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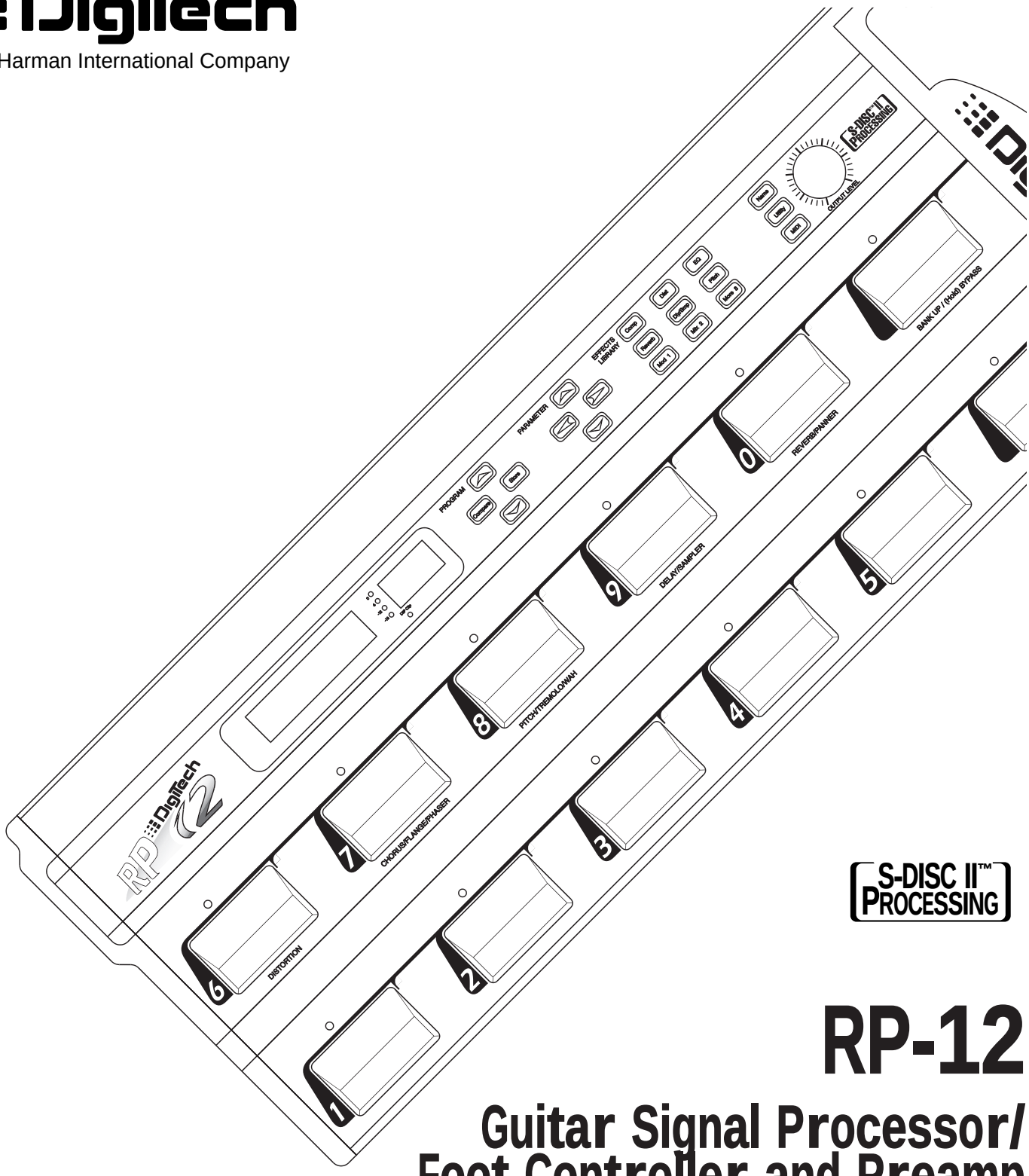

S-DISC II™ PROCESSING

RP-12

Guitar Signal Processor/ Foot Controller and Preamp

Owner's Manual

DECLARATION OF CONFORMITY

Manufacturer's Name: Digitech

Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, USA

declares that the product:

Product Name: RP-12

Product Options: All (requires a Class II power adapter that conforms to the requirements of EN6005, EN60742, or equivalent).

conform to the following Product Specifications:

Safety: EN 60065 (1993)
IEC 65 (1987) with Amendments 1, 2 & 3

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

Supplementary Information:

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

.

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President of Digitech
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Effective October 17, 1996

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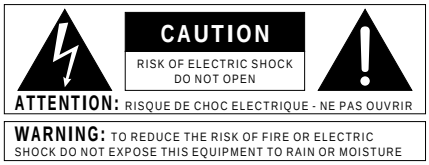
Introduction

Congratulations, and thank you for purchasing the DigiTech RP-12 Guitar Signal Processor / Preamp. The RP-12 offers you a fresh approach to guitar sound creation, giving you the hottest tones and total control of the best digital effects in the industry. DigiTech's revolutionary S-DISC II ™ processor makes it all happen. Its digital multi-effects are second to none, and when you combine its power with the warmth and clarity of the best analog preamp on the market, with up to 10 real-time continuous controller links per Program, nothing else even comes close. Special features of the RP-12 include:

- Full bandwidth effects (20-20kHz)
- 24-bit signal path, 48-bit internal data transmission
- Stereo Effects
- Instant Module and Parameter access
- Harmony/Intelligent Pitch Shifting
- Whammy™ effects
- Three Distortions types including Grunge™
- Silencer™ Noise Reduction
- Programmable cabinet emulation for running direct to a mixing console (great for both studio and live applications)
- Built in FX Continuous Controller Pedal
- Built-in MIDI merging
- MIDI Transmit and Receive mapping
- Extensive real-time MIDI control of effects and parameters
- New and improved Chromatic Tuner

For the first time, all of your effects needs can be filled by a single unit with 16-bit digital clarity. This owner's manual is your key to understanding the powerful world of the RP-12. Read it carefully.

Safety Precautions



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 equipment during storms to prevent damage.

U.K. ONLY - 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.

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 - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri av samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

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

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

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 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 II™, Whammy™ and Silencer™ are registered trademarks of the Harman Music Group Incorporated.

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.

Section 1 - Startup

Supplying power

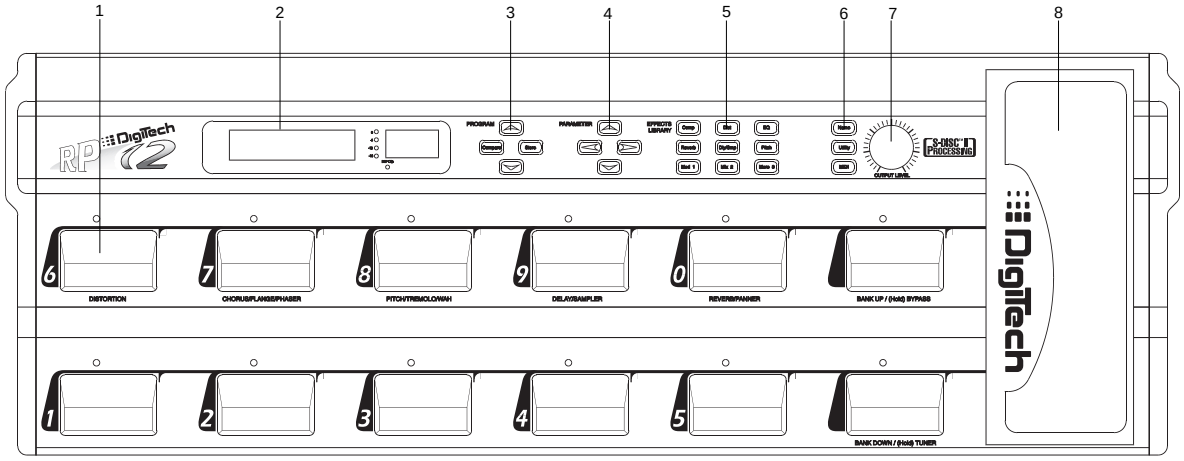
Line Conditioning - The RP-12 is sensitive to voltage drops, spikes, and surges. Interference such as lightning or power "brownouts" can seriously, and in extreme cases, permanently damage the circuitry inside the unit. Here are some ways to avoid this type of damage:

- Spike/Surge Suppressors - This is an inexpensive solution to all but the severest of AC line conditions. Surge protected power strips usually cost only slightly more than unprotected strips, making them a worthy investment for protection of all your valuable gear.

- AC Line Conditioners - This is the best way to go for total protection from improper line voltages, albeit the more expensive way. Line conditioners constantly monitor for excessively high or low voltages and adjust accordingly, thus delivering consistent power levels.

Front Panel Controls

The front panel controls and functions of the RP-12 are as follows (refer to diagram):



1) Pedalboard - The RP-12's pedalboard consists of twelve switches and a real-time Continuous Controller Pedal. The ten main switches are labeled 1 - 0 (10) and can be set to turn effects on or off, change Programs, or toggle continuous controllers. From the Factory, switches 1-5 are assigned to change programs. Switches 6-0, are used to turn effects on or off. The Bank Up/Bypass (top row, far right switch) move Up through any of ther 25 banks in the RP-12 and will allow you to bypass all the effect functions of the RP-12 by pressing the footswitch down. When the RP-12 is in Bypass mode, the instrument sound is passed directly from the input to the outputs without effects. The Bank Down/Tuner Switch (bottom row, far right) allows you to move down through any of the 25 banks, by pressing, or access the tuner by pressing and holding the footswitch.

2) Display Window - The display window shows all current operating and programming information and is comprised of several parts: the LCD display, the input level meter, the Program number indicator, and DSP Clip indicator LEDs. The LCD display shows all Program names, Parameters and Parameter values, and is the communication interface between you and the RP-12. The input level meter monitors the level of the signal entering the digital section. In the Program number indicator window you will find the currently selected Program number. This changes as you scroll through the available Programs. The functions of the Input Level Meter and DSP Clip indicator LEDs are as follows:

- Input Level Meter - Displays the strength of the signal after the preamp section in 6 dB steps, entering the digital section.

- DSP Clip - Indicates digital information overflow in the processor. When lit, distortion may be heard in the output signal. The guideline for this indicator is: ***let your ears be the judge***. If this indicator lights regularly and no audible distortion is present, it can be ignored. If distortion is audible in the output signal, one or more of the internal analog effects levels or the DSP Master level in the Program must be turned down to eliminate the problem.

3) Program Buttons - The Program <UP> and <DOWN> keys allow you to scroll through the RP-12's effects Programs. The <STORE> key allows you to store a Program in memory for later recall. The <COMPARE> key allows comparison of an edited Program with the original unedited version before it is stored.

4) Parameter Buttons - The Parameter keys perform several different functions. When the Program Title is displayed, the <UP> and <DOWN> Parameter keys do nothing. The <RIGHT> key will move you to the algorithm section, through the modules of the algorithm and into the parameters of the program. The <LEFT> key moves you in the opposite direction (see the diagram on page 12 for further explanation). Once you have accessed the algorithm screen or parameter screen with the <LEFT> and <RIGHT> parameter keys, the <UP> and <DOWN> keys allow you to increase or decrease the displayed values.

5**) Effects Library Buttons** - This group of buttons allows you to jump directly to the first Parameter of Modules in the currently selected Algorithm. The buttons in this group are: <COMP>, <DIST>, <EQ>, <REVERB>, <DLY/SMP>, <PITCH>, <MOD>, <MIX>, and <MORE>. Also included in this section and sharing buttons with the <MOD>, <MIX>, and <MORE> buttons are the Function keys (indicated by 1, 2,and 3) which act as menu selection keys in the Utility, MIDI, and Naming menus.

6) Global Buttons - These buttons perform global functions. Some of

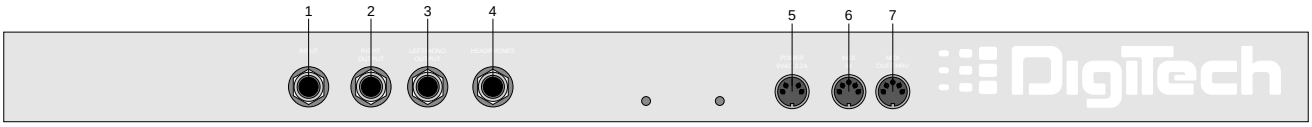
these functions include, Utility functions such as LCD contrast, Pedalboard , and MIDI setups (including transmit & receive maps). Buttons in this group are: <NAME>, <UTILITY>, and <MIDI>.

7) Main Output Level - This controls the overall output level of the RP-12. It also controls the overall level of the headphones.

8) Continuous Control Pedal - This volume-type pedal allows real-time control over Parameters in the RP-12.

Rear Panel Connections

The RP-12 rear panel connectors and functions are as follows:



1) Input - This is the audio input to the RP-12. Plug your instrument in here.

2) Right Output - This is the right main audio output of the RP-12. Use both left and right outputs when Programs are set up to take advantage of stereo effects.

3) Left/Mono Output - This is the left main audio output of the RP-12. Use both left and right outputs when Programs are set up to take advantage of stereo effects. Use either output when the RP-12 is set to mono output.

4) Headphone Output - 1/4" stereo plug for headphones.

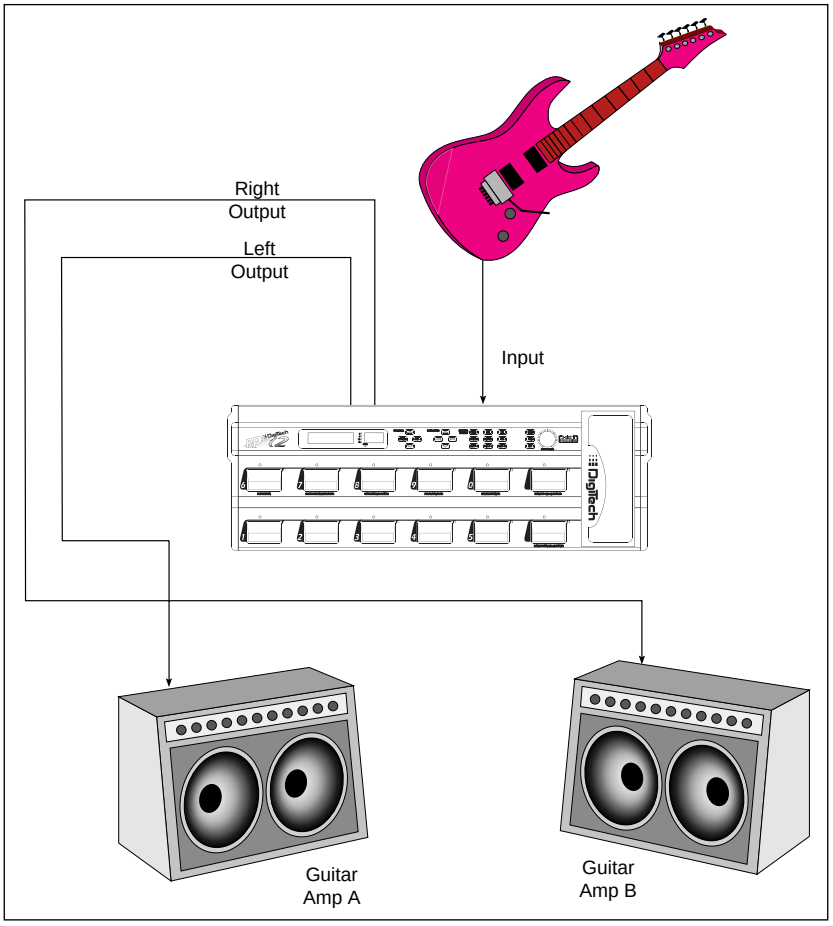
5) AC Line Input - This is the power supply receptacle.

6) MIDI In - The MIDI In port allows the RP-12 to respond to incoming MIDI messages, including Program Change, Continuous Control, and System Exclusive data.

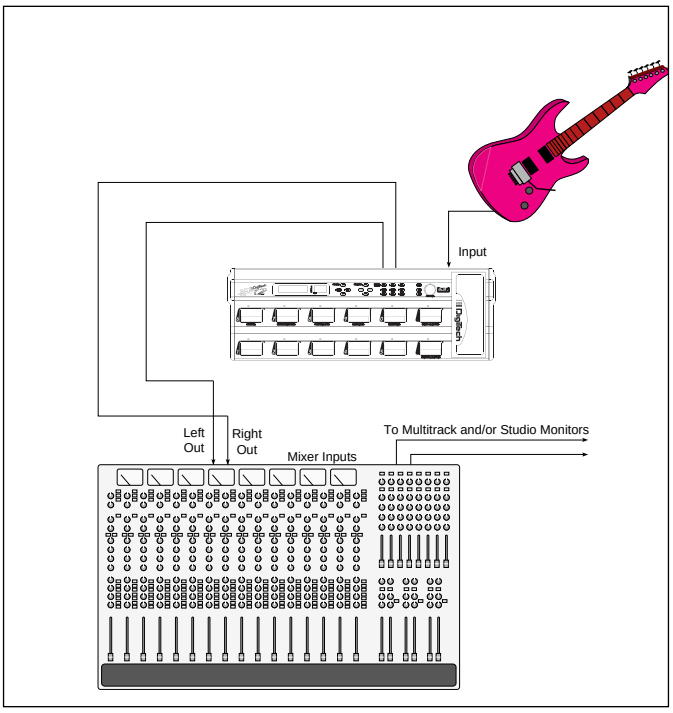
7) MIDI Out / Thru - Sends out MIDI data generated by the RP-12 to other devices. It also passes MIDI data transmitted on the RP-12's MIDI channel through to other devices.

MIDI and Audio Setups

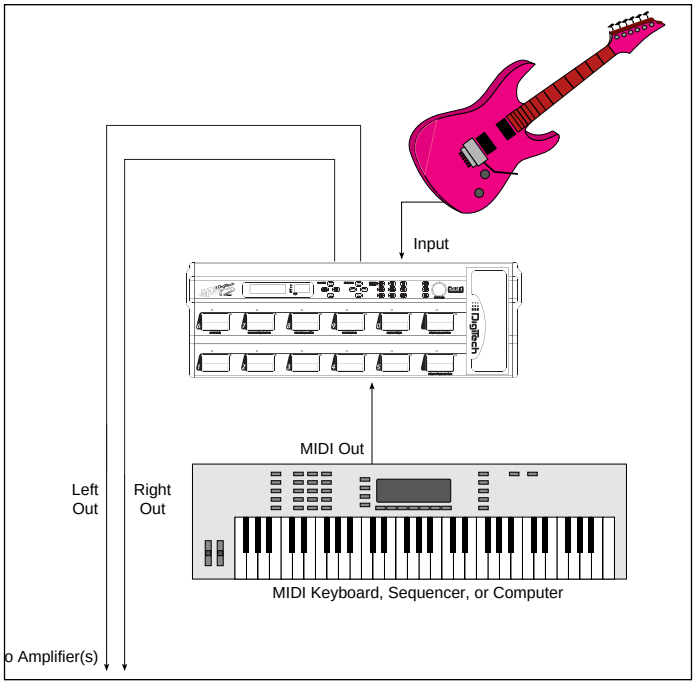
The following diagrams show possible MIDI and audio routing setups for the RP-12.



