Eventide
the next step

4000 Series
Ultra-Harmonizer®
OPERATOR'S MANUAL
covering DSP4000 and GTR4000 products

Table Of Contents

Eventide 4000-Series Ultra-Harmonizer®

The Eventide 4000 Series Ultra-Harmonizers are multipurpose programmable digital audio signal processor with pitch change capability. It is the latest and greatest in a line of pitch change special effects units stretching back to before most audio manufacturers ever heard of digital.

We call it Ultra because it does more than our earlier models. And it's a lot more. The 4000s are capable of creating effects you've never heard before (and neither has anybody else). It has a built in patch editor to let you create your own effects algorithms. The 4000s are fully MIDI addressable, with clickless, real-time MIDI control.

The different Harmonizers in the 4000 series are tailored for specific marketplaces and include features optimized for that marketplace. Most of the features of each model are available as options for the other models. Options include different factory presets (available on memory cards from your dealer), audio sampling, S/P DIF and AES/EBU digital audio inputs and outputs, and software upgrades.

Each Harmonizer comes equipped with hundreds of factory presets (programs). Turn to the appendices for lists of programs included in each unit in the 4000 series. You'll find out about programs later in this manual so first, please read the next few pages carefully! A thorough understanding of the 4000's controls and connections will make ownership of the unit more fulfilling.

Contents

The Front Panel and Controls

1   Power Switch   This controls the AC power into the 4000. When the power switch is off the unit is bypassed, i.e., the audio inputs are connected to the audio outputs.

2   Memory Card Release   Push this button to release the memory card.

3   Memory Card Slot   Insert memory card here to add new programs or to save your own.

4   Memory Card Busy   This light indicates that the memory card is in use. Don't release the memory card while it is in use.

5   Knob   The knob is used to adjust anything that needs adjusting. Just turn it.

6   Cursor Keys   Use these to select what to adjust with knob or keypad, and for moving about in text field. > means right or down, < means left or up.

7   SELECT Button   Push this to approve or accept a given choice.

8   Soft Keys   The bottom line of the display indicates what these keys do. Generally they are used to choose a menu to look at or to command an event.

9   BYPASS Button   Selects bypass or mute, depending on the current setup (See LEVELS, [route], Page 20).

10 Bypass/Mute Indicators   If BYPASS is lit, the outputs are connected to the inputs, via relay or via the digital signal processor depending on the state of 'kill mode'. See LEVELS, [route], Page 20). If MUTE is lit, the outputs are muted. Pressing the BYPASS button re-enables the unit.

11 LEVELS Button   Press this to go to the LEVELS area menu. This menu lets you control wet/dry mix, audio input levels, digital input levels, output level, meter decay, and peak hold timing. (See Page 18).

12 Level Meters   There are two meters made up of 10-segment LED bar graphs. They are three-color. When using digital inputs, they indicate the digital value presented by the input source. When using audio inputs, these meters are extremely useful for signalling when you are over-driving the 4000. If the meters are indicating into the red then you are clipping.

13 Display   This tells you what's going on. The top line displays the program name and the current display area that you're working in. The bottom line is dedicated to the four *soft keys* that are directly below it. The rest of the display changes depending on what display area you're working in and on what you are doing there.

14 PARAMETER Button   In here you'll be able to adjust parameter values for the current *program*. (See Page 35).

15 SETUP Button   This button lets you adjust the display, segue timing, audio source and sampling, MIDI parameters, and system self-test. (See Page 22).

16 PROGRAM Button   This is where you must go to load a new effect or to save your own customizations. Here is where you can work with memory cards as well. (See Page 28).

17 PATCH Button	This gives you access to the Patch Editor which is used to edit or create programs. (See *Chapters 3, 4 and 5*)
18 Numeric Entry	Use the numbers, decimal point, and minus sign to enter a numeric value, or to enter numeric text in a text field.
19 Up/Down Buttons	These buttons increment or decrement a parameter or numeric value.
20 ENT Button	Enter a number. After you type in a numeric entry, pressing this key will tell the 4000 to use it.
21 CXL Button	Clears your last keystroke. This also deletes characters in a text field.
22 USER 1 Button	User programmable button. This button is available to trigger operations as selected in the SETUP area ([*mod con*] and [*nextprog*])
23 USER 2 Button	User programmable button. This button is available to trigger operations as selected in the SETUP area ([*mod con*] and [*nextprog*]).
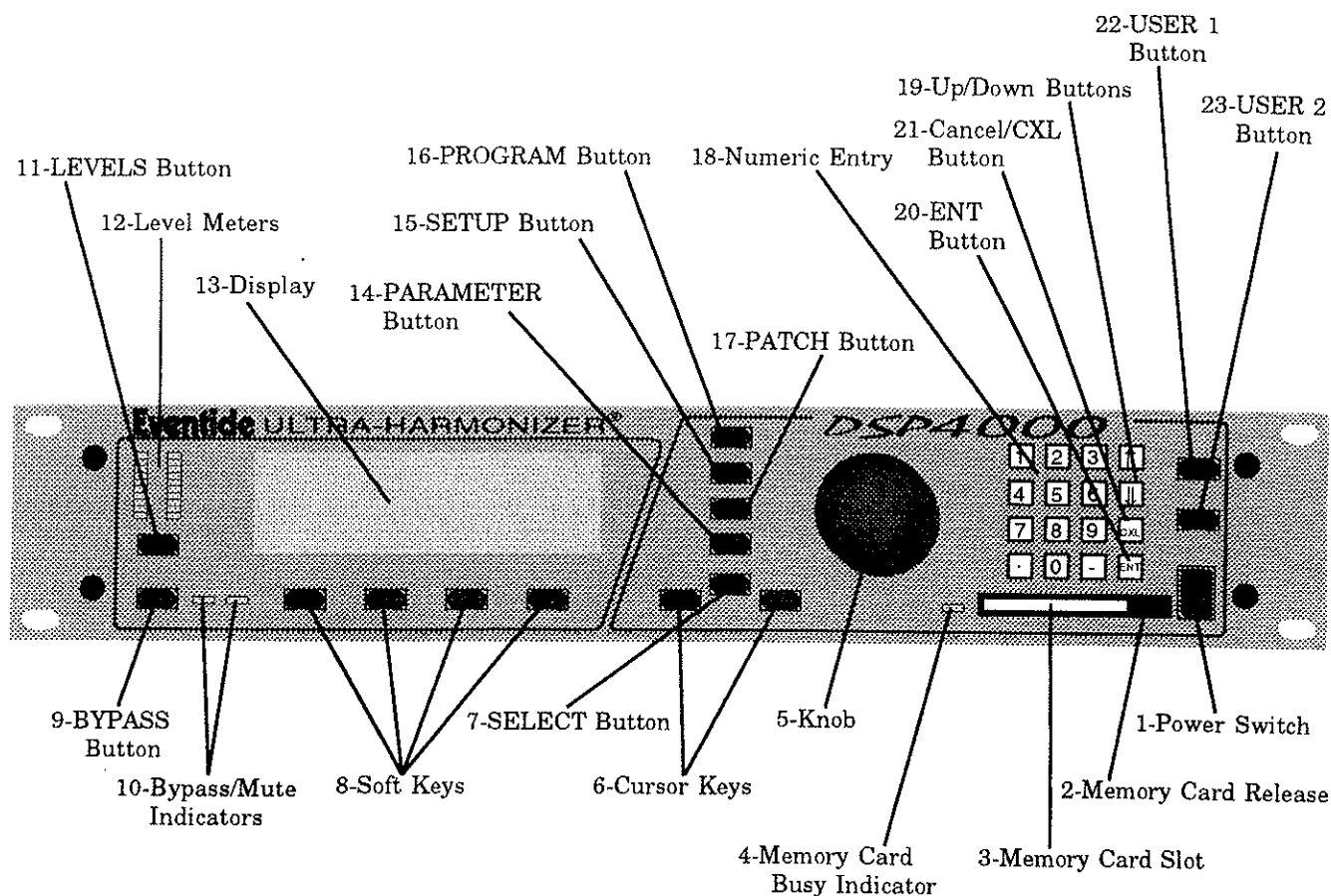
The Rear Panel and Connections

1   AC Voltage Selector   Line up the dot with the triangle so your preferred voltage setting is *up*.

2   Fuse Holder   A 1-Amp Slow Blow fuse. Always replace it with the correct value.

3   AC Connector   This is where the AC power cord is connected. It's an IEC standard 3-prong connector. The center post is chassis ground.

