output** - The Control Output is a 5-pin DIN connector (MIDI-type). All control information generated by the 2120 FC is sent out the Control Output to the 2120 VGS. The 2120 FC also gets its power from the 2120 VGS through this cable, eliminating the need for a separate power supply for the foot controller.

IMPORTANT: The Control Output is not a MIDI output, and should not be connected to anything but the dedicated Foot Controller connector on the 2120 VGS.

- **External Continuous Controller Input** - This 1/4" jack allows a second continuous control device to be used with the 2120 VGS. It responds to both control voltage and resistance pedals (volume-type), and can be used in conjunction with the built-in Expression pedal.

Basic Operation of the 2120 FC Foot Controller

Using the 2120 FC foot controller

Following is a basic step-by-step procedure on how to connect and use the 2120 FC with your 2120 VGS.

1. Make sure the power to your 2120 VGS is off.
2. Using a standard 5-pin DIN cable (MIDI-type), connect the Control Output to the Foot Controller input on the rear panel of the 2120 VGS.

WARNING: Do not connect devices other than the 2120 FC to the Foot Controller connector on the rear panel of the 2120 VGS. This is **not** a MIDI connection. Connecting devices other than the 2120 FC to the Foot Controller connector may damage the device.

3. When the 2120 FC is connected, turn the 2120 VGS's power switch on. Both the signal processor/preamp and the 2120 FC will

begin their power-up initialization sequences. When initialization is complete, the 2120 FC's display will show the number and name of the currently selected program on the 2120 VGS.

4. To change programs within the currently selected Bank, press one of the numbered patch switches on the pedalboard. The display will change to reflect the name and number of the newly selected Program.
5. The Expression pedal is set from the factory to control at least one parameter in almost every program in the 2120 VGS. Try it in each new Program to find out what it does. The 2120 VGS will automatically calibrate the 2120 FC when connection is made.

Expression Pedal Names

With the 2120 being able to accommodate up to 3 Expression pedals, the pedal names change if the 2120 FC is used. The Names are as follows:

Exp1 = Expression pedal input on the rear of 2120. When the 2120 FC is **not** connected

Exp1 = Expression pedal on 2120 FC(When the 2120 FC **is** connected)

Exp2 = External Expression pedal insert on 2120 FC(When the 2120 FC **is** connected)

Exp3 = Expression pedal insert on the rear panel of the 2120 (When the 2120 FC **is** Connected).

Programming the 2120 FC Foot Controller

All programming and setup for the 2120 FC is performed from the front panel of the 2120 VGS. Most of the setup menus that deal with the 2120 FC can be found in the Utility section of the 2120 VGS.

Assigning Functions

The 2120 FC foot controller helps you organize your sounds into 19 groups called Banks. Each of these Banks utilize the 10 footswitches patches, which are user programmable to do one of several functions. These functions include:

- Selecting any 2120 VGS Program
- Modifying or turning On/Off any Parameter in real-time
- Sending MIDI CC information out of the MIDI out port (Toggle CC# for values 0 or 127)
- Assign a MIDI CC# for the Expression pedal to send out the MIDI port
- Selecting the next or previous Bank (Bank Up/Down)

To change Banks, Press either the Bank Up or Bank Down footswitches on the 2120 FC to take you up or down one bank at a time.

The Foot Controller setup menu contains all the setup options necessary to use the 2120 VGS with the DigiTech 2120 FC foot controller. The submenus included under the Foot Controller setup are located on pages 10 and 11 of the utilities menu and they include:

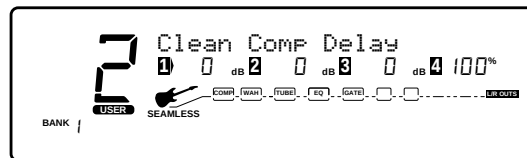
- Patch Assignment
- Continuous Control

The 2120 includes several shortcuts for programming your 2120 FC:

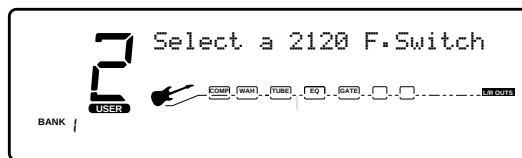
Assigning Programs to Footswitches

To assign any currently selected Program to a Patch footswitch in the currently selected bank, do the following:

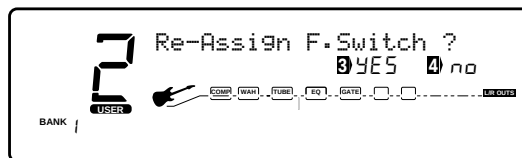
1. Be sure that that the Program's Title screen is displayed as shown below:



2. Press the <Assign> button once. The display reads:



3. Press one of the ten footswitches to Link that Program to that switch. If you choose a footswitch that is already assigned to do something else besides select a Program, the display reads:



4. Turning the <3> button re-assigns the function of the footswitch while turning the <4> knob will leave everything as it was, aborting the procedure. Once you link a Program to a Patch in a Bank, the LED lights above the footswitch that you selected indicating the Link was successful.
5. Press the <Program> button to exit.

Assigning Parameters to Footswitches/ Expression Pedals

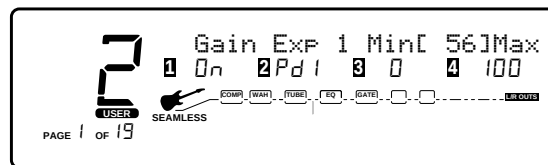
The 2120 allows you to control up to 16 Parameters per Program. Each time you link a parameter to a Footswitch or expression pedal, it is added to any assignments already made to that controller. This is where the 2120 becomes the dedicated work horse that it is, by doing all of the organizing for you so all you have to do is select which parameter is being controlled, then tell the 2120 to "Make it so"

To assign any currently selected Parameter to a footswitch or Expression pedal in the currently selected bank, do the following:

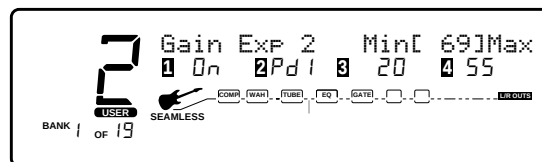
1. Be sure that the Parameter you want to link is displayed and selected (below is an example the gain setting of the Tube Distortion module.). The display should appear something like this:



2. Turn the <4> knob to select the gain parameter, then press the <Assign> button once. The display reads:



3. Select the footswitch or move the expression pedal to be used. An example would be to use Exp 1. From there, use knobs <3> and <4> to set the minimum and maximum ranges of the gain. Once this is done, the display will appear something like this:



4. To exit the parameter assignment mode press the <Program> button to return to Program mode. The <Store> button will stay bright until these changes are stored, or the program is changed.

