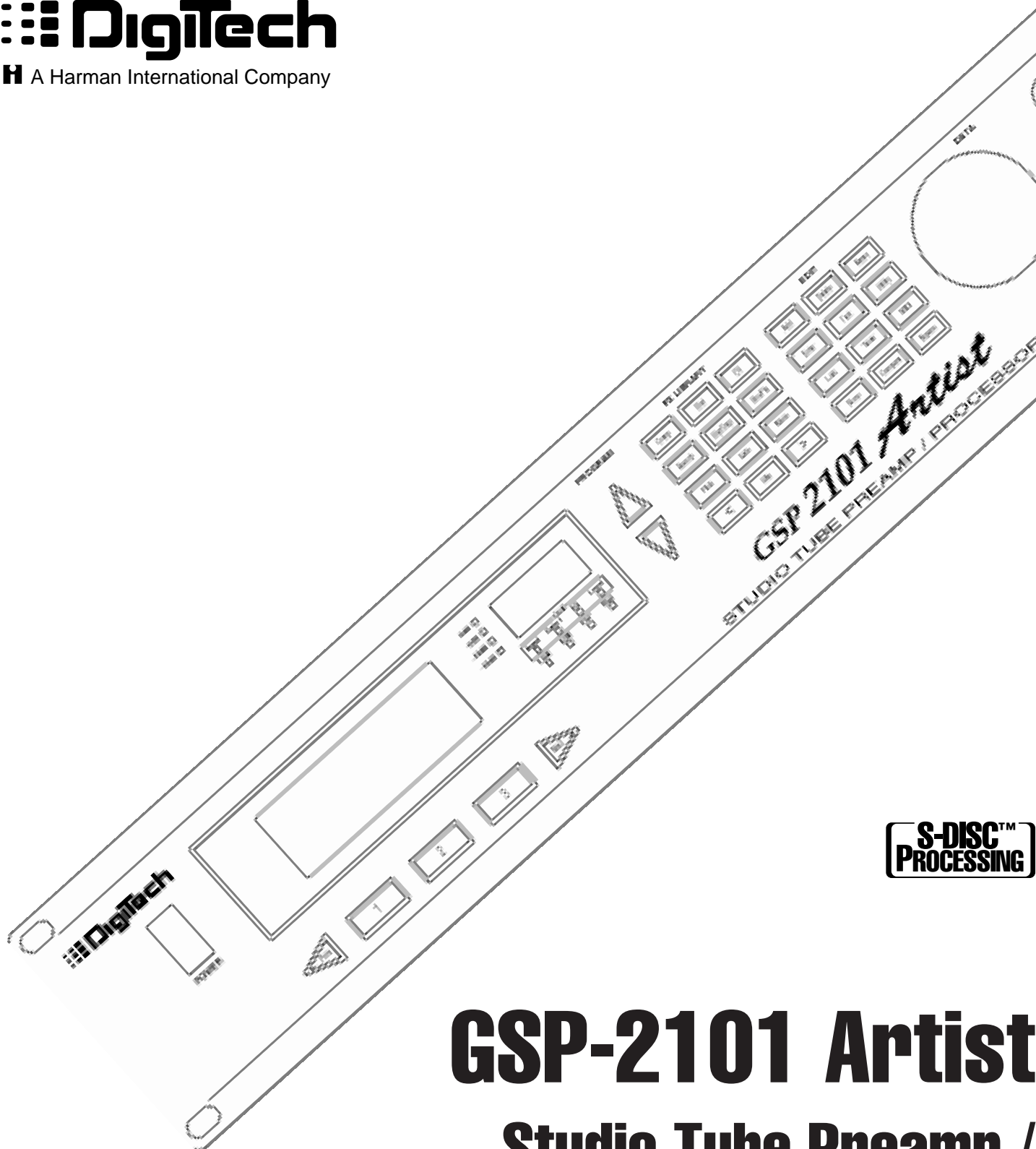


DiGiTech

A Harman International Company



**S-DISC™
PROCESSING**

GSP-2101 Artist

Studio Tube Preamp / Multi-Effects Processor

Owner's Manual



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.

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.

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.

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.

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	
		Normal	Alt
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	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.

LITHIUM BATTERY WARNING

CAUTION!

This product contains a lithium battery. There is danger of explosion if 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 - Eksplosjonsfare ved feilagtig håndtering. Utskiftning må kun ske med batteri av samme fabrikat og type. Levér det brukte batteri tilbake 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 apparatillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

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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 help you do it right the first time.

Connect Cables: Connect audio input and output cables to the rear jacks. Balanced (tip-ring-sleeve), unbalanced (tip-sleeve) or balanced XLR cables can be used with the output jacks. The rear headphone jack permits you to use the GSP-2101 Artist without an amplifier.

Apply Power: Use the supplied AC power cord to connect the GSP-2101 Artist 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 to the GSP-2101 Artist effects send and return jacks. **NOTE:** External devices should return the same signal level to the GSP-2101 Artist as they receive from the GSP-2101 Artist. This will avoid level changes when switching the effects loop in and out. This signal level relationship is called unity gain.

Connect Control One Foot Controller (if applicable): Connect the output of the optional DigiTech Control One foot controller to the Foot Controller jack found on the rear of the GSP-2101 Artist. **DO NOT CONNECT ANYTHING BUT THE OPTIONAL DIGITECH CONTROL ONE FOOT CONTROLLER TO THE FOOT CONTROLLER JACK ON THE REAR PANEL! DOING SO MAY DAMAGE THE DEVICE. IF YOU WANT TO USE MIDI CONTROL, CONNECT THE DEVICE(S) TO THE MIDI IN JACK.**

Adjust Input: Set the instrument 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.

Adjust Output: Set the GSP-2101 Artist 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 Data wheel, or the Program Up/ Down buttons. Programs 1-100 are user-programmable, and you can modify and store them as you want. Programs 101-240 are duplicates of the first 100. Programs 101-240 cannot be overwritten.

ABOUT THE GSP-2101 ARTIST

Congratulations, and thank you for your purchase of the DigiTech GSP-2101 Artist Studio Tube Preamp/Multi-Effects Processor. The original GSP 2101 has become the world's most popular professional guitar processor and to prove it, many of the industry's top players have contributed their own presets to the GSP-2101 Artist. The GSP-2101 Artist continues to go beyond the expected, offering total flexibility and control of the best digital effects in the industry. Special features include:

- Full bandwidth effects (20-20kHz)
- 24-bit signal path, 48-bit internal data path
- Any digital effect can appear at any point in any effects chain
- Number of simultaneous effects limited only by available CPU and RAM blocks in the unit
- Programmable Algorithms allow you to create an unlimited variety of custom effects configurations
- Effects can be repeated in a chain, e.g. EQ + flange + EQ + pitch shift + pitch shift
- Instant Module and Parameter access
- Multiple dynamic effects capability (e.g. chorus + flange+ pitch shift)
- Expandable to 2x factory memory and processing with optional PPC-210
- Balanced, speaker-compensated outputs for running direct to a mixing console
- World-class tube preamp with six distortion types (3 tube, 3 solid state)
- DigiTech's exclusive modulation delays
- New and improved chromatic tuner
- New Effects include: improved Whammy™, Chromatic Pitch Shifter, New Harmony Intelligent Pitch Shifting, and Programmable Cabinet Emulation
- Built-in tone generator
- Digital and analog EQ
- MIDI input filtering and MIDI Merging
- MIDI program transmit and receive mapping
- All Effects and Parameters available for MIDI continuous control
- Optional Control One foot controller with built-in Expression Pedal for ultimate programmability and control

This owner's manual is your key to understanding the powerful world of the GSP-2101 Artist. Read it carefully. After you've had time to familiarize yourself with the unit, try experimenting with unusual effects combinations or routings. You may get some interesting results. Good luck, and thank you for choosing DigiTech.

PACKAGING

The GSP-2101 Artist's shipping box contains:

- This Owner's Manual
- The GSP-2101 Artist
- An AC power cord appropriate for the country in which you bought this product
- Four screws for mounting the GSP-2101 Artist in a rack.

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 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.

DigiTech™, S-DISC™, Whammy™, AutoLink™, and Silencer™ are registered trademarks of DOD Electronics Corporation.

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.

AUDIO CONNECTIONS

Guitar Inputs - The GSP-2101 Artist provides two jacks to choose from when connecting your guitar. One on the front, and one on the back (see diagrams 2-4 & 2-5). They are identical except that the front input jack takes priority over the rear input jack (i.e. when you use the front jack, the rear jack becomes inactive). The rear jack is provided for those who "hard-wire" their equipment into racks and prefer to run their cables behind the equipment instead of the across the front.

2101 Outputs - The GSP-2101 Artist includes both balanced 1/4" and XLR outputs (see diagram 2-5). The 1/4" outputs are commonly used to feed a guitar amp(s), and the XLRs are usually connected to a mixing console (in both live and recording studio situations). Be sure to keep levels low to avoid possible speaker damage when making these audio connections.

1/4" vs. XLR Outputs - These outputs are identical except, the Active Speaker Compensator circuit only effects the XLR outputs. This allows a player to run an amp set-up on stage, while simultaneously sending signal to a mixing console using the Active Speaker Compensator.

FX Loop - The GSP-2101 Artist provides a programmable line level mono send/stereo return FX loop (see diagram 2-5). This allows you to insert additional processing into the 2101's signal path. The signal leaves the box after the Preamp and EQ circuits, and returns just before the A/D converters for the digital processing (see Block Diagram). Although the A/D converters usually only receive a mono signal from the analog section, the FX Loop Returns can be used for either mono (left jack only) or stereo applications (both jacks).

How the FX Loop Return's signals combine with the original signal can be defined and stored into each Program, using the following settings:

Bypass - The FX Loop Returns are off, and completely ignored.

Summed - The FX Loop Returns are summed together with the original signal using a 50:50 ratio.

No Sum - If plugs are connected to the FX Loop Return jack(s), they are the primary signal source. If there is no signal present at these jacks, you don't hear anything from the GSP-2101 Artist. When the jacks aren't used, No Sum behaves the same as the FX Loop Bypass setting.

Every Program in the 2101 has the FX Loop set to bypass, so you will need to turn the loop on in each Program that requires the external processing. See Editing Effects on pg. 13 for information concerning parameter editing.

Active Speaker Compensator- The GSP-2101 Artist includes special circuitry before the XLR and Headphone outputs that simulates the sound of microphoned guitar cabinets. The Active Speaker Compensator is engaged when the button next to the XLR out jacks is pressed in. This circuit is extremely useful for recording studio applications, or connecting the 2101 directly to the mixing console in live applications. Guitar speakers are not flat, full frequency transducers. The Active Speaker Compensator simulates the frequency response and behavior of a common 4 x 12 Cabinet, giving you true guitar speaker sound without extra baggage!

Phantom Power - The GSP-2101 Artist has no need for Phantom Power supplied by mixing consoles. If your console doesn't allow you turn off Phantom Power to individual channels, don't worry, the 2101 will survive. However, with all equipment exposed to Phantom Power, you should always engage the Phantom Power AFTER all audio connections are completed.

Mono vs. Stereo Usage - The GSP-2101 Artist can be used in either mono or stereo output applications. When using the 2101 in a mono application, you should set the Output Mode to Mono (found in the Utilities menu). This will ensure that you hear both sides of multi-tap delays, etc. (Please see page 83 for more information regarding Mono/Stereo usage).

Examples - Figures 2-1 and 2-2 show common ways to connect your GSP-2101 Artist to guitar amps and speakers. Once you have everything plugged in, set the amps to clean settings. Remember, the better your rig sounds when clean, the better your 2101 will perform.

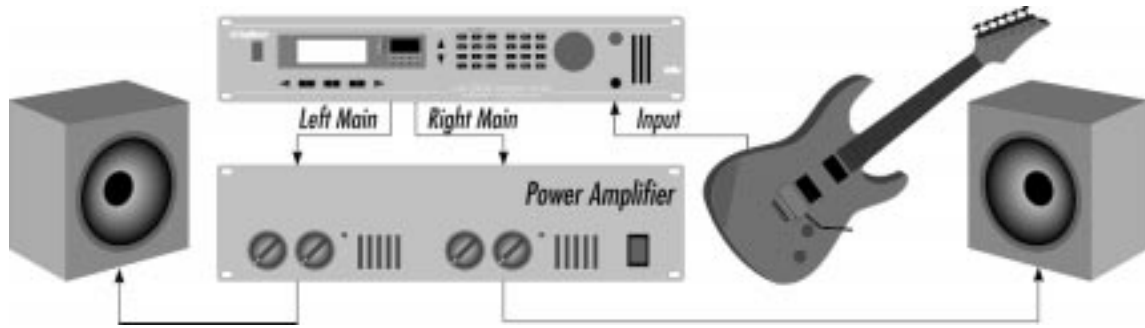


Fig 2-1

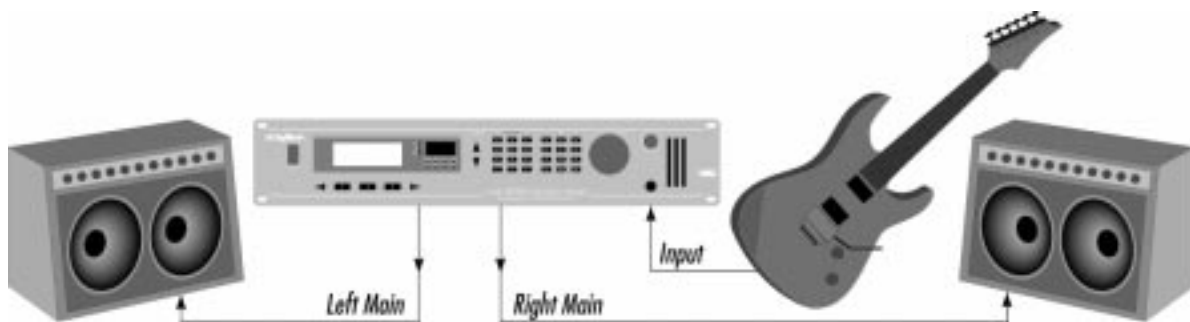


Fig 2-2

POWER CONNECTIONS

Applying Power - The GSP-2101 Artist, like any piece of computer hardware, is sensitive to voltage drops, spikes, and surges. Interference such as lightning or power "brownouts" can seriously, and in extreme cases, permanently damage the circuitry inside the unit. Always be sure to connect your 2101 to well grounded AC outlets. You may wish to implement a Spike/Surge Suppressor or AC Line Conditioners to further protect your investment.

Power Cord - Use the power cord supplied with the GSP-2101 Artist when making your AC connections. The power cord should be appropriate for the country where the 2101 was sold. If not, please contact your DigiTech dealer immediately. This cord connects to the back of the 2101 using the AC Line Input Jack (see fig 2-5 on pg. 12).

Power Switch - Lets you to turn On/Off the GSP-2101 Artist (see fig 2-4 on pg. 12).

OTHER CONNECTIONS

MIDI - The GSP-2101 Artist is MIDI savvy. Much of the 2101's flexibility can be accessed remotely using MIDI, allowing you to focus more on your playing. The 2101 is complete with the standard MIDI In, Out and Thru jacks on the rear of the unit (see figure 2-5). Connect a MIDI controller (such as a MIDI sequencer, or perhaps a DigiTech MC² continuous controller pedal) to the MIDI In jack for remote or automated control of the 2101. MIDI System Exclusive Data, Program Changes, and Continuous Control information can be sent from the 2101 using the MIDI Out jack. The MIDI Thru jack is used to pass along MIDI information received at the MIDI In jack. MIDI information created by the 2101 can be Merged with incoming data and passed to the MIDI Out jack, offering a second Thru option for your MIDI applications. Please see section 5 for more information concerning the 2101 and MIDI (pg. 63).

Control One Foot Controller - DigiTech offers an optional pedalboard designed to get the most out of your GSP-2101 Artist, called the Control One foot controller (see fig 2-3). The Control One features 10 footswitches that can be programmed to select a new program, change banks, or change parameter values. It also includes a built-in Expression Pedal for changing parameters in real-time. The Control One is connected to the Foot Controller Input on the rear of the unit (see figure 2-5).

WARNING: This jack supplies voltage to the Control One. Do not plug any device other than the Control One into the Foot Controller Input jack.

The cable that connects the 2101 to the Control One uses 5-pin DIN connectors commonly used by MIDI devices. Should the cable ever need replacing, a standard MIDI cable will do the job, as long as all 5 pins are wired (MIDI only requires 3 active pins, but most MIDI cables wire all 5).



Fig 2-3

USING FACTORY/USER PROGRAMS

The GSP-2101 Artist contains 100 User Programs and 140 Factory Programs. The Factory Programs cannot be copied over, while the User Programs can be copied over. Many of the Factory Programs have been placed in User Program positions for your convenience.

Program Buttons/Data Wheel: The Program [Up/Down] buttons (see fig 2-4) let you select any Program in the 2101 Artist. The Program Up button selects the next Program, while Program Down selects the previous Program.

The Data Wheel can also be used to select Programs, but only when the Program's Title Screen is being displayed. The Data Wheel is very convenient for scrolling quickly from one Program to another.

Bypassing the 2101: All of the 2101's effects can be Bypassed at one time by pressing the [BYPASS] button on the front panel. Press [BYPASS] again to exit Bypass mode. Bypass mode can also be accessed using the Control One foot controller.

Bypass LED indicator - This LED is located in the Display Window (see pg. 12) and indicates (when lit) that all effects have been bypassed using either the Bypass button or the optional Control One foot controller.

Copying Programs: Any of the GSP-2101 Artist's 240 Programs can be copied to a User Program location. To copy a Program, do the following:

- Press the [STORE] button, the display reads:

```

Copy
Dry Saturated Tube
To: 1
Dry Saturated Tube
  
```

- Select the User Program position where you want to place a copy of the selected Program (using the Data wheel or Program [UP] / [DOWN] keys), and press [STORE] again. The display briefly reads:

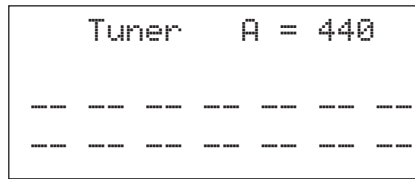
```

*** Copying ***
  
```

after which, you will automatically be returned to Program's Title Screen. To abort the copy command, press [COMPARE].

If a new Program is stored in a location where a Program already exists, the old Program will be overwritten by the new one. Make sure you know where you're storing your Programs to avoid accidental loss of valuable sounds.

Accessing the Tuner/Tone Generator: The GSP-2101 Artist comes complete with a full-function chromatic tuner and tone generator. To access the tuner, press the [TUNER] button. The display reads:

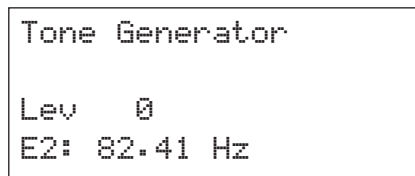


As you play a note on the guitar, line two of the display will tell you which note you are playing. The 3rd and 4th lines of the display will begin to show characters moving to the left or to the right. If the characters are moving right, the note you are playing is sharp. If the characters move left, you are flat. The goal is to tune your guitar so that the characters stop moving, and the display indicates you are in tune.

The tuner is referenced to A=440Hz. If you prefer tuning sharp or flat according to the A reference, use the Data Wheel 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 chord, but you hear an Ab chord). It is possible to tune as low as A=Gb.

Press the [Tuner] button to exit the Tuner.

To access the Tone Generator, press and hold the [Tuner] button. The display reads:



Press the [1] button, then use the Data wheel to modify the Level parameter. Pressing button [2] and then using the Data Wheel lets you select the tone that is being generated. The tone generator can be very helpful in helping other musicians tune their instruments to your reference. Press the [Tuner] button to exit the Tone Generator.

FRONT & REAR PANEL DIAGRAMS



Fig 2-4

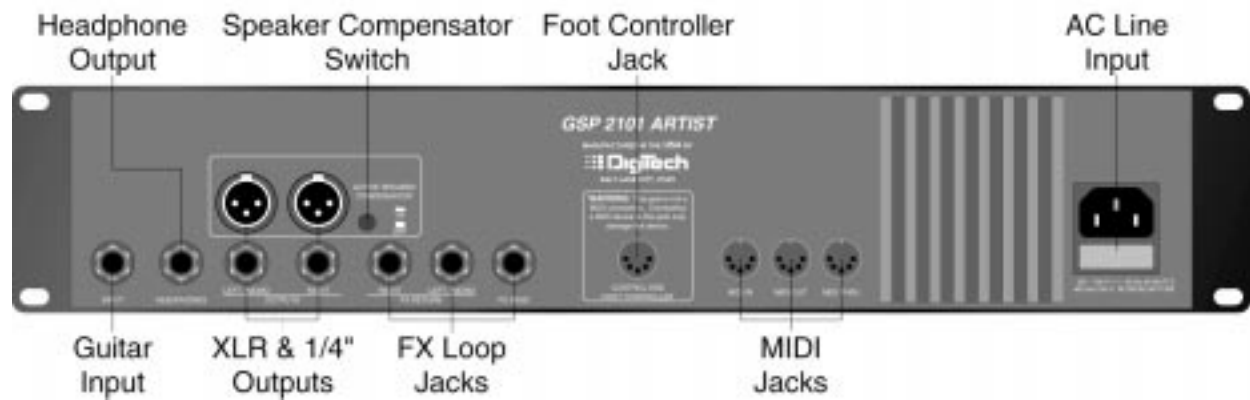


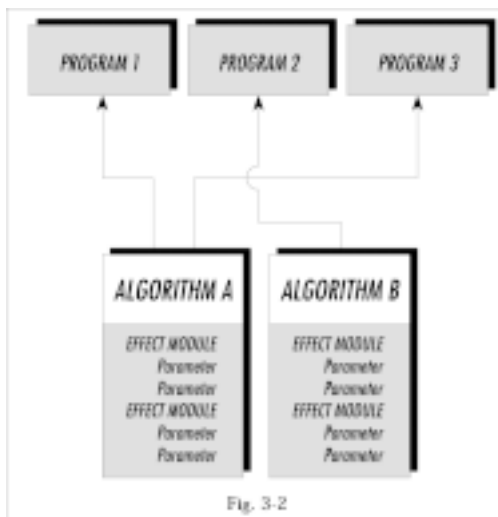
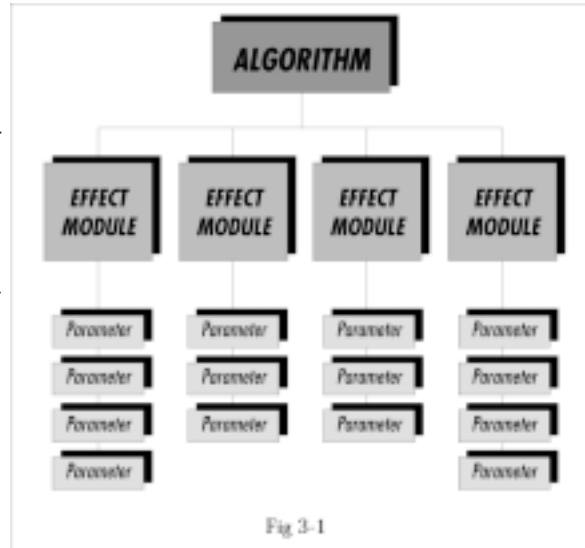
Fig 2-5

PROGRAMS VS. ALGORITHMS

For a Program to function, it must have an Algorithm assignment. In simplest terms, an Algorithm is a group of effects connected together in a specific way. Algorithms tell the GSP-2101 Artist which effects to use, while Programs tell the Algorithm how the effects should sound (by setting the parameters to the stored values).

An Algorithm contains a group of single-purpose effects called FX Modules (see fig. 3-2). Each FX Module contains its own set of Parameters, and is designed to perform a specific function. It is within these individual Modules, and their ability to be used in groups or to stand alone that, the full power of the GSP-2101 Artist is utilized. When combined in groups, virtually any imaginable effects combination and routing is possible.

Figure. 2-3 shows an example of two different Algorithms assigned to three Programs. Notice that Algorithm A is assigned to both Programs 1 and 3, while Algorithm B is assigned to Program 2 only. (Using a single Algorithm for more than one Program is common. Because, Programs with the same effects Modules and routings as other Programs are often needed, but with slightly different Parameter settings for each effect.).



Since Algorithms can be modified, there are some rules concerning when User Algorithms can be changed, and when they can not. For more information, refer to Section 4 Algorithm Usage on pg. 45.

Essentially, every Program's first Parameter is the Algorithm select screen. When the 2101 displays the Program's title screen, the Algorithm select screen is reached by pressing the Parameter [NEXT] button once. All the FX Modules and their Parameters are found immediately after the Algorithm select screen. Fig 3-2 shows how a Program's Parameter Pages are linked in a circular fashion.



FX LIBRARY BUTTONS

The FX Library buttons (see fig 2-4 on pg. 12) make the GSP-2101 Artist easier and faster to use. These buttons let you jump to the first Parameter page of each Module used in the Program. From there, you can scroll to the Parameter you want using the Parameter [NEXT] and [PREV] buttons. For example: if a Program uses an algorithm that contains two choruses and one reverb effect, you can jump directly to the first chorus module by pressing the [CHO/FLA] button, and get to the second chorus module by pressing the [CHO/FLA] button again. The [NEXT] button could have taken you to the same location, but the FX Library Buttons made things much quicker.

There are two buttons found in this button array that aren't labeled with names. They are the [<] and [>] buttons. These two buttons allow you to jump from effect module to effect module. This is helpful when you're not sure of the effect order, and you don't wish to scroll through all the parameters. Press the [>] button to access the next effect module in the algorithm, or the [<] button to jump to the previous module.

SELECTING AND MODIFYING PARAMETERS

Using the Program's Title Screen as a starting point, press one of the FX Library buttons, or [Prev] or [Next] buttons to enter Edit Mode. Once in Edit Mode, you will see that Parameters are often logically grouped into sets of two and three like this:

```

Stereo Noise Gate
SNGt  |Thresh|Hyster
On    |-64dB |6dB

```

To select one of the three displayed parameters, press either the [1], [2], or [3] button. Once you have selected the Parameter, use the Data Wheel to adjust the value. Pressing the [1], [2], or [3] button again will cause the value to increment or decrement (depending on its current assignment and the last direction it was moved). To retain any changes you have made to a Program, Store it before changing Programs (see Storing Changes pg. 17)

ASSIGNING PARAMETERS TO FUNCTION KEYS

The Function keys ([1], [2], and [3]) are user-programmable buttons that let you access and tweak up to three of your most commonly used Parameters in a Program, from the Program Title Screen.

If you find that you need to adjust delay times frequently, you could set up a Function key to give you instant access to the delay time Parameter, enabling you to tweak its value quickly and easily. This feature is great for maximizing productivity in the studio, or fixing something fast in a live performance situation.

Suppose you're using a stereo chorus and that you want to assign Function key [1] to the chorus speed Parameter. The procedure is as follows:

- Using the Parameter [NEXT] / [PREV] keys, scroll to CHORUS SPEED.
- Press and hold Function key [1] for about two seconds. After a short pause, The display reads:

```
Select Parameter's
location on Program
screen
  ↓      ↓      ↓
```

- Select the Program screen location where you want the Parameter to appear by pressing Function key [1], [2], or [3].

After you've selected a location in the Program screen for the Parameter, the GSP-2101 Artist returns to the place in the Parameter menu where you left off.

If you decide you want to change the Function key assignment for that Parameter, repeat the process, and select a different location. If you want to leave a Parameter with no Function key assignment, press its assigned Function key again, and the Function key will be disconnected from the Parameter. After you've made your Function key assignments, you'll need to store the Program in order to retain the changes. See pg. 17 for information on Storing Programs.

The special characters used to indicate Function key assignments are as follows:



- Indicates that Access key [1] has been assigned to the Parameter shown in the display.
- Indicates that Access key [2] has been assigned to the Parameter shown in the display.
- Indicates that Access key [3] has been assigned to the Parameter shown in the display.

COMPARING PROGRAMS

The [COMPARE] button lets you compare a modified Program to the original program without losing the modifications you have made. This feature makes the difference between Programs clear, and provides an easy reference point for creating new Programs.

To compare a modified Program to the original:

- Press the [COMPARE] button. The GSP-2101 Artist will temporarily switch to the original Program settings, and the display will read:

```
***          ***
***  COMPARING  ***
***          ***
```

Now you can hear what the original Program sounds like. Press the [COMPARE] button again to switch back to the edited version.

The GSP-2101 Artist will not respond to any buttons or commands while in Compare mode.

NAMING PROGRAMS

The GSP-2101 Artist lets you give your Programs and Algorithms custom names (up to 20 characters in length). Use the Data wheel and the Function keys to make naming quick and easy. Function key [1] changes the character from upper to lower case and vice versa. Function key [2] inserts a space into the Program name, and Function key [3] jumps to the numbers in the character set.

To custom name a Program or Algorithm, do the following:

- Press the [NAME] button once. The display looks something like this:



The numbers preceding each option indicates the Function key that will perform the function shown.

- Using the Data wheel, scroll to the character you want to use, or press one of the Function keys. When you have selected the character you want, press the Parameter [NEXT] button. Note that the cursor moves to the next character. Repeat this procedure until the display shows what you want.