S/P DIF - Digital Audio Input/Output (Consumer) -- standard on DSP4000, else optional

The two audio channels are encoded into a single connector for input and for output. S/P DIF is a consumer digital audio standard. These connectors allow you to attach the 4000 to CD players, DAT recorders and other audio gear. The connectors are two conductor RCA jacks. Your plug should have the shield connected to the sleeve with the single shielded conductor connected to the tip.

4   Output   From the 4000 to your equipment's digital input.

5   Input   From your equipment's digital output to the 4000.

Analog Audio Outputs

Each channel from the two different connector formats is connected in parallel except that there is attenuation in the 1/4" outputs.

6   Channel 2, right, 1/4"   Sleeve is ground reference, tip is audio signal.

7   Channel 1, left, 1/4"   Sleeve is ground reference, tip is audio signal.

8   Channel 2, right, XLR   Balanced audio. See *Page 6*.

9   Channel 1, left, XLR   Balanced audio. See *Page 6*.

Analog Audio Inputs

Left channels from the two different connector formats are mixed, as are right channels.

10   Channel 2, right, 1/4"   Sleeve is ground reference, tip is audio signal.

11   Channel 1, left, 1/4"   Sleeve is ground reference, tip is audio signal.

12   Channel 2, right, XLR   Balanced audio. See *Page 6*.

13   Channel 1, left, XLR   Balanced audio. See *Page 6*.

AES/EBU - Digital Audio Input/Output (Professional) -- standard on DSP4000, else optional

These connectors are used to connect professional digital audio gear to the 4000. These cables are differential with a shielded twisted pair.

14   Input data, XLR   The 4000's connector is female. Pin 1 is shield, pins 2 and 3 are differential signal. See diagram and description on *Page 6* for XLR input, differential/balanced.

15   Output data, XLR   The 4000's connector is male. Pin 1 is shield, pins 2 and 3 are differential signal. See diagram and description on *Page 6* for XLR output, differential/balanced.

Foot Pedal

These connectors are used to connect foot switch and pedal accessories as well as to patch the 4000 into another device's foot switch input. See *Page 36*.

16   Foot Pedal Input   Sleeve is ground reference, ring is +5V (source) and tip is an analog signal from 0 -> 5V. This input may be used to modulate parameters.

17   Foot Switch Input   Sleeve is ground, Ring is switch 1, Tip is switch 2. The switch inputs may be attached to an internal switchable item by using the *exttrig* module.

18   Relay Output   Sleeve is common, Ring is relay contact 1. Tip is relay contact 2. The relay outputs are set on the *relay* menu page under the LEVEL button. The condition of the relay settings are saved with each program.

MIDI

Used for instrument to instrument digital communications. The 4000 sends and receives *Eventide system exclusive* messages to allow a sequencer to remote control the 4000. In addition the 4000 may respond to MIDI controller messages. See *Chapter 6:MIDI*.

19	MIDI IN	See MIDI specification in *Chapter 6* and *Appendix D*
20	MIDI OUT	See MIDI specification in *Chapter 6* and *Appendix D*
21	MIDI THRU	See MIDI specification in *Chapter 6* and *Appendix D*

RS-422 Serial Interface

22	In	Eventide RS-422 protocol, to be announced
23	Out	Eventide RS-422 protocol, to be announced

1-AC Voltage Selector

10-Audio In Channel 2 Right, 1/4

2-Fuse Holder

7-Audio Out Channel 1 left,1/4"

11-Audio In Channel 1 Left, 1/4"

3-AC Connector   5-S/P DIF Input   6-Audio Out Channel 2 Right,1/4"

Unused   4-S/P DIF Output

22-RS-422 In   21-MIDI THRU   19-MIDI IN

16-Foot Pedal Input

23-RS-422 Out   20-MIDI OUT   18-Relay Output

15-AES/EBU Out

17-Foot Switch Input

14-AES/EBU In

8-Audio Out Channel 2 Right, XLR

9-Audio Out Channel 1 Left, XLR

The audio channels may be referred to as channel 1 and channel 2. Since the 4000 actually handles the two channels totally independently, depending on the program (effect) being used, these channels can be referred to as either 1 and 2, or left and right, at need.

12-Audio In Channel 2 Right, XLR

13-Audio In Channel 1 Left, XLR

Rear Panel XLR Connector Pin-Out

XLR output, differential/balanced

The 4000's XLR analog audio output connector is male. Pin #1 is grounded to the case of the external XLR connector. Pin #2 is +phase and pin #3 is – phase. This is the diagram for the pins on the 4000's back panel:
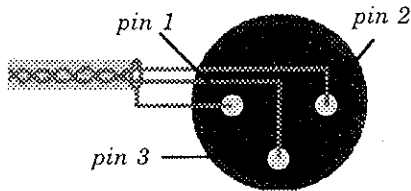
XLR output, unbalanced

Even though the output of the 4000 is balanced you can still use it with an unbalanced line. The 4000's XLR analog audio output connector is male. Pin #1 is grounded to the case of the external XLR connector. Connect pin #2 to your center conductor and leave pin 3 floating. This is the diagram for the pins on the 4000's back panel:
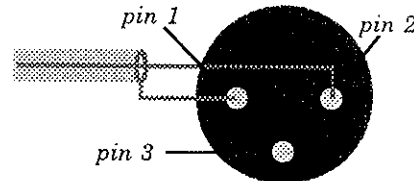
XLR input, differential/balanced

The 4000's input connector is female. Pin #1 will be grounded to the case of the external XLR connector. Pin #2 is +phase and pin #3 is –phase. This is the diagram for the pins on the 4000's back panel:
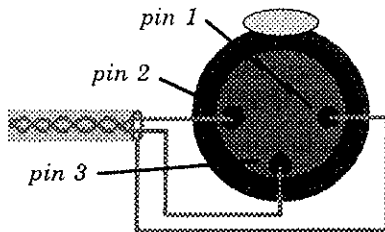
In the case of an XLR to XLR balanced line (i.e. differential) cable the shield should be left disconnected on one end. This prevents ground loops.

XLR input, unbalanced

Even though the input of the 4000 is balanced you can still use it with an unbalanced line. The 4000's XLR analog audio input connector is female. Pin #1 and pin #3 are grounded to the case of the external XLR connector. Pin #2 is your audio signal. This is the diagram for the pins on the 4000's back panel:
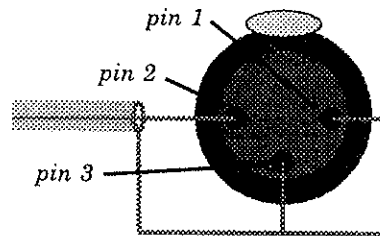
Chapter 2: Operation

The 4000 is operated via a series of menus presented on its backlit display and controlled by the front panel buttons and knob. This section goes through all of the menus that are accessed by a user of the 4000 and includes initial connection, level adjusting, parameter changing, and loading programs (presets). MIDI remote access and the *Patch Editor* are left to other chapters. Going through this section in detail will help you to make better use of the features of the 4000.

Getting Started

In order to better understand your 4000 it is best to set up the machine as it came from the factory. There is a simple operation you can perform to initialize the 4000. This will not delete or change any programs that may have already loaded, nor will it delete or change any information on the memory card if one is plugged in.