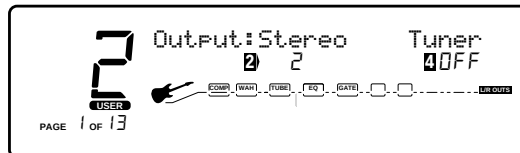
Other Footswitch Functions

The footswitches on the 2120 FC can be assigned to do several functions. This is done through the Foot Controller menus in the Utilities section of the 2120. These functions include:

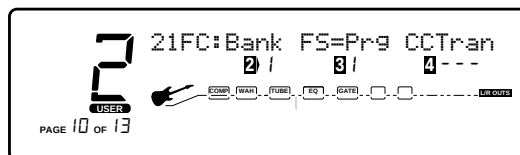
Assigning CC Transmit Toggle

The procedure for setting up the CC Transmit Toggle function is as follows:

1. Press the <Utilities> button once. The display reads:

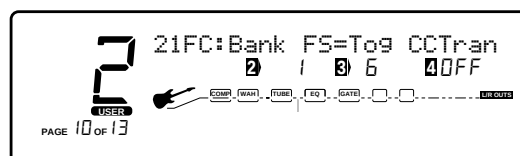


2. Turn the <Page> knob to page 10 until the display reads:

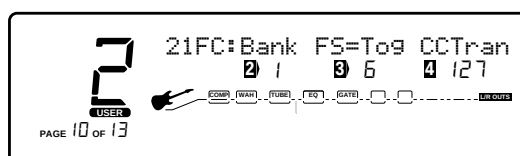


3. Turn the <2> knob to select the bank in which the CC toggle is to be used. Once the bank is selected, use the <3> knob to select the footswitch to be used. The display reads:

Note- Only footswitches currently assigned to control parameters in the 2120 VGS can be used for the CC Transmit Toggle function



4. The display now shows that footswitch 6 in bank 1 is can be used to toggle CCs. Take notice that from the factory when footswitches 6-0 can be used for the CC Transmit Toggle function.
5. Now to assign the CC number, just turn the function knob <4> until you have reached the desired CC. The display will now read something like this:



6. Press <Utilities> to exit the Foot Controller setup menu.

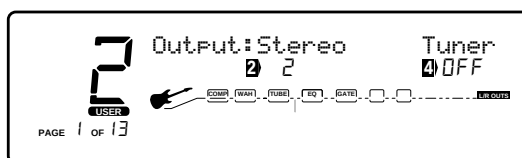
Assigning MIDI Control to the Expression Pedals

This series of menus and submenus allows MIDI setup of the Expression pedal(s) of the Control One. There are two procedures you must do in order for the Expression pedals to work properly with MIDI:

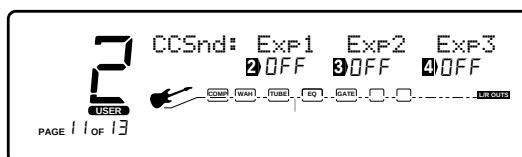
1. Assign CC Number
2. CC Transmit Channel

Assign CC Number to Expression Pedals - This option allows you to choose the MIDI CC numbers you want to use for sending continuous control messages using any one of the three Expression pedals options. From the factory, the Expression pedal(s) are not pre-assigned to any MIDI CC number. To assign which CC number is sent from the Expression pedal(s), do the following.

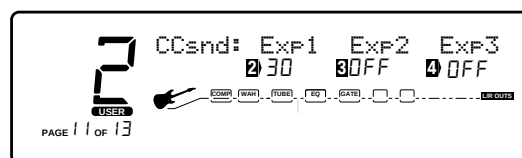
1. Press the <Utilities> button once. The display reads something like this:



2. Turn the <Page> knob to page 11 of the utilities menu and the display reads:



3. Turn either the <2, 3 or 4> knobs to assign a CC number to the selected Expression pedal. The display will appear like this if, for example Exp 1 is selected. (Exp1=Internal Expression pedal on 2120 w/o Control One. Or, Internal Expression on the 2120 FC when connected. The display now reads:



4. Press the <Utilities> button to exit.

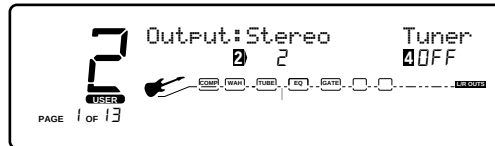
For a complete explanation of Expression Pedal names, please refer to page 50.

CC Transmit Channel - This option allows you to set the MIDI channel on which CCs will be sent out the 2120 MIDI Out port to other MIDI devices. If you are using the 2120 FC for the 2120 only, you don't need to worry about setting up this option.

However, if you plan to use the 2120 FC for continuous control over other MIDI devices (either in conjunction with the 2120 VGS or by themselves), you need to assign a MIDI transmit channel.

To change the MIDI channels on which the selected CCs will transmit to other MIDI devices, do the following:

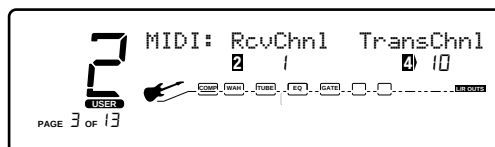
1. Press the **<Utilities>** button once. The display reads:



2. Turn the **<Page>** knob to page 3 and the display reads:



3. Turn the knob **<4>** to select the MIDI CC transmit channel. The example below uses MIDI channel 10.



4. To exit the Transmit channel assignment, press the **<Program>** button.

Here are a few other features that you will want to learn about to get the most out of your 2120 FC Foot controller:

Bank Up/ Tuner and Bank Down / Bypass Footswitches

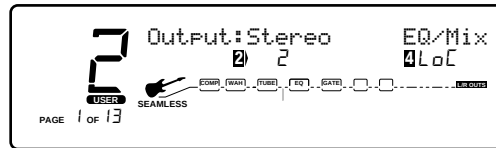
These two footswitches are located at the far right side of the 2120 FC next to the Expression pedal. The Bank Up/Tuner footswitch, as you may have guessed, will move to the next Bank Up in the 2120, as well as access the Tune Mode by simply pressing and holding the footswitch until the Tuner appears in the display.

To access the next bank down press the footswitch once. To bypass the 2120 VGS, press and hold the footswitch until the LEDs indicate that the unit is now in bypass mode.