Unique to the GSP-2101 Artist are several special naming functions. The [<], and [>] buttons in the FX Library group let you bump an entire name, or section of a name, left or right in one-space increments. Whether you move left or right, all characters to the right of the cursor will move.

The Program [UP] button copies a character into memory. This lets you place a copy of that character (using the Program [DOWN] key) anywhere in the name.

NOTE: if you exit the name mode before storing, an asterisk appears in the upper right corner of the display. This means that you must store the changes you have made in order for your custom Program name to be retained in memory.

STORING CHANGES

For modified Programs to be available for later recall, you must store them in memory. To store a Program, do the following:

- After you have changed the Program, press the [STORE] button once. The display looks something like this:

```
      Save
Dry Saturated Tube
      To: 1
Dry Saturated Tube
```

This screen lets you choose where you want to store the new Program.

- Using the Program buttons or the Data wheel, scroll to the Program number you want to store the new Program to.
- To store the Program, press the [STORE] button again. The display briefly reads:

```
*** Storing ***
```

after storing you will automatically be returned to the current Program. To abort the [STORE] command, press [COMPARE].

ANALOG EFFECTS

Every Program has a set of analog effects whose signal routing order is always fixed. These analog effects include Compression, Distortion, and a 7-band Graphic Equalizer.

Compression: Every Program in the GSP-2101 Artist has a dynamic range compression circuit specially designed for use with guitars. Compression does exactly what its name implies; it compresses the dynamic range of a signal. It does this by turning signals down as they become louder. After it makes the adjustment to the level, it boosts the overall signal back up. This can be used to increase sustain, and tighten up guitar signal, and is particularly useful on clean sounds. Parameters of the GSP-2101 Artist compressor are as follows:

Effect On / Off: Turns the Module on or off. When Modules are turned off, their Parameters are not displayed. To see the Parameters, you must turn the Module on.

Compression Ratio: Controls the amount of gain reduction for a given input signal level. This means that if RATIO is set to 2:1, every 2 dB increase in input level results in a 1 dB increase in compressor output. Likewise, if RATIO is set to 5:1, every 5 dB increase in input level will result in a 1 dB output level increase. The higher the RATIO setting, the more compressed the output signal becomes. Ranges from 1.5:1 to infinity:1.

Threshold: Sets the minimum input level at which the compressor will engage. As THRESHOLD is lowered, the compressor engages at lower input levels, causing the apparent output level to decrease. Ranges in 5 dB steps from -30dB to -45 dB.

Output Level: Adjusts the overall output level of the compressor. Ranges in 6 dB steps from -6 dB to +6 dB.

Distortions: The distortion section of the GSP-2101 Artist is capable of producing six distinctly different types of distortion: three are tube-driven (using 12AX7's), and three are solid state. Any one of these distortions is available in every 2101 Program.

Tube Distortions: We've provided you with two completely separate gain controls in the tube section.

The first gain control adjusts how hard the guitar signal hits the first 12AX7 tube. This control is very useful in compensating for different pickup strengths from your guitar. If one of your guitars provides a very strong signal, you will hear more distortion than guitars with weaker pickups. Use the first gain control to help match the distortion sound between the two guitars.

The second gain control adjusts how much gain is applied to the signal feeding the second 12-AX7 tube (the signal being the result of the first 12AX7 tube). This is where distortion really starts to build. Thousands of tonal possibilities are available by using different combinations of Gain1 and Gain2. Low Gain1 and High Gain2 settings produce more dynamic type distortions while, the opposite provide more tones with more natural edge. Using high settings for Gain1 and Gain2, offer more than enough distortion for most applications.

The 2101 gives you three types of tube circuitry to choose from. Saturated tube offers tight, all out gain possibilities. Distorted tube has less gain overall, and is a little looser in the bottom end. It also has a little darker natural tone overall.

While turning the distortion OFF gives you a clean sound, many guitarists prefer the sound of the tube when it is not overdriven. We call this the Clean Tube setting. It uses the first 12AX7 tube and has one gain control. This clean setting can still be used for very subtle distortion when Gain1 is set very high.

Solid State Distortions: The GSP-2101 Artist has three solid-state distortions. These three distortions are: **OVERDRIVE** - A gentle overdrive with extra punch for bluesier tones. **HEAVY SUSTAIN** - Smooth, warm distortion sound with a lot of sustain. Great for really smooth lead tones. **GRUNGE** - This has tons of gain with loads of bottom end, while still remaining tight and highly focused.

Distortion Parameters are as follows:

Effect On / Off: Turns the Module on or off. When Modules are turned off, their Parameters are not displayed. To see the Parameters, you must turn the Module on.

Distortion Type: Selects the type of distortion to be used in the Program. They are: **SATURATED TUBE**, **DISTORTED TUBE**, **CLEAN TUBE**, **HEAVY SUSTAIN**, and **GRUNGE**

Distortion Gain(#): Controls the gain stage(s) of the distortion. Solid state distortions have one gain stage, and tube distortions (except **CLEAN TUBE**) have two. In tube distortions, **GAIN1** and **GAIN2** act independently to produce different tonal characteristics at different setting combinations.

Analog 7-band GEQ: Included in every 2101 Program, is a seven-band analog graphic equalizer with ± 12 dB cut or boost in 2 dB steps. Frequency centers are: 80, 160, 320, 640, 1.28k, 2.56k, and 5.12k Hz. Use the [NEXT] and [PREV] keys to select the frequency you want to modify. Use the Data wheel to boost or cut the selected frequency.

DIGITAL NOISE GATE AND WET/DRY MIXER

There are two digital effect modules present in every GSP-2101 Artist Program: The digital noise gate and the wet/dry mixer. The digital noise gate uses DigiTech's Silencer™ technology, and is used for eliminating excess noise or creating special effects. This module appears in the FX Library when creating your own Algorithms. There may be some unique applications where you want to place a noise gate somewhere else in the effect chain. For more information on noise gate Parameters, see pg. 36.

The wet/dry mixer control is used to quickly change the overall effects level of a Program. If a Program has too much effect for your taste, press the [MIX] button, and the 2101 will jump to the wet/dry Parameter screen. Use the Data Wheel to adjust this relationship. Remember to store the Program after you change it (see pg. 17).

DIGITAL EFFECTS

All digital Modules can be placed anywhere in a signal path, and routed any way you choose. This flexibility puts S-DISC processing in a class of its own.

[EQ] FX Library

Module Name	Module Abbrev.	Description
<i>6Bnd GEQ</i>	<i>GEQ6</i>	<i>Full bandwidth 6-band graphic equalizer</i>
<i>10Bnd GEQ</i>	<i>GEQ10</i>	<i>Full bandwidth 10-band graphic equalizer</i>
<i>15 Band GEQ</i>	<i>GEQ15</i>	<i>Full bandwidth 15-band graphic equalizer</i>
<i>Low Pass Filter</i>	<i>LPF</i>	<i>Double-pole low-pass filter</i>
<i>High Pass Filter</i>	<i>HPF</i>	<i>Double-pole high-pass filter</i>
<i>1Bnd ParamtrcEQ</i>	<i>PEQ1</i>	<i>1-band parametric equalizer</i>
<i>3Bnd ParamtrcEQ</i>	<i>PEQ3</i>	<i>3-band parametric equalizer</i>
<i>5Bnd ParamtrcEQ</i>	<i>PEQ5</i>	<i>5-band parametric equalizer with shelving high and low</i>
<i>Band Pass Filter</i>	<i>BPF</i>	<i>Double-pole bandpass filter</i>
<i>Notch Filter</i>	<i>Notch</i>	<i>Double-pole notching (cut only) filter</i>
<i>Cabinet Emulator</i>	<i>Cab</i>	<i>Guitar Cabinet/Speaker Emulation</i>

The equalizer Modules provided in the GSP-2101 Artist offer superb noise performance and allow accurate tonal shaping of many different types of sound sources. There are three different graphic EQs: the high-pass, low-pass, bandpass, and notch filters. All allow precise band limiting of source material. Parametric equalizers are represented in 1-band, 3-band, and 5-band Modules, all with adjustable Qs (see discussion of Q on next page). The 5-band parametric has shelving-type, high and low-frequency controls, each with selectable frequencies.

A Programmable cabinet emulator can be used in place of the analog cabinet emulation provided at the XLR outputs. This lets you decide Program by Program whether or not to use cabinet emulation.

Adjustable Q equalizers offer the ability to control the bandwidth of the boost/cut ranges. High Q settings ($Q=8$) yield extremely narrow bandwidths, where boost and cut have minimal effect on frequencies adjacent to the center frequency. Fig. 3-4 shows how low Q settings affect a wider number of frequencies when the selected band is boost or cut.

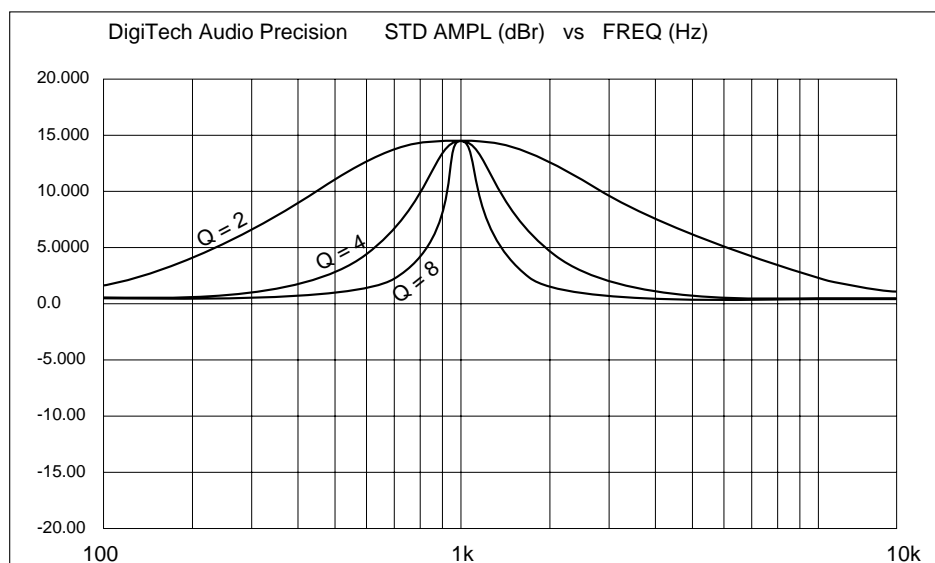


Fig 3-4

With a Q setting of 2, you can see that a large number of frequencies are affected by boosting the center frequency. Look at the middle and lower curves in the diagram. The curves with Q setting of 4 and 8 have a much narrower bandwidth.

The cabinet emulator's parameters are as follows:

Effect On / Off: Turns the Module on or off. When the cabinet emulation Module is turned off, the sound continues to pass through the Module.

Type: There are 10 cabinet types that can be selected. They range from 1-Warm to 10-MaxBndwidth. The maximum bandwidth setting is the same as having the cabinet emulator module bypassed.

[Reverb] FX Library

Module Name	Module Abbv.	Description
<i>Multi-FX Reverb</i>	<i>MVerb</i>	<i>For use in multi-effects Algorithms</i>
<i>BigVerb</i>	<i>Big</i>	<i>High-quality reverb</i>
<i>GigaVerb</i>	<i>Gig</i>	<i>Professional studio reverb</i>
<i>Gated Reverb</i>	<i>GtRvb</i>	<i>Mono in, stereo out gated reverb</i>
<i>Stereo Big Reverb</i>	<i>SBig</i>	<i>True stereo high-quality reverb</i>
<i>Stereo Gigaverb</i>	<i>SGig</i>	<i>True stereo professional studio reverb</i>
<i>Stereo Gated Reverb</i>	<i>SGtRv</i>	<i>Stereo in /out gated reverb</i>

GigaVerb has 20 Parameters, that give exceptional soundfield and tonal shaping control over reverberation. It is best suited for simulating natural room environments that have no acoustic treatment, like churches and assembly halls. A one input/four output GigaVerb Module, is capable of producing reverberation of virtually any size, shape, depth, timbre or soundfield location.

Bigverb is a slightly trimmed version of the GigaVerb, offering much of the same flexibility and controls as GigaVerb, but using less memory. Bigverb lets you produce a high-quality reverb, while including one or two other small Modules in the Algorithm.

Like Bigverb, MFX Reverb is a slimmer and trimmer version of GigaVerb, but MFX Reverb is specifically designed to fit efficiently into Algorithms, using multiple effects Modules.

Also available, are true stereo reverbs: Stereo GigaVerb and Stereo Bigverb. These Modules allow channel inputs to remain totally discrete, thereby retaining the imaging of stereo input sources. These reverbs also offer stereo mix controls that allow mixing of left- and right-channel early reflections and reverberations. These controls can be used to blur stereo imaging of input sources, creating a subtle stereo ambience rather than fully discrete reverberation channels.

Before covering all the reverb Parameters and their definitions in detail, let's discuss the benefits and theory behind reverberation.

Reverberation, or room ambience, occurs when acoustic energy is reflected off room surfaces, materials, and objects. Using reverberation with your guitar gives the listener a sense that the material is being performed in an environment where you are not actually present.

The GSP-2101 Artist uses early reflections in several Modules to get a better emulation of the natural sound of a room. Early reflections are short clusters of direct reflections from the room's closest walls. In an average size room, these direct reflections usually occur within the first 30 to 100 milliseconds, depending on the size of the room and the placement of the sound source within the room. Adding these early reflections to the reverberation increases the perceived reverberation time and the apparent size of the reverberant space. Adding more than small amounts tends to make the reverb sound unnatural.

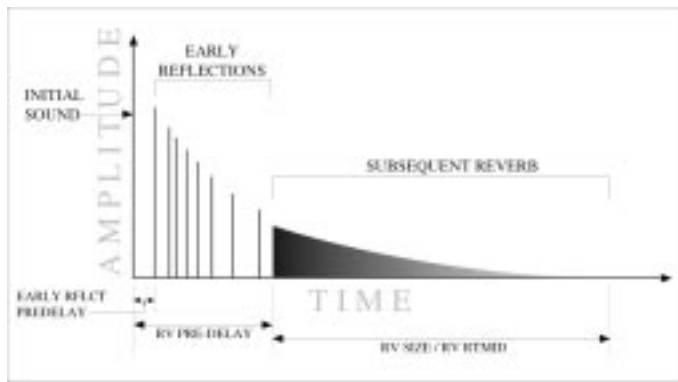


Fig. 3-5

The GigaVerb's ER SPREAD, ER SHAPE, and RV ROOM SIZE controls let you modify the build/decay of the early portion of the reverberation envelope and the relative reverberation time of the midrange reverb frequencies.

The ER SHAPE Parameter controls the shape of the early reflection envelope, and ER SPREAD sets the time over which this early reflection shape is achieved. A chart showing all 16 early reflection shapes can be found on Pg. 24.

The RV ROOM SIZE control is the master control for the apparent room size. The RV RTMID and RV RTBASS Parameters vary in relation to the setting of the RV ROOM SIZE. Meaning, that as RV ROOM SIZE is modified, the RV RTMID and RV RTBASS Parameters change to correspond with the selected room size. These values are calculated automatically, and the relative settings of RV RTMID and RV RTBASS remain the same. On the other hand, the RV ROOM SIZE Parameter does not vary when RV RTMID or RV RTBASS are modified.

These controls, in conjunction with the RV X OVER FREQUENCY, RV DIFFUSION, RV HI-FREQ DECAY, RV HI-FREQ ROLLOFF, RV MID LEVEL, and RVBASS LEVEL controls, give your simulated environment its reflective characteristics, and can be used to simulate the presence of any large-area reflective surface in a reverberant space, such as wood, carpet, glass, metal, etc.

Adding more sonic flexibility to the GSP-2101 Artist's GigaVerb is a 1-band parametric EQ with adjustable Q control (more on Q in the Equalizer section) and ± 15 dB of boost/cut. This is included as part of the GigaVerb Module, giving more tonal control over reverberation than any other processor.

Reverb Parameters and their functions are as follows:

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed and, signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

ER Pre-delay Time: Controls the length of time before the early reflections are heard. Ranges in milliseconds from 0 to 100.

ER Spread: Controls the length of time the early reflections occur. Low settings yield dense, smooth clusters of early reflections, while higher settings spread the same number of reflections out over a longer period of time. Ranges from 20 to 600 milliseconds.

ER Shape: Controls the shape of the early reflection envelope. There are 16 different early reflection envelope shapes. See fig. 3-6. The numbers across the top of each envelope shape graphic represents the level (relative to unity gain) of the signal at each point in the envelope.

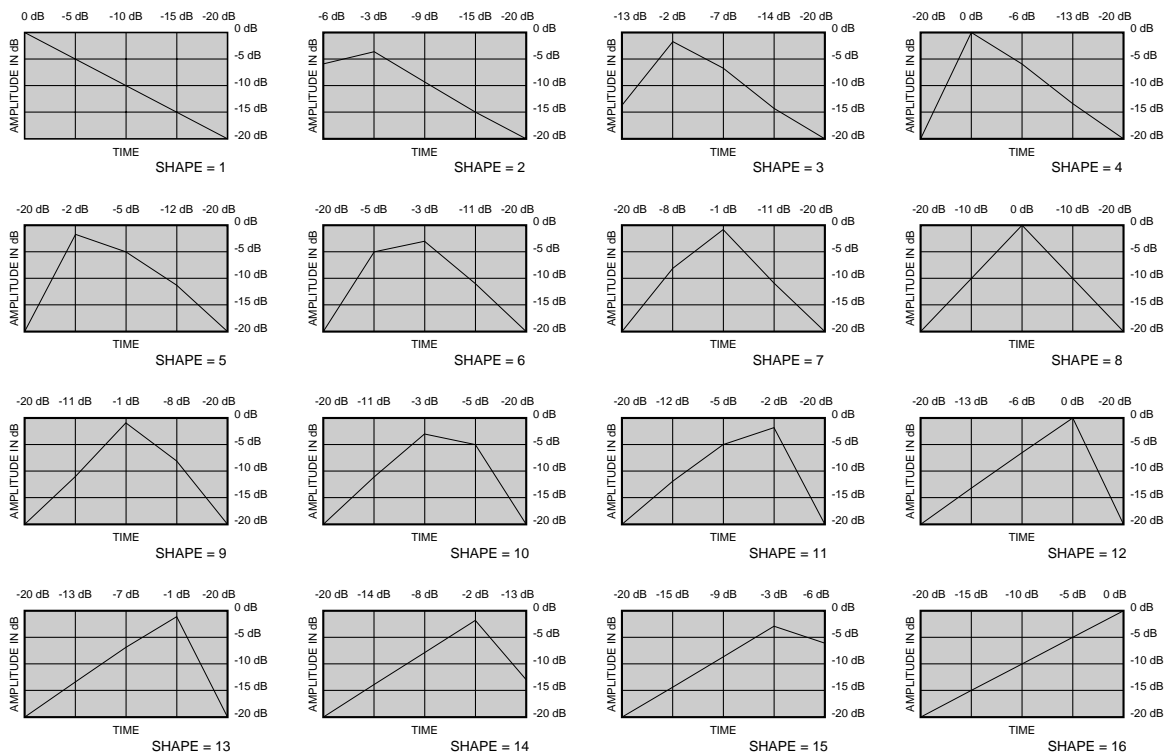


Fig 3-6

ER Stereo Blend: Appears only in the Stereo GigaVerb Module, and controls the amount of early reflections from the left side of the stereo image to be mixed into the right channel, and vice versa. When set at 0, the stereo image is completely preserved, with no mixing of early reflections from opposite channels. As this Parameter is increased, the stereo image becomes less and until, at a setting of 100, the early reflections from the left and right can be heard in both channels.

ER Diffusion: Controls the smoothness of the early reflections. Ranges from 1 to 10.

ER Level: Master level control for early reflections. Ranges from 0 - 100.

RV Predelay: Controls the amount of time before the first room reverberations are heard. In an actual acoustic space, the amount of reverberation predelay depends largely on the shape and size of the room, and the placement of both listener and sound source within the room. Long RV PREDELAY settings place the reverberation behind the program material (in time, not stereo soundfield) rather than in sync with it. Ranges in milliseconds from 0 to 100.

RV Spread: Controls the dispersal and density of reverberations through the course of the early portions of RV RTMID and RV RTBASS. Varies in 20 ms increments from 20-200 ms.

RV X Over Frequency: Sets the frequency at which the transition from RV RTBASS to RV RTMID occurs. We recommend that this control be set at least two octaves higher than the frequency you want to boost. For instance, if you want to boost a signal at 200 Hz, set the RV XOVER FREQ control to 800 Hz (an octave above 200 Hz is 400 Hz, two octaves above = 800 Hz).

RV Diffusion: RV DIFFUSION controls the smoothness of the reverberation. In a real room, reverberation is naturally diffused by the air. However, diffusion can also be affected by temperature, humidity, and the presence of absorptive or reflective materials in the reverberant space. Ranges from 1 to 10.

RV Hi-Freq Decay: Controls the decay length (damping) of the high frequency reverberations. Variable from 25Hz to 20 kHz.

RV Hi-Frq Rolloff: This is a low-pass filter that sets the rolloff frequency of the reverberations and early reflections. This is a band-limiting control, and the frequencies above the setting of this Parameter will be rolled off rapidly. Variable from 25Hz to 20 kHz.

RV Room Size: Sets the apparent size of the reverberant space. As the setting of RV ROOM SIZE is increased or decreased, the settings of both RV RTMID and RV RTBASS change to correspond with the new room size setting (the settings of RV RTMID and RV RTBASS retain the same relative settings when RV SIZE is modified). Changing the setting of either RV RTMID or RV RTBASS does not affect the setting of RV ROOM SIZE, however. Ranges from 1 to 10.

RV RTMid: Controls the length (RT60) of the midrange reverb frequencies after the signal has stopped. Remember that after the reverberations have decayed 60 dB in the presence of continuous program material, they are no longer audible to the listener. Ranges from .01 to 20 seconds.

RV RTBass: Controls the RT60 of the low frequency reverberations after the signal has stopped. Ranges from .01 to 20 seconds.

RV RT60: Controls the length of the reverberation after the signal has stopped. Ranges from .01 to 20 seconds.

PEQ Frequency: Sets the reverb equalization frequency. Varies from 25 Hz to 20 kHz.

PEQ Q (Bandwidth): Adjusts the narrowness of the equalization filter. Variable from .25 to 16.00. For more about Q, see the section on equalizer Modules, pg. 20.

PEQ Gain: Controls the amount of boost or cut at the frequency specified by the setting of PEQ FREQUENCY. Ranges from -15 dB to +15 dB.

RV Mid Level: Sets the overall level of the midrange reverberations. Varies from 0 to 100.

RV Bass Level: Sets the overall level of the low-frequency reverberations. Varies from 0 to 100.

RV Stereo Blend: Appearing only in stereo reverb Modules, RV STEREO BLEND controls the amount of reverberation reflections from the left side of the stereo image to be mixed into the right channel, and vice versa. When set at 0, the stereo image of the reverberation is completely preserved, with no mixing of reverberations from opposite channels. As this Parameter is increased, the stereo image becomes less apparent, until at a setting of 100, the reverberations from both the left and right can be heard in either channel.

RV Level: Controls the overall level of the reverberations. This control also acts as the master level for stereo setups. Varies from 0 to 100.

Gated Reverbs - A true gated reverb is simply a reverb followed by a gate. In the GSP-2101 Artist, this combination is emulated in a single Module. Gates usually include adjustable thresholds to set the point at which the reverberations will be gated (cut off). In fig. 3-7, you can see that reverberations occurring at a level below the gate threshold cutoff point are muted. This causes the reverb to decay for a specific amount of time (determined by the gate time), then it is cut off abruptly.

Gated reverbs are most commonly used on percussion, but there are other ways to employ the unique sound they produce. For instance, using a BUILD envelope shape, a reverse reverb effect can be accomplished. Rather than decaying out to be cut off by the gate, a reverse gate builds for a specific amount of time, and is cut off by the gate. Reverse envelopes are similar in sound to playing a record backwards. Fig. 3-8 shows how it works.

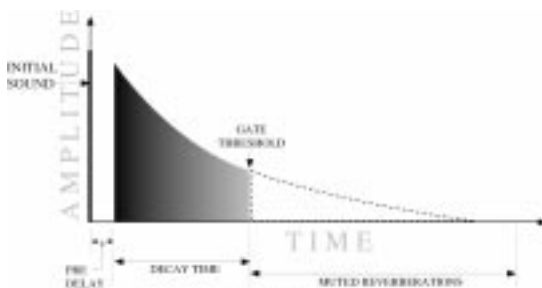


Fig 3-7



Fig 3-8

The accent point shown in the diagram allows placement of the actual sound, either before or after the gate has cut off the reverberation.

The GSP-2101 Artist offers three different envelope shapes in the gated reverb Modules: RAMP DOWN, FLAT, and RAMP UP. RAMP DOWN is a standard gated reverb envelope, with a linear decay to the cutoff point. In most applications, the RAMP DOWN envelope doesn't need an accent point, although it can produce some interesting unnatural sounds. In instances where an accent point is not needed, simply turn down the left and right REVERB ACCENT LVL parameters.

Using a FLAT envelope shape, the reverberation neither decays nor builds, but remains at a constant level for a specified amount of time (determined by the setting of DECAY TIME). This shape is particularly useful for short, percussive sounds.

RAMP UP allows creation of dramatic reverse gate reverb effects, with placement of the accent point permitted within 50 milliseconds before or after the end of DECAY TIME. Gated reverbs can be found in the <REVERB> library, and their parameters are as follows:

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Pre-Delay Time: Sets the amount of time before the reverberations are heard. Adjustable from 0 to 100 milliseconds.

Decay Time: Controls the amount of time before the gate cuts off the reverberations. Variable from 50 to 1000 milliseconds.

Envelope Shape: Sets the shape of the reverberation envelope (DECAY, FLAT, or BUILD).

Rvrb StereoBlend: Appears in stereo Modules only. Controls the amount of reverberation from the left side of the stereo sound field that is heard in the right side (and vice-versa). Ranges from 0 to 100.

Diffusion: Controls the smoothness of the reverberations. Variable from 1 to 10.

LPF Frequency: Sets the frequency below which reverberations will be heard. Adjustable from 25Hz to 20kHz.

Accent Dly: Allows placement (in time) of the actual sound, between 50 milliseconds before or 50 milliseconds after the reverb has been gated.

Accent Level Left: Controls the level of the accent in the left channel. Variable from 0 to 100.

Accent Level Right: Controls the level of the accent in the right channel. Variable from 0 to 100.

Reverb Level Left: Sets the overall output level of the reverberations in the left channel. Variable from 0 to 100.

Reverb Level Right: Sets the overall output level of the reverberations in the right channel. Variable from 0 to 100.

[Dly/Smp] FX Library

Module Name	Module Abbrev.	Description
<i>Mono Delay x.x Sec</i>	<i>Dly</i>	<i>Mono in/out 1-tap digital delay</i>
<i>Stereo Delay x.x Sec</i>	<i>SDly</i>	<i>Stereo input/output 1-tap digital delay</i>
<i>2 Tap Delay x.x Sec</i>	<i>2TDly</i>	<i>Mono input 2-tap digital delay</i>
<i>4 Tap Delay x.x Sec</i>	<i>4TDly</i>	<i>Mono input 4-tap digital delay</i>
<i>Modulated Delay</i>	<i>MDly</i>	<i>Mono input/output digitally pitch-modulated delay</i>
<i>Stereo Modulated Delay</i>	<i>SMDly</i>	<i>Stereo input/output digitally pitch-modulated delay</i>
<i>Sampler x.x Seconds</i>	<i>Smpl</i>	<i>Mono sampler Module</i>
<i>St. Sampler x.x Seconds</i>	<i>SSmpl</i>	<i>Stereo sampler Module</i>

Delays - All the non-modulated delays in this group have the same basic Parameters for controlling the behavior of the Module. General Parameters include: DELAY ON/OFF, INPUT LEVEL, DELAY TIME, FEEDBACK and REPEAT HOLD. The only differences between them are in the number of taps available. The multi-tap delays also include independent delay time controls for each tap, with a feedback control on the last tap in the series.

The Modulated Delays are a DigiTech exclusive that allow you to modulate the pitch of the delay repeats. They are similar in most respects to the rest of the delay family, but include an LFO modulation section like a chorus Module. The overall effect is that modulation is not heard in the signal until the delays begin repeating.

Each delay Module has a number that immediately follows the name. These numbers represent the amount of delay time in seconds available to each Module. For example, if the Module name shown in the display reads 4TDLY 0.5, you know that the Module is a 4-tap delay with a maximum of .5 seconds (or 500 milliseconds) of delay time available.