Basic Guitar Setup



Recording Setup (Use Cabinet Emulator)

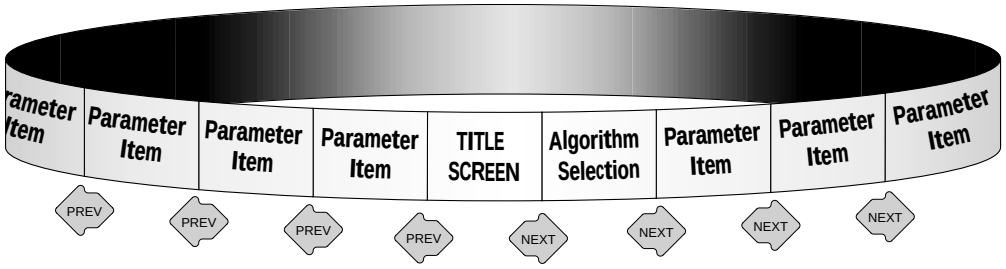


Using external MIDI control

Section 2 - Basic Operations

Program Architecture

The Program's Parameter architecture in the RP-12 has been designed to be a linear series of items, rather than a multiple-level menu (see diagram). In other words, instead of including several sub-menus under a single Parameter heading, all Parameters are included in a single level, and are accessed using the <LEFT> and <RIGHT> Parameter keys. This makes access to specific Parameters of a Program quick and easy, and provides a much clearer picture of exactly where you are in the Program.



Linear Parameter Architecture of a Program

The diagram above shows the linear arrangement of the Parameters in the RP-12. Notice that if you press the <RIGHT> Parameter key from the last item in the list (the Parameter item to the left of the title screen), the display jumps, or "wraps around to" the first item in the Program (in this case, the title screen).

Likewise, if the <LEFT> Parameter key is pressed from the title screen, the display will wrap to the last Parameter in the list. This wraparound menu feature is provided so that Parameters that appear near the end of a long list of items can be just as easily reached as items near the beginning of the menu. If you press and hold either the <LEFT> Parameter key or the <RIGHT> Parameter key, the RP-12 will begin scrolling at high speed through the available Parameters.

Accessing Factory Programs

There are three methods for recalling factory Programs.

1) The first method uses the <UP> and <DOWN> Program keys. The procedure is as follows:

   • From the title screen, press the Program <UP> key. Note that the Program shown in the display changes and the number shown in the LED display increments by one each time the Program <UP> key is pressed. Pressing the Program <DOWN> key causes the opposite to occur: the RP-12 decrements through the Programs in memory.

- To scroll at high speed through the Programs in memory, press and hold either the <UP> or <DOWN> Program key.

2) The second method uses the RP-12's pedalboard. When you change programs using the pedalboard, any unstored modifications you have made to a Program will be lost.

3) The third method is through the use of MIDI. This method will be covered later in the MIDI section of this manual, pg. 58.

Tuning with the RP-12

To access the Tuner using the RP-12 pedalboard, do the following:

- Press and hold the Bank Down/Tuner switch (in the lower right corner of the pedalboard). The display reads:

```
TUNER   A=440
-- -- -- --
```

- Begin tuning your instrument. As you tune, the note name is shown on the top line of the display, while vertical bars appear on the second line of the display and begin strobing. If the note is sharp, the bars will strobe from left to right. If the note is flat, they'll strobe from right to left. When the note is in tune, the strobing bars will stop moving and asterisks will appear around the note name on the top line of the display.

After a few seconds of tuner inactivity, the display returns to:

```
TUNER   A=440
-- -- -- --
```

- Exit Tuning Mode by pressing any pedal or button.

CHANGING THE TUNING REF

You can easily change the RP-12's tuning reference by using the <UP/DOWN> Parameter buttons while in tuner mode. The top line of the display will show the current setting. The default factory setting is: A=440 Hz. The tuning reference control ranges from 427 Hz to 453 Hz, which is the equivalent of ±50 cents (1/2 semitone) in either direction from 440 Hz.

Scrolling down below 427 Hz, you can access the alternative tuning references of: A= G♯, A=G, and A=F♯.

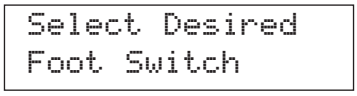
When you use any of the alternate tuning as your reference, tune your instrument so that the display shows normal tuning (E, A, D, G, B, & E for guitars) and the RP-12 will do the rest (the display shows normal tuning, but you'll actually be tuning to the selected reference).

- Exit Tuning Mode by pressing any pedal or button.

ASSIGNING PROGRAMS TO FOOTSWITCHES

The RP-12 has a special function within it's operating system, that allows you a quick and painless method of assigning any one of the 256 programs in the unit, to any one of the bottom row of footswitches (1-5). For example, you would like to store program 53 (Blue Naked), to footswitch 1. The procedure is as follows:

- From program 53, press and hold the <Utility> function button. The LEDs in the bottom row of footswitches will scroll along the botton row of footswitches, and the display will appear like this:



- Select and press the desired footswitch, and assignment is made. Now, whenever you press that footswitch, program 53 will be recalled.

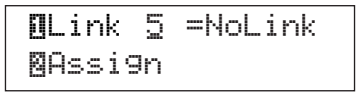
For a more in depth explanation on program assignment, please refer to page 49 for more information.

ASSIGNING PARAMETERS TO FOOTSWITCHES

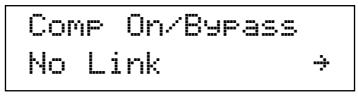
You can easily assign any effect parameter to a Continous Controller by performing a simple linking procedure using the front panel controls of the RP-12. For example, If you wanted to assign Footswitch 7 (CC 22) to control the Compressor On/Bypass Parameter in Program 5 (Wham & Eggs). The procedure is as follows:

- From the Program title screen, scroll to the Compressor

On/Bypass parameter, by either pressing the Parameter <right > button five times, or pressing the <COMP> Effects Library Button. Now press and hold the <MIDI> button, and the display reads:



- Press function button <Mix ™> to assign a CC, and the display will appear like this:



- To assign CC to the parameter, press Footswitch 7, and the display will appear like this:

- At this point, the Link has been made. Press the function button <MIDI> to exit, and then press store to save the link assignment.

For a more in depth explanation of Assignment of CCs to parameters, please see pg. 50 for more information.

Section 3 - Programming

Using the Function buttons

The RP-12 has three Function keys. They are located in the bottom row of the Effects Access buttons and they share buttons with the <MOD>, <MIX>, and <MORE> options. Each Function key is numbered and performs several functions in the Utility and MIDI modes (depending on the selected menu screen). These buttons are also used in the Program naming process (see Storing/Naming on page 19). See pg. 49 for more on the Utility Button. See pg. 58 for more on the MIDI Button.

are used in the display to indicate which function key to use.

More Special Characters

There are several special characters that the RP-12 uses to tell you at a glance exactly what it is doing. Some special characters in the RP-12 are in inverted type, that is, reversed out of a black background, and they will usually appear in the upper right-hand corner of the Program Title screen.

Indicates that the Cabinet Emulator is currently active.

Indicates that a MIDI 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. This is an instance in which a special character will immediately follow the Module name, rather than appear in the corner of the display.

Indicates a Program has been modified.

Indicates the value within the brackets is a stored or saved value.

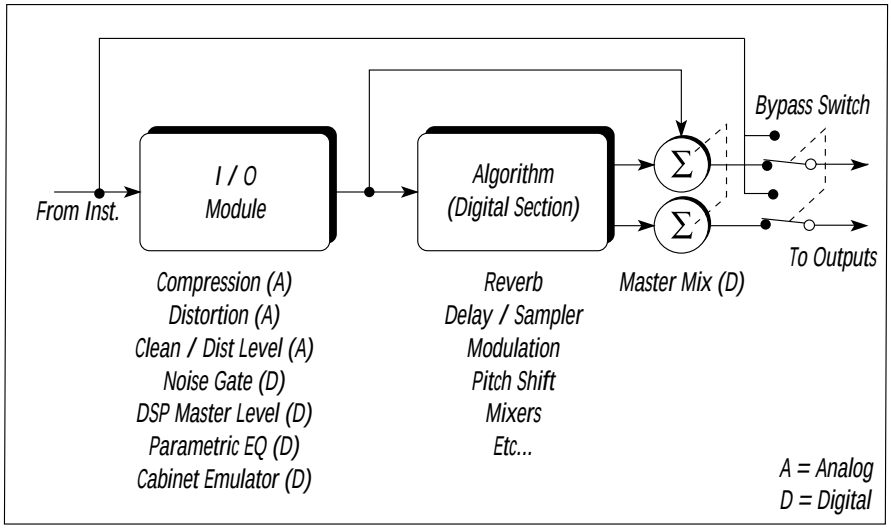
The Effects Library Buttons

The Effects Library buttons are used to jump to specific places in a Program. For example, if a Program contains two choruses and you want to change the delay time on only one of them, you could press the <MOD> Effects Library button from Program Title screen and you would jump to the first Parameter of the first chorus in the Algorithm. Press the button again, and you are taken to the first Parameter of the next chorus in the Algorithm.

About The I/O Module

Each Program in the RP-12 is equipped with Compression, Distortion, Clean / Distortion Level, Noise Gate, DSP Master Level, Parametric EQ, Wet/Dry Mix, and Cabinet Emulator controls. These items are permanent residents of every Algorithm in the unit.

This group of items is called the Input / Output Module (or I/O Module) because they are always a part of both the input and output audio paths of the RP-12. The following diagram shows how the I/O Module affects the signal as it flows through the unit.



The RP-12's Compression, Distortion, and Clean / Distortion Level are analog for warmth and power. The Noise Gate, DSP Master Level, Parametric EQ, Wet/Dry Mix and Cabinet Emulator are all accomplished in the digital section, for absolute flexibility and precision.

Modifying Factory Programs

After you've had time to familiarize yourself with the RP-12, you may find that there are several factory Programs that are very close to what you're looking for, but need a few small tweaks to get them perfect. Program 2 (Clean and Tight) has a chorus and delay. Let's assume that in order to work in your application, it needs to have a 60Hz cho-

rus speed. Using this Program as an example for Program modification, the procedure for changing the Chorus Speed is as follows:

- From the Program title screen, scroll to Program 2 using the <UP/DOWN> Program buttons. The display reads:

```
Clean and Tight
DCho→2TDly→2Pans
```

- Using the <RIGHT> and <LEFT> Parameter buttons, scroll to the CHORUS SPEED Parameter.

The display reads:

```
Chorus Speed
 (0.28Hz)
```

NOTE: By pressing the <MOD> key you can skip directly to the first Parameter of the Chorus effect within the Algorithm, then continue scrolling with the <RIGHT> Parameter key to the Chorus Speed parameter.

- Using the <UP> Parameter key, scroll upward until you reach 0.60Hz. The display reads:

```
Chorus Speed
0.60Hz
```

If you change Programs at this point (either through MIDI, the pedalboard, or the Program buttons), any modifications that you have made to the Program will be lost. In order for the RP-12 to remember the changes that you have made, you must store the Program in memory. The procedure for storing Programs is covered in more detail on pg 20.

Basic Program Creation

There are three requirements for creating a Program on the RP-12. The first is that an Algorithm needs to be assigned to the Program; second, Parameters must be modified to your liking, and third, the Program must be stored in memory in order to be recalled for later use.

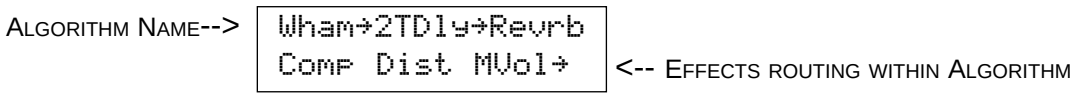
Selecting an Algorithm

The Algorithm you choose for a Program determines the basic function of the Program. It is therefore necessary to choose an Algorithm that contains all the Modules you want to use in an appropriate configuration (for a complete listing of the RP-12's algorithms, see page 67). The Algorithm selection screen for all Programs in the RP-12 is one screen to the right of the title screen.

NOTE: It may be easiest to select a Program that uses the Algorithm

you want and begin editing Parameters from there.

The Algorithm selection screen works in conjunction with the LED display to show the currently selected Algorithm number. When in the Algorithm selection screen, the LCD display looks something like this:



To select an Algorithm for a Program, the procedure is as follows:

- From the title screen, press the <RIGHT> Parameter key once. This is the Algorithm selection screen. The name of the currently selected Algorithm is shown on the top line of the display, while the bottom line shows the effects in the Algorithm.

  NOTE: When there are more effects in the Algorithm than will fit on a single line of the display, an arrow will appear in the first and/or last character of the bottom line of the display. These arrows indicate that there is more information about the effects that could not be displayed on a single screen. To see the remaining information, simply press the <RIGHT> or <LEFT> Parameter key (depending on the arrow direction indicated in the display).

- Use the <UP> and <DOWN> Parameter buttons to select the Algorithm you want to use with the Program. The LED display now shows the Algorithm number as you scroll up or down.

- Use the<RIGHT> and <LEFT> Parameter buttons to begin modifying the Parameters of the currently selected Algorithm to suit your purpose.

  NOTE: When you change the currently selected Algorithm, the default Parameters selected for the new Algorithm are taken from the first Factory Program in memory that uses that Algorithm.

Once you have selected the Algorithm you want to use and modified its Parameters, an asterisk appears in the upper right corner of the title screen. This asterisk indicates that the Program has been modified and any changes you have made will be lost if not stored in the RP-12's memory.

Naming Programs

In order for modified Programs to be available for later recall, you must store them in memory. This is accomplished using the <STORE> key. The RP-12 also allows you to give your Programs custom names up to 15 characters in length. This is accomplished using the <NAME> key. The naming procedure uses the <UP> and <DOWN> Parameter buttons, and the Function buttons [1] [2] & [3] to change the letters of the alphabet. The <MOD [1]> key changes the character from either upper or lower case, and jumps you to the letters of the character set. The

<MIX 2> key puts a space into the Program name, and jumps you to the special characters in the character set. The <MORE 3> key inserts an '0', and jumps you to the numbers section of the character set. The complete procedure for naming and storing a Program is as follows:

- After you have made all the necessary modifications to the Algorithm, press the <NAME> button once. The RP-12 is now in Name mode. The display shows:

```
[PROGRAM NAME]
1CAPS 2SPC 3NUM
```

The blocked numbers preceding each option on the bottom line indicate the Function key that will perform the function shown.

- Using the <UP/DOWN> Parameter buttons, scroll to the character you want to use, or press one of the Function buttons. When you have selected the character you want, press the <RIGHT> Parameter key. Note that the cursor moves to the next character. Repeat this procedure until the Program name is satisfactory.

Unique to the RP-12 naming process, are several special naming functions. The <COMPARE> and <STORE> buttons allow you to bump an entire name or section of a name either left or right in one-space increments. The procedure is as follows:

- In Name mode, use the <RIGHT> and <LEFT> Parameter buttons to place the cursor underneath the character to be moved.

- Press the <COMPARE> or <STORE> buttons to move the characters either left or right.

The Program <UP> key copies the character the cursor is under into memory. This allows you to place a copy of that character (using the Program <DOWN> key) anywhere else in the name that you want. The procedure is as follows:

- In Name mode, use the <RIGHT/LEFT> Parameter buttons to place the cursor under the character to be copied.

- Press the Program <UP> key. The selected character is copied into memory.

- Move the cursor to the location into which you want to place a copy of the character and press the Program <DOWN> key. The copy appears in the location you selected.

NOTE: Press the <UTILITY> button to abort the operation. When you change programs the original name will return.

- When the Program name appears as you want it, press the <NAME> button to exit the name selection mode.

Storing Programs

Once you have dialed in the program how you want it and given it a name, press the <STORE> button. The display reads:

```
Store To Prg ##
[PROGRAM NAME]
```

This screen allows you to select the Program location in which you want to store the new Program.

- Using the <UP> and <DOWN> Program buttons, scroll to the Program number location in which you want to store the new Program.

- To store the Program in the selected location, press the <STORE> key again. The display briefly reads:

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

after which you will automatically be returned to the previous mode. To abort the command, press <COMPARE>.

The Store function can also be used to copy Programs from one memory location to another. If no changes have been made to the selected Program and the <STORE> button is pressed, the display reads:

```
Copy To Prg ##
[PROGRAM NAME]
```

Select the memory location in which you want to place a copy of the selected Program using the <UP> and <DOWN> Program buttons, and press <STORE> again. The display briefly reads:

```
***Copying***
```

after which you will automatically be returned to the previous mode. To abort the command and return to the Program, press the <COMPARE> button.

SECTION 4 - EFFECTS AND PARAMETERS

About the Effects Library

The Effects Library consists of all the effects Modules you can find in the RP-12. Broken down into individual categories, specific Modules and their abbreviated library names are as follows:

Analog Effects

Module Name	*Module Abbrv.*	*Description*
Compressor	*Comp*	*Analog compressor tailored for instruments*
Distortion	*Dist*	*Analog distortion (3 solid-state types)*

The analog section of the RP-12 includes the compressor and the distortion section. These two items are always available in all Programs. The analog effects and their Parameters are as follows:

Compressor

The RP-12's compressor is a high-quality, low-noise circuit specially designed for guitars. Compression can be used to increase sustain and to tighten up guitars, and is particularly useful on clean sounds. Parameters of the RP-12 compressor are as follows:

Comp On / Bypass.....Turns the Module on or off. When Modules are bypassed their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Comp Amount .....Controls the amount of compression applied to the signal. Higher settings yield a tighter, more focused sound, while lower settings allow better dynamics. Ranges from 0 to 31.

Comp Level .....Sets the output level of the compressor before feeding to the distortion. Higher settings send more signal level into the distortion, yielding extra gain and drive. Varies from 1 to 7.

Distortion

The distortion section of the RP-12 is capable of producing three distinctly different types of distortion. These three solid-state distortion sounds range from lightly overdriven, to screaming grunge. The Grunge setting gives you extremely high-gain distortion, free from the mush and tonal sacrifices typical of other manufacturers' products.

Dist On / Bypass .....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Distortion Type .....Selects the type of distortion to be used in the

Program. Options are: OVERDRIVE - Solid-state overdrive with extra punch. HEAVY SUSTAIN - Smooth, warm distortion sound with lots of sustain. GRUNGE- High gain distortion which is tight and highly focused for powerful rhythms and leads.