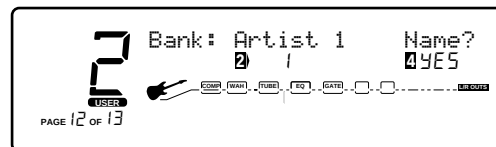
Naming Banks

The 2120 has 19 user Banks to choose from when used with the 2120 FC foot controller. Each of the banks has been given a specific named to indicate what type of programs exist with the bank. To help make the 2120 custom to your needs, we have given you the ability to rename these banks. The procedure is as follows:

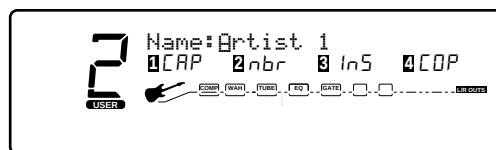
1. From Program mode press the **<Utilities>** button and the display will appear something like this:



2. Turn **<Page>** knob to page 12 and the display reads:



3. At this point, use the **<2>** knob to select the bank to be named. Once the bank has been selected, turn the **<4>** knob to rename the Bank. The display now appears something like this:



4. Using the **<Program/Effect>** knob, change the character to the one you want in the selected position.
5. When the correct character is displayed in that position, use the **<Page>** knob to scroll the cursor to the next character you want to change.
6. Use the **<2>** knob to select numbers, the **<3>** knob to insert spaces and the **<4>** knob to copy and paste characters.
7. To copy a character, position the cursor under the character you want to copy (using the **<Page>** knob), then turn the **<4>** knob clockwise. To paste the copied character, position the cursor where you want to paste the character, then turn the **<4>** knob counter-clockwise.
8. To abort the procedure, push either the **<Program>** button to take you to Program mode, the **<Edit>** button to take you to FX Edit mode, or the **<Utilities>** button to take you to Utility mode, depending upon which mode you want to enter.

Section - 6 Advanced Topics

Assigning Modifiers

Modifiers are unique tools that can be used to dramatically alter your sound based on information from signal amplitude, the settings of a Low Frequency Oscillator (LFO) or MIDI Continuous Controller and external footswitch and pedal information.

Every Program in your 2120 VGS has a set of Modifiers. Up to 16 Modifier links can be assigned to control any parameter. There are five types of Modifiers that can be linked to a parameter:

- MIDI CCs
- LFOs
- Dynamic (signal level dependent).
- External expression pedal
- The Expression pedal and foot switches on the DigiTech 2120 FC foot controller.

MIDI CCs

When you use MIDI CCs, the 2120 VGS responds to CC numbers 0-127 and CHP (channel pressure or aftertouch). This means that you could assign a MIDI Expression pedal, a keyboard's modulation or pitch bend wheel, or any other MIDI CC device to control effect parameters.

LFOs

When you use LFOs, parameter values can be controlled automatically between a defined minimum and maximum setting at a rate set by the user. The 2120 VGS has 2 user definable LFOs in each program that can be assigned to any parameter.

For example, you can create an auto panner without using an auto panner module. Simply link an effect's output pan parameter to the LFO modifier and the LFO will move that parameter back and forth. This modifier can be a very useful weapon in the ongoing battle of new sound creation. There are two LFOs available in each program that can use unique speeds and waveforms.

Dynamic Modifiers

When you use Dynamic modifiers, the Parameter values are controlled in relation to the dynamics of the input signal. The possibilities are nearly endless, and they cannot be duplicated using any other method.

For example, you could link the Dynamic Modifier of a Program to control a chorus level. It doesn't sound like much on paper, but imagine the expressiveness of this type of effect on the guitar part. As the dynamics of the music increase, the chorus becomes less apparent. Ease up on the string attack a little and the chorus increases. ALL IN REAL TIME!

NOTE: Linking a Modifier to a Parameter causes the Parameter to change as if you were changing it using the Data Wheel. The only difference is that the <Store> button and CHANGED icon do not light. Therefore, the Default name may display 'Custom' if a Parameter is consistently being changed by a Modifier. Storing the Program will store these new Parameter values.

External Expression Pedals

In addition to the Expression pedal on the 2120 VGS, up to 2 external expression pedals can be incorporated into the mainframe operating system of the 2120 VGS by connection (via the rear panel of the 2120 VGS, or the external expression pedal jack on the 2120 FC) to an

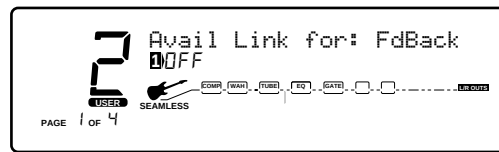
expression pedal. Once the External Expression pedal is connected, the assignment procedure to be followed is listed below.

Linking a Parameter to a Modifier

Note- Any changes made during this procedure must be stored with the program to be effective when recalled later.

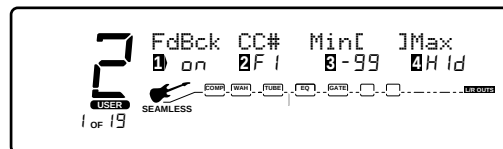
To link a Parameter to a modifier, please do the following:

1. Scroll to the parameter you would like to link to a modifier (ie: Delay feedback). See page 26 if your not sure how to scroll through a module's parameters.
2. Press **<Assign>**, the display will appear something like:



If the currently selected parameter is not already linked, you are taken to the next available link in this menu.

3. Turn the **<1>** knob to turn the link for that parameter on. The display will look something like this:



4. Use the **<2>** knob to scroll through the different modifiers that can be linked to the Parameter you want assigned. The options are:

MIDI CC's (CC): 0-127 & ChP (aftertouch)
 Real Time modifiers (RT): LF1, LF2, dY1, & dY2
 Expression Pedal (Pdl 1) Exp 1, Exp 2 and Exp 3
 Footswitch: (FS#) F1-F10

NOTE: The MUTE and THRU effect types do not have any parameters to connect to, so they will not appear in the parameter list.

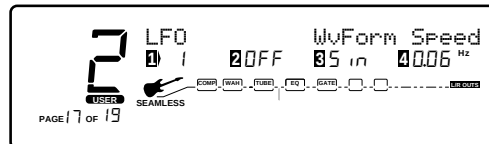
5. Use the **<3>** knob to select the minimum parameter value you want when the controller is in the maximum position.
6. Use the **<4>** knob to select the maximum parameter value you want when the controller is in the maximum position.

NOTE: Make sure you store any changes you want to save before moving on.

Setting up an LFO

To set up an LFO that is linked to an effect parameter, the procedure is as follows:

1. Enter Assign mode by pressing the **<Assign>** button.
2. Use the **<Page>** knob to scroll to the LFO page (Page 17). The display looks something like:

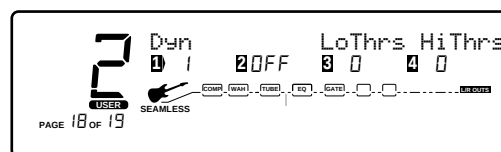


3. You can use the **<1>** knob to select which of the two LFOs you want to adjust.
4. Use the **<2>** knob to turn the LFO on or off.
5. Use the **<3>** knob to change the selected LFO's waveform. You can select SINE, TRIangle, SPecial1, SPecial2.
6. Use the **<4>** knob to adjust the speed of the LFO cycle.

Any parameters assigned to the LFOs will now follow the modulating waveform of the LFO you selected.