The available delay time ranges are 0.5 (500 milliseconds), 1.0 (1000 milliseconds), 2.0 (2000 milliseconds), and 5.0 (5000 milliseconds). Each Delay type appears once in each delay time range (with the exception of SDLY, which does not appear in the 5.0 category). Delay Parameters are as follows:

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Delay Time (Tap #): Controls the delay time of the tap indicated in the display. If no tap number is shown, this Parameter controls the overall delay time of the Module. DELAY TIMES are editable in two different ranges to give the most flexibility and accuracy in the least amount of scrolling time. If you turn the Data wheel when the cursor is in the hundred milliseconds position (one place to the right of the decimal), you will increase or decrease the delay time in increments of 100 milliseconds. Pressing the Parameter's Function key moves the cursor to the third position to the right of the decimal point, or milliseconds position. Each click of the Data wheel from this position increases the delay time in single millisecond steps. Using this method of ranging allows you to scroll rapidly to large-value delay times without having to wait for the unit to scroll to it in single millisecond steps. Variable from 0.000 sec. to 5.000 sec.

Feedback (Tap #): Controls the amount of feedback, or number of repeats, in the delay line. In multi-tap delays, this Parameter controls the feedback amount of the last tap in the series. Variable from 0 (Off) to 100%. See fig. 3-9.

LFO Speed: Controls the speed of the modulation sweep. Variable from .06 Hz to 16.00 Hz. This Parameter appears only in Modulated Delays.

LFO Depth: Sets the sweep depth (intensity) of the delay modulation. Variable from 0.00 to 40.00 milliseconds. This Parameter appears only in Modulated Delays.

LFO Waveform Type: Controls the LFO (low-frequency oscillator) waveform pattern of the delay modulation effect. SINE produces a smooth sine wave-type modulation with even transitions in and out of turnaround points. TRIANGLE is a linear modulation effect, and ramps the pitch of the wave up and down with no slowing at turnaround points. LOGARITHMIC and EXPONENTIAL waveforms are more dramatic in their effect on the signal, producing a type of bouncy oscillation. This Parameter appears only in Modulated Delays.

Level: Controls the level of the delay Module. Variable from 1 to 100.

Repeat Hold: This is the infinite repeat Parameter. When turned on, the delay taps will repeat indefinitely until the REPEAT HOLD Parameter is disengaged. See fig. 3-9.

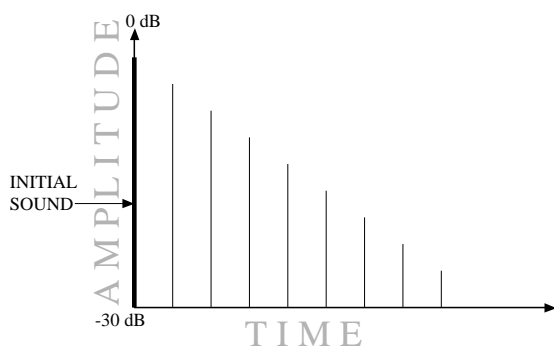


Fig 3-9

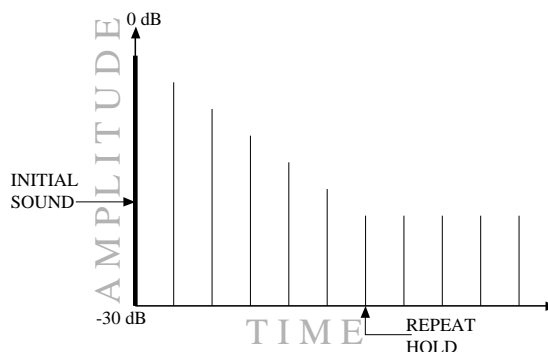


Fig 3-10

Samplers - The GSP 2101 Artist offers several sampler Modules in different time ranges and input/output routings to maximize flexibility and usefulness. All Modules offer 48 kHz sample rates for professional studio-grade samples. Sample recording and playback can be triggered from the optional DigiTech Control One, via MIDI (through continuous controller linkages), or by audio sources. Sampler Module Parameters are as follows:

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Manual Trigger: This Parameter allows manual playback triggering of the sample in memory. To trigger the sample, simply press the Function key located under this parameter on this screen.

Record Mode: Sets the mode of operation for the sampler Module. When set to RECORD, the sampler will record a new sample into memory when triggered. When set to PLYBCK, the sample in memory will be played back when triggered. After you record a sample, this Parameter is reset to PLYBCK.

Sample Start Point: Determines the point at which the recorded sample starts playback. This Parameter can be used to eliminate unwanted sounds at the beginning of the sample, such as empty space (silence), fret noise, amplifier buzz, wrong notes, etc. Each time this Parameter is changed, the sample is retriggered. This allows easy editing of start sample points (try turning the Data wheel!). This control can be set at any point in the sample below the setting of SAMPLE END. Like the DELAY TIME Parameter of delay Modules, SAMPLE START POINT is controlled in two ranges. Refer to pg. 27 for explanation of the ranges.

Sample Stop Point: Determines the point at which the sample stops playing. This Parameter can be used to eliminate unwanted sounds from the end of the sample. This Parameter can be set at any point in the sample above the setting of SAMPLE START POINT. Like the DELAY TIME Parameter of delay Modules, this Parameter is controlled in two ranges. Refer to pg. 27 for explanation of the ranges.

Direct Level: Sets the level of the dry (non-effected) sound. Variable from 1 to 100.

Playback Level: Determines the overall level of the sample when played back. Variable from 0 to 100.

Audio Trigger Mode: Determines whether audio triggering or manual triggering is active. There is one audio triggering option and one manual triggering option. They behave as follows: when set to MAN TR, samples and sampling are triggered using manual methods (footswitch, front panel, etc.). When set to AUD TR, the sample is retriggered any time a signal over the level setting of INPUT TRIG LEVEL is detected.

Input Trig Level: Sets the level at which the audio signal will trigger the sample. Variable from 0 to 100.

Playback Looping: The PLAYBACK LOOPING option has two settings: MANUAL and AUTO. When it is set to MANUAL, the sample must be triggered either manually or using an audio trigger. When the sample is finished playing, it resets and waits for another manual trigger. When this Parameter is set to AUTO, the sample plays continuously, until PLAYBACK LOOPING is switched back to MANUAL.

[Cho/Fla] FX Library

Module Name	Module Abbrev.	Description
<i>Mono Chorus</i>	<i>Cho</i>	<i>1-in / 1-out chorus</i>
<i>Dual Chorus</i>	<i>DCho</i>	<i>1-input / 2-output dual chorus</i>
<i>4 Phase Chorus</i>	<i>4PCho</i>	<i>1-input/4-output chorus w/ 4 independent delay times</i>
<i>Stereo Chorus</i>	<i>SCho</i>	<i>Stereo input/output chorus</i>
<i>Stereo Dual Chorus</i>	<i>SDCho</i>	<i>Stereo input/quad output dual chorus</i>
<i>Mono Flanger</i>	<i>Fla</i>	<i>Mono flange</i>
<i>Dual Flanger</i>	<i>DFla</i>	<i>1-input / 2-output dual flange</i>
<i>4 Phase Flanger</i>	<i>4PFla</i>	<i>1-input/4-output flange w/independent phasing</i>
<i>Stereo Flanger</i>	<i>SFla</i>	<i>Stereo input/output flange</i>

Choruses - The GSP-2101 Artist offers a diverse selection of choruses, each unique in character and sound. The dual chorus and 4-phase chorus Modules offer exceptionally rich chorusing using multiple voices with different modulation characteristics. The dual chorus Module uses two chorus voices whose modulation is set 180 degrees out of phase, while the 4-phase chorus Module uses four voices modulated 90 degrees out of phase. Chorus Parameters are as follows:

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Chorus Level: Controls the overall level of the chorus. Variable from 0 to 100.

Delay Time: Sets the amount of delay present in the chorus effect. This is useful when trying to create larger stereo images. Setting one voice (left) up with 30ms of delay and another (right) up with 60ms causes the chorus to sound very wide. Varies from 0 to 60 milliseconds.

LFO Speed: Controls the speed of the chorus sweep. The higher this is set, the faster the chorus oscillates back and forth. This will also cause the chorus to modulate deeper (as it goes faster). Variable from 00.06 to 16.00 Hz.

LFO Depth: This Parameter sets the sweep depth (intensity) of the chorus. Variable from 0.00 to 40.00 milliseconds.

LFO Waveform Type: Controls the LFO (low-frequency oscillator) waveform pattern of the chorus effect. SINE produces a smooth sine wave-type chorus with even transitions in and out of the turnaround points. TRIANGLE is a linear chorus effect, and ramps the pitch of the wave up and down, with no slowing at turnaround points (your ear will perceive this almost as detuning instead of chorusing). LOGARITHMIC and EXPONENTIAL waveforms are more dramatic in their effect on the signal, producing a bouncy oscillation. See fig. 3-11.

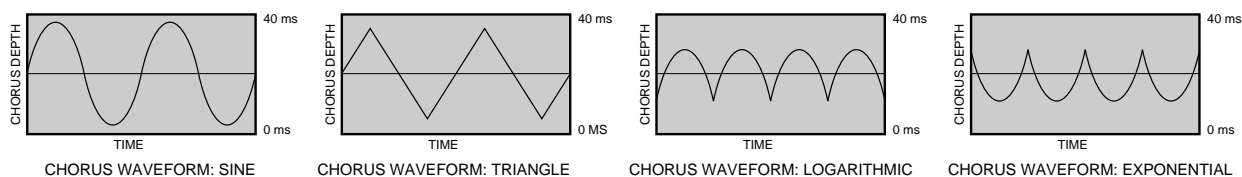


Fig 3-11

Flangers - The GSP-2101 Artist also offers a diverse selection of flangers, each unique in character and sound. Flangers are much like choruses except that the chorused signal is fed back into the input, causing the sound to curl or comb. Like the chorus, the dual flanger uses two flanger voices whose modulation is set 180 degrees out of phase, while the 4-phase flanger Module uses four voices modulated 90 degrees out of phase. Flanger Parameters are as follows:

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Flanger Level: Controls the overall level of the flanger. Variable from 0 to 100.

Delay Time: Sets the amount of delay present in the flange effect. Varies from 0.00 to 10.0 milliseconds.

Regeneration: Controls the amount of flanged sound fed back to the input of the Module. High regeneration settings produce dramatic and interesting unnatural effects like your guitar curling in a tube. Varies from -99% to +99%. This Parameter can also be turned off.

LFO Speed: Controls the speed of the flange sweep. The higher this is set, the faster the flanger oscillates back and forth. This will also cause the flanger to modulate deeper (as it goes faster). Variable from 0.06 to 16.00 Hz.

LFO Depth: This Parameter sets the sweep depth (intensity) of the flange. This Parameter sets the sweep depth (intensity) of the chorus. Intensity is also changed as the LFO Speed changes (faster = deeper). Variable from 0.00 to 40.00 milliseconds.

LFO Waveform Type: Controls the LFO (low-frequency oscillator) waveform pattern of the flange effect. SINE produces a smooth sine wave-type flange with even transitions in and out of the turnaround points. TRIANGLE is a linear chorus effect, and ramps the pitch of the wave up and down with no slowing at turnaround point. LOGTHM or EXPNTL waveforms usually sound best, but don't be afraid to experiment. See fig. 3-11

[Pitch] FX Library

Module Name	Module Abbrev.	Description
<i>Pitch Shifter</i>	<i>Pch</i>	<i>1-voice pitch shifter</i>
<i>Dual Pitch Shifter</i>	<i>DPch</i>	<i>Dual-voice pitch shifter</i>
<i>Stereo Pitch Shifter</i>	<i>SPch</i>	<i>Stereo 1-voice pitch shifter</i>
<i>Smooth Pitch Shifter</i>	<i>Pch2</i>	<i>Smooth Tracking 1-voice Pitch Shifter</i>
<i>Harmony</i>	<i>Harm</i>	<i>1-voice intelligent pitch shifting</i>
<i>Mono Detuner</i>	<i>Dtn</i>	<i>Mono single detuner</i>
<i>Dual Detuner</i>	<i>DDtn</i>	<i>Mono Dual Detuner</i>
<i>Stereo Detuner</i>	<i>SDtn</i>	<i>Stereo single detuner</i>
<i>Stero Dual Detuner</i>	<i>SDDtn</i>	<i>Stero dual detuner</i>
<i>4 Voice Detuner</i>	<i>4VDtn</i>	<i>Quad output 4-voice detuner</i>
<i>Arpeggiator</i>	<i>Arp</i>	<i>Mono single arpeggiator</i>
<i>Stereo Arpeggiator</i>	<i>SArp</i>	<i>Stereo arpeggiator</i>
<i>Whammy</i>	<i>Wham</i>	<i>Mono in /out pedal-controlled pitch shifter</i>
<i>Programmable Whammy</i>	<i>PWhm</i>	<i>Custom pedal-controlled pitch shifter</i>
<i>Smooth Whammy</i>	<i>Whm2</i>	<i>Fast tracking pedal-controlled pitch shifter</i>

The [PITCH] FX Library offers a diverse array of pitch shifter Modules, including multi-voice pitch shifting, intelligent pitch shifting, detuning, arpeggiation, and DigiTech's exclusive Whammy™.

Shifting a pitch involves taking a signal and moving it to a new pitch. This can be done in very small amounts which causes a note to sound detuned (like two guitar strings playing the same note but slightly out of tune). In larger amounts, it can help you create actual harmonies.

An arpeggiator is a pitch shifter with a delay and a feedback loop. Each time a note is fed back to the input of the pitch shifter, it is pitch shifted and sent to the delay, which in turn, sends part of the signal to the output, and the rest back into the pitch shifter to repeat the process. Experiment with high feedback settings and short delay times. Some of the sounds you can produce are reminiscent of early synthesizers.

The GSP-2101 Artist comes equipped with a Whammy™ Module that performs all the same radical pitch-bending functions as the famous DigiTech Whammy™ pedal, plus a special Programmable Whammy™ Module that allows you to individually program note intervals to your own specifications.

As a side note, several of these effects are in their second generation of development since the original release of the GSP-2101 (i.e. they have been improved). The smooth pitch shifter and smooth whammy both offer improved tracking capabilities, while the intelligent pitch shifter incorporates new pitch recognition technology.

Parameters are as follows:

Pitch Shifters

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Pitch Level: Controls the overall level of the pitch shift. Variable from 0 to 100.

Pre-delay Time: Sets the amount of time before the pitch shifted note is heard. When used with low values, PITCH PREDELAY can be used to widen mono images. Variable from 0 to 100 milliseconds.

Key (Harmony Only): Allows you to set the musical key for harmonies. If the song you are playing is in G Major, you would select G for the scale.

Scale (Harmony Only): Sets the scale type for the harmony you want to hear. Scale types include: Major, MInor, Harmonic Minor, Melodic Minor, Dorian, Mixolydian, Lydian, Major Pentatonic, Minor Pentatonic, and Blues.

Interval (Harmony Only): Sets the basic interval of the harmony. You can choose from one of several intervals (2nd, 3rd, 4th...Oct...etc). See Page 90 for Interval Chart.

Detune (Cents): Determines the amount of detuning applied to the shifted note. Variable in cents, from -99 to +99.

Pitch Shift (Tones): Sets the interval between the original note and the pitch shifted note. Variable in semitone steps from -24 to +24 (4 octaves).

Tracking (Tones): Controls the sound quality/tracking speed of the pitch shifted material. This control should be set according to the amount of pitch shifting being performed. That is, as the pitch shift interval increases, TRACKING should also be increased to optimize sound quality. Each value setting of this Parameter is optimized for specific ranges of pitch shifting. For instance, if the value displayed reads 6-10, it means that the setting of PITCH SHIFT should be 6 to 10 steps from the original note for best sound quality. Variable from 0-1 to 12-24.

Regeneration: Controls the amount of pitch shifted material that is fed back to the input of the pitch shifter. High regeneration settings produce interesting unnatural sounds. Varies from -99% to +99%. This Parameter can also be turned off.

Detuners

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Detuner Level Controls the overall level of the detuner Module. Varies from 0 to 100.

Detune (Cents): Controls the amount of detuning applied to the effected sound. Variable, in cents, from -100 to +100.

Voice # Predelay: Sets the amount of time before the indicated voice is heard. Ranges, in milliseconds, from 0 to 100.

Voice # Detune : Appears only in multi-voice detuner Modules. Controls the amount of detuning for the indicated voice. Variable, in cents, from -100 to +100.

Voice # Delay Time: Sets the amount of delay time before the indicated voice is heard. Variable, in milliseconds, from 0 to 100.

Arpeggiators

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Arpeggiator Level: Controls the overall level of the arpeggiator. Variable from 0 to 100.

Pitch Shift (Tones): Sets the interval between the original note and the shifted note. Variable in semitone steps from -24 to +24 (4 octaves).

Detune (Cents): Determines the amount of detuning applied to the shifted note. Variable, in cents, from -100 to +100.

Tracking (Tones): Controls the sound quality/tracking speed of the pitch shifted material. This control should be set according to the amount of pitch shifting being performed. That is, as the pitch shift interval increases, TRACKING should also be increased to optimize sound quality. Each value setting of this Parameter is optimized for specific ranges of pitch shifting. For instance, if the value displayed reads 6-10, it means that the setting of PITCH SHIFT should be 6 to 10 steps from the original note for best sound quality. Varies from, 0-1 to 12-24.

Delay Time: Controls the amount of time before the shifted note is heard. Ranges in seconds from 0 to 1.500.

Delay Feedback : Sets the amount of pitch shifted material that is fed back into the input of the arpeggiator. High settings of DELAY FEEDBACK produce interesting unnatural sounds. Ranges from 0% to 99%, plus OFF.

Whammy™

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, but signal will continue to pass through the module. To see the Parameters, you must turn the Module on.

Pedal Down Pitch: Sets the amount of pitch shifting when the pedal is down (the “down” position is when the toe of the pedal is down). Varies from -24 to +24 semitones. This Parameter appears only in the Programmable Whammy.

Pedal Up Pitch: Sets the amount of pitch shifting when the pedal is up (the “up” position is when the toe of the pedal is up). Varies from -24 to +24 semitones. This Parameter appears only in the Programmable Whammy.

Pedal Down Detune: Sets the amount of detuning when the pedal is down. Varies from -100 to +100 cents. This Parameter appears only in the Programmable Whammy.

Pedal Up Detune: Sets the amount of detuning when the pedal is up. Varies from -100 to +100 cents. This Parameter appears only in the Programmable Whammy.

Whammy Function: Selects the function of the Whammy Module. There are 16 functions available in regular Whammy Modules. They are as follows: ShallowDetune, Deep Detune, Up 1 Octave, Up 2 Octaves, Down 2nd, Down 1 Octave, Down 2 Octaves, Up 2nd-Up 3rd, Up m3rd-Up3rd, Up3rd-Up4th, Up4th-Up5th, Up5th-Up6th, Up5th-Up7th, Dn4th-Dn3rd, Dn5th-Dn4th, and Dn12-Up12. This Parameter does not appear in the Programmable Whammy.

Whammy Pedal Value: The WHAMMY PEDAL VALUE Parameter reflects the current setting of the continuous control device. This Parameter can be modified manually using the Data wheel, or by using a continuous control device (such as the DigiTech Control One) to perform the Whammy function. As the Parameter is modified, the pitch of the original note will change in intervals according to the setting of WHAMMY FUNCTION. Ranges from 0 to 100.

Tracking (Tones): Controls the sound quality/tracking speed of the pitch shifted material. This control should be set according to the amount of pitch shifting being performed. That is, as the pitch shift interval increases, TRACKING should also be increased to optimize sound quality. Each value setting of this Parameter is optimized for specific ranges of pitch shifting. For instance, if the value displayed reads 6-10, it means that the setting of PEDAL DOWN PITCH or PEDAL UP PITCH should be between 6 and 10 semitones from the original note for best sound quality. This Parameter does not appear in the Programmable Whammy. Ranges from 0-1 to 12-24.

Whammy Level: Controls the overall level of the Whammy effect. Varies from 0 to 100. This Parameter appears only in the Programmable Whammy.

Dry Level: Controls the level of the dry (unaffected) sound. Ranges from 0 to 100. This Parameter appears only in the Programmable Whammy.

[Gate] FX Library

Module Name	Module Abbrev.	Description
<i>S-DISC Silencer</i>	<i>Shh</i>	<i>Mono S-DISC Silencer™ Noise Reduction</i>
<i>St S-D Silencer</i>	<i>Shhh</i>	<i>Stereo S-DISC Silencer™ Noise Reduction</i>
<i>Noise Gate</i>	<i>NGt</i>	<i>Mono Silencer™ noise gate</i>
<i>Stereo Noise Gate</i>	<i>SNGt</i>	<i>Stereo Silencer™ noise gate</i>

The GSP-2101 Artist is equipped with DigiTech's Silencer™ technology. The Silencer™ Modules offer seamless, professional-quality noise reduction that can be incorporated into your custom Algorithms (the factory Algorithms are also equipped with the Silencer™ Noise Gate).

What is the Silencer™ technology? Well, Silencer™ Noise Gate and Noise Reduction Modules shut down signals in the digital domain. This means that it can actually write digital zeros to the Digital/Analog converters, ensuring the quietest noise reduction possible. The Noise Gate and Noise Reduction modules are essentially the same module, except that the Noise Gate Modules are flexible enough for use in any application. They include special controls that allow independent on-threshold and off-threshold settings, while the Noise Reduction Modules have fewer Parameters, and are easier to use. Noise Gates and Noise Reduction Modules can be found in the [MORE] library.

Silencer™ Noise Reduction

Silencer™ On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed but the signal continues to pass through the Module (i.e. bypass). To see the Parameters, you must turn the Module on.

SNR Threshold: Sets the level at which the Silencer™ will disengage. Ranges from -3 dB to -100 dB.

SNR Release Time: Controls how fast the Silencer™ activates after the signal has fallen below SNR THRESHOLD. Large numbers yield slow release times, while small numbers give a fast release. Varies from 0 to 2000 milliseconds (2 seconds).

Silencer™ Noise Gates

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed but the signal continues to pass through the Module (i.e. bypass). To see the Parameters, you must turn the Module on.

Threshold: Sets the level at which the gate will open. As THRESHOLD is modified, the off-threshold (HYSTERESIS) setting maintains the same relative distance (in dB) between them. This requires you to set only one Parameter to control both thresholds. See HYSTERESIS. Ranges from -3 dB to -100 dB.

Hysteresis: Sets the distance (in dB) between the on-threshold and the off-threshold. For example, if THRESHOLD is set at -40 dB and HYSTERESIS is set at 8 dB, the off-threshold would be 8 dB below the setting of THRESHOLD, or -48 dB. Ranges from 0 to 12 dB.

Hold Time: Controls the amount of time the signal must remain below the off-threshold before RELEASE TIME begins. This control should be set long enough to prevent false triggering during long decay times. Ranges from 0 to 500 ms.

Attack Time: Controls how fast the gate opens after detecting a signal above THRESHOLD. Large numbers yield slower attack times, while small numbers give a fast attack. Varies from 0 to 2000 milliseconds (2 seconds).

Release Time: Controls how fast the gate closes after the signal has fallen below HYS-TERESIS for the amount of time set by HOLD TIME. Large numbers yield slow release times, while small numbers give a fast release. Varies from 0 to 2000 milliseconds (2 seconds).

Attenuation: Sets the amount of attenuation (signal reduction) when the gate is closed. Varies from 100 dB (below the level of the nongated noise floor) to 0 dB (no attenuation).

Delay Time: Acts as a pre-trigger for Program material. The source signal is detected, but the gate is not opened until the time set by DELAY TIME has elapsed, after which, the gate is then opened. This Parameter allows source material with very fast attack time to be heard in its entirety, without the lag in gate response or attack transient loss that is common to inferior noise gates. Variable from 0 to 10 milliseconds.

[More] FX Library

Module Name	Module Name	Description
<i>Mono Tremolo</i>	<i>Trm</i>	<i>1-in / 1-out tremolo</i>
<i>Stereo Tremolo</i>	<i>STrm</i>	<i>Stereo input / output tremolo</i>
<i>Auto Panner</i>	<i>Pan</i>	<i>1-in / 1-out auto panner</i>
<i>Mono Phaser</i>	<i>Pha</i>	<i>Mono phaser</i>
<i>Dual Phaser</i>	<i>DPha</i>	<i>1-input / 2-output dual phaser</i>
<i>Stereo Phaser</i>	<i>SPha</i>	<i>Stereo input/output phaser</i>
<i>4 Voice Phaser</i>	<i>4PPha</i>	<i>1-input/4-output phaser w/4 independent delay times</i>
<i>4 Way Auto Panner</i>	<i>4Pan</i>	<i>1-in / 4-out auto panner</i>
<i>Phase Inverter</i>	<i>Inv</i>	<i>Inverts signal phase</i>
<i>Traditional Wah</i>	<i>TWah</i>	<i>Vintage wah effect</i>
<i>Smooth Wah</i>	<i>SWah</i>	<i>Smoother/faster responding</i>
<i>Automatic Wah</i>	<i>AWah</i>	<i>Automatic amplitude-based wah effect</i>
<i>Mono Ducker</i>	<i>Duc</i>	<i>Mono input / output automatic ducker</i>
<i>Stereo Ducker</i>	<i>SDuc</i>	<i>Stereo input / output automatic ducker</i>
<i>Tuning Reference</i>	<i>Tone</i>	<i>Sine wave generator with selectable reference frequency</i>

Tremolo was one of the first real “effects”, and appeared mostly on early guitar amplifiers. Because of this, tremolo is sometimes perceived as sounding classic or vintage. The GSP-2101 Artist however, breathes new life into this classic effect, providing totally silent volume modulation of sound sources. An auto panner is a modern relative of the tremolo. Instead of modulating the volume of the entire sound, the Auto panner modulates the sound from left to right, at a given rate.

Phasers are also very vintage sounding with their very unique sweeping effect. It is actually caused by taking a signal, copying it, then adding it back to original, while smoothly flipping it in and out of phase. Adding some feedback regeneration to the process makes the results even more intense.

The 2101 has three Wah Modules in its arsenal. The Smooth Wah is just a faster/smoothier version of the Traditional Wah. For best results, these Modules should be used with a Control One Foot Controller, or a MC² MIDI Expression Pedal. The Automatic Wah is sensitive to the dynamics of your playing...the louder you play the guitar, the more it Wahs your sound.

The [MORE] FX Library contains utility type Modules. One of the coolest is the Ducker which, when placed after an effect (like a Delay), lets you lower the level of an effect when you are playing loud. When you play soft, this effect becomes louder. This is very useful when you want to use lots of effect on your sound but you want it to dry up a little when you really start digging in.

Another utility module is the Phase Inverter, which simply flips the phase of the signal (great for eliminating acoustic guitar feedback). The last utility type module in the Fx (MORE) Library is the Tuning Reference tone generator. This can be very useful when you need to get the whole band in tune (should that be one of your goals). It can also be accessed anytime by simply pressing and holding the [TUNER] button.

Parameters are as follows:

Tremolos

Tremolo On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, but signal will continue to pass through the module. To see the Parameters, you must turn the Module on.

Tremolo Level: Controls the output level of the tremolo effect. Ranges from 0 to 100.

Tremolo Speed: Controls the tremolo speed (speed of modulation). Varies from 0.06 to 16.0 (Hz).

Tremolo Depth: Adjusts the intensity of the tremolo effect. Variable from 1 to 100.

Auto Panners

Auto Panner On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, but signal will continue to pass through the module. To see the Parameters, you must turn the Module on.

Panner Level: Controls the output level of the panning effect. Ranges from 0 to 100.

Panner Speed: Controls the panning speed (speed of modulation). Varies from 0.06 to 16.0 (Hz).

Panner Depth Adjusts the intensity of the panning effect. Variable from 1 to 100.

Phasers

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, and signal will not continue to pass through the module. To see the Parameters, you must turn the Module on.

Phaser Level: Controls the overall level of the phaser. Variable from 0 to 100.

Delay Time: Sets the amount of delay present in each voice of multi-voice phasing effects. Varies from 0 to 60 milliseconds.

Regeneration: Controls the amount of phased sound fed back to the input of the Module. High regeneration settings produce dramatic and interesting unnatural sounds. Varies from -99% to +99%. This Parameter can also be turned off.

LFO Speed: Controls the speed of the phase sweep. Variable from 0.06 to 16.00 Hz.

LFO Depth: This Parameter sets the sweep depth (intensity) of the phaser. Variable from 0.00 to 40.00 milliseconds.

LFO Waveform Type: Controls the LFO waveform pattern of the phasing effect. SINE produces a smooth sine wave-type phasing with even transitions in and out of the turnaround points. TRINGL is a linear phasing effect, and ramps the pitch of the wave up and down with no slowing at turnaround points. LOG and EXPN waveforms offer a more intense sound characteristic unique to the GSP-2101 Artist.

Wahs

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed, but signal will continue to pass through the module. To see the Parameters, you must turn the Module on.

Level: Controls the overall level of the wah effect. Varies from 0 to 100.

Sensitivity: Adjusts the sensitivity of the detection for the automatic wah. High SENSITIVITY settings cause the wah filter to open wider. Low settings limit the wah filter range. Varies from 0 to 100. This Parameter appears only in the automatic wah Module.

Pedal Position: The PEDAL POSITION Parameter reflects the current setting of the continuous control device used to control the wah effect. This Parameter can be modified manually using the Data wheel or by using a continuous control device (such as the optional DigiTech Control One) to perform the wah function. As the Parameter is modified, the tone of the original note will change, exactly like using a stand-alone wah pedal. Ranges from 0 to 100.