Distortion Gain .....Controls the amount of distortion produced by the RP-12. High settings produce greater gain and drive for effortless soloing, while low settings offer better nuance and touch control. Ranges from 0 to 11.0.

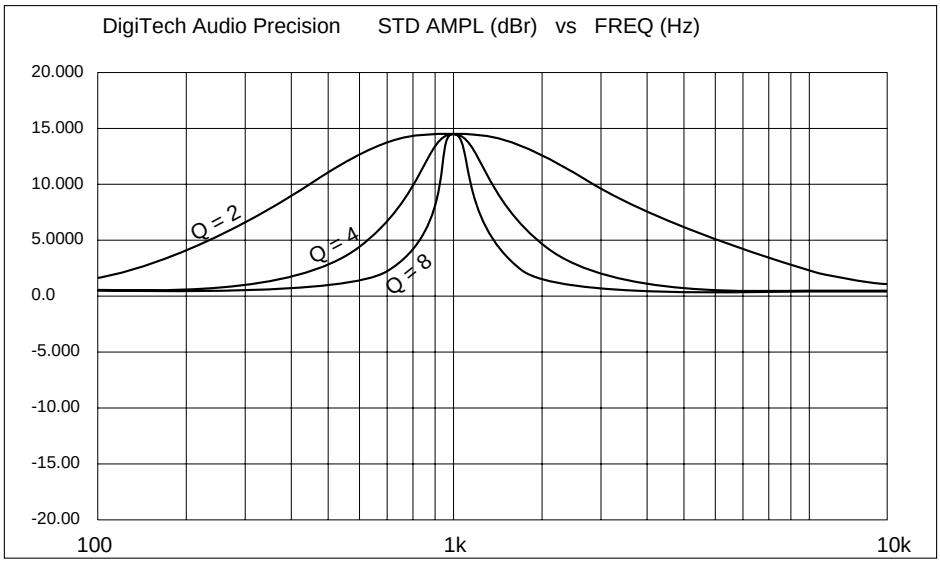
Dist/Clean Level .....This Parameter allows two separate levels to be set. If the Distortion is turned on, the Distortion level can be adjusted. If the Distortion is turned off, the Clean level can be adjusted. Both level settings are saved when the Program is stored. Settings include MUTE or ranging from -60dB to +12dB.

Equalizers

Module Name	*Module Abbrv.*	*Description*
10 Band GEQ	*GEQ10*	*Full bandwidth 10-band graphic equalizer*
4Bnd ParamtrcEQ	*PEQ4*	*4-band parametric equalizer w/adjustable Q*
Cabinet Emulator	*CabEm*	*Full-bore stack sound direct-to-console*

The equalizer Modules provided in the RP-12 offer superb noise performance, and allow accurate tonal shaping of many different types of sound sources. A 4-band parametric equalizer with adjustable Q is available in all Algorithms. The RP-12 also features a 10-band Graphic Equalizer module. All equalizer Modules offer silent, accurate (double-precision) tonal shaping.

Adjustable Q equalizers offer the ability to control the bandwidth of the boost/cut ranges. High Q settings yield extremely narrow bandwidth, where boost and cut have minimal effect on adjacent frequencies of the program material. Low Q settings affect a wider number of frequencies when the selected band is boosted or cut.



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

Cabinet Emulator

The RP-12's programmable Cabinet Emulator circuitry allows you to use it in both recording and live situations, without lugging heavy amps and/or cabinets around. Just connect the RP-12 outputs to a mixing console, and kick in the Cabinet Emulator. No miking hassles, no heavy equipment, just full on mic'd cabinet sound. Programs can be stored with different Cabinet Emulator settings so you can customize your banks or set lists for whatever sound types you need. The Cabinet Emulator can be controlled globally from the <UTILITY> Menu. Parameters are as follows:

Cabinet On / Bypass.....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Cabinet Type.....Selects the tonal characteristics of the simulated cabinet. There are 10 different cabinet types; 3 warm cabinets, 3 medium cabinets, 3 bright cabinets, and 1 full bandwidth cabinet for maximum frequency response. The full bandwidth cabinet is useful when the global Cabinet Emulator is active (in the Utility menu), and a full bandwidth sound is still desired.

Reverbs

Module Name	Module Abbrv.	Description
BigVerb	Big	Studio-quality reverb.
MFX Reverb	MVerb	Appears in multi-effects Algorithms.
Gated Reverb	GtRvb	Professional gated reverb

Big Verb/MFX Reverb

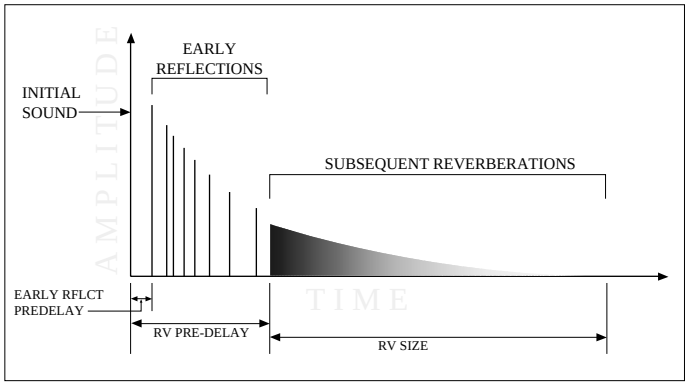
Bigverb is the flagship reverb Module of the RP-12. It contains 14 Parameters, giving exceptional soundfield and tonal shaping control over reverberation. Bigverb is capable of producing reverberation of virtually any size, shape, depth, timbre or soundfield location.

MFX Reverb is a slightly trimmed version of the Bigverb, offering much of the same flexibility and controls as Bigverb, but requires less memory space. MFX Reverb lets you achieve high-quality reverb in conjunction with other effects.

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

Ambience, or reverberation, is produced when sound energy is reflected off room surfaces and objects. Using reverberation in recorded program material gives the listener a sense that the material is being performed in an actual room or hall. It is this similarity to actual acoustic spaces that makes reverberation a useful tool for going direct to board.

The RP-12 uses early reflections to better emulate the natural sound of a hall. Early reflections are short clusters of direct reflections from the closest room walls. In an average size hall, 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, but adding more than small amounts tends, to make the reverb sound unnatural.



The BigVerb's ER Spread, ER Shape and ER DIFFUSION 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. The ER SPREAD sets the time over which this early reflection shape is achieved, and the ER diffusion controls the smoothness of the early reflection. A chart showing all 10 early reflection shapes can be found on the following page.

The Rv Size control is the master control for the apparent room size. The RV RT60 Parameter varies in relation to the setting of the RV Size. This means that as RV Size is modified, the RV RT60 Parameter changes to correspond with the selected room size (the RV RT60 value is calculated automatically). The RV Size Parameter, on the other hand, does not vary when RV RT60 is modified.

These few controls, in conjunction with the RV Diffusion, RV Hi-Freq Decay, and RV Hi-Freq RollOff controls, give your simulated environment its reflectivity characteristics, and can be used to simulate the presence of nearly any type of large-area reflective surface in a reverberant space, such as wood, carpet, glass, metal, etc.

Reverb Parameters and their functions are as follows:

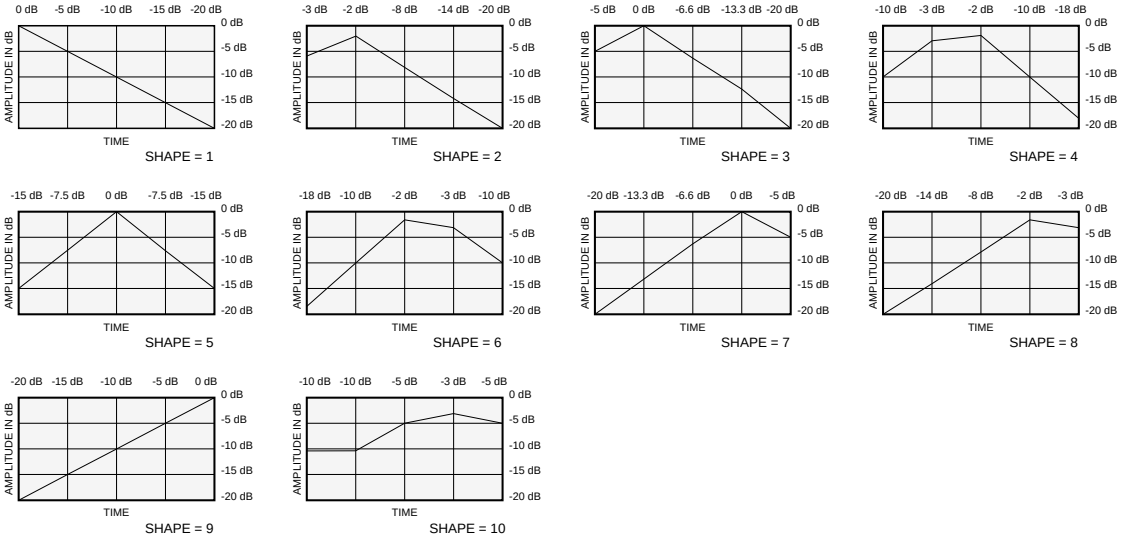
Reverb On / Off.....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

ER Predelay.....Controls the length of time before the early reflections are heard. Ranges in milliseconds from 0 to 100. (ER settings in BigVerb only.)

ER Spread.....Controls the length of time over which the early reflections occur. Low settings yield a dense, smooth cluster of early reflections while

higher settings spread the same number of reflections out over a longer period of time. Ranges from 25 to 300 milliseconds. (ER settings in BigVerb only).

ER Shape.....Controls the shape of the early reflection envelope. There are 10 different early reflection envelope shapes. The following diagram shows all the available early reflection envelope shapes. The numbers across the top of each envelope shape graph represent the relative level of the signal at each point in the envelope. (ER settings in BigVerb only.)



ER Diffusion .....Controls the smoothness of the early reflections. Ranges from 1 to 10. (ER settings in BigVerb only.)

ER Level.....Master level control for early reflections. Ranges from 0 to 100. (ER settings in BigVerb only.)

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 after the program material 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 portion of RV RT60. BigVerb's RV Spread varies in 20 ms increments from 20-180 ms. MFX Reverb's RV Spread varies in 10 ms increments from 10-100 ms.

RV Diffusion .....RV Diffusion controls the smoothness of the reverberation. In a real room, reverberation is naturally diffused by air. However, diffusion can also be affected by temperature, humidity, and the presence of absorptive or diffusive 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 form 25Hz to 18kHz.

RV Hi-FrqRolloff.....This is a low-pass filter that sets the rolloff frequency of the Reverberation. This is a band-limiting control, and the frequencies above the setting of this Parameter will be rolled off rapidly. Variable from 25Hz to 18kHz.

RV Size .....Sets the apparent size of the reverberant space. As the setting of RV Size is increased or decreased, the setting of RV RT60 changes to correspond with the new room size setting. However, changing the setting of RV RT60 does not affect the setting of RV Size. Ranges from 1 to 10.

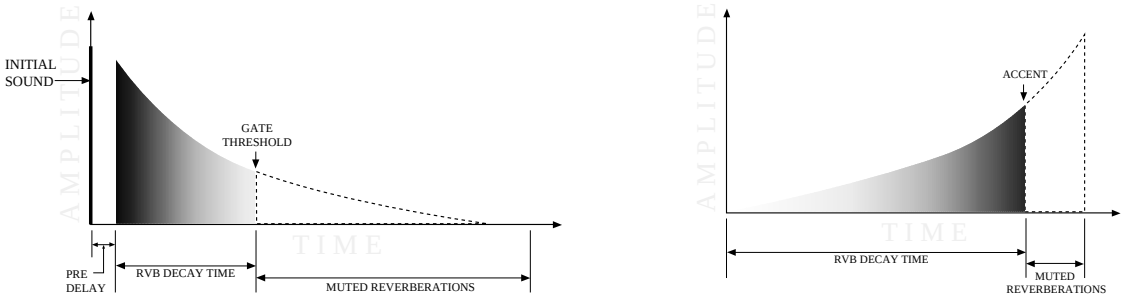
RV RT60 .....Controls the length (RT60) of the reverb. Ranges in seconds from 0.01 to 20.00.

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

Gated Reverbs

Gated reverbs usually include adjustable thresholds to set the point at which the reverberations will be gated (cut off). The RP-12's RV DECAY TIME control behaves in a similar way, except that instead of setting the length by level (threshold), the length is set by time (in milliseconds). In the left side of the diagram that follows, you can see that reverberations occurring after RVB GATE TIME are muted. This causes the reverb to cut off abruptly.

Gated reverbs are most commonly used on percussion, but there are other ways to employ the unique sound they produce. One way of achieving this is by using a REVERSE envelope shape. A reverse gate 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. The right diagram below shows how a Reverse envelope works.



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 RP-12 offers three different envelope shapes in the Gated Reverb Algorithm: DECAYING, FLAT, and REVERSE. DECAYING is a standard gated reverb envelope, with a linear decay to the cutoff point. In most applications, the DECAYING envelope doesn't need an accent point, although it can produce some interesting unnatural sounds. In a situation where an accent point is not needed, simply turn down the left and right REVERB ACCENT DLY 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 RVB DECAY TIME). This shape is particularly useful for short, percussive sounds.

A REVERSE envelope allows creation of dramatic reverse gate reverb effects, with placement of the accent point ±50 milliseconds either before or after the end of RVB DECAY TIME. Gated reverbs can be

found in the <REVERB> library, and their Parameters are as follows:

Gated Reverb On / Off..Turns the Module on or off.

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

Rvb Decay Time.....Controls the amount of time before the gate cuts off the reverberations. Variable from 20 to 1000 milliseconds.

Rvb Envelope.....Sets the shape of the reverberation envelope (DECAYING, FLAT, or REVERSE).

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

Rvb LPF Frequency .....Reverb low-pass filter. Sets the frequency below which reverberations will be heard. Adjustable from 25Hz to 18kHz.

Rvb Accent Delay.....Allows placement (in time) of the actual sound, ±50 milliseconds from the reverb gate point.

Rvb Accent Left.....Controls the level of the accent in the left side of the stereo soundfield. Variable from 0 to 100.

Rvb Accent Right .....Controls the level of the accent in the right side of the stereo soundfield. Variable from 0 to100.

Rvb Level Left .....Sets the output level of reverberations heard in the left channel. Variable from 0 to100.

Rvb Level Right.....Sets the output level of reverberations heard in the right channel. Variable from 0 to100.

Delays / Sampler

Module Name	Module Abbrv.	Description
Mono Delay x.x	Dly x.x	1-tap digital delay
2Tap Delay x.x	2TDly x.x	2-tap digital delay
4Tap Delay x.x	4TDly x.x	4-tap digital delay
Stereo Delay	SDly	Stereo digital delay
Modulated Delay	ModDly	Digital delay with pitch modulation
Sampler	Smpl1.5	1.5 second sampler

Delays

All the delays in this group have the same basic Parameters for controlling the behavior of the Module. General Parameters include: Delay On/Off, Delay Level, Delay Time, Delay Feedback, and Delay Repeat Hold. The only differences between them lie in the number of taps available and the total amount of delay time. The multi-tap delays also include independent delay time controls for each tap with a feedback control on the last tap in the series. Modulated Delay sounds like a delayed chorus due to the pitch modulation.

Each delay Module has a number that immediately follows the name. These numbers represent, in seconds, the amount of delay time available to each Module. For example, if the Module name shown in the display reads MONO DELAY 1.4S, you know that the Module has a maximum of 1.4 seconds of delay time available.

The available delay time ranges are 0.4 seconds (400 milliseconds), 0.5 seconds (500 milliseconds), 0.8 seconds (800 milliseconds), 1.0 seconds (1000 milliseconds), and 1.4 seconds (1400 milliseconds). Delay Parameters are as follows:

Delay On / Off .....Turns the delay Module either on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

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

Delay Time (Tap #) .....Controls the delay time of the tap indicated in the display. If a mono delay is used, no tap number is shown. Delay time Parameters are editable in two different ranges to give the most flexibility and accuracy in the least amount of scrolling time. If you press the <UP> Parameter button when the cursor is in

the hundred milliseconds position (one place to the right of the decimal), you will increase the delay time in increments of 100 milliseconds. Pressing the <RIGHT> Parameter button moves the cursor to the third position to the right of the decimal point, or milliseconds position. Each press of the <UP> Parameter button 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 1.400 sec.

Delay Feedback .....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 99%.

Delay Repeat Hold.....This is the infinite repeat Parameter. When turned on, the delay taps will repeat indefinitely until the Repeat Hold Parameter is disengaged. This Parameter is either ON or OFF.

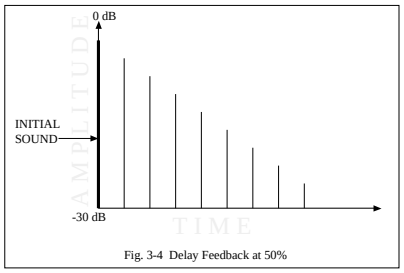


Fig. 3-4 Delay Feedback at 50%

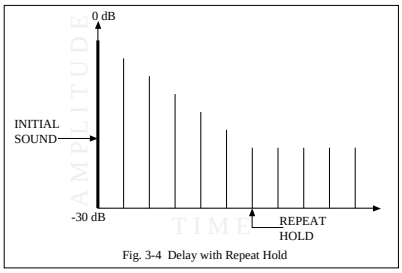


Fig. 3-4 Delay with Repeat Hold

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

LFO Depth.....This Parameter sets the sweep depth (intensity) of the delay modulation. Variable form 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 the 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.***

Sampler

The RP-12 offers a studio-grade sampler Module for maximum flexibility and usefulness. It uses a 40 kHz sample rate for increased sound quality. Sample recording and playback can be triggered from the RP-12 pedalboard, or via MIDI (through continuous controller linkages). Sample recording can also be triggered upon detection of a sound source. Parameters of sampler Modules are as follows:

Sampler On / Off .....Turns the Module on or off.

Smpl Plybck Levl.....Determines the overall level of the sample when played back. Varies from 0 to 100.

Smpl Looping .....This Parameter has two settings: MANUAL and AUTO. When this Parameter 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 begins playing. When the sample is finished playing, it is automatically retriggered from the beginning of the sample, and continues retriggering until the Parameter is switched back to MANUAL.

Smpl Record/Play .....Sets the mode of operation for the sampler Module. When set to RECORD, the sampler will record a new sample into memory when triggered. This parameter automatically changes to PLAYBACK after the sample in memory has been recorded.

NOTE: Samples can not be stored.

Manual Trigger .....This Parameter allows manual playback triggering of the sample in memory. To trigger the sample, simply press the <UP> Parameter button on this screen. To trigger the Sampler using MIDI, link this Parameter to a MIDI CC number (see Assigning CC links, pg. 59).