Setting up a Dynamic Modifier

1. Enter Assign mode by pressing the **<Assign>** button.
2. Use the **<Page>** knob to scroll to the first of two Dynamic modifier pages (18 and 19). The display looks something like:



3. You can use the **<1>** knob to select which of the two Dynamic modifiers you want to adjust.
4. Use the **<2>** knob to turn the Dynamic modifier on or off.
5. Use the **<3>** knob to set the threshold above which dynamic modification of the parameter begins.
6. Use the **<4>** knob to set the point at which maximum parameter modification occurs.

7. Use the **<Page>** knob to scroll to the next Dynamic modifier page.
8. Use the **<1>** knob to select which of the two Dynamic modifiers you want to adjust.
9. Use the **<2>** knob to adjust the attack time of the Dynamic modifier.
10. Use the **<3>** knob to adjust the hold time of the Dynamic modifier.
11. Use the **<4>** knob to adjust the release time of the Dynamic modifier.

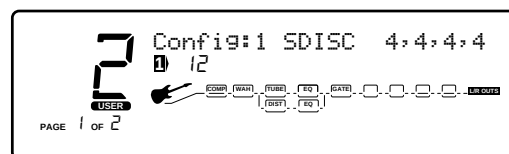
Morphing/Volume Pedal Assignments

The 2120 VGS Valve preamp modules and the effect configurations within the 2120 VGS have special morphing and volume control capabilities that allow you to morph between one preamp type to another. This will allow you to either morph from a distorted Tube distortion type, to a clean Solid State preamp tone type or assign a volume pedal either pre or post digital effects. Morphing and Volume control can be done by linking an Expression pedal to the Morph or Volume pedal parameter.

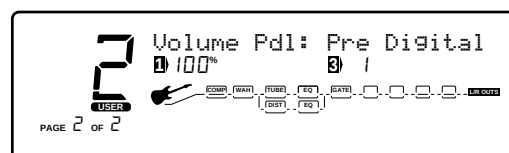
Morphing/Volume Assignments

To assign the Morphing/Volume pedal to morph between distortion types or control volume, use the following procedure.

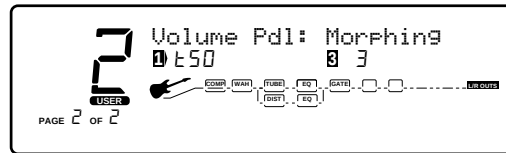
1. From Program mode, press the **<Edit>** button and then turn the **<Program/Effect>** wheel until The display appears something like this:



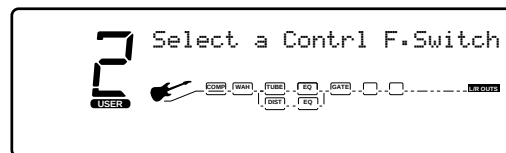
2. Now turn the **<Page>** knob, and the display will appear like this:



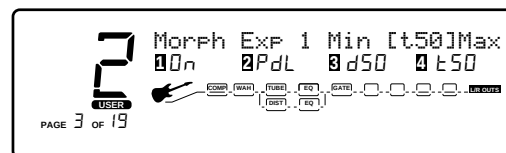
3. At this point, you can select the position of the Volume pedal (Pre or Post Digital) or the Morphing pedal for assignment by turning the **<3>** knob until the display appears something like this:



4. Now turn the <1> knob to make the Preamp active for morphing assignment or if the Volume pedal is to be used and is selected at this point. Once this is done, press the <Assign> button and the display will appear something like this if this parameter has not already been assigned:

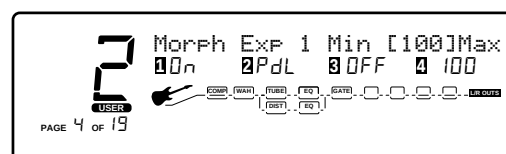


5. Now select the Expression pedal, and the display will appear something like this if the **Morphing** parameter has been selected:



6. The <1> knob lets activate or de-activate the selected expression pedal. The <2> knob lets you change the selected pedal. The <3> and <4> knobs are used to set the minimum and maximum morphing levels between the Tube (t.) and the Solid State (s digital). Once you have made this assignment, make sure to save your changes by pressing the button.

- 6-b. If the **Volume Control** parameter has been selected, the display will appear as follows:



- 6-c. The <1> knob lets activate or de-activate the selected expression pedal. The <2> knob lets you change the selected pedal. The <3> and <4> knobs are used to set the minimum and maximum volume levels. Once you have made this assignment, make sure to save your changes by pressing the button.

MIDI Functions

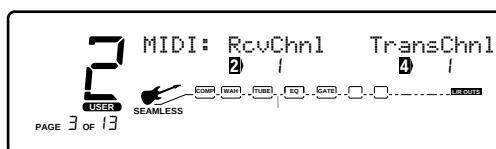
In this day and age where the role of the Guitarist has taken on so many new responsibilities, his or her equipment has to be fast, and has to be able to communicate with other devices at the drop of a hat. So, we at Digitech have given the 2120 VGS all of the MIDI goodies that your heart may desire.

Setting the MIDI Channels

This option sets the MIDI Channel that the 2120 VGS will respond to MIDI program changes and CC messages and transmit MIDI program changes and CC data.. MIDI Channel settings include: Off, 1, 2,...15, 16, and All.

To change the MIDI channel assignment, do the following:

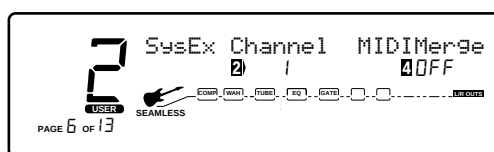
1. Go to Page 3 of the Utilities menu by pressing the **<Utilities>** button and tuning the **<Page>** knob. The display reads:



2. Use the **<2>** knob to select the MIDI channel number you want your 2120 VGS to receive on.
3. Use the **<4>** knob to select the MIDI channel number you want your 2120 VGS to transmit on.

MIDI Merging

MIDI merging allows incoming MIDI data to be merged with any MIDI data generated by your 2120 VGS before being sent to the MIDI Out/Thru port. Selecting the MIDI Merge option can be accessed in Page 6 of the Utilities menu. Once there, the display will appear like this:



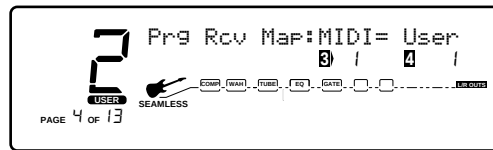
Program Receive Map

The Program Mapping features of the 2120 VGS allow you to access any of your 2120 VGS's 200 Programs using the standard 128 Program Change commands through MIDI. From the Factory, the 2120 VGS is set to access User Programs 1 through 100 using MIDI Program change numbers 1 through 100. MIDI Program change numbers 101 through 128 access the Factory Program bank.