Duckers

Effect On / Off: Turns the Module on or off. When the Module is turned off, its Parameters are not displayed but, signal will continue to pass through the module. To see the Parameters, you must turn the Module on.

Control Threshold: Sets the minimum input level required to trigger the ducker (this Parameter can be thought of as the ducker sensitivity). Higher settings of CONTROL THRESHOLD require higher input levels to trigger the ducker. Lower settings make the ducking effect easier to trigger. Ranges in 1 dB step from -100 to 0 dB.

Hold Time: Controls the amount of time before the ducker disengages after the signal has stopped. Varies from 0.000 to 5.000 seconds.

Attenuation: Adjusts the amount of level attenuation applied to the ducked effects when the ducker is engaged (ducker is engaged when the input level exceeds the setting of CONTROL THRESHOLD). Adjustable from -100 dB to 0 dB.

Attack Rate: Sets the amount of time over which the ducker will reach full attenuation. Adjustable in milliseconds from 0.00 to 14.00 seconds.

Release Rate: Sets the amount of time over which the ducker will disengage. Adjustable in milliseconds from 0.00 to 14.00 seconds.

Phase Inverter

Phase Inverter Flips the signal phase 180 degrees. Settings are either IN PHASE or OUT OF PHASE.

Tuning Reference

Level: Controls the output level of the tuning reference tone. Variable from 0 to 100.

Reference: Selects the reference tone. This Parameter has settings for standard guitar tuning, standard guitar tuning harmonics (12th fret), E flat guitar tuning tones and 12th fret harmonics, 437-443 Hz tones, and a 1kHz reference tone. Note: This module is always available by pressing and holding the [TUNER] button.

[Mix] FX Library

Module Abbrev.	Description	Module Abbrev.	Description	Module Abbrev.	Description
2x1	2-in / 1-out mixer	2x2	2-in / 2-out mixer	2x3	2-in / 3-out mixer
3x1	3-in / 1-out mixer	3x2	3-in / 2-out mixer	3x3	3-in / 3-out mixer
4x1	4-in / 1-out mixer	4x2	4-in / 2-out mixer	4x3	4-in / 3-out mixer
5x1	5-in / 1-out mixer	5x2	5 in / 2-out mixer	5x3	5 in / 3-out mixer
6x1	6-in / 1-out mixer	6x2	6-in / 2-out mixer	6x3	6-in / 3-out mixer
7x1	7-in / 1-out mixer	7x2	7-in / 2-out mixer	7x3	7-in / 3-out mixer
8x1	8-in / 1-out mixer	8x2	8-in / 2-out mixer		
10x1	10-in / 1-out mixer	10x2	10-in / 2-out mixer		
		12x2	12-in / 2-out mixer		
		14x2	14in / 2-out mixer		
		16x2	16-in / 2-out mixer		

When you Link your custom Algorithms together, the GSP-2101 Artist will allow a single output to be routed to any number of inputs. The reverse, however, is not true. If you want more than one output routed to a single input, you must use a mixer, just like you would if you were using discrete effects devices. The GSP-2101 Artist provides a wide range of mixer Modules to accommodate virtually any routing application.

Each mixer channel is equipped with an input level and an output level (except 3-out mixers) to give maximum control over levels coming and going to and from different Modules. Mixer Modules are available in 1-out, 2-out, and 3-out configurations. 2-out configurations include pan controls on the inputs, and 3-out mixers have a stereo output pair (outputs 2 and 3) plus a mono summed output (output 1) that carries a summed version of the signal at outputs 2 and 3.

Why Do You Need Mixers? The role of mixers in effects chains is probably the most misunderstood and least appreciated. They quietly go about their job without hype or fanfare, and although you may not know it, most multi-effects chains, from the most sophisticated rack units to the simplest stomp boxes, depend on mixers for proper signal handling.

Choruses, delays, reverbs, phasers, flangers, and pitch shifters all rely on a combination of dry and effects signal to produce their characteristic sounds. A good example of this is a chorus. A chorused signal by itself (without a dry signal mixed in) sounds like it's slowly moving in and out of tune (a dry signal is, of course, just a plain signal). Only when you combine the modulating signal with the dry signal, do you get the dynamic detuning sound you know as a chorus.

Even simple chorus pedals use a 2-input, 1-output mixer just before the output jack to combine the wet and dry signals. The GSP-2101 Artist, on the other hand, separates the effects from the mixers to give you maximum flexibility and control over signal flow.

There are other reasons why you might want to use mixers, especially in multi-effects setups. Fig. 3-12 shows a basic multi-effect Algorithm you can easily set up in the GSP-2101 Artist. As you can see, the signal passes straight through all the effects to the outputs with no dry paths except the Master Mix control (set at 50:50). Without mixers in place to carry the dry path around each Module, you would hear the dry signal immediately at the outputs without effects (because of the Master Mix path). One second later, after the delay has run its course, you would hear delay repeats with chorus and reverb.

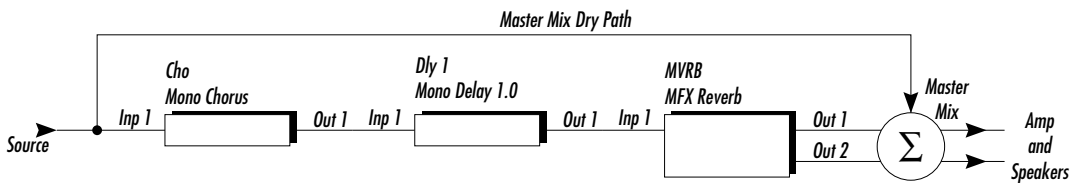


Fig 3-12

Although perfectly acceptable, this typically, is not how you want your effects to behave. Logic dictates that you should hear sound at the outputs with chorus, delay, and reverb as you play. Thus the need for mixers.

Fig. 3-13 shows the same Algorithm, except that instead of running the Modules in straight series as shown in fig. 3-12, mixers are inserted to carry signal around each individual Module and into the next.

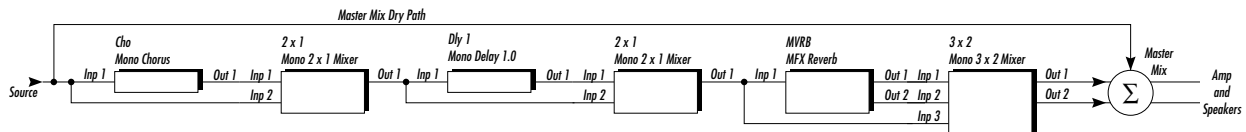


Fig 3-13

When you use mixers in the Algorithm, the input of the delay gets a combined version of the chorused signal and the dry signal. Likewise, the input of the reverb gets a combination of the chorused, delayed, and dry signals, while the Master Mix gets a combination of chorus, delay, reverb, and dry, giving you the complete sound at the outputs the way you would expect.

NOTE: The easiest way to control individual effect levels in multi-effects configurations is to 1 run the Master Mix control at WET:100, mixer levels at 100 and adjust individual effect levels at the Modules themselves (e.g. CHORUS LEVEL, DELAY LEVEL).

Using mixers in the GSP-2101 Artist is especially important because, you may want to turn individual effects on or off using the optional Control One foot controller. If your Algorithm has chorus, delay, and reverb, and you turn off the chorus, you would expect the delay and reverb to stay. Look back at fig. 3-12 and you'll see that if you turn off the chorus, the signal doesn't even get to the delay and reverb. The only signal at the outputs is through the dry Master Mix path. The way to solve this problem is shown in fig. 3-13, where each Module has an individual feed from the Module before it, and through the mixers.

What's the point of the Master Mix control? The Master Mix control works best for single effect Algorithms, like Factory Algorithm #7 (GigaVerb for Gtr). However, if you find that the overall effect levels are too high in multi-effect setups, you can use the Master Mix control to scale back all the effects at the same time.

OPTIMIZING LEVELS

Combining the worlds of analog and digital signals can be a real challenge at times. Fortunately, the 2101 gives you all the flexibility you need to make sure the two worlds come together perfectly. When optimizing your levels you have 3 goals:

- 1) Get great sounds
- 2) Get optimum signal to noise performance (while avoiding unwanted clipping)
- 3) Set proper playing levels when moving from Program to Program

Before we go any further, remember what distortion is and isn't. It is a signal that is purposely being clipped and is not very dynamic. One thing that you will notice when you first plug your 2101 in is that the Headroom meter doesn't go as high on distortion sounds as it does on clean sounds. This is normal.

Since distortion sounds are much more compact dynamically, they sound louder, all the time, even though the meter makes it look like they are quieter. Since clean sounds are more dynamic, they will usually need the most help level optimizing. There are LED indicators to help indicate possible problems in your Program.

Headroom meter - Like any digital device, it is possible to drive the GSP-2101 Artist's internal signal level too high, causing clipping. Most devices, however, can only show the level at one point in the signal path even though the signal may be clipping in other areas. The GSP-2101 Artist headroom meter shows the signal level at four points, the highest of which registers on the meter. If clipping occurs, the location of the clip in the signal path is indicated by one of the clip indicators (Input, Gain1, EQ, Level).

Clip indicators - These indicator LEDs tell you which section of the circuitry is clipping. The clip indicators show clipping at the following points: the input stage (immediately after the guitar input), the first gain stage, the local (analog) EQ stage, and the Master Volume (level) stage. The guideline for these indicators is let your ears be the judge. If the indicators light occasionally, and no audible or undesirable distortion is present, they can be ignored. If undesirable distortion is audible in the output signal, simply scroll to the indicated location and turn down the level.

- **Overload indicator** - Indicates (when lit) that the digital section of the GSP-2101 Artist is being overloaded. If this indicator lights when the GSP-2101 Artist is receiving signal, simply reduce the overall level of the digital effects in the Program. Again, let your ears be the judge. If the indicator lights regularly and no undesirable distortion is present, it can be ignored.

Generally, you want to set the levels of the Clean sounds and make sure they are sounding the way that you want. The easiest Parameter to use for setting levels is the Master Volume (if you can see the Program's Title screen, you can get to this Parameter by pressing the [MORE] button). Remember to leave some room on the top to work with... don't set everything to +15dB.

Try setting all the clean Programs you plan to use to 0dB with the Master Volume. Listen to all of them and determine which one best represents the average volume of all your clean sounds. Then adjust the other Programs up or down to match the average one. Once this is done, you can match the distortion Programs the same way (matching one first to the clean Program and then to each other).

We would have loved to do this all for you at the factory, but we weren't sure which guitar you are using or which pick-up you use with certain clean sounds. It makes a big difference, so take the time to get your rig set up right.

You may want to take optimizing to the next level because you want your 2101 to be dead quiet in noise sensitive environments like the recording studio. What you want to try and do is send as much signal to the digital section as possible, and then turn down levels of digital effects and mixers to avoid digital clipping. This takes a little more patience but can be very rewarding when you don't want to be heard.

Distortion On vs. Distortion Off Levels: Every 2101 Program actually has two Master Volume levels. One when the distortion is turned, on and one when it is turned off. This can be very useful when you are using a Control One foot controller that has a footswitch assigned to turn distortion On/Off. The Master Volume Parameter tells you which level is currently being used.

SELECTING ALGORITHMS

The Algorithm you choose for a Program determines the basic function of the Program, so make sure you choose an Algorithm that has all the Modules you want to use in an appropriate configuration. The Algorithm selection screen for each Program can be found one screen to the right (one Parameter [NEXT] keypress) from the Program's Title Screen

The Algorithm selection screen works in conjunction with the LED display to show other information about the Algorithm. When you change a Program's Algorithm assignment, the LED display shows whether the currently selected Algorithm is a factory Algorithm or a user Algorithm, and the Algorithm's number in memory. Factory Algorithms are indicated by an "F" in the LED display, followed by a number. User Algorithms are indicated by a "U" in the LED display, followed by a number. To select an Algorithm for a Program, do the following:

- From the Program Title screen, press the Parameter [NEXT] key once. This is the Algorithm selection screen. The top line of the display tells you the number of the currently selected Algorithm, whether it is a factory or user Algorithm, and the name of the Algorithm. The bottom three lines show the Modules in the Algorithm. If you change the Program's Algorithm assignment, the LED display changes to show either a "U" for User, or an "F" for Factory, followed by the number of the newly selected Algorithm.

NOTE: When there are more Module names in the Algorithm than will fit on the bottom two lines of the display, an arrow will appear in the first or last character of the display. These arrows indicate that there is more information about the Modules that could not be displayed on a single screen. To see the remaining information, simply press the Parameter [NEXT] or [PREV] key (depending on the arrow direction indicated in the display).

- Use the Data wheel to select the Algorithm you want to use with the Program. Note that when you change the Program's Algorithm assignment, the Program must be stored to retain the changes you've made. See pg. 17 for storing procedures.

Once you've selected the Algorithm you want to use, you can begin modifying the Parameters.

USING THE [TEST] BUTTON

The [TEST] button allows you to listen to individual effects Modules by themselves. This can help you decide which FX Modules you want to include in your User Algorithms. The Parameter settings for the GSP-2101 Artist [TEST] sounds are basic, general-use sound settings only, and have a 50:50 wet/dry mix.

To listen to an individual effect Module, do the following:

- Press the [TEST] button from anywhere in the Parameter menu or from the title screen. The display reads:

```
Select Fx module for
sound test.
```

- Use the FX Library keys to select the Module you want to hear. The display shows the current Module being auditioned, and the test message. It will look something like this:

```

****      Sound      ****
****      Test       ****

MVerb: Multi-FX Reverb

```

- To select another Module from the same group (e.g. Gigaverb, Bigverb, and MFX reverbs are all in the [REVERB] library), press the same library button until the Module you want to hear is shown in the display.
- To exit Test mode, press the [TEST] button.

CONSTRUCTING USER ALGORITHMS

The easiest way to create an Algorithm can be reduced to four simple steps:

1. Decide which Modules you want in the Algorithm. This is the first and most important step when creating a new Algorithm. This process is simply a matter of deciding what types of sounds you want to create.
2. Decide how you want the Algorithm to be connected. We recommend that you sit down with a pencil and paper, and draw out the effects routings that you want for each Module. This creates a simplified block diagram of the input/output scheme that you can use as a guide for setting up the routings in the GSP-2101 Artist. Pages 92 through 101, show all the routings of all the factory Algorithms in the GSP-2101 Artist. Use them as guidelines to help you create your own custom Algorithms.
3. Add the Modules to a new Algorithm.
4. Link and Save the Algorithm.

Maximum Algorithms: The GSP-2101 Artist is a pretty smart machine. It works very hard at giving you the most value for your investment. One way it does this is by optimizing the memory it needs and uses it only when it needs it. Naturally, when you start creating your own Algorithms, you'll want to know how many Algorithms you can create. Well, the answer is very much up to you. The more complex the Algorithm (i.e. using lots of effect modules), the more memory it uses.

A mistake many users make in creating their own sounds is that they think they need to create a new Algorithm every time they want a new sound. They forget to look at all the Factory Algorithms to determine if one of these will do the job. More often than not, a Factory algorithm will do the job very well.

If you do end up needing a User Algorithm, our tests show that you should be able to create anywhere from 7-14 Algorithms (depending on how many FX Modules you use).

Memory Usage Information: An Algorithm is made up of individual effects, called Modules. Each Module requires a certain amount of processing power (CPU) and memory (RAM) to perform the effect's functions. These memory quantities are measured in small chunks, called "blocks." From the factory, the GSP-2101 Artist has 256 RAM blocks and 256 CPU blocks, most of which are available for any given User Algorithm.

IMPORTANT: When you start building your own Algorithms, remember that CPU and RAM block counts are approximate. It is normal to run out of blocks even your math says you have a few blocks still available. Also, every Algorithm automatically requires about 28 CPU blocks for the master mix control and miscellaneous input and output routing. This gives you about 228 CPU blocks to work with (484 CPU blocks on a PPC-210 equipped GSP-2101 Artist).

Different Modules require different quantities of each memory type. Suppose, for example, that you want to create an Algorithm that contains a 2-second delay, a 6-band EQ, a chorus, and a reverb. Since delays require more RAM space than CPU space, a 2-second delay may require only 7 CPU blocks, but as many as 100 RAM blocks. If you were to create an Algorithm containing just this delay, you would be left with around 249 available CPU blocks and 156 available RAM blocks.

A 6-band EQ, on the other hand, may require about 51 CPU (processing) blocks and practically no RAM (memory). The space requirements for an EQ, then, can be translated into: 51 CPU blocks and 0 RAM blocks. When you add this EQ to the Algorithm containing the 2-second delay, you are left with 165 available CPU blocks and 162 available RAM blocks.

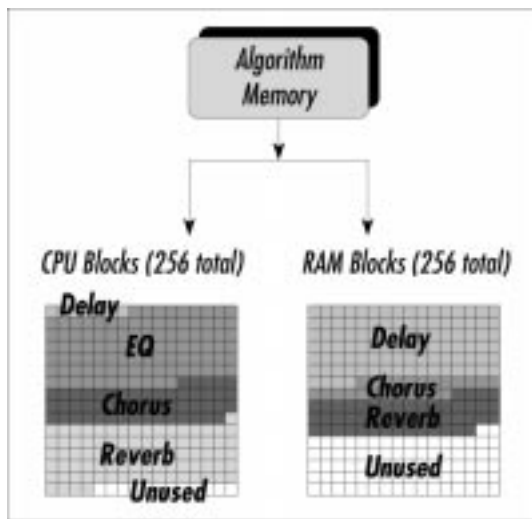


Fig. 4-1

NOTE: You don't need to use all 256 RAM and CPU blocks in each Algorithm. Unused space is ignored by the GSP-2101 Artist. In addition, the total number of blocks needed for an Algorithm will always exceed the sum of the blocks used by the Modules because a few blocks are always used for system processing.

L/R DSP Inputs: Although the GSP-2101 Artist only has mono guitar inputs, the digital processing section can actually handle stereo signals. This is important as you decide upon the structure of your User Algorithm. The FX Loop has Stereo Returns, so your User Algorithm may want accommodate stereo signal paths.

Upon examining the Factory Algorithms, you can see that many algorithms are set up for mono use and others for stereo. The stereo algorithms are mono compatible, so you won't notice any indication that one is mono and another stereo. Once you start using the Stereo Returns of the FX Loop, the difference between mono and stereo is very obvious.

Chorus Modules may require about 50 CPU and 10 RAM blocks, but since we only need one, there should be plenty of space for a small reverb. After adding the chorus to the Algorithm, you are left with 115 CPU and 152 RAM blocks.

To finish the Algorithm, you would need to find a reverb that fits into the available memory space. A reverb that requires 69 CPU blocks and 30 RAM blocks would leave you about 46 unused CPU blocks and 122 unused RAM blocks. After all the Modules have been added to the Algorithm, the memory divisions would look something like Fig. 4-1

Algorithm Construction Hints: Building an Algorithm is much like having a large rack full of individual effects and patching them all together with dozens of patch cables. We have found that if you don't prepare for this task, it can be a little overwhelming. Use the following hints to make this task much easier.

- Study the Factory Algorithms - We have mentioned this in other sections of this manual, but it can never be said too often. The Factory Algorithms are designed by professionals who know what they're doing. Examine their work and learn!
- Diagram your Algorithm Structure - This will help you avoid confusion, while pulling all the pieces of your Algorithm together. You don't have to possess a technical degree to do this. Simply draw boxes that represent your effects and how you want to connect them together (see fig. 4-2).
- Since Algorithms can be shared across several Programs, it can be advantageous to place extra FX modules in your Algorithm for optional use. For example, you may want to have the Algorithm as diagrammed below, but use a dual chorus sometimes in place of the dual detune. Use both and replace the 3x3 mixer with a 5x3 mixer. This way you can pick which one you prefer (or both!) and use only one Algorithm.

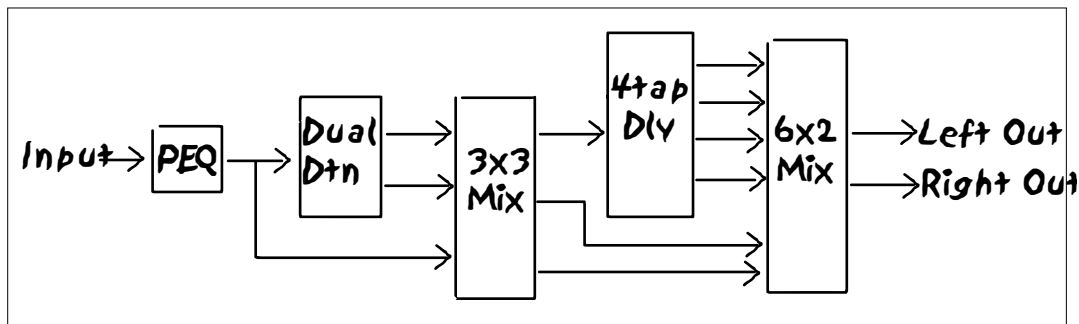


Fig 4-2

Entering/Exiting Edit Mode: Although the GSP-2101 Artist can be edited in many ways to your needs, only when you are modifying Algorithms are you actually in an area called Edit mode. Once in Edit mode, signals are no longer able to be processed. Everything gets put on hold while you modify User Algorithms. Once you exit Edit mode, everything returns to normal. To enter Edit mode, do the following:

- From the Program Title screen, press the [NEXT] button once to locate the Algorithm Select screen. It looks something like this:

```
F 2:Pch→Cho4→Dly Pa*
Comp Dist EQ FxL NGt
Pch 2x1 4PCch 5x2
Dly2 Pan 4x2 MMix
```

- Pressing the [ENTER] button once. The Edit LED lights and the display reads:

```
Entering edit
mode. Please wait

/
```

followed by:

```
Edit Algorithm:
 Modify Current Alg
 Create New Alg
 Exit Edit Mode
```

You can now select whether you want to modify the current Algorithm, create a new Algorithm, or Exit directly out of Edit mode.

Edit LED indicator - This LED is located in the Display Window (see pg. 12) and indicates (when lit) that you are in Algorithm Edit mode. This LED lights when performing operations like adding or deleting effects Modules from an Algorithm or when naming an Algorithm.

Once you are in Edit mode, you can exit by pressing the [3] button. If you have made any changes to the Algorithm, the display reads:

```
Save Changes ?
 Yes  Edit  Exit
```

This prompt allows you to save the algorithm, return to the Edit mode, or exit the Edit mode without saving any of the changes you made.

Adding FX Modules: Adding effects Modules to an Algorithm is like placing a group of objects on a table for later use. They are not arranged in any specific order (although you can use AutoLink™ if Modules are added to the Algorithm in an order that reflects the way they will be routed), and there are no inputs or outputs connected. Once all the Modules that you want to use have been added, you can begin the Linking process.

NOTE: There are a few conditions that will prevent you from making changes to existing Algorithms. For instance, if an existing Algorithm is used by more than one Program, you will only be allowed to temporarily add or delete effects Modules to and from the Algorithm. Permanent changes to the Algorithm can only be saved as a new Algorithm that contains all the elements of the Algorithm you modified originally. This safety feature prevents you from accidentally modifying Programs by making changes to their assigned Algorithms.

The GSP-2101 Artist will allow changes to be saved to an existing User Algorithm if it is used by only one Program. Any modification attempts under any other circumstances will be deferred to a new Algorithm.

To add effects Modules to an Algorithm, you must first enter Edit mode. Edit mode is reached by scrolling to the Algorithm screen (one screen to the right of the Title Screen) and pressing the [ENTER] or [ADD] button.

IMPORTANT: Do not confuse Edit mode with the mode in which Parameter values are modified. The term “Edit mode” is used only when referring to Algorithm editing. Changing Parameter values is called “Program modification”.

To add effects Modules to an Algorithm, start from the title screen and do the following:

- Switch to Edit mode by scrolling to the Algorithm screen (one screen to the right of the title screen) and pressing the [ENTER] button once. The Edit LED lights and the display reads:

```
Entering edit
mode> Please wait

      /
```

followed by:

```
Edit Algorithm:
[ ]Modify Current Alg
[ ]Create New Alg
[ ]Exit Edit Mode
```

This screen asks you to choose whether you want to modify the Algorithm of the currently selected Program, to create a completely new user Algorithm, or exit Edit mode.

- Select the option you want by pressing the Function key that corresponds with the number of the appropriate option in the display. The display reads:

```
Select effect to ADD
And Then Press Enter
Link When Done
[ ]Show Alg      [ ]Exit
```

- Using the FX Library keys or the Parameter [NEXT] / [PREV] keys, select the effect Module you want to add to the Algorithm.
- To add the Module to the Algorithm, press [ENTER]. The display briefly reads:

```
** Module Added **
*** Successfully ***
```

after which the display returns to:

```
Select effect to ADD
And Then Press Enter
Link When Done
[ ]Show Alg      [ ]Exit
```

- Continue adding Modules by selecting the Module and pressing [ENTER]. If there is not enough memory for the Module, the display will tell you that the Module won't fit.

Deleting Individual FX Modules: The [DELETE] key allows you to delete a single Module from an Algorithm, to delete all the Modules from within an Algorithm, or to delete an entire Algorithm from memory. When deleting Modules or Algorithms, you are bound by the same conditions as those for adding Modules. You can only delete or overwrite user Algorithms that are used by one or less Programs.

The procedure for deleting an individual FX Module is as follows:

- From the Program's Title Screen, switch to Edit mode by scrolling to the Algorithm selection screen and pressing the [ENTER] button. The display reads:

```

Edit Algorithm:
  [ ]Modify Current Alg
  [ ]Create New Alg
  [ ]Exit Edit Mode
  
```

- Press Function key [1]. The display reads:

```

Select effect to ADD
And Then Press Enter
      Link When Done
  [ ]Show Alg      [ ]Exit
  
```

- Press the [DELETE] button once. The display reads:

```

Select effect to DEL
And Then Press Enter
      Link When Done
  [ ]Show Alg      [ ]Exit
  
```

- Using the FX Library keys or the Parameter [NEXT] / [PREV] keys, select the effect Module that you want to delete from the Algorithm. The display will look something like this:

```

DEL: DCho
Dual Chorus
      Link When Done
Press ENTER to DEL
  
```

- To delete the selected Module from the Algorithm, press [ENTER]. The display briefly reads:

```

** Module Deleted **
** Successfully **
    
```

after which the display reads:

```

Select effect to DEL
And Then Press Enter
Link When Done
[ ]Show Alg      [ ]Exit
    
```

- To delete another Module, repeat this process.

Deleting All FX Modules: It is also possible to delete all the existing Modules from the Algorithm without deleting the entire Algorithm. This procedure is called “clearing the workspace”, and it allows you to start from scratch with clean and empty RAM and CPU memory.

- After entering Edit mode, press and hold [DELETE] until the display reads:

```

*** Deletin9 all ***
*** EFFECTS ***

Clearin9 Workspace
    
```

- Release the [DELETE] key. The display reads:

```

Select effect to ADD
And Then Press Enter
Link When Done
[ ]Show Alg      [ ]Exit
    
```

At this point, you’ve successfully cleared out all the Modules in the Algorithm, leaving you free to begin building a new Algorithm.

To delete an entire user Algorithm from memory:

WARNING! This procedure deletes the selected Algorithm permanently from memory, and all Programs that use the Algorithm will be lost.

This procedure only works for user Algorithms. Factory Algorithms are permanent and cannot be deleted from memory.

- From Program’s Title screen, scroll to the Algorithm screen. The display shows the Algorithm number, the Algorithm type, the Algorithm name, and the Modules in the Algorithm.

- Press the [DELETE] key. The display reads:

```

Delete Algorithm:

Yes      No      Edit
[ ]      [ ]      [ ]

```

- To delete the Algorithm from memory, press Function key [1]. The display briefly reads:

```

Progs using Alg will
be lost. You Sure ?
Yes      No
[ ]      [ ]

```

- To delete the Algorithm from memory, press Function key [1]. The display briefly reads:

```

****  DELETING  ****
****  ALGORITHM  ****

```

after which you'll be returned to the current Program. To abort the command, press Function key [2].

Move Modules / Switch S-DISC™ (PPC-210 users only)

The Move and Switch options are found in the SHOW ALG section of Edit mode, and they allow you to rearrange the Modules in an Algorithm quickly. The Move option allows you to rearrange the order of the Modules on the screen. Reasons you might want to shuffle Modules around are:

1. So that Modules appear on the display in a more logical order that reflects the way they will be linked.
2. To assist AutoLink™ in generating more accurate routings for your Algorithm.

To change a Module's location in the Algorithm list, do the following:

- After entering Edit mode, the display should read:

```

Select effect to ADD
And Then Press Enter
Link When Done
[ ]Show Alg      [ ]Exit

```

- Press Function key [1] to show the contents of the Algorithm. The display looks something like this:

```

[ ]4PCho 2x1
[ ]6x2 4TD1y2 5x2 Pch

Move      Switch      Exit

```

Note that a cursor appears under the first Module.

- Use the [NEXT] and [PREV] keys to select the Module you want to Move.
- Press Function key [1] to "pick up" the Module. Note that the MOVE on the display is replaced by DROP and that the Module name disappears from the menu.
- Use the [NEXT] and [PREV] keys to select the location where you want the Module.
- Press Function key [1] to drop the Module into place in front of the selected Module.