Smpl Triggr Mode.....Determines whether audio triggering or manu-

al triggering is active. There are two audio triggering options and one manual triggering option. They behave as follows: when set to MANUAL TRIG, samples and sampling are triggered using manual methods (pedalboard, front panel, etc.). When set to AUDIO TRG ONCE, the sample is triggered once using an audio source of a set level (determined by the setting of INPUT TRIG LEVEL), following which, this Parameter is automatically reset to MANUAL. When set to AUDIO RE-TRIG, the sample is retriggered any time a signal over the level setting of SMPL TRIG LEVEL is detected.

Smpl Triggr Levl .....Sets the level at which the audio signal will trigger the sample. Variable from 0 to 100.

Smpl Direct Levl .....Sets the level of the dry (non-effected) sound. Variable from 0 to 100.

Smpl Start Point .....Determines the point at which the sample will begin playing. 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. This control can be set at any point in the sample below the setting of SAMPLE stop point. Like the DELAY TIME Parameter in delay Modules, this Parameter is controlled in two ranges. Refer to page 31 of the owner's manual on controlling the delay time of a delay Module for explanation of the ranges.

Smpl 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. Like the DELAY TIME Parameter of delay Modules, this Parameter is controlled in two ranges. Refer to page 31 of the owner's manual on controlling the delay time of a delay Module for an explanation of the ranges.

Pitch Shifters

Module Name	Module Abbrv.	Description
Pitch Shift	Pch	1-voice pitch shifter
Smooth Pitch	Pch2	Smooth tracking 1-voice pitch shifter
Harmony	Hrm	1-voice intelligent pitch shifting
Mono Detune	Dtn	Single-voice pitch shifter
Dual Detune	DDtn	Mono dual detuner
Whammy	Wham	Pedal-controlled pitch bending effects
Smooth Whammy	Whm2	Fast tracking pedal-controlled pitch shifter
Arpeggiator	Arp	Mono arpeggiator

The <PITCH> group includes pitch shifters, mono and dual detuners, arpeggiators and DigiTech's exclusive Whammy™.

Pitch shifters allow you to change your input note by a specified interval and mix it with the original, creating a harmony. The effect is similar to two or more guitars playing different notes simultaneously.

Detuning is similar in sound to a chorus, except that its pitch remains constant, rather that modulating back and forth between two points. It is best visualized in terms of two guitar strings tuned to the same approximate pitch; both are tuned to the same note, but each is slightly out of tune with the other. Both notes are constant in pitch, but subtle additions in richness and overtones can be heard.

DigiTech's exclusive Whammy™ allows you to create mind-bending dive bombs and pitch bends with the continuous controller pedal on the RP-12 pedalboard. All the intervals are selectable and can be stored in memory for later use. You've never heard anything like it!

An arpeggiator is simply a pitch shifter in the feedback loop of a delay. Each time a note is fed back to the input of the pitch shifter, it is once again 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. With high feedback settings and short delay times, the sound is reminiscent of an early analog synthesizer. Parameters are as follows:

Pitch Shifters

Pitch On / Off .....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. 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.

Pitch Shft Amount .....Sets the interval between the original note and the pitch shifted note. Variable from -24 to +24 (4 octaves).

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

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

Interval (Harmony Only) Sets the basic interval of the harmony. You can choose one of several intervals. See pg.81 for Harmony Interval chart.

Pitch Detune.....Determines the amount of detuning applied to the shifted note. Variable, in cents, from -100 to +100.

Pitch Tracking .....Controls the sound quality/tracking speed of the pitch shifted material. This control should be set in relation to the Pitch Shift Amount or the interval setting. There are 10 different tracking settings, and some overlap of intervals is provided to help you find the sound that works best for you more quickly. The final judge of this setting should be your ears.

Pitch Regenerate .....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%.

Detuners

Detune On / Off.....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Detune Level .....Controls the overall level of the detuner Module. Varies form 0 to 100.

Detune Predelay .....Sets the amount of time, up to 100 ms, before

the detuned note is heard.

NOTE: The dual detuner has a predelay for each detune voice.

Detune Amount .....Controls the amount of detuning. Variable, in cents, from -100 to +100.

Whammy™

Whammy On / Off .....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Whammy Function .....Selects the function of the Whammy Module. There are 16 individual functions controlled by the CC Pedal available in regular Whammy Modules. They are as follows: ShallowDetune, DeepDetune, 1 Octave Above, 2 Octaves Above, 2nd Below, 1 Octave Below, 2 Octaves Below, 2ndAbv- 3Abv, min3Ab-maj3Ab, 3rdAbv-4thAbv, 4thAbv-5thAbv, 5thAbv-6thAbv, 5thAbv-7thAbv, 4thBlw-3rdBlw, 5thBlw-4thBlw, and 12Below-12Abv.

NOTE: The Smooth Whammy (Whammy2) functions are the same, but have slightly different names.

Whammy Pedal.....The WHAMMY PEDAL Parameter reflects the current setting of the continuous control device used to control the whammy effect. This Parameter can be modified using the RP-12's CC pedal, or manually modified using the <UP/DOWN> Parameter switches. As the Parameter is modified, the pitch of the original note will change in intervals according to the setting of the WHAMMY FUNCTION. Varies from 0 to 100.

Arpeggiators

Arpeggiator On / Off.....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

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

Arpeggio Shift.....Sets the interval between the original note and the shifted note. Variable from -24 to +24 (4 octaves).

Arpeggio Detune .....Determines the amount of detuning applied to the shifted note. Variable, in cents, from -100 to +100.

Arp Pch Tracking.....Controls the sound quality/tracking speed of the pitch shifted material. This control should be set in relation to the amount of pitch shifting to be performed. That is, as the pitch shift interval increases, ARP PCH TRACKING should be increased to optimize sound quality. Ranges vary from 0-100 cents to 12-24 tones.

Arpeggio Delay.....Determines the amount of delay applied to the shifted note before being returned to the ARP input. Variable, in milliseconds, from 0 to 400.

Arpeggio Feedback .....Sets the amount of pitch shifted material that is fed back into the input of the arpeggiator. High settings of ARPEGGIO FEEDBACK produce interesting unnatural sounds.

Mod (Modulation Effects)

Module Name	*Module Abbrv.*	*Description*
Mono Chorus	*Cho*	*1-in / 1-out chorus*
Dual Chorus	*DCho*	*1-input / 2-output dual chorus*
4 Phase Chorus	*4PCho*	*1-input/4-output chorus w/ 4 independent delay times*
Mono Flange	*Fla*	*Mono flange*
Dual Flange	*DFla*	*1-input / 2-output dual flange*
Mono Phaser	*Pha*	*Mono phaser*
Dual Phaser	*DPha*	*1-input / 2-output dual phaser*
Mono Tremolo	*Trm*	*1-in / 1-out tremolo*
Stereo Tremolo	*STrm*	*Stereo input / output tremolo*
Auto Panner	*Pan*	*1-in / 1-out auto panner*

Choruses

The RP-12 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 phasing characteristics. The dual chorus Modules use two choruses with their modulating waveforms set 180 degrees out of phase. The 4-phase chorus Modules have four chorus voices with their modulating wave-

forms set 90 degrees out of phase. Chorus Parameters are as follows:

Chorus On / Off.....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

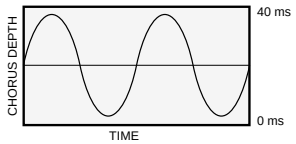
Chorus Level .....Controls the overall level of the chorus. Variable from 0 to 100.

Chorus Speed .....Controls the speed of the chorus sweep. Variable from 0.06 to 16.00 Hz.

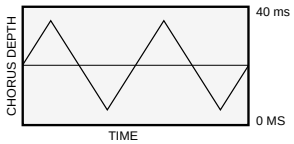
Chorus Depth .....This Parameter sets the sweep depth (intensity) of the chorus. Variable from 0.00 to 30.00 milliseconds.

Chorus Delay (#).....Sets the amount of delay present in the chorus effect. Varies from 0 to 60.00 milliseconds.

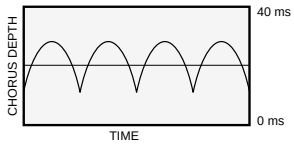
Chorus Waveform .....Controls the LFO waveform pattern of the chorus effect. SINE produces a smooth sine wave-type chorus with even transitions in and out of the turnaround points. TRIANGLE is a linear chorus effect, and ramps the pitch of the wave up and down with no slowing at turnaround points. LOGARITHMIC and EXPONENTIAL waveforms are more dramatic in their effect on the signal (waveform selection is not available in 4 Phase Chorus , the waveform defaults to the sine form).



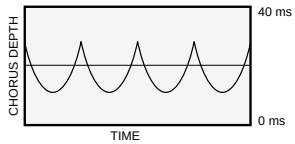
CHORUS WAVEFORM: SINE



CHORUS WAVEFORM: TRIANGLE



CHORUS WAVEFORM: LOGARITHMIC



CHORUS WAVEFORM: EXPONENTIAL

Flangers

The RP-12 also offers studio-quiet flanging. The dual flange Module offers exceptionally rich flanging using multiple voices with different phasing characteristics. The dual flange Module uses two flangers set 180 degrees out of phase. Flange Parameters are as follows:

Flange On / Off .....Turns the Module either on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Flange Level.....Controls the overall level of the flange. Variable from 0 to 100.

Flange Delay.....Sets the amount of delay present in the flange effect. Varies from 0 to 60.00 milliseconds.

Flange Feedback .....Controls the amount of flanged 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.

Flange Speed.....Controls the speed of the flange sweep. Variable from 0.06 to 16.00 Hz.

Flange Depth.....This Parameter sets the sweep depth (intensity) of the flange. Variable from 0.00 to 30.00 milliseconds.

Flange Waveform.....Same as CHORUS WAVEFORM.

Phasers

The Phaser produces animated, "swirling" type effects, it takes a normally flat sound of an instrument and makes it interesting. Phasers also provide that "surround sound" type of ambience.

Phaser On / Off.....Turns the Module either on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

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

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

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

Phaser Depth .....This Parameter sets the sweep depth (intensity) of the phaser. Variable from 0 to 100.

Phaser Waveform .....Same as CHORUS WAVEFORM.

Tremolos

Tremolo was one of the first real "effects", and appeared mostly on early guitar amplifiers. Because of this, tremolo is sometimes perceived as sounding "old" or "vintage". The RP-12, however, breathes

new life into this classic effect, providing totally transparent volume modulation of sound sources.

Tremolo On / Bypass ...Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Tremolo Level .....Controls the output level of the tremolo effect.

Tremolo Speed.....Controls the tremolo speed (speed of modulation). Variable from 0.00 to 16.00 Hz.

Tremolo Depth .....Adjusts the intensity of the tremolo effect. Varies from 0 to 100.

Auto Panners

An auto panner is a modern relative of the tremolo that, instead of modulating the volume of the entire sound, modulates the sound from left to right at a given rate. Both tremolo and auto panner Modules can be found in the <MOD> library. Parameters are as follows:

Panner On / Bypass.....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

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

Panner Speed .....Controls the panning speed (speed of modulation). Variable from 0.06 to 16.00 Hz.

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

Mixers (mono) *Mixers (stereo)* *Mixers (3-out)*

Module Abbrv.	*Description*	*Module Abbrv.*	*Description*	*Module Abbrv.*	*Description*
2x1	*2-in / 1-out mixer*	*3x2*	*3-in / 2-out mixer*	*3x3*	*3-in / 3-out mixer*
3x1	*3-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*
		6x2	*6-in / 2-out mixer*		
		7x2	*7-in / 2-out mixer*		
		8x2	*8-in / 2-out mixer*		

The RP-12's Mixer modules enable the use of effects in parallel configurations. They allow multiple Module outputs to be connected to a single input of another Module. Each mixer channel is equipped with an input level to give you maximum control over levels coming from and going to different Modules. Mixer Modules appear in 1-out, 2-out, and 3-out configurations. 2-out and 3-out configurations include pan controls on the inputs. 3-out mixers are configured so that the first output is actually a mono sum of all the inputs while outputs two and three function as left and right outs respectively.

Mixers.....When the MIXERS Parameter is set to HIDDEN, mixer Parameters disappear from the Parameter menu. To see mixer Parameters, you must turn the Parameter to DISPLAYED or press the <MIX> button. The <MIX>button option allows you to temporarily show mixer Parameters without the need for turning this Parameter on each time.

NOTE: The next two Parameters use a 4x2 Mixer as an example. The actual numbers in the screen will vary depending on the Mixer Module being used.

4 x 2 In 1 Level .....Controls the level of the input indicated in the display. Variable from 0 to 100.

4 x 2 In 1 Pan.....Controls the panning of the input indicated in the display from left to right. Variable from all left to all right.

More

Module Name	*Module Abbrv.*	*Description*
Noise Gate	*NGt*	*Mono noise gate*
Stereo Ducker	*SDuc*	*Stereo input / output automatic ducker*
Phase Inverter	*Inv*	*Inverts signal phase*
Traditional Wah	*TWah*	*Vintage wah effect*
Automatic Wah	*AWah*	*Automatic amplitude-based wah effect*

Noise Gates

The RP-12 utilizes Silencer™ digital noise reduction, which is unique to the S-DISCII™, to perform its noise gating chores. The gate is actually found in the digital portion of the processing which makes it so unique. This means that when the gate is closed, it writes digital zeros (commonly known as digital black) which brings the processor to its

quietest status. The Parameters are as follows:

Effect On / Bypass .....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

NG Threshold.....Sets the level at which the gate will open. Ranges from -∞ to +∞.

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

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

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

NG Attenuation.....Sets the amount of attenuation (signal reduction) when the gate is closed. Varies from 100 dB (eliminates the signal completely) to 0 dB (no attenuation).

NG Delay Time.....Allows placement of a slight delay on the source signal after the gate is triggered. This Parameter allows source material with a very fast attack time to be heard in its entirety without the lag in gate response that is common to inferior noise gates. Variable from 0 to 10 milliseconds.

DSP Level

DSP Level .....Controls the overall signal fed to the digital section. Variable from 0 to -100.

Wahs

Effect On / Off .....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

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

Wah 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 using the RP-12's pedal to perform the wah function. As the Parameter is modified, the tone of the original note will change. Varies from 0 to 127.

Duckers

This effect lowers the level of an Effect passing through the ducker when a signal is present at the third input. This allows the effect passing through the ducker to be more dynamic.

Effect On / Off .....Turns the Module on or off. When Modules are turned off, their Parameters disappear from the Parameter menu. To see the Parameters, you must turn the Module on.

Duc Threshold.....Sets the minimum input level required to trigger the ducker (it is perhaps easier to think of this Parameter as the ducker sensitivity). Higher settings of DUC THRESHOLD require higher input levels to trigger the ducker. Lower settings make the ducking effect easier to trigger. Ranges in 1 dB steps from -100 to 0 dB.

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

Duc 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.

Duc Attack Rate .....Sets the amount of time over which the ducker will reach full attenuation. Adjustable in milliseconds from 0.00 to 5.00 seconds.

Duc Release Rate.....Sets the amount of time over which the ducker will disengage. Adjustable in milliseconds from 0.00 to 5.00 seconds.

Phase Inverter

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

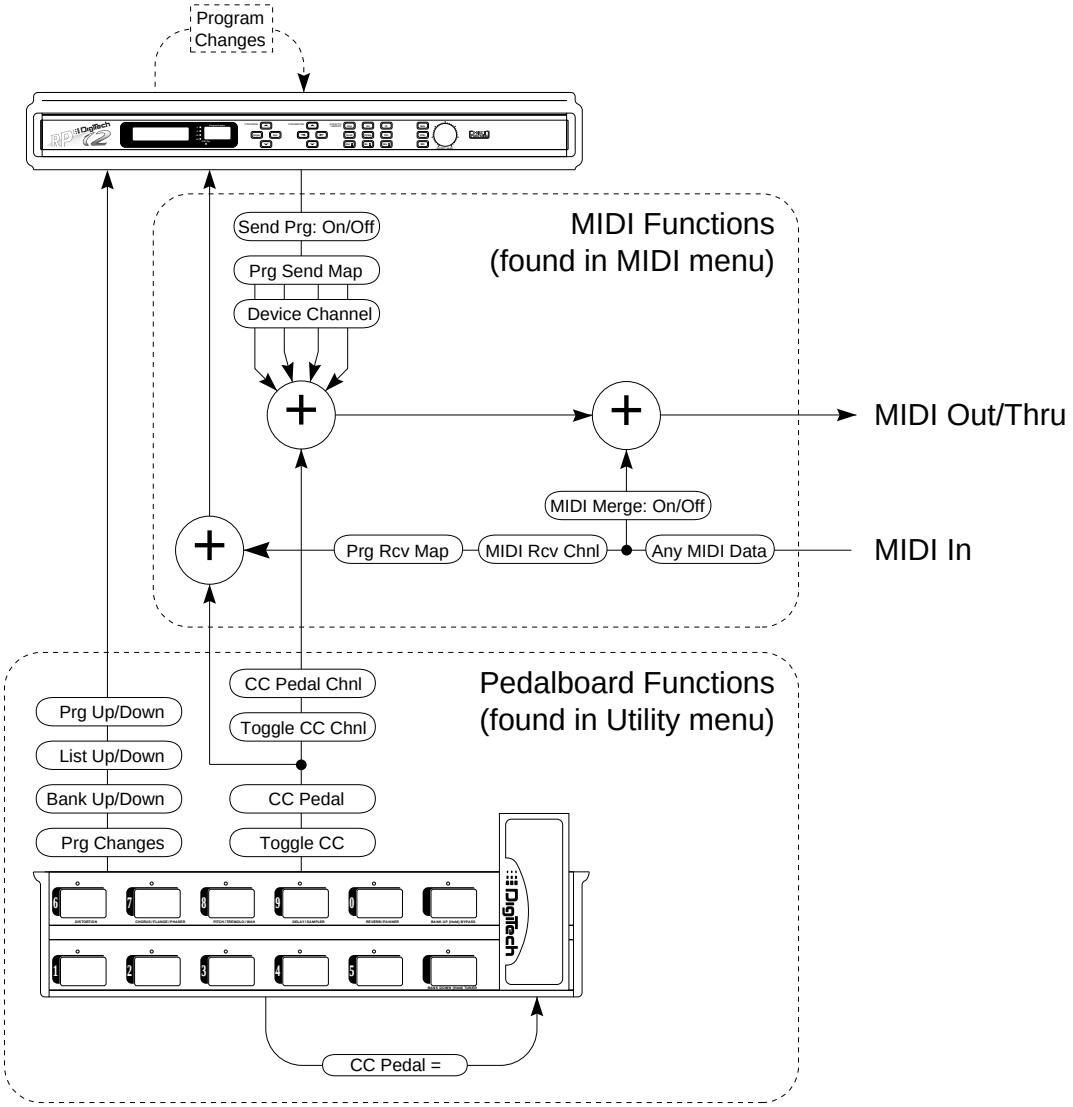
Phase Inv Level.....Set the level of the output signal from the Phase Inverter Module. Adjustable from 0 to 100.