- Push the SETUP button repetitively until the [service] soft key appears on the bottom of the screen.
- Push the [service] soft key.
- Push the right-hand cursor key five times to select the *clear setup* function.
- Push the SELECT button.
- Press the soft key labeled <yes>.

The 4000 is now set with default factory settings.

Connecting to the 4000

The 4000 series allows four different audio connection methods, each with its own set of connectors. See the Rear Panel Pictorial (*Chapter 1*). The inputs and outputs may be selected separately. The [audio] menus under SETUP select which input will be used. (Note that 1/4" and XLR analog audio inputs are wired in parallel and are both active at the same time) The factory configuration is set up for using the 1/4" and XLR audio inputs and outputs. These are all ready to run with no additional menu adjustments. If possible run through the quick start-up below using the 1/4" or XLR inputs and outputs, not using digital. If you prefer to learn the basics of the 4000 using the optional digital in and/or out, read through the tutorial below anyway and then refer to the section on the required digital input/output modes (see *sampling rate-digital i/o, Page 24*). (Digital audio is optional or not available in some versions of the 4000 series.)

Analog Audio Levels

To obtain the best performance from the Eventide unit, certain operating principles should be applied. Use the "hottest" input levels possible without clipping. Take advantage of the front-panel metering when adjusting your source device. Try to adjust the source's levels so that they are as close as possible to maximum scale on the 4000's input meters, but without lighting the red *CLIP* lights, while the 4000's gaintrim adjustment is set to 0 dB (factory default).

If this results in output levels that are too "hot", reduce the source's output levels, not the 4000's input! After setting the source as close as possible to the 4000's nominal input level, use the Analog Input Trim control [gaintrim] under the LEVELS key (see *Page 18* for details). This allows an adjustment range of -30 to +10dB.

Note that the input levels into the two available connector formats are different. The 1/4" input jacks are -10dB inputs. The input levels on the XLR input jacks are +4dB nominal.

In order to reduce line noise through cable pickup the 4000 uses an instrumentation amp at the XLR inputs to *cancel* noise. This is called a "differential input", and enables the user to mount the 4000 remotely without fear of signal degradation. If the XLR inputs are used but without the differential pin, proper termination of the cable is desirable. For instance, if only pin 2 hot of the input XLR connector is used for signal (the standard), pin 3 should be tied to ground.

The XLR output is also differential and in phase with the input when "dry signal" is selected. If a single-ended output is used, leave the unused pin unconnected. The output amp is capable of driving 600-ohm lines up to +21dBm with negligible distortion.

To get the best performance out of the 4000, drive it as hot as possible without over-driving it. Use the CLIP indication on the level meters to help make this adjustment.

After setting the input levels as best as possible, press the LEVELS button and rotate the knob to adjust the *gaintrim*. The meters should reflect the adjustments. *gaintrim* has a range of -30dB to +10dB.

Press the BYPASS/MUTE button and make sure the red light under MUTE lights up. That is the panic button in case damaging feedback or overly loud audio occurs during this setup process..

Now set the 4000 to pass audio by loading the *Thru* program. To do this press the PROGRAM button, then press the left cursor key, and then on the numeric keypad type 0 ENT 3 ENT.

Next press the LEVELS button and then the [*global*] soft key. Press the *right cursor* button three times so that *left out* and *right out* are selected on the display. Rotate the knob to adjust the *left output* and *right output* to the ideal settings for the amplifier or mixer.

Now you are ready to experiment with *factory programs*. Press the PROGRAM button, then the *left cursor* key, then rotate the knob. When you find a bank that looks interesting, press the *right cursor* key and rotate the knob. After indicating the desired program, press the *<load>* soft key. Check the status of the BYPASS/MUTE indicator and press the key if necessary to put the 4000 back in-line.

Mounting and Handling

Normally the 4000 will be rack mounted in a standard 19-inch rack using grommets to avoid damaging the front panel overlay. If the rack will be taken on the road the 4000 should be supported at the rear. It is advisable to keep the rack well ventilated and in a dry and dust free environment so heat and moisture won't cause degradation of performance. Since the Eventide Ultra-Harmonizer has almost no internal connectors, it should hold up well under "road conditions".

AES/EBU and S/P DIF

Some variants of the 4000 series include AES/EBU and S/P DIF digital audio format inputs and outputs. The following information may be applied in order to set up a 4000 which has digital audio.

If the unit is initialized as discussed on the previous page then the output levels are set to 0dB, as are the input levels. Both digital outputs are always enabled although the format is set to AES/EBU. If you plug an S/P DIF device in while the 4000 is in AES/EBU output mode you will get indeterminate results. To change the output mode, go to the Audio Configuration screen (press the SETUP key, then press the [*audio*] soft key). Now rotate the knob to select your input. To select the output format, press the right hand cursor key, then rotate the knob.

Using The Controls

After the input and output levels are adjusted properly, you'll be ready to explore some of the 4000's capabilities. Be aware that the 4000 can emit maximum audio with very little warning in some of the programs under certain conditions. Take proper precautions. Protect your voice coils and eardrums!

Now that the Ultra-Harmonizer is installed in your audio system you should be able to press the BYPASS button (to un-mute) and hear what the program sounds like. If you wish, experiment with some of the menus and see what the machine can do. After you get bored come back and read the rest of this section. You will find that the sophistication of the 4000 means that it is more complex in operation than some simpler systems. After reading the rest of this section you'll have a better grasp of how to get the most out of your new Ultra-Harmonizer.

Major Functional Areas and Soft Keys

The 4000's operation may be broken down into five basic areas. These are LEVELS, PROGRAM, SETUP, PATCH and PARAMETER. Each functional area is accessed through an *area* button on the front panel.

LEVELS area

This area has several screens which allow you to change the input and output levels; adjust wet/dry mix; control bypass/mute functionality, and set meter decay and peak hold times.

PROGRAM area

Here you'll find the program *load* and *save* commands. Programs may be saved in banks which you may create and name, in both internal memory and removable cards.

SETUP area

Setup includes: display backlight and contrast; segue control; audio input and output selection (on digital audio equipped 4000s); MIDI controls; self-test; memory card formatting; and memory checksum commands.

PARAMETER area

This is a special area which controls the currently operating effects program. Each program includes a selection of parameters organized into menus and displayed under the PARAMETER button. These menus will change each time a new effects program is loaded. Programs may have a dozen or more pages of parameters accessed by pressing the soft keys.

PATCH area

The Patch Editor allows you to add, delete, or reconnect the modules which make up the patch algorithms or *programs*. PATCH area is described in Chapters 3, 4 and 5.

```
┌─────────────────────────────────┐   ┌─────────────────────────────────────┐
│ Stereo Chorus      MIDI system config│   │ Xtal Kazoo         audio configuration│
│ base channel: 1    sequence out:  off │   │ input: analog      sample rate = 48000│
│ omni mode:  on     system exclusive: on│   │ output: analog     analog input       │
│ MIDI:  enabled     device ID:  1      │   │ sample rate:48000 Hz ───────────────  │
│ program load: on                      │   │ ─────────────────────                 │
│ ◄ display  setup  midi/ext  audio  ►  │   │ ◄ display  setup  midi/ext  audio  ►  │
└─────────────────────────────────┘   └─────────────────────────────────────┘
```

Underneath the display on the 4000 are four buttons labeled *soft keys*. On the bottom of the screen are up to four boxes which name the function of the keys below them. The keys are called soft because the functions associated with the keys can change depending on what is on the display. Each *functional area* has several soft keys associated with it. Each soft key represents an immediate operation, like *load* or *save*, or the name of a menu page in which you can see or adjust values which make the 4000 do what you want it to.

The 4000 display

Understanding the display screen on the 4000 is very important to your use of the instrument. Except for the Bypass button and the power switch all operations with the 4000 involve the use of the display, but only a few protocols have to be learned to make your use of the 4000 easy and efficient.