While MOVE simply changes the screen order of the Modules within an individual S-DISC and is available in any GSP-2101 Artist, the SWITCH option switches the Module from S-DISC 1 to S-DISC 2 or vice versa (available only in PPC-210-equipped units). To perform a Switch, do the following:

- After entering Edit mode, the display should read:

```
Select effect to ADD
And Then Press Enter
Link When Done
[ ]Show A19      [ ]Exit
```

- Press Function key [1] to show the contents of the Algorithm. The display looks something like this:

```
[ ]4PCho 2x1
[ ]6x2 4TD1y2 5x2 Pch

Move   Switch   Exit
```

Note that a cursor appears under the first Module.

- Use the [NEXT] and [PREV] keys to select the Module you want to Switch.
- Press Function key [2] to Switch the Module to the other S-DISC. Note that when you Switch a Module from S-DISC 1 to S-DISC 2, the Module appears at the beginning of the S-DISC 2 list. When you Switch from S-DISC 2 to S-DISC 1, however, the Module is placed at the end of the S-DISC 1 list.

NOTE: When you Switch a linked Module, the GSP-2101 Artist retains all audio routings (if possible), regardless of the position of the Module on the screen.

Linking (Audio Path Routing)

After you have added all the Modules that you want to use, the next step is to connect the inputs and outputs of each Module to the other Modules or to the GSP-2101 Artist inputs and outputs. The linking process itself is similar to connecting patch cables between discrete effects devices; that is, you are connecting outputs to inputs. There are four conditions that govern the capabilities of the Link mode. They are as follows:

- Outputs can be connected to any number of inputs without using mixer Modules.
- Inputs can be connected to only one output. If you want to connect more than one output to a single input, you must use a mixer Module in your Algorithm. By using this method, any number of outputs can be connected to a single input.
- You are always connecting outputs to inputs, much the same as if you were connecting a series of discrete effects boxes.
- The left side of the display always shows where the connection is coming from, and the right side of the display shows what the item on the left is currently connected to. The center section of the display is reserved for graphic representations of the current connection.

It sounds a bit complicated at first, but once you sit down and try it, you'll see that it's simple. The easiest way to get the routing you want can be reduced to three simple steps:

1. Add the Modules in the order you want them routed.
2. Use AutoLink™. In most cases, if your Modules are ordered correctly, AutoLink™ can usually take care of everything, and there is nothing left to do but save the new Algorithm.
3. Double-check your routings to make sure they are correct. If necessary, manually Link (or re-Link) the connections you want.

Step by Step (A Simple Example): After you have read over the section about Algorithm Use, you may wish to build an Algorithm with a little help. So lets build one together and see just how simple it really is. Step by step...here we go!

- What sound should we create? How about a chorused reverb? Not a chorus that feeds a reverb (there are Factory algorithms to do that), rather a reverb that feeds a chorus. Just for fun lets add a delay that pans back and forth. First, draw it out...

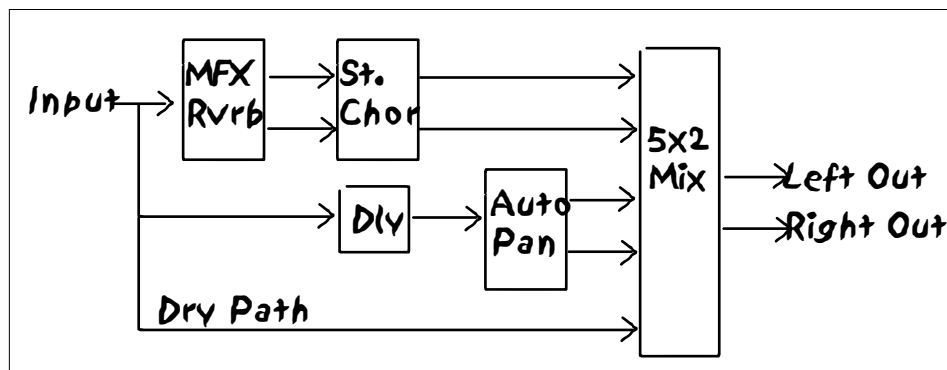


Fig 4-3

Now let's add the modules to a new Algorithm. Because we are using several effects at one time, managing the wet/dry relationship can be a little tricky. By handling it in DSP land, we can make each of the effects as wet or dry as we want. The master Wet to Dry mixer found in every program works globally with the effects used in a Program.

- Select a Program where you want this Algorithm to be used (remember after it is created, it can be used in several Programs).
- Press the [NEXT] button so that the Algorithm Select screen can be seen.
- Press the [ENTER] button to enter the Edit mode. The screen should look like this:

```

Edit Algorithm:
  [ ]Modify Current Alg
  [X]Create New Alg
  [ ]Exit Edit Mode
    
```

- Press the [2] button so that we can create a new Algorithm.
- Add the first FX Module. This is done by pressing the [REVERB] button (because the first module is a reverb) and using the Data Wheel to locate the MVrb module. Press [ENTER] to load the selected module into our new Algorithm.
- Repeat this process for the other modules. Add a SCho, Dly1, Pan (use the [MORE] key to find this module), and a 5x2 mixer. Remember to press [ENTER] each time you want to load the module into the new Algorithm.
- Verify that all the modules are loaded correctly by pressing the [1] key. This will show you the Algorithm as it is loaded. The display should look like this:

```

MVrb SCho Dly1 Pan
5x2

Move           Exit
    
```

- Press the [3] button to exit the Show Algorithm mode.

Now we are ready to Link the audio paths together according to our diagram. We are going to let AutoLink do as much work as possible, but since our Algorithm is fairly complex, we will probably need to reconnect a few things.

- Press the [LINK] button. The display will read:

```

Perform AutoLink?

Yes           No
  [ ]         [X]
    
```

- Press [1] for yes. The display should look like this:

```
Link FX OUTs to INs
Press Store when rdy
Left Input
To MVRb INP 1 →
```

AutoLink has made a guess as to how we may want to link our FX Modules together. But, by using the the [NEXT] and [PREV] buttons we notice that not everything is right according to our original diagram. Drawing the AutoLink's work, looks like this:

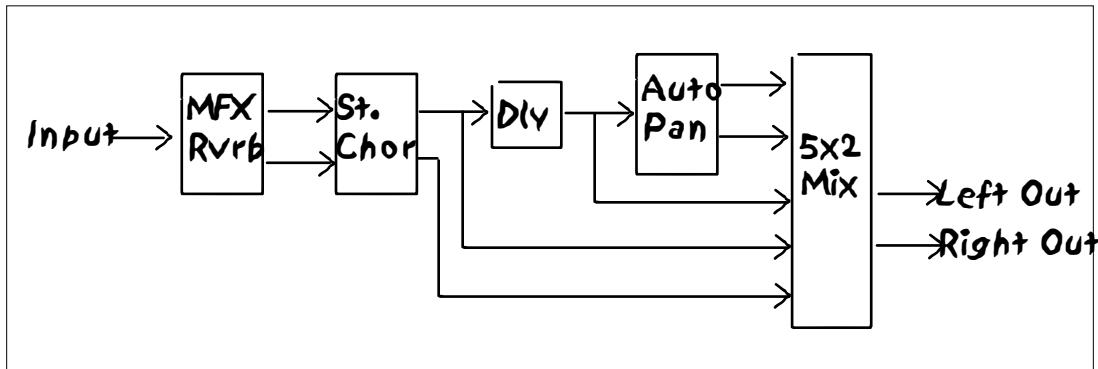


Fig 4-4

Although this doesn't look much like our original drawing, it will only take a few tweaks to get it right. To fix this, all we need to concern ourselves with is the input of a given FX Module. Examining the AutoLink's work shows us that the inputs for the reverb, stereo chorus, auto pan and left/right outputs are fine. The delay input and the mixer inputs need to be corrected.

- Using the [NEXT] and [PREV] button, locate the Dly1 input connection. The screen will look like this:

```
Link FX OUTs to INs
Press Store when rdy
SCho OUT 1
← To Dly1 INP 1 →
```

This tells us that the input to Dly1 is connected to the first output of the stereo chorus. We actually want the delay to be hooked up to the main input, so use the Data Wheel to select the Left Input (remember this is a mono in Algorithm so the right input is not being used). The display should say:

```
Link FX OUTs to INs
Press Store when rdy
Left Input
← To Dly1 INP 1 →
```

- Using the the [NEXT] and [PREV] buttons, locate the inputs for the 5x2 mixer. Set those up so that they match our original Algorithm drawing (i.e. SCho Out 1 connected to 5x2 Inp 1, SCho Out 2 connected to 5x2 Inp 2, Pan Out 1 connected to 5x2 Inp 3, etc...)

- After linking all the FX Modules correctly, press the [STORE] button. After renaming our new Algorithm (optional), press [STORE] again to compile the Algorithm into something we can use.

The new Algorithm is now loaded in the currently selected Program. Check to make sure that the master Wet to Dry mixer is set to All Wet. After you tweak up the effect's parameters (to get the sound just right), use the [STORE] button to save your new sound.

Congratulations! You are now officially a GSP-2101 Artist power user!

PPC-210 USERS ONLY:

Because the PPC-210 adds a second S-DISC to your GSP-2101, it is possible to link effects not only in the normal ways (series, parallel or any combination of series/parallel), but across S-DISCs as well. This means that any of the outputs from Modules residing in S-DISC 1 can be routed to any of the inputs of Modules residing in S-DISC 2, and vice versa. There are limits on the number of these cross-linkages however (the average is about 10 in each direction, depending on memory constraints), so we recommend you keep them to a minimum. It's also easier and less confusing to build a signal path straight through S-DISC 1 before proceeding to S-DISC 2. Also, AutoLink™ will only perform one cross-link, and only at the end of the S-DISC 1 signal path (between S-DISC 1 and S-DISC 2).

REMEMBER: Seamless Program changes will not occur when switching to or away from a Program that uses a dual S-DISC Algorithm.

Storing an Algorithm: Once the Modules of an Algorithm are Linked, you must save the Algorithm to retain your changes. This is done with the [STORE] button (in the Edit section of the front panel). Do not exit Link mode to store Algorithms.

To store an Algorithm in memory, do the following:

- From Link mode, press the [STORE] button once. If the currently selected Algorithm name is already in use, the display will briefly read:

```
Algorithm name is  
already in use
```

after which you are automatically placed in Name mode.

- Give the Algorithm a new name (using the naming procedures covered on pg. 16) and press the [STORE] key again. The display briefly reads:

```
***** SAVING *****  
***** ALG *****  
  
/
```

after which you are automatically returned to the Algorithm select screen.

The Algorithm is now saved in memory for use with Programs. When you exit, the GSP-2101 Artist selects the newly saved Algorithm for use in the Program that you return to.

“Why can’t I copy over an existing Algorithm?”

The GSP-2101 Artist keeps track of where Algorithms are used. Since Algorithms can be used in various Programs, things can become a little confusing if you’re not careful.

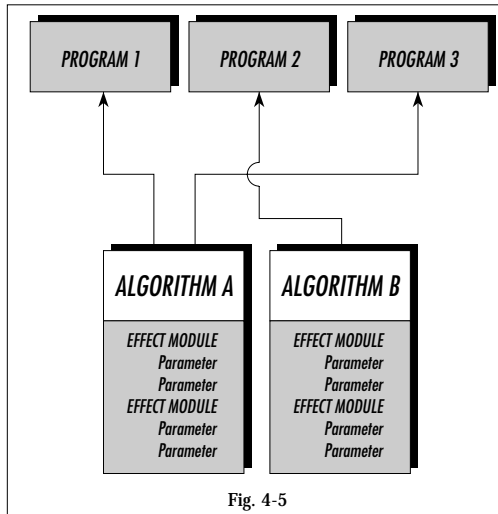


Fig. 4-5

For example, suppose Algorithm A contains a reverb, a chorus, and a flanger, and that you want to replace the reverb with a multi-tap delay. Since Algorithm A is used by more than one Program, modifying the Algorithm might cause both Programs 1 and 3 to change. On a larger scale, imagine what would happen if 25 or 30 Programs used the same Algorithm, and you were allowed to modify it. The results could be disastrous.

Fortunately, the GSP-2101 Artist does not allow mistakes of this kind. Instead, you will be informed that the Algorithm is already in use, and you will be asked to give a name to a new Algorithm. This is a safety feature that keeps all your Programs (and your sanity) intact.

Let’s refer back to the example in figure 4-5. If you wanted to modify Algorithm B, you would be allowed to do only because the Algorithm is used by a single Program. The same is true of Algorithms that aren’t used by any Programs. Only under these conditions will the GSP-2101 Artist allow modification of existing Algorithms. Modification attempts under any other circumstances will be deferred to a new Algorithm.

Converting Algorithms From Single to Dual (PPC-210 Users Only): PPC-210-equipped GSP-2101 Artists allow conversion of standard single S-DISC Algorithms to dual S-DISC versions. This gives you room to add more effects to the Algorithm.

NOTE: To maintain maximum Program switching speed, you should only convert Algorithms that need more effects than a single S-DISC can handle. The reason is simple: more effects = more data that has to be cleared from memory when you switch Programs.

To convert a single S-DISC Algorithm to a dual, do the following:

- From the Program title screen, press [NEXT] once. The display shows the Algorithm selection screen.
- Enter Edit mode by pressing [ENTER]. The display briefly reads:

```
Entering edit
mode> Please wait
      /
```

followed by:

```

Edit Algorithm:
  [1]Modify Current A19
  [2]Create New A19
  [3]Exit Edit Mode
    
```

- Press Function key [1]. The display reads:

```

Number of S-DISCs:
  [1]Single A19
  [2]Single -> Dual
  [3]Exit Edit Mode
    
```

- Press Function key [2]. The Algorithm is converted, after which the display reads:

```

Select effect to ADD
And Then Press Enter
Link When Done
  [1]Show A19      [2]Exit
    
```

The Algorithm has been successfully converted to dual S-DISC, giving you twice as much space for effects.

Converting Algorithms From Dual to Single (PPC-210 Users Only): With the PPC-210, you can convert existing dual S-DISC Algorithms to conventional single S-DISC versions. This procedure throws out everything in S-DISC 2 and leaves the end of the effects chain in S-DISC 1 unconnected. You will not hear any sound at the outputs of the GSP-2101 Artist whenever this Algorithm is used unless the Algorithm is relinked.

To convert a dual S-DISC Algorithm to a single, do the following:

- From the Program title screen, press [NEXT] once. The display show the Algorithm selection screen.
- Enter Edit mode by pressing [ENTER]. The display briefly reads:

```

Entering edit
mode. Please wait

      /
    
```

followed by:

```

Edit Algorithm:
  [1]Modify Current A19
  [2]Create New A19
  [3]Exit Edit Mode
    
```

- Press Function key [1]. The display reads:

```

Number of S-DISCs:
  [1]Dual A19
  [2]Dual -> Single
  [3]Exit Edit Mode
    
```

- Press Function key [2]. The Algorithm is converted, after which the display reads:

```
Select effect to ADD
And Then Press Enter
Link When Done
█Show A19      █Exit
```

The Algorithm has been successfully converted to dual S-DISC, giving you twice as much space for effects.

Adding/Deleting Effects Modules in Dual S-DISC Algorithms (PPC-210 Users Only): The procedure for adding/deleting effects Modules to dual S-DISC Algorithms is identical in many respects to the conventional method. The main difference is that if the Algorithm uses two S-DISCs, you must specify the S-DISC to which you want to add/delete the Module. Let's add a Gigaverb to S-DISC 2 as an example.

- After entering Edit mode, the display should read:

```
Select effect to ADD
And Then Press Enter
Link When Done
█Show A19      █Exit
```

- Press [REVERB] three times. The display reads:

```
█ ADD: (Won't fit)
GigaVerb

Press ENTER to ADD
```

The █ character in the upper left corner of the display indicates that when you press [ENTER] (and if there's room), a GigaVerb Module will be added to S-DISC 1.

- Press [ADD] once. Note that the █ character has changed to a █ character and the (WON'T FIT) is replaced by the name of the Module. This indicates that when you press [ENTER], the GigaVerb Module will be added to S-DISC 2 (you can select either S-DISC by pressing the [ADD] key repeatedly). If a Module doesn't fit in █, try █.
- Press [ENTER] to add the GigaVerb to S-DISC 2. The display briefly reads:

```
** Module Added **
*** Successfully ***
```

Followed by:

```
Select effect to ADD
And Then Press Enter
Link When Done
█Show A19      █Exit
```

You can continue to add/delete Modules as described above until both S-DISCs are out of memory and / or processing blocks.

NOTE: If you find that you're still running out of room, try adding your Modules in a different order. Sometimes it's possible to fit more Modules in an Algorithm just by changing the screen order. Remember that the order of the Modules on the screen doesn't really matter (except when using AutoLink™) because you can manually Link any output to any input.

Seamless Program Changes (PPC-210 Users Only): When you use a GSP-2101 Artist with a PPC-210 installed, you gain the capability of having your Programs change “seamlessly” from one program to another. This makes for very natural sounding Program changes. This feature only works when switching from a Program that uses a Single S-DISC™ Algorithm to a Program with a Single S-DISC™ Algorithm. Anytime a Dual Algorithm is involved, seamless Program changes are not executed.

Ramp and Hold times can be set (see pg. 85) to create unique sound possibilities. Setting up a Sound on Sound type Program with a long Hold time allows you to select a new Program and hear both Programs at one time (the remaining audio from the Sound on Sound Program and the newly selected Program).

MAIN MIDI RECEIVE CHANNEL

The GSP-2101 Artist MIDI Channel Parameter allows you to select the MIDI channel on which the GSP-2101 Artist will receive MIDI data. This can be set to channels 1 - 16, ALL, or NONE. If this Parameter is set to ALL, MIDI data received on any MIDI channel will be recognized. If it is set to NONE, the GSP-2101 Artist will not recognize incoming MIDI data.

To set the GSP-2101 Artist's MIDI channel, do the following:

- Enter the MIDI setup menu by pressing the [MIDI] button once. The display reads:

```

MIDI Channel    1
Receive MIDI Prg 1
    as GSP Prg  1
                →
  
```

- Press Function key [1] once. A cursor appears under the number next to MIDI CHANNEL.
- Use the Data wheel to change the MIDI channel designation. When you're finished, press the [MIDI] button to Exit MIDI mode.

NOTE: In order for the GSP-2101 Artist to respond to incoming CCs, the MIDI CHANNEL setting must match the channel designation of the incoming messages.

PROGRAM MAPPING

The RECEIVE MIDI PRG (#) AS GSP PRG (#) function allows you to map incoming Program Changes that are within MIDI range to any Program out of MIDI Program Change number range on the GSP-2101 Artist. For example, suppose you want to access Program #146 using a MIDI Program Change. Since MIDI only supports Program Change numbers 1 - 128, Program Change number 146 would normally be impossible for the GSP-2101 Artist to recognize (or the sending device to send). With the GSP-2101 Artist's flexible MIDI input mapping, however, you can assign a Program Change number that MIDI will recognize to be received as Program #146 on the GSP-2101 Artist.

To illustrate, let's assign MIDI Program Change number 26 to change the GSP-2101 Artist to Program #131.

- After entering the main MIDI setup menu, press Function key [2] (RECEIVE MIDI PRG) once. The display reads:

```

MIDI Channel    1
Receive MIDI Prg 1
    as GSP Prg  1
                →
  
```

A cursor appears under RECEIVE MIDI PRG. At this moment, MIDI Program Change number 1 is currently set to activate Program number 1 on the GSP-2101 Artist.

- Using the Data wheel, set the RECEIVE MIDI PRG number to 26. Note as this number changes, the AS GSP PRG number changes with it.

- Press Function key [3]. The cursor moves to AS GSP PRG.
- Change the number to 131 using the Data wheel. When you're finished, press [MIDI] to exit.

Now, when the GSP-2101 Artist receives Program Change number 26 via MIDI, Program 131 will be recalled. Any number of Program Changes (up to the MIDI maximum of 128) can be mapped to recall any GSP-2101 Artist Program.

SEND FRONT PANEL PROGRAM CHANGE

This option determines whether or not corresponding Program Changes will be sent out the GSP-2101 Artist MIDI Out port as you scroll through the Programs. This Parameter is set to either YES or NO. The procedure is as follows:

- After entering the main MIDI setup menu, press the [NEXT] key four times. The display reads:


```

MIDI merging      Off
Send Front Panel
  Program change? No
←                                     →
            
```
- To change the setting, press Function key [2]. When you're finished, press the [MIDI] button once to return to exit MIDI mode.

DEVICE MAPPING

Device mapping allows the GSP-2101 Artist to act as a MIDI multiplexer for up to four other devices. Here's how it works: when the GSP-2101 Artist receives a Program Change message via MIDI, each device you specify can receive independent Program Change messages on an individual MIDI channels. This feature can allow you to have up to 32 MIDI channels (16 would be downline from the GSP-2101 Artist, and 16 would be upline).

To set up external devices for MIDI multiplexing:

- After entering the MIDI setup menu, press the [NEXT] key five times. The top line of the display reads:

```

Device    1 CH 1
GSP Program    1
Send as      1
←
            
```

- Press Function key [1]. A cursor appears under the DEVICE number.
- Using Function key [1], select the device number (1-4) you want to edit.
- Press [NAME] and identify the device with a custom name according to the standard naming procedures found on pg. 16. When you're finished, press the [NAME] key again, and the display returns to where you left off.

- With the cursor still under the DEVICE number, use the Data wheel to select the MIDI channel you want the device to respond to (if this Parameter is set to DISABLED, the GSP-2101 Artist will not send out any Program Change messages for that device).
- Press Function key [2]. The cursor appears under the GSP PROGRAM number on the second line of the display. The second and third lines of the display tell you that when the GSP-2101 Artist receives Program Change number 1, device 1 will be sent Program change number 1 on its designated MIDI channel.
- Using the Data wheel, select the GSP-2101 Artist Program number (1-240) that will send the mapped Program Change to the external device. When you're finished, press Function key [3] once.
- The cursor appears under SEND AS 1. This Parameter determines the Program Change number that the external device will receive when the appropriate Program Change number is received on the GSP-2101 Artist. Select the Program Change number that will be sent (1-128) using the Data wheel.

You can map up to 4 devices and as many incoming Program Change messages as you like. These are stored in memory automatically, and are always active until you change them or until a factory reset is performed.

LINKING PARAMETERS TO CONTINUOUS CONTROLLERS

Linking Parameters to external controllers has been specially designed to be extremely fast and simple. Up to 10 Parameters can be linked for each Program in the GSP-2101 Artist. This means that an external MIDI controller like the DigiTech MC² MIDI Expression Pedal (which sends MIDI Continuous Controller data) or a MIDI sequencer can control the GSP 2101 Artist in real-time applications.

For instance, these links could be used to control chorus level, sweeping from moderate to deep. Let's link MIDI Continuous Controller #7 (which set aside in MIDI world as a volume control) to a Parameter item. To link a Parameter to a MIDI CC, do the following:

- From Program's Title screen, use the [NEXT]/[PREV] keys to select the Parameter you want to link to a MIDI continuous controller (let's use Stereo Chorus Level from our example).
- When you have selected the Parameter you want to link, enter the LINK setup menu by pressing and holding the [MIDI] key.
- When you release the key, the display looks something like this:

```

Link:2
SCho Level
is not linked
          ← →

```

- Using the Data wheel, select the CC number you want to control the Parameter with. The display looks something like this:

```

Link:2      Min/Max
Scho Level Links
to MIDI CC 7
Delete Link  ← →
    
```

- After you have selected a CC number, set the min/max value by pressing function button [2]. The display looks something like this:

```

Scho Level Links
to MIDI CC 7
Min Value 0
Max Value 100
    
```

Note the Min/Max settings that allow you to scale Parameter ranges to fit your personal taste. These values can be reversed so that the minimum MIDI CC value takes you to the maximum Parameter value.

- To change the MIN VALUE setting, press Function button [2]. A cursor appears under the value.
- Using the Data wheel, change the MINIMUM VALUE to the desired minimum Parameter value setting (the value of the Parameter when the CC pedal is in the full toe up position).
- To change the MAX VALUE setting, press Function key [3]. A cursor appears under the value.
- Using the Data wheel, change the MAX VALUE to the desired maximum Parameter value setting (the value of the Parameter when the CC pedal is in the full toe down position).
- Press the [MIDI] key to exit the Link setup menu. The display returns to the Parameter you left off with. Note that a small CC appears next to the Parameter name. This symbol tells you that the Parameter is linked to a continuous controller.

At this point, you have successfully linked local CC #7 to control a Parameter. When you send MIDI CC #7 data (using the same MIDI channel the 2101 is set to receive), the GSP-2101 Artist sweeps smoothly between the two Parameter values you selected (MIN VALUE, MAX VALUE).

Editing assigned Links is the same as for assigning a new Parameter, except that after you release the [MIDI] button, the Data wheel selects the Link you want to edit. Don't forget to store the Program to retain your changes.

DISPLAY ACTIVE LINKED PARAMETER

This is a simple option that allows you to see the CC values change in real time. When this Parameter is set to YES, the CC response time is slower, making it useful for troubleshooting MIDI CC problems (for quickest response time, this Parameter should be set to NO). Also, when this item is set to YES, any CC activity will cause the GSP-2101 Artist to automatically jump to the Parameter screen of the value being controlled.

If the item is set to PAR, it will only show a Parameter being changed in real-time if the Parameter is currently being viewed. When the Parameter is being updated on the screen in real-time, you will notice that response time is slower. Once you move to another screen, the performance will return to normal. The PAR setting is the default from the factory.

To display CCs, do the following:

- After entering the MIDI setup menu, press the [NEXT] key twice. The display reads:

```

FC/CC displayed Par
Dump system data

←                               →

```

- To change the setting, press Function key [1] until the display shows the setting you want. When you're finished, press the [MIDI] button once to exit.

ABOUT SYSEX DUMPS

The GSP-2101 Artist allows you to use MIDI to archive the settings in your unit or even settings of each individual Program. This is done through MIDI System Exclusive data protocols. System Exclusive data, or SysEx as it is often called, can be shared between two 2101s by simply connect the MIDI Out of one 2101 to the MIDI In of the other. To ensure data integrity, the two 2101s should be using the same software version (the version is displayed when the unit powers up).

2101 SysEx data can also be sent to an external MIDI recording device, such as a MIDI sequencer or a computer outfitted with a proper MIDI interface. Once the data is there, it can be sent back to the 2101 to restore settings to their archived values.

System SysEx Data: The DUMP SYSTEM DATA option allows a complete system exclusive dump of the entire contents of the GSP-2101 Artist memory. This includes all user Programs, Algorithms, Utility, and MIDI Menu setups. Also, if dumping to another GSP-2101 Artist, the unit is capable of detecting and filtering out identical user Algorithms.

To perform a system exclusive dump of the entire contents of the GSP-2101 Artist memory, do the following:

- After entering the MIDI setup menu, press the [NEXT] key twice. The display reads:

```

FC/CC displayed Par
Dump system data

←                               →

```

- Press Function key [2]. The display reads:

```
Press [2] to start
MIDI data dump
of entire system.
18340 Bytes Total
```

The total number of bytes to be dumped may vary depending on how many of your own custom Programs and Algorithms you have in memory.

- To dump the data, press Function key [1]. The display briefly reads:

```
*** Sending MIDI ***
*** System Data ***
***      /      ***
*** 18340 Bytes ***
```

after which you are returned to the MIDI setup menu. To abort the command, press Function key [2].

- Exit the Dump screen by pressing the [MIDI] button.

Program SysEx Data: The GSP-2101 Artist has the convenient ability to dump an individual Program as a MIDI program number other than its own. This is particularly useful in cases where you need to perform Program dumps from one GSP-2101 Artist to another, and you don't want to overwrite the corresponding Program number in the destination unit.

To dump an individual Program, do the following:

- After entering the MIDI setup menu, press the [NEXT] key three times. The display reads:

```
[2]DUMP Program      1
[2] as MIDI prg     1
[2]Start the dump
←                      →
```

- Press Function key [1] once. A cursor appears under the DUMP PROGRAM number.
- Use the Data wheel to select the number of the Program you want to dump.
- Press Function key [2]. A cursor appears under the AS MIDI PRG number.
- Use the Data wheel to select the Program number you want the Program dumped as.
- To initiate the dump, press Function key [3] once. The display briefly reads:

```
Sending Program 1
as MIDI Program 1
```

- When the dump has finished, press the [MIDI] key once to exit.

MIDI MERGING

The MIDI merging option allows incoming MIDI data to be merged with any MIDI data generated by the GSP-2101 Artist before being sent to the MIDI Out port.

To change the setting of the MIDI merging option, do the following:

- After entering the MIDI setup menu, press the [NEXT] key four times. The display reads:

```

MIDI merging      Off
Send Front Panel
Program change? No
←                  →
  
```

- To change the MIDI merging setting, press Function key [1]. When you're finished, press the [MIDI] button once to exit.

MIDI PROGRAM LOAD TYPE

The GSP-2101 Artist works hard at making Program load times as small as possible. One of the ways it does this, is by caching the Programs before they are actually needed. When the Control One foot controller is connected, it caches according to Banks. Otherwise it pre-loads Programs closest to the currently loaded Program.