Section 5 - RP-12 Functions

Internal Functions

The RP-12 has two basic types of functions: Pedalboard functions and MIDI functions.

The Pedalboard functions can be broken down into two sections: Pedalboard functions that affect the processor directly and Pedalboard functions that interact with MIDI and then affect the processor.



RP-12 Internal Communication Routing

The Pedalboard functions that affect the processor directly include: Program changes, Program Up/Down, List Up/Down, Bank Up/Down/Tuning, and Bypass. The Pedalboard functions that interact with MIDI and then affect the processor include: Toggle CC and CC Pedal. The CC Pedal channel and Toggle CC channel allow MIDI CC information to be sent out the MIDI port allowing for control of the RP-12, external units, or both together. For more information on how to set up these functions, see page 51.

The MIDI functions can be broken down into two sections: MIDI Out/Thru and MIDI In. The MIDI Out/Thru functions include: Program Send: On/Off, Program Send Map, Device Channel and any MIDI Merge material if that feature is activated. The MIDI In includes: Any MIDI data received by the RP-12, MIDI Receive Channel, Program Receive Map. For more information on how to set up these functions, see page 58.

Pedalboard Functions

Pedals assigned with Program changes allows any Pedal in any Bank of the RP-12 pedalboard to recall an RP-12 Program number. For more information on how to assign Program changes to pedals, see page 51.

Bank Up/Bypass Bank Down/Tuner perform exactly as the name implies in that they increment and decrement through Banks and Bypass or put the RP-12 in Tuner Mode For more information on how to set up these functions, see page 51.

> **NOTE:** When using Program Up/Down or Bank Up/ Down, it is important to remember that they function only within their assigned Bank. When you leave the Bank in which they are assigned, they will take on their assigned function for newly selected Banks. These functions can be assigned to as many Banks in the RP-12 as you want, but remember that you must set up each Bank individually.

List Up, List Down is another useful pedalboard function that allows you to scroll through a custom sequence of Programs using a single pedal. This sequence is called a List, and can be defined by the user (see pg 52). It can be up to 32 steps in length, and each step has its own Program number assignment. To use the List, assign a Pedal as List Up and another as List Down.

Toggle CC allows you to set up a Pedal to act as a Continuous Controller which toggles between values 0 and 127. You will find, for example, that Pedal 6 in every Bank is assigned as Toggle CC 21 at the factory. Each time footswitch 6 is pressed, it will toggle between values 0 and 127 of CC 21. By following the factory default Pedal/CC map this causes the Distortion to be turned On and Off since it is linked to CC 21 in all of the Factory Programs. To assign toggle CCs, see page 51.

While performing, the CC Pedal= command can be used to assign a different Continuous Controller number to the CC Pedal (defaulted to CC 4 at the factory). Upon hitting the assigned pedal, the CC pedal will be reassigned from its current controller, number to the new continuous controller number. Hitting the footsitch again will assign the pedal back to the default CC number. Changing the Program will always cause the pedal to be assigned to the default CC number.

This function is especially useful if you want to use the CC pedal with a Program in more than one way. For example, you can control the level of Delay linked to CC4. Then, in real time, reassign the pedal to CC 10 which will control any Parameter in the Program linked to CC 10 (like a Reverb level). For more information on how to set up this function, see page 51. For more information on linking Parameters to CC's, see page 51.

MIDI Functions

Send Prg: On/Off determines whether or not Program Changes will be sent out the RP-12 MIDI Out port as you select Programs on the RP-12. This Parameter is either ON or OFF, but will be ignored if all the Devices in the Program Send Map are disabled. See page 58 for more information.

Prg Send Map allows the RP-12 to act as a MIDI multiplexer for up to four other devices. Here's how it works: when you change from the current Program, or the RP-12 receives a Program Change message via MIDI, each external device you specify can receive independent Program Change messages on individual MIDI channels. This feature can allow you to control up to four separate MIDI devices with the RP-12.

You may map as many of the Program changes as you like. These are stored in memory automatically, and are always active until you change them or until the factory presets are restored. For more information on how to set up this function, see page 58.

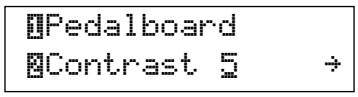
Prg Rcv Map allows you to map incoming Program Change commands (1-128) to any Program on the RP-12. For example, suppose you want to access Program #146 using a MIDI Program Change command. Since MIDI only supports Program Change numbers 1 - 128, Program Change #146 would normally be impossible for the RP-12 to recognize. With the RP-12's flexible MIDI input mapping, however, you can assign a Program Change number to be received as Program #146 on the RP-12. For more information on how to set up this function, see page 58.

The MIDI Merging option allows incoming MIDI data to be merged with any MIDI data generated by the RP-12 before being sent to the MIDI Out port. This is a simple ON or OFF option. See page 65 for more information.

Section 6 - Pedalboard set-up

The Utility section of the RP-12 contains the pedalboard setup menu. This menu is reached by pressing the <UTILITY> button. The procedure is as follows:

• Press the <UTILITY> button once. The display reads:



This is the main Utility options menu. From this selection screen, you are able to choose the option you want using the 1,2,&3 Function buttons. The arrow indicates that more options can be found by pressing the <RIGHT> or <LEFT> Parameter button (depending on the direction of the arrow in the display). Note that each option is preceded by an inverse number. These numbers indicate the Function button you should press to reach each option or sub-menu.

Also, it is important to note that when you are several sub-menus below the main menu (such as in the pedalboard setup menu) you can press the Program <UP> button to take you back to the main menu one level at a time, or press the <UTILITY> button to return to the Program.

• Press Function button <MOD 1>. The display reads:

Note: There are three available options in this sub-menu. Let us refer to this screen as the Pedalboard sub-menu. We will refer to this screen while pursuing each of these options in ascending order.

Pedals

The ▯Pedals option allows different functions to be assigned to each of the pedals on the pedalboard.

- From Program mode, press the <UTILITY> button once.
- Press the Function button <MOD ▯> once. The display reads:

```
▯Pedals  ▯CC Ped
▯PrgList Assign→
```

- Press Function button <MOD ▯> again. The display reads:

```
▯Bank 1 ▯Pedal 1
▯[assignment]  1
```

There are 25 Banks available, each with 10 pedal assignments. As you scroll through the Banks or Pedals, you will notice the pedal assignment name and number located under option ▯[assignment] change according to each ▯Pedal #.

Use Function button <MOD ▯> to select the ▯Bank # option and scroll to the desired Bank. Function button <MIX ▯> selects the ▯Pedal # option and allows you to scroll to the desired pedal in that bank.

Pedal Assignments

There are seven types of pedal assignments. They are: Program Changes, Program Up/Down, List Up/Down, Bank Up/Down, Toggle CC (0-127), and CC Pedal (0-127). For a description of these functions, refer to the RP-12 Functions section (pg 46).

Use Function button <MORE ▯> to select the ▯[assignment] option. At this point, press the <UP> and <DOWN> Parameter buttons to ascend or descend through the RP-12's Program numbers until you reach Program 256 . If you continue to press the Parameter buttons, other assignments will be available in the following order: ▯Program Up, ▯Program Down, ▯List Up, ▯List Down,, ▯Bank Up, ▯Bank Down, ▯Toggle CC 0-127, ▯CCPedal= CC 0-127.

CC Pedal

This section allows you to assign the CC Pedal's CC number and transmit Channel number.

- From Program mode, press the <UTILITY> button once.
- Press the Function button <MOD 1> once. The display reads:

```
1Pedals  2CC Ped
3PrgList Assign→
```

Assign CC Pedal

- Press Function button <MIX 2>. The display reads:

```
1Assign CC Pedal
2Calibrate Pedal
```

•Press Function button <MOD 1>. The display reads:

```
1CCPedal:CC  4
2Transmit:Ch 1 →
```

The cursor should be under the CC number in the display. Function button <MOD 1> selects the CC link number for the CC Pedal. Function button <MIX 2> selects the MIDI Transmit Channel for the CC Pedal. If you press the <RIGHT> Parameter button, the display reads:

```
1Toggle Transmit
←  Channel 1
```

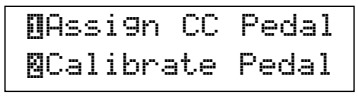
On this screen, Function button <MOD 1> selects the MIDI Transmit Channel for the Toggle CC's.

Calibrating the CC Pedal

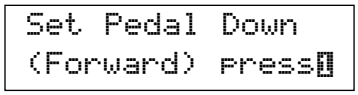
- From Program mode, press the <UTILITY> button once.
- Press the Function button <MOD 1> once. The display reads:

```
1Pedals  2CC Ped
3PrgList Assign→
```

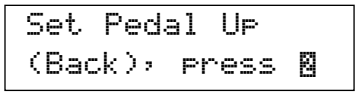
- Press Function button <MIX 2>. The display reads:



• Press Function button <MIX [2]>. The display reads:



• Move the pedal to its full forward (toe down) position, and press Function button <MOD [1]>. The display reads:



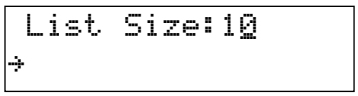
• Move the pedal to its full back (toe up) position, and press Function button <MIX [2]>. When the display returns to the Utility setup menu, you have successfully calibrated the CC pedal.

PrgList Assign

This section explains the procedure of how to assign a List Size and assigning Program numbers to step numbers of the List.

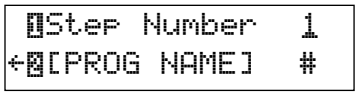
• From Program mode, press the <UTILITY> button once.
• Press the Function button <MOD [1]> once. The display reads:

• Press Function button <MORE [3]>. The display reads:



•Press the <UP> and <DOWN> Parameter buttons to select the list size you want. The list is set to be 10 steps long from the factory. However, you can assign up to 32 steps in a list.

•From the above screen press the <RIGHT> Parameter button. The display reads:



The cursor should be under the Step number on the above screen. At this point, each time you press the <UP> and <DOWN> Parameter

buttons, you will scroll through the number of steps that you assigned from the above List Size. For example: if you assigned your List Size to be 6 steps, you will have 6 assignments available.

You may have noticed, as you increment and decrement the Step Number, the Program Name and number change with the step number. If you want to change the Program number assigned to the step, Press Function button <MIX 2>. The cursor should move under the Program number. The Step Number will remain stationary while you increment and decrement through the 256 available Programs, using the Parameter <UP> and <DOWN> buttons.

LED Assign

This function gives you the option of choosing how the pedal's LEDs will illuminate. There are three options available: Normal, Reversed, and All on. Normal illuminates the LEDs of the Pedals in use. Reversed illuminates the LEDs of the Pedals that are not in use. All On, illuminates all the LEDs.

- From Program mode, press the <UTILITY> button once.
- Press the Function button <MOD 1> once. The display reads:

```
1Pedals  2CC Ped
3PrgList Assign→
```

- Press the <RIGHT> Parameter button. The display reads:

```
 1LEDs:Normal
←2Bank Names
```

- Press Function button <MOD 1> until the desired mode is displayed. There are three modes: `Normal`, `All On`, and `All Off`.

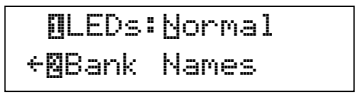
Naming Banks

This function gives you the option of customizing banks within the RP-12 by assigning each bank it's own unique name. This can be a invaluable feature when a diverse menu of banks is required. The procedure for naming banks is as follows:

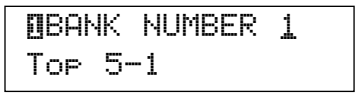
- From Program mode, press the <UTILITY> button once.
- Press the Function button <MOD 1> once. The display reads:

```
1Pedals  2CC Ped
3PrgList Assign→
```

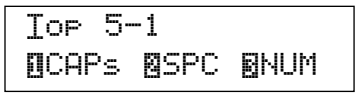
- Press the <RIGHT> Parameter button. The display reads:



- Press Function button <MIX ▯> and the display will look something like this:



- Press Function button <Name> button and the display will look something like this:



- Using the <UP/DOWN> Parameter buttons, scroll to the character you want to use, or press one of the Function buttons. When you have selected the character you want, press the <RIGHT> Parameter key. Note that the cursor moves to the next character. Repeat this procedure until the Bank name is satisfactory.

- Once the bank has been named, press function button <Name> to exit Bank naming utility.

Section 7 - RP-12 set-up

The Utility section of the RP-12 contains the Contrast Menu, Output Mode, Cabinet Emulation Menu, Sales Banner Menu, and the Reinitializing Menu. These menus are reached by pressing the <UTILITY> button. The procedure is as follows:

- (Step 1) Press the <UTILITY> button once. The display read:

This is the main Utility options menu. From this selection screen, you are able to choose the option you want using the Function buttons. The arrow indicates that more options can be found by pressing the <RIGHT> or <LEFT> Parameter button (depending on the direction of the arrow in the display). Note that each option is preceded by an inverse number. These numbers indicate the Function button you should press to reach each option or sub-menu.

Also, it is important to note that when you are several sub-menus below the main menu, you can press the Program <UP> button to take you back to the main menu one level at a time, or press the <UTILITY> button to return to the Program.

LCD Contrast

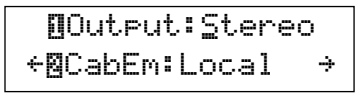
The 2Contrast # option allows you to change the LCD displays' contrast, so you are able to view the display at various angles.

- Press Function button <MIX 2> until the desired contrast is displayed.

Output Mode

The 1Output: option allows you to set the output to stereo or mono. If mono is selected, the left and right outputs will be summed together before they are sent to the outputs. From the Program title screen, press the <UTILITY> button. The display reads:

- Press the <RIGHT> Parameter button, the display reads:



- Press Function button<MOD 1> to change the output from Stereo to Mono or vice versa.

Cabinet Emulator

The ▯CabEm: option allows you to select: All On , All Off, and Local. All On indicates the Cabinet Emulation Parameter will always be set to on. All Off indicates the Cabinet Emulation Parameter is always off. Local indicates the stored Parameter value is being used. From the Program title screen, press the <UTILITY> button. The display reads:

```
▯Pedalboard
▯Contrast 5     →
```

- Press the <RIGHT> Parameter button. The display reads:

```
  ▯Output:Stereo
←▯CabEm:Local   →
```

- Press Function button <MIX ▯> unit the desired Cabinet Emulator setting is displayed.

Sales Banner

The Sales Banner gives a brief description of the features of the RP-12. From the beginning of the Set-up Section, follow step 1 until the display reads:

```
▯Pedalboard
▯Contrast 5     →
```

- Press the <RIGHT> Parameter button twice. The display reads:

```
  ▯Sales:Off
←▯Reinitialize
```

- Press Function button <MOD ▯> to turn the Sales Banner On and OFF.

Reinitializing the RP-12

Reinitializing the RP-12, restores the factory presets and deletes any user presets stored or not stored. It will be exactly as it was the day it left the factory new. From the Program title screen, press the <UTILITY> button. The display reads:

```
▯Pedalboard
▯Contrast 5     →
```

• Press the <RIGHT> Parameter button, twice. The display reads:

```
 ▯Sales:Off
←▯Reinitialize
```

•Press Function button <MIX ▯>. The display reads:

```
Restore Factory
Programs?▯Yes▯No
```

•Press Function button <MOD ▯>. The display briefly reads:

```
This will erase
User Programs
```

followed by:

```
Are You Sure?
▯Yes ▯Cancel
```

• This is your last chance to change your mind. To abort the operation, press Function button 3. To restore all Programs to original factory defaults, press Function button 2. The display briefly reads:

```
Resetting.
Please wait ...
```

after which you will be returned to the Program Title screen.

SECTION 8 - MIDI set-up

The RP-12's MIDI set-up allows you to access and change MIDI Parameters. This is where you are able to edit your MIDI channels, turn the Program send on or off, edit the Program send and receive maps, edit the Device number, assign CC numbers, dump MIDI SysEx data, and turn MIDI merging on or off. These menus are reached by pressing the <MIDI> button. The Procedure is as follows:

- (Step 1) Press the <MIDI> button once. The display reads:

This is the MIDI options menu. From this screen, you are able to choose the option you want using the Function buttons. The arrow indicates that more options can be found by pressing the <RIGHT> or <LEFT> Parameter button (depending on the direction of the arrow in the display). Note that each option is preceded by an inverse number. These numbers indicate the Function button you should press to reach each option or sub-menu.

Also, it is important to note that when you are several sub-menus below the main menu you can press the Program <UP> button to take you back to the main menu one level at a time, or press the <MIDI> button to return to the Program.

MIDI Channel

The MIDI Channel Parameter allows you to select the MIDI channel on which the RP-12 will respond to MIDI data.

From the MIDI options menu, (1MIDI Channel:1 is displayed in the top line of the screen):

- Press Function button <MOD 1>, until the desired MIDI Channel number is selected.

Send Program

Send Prg determines whether or not MIDI Program Changes will be sent out the RP-12 MIDI port as you select Programs. From the MIDI options menu, (2Send Prg: Off is displayed in the top line of the screen):

- Press Function button <MIX 2> to turn the Send Program function ON or OFF.

Program Send Map

Device mapping allows the RP-12 to act as a controller for up to four other devices. From the MIDI options menu:

- Press the <RIGHT> Parameter button. The display reads:

```
  Prg Send Map
←Prg Rcv Map →
```

- Press Function button <MOD 1>. The display reads:

```
Device 1
MIDI Ch:1 →
```

The cursor is now under the Device number on the above screen. At this point, each time you press Function button <MOD 1>, you should increment through the four Device numbers. To choose your own custom name for the Device, follow the same steps used in custom naming a Program on pg. 19.

- Press Function button <MIX 2>

The Cursor is now found under the MIDI Channel number. You can select the channel number you want to be assigned to the Device number you selected previously. There are 16 MIDI channel numbers, or you may choose to disable MIDI. Either use the <UP> and <DOWN> Parameter buttons, or keep pushing the <MIX 2> button to scroll through the MIDI channel numbers.

- Press the <RIGHT> Parameter button. The display reads:

```
 Device # Send
←Prg:1   As:1
```

This screen tells you that when the RP-12 changes to Program 1, the selected device will be sent Program Change number 1 on its designated MIDI channel.

- Press Function button <MIX 2> once.

The cursor appears under 2 PRG: 1. Using the <UP> and <DOWN> Parameter buttons, select the RP-12 Program number (1-256) that will send the mapped Program Change to the external device.

- Press Function button <MORE 3> once.

The cursor now appears under 3AS: (#). This Parameter determines the MIDI Program Change number that the external device will receive when the appropriate Program Change number is received on

the RP-12. If this Parameter is set to DISABL, the selected RP-12 Program Change will send nothing to the external device. Select the Program Change number that will be sent (1-128, DISABL) using the <UP/DOWN> Parameter buttons.