To gain MIDI access to other programs not mentioned and Bypass you must use the program mapping feature.

To remap a Program number to a MIDI Program change number, please perform the following procedure:

1. Press the **<Utility>** button ,and Scroll to Page 4 of the Utility Menu using the **<Page>** knob. The display appears something like this:



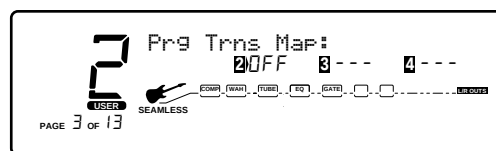
2. Use the **<3>** knob to select the MIDI Program change number you want mapped. Note that the number under 2120 USER changes along with the MIDI number.
3. Use the **<4>** knob to select the 2120 Program you want the selected MIDI Program change number to recall. As this number increases above Program 100, note that 2120 USER changes to 2120 FACT, indicating that the mapped number will recall the indicated Program number in the Factory bank..

Program Transmit Map

With the Program Transmit Map function, you can use your 2120 VGS to control patch changes of your other effects devices. So if you are using the FX loop of the 2120 VGS to create your sound, when you call up a program in your 2120 VGS, the appropriate programs in your other FX unit's will also be recalled.

To remap a MIDI Program change number to a program number, do the following:

1. Press the **<Utilities>** button, and scroll to Page 3 of the Utility Menu using the **<Page>** knob. The display reads:



2. Use the **<2>** knob to turn the Program Transmit Map function on or off.
3. Use the **<3>** knob to select the 2120 VGS Program number you want mapped. Note that the number under MIDI changes along with the program number.
4. Use the **<4>** knob to select the MIDI Program change number to be sent out the MIDI Out port when the corresponding program number is recalled.

SysEx Device Channel

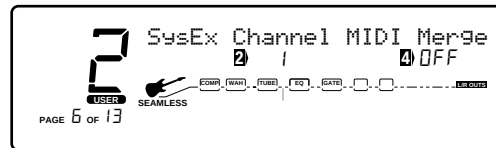
An easy way to think of the System Exclusive Device Channel option is to separate System Exclusive data from normal MIDI data. Each type of data has its own group of 16 channels upon which data can be transmitted.

Normal MIDI data, such as Program Changes, MIDI Volume, Modulation, etc is transmitted and received on the MIDI channel designated by the setting of MIDI CHANNEL. SysEx data, on the other hand, is transmitted and received on the SysEx channel designated by the setting of SYSEX DEVICE CHANNEL.

This setup frees up your regular MIDI channels for other control options, and gives you the flexibility to request SysEx data from only the devices you want in your setup, whether they share the same MIDI channel or not.

To change the SysEx Device Channel number do the following:

1. Press the **<Utilities>** button, and scroll to Page 6 of the Utility Menu using the **<Page>** knob. The display reads:



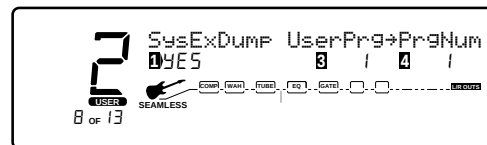
2. Use the **<2>** knob to select the desired SysEx channel (1 - 16).

Sysex Dumps

Program Dump: Allows you to dump individual 2120 Programs to another 2120 or external MIDI devices like patch librarians, computers, or sequencers for backup, storage, or organization. This option allows you to select the program to be dumped, and, when dumping to another 2120, the program location where you want the Program dumped.

To initiate an individual patch dump from the 2120, do the following:

1. Press the **<Utilities>** button and scroll to Page 8 of the Utility menu using the **<Page>** knob. The display will appear something like this:



2. Using the **<3>** knob, select the Program number you want to dump. Note that the MIDI number changes as you scroll.
3. Use the **<4>** knob to select the Program location where you want the Program dumped.
4. To initiate the dump, turn the **<1>** knob. The Information line briefly reads:

SENDING PROGRAM DUMP...

after which it returns to the Program dump screen.

Default Dump: Allows you to dump individual 2120 effect module User defaults to another 2120 or external MIDI devices like patch librarians, computers, or sequencers for backup, storage, or organization. This option allows you to select the Default to be dumped.

To initiate an individual Default dump from the 2120, do the following:

1. Press the **<Utilities>** button and scroll to Page 9 of the Utility Menu using the **<Page>** knob. The display reads:



2. Using the <2> knob, select the Effect module whose Default you want to dump.
3. Use the <4> knob to select the User Default you want to dump.
4. To initiate the dump, turn the <1> knob. The Information line briefly reads:

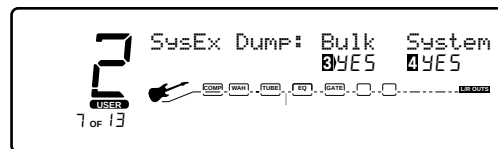
SENDING DEFAULT DUMP...

after which it returns to the User default screen.

Bulk Dump: This option allows you to dump all resident Programs in memory to an external recording device, like a patch librarian, computer, or sequencer for backup, storage, or organization. This option dumps all Programs simultaneously. It does not send any 2120 system information (Utility setups), such as SysEx Device channel or Program maps.

To perform a SysEx Bulk Dump of all the 2120 VGS programs, do the following:

1. Press the <Utilities> button and scroll to Page 7 of the Utility menu using the <Page> knob. The display reads:



2. To initiate a bulk dump, turn the <3> knob. The Information line of the display reads

SENDING BULK DUMP...

after which the display returns to the Dump screen. Bulk Dumps are very large and may take several minutes to complete.

System Dump: This is the option to use for dumping system data to an external MIDI or SysEx recording device. All the item settings in the Utility menu are sent using this option. Programs are not included in this dump.

The System Dump procedure is the same as the Bulk Dump procedure (see above), except that to initiate a System Dump, turn the <4> knob.

Other Utility Functions

These are the extra Utility functions included in the 2120 VGS that make your programming life a little easier.

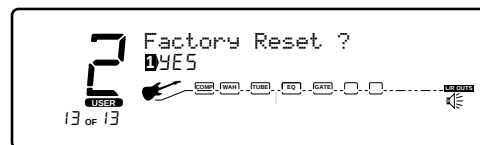
Factory Reset

Allows you to erase all User Program, Default and Utility settings at once and restore the 2120 VGS memory to its factory condition.

WARNING! This procedure will destroy and reset ALL User programs in the 2120 VGS memory. Be sure you want to erase the memory, and start fresh before continuing with this procedure.

To perform a factory reset, do the following:

1. Press the **<Utilities>** button and scroll to page 13 of the Utility Menu using the **<Page>** knob. The display reads:



2. To initiate the reset, turn the **<1>** knob.
3. This is your last chance to change your mind. If you are sure, turn the **<3>** knob. If not, you can abort the procedure by turning the **<4>** knob. If you turn the **<3>** knob, the Information line of the display briefly reads:
FACTORY RESETTING . . .
 after which the unit resets, and returns to Program 1.