Current Program Title   Name of menu page

Information displays
and adjustments

```
┌─────────────────────────────────────────────┐
│ LN TUNE2C              Synth Monitors          │
│ steps/second:  3.51   note/val/ps:   10        │
│ timing cntl :  0.6    indx_cnt_fix:  10        │
│                       Reset Cycle :  0.00      │
│ Num of steps    15    Reset Steps:  14         │
│ ◄ control  monitors  notesl  notesr  ►         │
└─────────────────────────────────────────────┘
```

More soft keys   Soft keys   *More soft keys*
indicator   indicator
            Highlighted soft key   Stack of soft keys (more pages
            indicates active   beneath these two)
            menu page

Note: Square soft keys select menu pages [display]
Diamond soft keys make a change ⟨ insert ⟩

In all displays other than the Patch Editor the following applies:

If you press the button below a rectangular soft key the soft key will "light up" (become highlighted) and the menu page will change accordingly. If the soft key is a *stack* (see diagram) pressing it repeatedly will sequence through two or more pages of information. If a soft key is already highlighted and is not a stack (multiple page) key, then pressing it will have no effect.

To get to a new *area*, press its associated button. If there are indicators to the left and right of the soft key labels (see diagram), pressing the area button a second time will produce another set of soft keys. There can be many sets of soft keys, especially in the PARAMETER area where the soft keys can be user-definable. When you press an area button to go to a new area you will always get the first set of soft keys.

Making Adjustments

The cursor keys, SELECT button, knob, and keypad are all used in the adjustment process. To make an adjustment, go to the menu page that lists the parameter you wish to adjust, then light up the item by selecting it with the left and right cursor keys. Now rotate the knob or use the up and down arrows on the keypad. To enter a new value numerically, type the number in on the keypad and then press ENT. The 4000 will automatically limit the number you have entered to within the allowable range for the item being adjusted.

Example:

To change the *FadeOut time,* push the SETUP button twice, then the [*segue*] soft key.

```
Delay w/Feedback    EFX segue control
fadein time:default
fadeout time:default
def fadein:0.00 sec
def fadeout:0.00sec
◄   segue      dump      mod con   nextprog ►
```

Next push the right cursor button to move to the next menu item.

```
Delay w/Feedback    EFX segue control
fadein time:default
fadeout time:default
def fadein:0.00 sec
def fadeout:0.00sec
◄   segue      dump      mod con   nextprog ►
```

Now turn the knob to the right to start increasing the value.

```
Delay w/Feedback    EFX segue control
fadein time:default
fadeout time:5.32 s
def fadein:0.00 sec
def fadeout:0.00sec
◄   segue      dump      mod con   nextprog ►
```

If the knob doesn't change the value fast enough just type in a new value.

```
Delay w/Feedback    EFX segue control
fadein time:default
11.25
def fadein:0.00 sec
def fadeout:0.00sec
◄   segue      dump      mod con   nextprog ►
```

Next push the ENT key to save the entered value.

```
Delay w/Feedback    EFX segue control
fadein time:default
fadeout time:11.25 s
def fadein:0.00 sec
def fadeout:0.00sec
◄   segue      dump      mod con   nextprog ►
```
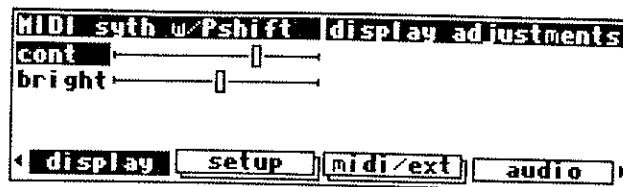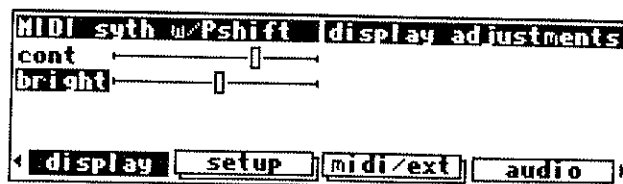
FadeOut time is now set.

Some adjustments are done visually, with a graphical representation of a slide pot. In this case you still use the knob. Alternatively you may enter a numerical value using the keypad.
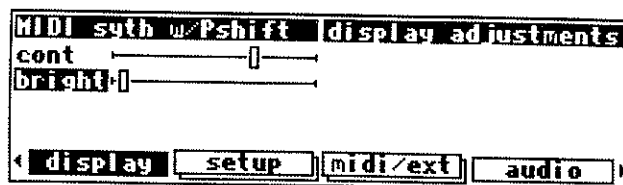
Example:

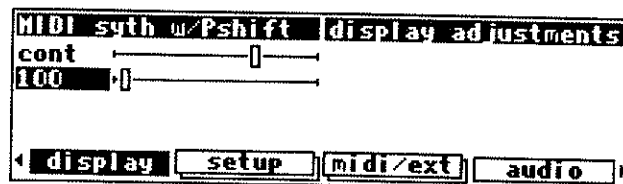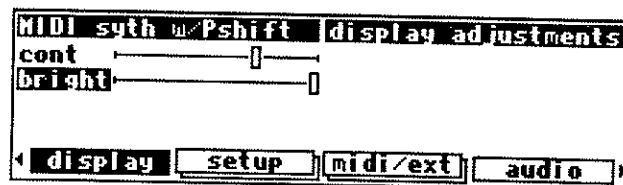To change the display's brightness, press the
SETUP key.

```
┌─────────────────────────────────────────────┐
│ MIDI syth w/Pshift   display adjustments     │
│ cont    ───────────0────                     │
│ bright──────────0───                         │
│                                              │
│  display   setup  midi/ext   audio           │
└─────────────────────────────────────────────┘
```

Then the right cursor button..

```
┌─────────────────────────────────────────────┐
│ MIDI syth w/Pshift   display adjustments     │
│ cont    ───────────0────                     │
│ bright──────────0───                         │
│                                              │
│  display   setup  midi/ext   audio           │
└─────────────────────────────────────────────┘
```

Now rotate the knob to the left and observe the
displayed 'slide pot'.

```
┌─────────────────────────────────────────────┐
│ MIDI syth w/Pshift   display adjustments     │
│ cont    ───────────0────                     │
│ bright▸0──────────                           │
│                                              │
│  display   setup  midi/ext   audio           │
└─────────────────────────────────────────────┘
```

If you type a number on the keypad it will be
displayed. Press the ENT key to accept.

```
┌─────────────────────────────────────────────┐
│ MIDI syth w/Pshift   display adjustments     │
│ cont    ───────────0────                     │
│ 100   ▸0──────────                           │
│                                              │
│  display   setup  midi/ext   audio           │
└─────────────────────────────────────────────┘
```

Since this fader ranges from 0 to 100, where 100 is
at the right, the fader is now at full scale..

```
┌─────────────────────────────────────────────┐
│ MIDI syth w/Pshift   display adjustments     │
│ cont    ───────────0────                     │
│ bright──────────────0                        │
│                                              │
│  display   setup  midi/ext   audio           │
└─────────────────────────────────────────────┘
```

Ganged Knobs

In some cases there are multiple related parameters which are usually adjusted together. To make this easy a feature exists to *gang* parameters together. The [global] menu page under the LEVELS area button is a good example of ganged parameters. Use the left and right cursor keys as well as the keypad to explore ganged knobs. Using the cursor keys it is possible to select one, the other, or both parameters. Up to 8 parameters, all on one page, may be ganged.

```
┌─────────────────────────────────────────────┐
│ Laura Program          global parameters     │
│ left in:   -8.9 dB   left mix:   49 % wet     │
│ right in:  -8.9 dB   right mix:  49 % wet     │
│ left out:   0.0 dB   left con:  100.0 %       │
│ right out:  0.0 dB   right con: 100.0 %       │
│  global   preset  gaintrim   route            │
└─────────────────────────────────────────────┘
```
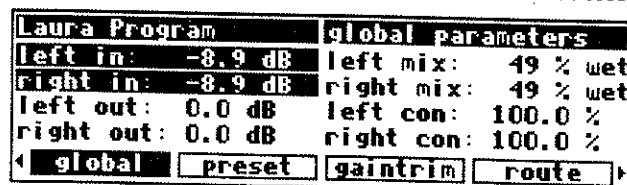
Entering Or Changing Text