Using MIDI Program changes can be troublesome in this regard because unlike the Control One, MIDI isn't thinking in Banks. Using Program 6, then 7, then jumping to 20 can deliver slightly different load times. This can be inconvenient if you are counting on a Sequencer to change Programs for you at an exact instant.

We give two options to help in these situations: NORMAL MIDI Program Load and FAST MIDI Program Load. The NORMAL setting disregards the caching completely (and ensures consistent load times) while the FAST setting tries its best to cache Programs.

To change the setting of the MIDI Program Load option, do the following:

- After entering the MIDI setup menu, press the [NEXT] key six times. The display reads:

```

NORMAL MIDI Program
Load
  
```

- To change the MIDI Program Load setting, press Function key [1]. When you're finished, press the [MIDI] button once to exit.

CONFIGURING THE PEDALBOARD

The optional Control One foot controller can help you get the most out of your GSP-2101 Artist. Since the Control One talks to the 2101 using a proprietary communication protocol, it offers better response time and capabilities not available with convention MIDI pedalboard controllers.

The Control One includes 12 footswitches for Program and Parameter control. It also features a built-in Expression Pedal. An external expression pedal jack allows you to add a second passive volume pedal for even more real-time control of your sound. The large 20 character display constantly feeds you important information like Program names or Tuner indicators.



Fig 5-1

The Control One uses a standard 5-pin DIN cable (like those used for MIDI) to communicate with the 2101. Simply connect the Control One output jack to the GSP-2101 Artist Foot Controller input jack and your ready to roll!

NOTE: Never plug anything other than a Control One into the 2101's Foot Controller input jack. (Voltage is present at this jack).

If you choose to use a second expression pedal with the Control One foot controller, simply plug a cable from the pedal's output to the Control One's Ext pedal input. Voltage Control pedals (such as the DOD FX-17) can also be used with the Control One. You will need to connect the Control One to the CV Out of the expression pedal instead of the audio output. Once you are are connected, you need to calibrate the pedal (see below).

Pedal Calibration: Calibration procedures are the same for both the internal (built-in) Control One expression pedal and external pedals that can be connected to the Control One. They are as follows:

- Press the [UTILITY] key once. The display reads:

```

Output Mode: Stereo
Foot Controller
                                     →
    
```


- Press Function key [2] once. The display reads:

```

Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup →

```

- Press Function key [3]. The display reads:

```

Exp Pedal Calibrate
Exp Pedal Min/Max
Exp Pedal CC Assign
and CC Xmit Setup

```

- Press Function key [1]. The display reads:

```

Calib Int Exp Pedal
Calib Ext Exp Pedal

```

- Select whether you want to calibrate the internal (built-in) CC pedal or an externally connected pedal by pressing the appropriate Function key. The display will look something like this:

```

Calib Int Exp Pedal
Move Pedal Fully
Down (Forward) and
  Press #1

```

This step sets the maximum value of the CC pedal when it is in the fully forward position.

- Move the pedal to its full forward (toe down) position and press Function key [1]. The display reads:

```

Calib Int Exp Pedal
Move Pedal Fully
Up (Back) & Press #2
  Press #2

```

- Move the pedal to its full back (toe up) position and press Function key [2]. When the display returns to the Utility setup menu, you have successfully calibrated the CC pedal.
- Press the [UTILITY] key to exit the Calibration mode.

BANKS/PATCHES

The Control One helps you organize your sounds into ten groups called Banks. Each of these Banks contain ten patches which are user programmable to do one of several functions. These functions include:

- Selecting any 2101 Program
- Modifying Parameters in real-time
- Sending MIDI CC information (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 Program (Program Up/Down)
- Selecting the next or previous Bank (Bank Up/Down)
- Selecting the next or previous Program in the user defined Song List (List Up/Down)

To change Banks, tap the the Prg/Bnk/Tuner footswitch twice on the Control One, then tap footswitch 1 through 10 (0).

The Foot Controller setup menu contains all the setup options necessary to use the GSP-2101 Artist with the optional DigiTech Control One foot controller. The submenus included under the Foot Controller setup menu are:

- Patch Assignment
- LED Assignment
- Continuous Control

However, the GSP-2101 includes several shortcuts for programming your Control One. So, step by step, let's do this the easy way.

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

- Be sure that that the Program's Title screen is displayed.

```
Lead On Me  
St Cho→Dly→Reurb  
  
MVol |Chorus |Delay
```

- Press the [Link] button once. The display reads:

```
Select a Foot Switch
```

- Simply press one of the ten Patch 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:

```

Do you want to
re-assign this
foot switch ?
Yes           No

```

Pressing the [1] function button re-assigns the function of the footswitch while pressing [2] 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.

- Press the [Link] button to exit.

Assigning Parameters to Footswitches/Expression Pedals: The GSP-2101 Artist allows you to control up to ten 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. There are actually two quick ways to link a Parameter to a footswitch or Expression pedal. The first assumes you want to use the minimum and maximum range of a parameter. The second offers more flexibility and a way to delete unwanted or redundant links. To assign any currently selected Parameter to a Patch footswitch or Expression pedal in the currently selected bank, do the following:

- Be sure that the Parameter you want to link is displayed and selected (below is an example the Master Volume Parameter):

```

Master Volume
Distortion on
      0dB
Low  <<>>  High

```

- Press the [Link] button once. The display reads:

```

Select a Foot Switch

```

- Press one of the ten Patch footswitches or move the Expression pedal to Link that Parameter. If you choose a footswitch that is already assigned to do something else (besides select a Program), the display will read:

```

Do you want to
re-assign this
foot switch ?
Yes           No
    
```

Pressing Function button [1] re-assign the function of the footswitch, while pressing [2] leaves everything as it was, aborting the procedure. Press Yes. The display reads:

```

Link:2       Min/Max
  MVol MVol Links
  to Foot Switch 1
Delete Link  ← →
    
```

- Press Function button [2] to set the min/max values. The display reads:

```

MVol MVol Links
  to Foot Switch 1
Min Value -16
Max Value 15
    
```

In this example, we want to kick up the volume 3dB when we hit the footswitch. Setting the min value to 0 and the max value to 3 will make this happen. Press the [Link] button to exit.

The second method of assigning a Parameter to the Control one involves a few more steps but allows you more flexibility in your set-up. It also gives you the opportunity to delete other links, and get a feel for what all the links are doing in the current Program. The following is a example of the extended set up procedure:

- Be sure that that the Parameter you want to link is displayed and selected (below is an example Master Volume):

```

Master Volume
Distortion On
      0 dB
Low   <<>>   High
    
```

- Press and hold the [MIDI] button until the display reads:

```

Assigning CC/FS
    
```

- After releasing the [MIDI] button, the display reads:

```

Link:2
  MVol MVol
  is not Linked
                               ← →
    
```

- Use the Data Wheel to select the pedal to be used, the display reads:

```

Link:2  Min/Max
MVol  MVol Links
to Int Exp Pedal
Delete Link  ← →

```

NOTE: Remember that the 2101 recalls the stored value first and pays no attention to Parameter links. If you want a Program to load with a Master Volume of 3, store it with Master Volume set at 3. Setting the link at Min Value doesn't mean that the Program automatically loads with that Min Value loaded.

- Press one of the ten Patch footswitches or move the Expression pedal to Link that Parameter. The display reads:

```

Do you want to
re-assign foot
switch ?
Yes          No

```

Pressing the [1] function button re-assigns the function of the footswitch. The display looks something like this:

```

Link:2  Min/Max
MVol  MVol Links
to Foot Switch 9
Delete Link  ← →

```

Pressing [2] will leave everything as it was, aborting the procedure.

- Press the [MIDI] button to exit the Parameter Link mode.

Other Footswitch Functions: The footswitches on the Control One can be assigned to do several functions. This is done through the Foot Controller menu in the Utilities section of the 2101. These functions include:

Program Up/Down: Footswitches in a Bank can be used to select the next or previous Program available instead of some specific Program (exactly like the Program Up/Down buttons function).

Bank Up/Down: Footswitches in a Bank can be used to select the next or previous Bank. Many players set aside two footswitches in each Bank so that they can get around their Banks more easily. The Bypass and Prg/Bank/tuner buttons can also be set up to function this way (see pg. 81 for more information).

List Up/Down: The 2101 allows you to program a song or performance list (see pg. 80). After that list is created, the List Up/Down allow you to navigate through that list.

Toggle CC: This function allows you to send MIDI Continuous Controller (CC) information out the MIDI port while the footswitch still maintains its ability to control a Parameter directly. When assigned to a footswitch, CC values 0 (Off) or 127 (On) are sent. CC numbers 0 through 127 are available.

Int. Exp pedal CC: The Expression pedal of the Control One can also send MIDI CC data . This switch function allows you to re-assign the MIDI CC assignment for the Expression pedal (i.e. if the pedal were assigned to send CC4 data, it could be temporarily re-assigned to send CC7 using the Int. pedal CC function).

The procedure for setting up a footswitch function is as follows:

- Press the [UTILITY] key once. The display reads:

```

Output Mode: Stereo
Foot Controller
                                     →
    
```

- Press Function key [2] once. The display reads:

```

Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup      →
    
```

- Press Function key [1]. The display reads:

```

Bank Number:      1
Foot Switch:      1
Program Number:   1
Lead On Me
    
```

This screen tells you that Footswitch 1 in Bank 1 of the Control One is set to recall Program 1 of the GSP-2101 Artist.

- The cursor appears under PROGRAM NUMBER. Using Function key [3] or the Data wheel, locate the footswitch function you wish to use.

- The display may read:

```

Bank Number:      1
Patch Number:     1
Program Up        *
    
```

- Press [UTILITY] 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 several things you must do in order for the Expression pedals to work properly with MIDI.

Assign CC Number - This option allows you to choose the MIDI CC numbers you want to use for sending continuous control messages. 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.

- Press the [UTILITY] key once. The display reads:

```

Output Mode: Stereo
Foot Controller
                                     →

```

- Press Function key [2] once. The display reads:

```

Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup      →

```

- Press Function key [3]. The display reads:

```

Exp Pedal Calibrate
Exp Pedal Min/Max
Exp Pedal CC Assign
and CC Xmit Setup

```

- Press Function key [3]. The display reads:

```

Int Exp CC:Not Used
Ext Exp CC:Not Used
CC Transmit Channel

```

This screen has three options. You can change the internal pedal's MIDI CC number, the external CC pedal's MIDI CC number, or you can change the MIDI channel(s) on which the internal or external pedal will transmit MIDI CC messages to other MIDI devices (using the MIDI Out port).

- To change the internal or external CC pedals' MIDI CC number, press the appropriate Function key. Note that a cursor appears under the value of the pedal you selected.
- Use the Data wheel to change the value as desired.
- Press [UTILITY] to return to exit this menu.

CC Transmit Channel - This option allows you to set the MIDI channel on which CCs will be sent out the GSP-2101 Artist's MIDI Out port to other MIDI devices. If you are using the Control One for the GSP-2101 Artist only, you don't need to worry about setting up this option. However, if you plan to use the Control One for continuous control over other MIDI devices (either in conjunction with the GSP-2101 Artist or by themselves), you need to assign a MIDI transmit channel for each of the CC numbers you'll be using for continuous control of the other devices.

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

- Press the [UTILITY] key once. The display reads:

```

Output Mode: Stereo
Foot Controller

                                     →
    
```

- Press Function key [2] once. The display reads:

```

Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup      →
    
```

- Press Function key [3]. The display reads:

```

Exp Pedal Calibrate
Exp Pedal Min/Max
Exp Pedal CC Assign
and CC Xmit Setup
    
```

- Press Function key [3]. The display reads:

```

Int Exp CC:Not Used
Ext Exp CC:Not Used
CC Transmit Channel
    
```

- Press Function key [3]. The display reads:

```

CC Transmit Channels
Int Exp Pedal:      1
Ext Exp Pedal:      1
Toggle CC           : 1
    
```

- To change the CC transmit channel numbers, press the appropriate Function key to select whether you want to change the setting for the internal Expression pedal, external Expression pedal, or the Footswitch Toggle CCs. Use the Data wheel to change the value as desired.

- When you're finished, press the [UTILITY] key to exit this mode.

For the external units to respond to CC messages from the GSP-2101 Artist, set them up to respond to the same CC MIDI channel that you set in the preceding steps.

Set MIDI CC Value Min and Max - The 2101 allows you to set the minimum and maximum MIDI CC values for the internal (built-in) and external Expression pedals. This allows you to limit the range of control to fit your application. Procedures for setting minimum and maximum values are the same for both internal and external Expression pedals. They are as follows:

- Press the [UTILITY] key once. The display reads:

```

Output Mode: Stereo
Foot Controller

→

```

- Press Function key [2] once. The display reads:

```

Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup

```

- Press Function key [3]. The display reads:

```

Exp Pedal Calibrate
Exp Pedal Min/Max
Exp Pedal CC Assign
and CC Xmit Setup

```

- Press Function key [2]. The display reads:

```

Set Pedal s Min/Max
Int Exp Pedal
Ext Exp Pedal

```

- Select whether you want to set the MIN/MAX for the internal or external Expression pedal by pressing the appropriate Function key. The display reads:

```

MIN/MAX - EXT PEDAL
Cur Pedal Value:
Set Min Value: 0
Set Max Value: 127

```

followed by the current pedal value and current minimum and maximum settings for the pedal you selected. Note that as you move the pedal, the CUR PEDAL VALUE changes to correspond.

- To change minimum or maximum values, press the Function key that corresponds with the value you want to change (Function key [1] for minimum, Function key [2] for maximum). Note that a cursor appears under the value.
- Using the Data wheel, change the value as desired. Note that MIN cannot be set higher than MAX. When you're finished, press the [UTILITY] key to exit.

OTHER PEDALBOARD TIDBITS

Here are a few other features that you will want to learn about to get the most out of your Control One foot controller.

Programming Set Lists: Another special feature of the Control One allows you to step through custom sequences of Programs using a single footswitch. This sequence is called a List. It can be up to 31 steps in length, and each step has its own Program number assignment.

The procedure for setting up a List of Programs is quite simple. First a Footswitch needs to be assigned to either List Up or List Down (see pg. 72). Once that is done, an arrow appears next to the asterisk on the right side of the display. This arrow simply tells you that pressing the [NEXT] key will take you to the List setup menu.

The procedure for setting up a List is as follows:

- From the Patch Assignment menu, press Function button [3] until the display reads:

```

Bank Number:      1
Foot Switch:      1
List Up           *→
  
```

- Press the [NEXT] key. The display reads:

```

List Size:        10
Step Number:      1
Program Number:   1
← [ ] [ ] [ ]
  
```

This display tells you that the current list is 10 steps long, and that the first step in the List will recall Program number 1.

- To change the number of steps in the List, press Function key [1] once. Using the Data wheel, adjust the length of the List (Lists can have a maximum of 31 steps).
- To change the step number in the List, press Function key [2] once and use the Data wheel to scroll to the step you want to change.
- When you have selected the step you want to change, press Function key [3] once and use the Data wheel to change the Program number recalled by the selected step.
- When you are finished setting your List, press the [UTILITY] key once to exit.

LED Assignments: The LED indicators of the Control One can be set up to function in one of three ways. In the LED NORMAL mode, the LED above the currently selected Patch will light. In LED REVERSED mode, all LEDs on the pedalboard except the currently selected Patch are lit. This setting is particularly useful for extreme low light environments where it is impossible to see the actual switches on the pedalboard. The third mode is called LED ALL ON, which causes all LEDs on the pedalboard to be lit all the time.

From the factory, the default setting of this option is LED NORMAL.

To select an LED mode, do the following:

- Press the [UTILITY] key once. The display reads:

```

Output Mode: Stereo
Foot Controller
                                     →
  
```

- Press Function key [2] once. The display reads:

```

Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup
  
```

- Press Function key [2]. The display reads:

```

LED Normal          *
LED Reversed
LED All On
  [ ] [ ] [ ]
  
```

- To select a mode, simply press the appropriate Function key. Note that the asterisk moves next to the option you choose.
- To exit, press [UTILITY] once.

Program/Bank/Tuner and Bypass Footswitches: These two footswitches are located at the far right side of the Control One next to the Expression pedal. The Program/Bank/Tuner footswitch, as you may have guessed, accesses Programs, Banks and the Tuner respectfully. To access a Program, press the Program/Bank/Tuner footswitch once and then enter the number of the Program using the other footswitches. To access a new Bank, press the switch twice and use the other footswitches. Pressing the Program/Bank/Tuner footswitch three consecutive times will place you into tuner mode.

NOTE: The tuner information found on the front of the 2101 is also sent to the Control One foot controller for convenient tuning in live situations.

The Bypass footswitch performs as its name implies. Pressing the Bypass footswitch once places you into Bypass mode (all effects are turned off). Pressing it again exits Bypass mode.

Alternate Bank Up/Down Footswitches: Many players feel that giving up two footswitches for use as Bank Up/Down switches in every Bank is just too costly. So, the GSP-2101 Artist allows you to re-assign the Program/Bank/Tuner and Bypass footswitches as Bank Up/Down footswitches. To change this assignment, do the following:

- Enter the Utilities menus by pressing the [UTILITY] button once. The screen reads:

```
Output Mode: Stereo
Foot Controller
→
```

- Press [2] to enter the Foot Controller menus. The screen reads:

```
Patch Assignment
LED Assignment
Exp Pedals and
CC Xmit Setup
```

- Press [Next] once. The screen reads:

```
Prg/ByP= Prg/ByP
```

- Press [1] once. The screen reads:

```
Prg/ByP= Bank up/dn
```

- Press [UTILITY] once to exit these menus.

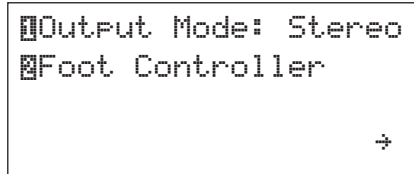
The Program/Bank/Tuner footswitch now functions as a Bank Up switch and the Bypass footswitch as a Bank down switch.

MONO VS. STEREO OUTPUT MODES

To get the best results from your GSP-2101 Artist, the output mode must be set for your particular setup. The OUTPUT MODE option in the Utility setup menu allows you to set whether the unit will be operated in stereo (dual outputs) or mono (single output). This is important for one reason: if the unit is set for stereo operation and only one output is used, effects may not sound the same as when both outputs are summed together to a single mono output. As a reminder, the GSP-2101 indicates the current output mode when it powers up.

To set the output mode, do the following:

- Enter the Utility setup menu by pressing the [UTILITY] button once. The display reads:



```

Output Mode: Stereo
Foot Controller
  
```

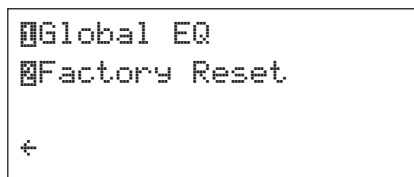
- Change the OUTPUT MODE option by pressing Function key [1] until its setting reflects the way you will be using your GSP-2101 Artist.
- To exit the Utility setup menu, press the [UTILITY] button again.

GLOBAL EQ

As you know, each Program in the GSP-2101 Artist has a 7 Band Graphic local EQ that can be customized individually and stored in memory for later recall. The Global EQ, however, serves as a master equalizer that everything passes through before leaving the outputs of the GSP-2101 Artist. The frequency centers and the boost / cut ranges of the Global EQ are the same as those found in local EQs.

The Global EQ is used to customize the overall tonal character of the GSP-2101 Artist. From the factory, the default Global EQ settings are completely flat (no boost or cut at any of the frequencies). Many guitarists like to setup a Program that is completely flat (no EQ, no effects, no distortion), then use the Global EQ to tweak their rig up so that it sounds correct to them in its most basic state. The better the natural rig sound, the better all the presets will sound. The procedure for changing the setting of the Global EQ is as follows:

- Press the [UTILITY] key once to enter the Utility setup mode.
- Press [NEXT] once. The display reads:



```

Global EQ
Factory Reset
  
```

- Press Function key [1] once to access the Global EQ.
- Use the [NEXT] and [PREV] keys to select the frequency you want to adjust. Use the Data wheel to adjust the amount of boost or cut for the selected frequency.
- When you're finished, press the [UTILITY] key to return to exit.

FACTORY RESET

Factory Reset gives you two different options for restoring the memory of the GSP-2101 Artist to its original factory condition. The first (RELOAD PRG/ALG) is a hard reset that permanently erases all user Programs and Algorithms in the unit. If you want to erase everything you've programmed, this is the reset to use. The second option (RESET Utility/MIDI) is a softer reset that simply restarts the GSP-2101 Artist. This reset does not affect the status of any user Programs or Algorithms, and is similar to turning the GSP-2101 Artist's power switch off and back on. To restart the unit, this is the reset to use.

WARNING: Performing the following procedure will destroy all user-programmed data (including Programs and Algorithms), and all such data will be lost forever!

To perform a Program Algorithm reset of the GSP-2101 Artist, do the following:

- After entering Utility mode, press [NEXT] once. The display reads:

```

Global EQ
Factory Reset

←

```

- Press Function key [2]. The display reads:

```

Reload Prg/Alg
Reset Utility/MIDI

```

- Press Function key [1] once. The display reads:

```

Are You Sure?

No                Yes

```

- This is your last chance to change your mind. To reset, press Function key [3] once. The display briefly reads:

```

Resetting
Please wait ...  /

```

after which you exit. To abort the operation, press Function key [1] or [UTILITY], and you will be returned to the current Program.

To reset Utility and MIDI menus of the GSP-2101 Artist, do the following:

- After entering Utility mode, press [NEXT] once. The display reads:

```

Global EQ
Factory Reset

←

```

- Press Function key [2]. The display reads:

```

Reload Pr9/A19
Reset Utility/MIDI

```

- Press Function key [2] once. The display reads:

```

Resetting
Please wait ...  /

```

after which you will be returned to the current Program.

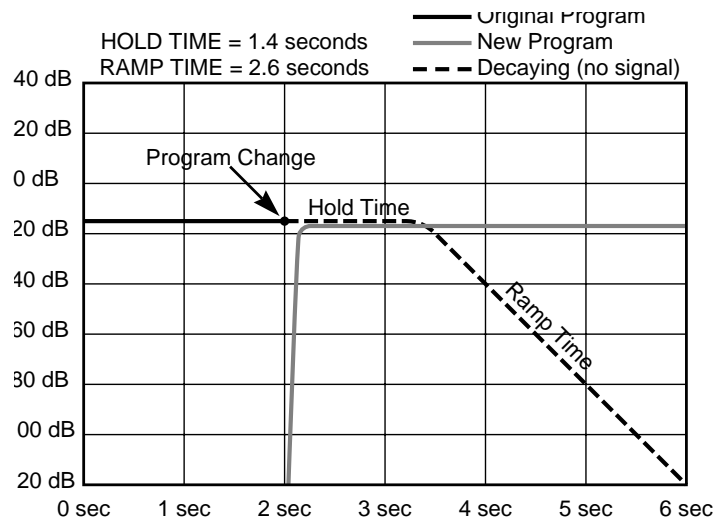
SEAMLESS PROGRAM CHANGE TIMES

With a PPC-210 installed, a third page is added to the Utility menu; it's called the Seamless Program Change menu, and it allows you to determine the behavior of each Program when seamless Program changing occurs.

You also have two basic Algorithm types at your disposal instead of one: single S-DISC Algorithms and dual S-DISC Algorithms. Single S-DISC Algorithms let you take advantage of seamless changing, while dual S-DISC Algorithms give you lots of room for complex effects chains.

The Seamless Program Change menu consists of two Parameters: HOLD TIME and RAMP TIME. These Parameters behave exactly like the sustain-release portion of an ADSR (attack-decay-sustain-release) envelope generator (such as those found in keyboards). HOLD TIME determines how long the currently selected Program holds after a Program change is received, while RAMP TIME controls the length of the Program's decay after HOLD TIME has elapsed.

The following diagram shows exactly what happens during the course of a seamless Program change. The example settings are: HOLD TIME = 1.4 seconds; RAMP TIME = 2.6 seconds.



From 0 seconds to 2 seconds, the currently selected Program runs normally using S-DISC 1. At 2 seconds, a Program change message is received, initiating HOLD TIME for the original Program and ramping the S-DISC 1 inputs to zero. Simultaneously, the new Program is loaded into S-DISC 2 and begins running. At 3.4 seconds (1.4 seconds from the Program change), RAMP TIME is initiated, which smoothly ramps the original Program level down to inaudibility over the course of 2.6 seconds.

It is significant to note that, between the 2 and 6 second marks, BOTH PROGRAMS ARE RUNNING AT THE SAME TIME. No other device currently available has this ability.

NOTE: Be sure to set up your own Programs this way, as unnecessarily long HOLD and RAMP TIMES reduce the speed and efficiency of Program changes.

The Seamless Program Change menu can be reached using the following procedure:

- Use the Program [UP] or [DOWN] keys to select the Program you want to change.
- Press [UTILITY] once. The display reads:

```

Output Mode: Stereo
Foot Controller
                                     →
    
```

- Press [NEXT] twice. The display reads:

```

Seamless Program 99
Output Mode: Stereo
Foot Controller
Hold Time: 5.0 Sec
Ramp Time: 0.0 Sec
←
    
```


Note that a cursor appears under the 0 in HOLD TIME.

This is the seamless Program change setup menu. This menu is Program specific; each Program can be set up to behave differently using this setup screen.

IMPORTANT: The seamless Program change setup menu only shows up WHEN THE CURRENTLY LOADED PROGRAM USES A SINGLE S-DISC ALGORITHM. If this menu does not appear using the procedure described above, check to make sure that the Program uses a single S-DISC Algorithm.

- Using the Data wheel, change HOLD TIME to the desired value.
- Press Function key [2] once. The cursor moves to RAMP TIME.
- Use the Data wheel to select the desired value.
- When you're finished, press [UTILITY] to exit.

The maximum available RAMP TIME is 10 seconds. HOLD TIME also has a maximum setting of 10 seconds, but also includes an INFINITE option that holds the previous Program indefinitely until the next Program change.

IMPORTANT: The INFINITE option is not an infinite repeat for delays or reverbs. Infinitely repeating effects must be set up in the Parameter menu for each Program. The INFINITE option allows the infinitely repeating effect to continue without ramping down after a Program change.

STUDIO HINTS

The GSP-2101 has two sets of outputs that do slightly different things. Both the XLR and 1/4" outputs provide great sounding audio signals, but the XLRs can also have the Cabinet Emulation enabled (see pg. 20). Having both sets of outputs at your disposal can make things a little easier for you in the studio.

Most mixing consoles have input channels that accept both XLR inputs and 1/4" line inputs. By connecting the both the XLRs and 1/4" outputs to the mixing console, you can have the best of both worlds at the flip of a switch. Use the XLR outputs with the Cabinet Emulation engaged for your distortion tones. Then, switch to the 1/4" line inputs for crystal clean sounds when you don't need the Cabinet Emulation filters.

USING THE 2101 FOR STUDIO PROCESSING

The digital section of the GSP-2101 Artist is so powerful that it seems a waste to have it sitting around during mix-down after you have finished tracking your guitar parts. Well don't let it sit there! Put it to work!

If you'll remember, the 2101 has a stereo FX loop return. This means you have two inputs into the digital effects section. Simply connect a couple Aux Effect Sends from your mixing console to the stereo FX Loop return of the 2101. You can construct an Algorithm (or more!) that is better suited for you studio mix-down needs. Also remember to turn the Gate OFF (since it is looking at the guitar input for triggering information) and the Wet to Dry Mixer to ALL WET.

The two inputs can be used for true stereo processing or for running two independent signal paths. A simple, yet very usable Algorithm is shown below:

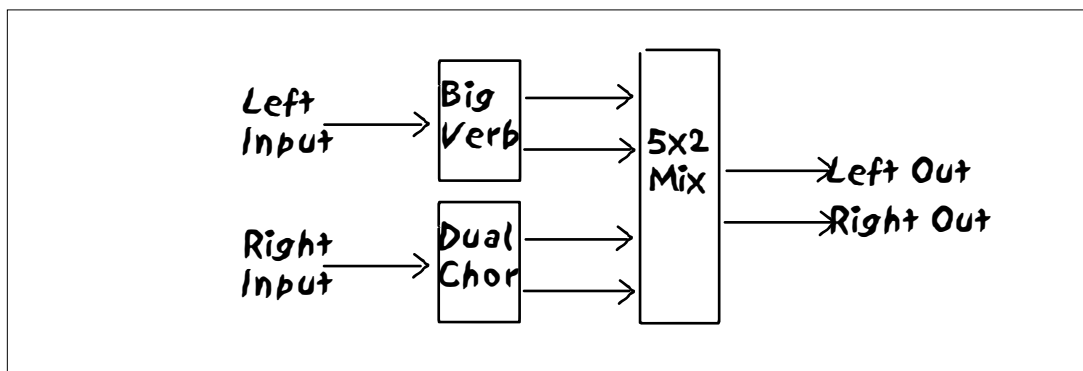


Fig 8-1

ALTERNATE SETUP CONFIGURATIONS

There are many basic ways to setup your GSP-2101 Artist. Using a single combo amp, perhaps two, or perhaps a stereo power amp with a couple guitar cabinets. But what if you already have a classic rig and you don't want to give up what it has to offer you. Well, the 2101 can interface into several situations. Here is an example:

Suppose you own a 4x12 cabinet, with a classic sounding (and plenty loud) Amp head. The Amp head has a great tone of its own, so you don't want to lose that. Plug your guitar into the input of the Amp head and then from the second input, daisy chain the 2101 input to the Amp head (if your Amp head doesn't have a second input, a -Y- cable will work just as well).