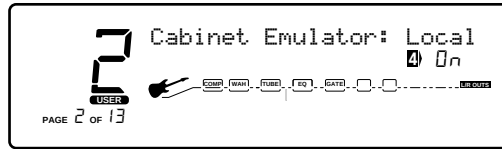
In extreme situations, the 2120 VGS can be reset using a special power-up procedure. This will also completely reset the 2120, eliminating any custom settings created by the user. The procedure is as follows:

1. Press and hold the **<Preamp>** button while powering up your 2120 VGS.
2. Release the **<Preamp>** parameter button after an asterisk appears in the information line on the screen.
3. Press the **<Mod>** button and the 2120 VGS will re-initialize itself.

Global vs. Local Cabinet Emulation

The thing to factor in when using the Cabinet emulator in either global or local mode is whether or not you want all of your sounds affected by this change. A good time to use Global mode is when your frequently playing in different venues (because each room always sounds different).

1. Press **<Utilities>** and scroll to page 2 of the Utility page using the **<Page>** knob. The display reads:

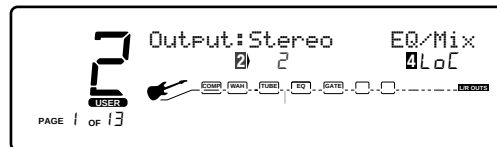


- Using the <4> knob, you can turn the Cabinet Emulator to either Local On or Global On mode, or Global Off.

Global vs. Local EQ & Wet/Dry Mixer

The thing to factor in when using the Global EQ and Wet/Dry Mixer in either global or local mode is whether or not you want all of your sounds affected by this change. A good time to use Global mode is when your frequently playing in different rooms (because each room always sounds different).

- Press the <Utilities> button and scroll to page 1 of the Utility page using the <Page> knob. The display reads:

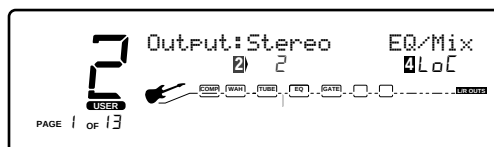


- Using the <4> knob, you can turn the Global EQ and Wet/Dry Mixer to either Local or Global mode.

Output Mode

You can select the signal output route of your 2120 as either a stereo or mono signal output.

- Press the <Utilities> button and scroll to page 1 of the Utility menu using the <Page> knob. The display reads:



- Using the <2> knob, you can set output route of the 2120 to either a stereo or mono signal.

Section - 7 Appendix

2120 VGS Factory Program List

Bank 1 Artist 1

1-	Satch 1 (Joe Satriani)	Cfg-1
2-	Satch 2 (Joe Satriani)	Cfg-5
3-	Satch 3 (Joe Satriani)	Cfg-8
4-	Electric 12 String	Cfg-4
5-	Star Wahs	Cfg-4

Bank 2 Artist 2

6-	EVH '78	Cfg-2
7	Strange MicroBrew	Cfg-9
8-	Down By the Seaside	Cfg-2
9-	Whammy Against da Machine	Cfg-17
10-	Jazz Down Pat	Cfg-9

BANK 3 ARTIST 3

11-	We're Not Holdsworth	Cfg-2
12	It May be Queen	Cfg-17
13-	SRV Lives On	Cfg-5
14	Wind Cries Jimi	Cfg-1
15	I'm from Boston	Cfg-5

BANK 4 ARTIST 4

16-	Country >> Rock Morph	Cfg-7
17-	Meta Morph	Cfg-15
18-	Hot Stack >> Greasy Fuzz	Cfg-4
19-	SuperweetClean >> Thrash	Cfg-1
20	Auto Morph	Cfg-10

BANK 5 ARTIST 5

21-	Hybrid Stereo Sweep	Cfg-5
22-	Dirty/Clean Squeeze	Cfg-1
23	Stereooverdrive	Cfg-7
24	Pannable Sweet Solo	Cfg-7
25	My Tone's Bigger	Cfg-2

Bank 6 Artist 6

26	RockMang	Cfg-19
27	Jazz/Fusion Solo	Cfg-19
28-	Tube Dirt	Cfg-2
29-	Big Power Chord	Cfg-21
30-	Singing Lead	Cfg-20

Bank 7 Artist 7

31-	Blues Rhythm	Cfg-1
32-	70s' British Stack	Cfg-1
33-	Twin Combo	Cfg-1
34-	Fuzz Me Tender	Cfg-1
35-	Good Ol' Clean/Crunch	Cfg-1

BANK 8 MORPH

36-	Late Night Blues	Cfg-5
37-	Exp Pedal Slide	Cfg-17
38-	Squeezy Clean Delay	Cfg-5
39-	Big Blues Solo	Cfg-4
40-	Sweet & Blue Solo	Cfg-20

Bank 9 Blues

41-	Country Picken	Cfg-7
42-	Gonna Be a Showdown	Cfg-3
43-	Trem O' Luck	Cfg-3
44-	Country Rockin STER	Cfg-7
45-	Stereo Country	Cfg-11

Bank 10 Country

46-	Rhythm King	Cfg-9
47-	Octavian	Cfg-9
48-	Stereo Razor	Cfg-4
49-	Bad Attitude	Cfg-8
50-	Death Scoop	Cfg-9

Bank 11 Metal Tones

51-	Thickerer	Cfg-8
52-	Real Auto Wah	Cfg-9
53-	Hip Notize	Cfg-5
54-	Happenin' Rhythm	Cfg-1
55-	Flower Phase	Cfg-5

Bank 12 Preamp Only

56-	LA Chorus	Cfg-11
57-	Tru Stereo +Pan Dly	Cfg-7
58-	Stereo Power Chord	Cfg-8
59	West Coast Solo	Cfg-8
60-	Greasy Solo	Cfg-5

Bank 13 Dual Tone

61-	Surfin the 90s'	Cfg-5
62-	Phuzadelic	Cfg-11
63-	Tape Delay	Cfg-11
64-	Her Name was Lezlie	Cfg-11
65-	True Analog Delay	Cfg-11

Bank 14 Studio

66-	Clean Quad Detune/Delay	Cfg-5
67-	Panning Clean Warm Tube	Cfg-4
68-	Crisp Clean	Cfg-9
69	Clean w/Mod Delay	Cfg-4
70-	Phase w/Panning Delay	Cfg-2

Bank 15 Vintage

71-	Texas Fusion Solo	Cfg-20
72-	Jazz FX/Neck Pickup	Cfg-20
73-	Jazz Concert Hall	Cfg-9
74-	Pop Jazz Comp	Cfg-12
75-	Synth Vol Pedal Pad	Cfg-12