In some menus it will be necessary to enter or change text, for example, when saving a new program.
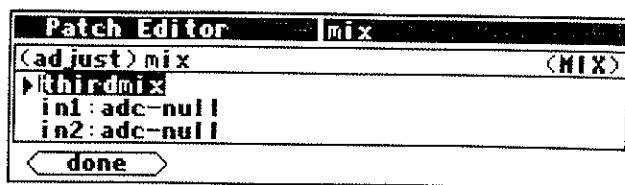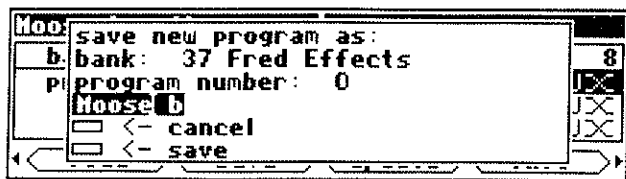
The method by which text is changed is simple although some might consider it a bit tedious. It gets quicker with practice. The problem is, how do you type 26 characters, upper and lower case, punctuation, and numerals, on a machine with few enough buttons to be easy to use? Answer: Use the knob! Here's how it works: Once you select the menu item that has text you wish to add or change, press the SELECT button. Now the numeric keyboard's CXL button may be used for deleting characters and the left and right cursor keys may be used to move backwards and forwards in the text line.

To add a new character to the line, rotate the knob to the right or to the left. Rolling the knob to the right inserts upper case and numbers. Rolling to the left inserts lower case and punctuation..

The entire list is:

;	}	y	i	G	W
:	{	x	h	H	X
/	]	w	g	I	Y
?	[	v	f	J	Z
>	'	u	e	K	0
<	)	t	d	L	1
,	(	s	c	M	2
;	*	r	b	N	3
`	&	q	a	O	4
~	^	p		P	5
		%	o	A	Q	6
\	$	n	B	R	7
—	#	m	C	S	8
=	@	l	D	T	9
+	!	k	E	U	.
-	z	j	F	V	-
					%

After rolling to the character you want to insert, use the right cursor key to move past the character and then roll the next character.

If you decide that you don't need the character after all, use the CXL key to delete the character. If you delete all of the characters that are in the phrase, and then hit CXL one more time, the phrase is restored to the default or last value the phrase was saved with.

% is a special case character in that it is used to denote numerical displays in a text string. This is used in the PATCH editor and PARAMETER system and is described elsewhere. It is important to note that to display a % in a PARAMETER menu string two % chars must be used.

Trig and Mod Control Panels

Trig/Mod control panels are a class of menus that are mostly used for patching rear panel controls to modulatable and triggerable controls, both as part of the 4000's normal suite of setup parameters, and as part of programs customized for external control. All menus of this class are similar and can be described in broad terms. When you see one of these menu pages you'll quickly be able to figure out how it works. The major clue that you are looking at a Trigger Control Panel or Mod Control Panel is that the second line of the left half of the screen is "mode:" and the last line above the soft keys is "monitor =". Trig and Mod control panels appear in menu pages under the SETUP, LEVELS and PARAMETER keys.

```
┌─────────────────────────────────┐   ┌─────────────────────────────────┐
│ Empty Program    │left out setup │   │ Oscillator 440   │left out setup │
│ mode: pitch wheel               │   │ mode: MIDI double               │
│ channel: base + 1               │   │ channel: omni                   │
│ ─────────────────               │   │ con:    0                        │
│ monitor = 0.00%                 │   │ monitor = 0.00%                 │
│ ◄  meter │ ext con            ► │   │ ◄  meter │ ext con            ► │
└─────────────────────────────────┘   └─────────────────────────────────┘
```

These are two snapshots of the same generic *mod control* menupage. The title in the top right corner of the screen denotes which parameter is being modified. The mode: parameter can be changed to one of a couple of dozen different values as shown in the table later in this section. When the mode parameter is changed, by rolling with the knob, the next two parameter lines change to applicable additional parameters. Note that when Pitch Wheel is selected, the third line is blank, and when MIDI Double or MIDI Single is selected, the third line is used to select the control number. (See *Chapter 6 and Appendix C* for more on control numbers.) On some of the Trig/Mod control panels there are blank fields under many conditions.

The *channel* field is used to select which MIDI channel is recognized for the selected Mode. There are 16 channels available. Each channel has its own set of MIDI controls. These include pitch wheel, mod wheel, channel pressure etc. The Base channel is set with the [midi] menu page under the SETUP area. Once the Base channel is set you can select offsets. Thus the pitch wheel may be used on many different channels for different purposes. If the Base channel is set to 15 and you select Channel of *base + 4* you will wrap around so that channel 3's pitch wheel (or other control) is actually used. **Important:** If *Omni Mode* is set to on, the Channel will display Omni and *will not be changeable. Omni Mode* is controlled in the [midi] menu page under the SETUP area.

The Monitor field is not changeable and will display the value of the selected input in percentage of full scale. Input signals range from 0 at minimum to 100% at full scale but are interpreted in most cases in terms of the range of the parameter being modified. Thus a remote input can fully modulate an input audio level whose range is -40 to +12 while the remote input ranges from 0 to 100%.

PARAMETER area remote panel

This Trig/Mod control panel is part of the PARAMETER menu. It has a couple of differences from the rest of the Trig/Mod control panels. It has an additional parameter used for scaling the incoming value. The scaling value is multiplied by the input signal whose value ranges from 0 at minimum to 1 at full scale. The scaled input signal is then added to the parameter value being adjusted. After configuring control of a parameter, go back to the menu page where the parameter is located to view that the changes are effective.

```
┌─────────────────────────────────┐
│ Stereo Flange    │amount1        │
│ mode: pedal      │ ☐ Capture Midi│
│ ─────────────    │ scaling = 9.00│
│ ─────────────                   │
│ 45.31 █████▌                    │
│ ◄ *remote*                    ► │
└─────────────────────────────────┘
```

Redirection

A feature provided in the 4000 is the concept of *redirection*. Redirection allows a program developer to have an external input in his program, while allowing a 4000 user to assign which external input actually connects to that input. There are six parameters that are redirectable. They are:

mod1, mod2, mod3, mod4   used to redirect modulation controls

and

trig1, trig2   used to redirect trigger controls

The mod and trig redirection controls are set up in the menu pages under the *mod con* soft key which is under the SETUP button. A user may assign one of the redirectors to an input or a value (a mod can be set to *high, mid* or *low* as well as being set to an input). A program's parameter or a setup parameter can then be modulated or triggered by one of the mod or trig redirectors instead of being modulated directly by an external device. When the system/rack that the 4000 is installed in is changed, the mod/trig redirectors can be repatched, without having to change all of the programs that depend on external inputs.

Trig vs. Mod

Trigger control panels are almost the same as mod control panels. Triggers are used to initiate *events*. Examples of *events* include:

* Shift to next program
* Start an envelope (in the current program)
* Toggle the Kill Key (Same as pushing the BYPASS/ MUTE key)

Trigger events are events that occur once when an action is taken. The action of pushing an elevator button triggers the arrival of the elevator. There is no sustain. Continuing to hold the button down will make no difference to a trigger event. Signals that drive the trigger event parameters are of the *single shot* kind. It is quite possible, however, to feed a non-*single shot* input into a trig parameter. The 4000 will recognize the trigger when the signal rises past 50%. The signal must go below 50% and then rise past 50% before it will be recognized as a trigger again.

```
Empty Program      trig 1 setup
mode: MIDI note    back: tip
channel: base + 0  monitor =    1
-------------
front: off
segue      dump    mod con  nextprog
```

```
Empty Program      trig 1 setup
mode: user 1       -------------
-------------      monitor =    0
-------------
-------------
segue      dump    mod con  nextprog
```

```
Empty Program      trig 1 setup
mode: MIDI note    back: off
channel: base + 0  monitor =    0
-------------
front: off
segue      dump    mod con  nextprog
```

A feature of the trig control panels is when a MIDI message is set as a source of trigger, the control panel still lets the user have a front panel USER switch or a rear panel foot switch as additional trigger sources.