Program Rcv Map

The Program Recieve Map function allows you to map incoming MIDI Program Changes to any Program in the RP-12. From the MIDI options menu (step 1):

- Press the <RIGHT> Parameter button. The display reads:

```
 1Prg Send Map
←2Prg Rcv Map →
```

- Press Function button <MIX 2>. The display reads:

```
1Rcv MIDI Prg  1
2As RP-12:     1
```

The cursor appears under 1 RCV MIDI PRG: 1. This display is saying: MIDI Program Change number 1 is currently set to activate Program number 1 on the RP-12.

- Using the Parameter <UP> Parameter button, set the 1 RCV MIDI PRG number. Note that as you change this number, the AS RP-12 number changes with it.

- Press Function button <MIX 2> once.

The cursor appears under 2 AS RP-12: #.

- Change the number using the <UP> and <DOWN> Parameter button. When you're finished, press the <MIDI> button to exit back to the Parameter screen you left.

Any number of Program Changes (up to the MIDI maximum of 128) can be mapped to recall any number of Programs on the RP-12.

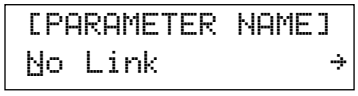
Assign CC # to Parameter

You can create up to 10 continuous controller links that can be linked to any Parameter in the RP-12. Remember, CCs are active only when the Program to which they are linked is active. Make sure you have scrolled to the Parameter you want link before you attempt to link the CC.
As an example, let's link CC 23 to a Parameter. The procedure is as follows:

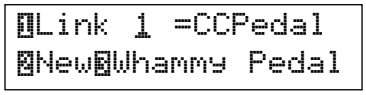
• From the Parameter screen press and hold the <MIDI> button. The display reads something like:

NOTE: All presets have factory established CC Links. If the selected Parameter is not linked, it will select the next available CC link for assignment.

• Press Function button <MIX > once. The display reads:



NOTE: If you failed to pick a Parameter before attempting to assign it, the display you will see, looks something like this:



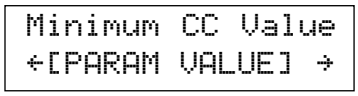
This simply means, that the RP-12 has taken you to the first CC parameter link in the Program.

• ***Option 1:*** Press a pedal assigned as a toggle CC or move the CC Pedal on the Pedalboard. The Parameter is now linked to the CC# assigned to the pedal you selected.

• ***Option 2:*** Using the <UP/DOWN> Parameter buttons, select the MIDI continuous controller number that will control the Parameter [0-127, CHPRESS (channel pressure),CC PEDAL, or NO LINK].

After assigning a parameter, the minimum and maximum values can be established. The procedure is as follows:

• Press the <RIGHT> Parameter button once. The display reads:



The value shown with this Parameter automatically defaults to the minimum Parameter value available.

NOTE: The MINIMUM CC VALUE and MAXIMUM CC VALUE Parameters allow you to limit the range of the continuous controllers in the full on and full off positions. The values you select on these two screens determine the behavior of the continuous controller. For example, if a Parameter ranges from 0-100 and MINIMUM CC VALUE is set at 40, the lowest the Parameter can go to via continuous control is 40. Likewise, if MAXIMUM CC VALUE is set at 90, the CC range would run from 40 to 90. It is also possible to set MINIMUM CC VALUE higher than MAXIMUM CC VALUE to reverse the action (polarity) of the continuous controller.

- Use the <UP/DOWN> Parameter buttons to set the minimum Parameter value when the CC pedal is at minimum.

- Press the <RIGHT> Parameter button once. The display reads:

```
Maximum CC Value
←[PARAM VALUE]
```

  The number shown with this Parameter automatically defaults to the maximum Parameter value.

- Use the <UP/DOWN> Parameter buttons to set the maximum Parameter value when the CC pedal is at maximum travel range.

- Press the <MIDI> button once to return to the Parameter screen. Note that the CC symbol appears in the upper right corner of the display. This symbol simply tells you that the Parameter is linked to a continuous controller.

At this point, you have successfully linked a CC # to control a Parameter. When you move your CC transmitting device (such as the CC Pedal of the Pedalboard), the RP-12 sweeps smoothly between the two values you selected (MINIMUM CC VALUE, MAXIMUM CC VALUE). The Program must now be saved or the CC Link assignment will be lost upon changing Programs (see Storing/Naming Programs, pg. 21).

NOTE: In order for the RP-12 to respond to incoming CCs, the RP-12 MIDI channel setting must correspond with the channel designation of the incoming messages. The RP-12 MIDI channel can be set to any one of the 16 MIDI channels, or all channels (omni). Refer to MIDI Channel on pg 58.

Let's go back to the CC LINK screen for a moment and tackle another scenario: if the Local Link number you want already has a CC assignment, the CC LINK display will read:

```
Link   # =  CC#
New[PARAM NAME]
```

This screen gives you the option of either reassigning the link (NEW) or selecting a different Local CC Link number. To reassign the link:

- Press Function button <MIX >. If a Parameter has not been selected for continuous control, the display briefly reads:

```
Move to Param to
Link Local CC
```

after which you are returned to the Program to select a Parameter for continuous control. If a Parameter has been selected, the old Parameter link will be overwritten by the new selection. From this point, the procedure is the same as previously outlined.

Display CCs

This is a simple option that allows you to see the CC values change in real time. From the MIDI options menu (step 1) find the <RIGHT> Parameter button.

- Press the <RIGHT> Parameter button, twice. The display reads:

```
 CC Assignments
<Disp CC's:Off>
```

- Press Function button <MIX > until the display shows the setting you want.

NOTE: The RP-12's performance while using CCs will decrease if Display CCs is active.

Bulk Dump

This option allows you to dump a SysEx copy of the entire contents of the RP-12 memory out the MIDI port. This is particularly useful for backing up the memory of the RP-12, or copying all the Programs from one RP-12 to another. From the MIDI options menu (step 1):

- Press the <RIGHT> Parameter button, three times. The display reads:

```
 1Bulk Dump
←2Program Dump →
```

- Press Function button <MOD 1> once. The display reads:

```
Dump MIDI Data?
Press 2 for Yes
```

- Press Function button <MIX 2>, to dump a SysEx copy of the entire contents of the RP-12 memory. To abort the operation, press <MIDI>.

- If Function button <MIX 2> is pressed the display briefly reads:

```
* Dumping MIDI *
*     DATA      *
```

When the dump is finished, the display returns to:

```
Dump MIDI Data?
Press 2 for Yes
```

- Press <MIDI> to exit and return to the previous screen.

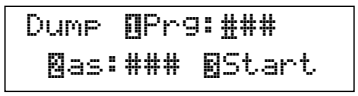
Program Dump

This option allows you to dump an. individual Program, using SysEx, from the RP-12 out the MIDI port to another device. From the MIDI options menu (step 1):

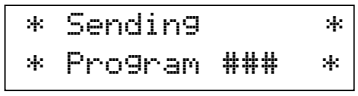
- Press the <RIGHT> Parameter button, three times. The display reads:

```
 1Bulk Dump
←2Program Dump →
```

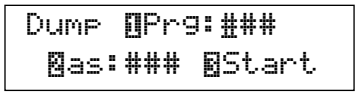
- Press Function button <MIX 2> once. The display reads:



- Using the <UP> and <DOWN> Parameter buttons, select the Program number you want to dump out the MIDI port.
- Press Function button <MIX B> once. Note that the cursor moves under Bas:###.
- Using the <UP/DOWN> Parameter buttons, select the Program number location in which you want the dumped Program to appear. To abort the operation press the <MIDI> button.
- Press Function button <MORE B> to start the SysEx dump. The display briefly reads:



When the dump is finished, the display returns to:

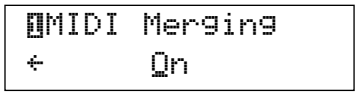


- Press the <MIDI> button to exit and return to the previous screen:

MIDI Merging

The MIDI Merging option allows incoming MIDI data to be merged with any MIDI data generated by the RP-12 before being sent to the MIDI out port. From the MIDI options menu (step 1) find the <RIGHT> Parameter button.

- Press the <RIGHT> Parameter button, four times The display reads:



- To change the setting, press Function button <MOD A>. When you're finished, press the <MIDI> button once to return to the Program.

Section 9 - appendix

Specifications

A/D Converter: 16 bit PCM
D/A Converter: 16 bit PCM
Sampling Frequency: 40 kHz

DSP Section:

Architecture: Static-Dynamic Instruction Set Computer (S-DISC II™)
Digital Signal Path Width: 24 bits (144.5 dB)
Internal Data Path Width: 48 bits (289 dB)
Dynamic Delay Memory: 64k x 24 bits (1.68 seconds)
Static Delay Memory: 256 24-bit registers (6.55 milliseconds)
Data ALU Processing: 10.0 MIPS
Address ALU Processing: 15.0 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
Nominal Level: +4 dBu
Maximum Level: +18 dBu
Impedance: 50 ohms

General:

Frequency Response: 20 Hz. - 20 kHz. +0, -3 dB
S/N ratio: Greater than 90 dB; ref = max signal, 22 kHz measurement bandwidth
Total Harmonic Distortion: Less than 0.04% (1 kHz.)
Memory Capacity:
- Factory: 128 programs, 36 algorithms
- User: 128 programs

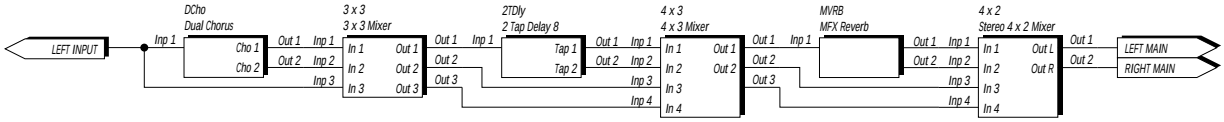
Power Requirements:
- US and Canada: 120 V AC, 60 Hz
- Japan: 100 V AC, 50/60 Hz
- Europe: 230 V AC, 50 Hz
- UK: 240 V AC, 50 Hz

Power Consumption: 30 watts
Dimensions: 24 5/16" W x 2 5/8" H x 8 7/8" D

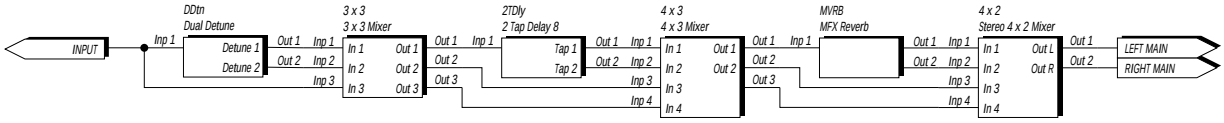
Factory Algorithm Diagrams

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 36 Algorithms.