Bank 16 Clean

76-	Electro Acoustic Det/Rev	Cfg-5
77-	PEQ Chorus/Delay	Cfg-5
78-	12 String	Cfg-17
79-	Just a Phase	Cfg-2
80-	Moving Detune/Reverb	Cfg-2

Bank 17 Jazz/Fusion

81-	Hit-Me-Hard Phase	.Cfg-2
82-	Ducked Delay	.Cfg-4
83-	Soft: Reverb Hard: Chorus	.Cfg-8
84-	Envelope Attack	.Cfg-4
85-	Panning DynoWah	.Cfg-9

Bank 18 Jam-A-Long

86-	Sound+Sound Jam	.Cfg-23
87-	Sound+Sound 1>4>5	.Cfg-23
88-	DelayShifter	.Cfg-10
89-	Mega Chord	.Cfg-15
90-	Space Beat	.Cfg-5

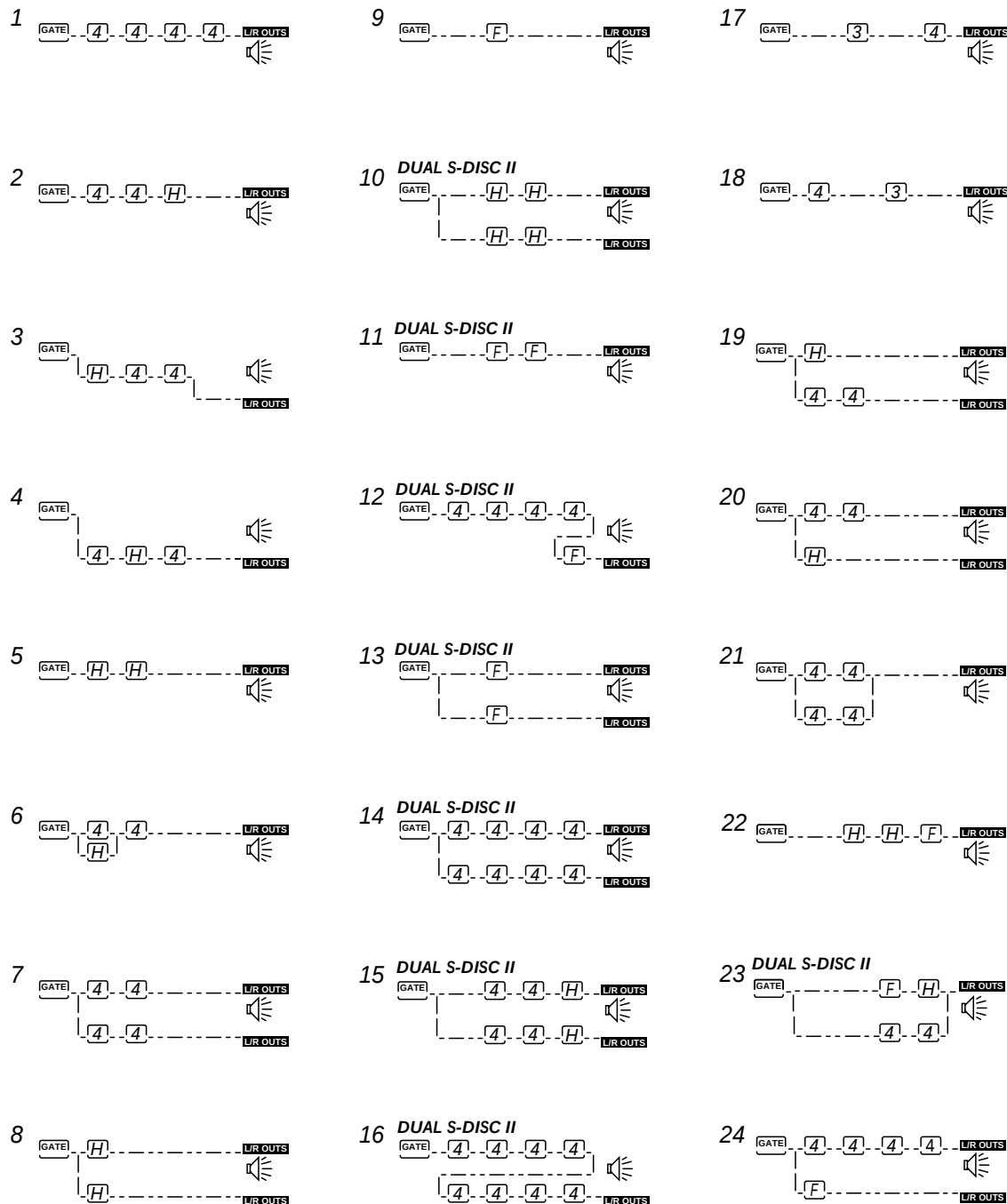
Bank 19 Jazz

91-	Big Fat Bass Room	.Cfg-4
92-	High Freq Chorus	.Cfg-7
93-	Bowed Church Bass	.Cfg-7
94-	Slappy Psycho Bass	.Cfg-2
95-	Grungified Bass	.Cfg-7
96-	Slight of Hand	.Cfg-11
97-	Worth Waiting For	.Cfg-4
98-	Peaceful Place	.Cfg-5
99-	Guitar Synth Pad	.Cfg-12
100-	You Take the High tap	.Cfg-13

Digital Effect Block Configurations (Factory Bank)

101)	Cfg. 1 (4, 4, 4, 4)
102)	Cfg. 2 (4, 4, H)
103)	Cfg. 3 (H, 4, 4)
104)	Cfg. 4 (4, H, 4)
105)	Cfg. 5 (H, H)
106)	Cfg. 6 (4, 4, 2)
107)	Cfg. 7 (4, 4, 4, 4)
108)	Cfg. 8 (H, H)
109)	Cfg. 9 (F)
110)	Cfg. 10 (H, H, H,H) Dual S-DISC II
111)	Cfg. 11 (F, F) Dual S-DISC II
112)	Cfg. 12 (4, 4, 4, 4, F) Dual S-DISC II
113)	Cfg. 13 (F,F) Dual S-DISC II
114)	Cfg. 14 (All 4ths) Dual S-DISC II
115)	Cfg. 15 (4,4,2,4,4,2)
116)	Cfg. 16 (All 4ths)
117)	Cfg. 17 (3,4)
118)	Cfg. 18 (4,3)
119)	Cfg. 19 (2,4,4,)
120)	Cfg. 20 (4,4,2,)
121)	Cfg. 21 (4,4,4,4)
122)	Cfg. 22 (H, H, F,)
123)	Cfg. 23 (F, H, 4,4)
124)	Cfg. 24 (4, 4, 4,4,F)

Effect Configuration Chart



Dual Output Configurations -Take notice that several effect configurations (ie: 7 and 8) use dual outputs. This indicates that Dual distortion paths can be run to both the right and the left outputs. This will be dictated by panning either distortions to the right or the left.