Mode settings for mod control panels

| Input Name	performs function when:	
Off	disabled (reports no value)	
High	full output	
Mid	50% output	
Low	0% output (reports a value of 0)	
mod1	equal to output of mod1	
mod2	equal to output of mod2	
mod3	equal to output of mod3	
mod4	equal to output of mod4	
Pedal	from 4000's rear panel pedal connector	
Tip	0 if rear panel footswitch connector's tip is grounded, else full output	
Ring	0 if rear panel footswitch connector's ring is grounded, else full output	
user 1	toggle output from full to 0 as USER1 is pressed	
user 2	toggle output from full to 0 as USER2 is pressed	
Mod Wheel	from MIDI ctlr 1 mod wheel	
Chan Pressure	from MIDI channel pressure message	
Pitch Wheel	from MIDI pitch bend message	
Breath Con	from MIDI ctrl 2	Breath Con
Foot Con	from MIDI ctrl 4	Foot Con
Portamento	from MIDI ctrl 5	Portamento
Volume	from MIDI ctrl 7	Volume
Balance	from MIDI ctrl 8	Balance
Pan	from MIDI ctrl 10	Pan
Expression	from MIDI ctrl 11	Expression
General 1	from MIDI ctrl 16	General 1
General 2	from MIDI ctrl 17	General 2
General 3	from MIDI ctrl 18	General 3
General 4	from MIDI ctrl 19	General 4
MIDI Double	allows selection of any MIDI controller number. Input range is 0 -> 16383	
MIDI Single	allows selection of any MIDI controller number. Input range is 0 -> 127	
Note On	from MIDI keyboard. Value is number of last key pressed. Input range is 0 -> 127.	

Mode settings for trig control panels

Input Name	performs function when:
Off	never triggers
trig 1	Trigger when the trig1 variable is triggered.
trig 2	Trigger when the trig2 variable is triggered.
user 1	Trigger when the USER1 button is pressed.
user 2	Trigger when the USER2 button is pressed.
tip	trigger when rear panel footswitch connector's tip becomes grounded.
ring	trigger when rear panel footswitch connector's ring becomes grounded.
damper	Trigger when a damper control message is received with damper = 1.
portamento	Trigger when a portamento control message is received with portamento = 1.
sostenuto	Trigger when a sostenuto control message is received with sostenuto = 1.
soft	Trigger when a soft control message is received with soft = 1.
hold 2	Trigger when a hold 2 control message is received with hold 2 = 1.
general 5	Trigger when a general 5 control message is received with general 5 = 1.
general 6	Trigger when a general 6 control message is received with general 6 = 1.
general 7	Trigger when a general 7 control message is received with general 7 = 1.
general 8	Trigger when a general 8 control message is received with general 8 = 1.
MIDI note	Trigger when a MIDI note message is received.
MIDI program	Trigger when a MIDI program change message is received.
mod 1	Trigger when the mod1 parameter passes 50%.
mod 2	Trigger when the mod2 parameter passes 50%.
mod 3	Trigger when the mod3 parameter passes 50%.
mod 4	Trigger when the mod4 parameter passes 50%.
MIDI single	allows use of any MIDI single byte control as a trigger. When a control value of 50% of full range is received a trigger will occur. It resets the trigger when a value of less than 50% is received.

Audio Paths

Below is a block diagram of the 4000. The triangles in the drawing are audio gain/level adjustment points. The squares represent digital processing points, used for conversions or, in the case of the square marked DSP, for effects. The arrows represent switches. *Note: AES/EBU and S/P DIF digital audio inputs and outputs are optional and are only standard with the DSP4000 product.*

Most of the audio pathways and controls are shown in this drawing, with signals moving from left to right.

All of the output connectors are driven at all times. Only the format of the digital data is selectable. The S/P DIF and AES/EBU outputs are both driven with the same signal. The selection of format, S/P DIF or AES/EBU, is determined by the *output:* parameter in the [audio] menu page under SETUP (*see Page 24*). The left in/right in block in the diagram represents global *left in* + preset *left in*, and global *right in* + preset *right in*. The gain for *global* and *preset* are added. The left out/right out/mute block in the diagram represents global *in* + preset *in*, which is then controlled by the *con* (control) percentage.
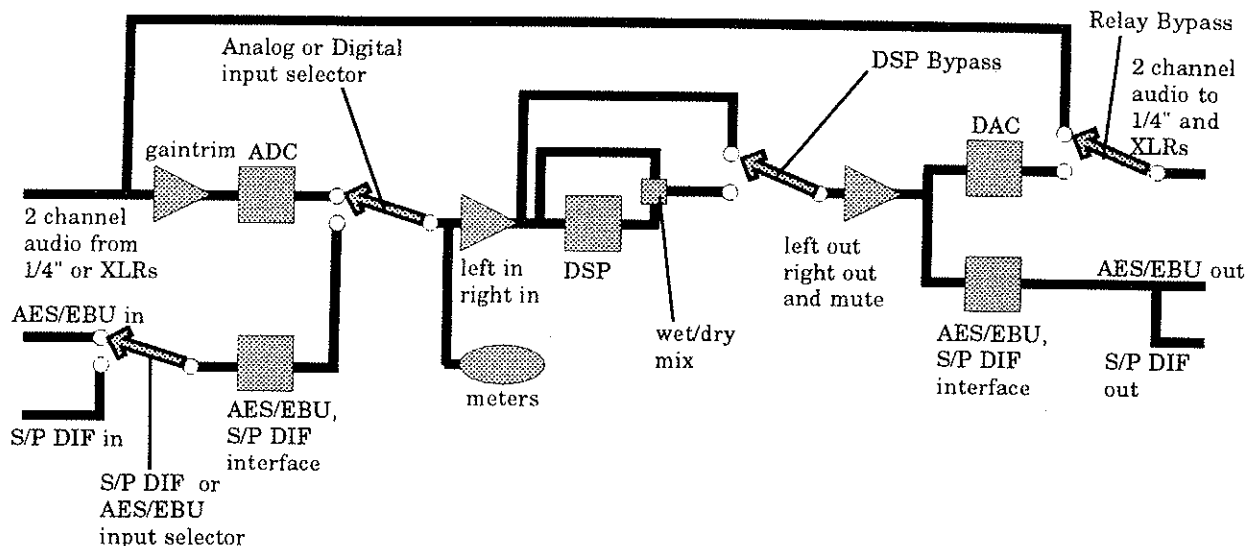
LEVELS area

The LEVELS area is used to display and change items which are of direct consequence to the input and output audio levels that pass through the 4000. This area lets you adjust the meter action for the front panel LED bar-graph meter, the input and output gain in the digital portion of the 4000, the wet/dry mix, and the gain trim on the analog audio inputs. Care must be taken when initially installing the 4000 to make sure that your source audio is not over driving the unit. This area is where that kind of adjustment will be made.

Global Input/Output   [global]

The *global* menu allows you to set audio adjustment parameters that will be constant across all programs. These values are part of the instrument's *setup*.

The digital audio section of the 4000 has two audio adjustment points, one before the effects program and one after. In both the [global] and [preset] menu pages, the adjustments before the effects program are called *in*; those after the effects program are called *out* or *con*.

As described above, the *left in/right in* parameters change the audio level digitally, before the *effects program*. These parameters affect all audio paths into the 4000. The range of adjustment is -40 dB to 0 dB in tenths of a dB. Since this audio adjustment is made in the digital portion of the 4000, it will not clean up an analog overdrive problem, but it may clean up a problem where an effects program has too much gain and is distorting.