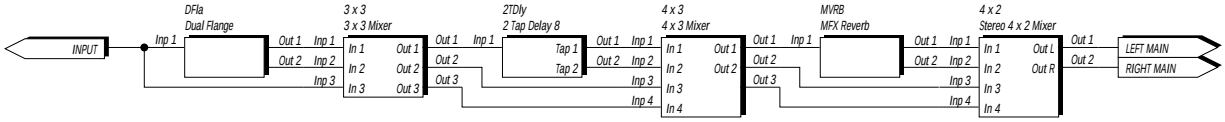
Algorithm #1
DCho -> 2TDly -> Revrb



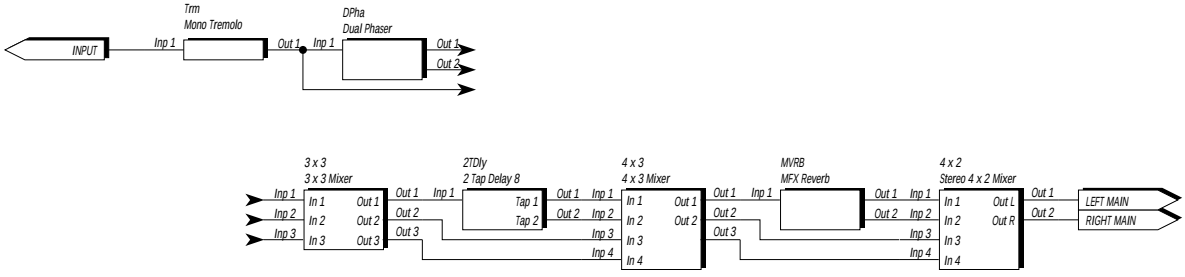
Algorithm #2
DDtn -> 2TDly -> Revrb



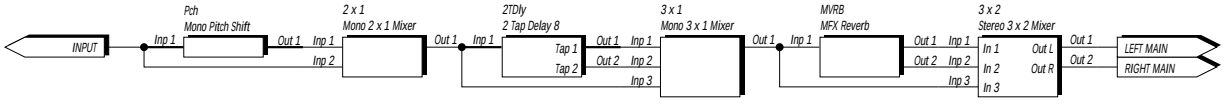
Algorithm #3
DFla -> 2TDly -> Revrb



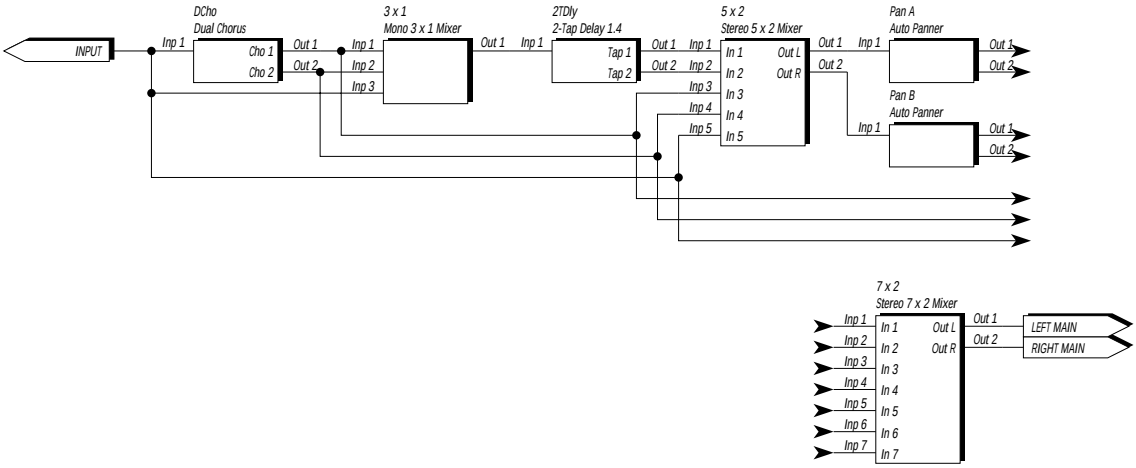
Algorithm #4
DPha -> 2TDly -> Revrb



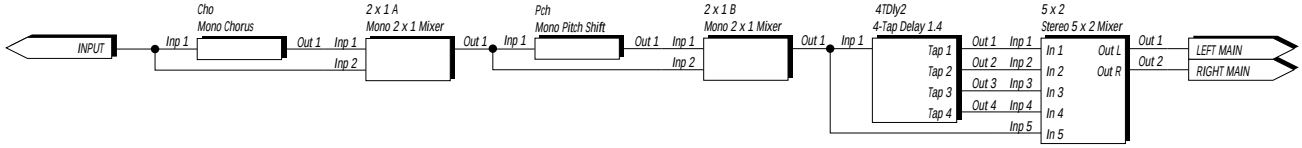
Algorithm #5
Pch -> 2TDly -> Revrb



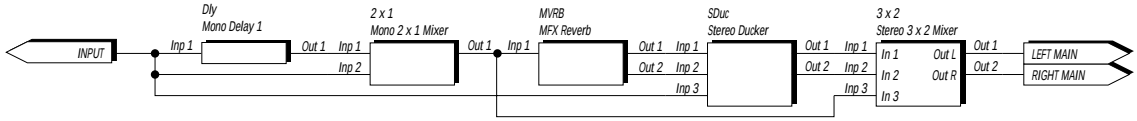
Algorithm #6
DCho -> 2TDly -> 2 Pans



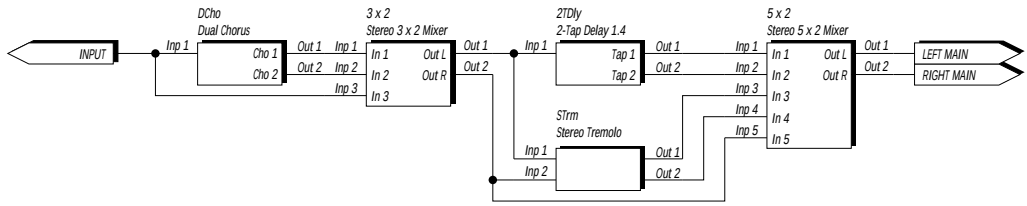
Algorithm #7
Cho -> Pch -> 4TDly



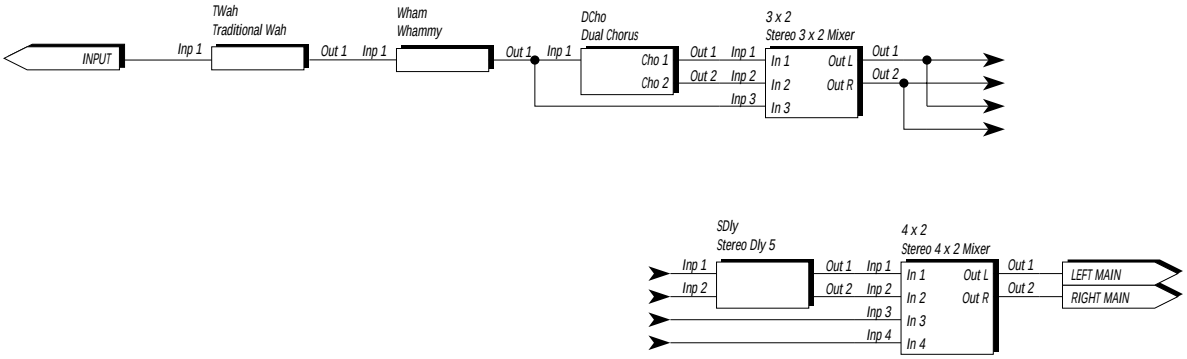
Algorithm #8
Dly -> Revrb -> SDuc



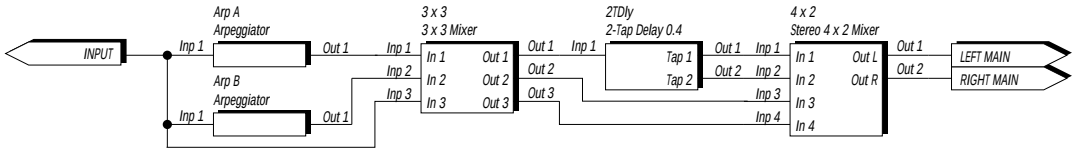
Algorithm #9
DCho -> 2TDly / STrem



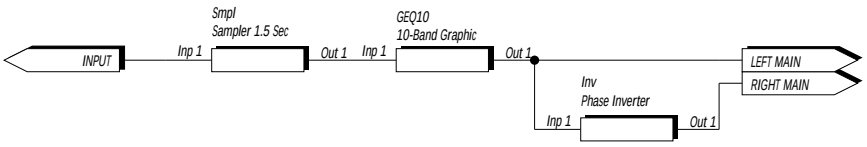
Algorithm #10
Wah -> Wham -> Cho -> Dly



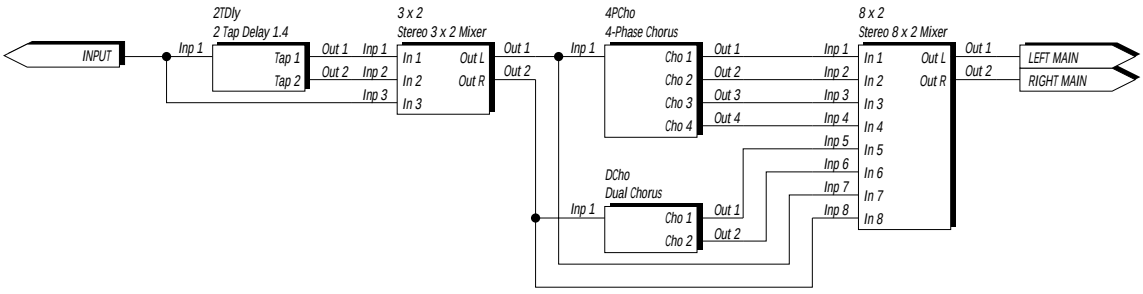
Algorithm #11
Arpeggio2 -> Dly



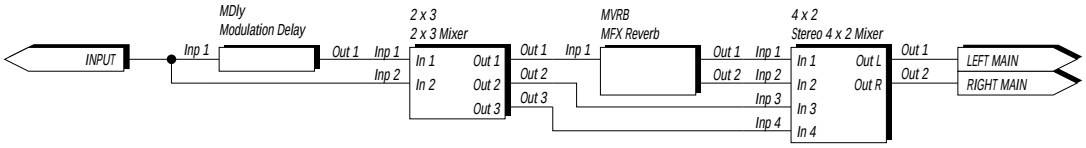
Algorithm #12
Sampler -> GEQ10



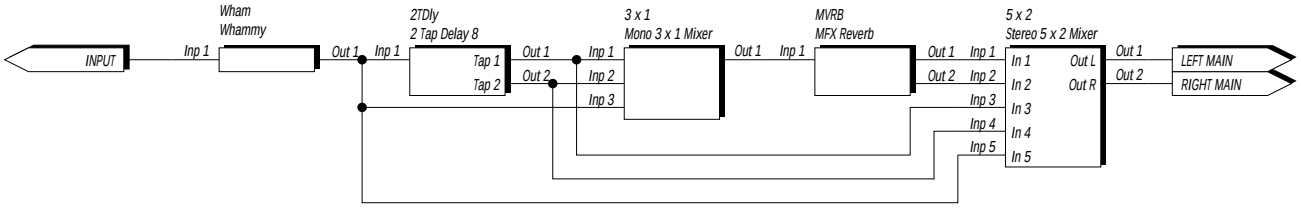
Algorithm #13
2TDly -> 6VoiceCho



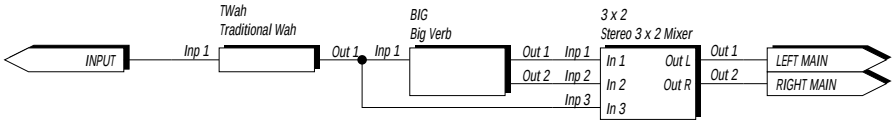
Algorithm #14
Mod Dly -> Revrb



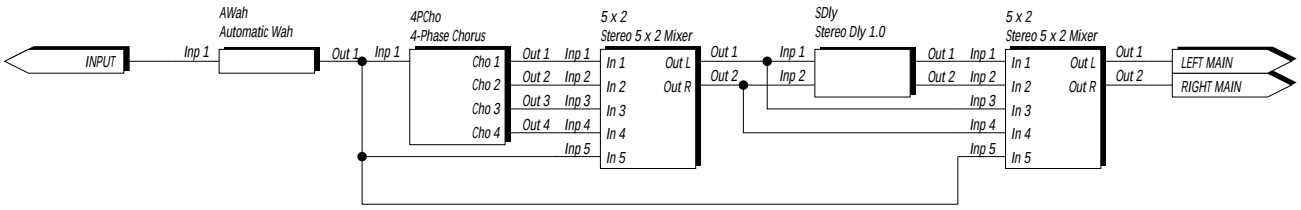
Algorithm #15
Wham -> 2TDly -> Revrb



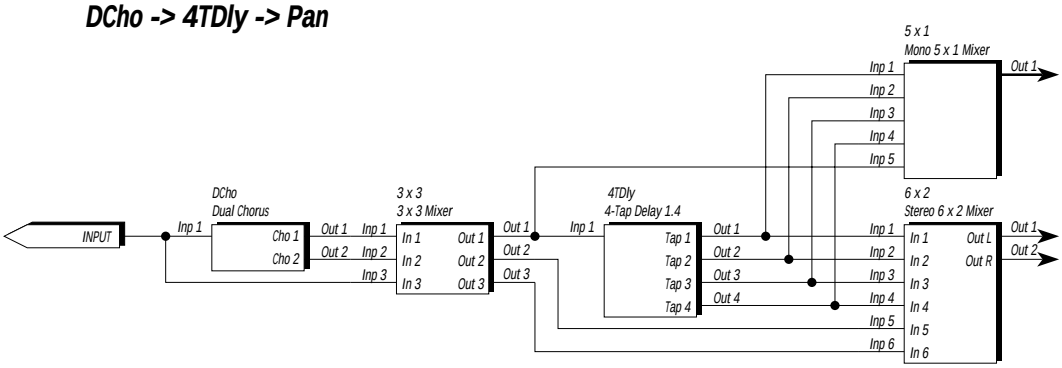
Algorithm #16
Wah -> BigVerb

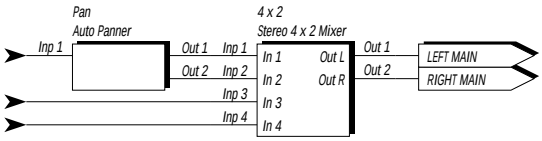


Algorithm #17
AWah -> Cho -> Dly

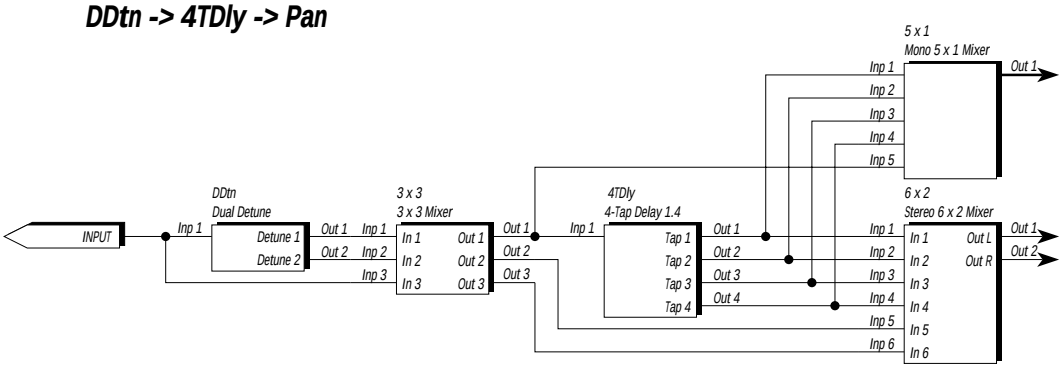


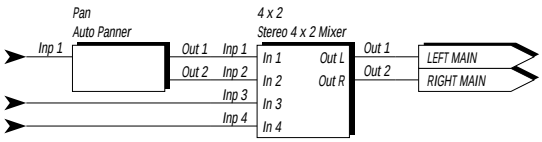
Algorithm #18
DCho -> 4TDly -> Pan



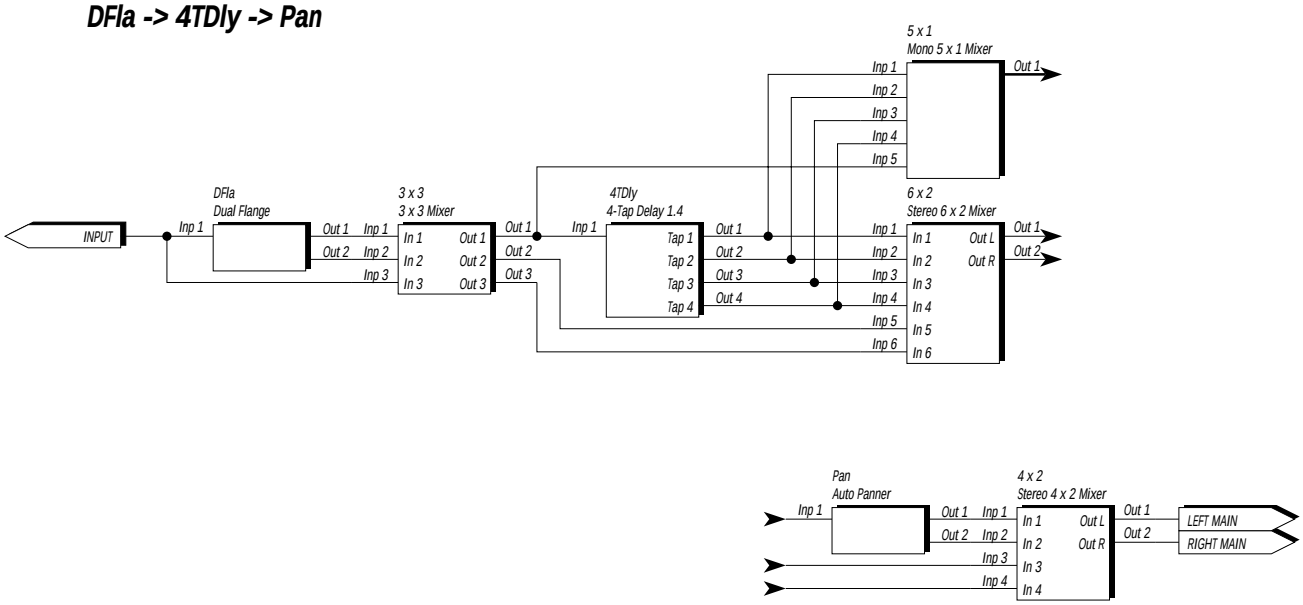


Algorithm #19
DDtn -> 4TDly -> Pan

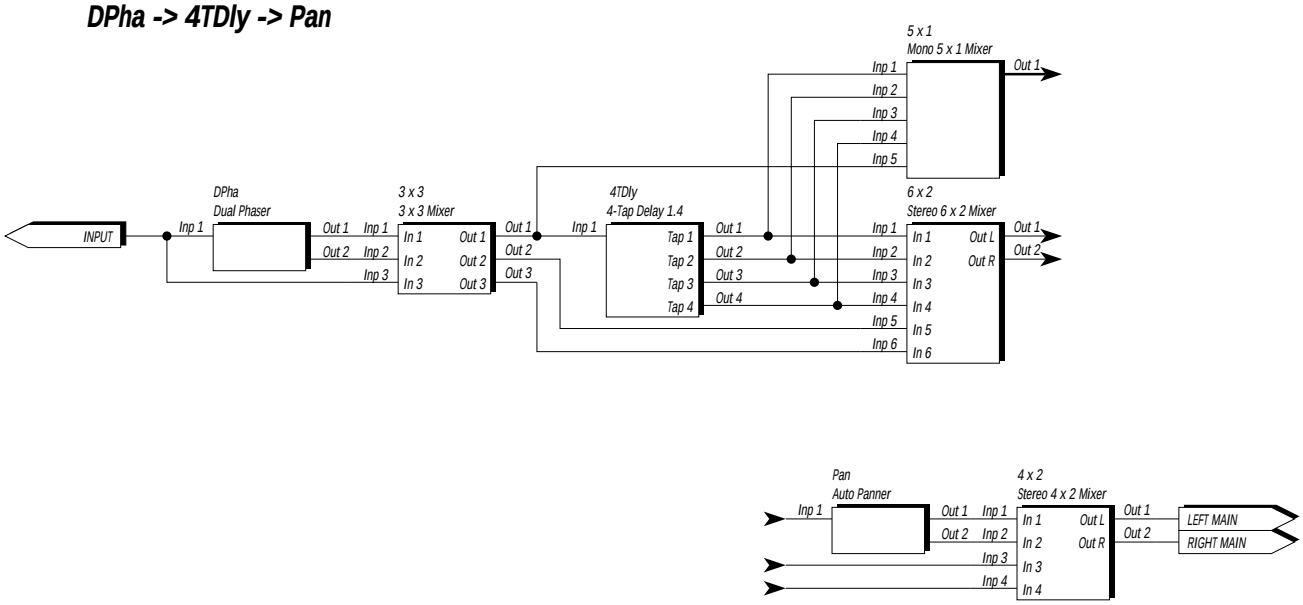




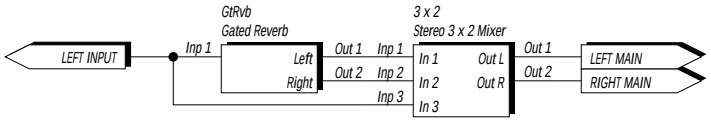
Algorithm #20
DFla -> 4TDly -> Pan



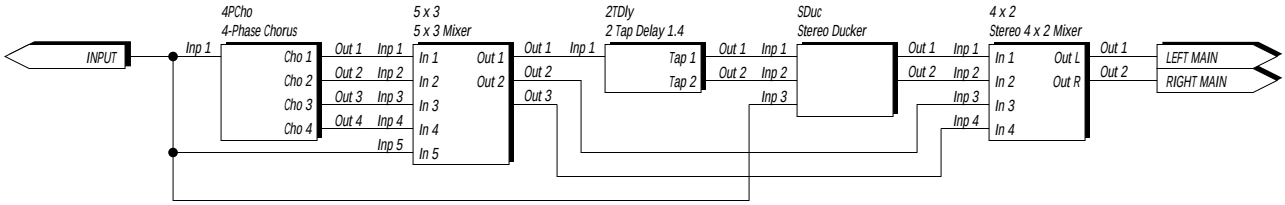
Algorithm #21
DPha -> 4TDly -> Pan



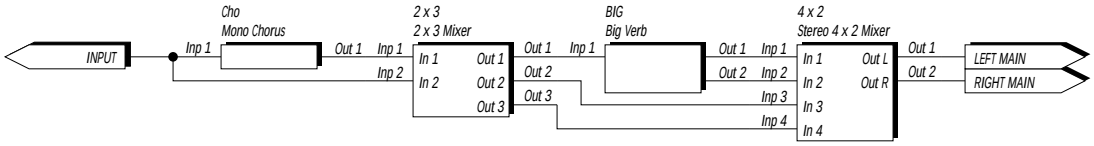
Algorithm #22
Gated Reverb



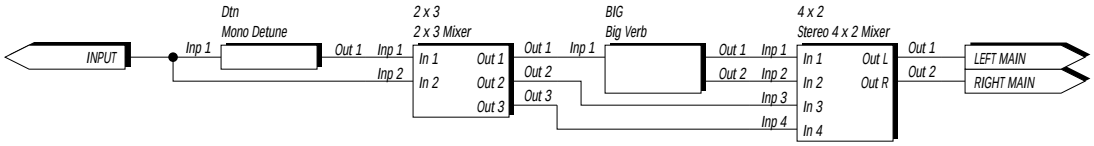
Algorithm #23
4PCho -> 2TDly -> SDuc



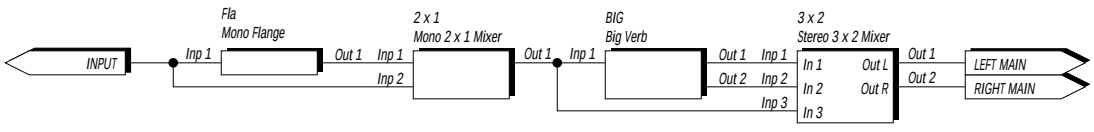
Algorithm #24
Chorus -> BigVerb



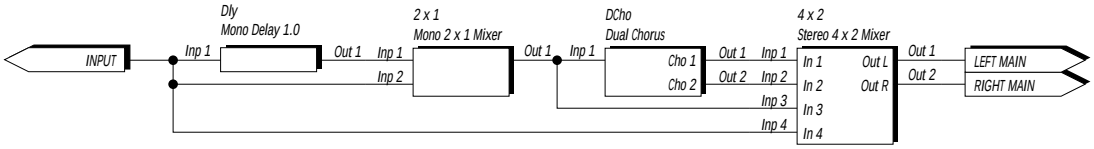
Algorithm #25
Detune -> BigVerb



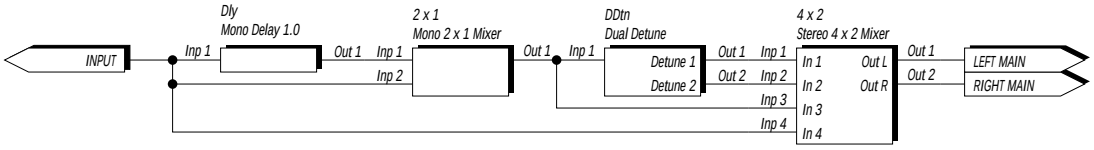
Algorithm #26
Flange -> BigVerb



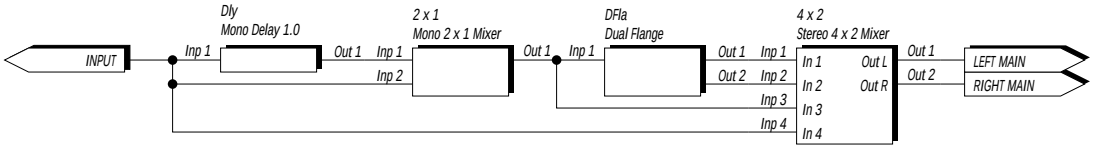
Algorithm #28
Dly -> Dual Chorus



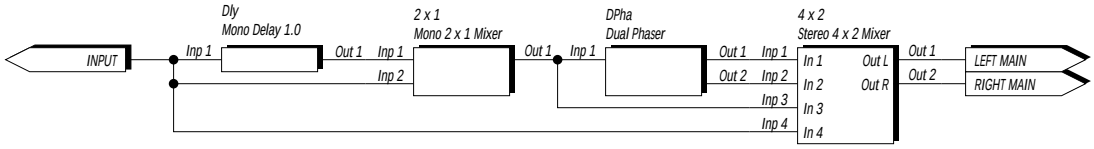
Algorithm #29
Dly -> Dual Detune



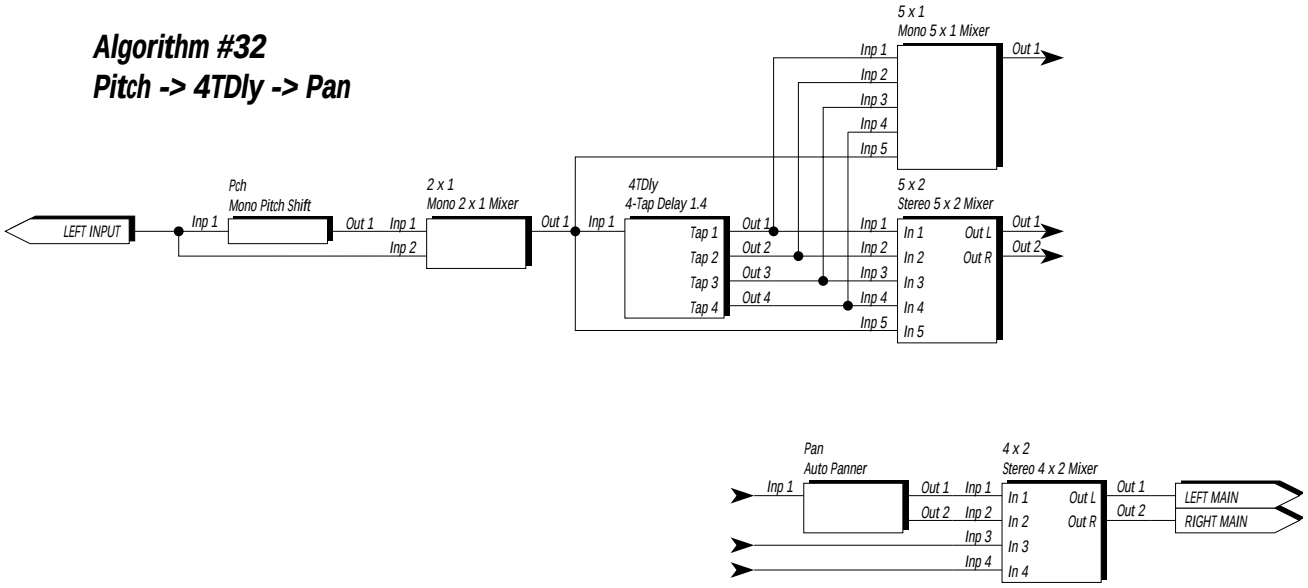
Algorithm #30
Dly -> Dual Flange



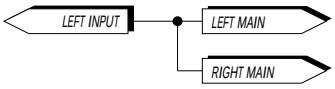
Algorithm #31
Dly -> Dual Phaser



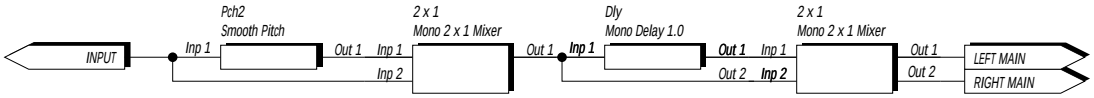
Algorithm #32
Pitch -> 4TDly -> Pan



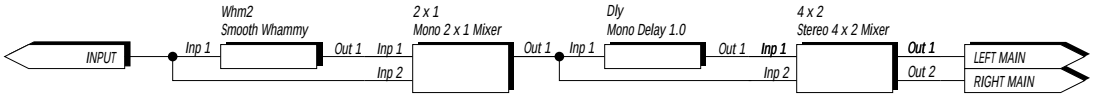
Algorithm #33
No Digital



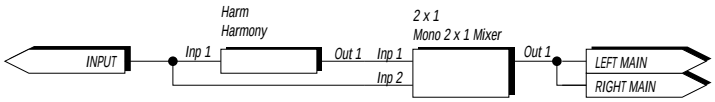
Algorithm #34
Pch2 -> Dly



Algorithm #35
Whm2-> Dly

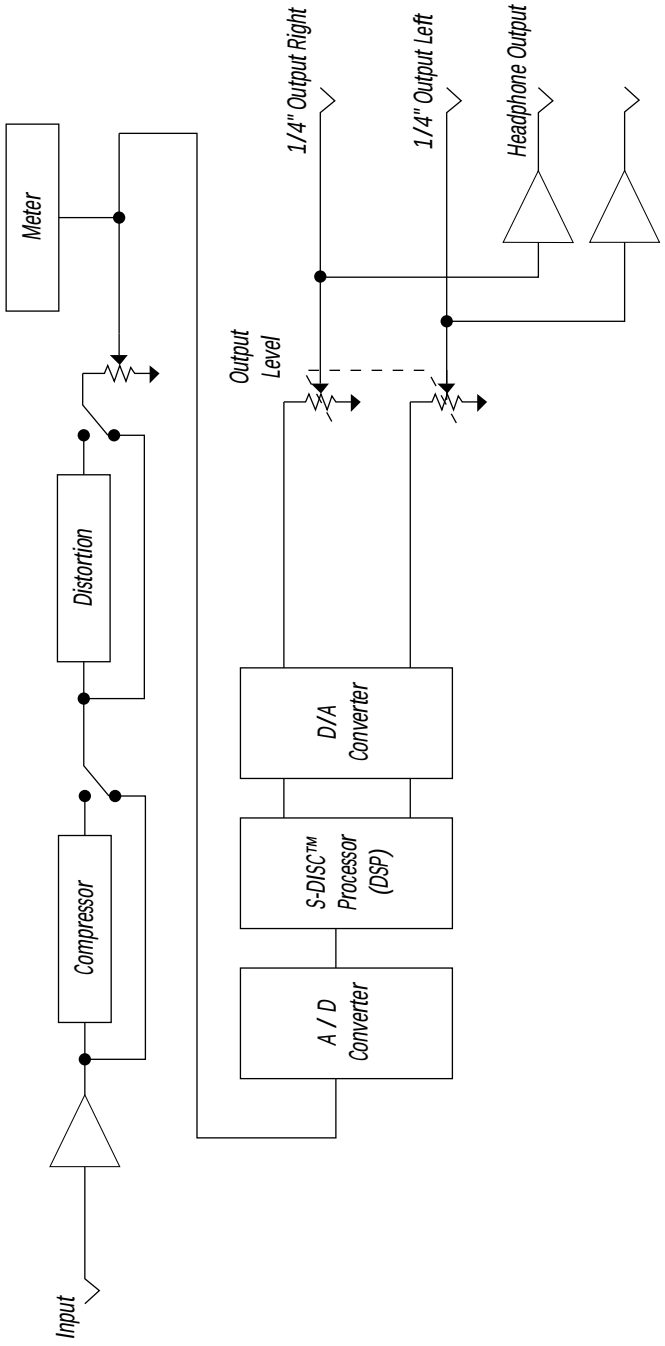


Algorithm #36
Harm



Block Diagram

The following is a simplified block diagram of the RP-12.



MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1-16 1-16	1-16 1-16	Memorized
Mode	Default Messages Altered	Mode 3 X X	Mode 3 X 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 O	
Pitch Bender		X	X	
Control Change		O	O	Default Channel 1
Prog Change	True #	0-127	0-127 1-128	
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 Mes- sages	:Local ON/OFF :All Notes Off :Active Sense :Reset	X X X X	X X X X	
Notes				

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO O : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO X : No

Preset List

#	Title	Alg#
Bank 1	**Top Five-1**	
1	Shooting Star	2
2	Clean and Tight	6
3	Smart 3rds in A	36
4	Dynamic Solo	2
5	Wham and Eggs	35
Bank 2	**Top Five-2**	
6	Auto Wahtch It !	17
7	Post Hippie	27
8	Hot Rod	2
10	String Pad	18
Bank 3	**Alternative-1**	
11	Tune Me Down	15
12	Dogs Day	3
13	Nosey	16
14	Meat Eaters	24
15	Slapback Chorus	28
Bank 4	**Alternative-2**	
16	..ccCCarol Ann	22
17	Greener Daze	25
18	Liquid Flange	20
19	I Wanna be Punk	17
20	Expressive Phase	4
Bank 5	**Rock/Metal-1**	
21	New Metal	2
22	Hall Pass	26