Now we are actually feeding the two pre-amps the same guitar signal. Most Amp heads have an FX loop, so let's put this to work for us. Use an instrument cable to connect the Amp head's FX loop out to the Left (mono) FX Loop return of the 2101. Take another cable and connect the 2101's Left Output (mono) to the Amp head's FX loop return. The whole wiring configuration should look something like this:

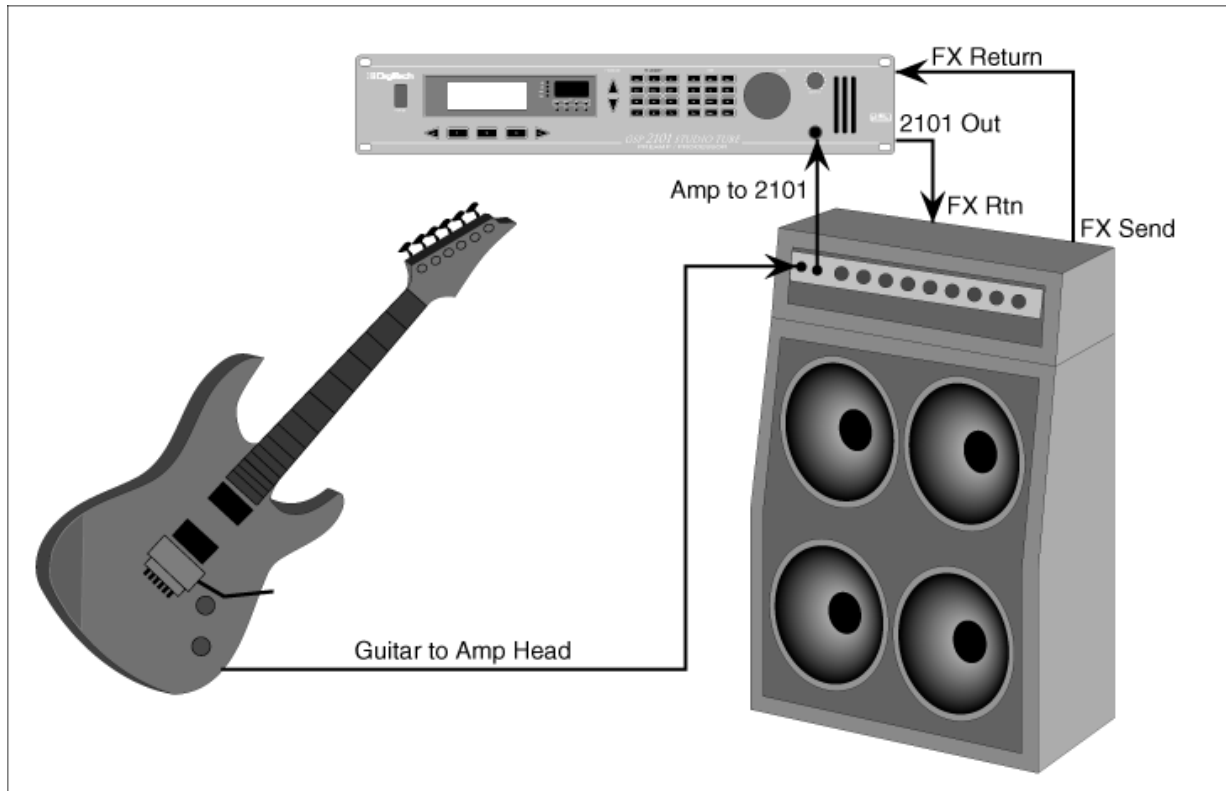


Fig 8-2

With this type of setup (it also, can be expanded to run in stereo), you get both great pre-amps, and the Amp head now has digital effects it can work with. The programmable FX Loop in the 2101 becomes control central for this rig. Signal from the guitar always feeds both pre-amps, but the 2101's FX Loop decides what happens from there. If the Loop is set to BYPASS, the 2101's pre-amp becomes the principle preamp. When the FX Loop is set to NO SUM, the Amp head takes over...except that the Digital Effects section of the 2101 is still in the picture! Your old Amp head never sounded better! If you are real experimental, setting the FX Loop to SUMMED gives you usage both pre-amps.

ABOUT SYSEX DOCUMENTATION

If you are interested in obtaining a copy of the SysEx documentation for the GSP-2101 for the purposes of writing a Editor/Librarian or some other application that requires extended control of your 2101, please contact us at:

GSP-2101 SysEx Documents
 Attn: Product Management Department
 8760 South Sandy Parkway
 Sandy, Utah 84070 USA

or call our Customer Service Department (801)566-8800

SPECIAL CHARACTERS

There are several special characters that the GSP-2101 Artist uses to tell you at a glance exactly what is happening. Most special characters in the GSP-2101 Artist are in reversed type, that is, reversed out of a black background, and they usually appear in the upper right-hand corner of the display. There are instances, however, when they appear somewhere other than in the upper right-hand corner or when more than one special character appears in the display.

Letters A-F are used in Algorithms where two or more effects Modules have the same name. This is an instance in which a special character will immediately follow the Module name rather than appear in the corner of the display. Following is a list of all the GSP-2101 Artist special characters and their meanings.

 This indicates that a Continuous Controller is linked to the Parameter.

 Characters from this group are used for distinguishing between Modules of the same name in a single Algorithm.

 These arrows at the bottom of menu screens indicate that additional menus can be reached using the [PREV]/[NEXT] buttons.

 The asterisk in the top right corner of a Program's Title screen indicates the current Program has been modified. In the Parameter Screen, this indicates the currently selected Parameter has been changed.

Harmony Interval Charts

Intervals for the first seven scale types in Fig. 9-1 (Major to Lydian) are expressed as simple steps of the selected scale. The second seven scale types in Fig. 9-2 (Lydian Aug. to Blues), use a more detailed method of the naming of intervals. These charts are referenced with C as the input note. Other input notes will vary.

Interval	Major	Minor	Harm.Minor	Mel.Minor	Dorian	Mixolydian	Lydian
↑Oct	C	C	C	C	C	C	C
↑7th	B	B _b	B	B	B _b	B _b	B
↑6th	A	A _b	A _b	A	A	A	A
↑Oct	G	G	G	G	G	G	G
↑Oct	F	F	F	F	F	F	F#
↑Oct	E	E _b	E _b	E _b	E _b	E	E
↑Oct	D	D	D	D	D	D	D
Ref	C	C	C	C	C	C	C
↓2nd	B	B _b	B	B	B _b	B _b	B
↓3rd	A	A _b	A _b	A	A	A	A
↓4th	G	G	G	G	G	G	G
↓5th	F	F	F	F	F	F	F#
↓6th	E	E _b	E _b	E _b	E _b	E	E
↓7th	D	D	D	D	D	D	D
↓Oct	C	C	C	C	C	C	C

Fig. 9-1

Int.	Lydian Aug.	Int.	Major Pent.	Int.	Minor Pent.	Int.	Blues	Int.	Whole Tone	Int.	Hif-Whl Dim.	Int.	Whi-Hif Dim.
										↑0ct	C	↑0ct	C
↑0ct	C									↑b7th	B _b	↑6th	B
↑7th	B					↑0ct	C	↑0ct	C	↑6th	A	↑5th	A
↑6th	A	↑0ct	C	↑0ct	C	↑b7th	B _b	↑b7th	A#	↑5th	G	↑b6th	G#
↑#5th	G#	↑6th	A	↑b7th	B _b	↑5th	G	↑#5th	G#	↑#4th	F#	↑b5th	F#
↑#4th	F#	↑5th	G	↑5th	G	↑b5th	F#	↑#4th	F#	↑3rd	E	↑4th	F
↑3rd	E	↑3rd	E	↑4th	F	↑4th	F	↑3rd	E	↑#2nd	E _b	↑b3rd	E _b
↑2nd	D	↑2nd	D	↑b3rd	E _b	↑b3rd	E _b	↑2nd	D	↑2nd	D _b	↑2nd	D
Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C
↓b2nd	B	↓b3rd	A	↓2nd	B _b	↓2nd	B	↓2nd	A#	↓2nd	B _b	↓b2nd	B
↓b3rd	A	↓4th	G	↓4th	G	↓4th	G	↓3rd	G#	↓b3rd	A	↓b3rd	A
↓3rd	G#	↓b6th	E	↓5th	F	↓b5th	F#	↓b5th	F#	↓4th	G	↓3rd	G#
↓b5th	F#	↓b7th	D	↓6th	E _b	↓5th	F	↓b6th	E	↓b5th	F#	↓b5th	F#
↓b6th	E	↓0ct	C	↓0ct	C	↓6th	E _b	↓b7th	D	↓b6th	E _b	↓5th	F
↓b7th	D					↓0ct	C	↓0ct	C	↓6th	E	↓6th	E _b
↓0ct	C									↓7th	D _b	↓b7th	D
										↓0ct	C	↓0ct	C

Fig. 9-2

Memory Usage Chart

On the following page is a list of all the Modules available in the GSP-2101 Artist and the RAM and CPU memory requirements for each. The values shown next to each Module are approximate, due to the fact that there are several other types of memory involved in the process of building an Algorithm. For the sake of simplicity, we've condensed these several different types into two basic groups: RAM and CPU blocks.

There are instances where you'll think you may just be able to squeeze another Module into an Algorithm (according to the memory usage chart), when the display of the GSP-2101 Artist will tell you that it won't fit. If any one of the other memory types are completely used, the GSP-2101 Artist will tell you that the Module won't fit.

When building your own Algorithms, try to leave a few blocks of extra space in each category. This will simplify the Algorithm-building process and eliminate memory questions at the same time.

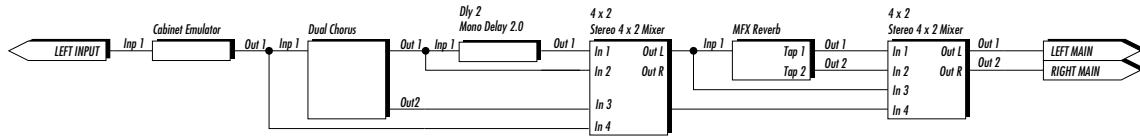
Section 9 - Appendix

	RAM	CPU		RAM	CPU
EQUALIZERS					
6-Band Graphic	0	51	Stereo Dual Detuner	17	100
10-Band Graphic	0	81	4-Voice Detuner	9	158
15-Band Graphic	0	114	Arpeggiator	78	58
Low-Pass Filter	0	11	Stereo Arpeggiator	156	84
High-Pass Filter	0	11	Whammy	76	57
1-Band Parametric	0	14	Programmable Wham.	76	58
3-Band Parametric	0	30	Smooth Whammy	16	167
5-Band Parametric	0	47	NOISE REDUCTION / GATES		
Band-Pass Filter	0	11	Silencer™ Noise Reduc.	1	12
Notch Filter	0	12	Stereo Silencer™ NR	1	14
Cabinet Emulator	0	17	Noise Gate	1	12
REVERBS			Stereo Noise Gate	1	14
MFx Reverb	30	69	TREMOLOS / AUTO PANNERS		
BigVerb	79	119	Mono Tremolo	0	15
GigaVerb	191	225	Stereo Tremolo	0	18
Gated Reverb	62	135	Auto Panner	0	24
Stereo BigVerb	65	136	4 Way Auto Panner	0	34
Stereo GigaVerb	157	221	PHASERS		
Stereo Gated Reverb	85	217	Mono Phaser	2	46
DELAYS			Dual Phaser	2	48
Mono Delay 0.5	24	12	Stereo Phaser	2	68
Mono Delay 1.0	47	12	4-Voice Phaser	8	100
Mono Delay 2.0	94	12	OTHER		
Mono Delay 5.0	235	12	Phase Inverter	0	4
Stereo Delay 0.5	47	18	Traditional Wah	0	11
Stereo Delay 1.0	94	18	Smooth Wah	0	25
Stereo Delay 2.0	188	18	Automatic Wah	0	49
2-Tap Delay 0.5	24	16	Mono Ducker	0	28
2-Tap Delay 1.0	47	16	Stereo Ducker	0	32
2-Tap Delay 2.0	94	16	Tuning Reference	0	15
2-Tap Delay 5.0	235	16	MIXERS		
4-Tap Delay 0.5	24	24	2x1 Mixer	0	5
4-Tap Delay 1.0	47	24	3x1 Mixer	0	6
4-Tap Delay 2.0	94	24	4x1 Mixer	0	7
4-Tap Delay 5.0	235	24	5x1 Mixer	0	8
Modulated Delay	97	48	6x1 Mixer	0	9
Stereo Modulated Delay	102	62	7x1 Mixer	0	10
SAMPLERS			8x1 Mixer	0	11
Sampler 1.0	47	110	10x1 Mixer	0	13
Sampler 2.5	118	98	2x2 Mixer	0	8
Sampler 5.0	235	98	3x2 Mixer	0	10
Stereo Sampler 1.0	94	110	4x2 Mixer	0	13
Stereo Sampler 2.5	235	110	5x2 Mixer	0	15
CHORUSES			6x2 Mixer	0	17
Mono Chorus	10	50	7x2 Mixer	0	19
Dual Chorus	10	62	8x2 Mixer	0	21
4-Phase Chorus	10	82	10x2 Mixer	0	22
Stereo Chorus	19	66	12x2 Mixer	0	29
Stereo Dual Chorus	20	90	14x2 Mixer	0	31
FLANGERS			16x2 Mixer	0	37
Mono Flanger	10	54	2x3 Mixer	0	6
Dual Flanger	19	68	3x3 Mixer	0	8
4-Phase Flanger	38	96	4x3 Mixer	0	10
Stereo Flanger	19	70	5x3 Mixer	0	12
PITCH SHIFTERS			6x3 Mixer	0	14
Pitch Shifter	13	60	7x3 Mixer	0	16
Dual Pitch Shifter	13	110			
Stereo Pitch Shifter	25	78			
Smooth Pitch Shifter	16	167			
Harmony	1	188			
Mono Detuner	9	44			
Dual Detuner	9	62			
Stereo Detuner	17	64			

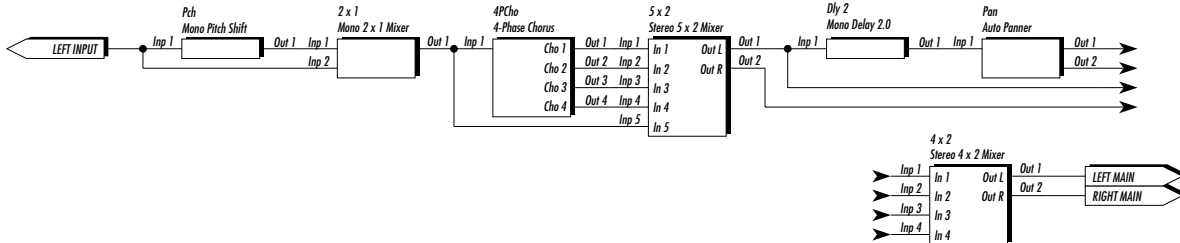
Factory Algorithm Routing Diagrams

Following are block diagrams of all the Factory Algorithms. These diagrams show all of the input and output information associated with each Module, as well as the signal path routings for each of the 32 Algorithms.