Key: 4= 1/4 size module
3= 3/4 size module
H= 1/2 size module
F= Whole size module

Harmony Interval Charts

Interval	Major	Minor	Harm.Minor	Mel.Minor	Dorian	Mixolydian	Lydian
↑0ct	C	C	C	C	C	C	C
↑7th	B	B _♭	B	B	B _♭	B _♭	B
↑6th	A	A _♭	A _♭	A	A	A	A
↑5th	G	G	G	G	G	G	G
↑4th	F	F	F	F	F	F	F [#]
↑3rd	E	E _♭	E _♭	E _♭	E _♭	E	E
↑2nd	D	D	D	D	D	D	D
Ref	C	C	C	C	C	C	C
↓2nd	B	B _♭	B	B	B _♭	B _♭	B
↓3rd	A	A _♭	A _♭	A	A	A	A
↓4th	G	G	G	G	G	G	G
↓5th	F	F	F	F	F	F	F [#]
↓6th	E	E _♭	E _♭	E _♭	E _♭	E	E
↓7th	D	D	D	D	D	D	D
↓0ct	C	C	C	C	C	C	C

Int.	Lydian Aug.	Int.	Major Pent.	Int.	Minor Pent.	Int.	Blues	Int.	Whole Tone	Int.	Hlf-Whl Dim.	Int.	Whl-Hlf Dim.
										↑0ct	C	↑0ct	C
↑0ct	C									↑♭7th	B _♭	↑6th	B
↑7th	B					↑0ct	C	↑0ct	C	↑6th	A	↑5th	A
↑6th	A	↑0ct	C	↑0ct	C	↑♭7th	B _♭	↑♭7th	A [#]	↑5th	G	↑♭6th	G [#]
↑5th	G [#]	↑6th	A	↑♭7th	B _♭	↑5th	G	↑5th	G [#]	↑4th	F [#]	↑♭5th	F [#]
↑4th	F [#]	↑5th	G	↑5th	G	↑♭5th	F [#]	↑4th	F [#]	↑3rd	E	↑4th	F
↑3rd	E	↑3rd	E	↑4th	F	↑4th	F	↑3rd	E	↑2nd	E _♭	↑♭3rd	E _♭
↑2nd	D	↑2nd	D	↑♭3rd	E _♭	↑♭3rd	E _♭	↑2nd	D	↑2nd	D _♭	↑2nd	D
Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C
↓♭2nd	B	↓♭3rd	A	↓2nd	B _♭	↓2nd	B	↓2nd	A [#]	↓2nd	B _♭	↓♭2nd	B
↓♭3rd	A	↓4th	G	↓4th	G	↓4th	G	↓3rd	G [#]	↓♭3rd	A	↓♭3rd	A
↓3rd	G [#]	↓♭6th	E	↓5th	F	↓♭5th	F [#]	↓♭5th	F [#]	↓4th	G	↓3rd	G [#]
↓♭5th	F [#]	↓♭7th	D	↓6th	E _♭	↓5th	F	↓♭6th	E	↓♭5th	F [#]	↓♭5th	F [#]
↓♭6th	E	↓0ct	C	↓0ct	C	↓6th	E _♭	↓♭7th	D	↓♭6th	E _♭	↓5th	F
↓♭7th	D					↓0ct	C	↓0ct	C	↓6th	E	↓6th	E _♭
↓0ct	C									↓7th	D _♭	↓♭7th	D
										↓0ct	C	↓0ct	C

2120 VGS Specifications

A/D Converter: 20 bit, 64 x oversampled delta-sigma stereo

D/A Converter: 20 bit 64 x oversampled

Sampling Frequency: 44.1 kHz

Frequency Response 20 ~ 20kHz +/- 0.5 dB

DSP Section:

Static-Dynamic Instruction Set computer 2 (S-DISC II®)

Digital Signal Path Width: 24 bits (144.5 dB)

Internal Data Path Width: 48 bits (289 dB)

Dynamic Delay Memory: 64k x 24 bits (1.4 seconds)

Static Delay Memory: 256 24-bit registers (5.8 milliseconds)

Data ALU Processing: 45.1 MIPS

Address ALU Processing: 33.8 MIPS

Multiplier Size: 24 bits x 24 bits

THD Less than 0.03 (kHz)

Input Section:

Connectors: 1- 1/4" TRS Plug balanced

Nominal Level: -10 dBV, +4 dBu, software variable

Maximum Level: +18 dBu

Impedance: 10 k Ω

Output Section:

Connectors: 2- 1/4" TRS Plug balanced,

Nominal Level: -10dBV, +4 dBu switchable

Maximum Level: +18 dBu

Impedance: 470 Ω

Recommended Output Load: 20K Ω

General:

Frequency Response: 20 Hz. - 20kHz. ± 3 dB

S/N ratio: Greater than 91 dB; ref =max signal, 22 kHz measurement bandwidth, unweighted

96dB Max signal "A" Unweighted

Total Harmonic Distortion Less than 0.03% (1 kHz)

Midi In, Out/Thru

Memory Capacity:

Factory: 100 Programs

User: 100 Programs

Power Requirements:

US and Canada: 120 VAC, 60 Hz

Japan: 100 VAC, 50/60 Hz

Europe: 230 VAC, 50 Hz

UK: 240 VAC, 50 Hz

Power Consumption: 28 watts

Dimensions: 19" (482 mm) W x 3.50" (88 mm) H x 9.25" (234 mm) D

Net Weight: 10.60 lbs (4.80 kg.)

Shipping Weight: 13.35 lbs. (6.05 kg.)

MIDI Implementation Chart

Function...		Transmitted		Recognized		Remarks
Basic Channel	Default Channel	X	X	1-16	1-16	Memorized
Mode	Default Messages Altered	X	X	Mode 2, Mode 4	Mode 2, Mode 4	Memorized
			N/A		X	
Note Number	True Voice	X	N/A	X	X	
Velocity	Note ON		X		X	
	Note OFF	X	X	X	X	
After Touch	Key's Ch's	X	X	O	X	
			X		X	
Pitch Bender			X		X	
Control Change			X		O	1*
Preset Change	True #	X	N/A	0	0-127	2*
System Exclusive			O		O	See SysEx (see appendix)
System	:Song Pos		X		X	
	:Song Sel				X	
Common	:Tune		X		X	
System	:Clock		X		X	
Real Time	:Commands		X		X	
Aux	:Local ON/OFF		X		X	
Mes-	:All Notes Off		X		X	
sages	:Active Sense		X		X	
	:Reset		X		X	
Notes 1* Each Parameter can be linked to any control change. These assignment tables are stored in memory. 2* For Preset map 1-128 (Preset Change can be mapped to Factory Presets, User Presets, or Bypass function).						

Mode 1 : OMNI ON, POLY
 Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
 Mode 4 : OMNI OFF, MONO

O : Yes
 X : No



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