23	In Yo Face	33
24	Hall O' Plenty	2
25	Side 2 Side Delay	2
Bank 6	**Rock/Metal-2**	
26	Soloin' Smooth	1
27	Steamshovel	15
28	Pedal Panner	24
29	Wide-n-Heavy	1
30	Stereogram	2
Bank 7	**Pure Tone-1**	
31	Half Stack	33
32	Good Overdrive	33
33	Saturate	33
34	Texas Blues	33
35	Solid State	33
Bank 8	**Pure Tone-2**	
36	Tube Time	33
37	BrightStratRthm	33
38	Power Combo	33
39	Punchy	33
40	Heavy Chunk	33

#	Title	Alg#
Bank 9	**Morph-1**	
41	Phse/Trem Morph	4
42	Pdl Intensified	18
43	Det/Chor Morph	10
44	Time Warp	4
45	Going Up/Down	11
Bank 10	**Morph-2**	
9	Smoothie	1
46	Cho/Delay Morph	6
47	Flange/VerbDelay	3
48	Cho/Pch Morph	7
49	Trem/Dly Morph	9
50	Wet/Dry Morph	19
Bank 11	**Blues-1**	
51	Peddlin' Blues	23
52	Dirty Lil Thang	2
53	Blue Naked	33
54	BottleSlide Pdl	15
55	Rotary Pedal	21
Bank 12	**Blues-2**	
56	Feeling Blue	1
57	Azure Room	2
58	Slippery Slide	2
59	For Rhythmbucker	2
60	Hyper Blue Lead	2
Bank 13	**Country-1**	
61	Tele Slap	1
62	Walked the Line	6
63	Pedal Steel	15
64	Pansville	6
65	Gritty Ditty	24
Bank 14	**Country-2**	
66	Blue Jeans	14
67	Hawaiian Style	10
68	Good Time Slap	13
69	Cowboy Tremolo	9
70	Steel Guitar	26
Bank 15	**Acoustic 1**	
71	Nylon String	6
72	ElectroAcoustic	2
73	Acoustic Phase	4
74	SteelString Solo	24
75	Very Classical	24
Bank 16	**Acoustic-2**	
76	Panning Chorus	4
77	Tremobrato	9
78	12 String	7
79	Sweet Acoustic	24

80	Lively Strum	25

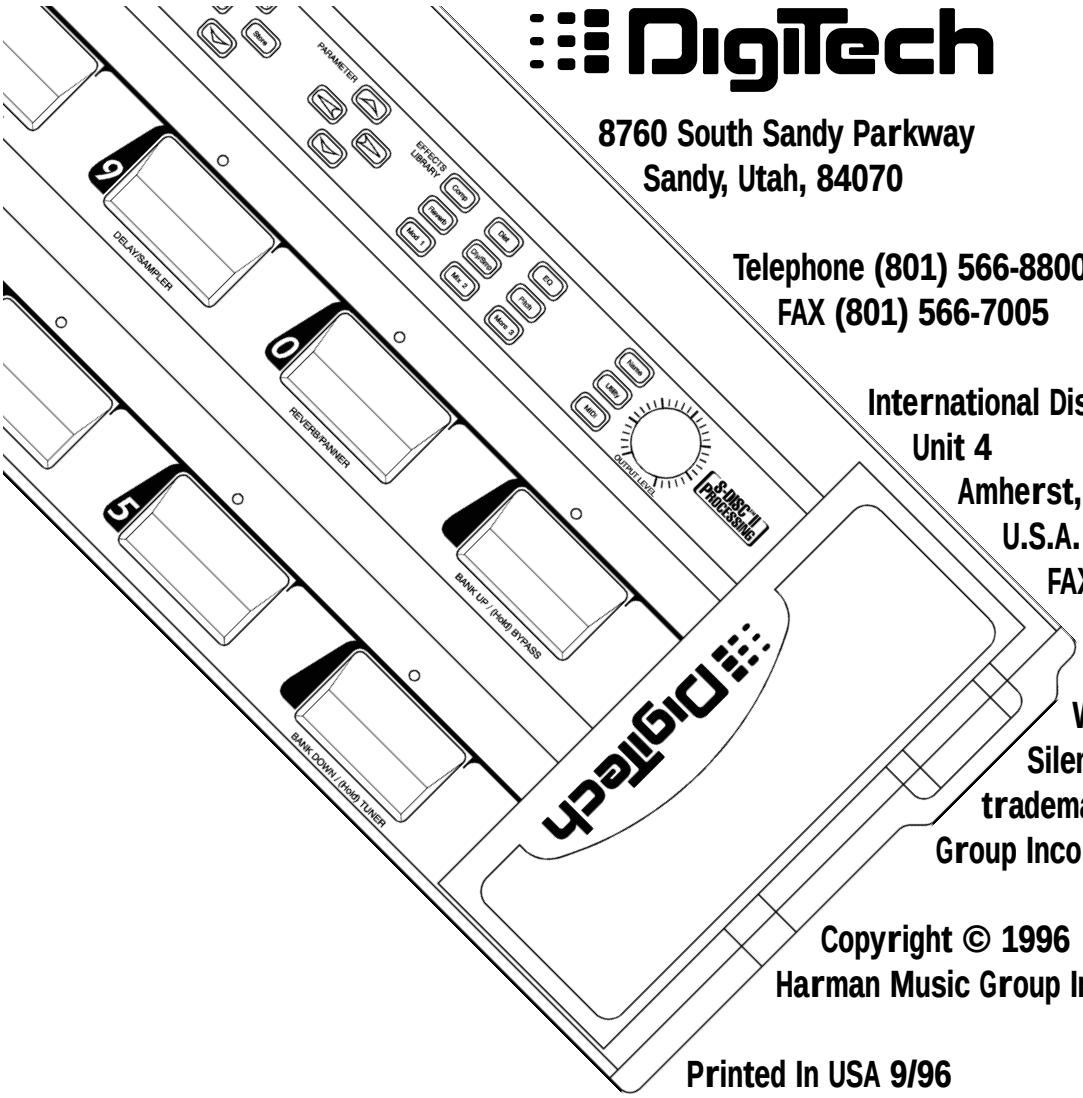
#	Title	Alg#
Bank 17	**Jazz/Fusion-1**	
81	Big Chorus Room	24
82	Pedal Synth	7
83	New Ages	19
84	Fused 4ths	5
85	Jazzman Chorus	23
Bank 18	**Jazz/Fusion-2**	
86	Fusion Tone	1
87	Classic Jazz	24
88	Take the 5th	7
89	PedalSynth Lead	7
90	Delay > Detune	29
Bank 19	**Studio-1**	
91	Melodic Solo	1
92	Studio Clean	1
93	Rhythmic Delays	6
94	Duc My Echo	23
95	1.5 Sec Sampler	12
Bank 20	**Studio-2**	
96	Ducked Reverb	8
97	Heavy Rhythm DI	1
98	Chunky Rhythm	1
99	Rhythmic Delays	6
100	MegaChorus Pong	13
Bank 21	**Vintage-1**	
101	Phase Rhythm	4
102	Super Fuzz	31
103	Classic Dirt	27
104	Beach Tremolo	4
105	Surf's Up	16
Bank 22	**Vintage-2**	
106	Vibro Joe	14
107	Electric Sitar	7
108	Old Transistor	1
109	Classic Wah	16
110	Trippin'	14
Bank 23	**Bass Guitar-1**	
111	Modern Jazz Bass	1
112	Cool Fretless	2
113	Pick It Bright	6
114	Subtle PhaseVerb	27
115	All Funked Up	2
Bank 24	**Bass Guitar-2**	
116	Big Smile	33
117	Bass Solo	15
118	Psycho Flange	3
119	8 String	34
120	Whammy 5 String	35

#	Title	Alg#
Bank 25	**Special**	
121	Floydian Fun	7
122	Fantasia 5ths	7
123	Chinstrap	11
124	HorrorFilmscore	11
125	Sound On Sound	32
126	Empty	30
127	Empty	30
128	Empty	30

Harmony Interval Charts

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
↑6th	A	A♭	A♭	A	A	A	A
↑Oct	G	G	G	G	G	G	G
↑Oct	F	F	F	F	F	F	F#
↑Oct	E	E♭	E♭	E♭	E♭	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
↓3rd	A	A♭	A♭	A	A	A	A
↓4th	G	G	G	G	G	G	G
↓5th	F	F	F	F	F	F	F#
↓6th	E	E♭	E♭	E♭	E♭	E	E
↓7th	D	D	D	D	D	D	D
↓Oct	C	C	C	C	C	C	C

Int.	Lydian Aug.	Int.	Major Pent.	Int.	Minor Pent.	Int.	Blues	Int.	Whole Tone	Int.	Hlf-Whl Dim.	Int.	Whl-Hlf Dim.
										↑Oct	C	↑Oct	C
↑Oct	C									↑♭7th	B♭	↑6th	B
↑7th	B					↑Oct	C	↑Oct	C	↑6th	A	↑5th	A
↑6th	A	↑Oct	C	↑Oct	C	↑♭7th	B♭	↑♭7th	A#	↑5th	G	↑♭6th	G#
↑#5th	G#	↑6th	A	↑b7th	B♭	↑5th	G	↑#5th	G#	↑#4th	F#	↑♭5th	F#
↑#4th	F#	↑5th	G	↑5th	G	↑♭5th	F#	↑#4th	F#	↑3rd	E	↑4th	F
↑3rd	E	↑3rd	E	↑4th	F	↑4th	F	↑3rd	E	↑#2nd	E♭	↑♭3rd	E♭
↑2nd	D	↑2nd	D	↑♭3rd	E♭	↑♭3rd	E♭	↑2nd	D	↑2nd	D♭	↑2nd	D
Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C
↓♭2nd	B	↓♭3rd	A	↓2nd	B♭	↓2nd	B	↓2nd	A#	↓2nd	B♭	↓♭2nd	B
↓♭3rd	A	↓4th	G	↓4th	G	↓4th	G	↓3rd	G#	↓♭3rd	A	↓♭3rd	A
↓3rd	G#	↓♭6th	E	↓5th	F	↓♭5th	F#	↓♭5th	F#	↓4th	G	↓3rd	G#
↓♭5th	F#	↓♭7th	D	↓6th	E♭	↓5th	F	↓♭6th	E	↓♭5th	F#	↓♭5th	F#
↓♭6th	E	↓Oct	C	↓Oct	C	↓6th	E♭	↓♭7th	D	↓♭6th	E♭	↓5th	F
↓♭7th	D					↓Oct	C	↓Oct	C	↓6th	E	↓6th	E♭
↓Oct	C									↓7th	D♭	↓♭7th	D
										↓Oct	C	↓Oct	C



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