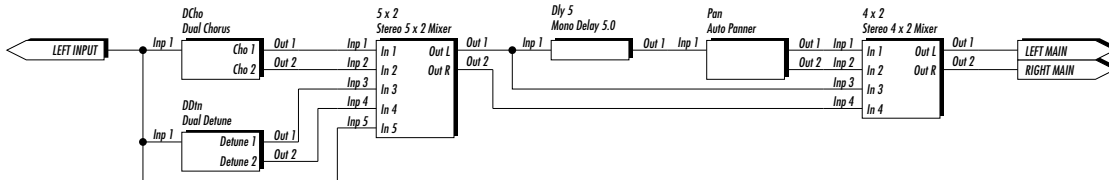
Algorithm #1
CabEm>DCho Dly Rvb



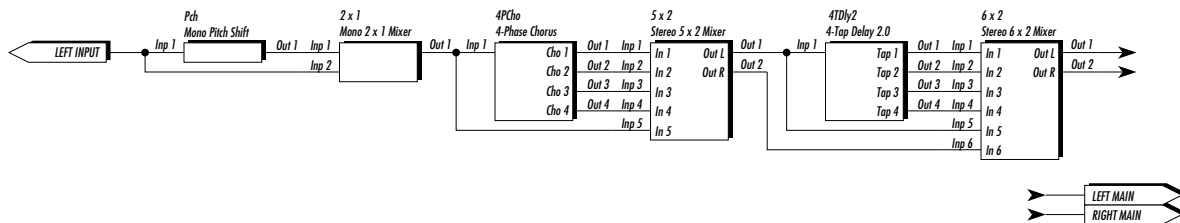
Algorithm #2
Pch>Cho4>Dly Pan



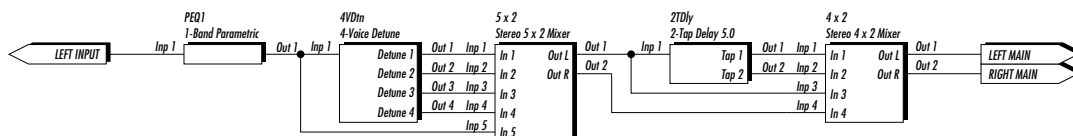
Algorithm #3
Cho+Dtn>Dly Pan



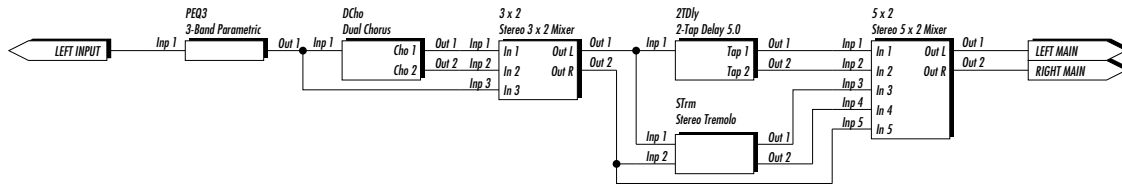
Algorithm #4
Pitch>Chor4>4Tap



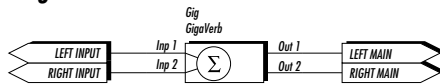
Algorithm #5
4VoiceDtn>2Tdly5



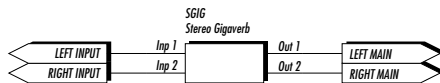
Algorithm #6
Cho>2TDly>StTrem



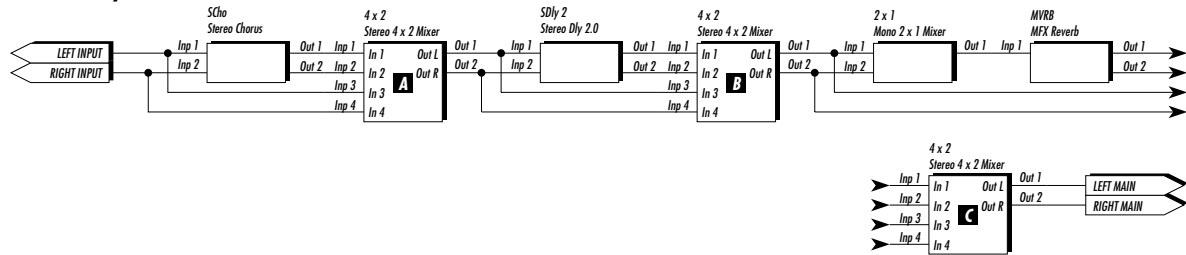
Algorithm #7
GigaVerb for Gtr



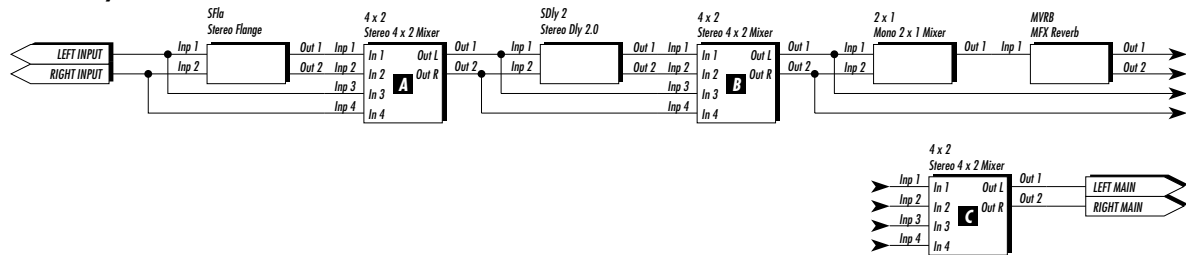
Algorithm #8
Stereo GigaVerb



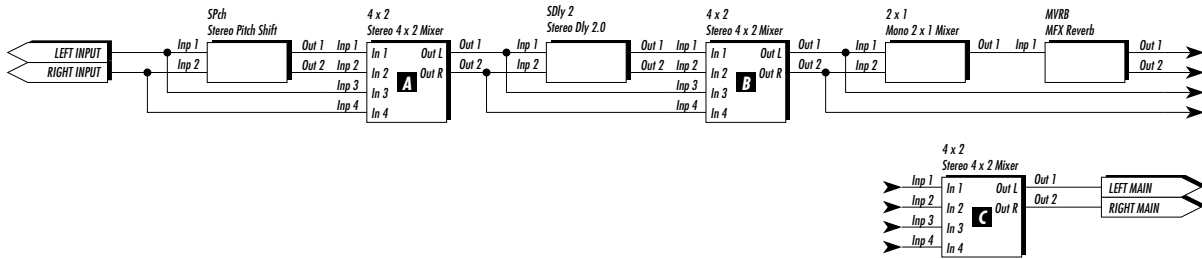
Algorithm #9
St Cho>Dly>Reverb



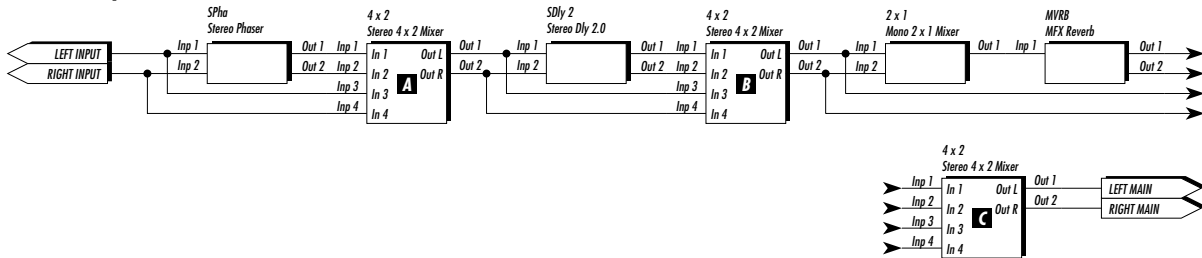
Algorithm #10
St Fla>Dly>Reverb



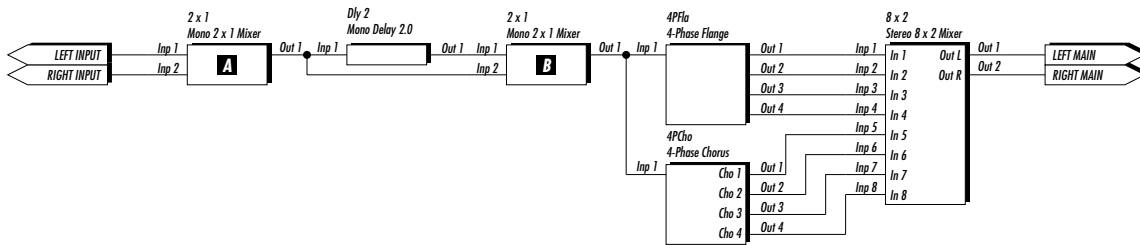
Algorithm #11
St Pch>Dly>Revrb



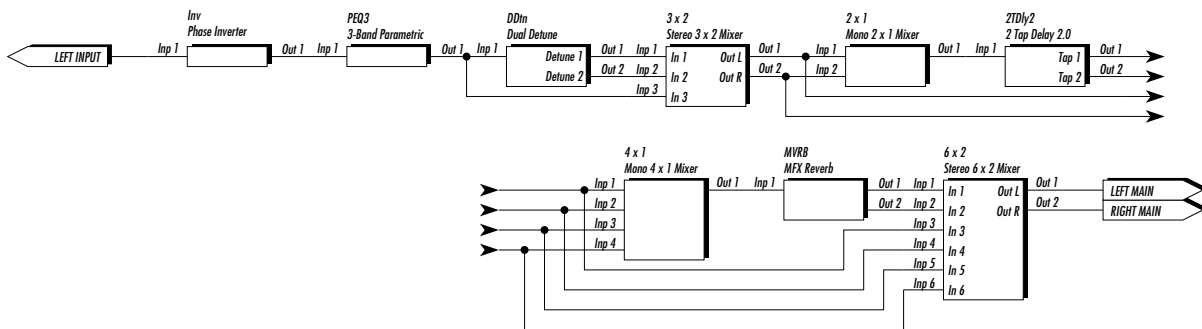
Algorithm #12
St Pha>Dly>Revrb



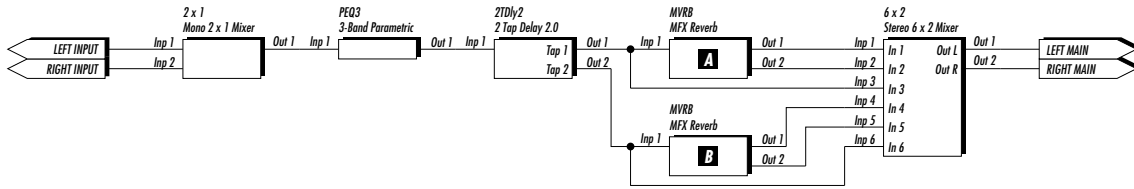
Algorithm #13
Dly>4PhaseChoFla



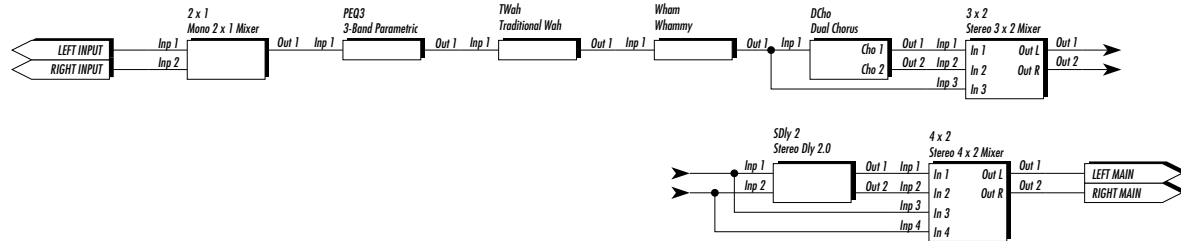
Algorithm #14
DTune>2Tap>Reverb



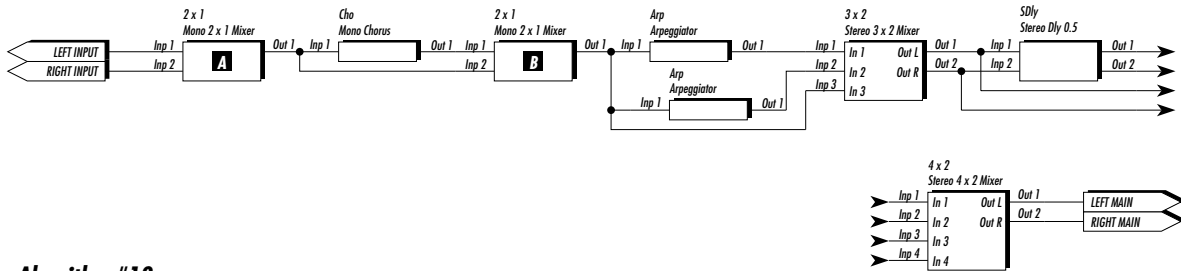
Algorithm #15
2TDly>2 Reverbs



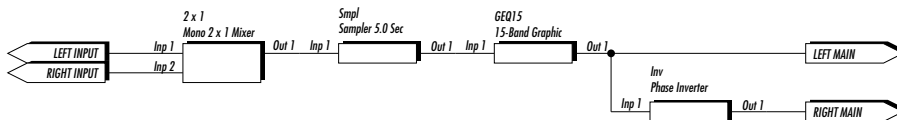
Algorithm #16
Wah>Wham>Cho>Dly



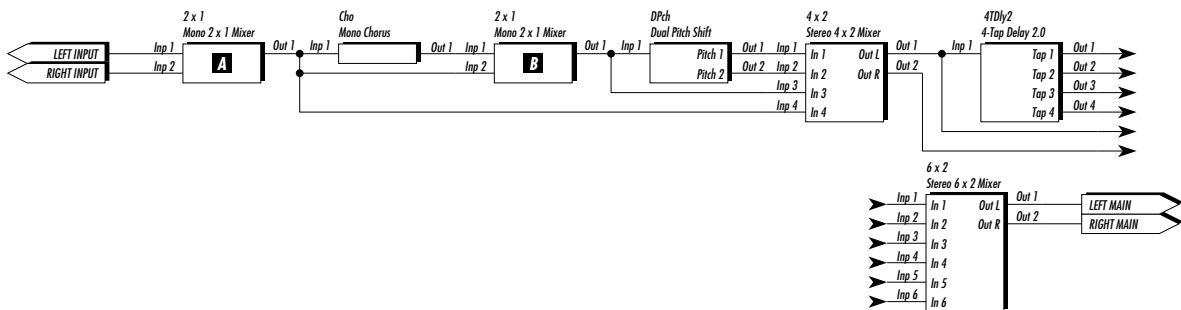
Algorithm #17
Cho>Arpeggio>Dly



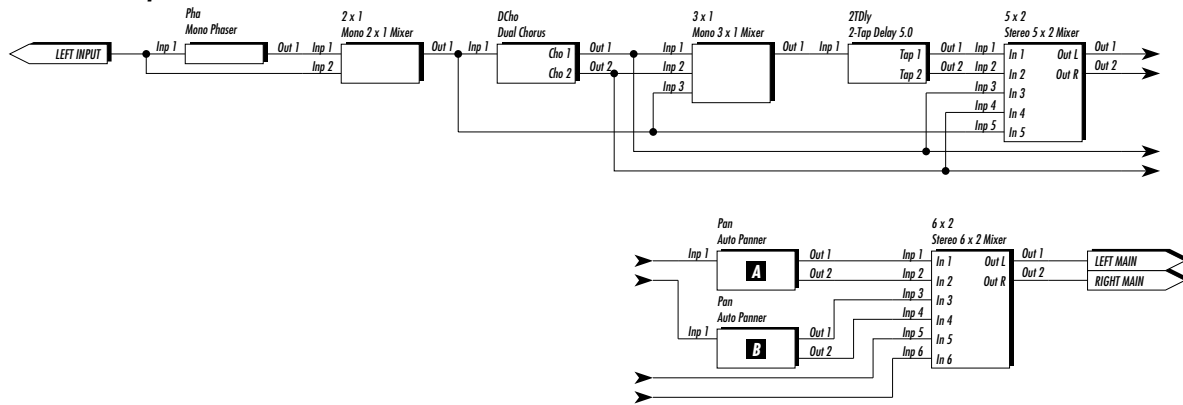
Algorithm #18
Sampler5.0>GEQ15



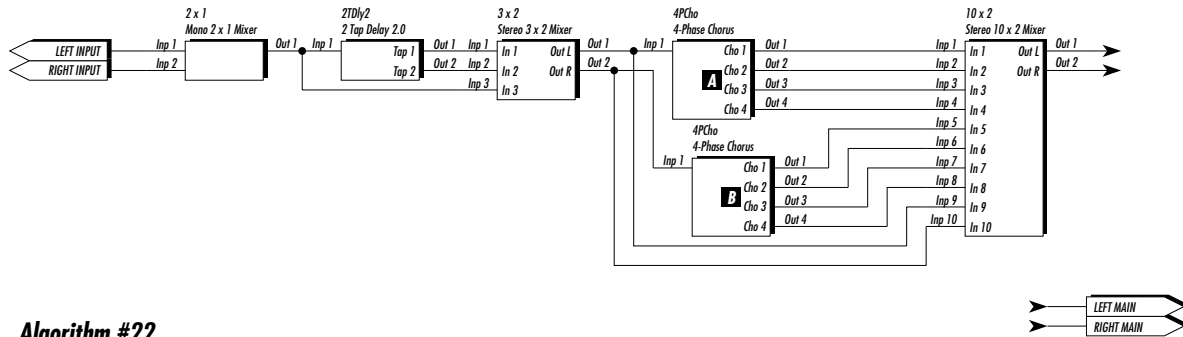
Algorithm #19
Cho>2 Pitch>4Tap



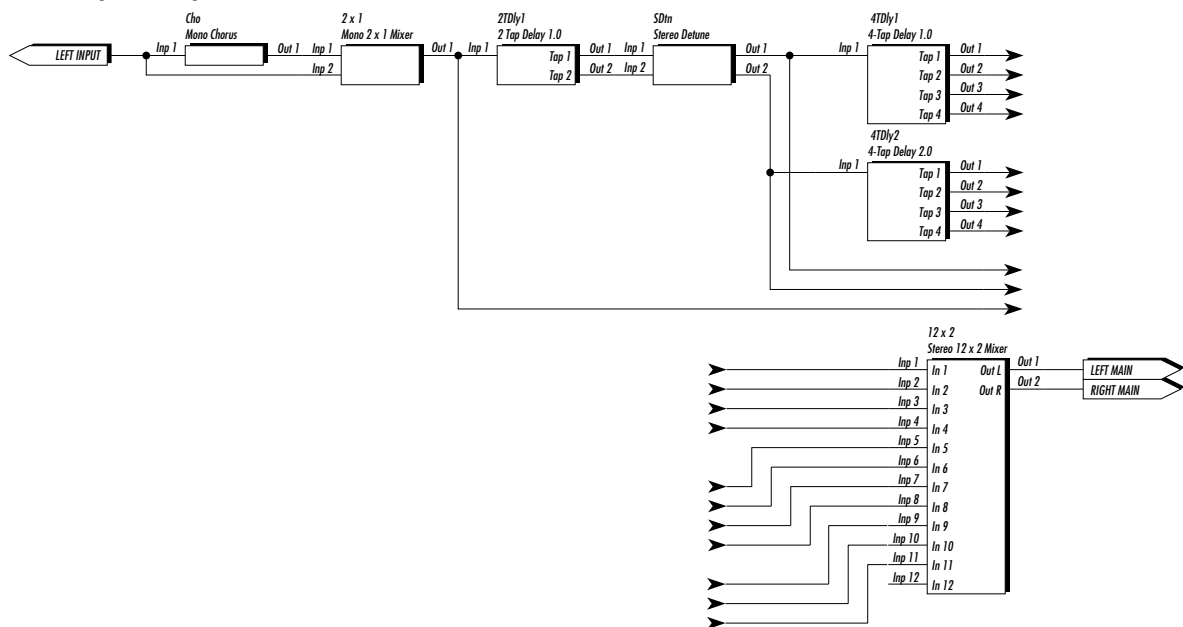
Algorithm #20
Pha>Cho>2Tap>Pan



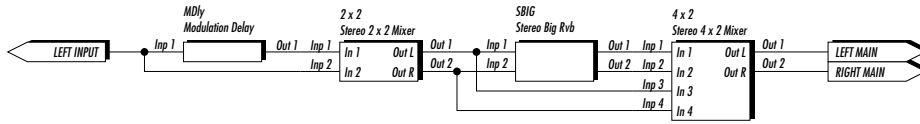
Algorithm #21
Dly>8Voice Chorus



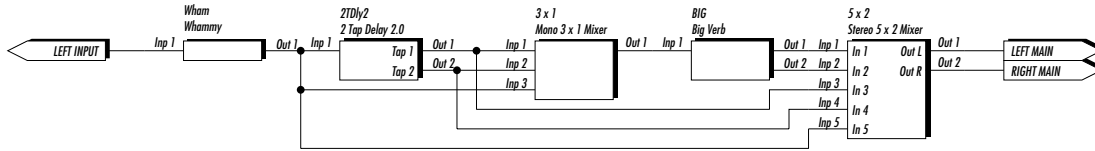
Algorithm #22
Cho>2Tap>Dt>8Tap



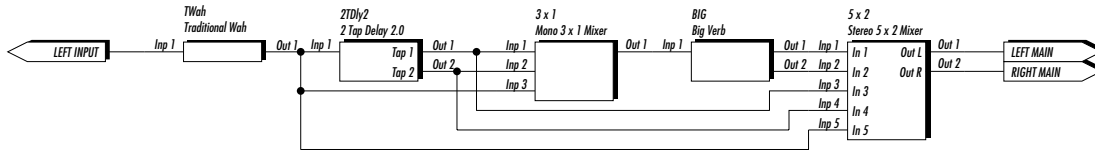
Algorithm #23
Mod Dly>St Revrb



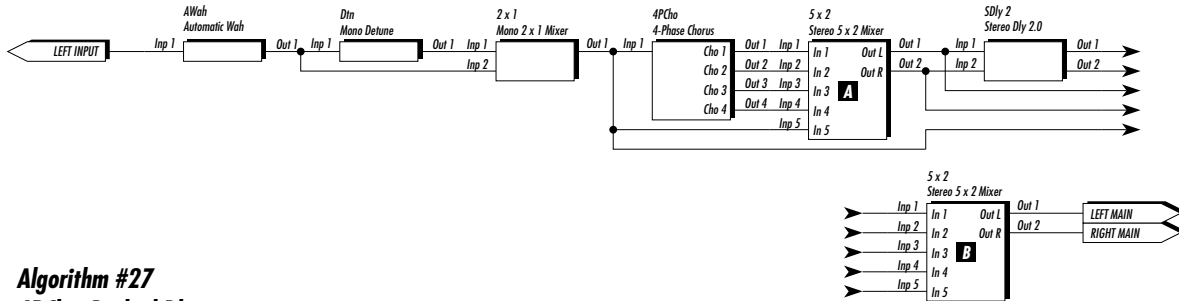
Algorithm #24
Whammy>2Tap>Rvrb



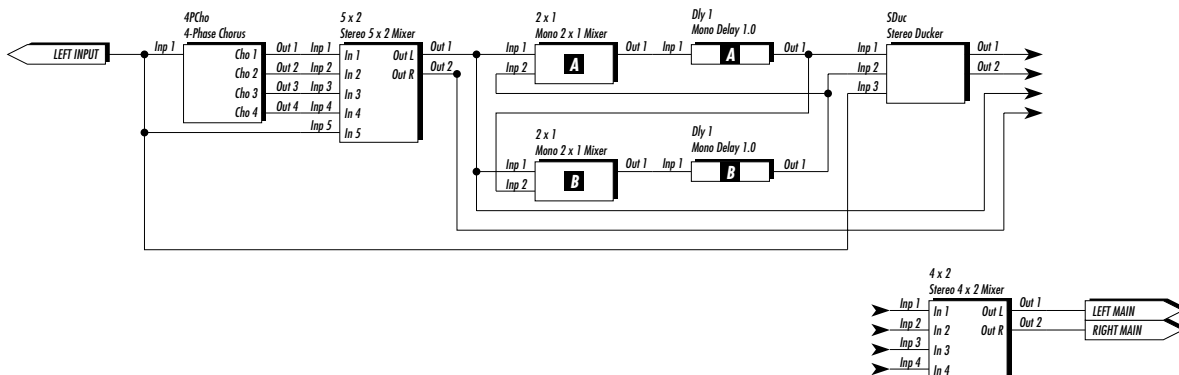
Algorithm #25
Wah>2Tap>Rvrb



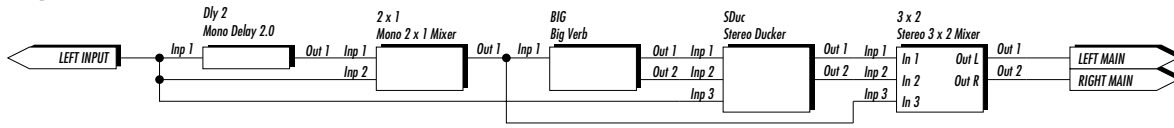
Algorithm #26
AWah>Dtn>Cho>Dly



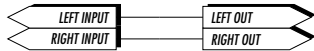
Algorithm #27
4PCho>Ducked Dly



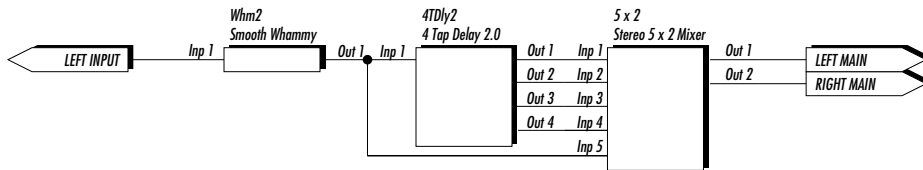
Algorithm #28
Dly>Ducked Reverb



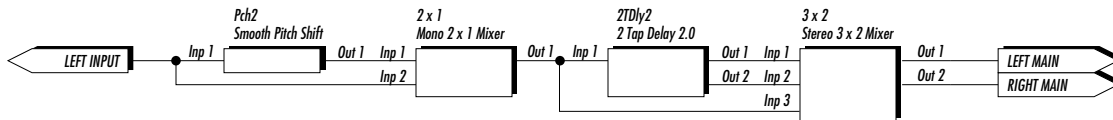
Algorithm #29
No Digital



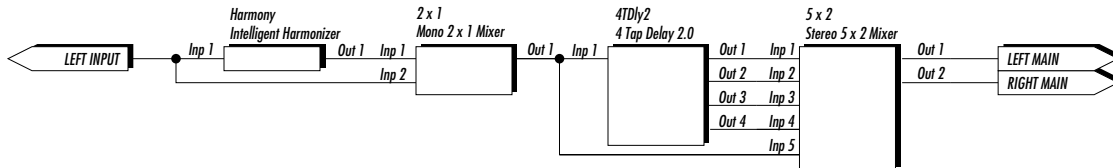
Algorithm #34
Wham2>4 Tap Dly



Algorithm #35
Pch2>2 Tap Dly



Algorithm #36
Harmony>4 Tap Dly



Factory Program List

1	Lead On Me	F9	Frank Gambale	79	Phaser in Space	F12	
2	Smiling Chords	F9	Frank Gambale	80	Whammy Down (use FC) . . .	F16	
3	Sonofa Blues Solo	F9	Paul Pesco	81	Grunge Solo	F15	
4	Studio Strat	F7	Paul Pesco	82	Naked Solo	F29	
5	Band Of Jeeps	F13	Paul Pesco	83	3rd Above- D Mixolyd	F36	
6	Airgulls	F3	Eddie Berner	84	Primitive & Effective	F29	
7	Mount Shasta	F21	Steve Vai	85	Look Wah, No Feet!	F26	
8	Wetness	F7	Steve Vai	86	Possessed to Skate	F9	
9	MyNervousPhase	F9	Jennifer Batten	87	Funhouse	F7	
10	Wild Wild Wah Wes	F25	Wesley B. Wright	88	Whammy Down2 (use FC) . . .	F34	
11	Cuccurullo Lead	F11	Warren Cuccurullo	89	3rd Above- A Major	F36	
12	Galactic Tenths	F2	Warren Cuccurullo	90	Clean and Wide	F3	
13	Morse Clean Chords	F21	Steve Morse	91	I Like My Surf Board	F7	
14	Metal Rhythm	F3	Yngwie Malmsteen	92	Chorus Tremolo	F6	
15	Home Grown Tone	F3	Chris Haskett	93	Dirty Slapped Phaser	F20	
16	Home Page	F12	Chris Haskett	94	Sludge Tap Detuner	F5	
17	George Blues Lead	F8	George Lynch	95	EdgeHog	F29	
18	George Rhythm	F15	George Lynch	96	String Volume Swell	F4	
19	Amp On Fire	F29	Ivan Julian	97	ZZ Tush Comp	F7	
20	Acid Wash	F9	Vinnie Moore	98	Big Rock Rhythm	F9	
21	Vinman Lead	F3	Vinnie Moore	99	Dire Strat Grit	F23	
22	Mandolin Echo	F15	Don Teshner	100	Big Clean Rhythm	F21	
23	"Ed"ify Yourself	F12	Dweezil Zappa	101	Lead On Me	F9	Frank Gambale
24	Stratocast Maximus	F7	Dweezil Zappa	102	Smiling Chords	F9	Frank Gambale
25	Traveler Lead	F2	Chan Kinchla	103	Sonofa Blues Solo	F9	Paul Pesco
26	Upchurch's Jazz	F9	Phil Upchurch	104	Studio Strat	F7	Paul Pesco
27	Wes Montgomery	F2	Phil Upchurch	105	Band Of Jeeps	F13	Paul Pesco
28	Mayzing Chorus	F5	Tim May	106	Airgulls	F3	Eddie Berner
29	Dry Stratini	F29	Warren DeMartini	107	Mount Shasta	F21	Steve Vai
30	Stevens Rhythm	F7	Steve Stevens	108	Wetness	F7	Steve Vai
31	Stevens Solo	F15	Steve Stevens	109	MyNervousPhase	F9	Jennifer Batten
32	Big Al	F12	Albert Lee	110	Wild Wild Wah Wes	F25	Wesley B. Wright
33	Pimp Life	F5	Blues Saraceno	111	Cuccurullo Lead	F11	Warren Cuccurullo
34	Dusty Lead	F7	Blues Saraceno	112	Galactic Tenths	F2	Warren Cuccurullo
35	Dizzy Jen Turner	F20	Jennifer Turner	113	Morse Clean Chord	F21	Steve Morse
36	Skunk Pedal Steel	F7	Jeff "Skunk" Baxter	114	Metal Rhythm	F3	Yngwie Malmsteen
37	Squall Now	F24	Reeves Gabrels	115	Home Grown Tone	F3	Chris Haskett
38	All U Need	F29	Reeves Gabrels	116	Home Page	F12	Chris Haskett
39	Fingerpickin'	F14	Lawrence Juber	117	George Blues Lead	F8	George Lynch
40	Will Lee Sledge-H	F35	Will Lee	118	George Rhythm	F15	George Lynch
41	Will "Enve" Lee	F26	Will Lee	119	Amp On Fire	F29	Ivan Julian
42	Stanley	F7	Stanley Clarke	120	Acid Wash	F9	Vinnie Moore
43	Fretless Melody	F3	Steve Bailey	121	Vinman Lead	F3	Vinnie Moore
44	Solo Bass Fifths	F2	Steve Bailey	122	Mandolin Echo	F15	Don Teshner
45	Terminator	F19	Vail Johnson	123	"Ed"ify Yourself	F12	Dweezil Zappa
46	Funkenstein	F20	T.M. Stevens	124	Stratocast Maximus	F7	Dweezil Zappa
47	A.J. Fingerstyle	F3	Alphonso Johnson	125	Traveler Lead	F2	Chan Kinchla
48	Fretless Bass Casas	F7	Jorge Casas	126	Upchurch's Jazz	F9	Phil Upchurch
49	Very Fishy	F12	Chris Squire	127	Wes Montgomery	F2	Phil Upchurch
50	Squire's RickenB	F29	Chris Squire	128	Mayzing Chorus	F5	Tim May
51	Look Out Below	F2	Kenny Aaronson	129	Dry Stratini	F29	Warren DeMartini
52	SR EW&F Rhythm	F9	Sheldon Reynolds	130	Stevens Rhythm	F7	Steve Stevens
53	*ELECTRIC SARALAND	F22		131	Stevens Solo	F15	Steve Stevens
54	Wet 12 String	F4		132	Big Al	F12	Albert Lee
55	Dry Ice	F21		133	Pimp Life	F5	Blues Saraceno
56	Dry Saturated Tube	F29		134	Dusty Lead	F7	Blues Saraceno
57	Black Hole	F19		135	Dizzy Jen Turner	F20	Jennifer Turner
58	Chicken Pickin'	F25		136	Skunk Pedal Steel	F7	Jeff "Skunk" Baxter
59	Parallel Chor&Dtn	F3		137	Squall Now	F24	Reeves Gabrels
60	Lotus Lead	F17		138	All U Need	F29	Reeves Gabrels
61	Big Stereo Punch	F23		139	Fingerpickin'	F14	Lawrence Juber
62	Warm Sweet Solo	F9		140	Will Lee Sledge-H	F35	Will Lee
63	RAW CAN ROLL	F29		141	Will "Enve" Lee	F26	Will Lee
64	Plutonium	F10		142	Stanley	F7	Stanley Clarke
65	Punchy Pitch	F5		143	Fretless Melody	F3	Steve Bailey
66	Death Metal Grind	F29		144	Solo Bass Fiths	F2	Steve Bailey
67	Floating 5ths	F2		145	Terminator	F19	Vail Johnson
68	Quad Detune	F5		146	Funkenstien	F20	T.M. Stevens
69	3rd Above- E minor	F36		147	A.J. Fingerstyle	F3	Alphonso Johnson
70	Killer Chorus	F21		148	Fretless Bass Casas	F7	Jorge Casas
71	Heap O'Bottumus	F29		149	Very Fishy	F12	Chris Squire
72	Nozone	F3		150	Squire's RickenB	F29	Chris Squire
73	Napalm Solo	F4		151	Look Out Below	F2	Kenny Aaronson
74	Pyro Lead	F5		152	SR EW&F Rhythm	F9	Sheldon Reynolds
75	Metal Tremolo	F6		153	*ELECTRIC SARALAND*	F22	
76	Grunge To The Max	F9		154	Wet 12 String	F4	
77	Beavis Shredhed	F7		155	Dry Ice	F21	
78	Lerxst	F25		156	Dry Saturated Tube	F29	

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158	Chicken Pickin'	F25
159	Parallel Chor&Dtn	F3
160	Lotus Lead	F17
161	Big Stereo Punch	F23
162	Warm Sweet Solo	F9
163	RAW CAN ROLL	F29
164	Plutonium	F10
165	Punchy Pitch	F5
166	Death Metal Grind	F29
167	Floating 5ths	F2
168	Quad Detune	F5
169	3rd Above- E minor	F36
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171	Heap O'Bottumus	F29
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193	Dirty Slapped Phaser	F20
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195	EdgeHog	F29
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197	ZZ Tush Comp	F7
198	Big Rock Rhythm	F9
199	Dire Strat Grit	F23
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223	Jazz Lead	F8
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236	Cyclone Hangover	F20
237	Holdsworthian 5ths	F2
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240	The Big Volume Swell	F4

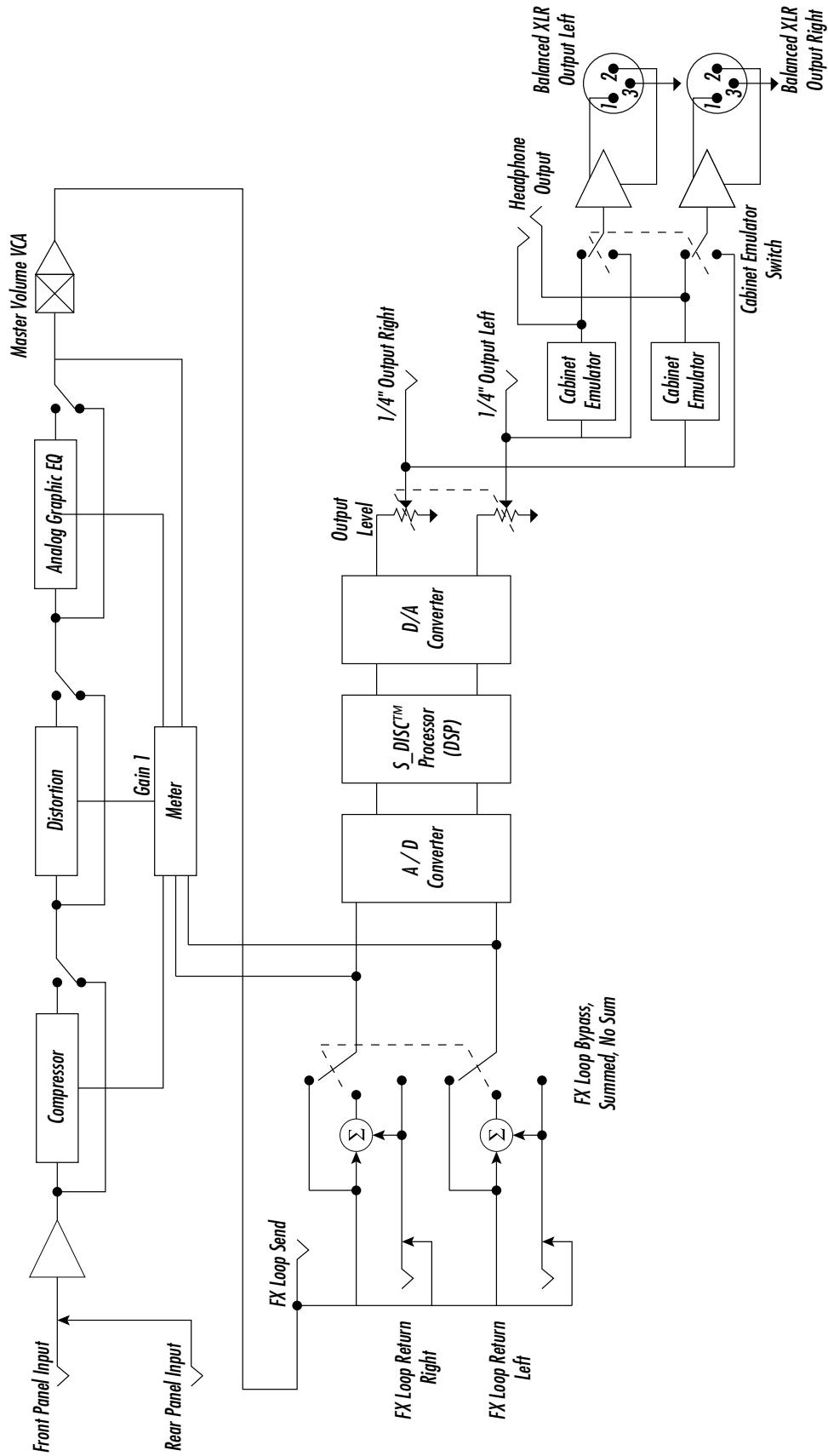
PPC-210 users only:

The Following Programs appear only in PPC-210 equipped GSP-2101 Artists running version 2.00.00 or later software.

241	Goopy 2101 Treatment	F31
242	Quaalude Buzz Box	F32
243	Analog Kentucky	F33
244	Outer Limits	F33
245	Ain't No Saint	F32
246	The Works	F31
247	Hide Behind My Bebop	F33
248	Sunrise in Okinawa	F31
249	Curiosity	F32
250	MuckVerb	F33
251	Analogged Blues	F33
252	Dirty Delay Heaven	F3
253	Eternities	F4
254	Chorus Cavern	F21
255	Canned AM Radio	F33

* If you are Upgrading your GSP 2101 to the 2101 Artist, the following presets have been deleted from 2.55.00 or later software. If you wish to keep these programs after the update, you may want to write them down before the upgrade is performed.

2	On Cloud 9...
5	Edge of the Universe
8	Studio Steel
16	Clean Arena
24	Solo In Arena
26	Ultra Thick Chorus
27	Small Brite Room
39	Grunge Chorus Crunch
45	Squealie
56	Cat Scratch Nugget
87	All in the Family
88	Comping Chor&Det



Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1-16 1-16	1-16 1-16	Recorded
Mode	Default Messages Altered	Mode 3 X	Mode 3 X	
Note Number	True Voice	X	X	
Velocity	Note ON Note OFF	X X	X X	
After Touch	Key's Ch's	X X	X X	
Pitch Bender		X	X	
Control Change		O	O	Transmitted via Control One pedal
Prog Change	True #	1-128	1-128	Internally mapped
System Exclusive		O	O	
System Common	:Song Pos :Song Sel :Tune	X X X	X X X	
System Real Time	:Clock :Commands	X X	X X	
Aux Messages	:Local ON/OFF :All Notes Off :Active Sense :Reset	X X X X	X X X X	
Notes		X	X	

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

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

O : Yes
X : No

Specifications

Digital Conversions:

A/D Converter 18 bit, 128 x oversampled delta-sigma stereo
 D/A Converter 18 bit PCM
 Sampling Frequency 48 kHz

DSP Section:

Architecture Static/Dynamic Instruction Set Computer (S-DISC™)
 Digital Signal Path Width . . . 24 bits (144.5 dB)
 Internal Data Path Width . . . 48 bits (289 dB)
 Dynamic Delay Memory 256k x 24 bits (5.46 seconds)
 Static Delay Memory 256 24-bit registers (5.33 milliseconds)
 Data ALU Processing 12.3 MIPS
 Address ALU Processing 18.4 MIPS
 Multiplier Size 24 bits x 24 bits

Input Section:

Connector 1/4" Unbalanced TRS
 Nominal Level -8 dBu
 Maximum Level +10 dBu
 Impedance 470 kohms

Output Section:

Connector 1/4" TRS or balanced XLR
 Nominal Level +4 dBu
 Maximum Level +18 dBu
 Impedance 50 ohms

General:

Tubes: 12AX7A (2)
 Frequency Response 20 Hz - 20 kHz. ±0.5 dB
 S/N ratio Greater than 90 dB; ref = max signal, 22 kHz measurement bandwidth
 Total Harmonic Distortion . . . Less than 0.03% (1 kHz.)

Memory Capacity:

Factory 140 Programs, 32 Algorithms
 User 100 Programs, approx. 12 single S-DISC (7 Dual S-DISC) Algorithms
 PPC-210 Equipped . . 100 user Programs, 36 factory Algorithms

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 40 watts

Dimensions 19" (482 mm) W x 3.5" (88 mm) H x 10" (254 mm) D

Net Weight 12 lbs. (5.44 kg.)

Shipping Weight 14 lbs. (6.35 kg.)

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