The *left out*/*right out* parameter also changes the audio digitally, at the output of the DSP effects program.

Left con/*right con* are available for external control. These parameters may be controlled by an external pedal or MIDI control, or from this menu page. These parameters adjust the output audio, just like the *left out*/*right out* parameters, except they are displayed in terms of percentage to be compatible with external control devices. These controls are linear: 50% of adjustment is equal to 6dB of attenuation, 25% is equal to 12dB of attenuation.

```
Stereo Flange        global parameters
left in:    -2.0 dB  left  mix:  100 % wet
right in:   -2.0 dB  right mix:  100 % wet
left out:   -3.2 dB  left  con:  100.0 %
right out:  -3.2 dB  right con:  100.0 %
◄  global    preset  gaintrim   route ►
```

```
Stereo Flange        global parameters
left in:    -2.0 dB  L mix:  studio (wet)
right in:   -2.0 dB  R mix:  studio (wet)
left out:   -3.2 dB  left  con:  100.0 %
right out:  -3.2 dB  right con:  100.0 %
◄  global    preset  gaintrim   route ►
```

The digital signal processor takes the total of the *global in* and the *preset in* controls for each channel and uses that total to decide how much attenuation to apply. A total of greater than 0 dB is treated as 0dB. (note that the *preset* level controls allow an adjustment of up to +12dB). This stage does *not* apply gain. The output level controls are similarly totalled and then applied to the audio at the output of the digital signal processor. The *con* control is then applied to that output.

In many applications, the output of the 4000 should contain some percentage of unprocessed (dry) audio signal. (Processed audio is also called wet audio.) This menu allows the user to decide what the mix amount should be. The range is 0 to 100%. If you refer to the audio block diagram you will see the *wet/dry mix* block. This is part of the digital section of the 4000. The mix block in the diagram refers to the mix controls in both the global and preset menu pages. The percentages from the global and preset menus are tallied before being used for processing, so if either global or preset *left mix* parameter is set to 0%, the audio will be 0% wet. The mix parameters will not be available if the mix mode is set to *studio* in the *audio* menu under the SETUP area, in which case "studio (wet)" is displayed for the left mix values. The global mix parameters are controlled both from this menu and the [*ext con*] menu as described on the next page.

To access the [*global*] menu, press the LEVELS button, then the [*global*] soft key. Use the left and right cursor controls to step between the eight different adjustable items. Rotate the knob or use the keypad to change the current settings. Valid settings for the first four adjustments fall between 0 and -40. (Use the - key). For example, set the left in value to -20 by typing '-' then '2', then '0', then 'ENT' on the keypad.

Preset Input/Output   [*preset*]

This menu allows the user to set audio adjustment parameters and relay settings that will be saved in an effects program. If these parameters are changed and then another program is loaded without first saving, then these changes will be lost.

The left in/right in and left out/right out parameters are added to the global Input/Output levels as discussed previously. The available range is -40 dB to 12 dB in steps of 1 dB.

```
Beeg Garage          preset parameters
left in:    -6 dB    left  mix:  100 % wet
right in:   -6 dB    right mix:  100 % wet
left out:    2 dB    tip relay:   open
right out:   2 dB    ring relay:  open
◄  global    preset  gaintrim   route ►
```

```
Beeg Garage          preset parameters
left in:    -6 dB    L mix:  studio (wet)
right in:   -6 dB    R mix:  studio (wet)
left out:    2 dB    tip relay:   open
right out:   2 dB    ring relay:  open
◄  global    preset  gaintrim   route ►
```

The relay parameters are used to open or close the relays which are available via a rear panel connector. Since these parameters are saved with programs, the 4000 may be used to control other instruments if the user desires (via loading the appropriate program).

The left mix/right mix parameters are added to the global mix values before being used by the digital processor. These parameters will not be available if the mix mode is set to *studio* in the [*audio*] menu page under the SETUP area, in which case "studio (wet)" is displayed for the left mix values.

Analog Input Trim [*gaintrim*]

The audio levels of analog audio input (from the 1/4" or XLR input connectors) may be trimmed with the use of the [*gaintrim*] menu. This adjustment affects the audio signal before the digital processing and thus can be used to bring the audio levels below a level which causes distortion in the 4000. Use the 4000's bar graph level meters to assist in this adjustment.

```
Boston Chamber        analog input gain
left gain: 2.1 dB
right gain:2.1 dB


◄  global      preset    gaintrim    route  ►
```

To access this menu, press the LEVELS area button, then the [*gaintrim*] soft key. Use the knob or keyboard to make adjustments and the left and right cursor keys to move between selections. Legal values to be entered with the keyboard range from -30 to +10dB for *left* and *right gain* adjustments. These adjustments will have no effect if you are using AES/EBU or S/P DIF digital audio inputs. *Note: Since this gain stage is not the first stage in the 4000, you can still overdrive the inputs even though the meters don't show clipping. If analog input gain is set to -10 or less, reduce your drive!*

Kill Switch - Mix Mode [*route*]

This menu controls the bypass/mute button's function and the availability of 'mix'.

Mix allows audio from the inputs (dry audio) to be mixed with audio from the current program (wet au-

```
Don's Small Room     routing config
kill mode:mute
mode:studio(no mix)


◄  global      preset    gaintrim    route  ►
```

dio). This is especially useful during performances but, not a desired function while in the studio. The available mix modes are *guitar* and *studio*. Changing the mode to studio (no mix) will cause the mix: options to be unavailable on both the [*preset*] and [*global*] menus.

Kill mode selects the function of the bypass/mute button. Available options are: *mute*; *DSP bypass*; or *relay bypass*. In *mute* mode all audio outputs will be silent. In *DSP bypass*, the current audio input (analog audio for units without digital audio) will be passed through the level controls but will skip around the current program, and will be copied to all audio outputs. In *relay bypass*, each audio input connector is passed via a relay to the associated audio output connector. Thus XLR channel 1 input audio is connected to the XLR channel 1 output but not to the 1/4" output.

Bar Graph Level Meter [*meter*]

The bar graph meters on the upper left corner of the front panel display the audio level sampled just after the Analog or Digital input source switch. The left in and right in gain controls do not affect the meter read-

```
Drew's Small Room    meter ballistics
decay time:0.30 sec
peak hold: 1.0 sec


◄  meter      ext con                    ►
```

ing. The meter is best used to determine whether the 4000 is being over driven. In the case of analog audio input, the *gaintrim* controls can be used to reduce audio input to the 4000 before it is digitized. The meters are used to assist in this adjustment.

This menu allows you to add decay delay to the meters and to adjust the timing on the peak hold feature. Peak hold causes the meter to indicate where the highest meter reading was for seconds after the signal is reduced. The amount of time that the peak is indicated can be adjusted in this menu. The decay time is the amount of time it takes for the meter to go from full 'deflection' to zero reading in the case of a signal that disappears suddenly.

To access this menu, press the LEVELS area button twice, then the [*meter*] soft key. Use the knob or keyboard to make adjustments and the left and right cursor keys to move between selections. Legal values to be entered with the keyboard range from 0 to 10 seconds for the Decay Time and 0.1 to 20 seconds for the Peak Hold time.

Audio External Control [*ext con*]

This menu allows external control of output audio and audio mix parameters. The following parameters are controlled:

```
┌─────────────────────────┬──────────────────┐
│ Drew's Small Room       │ left out setup   │
│ mode: pedal             │                  │
│ ─────────────────       │                  │
│ ─────────────────       │                  │
│ monitor = 25.00%        │                  │
│◄│  meter  ││ ext con │  │                ►│
└─────────────────────────┴──────────────────┘
```

- Left Mix   uses a standard mod control panel
- Right Mix   uses a standard mod control panel
- Kill Key   uses a standard trig control panel
- Left Output   uses a standard mod control panel
- Right Output   uses a standard mod control panel
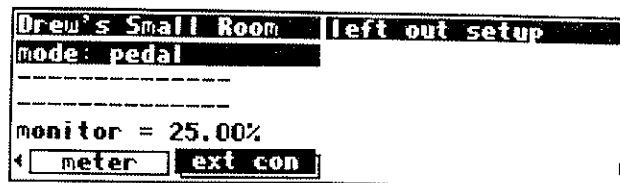
The *Kill Key* is the front panel control marked BYPASS/MUTE. When set up properly, the Kill Key may be cycled by external control just as if the front panel button had been pressed. The mod and trig control panels are described on *Page 15*.

Remember that pressing the LEVELS button repeatedly will page through the available soft keys. To get to [*ext con*] you'll need to press the LEVELS button once, to get into the LEVELS area, and a second time to see the [*ext con*] soft key.

SETUP area

The 4000 has configurables that relate to a single program and configurables that relate to the entire machine. The configurables relating to the entire machine are called the "setup". The SETUP area and LEVELS area have all of the *setup* related parameters as well as a menu to load and save *setups*. The SETUP area has up to nine different soft keys. Press SETUP repeatedly to go between pages of soft keys.

Display Adjustment   [*display*]

The brightness and contrast of the 4000's display may be adjusted in this menu. *cont* adjusts the contrast of the LCD and can be used to make the display light on dark or dark on light or totally impossible to read. You can enter a keyboard value of 68 which is about ideal for looking straight at the 4000. *bright* adjusts the brightness of the backlight, which is important when you are using the 4000 in a dim room or in a particularly bright room. The ideal setting depends on your lighting conditions. Note: If bright does not affect brightness, the machine may be configured for a pre-release version of 4000 hardware. See *page 37*, the *6 key*.
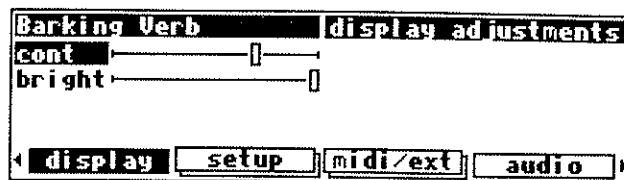
To access this menu press the SETUP area button, then the [*display*] soft key. Legal values to be entered with the keyboard range from 0 to 100 where 100 is maximum and is indicated by the box being at the right-hand end of the scale.

Saving SETUPs   [*setup*]

The machine configurables classified as the 'setup' may be saved or loaded using three menu pages under the [*setup*] soft key. Setups may be saved in internal program memory space or on a memory card. The setup is further broken down into eleven sub-setups. The user may separately enable the saving of each sub-setup. If a setup is loaded that includes only some of the sub-setups, only those sub-setups are changed. There is no way to load only part of a saved setup.

To access this menu, press the SETUP area button, then the [*setup*] soft key. Use the knob to select a setup. The C symbol to the left of the setup name indicates the setup is saved on the memory card. If you remove the memory card, those setups with a C will be removed from the list. Similarly, inserting a new memory card will cause the setups from that card to be shown on the list. Use the left and right cursor keys to select the load setup scroll window or one of the three action buttons. If the *load setup* section of the menu page is active (the button left of the words "load setup" is black) pressing the SELECT button will cause the selected setup to be loaded. The save setup action will cause a new menu to appear prompting for the setup name and memory destination (card or internal).

Press the [*setup*] soft key to toggle between the main setup files screen and the two *save setup enables* screens. Press the left and right cursor key and then use the SELECT button, the knob or the up/down keys to enable or disable a sub-setup enable.
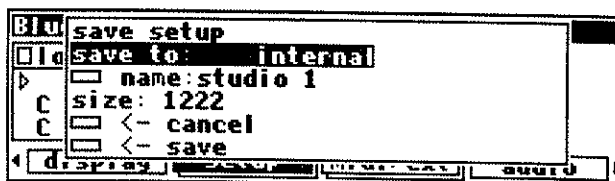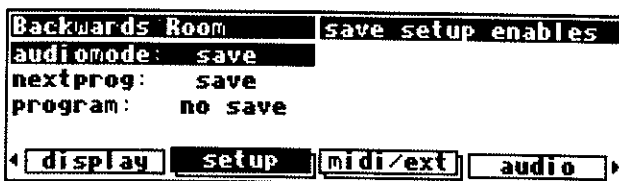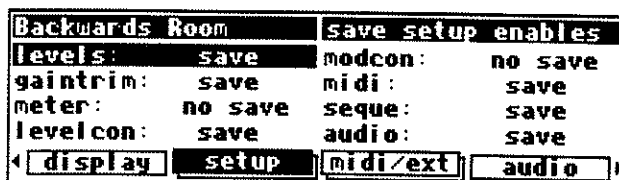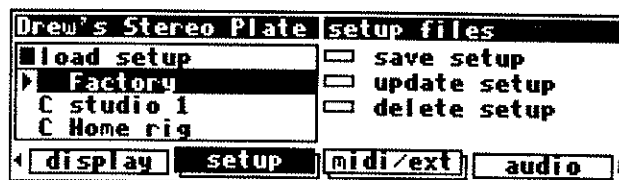
Notes: The sub-setup enable choices are *not* saved in a setup file. Loading a setup does not affect the save setup enables. You must manually enable the sub-setups before performing *save setup* or *update setup*.

Chapter 2 - Operation   4000 Series Ultra-Harmonizer® v2.0

Parameters in each sub-setup

The two screens titled "save setup enables" control which parameters are saved with a setup. If an enable is set to *save* then all of the items in that sub-setup are saved. This table describes each sub-setup.

levels	parameters under LEVELS [*global*]	**segue**	parameters under SETUP [*segue*]
gaintrim	parameters under LEVELS [*gaintrim*]	**audio**	parameters under SETUP [*audio*] (note: no function on GTR/4000 without digital audio)
meter	parameters under LEVELS [*meter*]		
levelcon	parameters under LEVELS [*ext con*]	**audiomode**	parameters under LEVELS [*route*]
modcon	parameters under SETUP [*mod con*]	**nextprog**	parameters under SETUP [*nextprog*]
midi	parameters under SETUP [*midi*]	**program**	the program that is currently running (the program is saved, including all that goes along with it. This doesn't just save the bank and program number.)

MIDI Configuration   [*midi/ext*]

For an explanation of how the 4000 works with MIDI see *Chapter 6: MIDI*. This page of controls is the master control for MIDI operations. See also *Trig and Mod Control Panels, Page 15*.

```
┌─────────────────────────────────────┐   ┌─────────────────────────────────────┐
│Chorus & Plate    MIDI system config │   │Chorus & Plate    global MIDI setting│
│base channel: 1   sequence out:  off │   │note mode: poly   *remote*:   on     │
│omni mode: off    system exclusive: on│  │pressure: channel                    │
│MIDI:  enabled    device ID:  1      │   │pitch bend:  0                       │
│program load: on                     │   │                                     │
│ ◄ display   setup  midi/ext  audio ►│   │ ◄ display   setup  midi/ext  audio ►│
└─────────────────────────────────────┘   └─────────────────────────────────────┘
```

base channel: Selects one of 16 channels to be the base channel from which MIDI channel numbers will be calculated.

omni mode: If this is *on*, then a message to any channel is accepted by any enabled ext/mod control. If *off*, then each ext/mod control specifies a channel offset from the *base channel*.

MIDI: If *disabled*, all received MIDI commands are ignored. MIDI output messages, including parameter changes, program load, bank change, and the various dump commands, are still enabled.

program load: If a program is sent to this 4000 from an external MIDI device, and *program load* is set to on, then the program will be received and run. If *program load* is set to off, then program load messages will be ignored.

sequence out: If set to *on*, then every time a parameter is changed or program is loaded, a message is sent out from the MIDI port as a system exclusive message. If these system exclusive messages are looped back to this 4000 with no delay, irregular operation will result. This can be caused by connecting the 4000 to a device that is powered off. Leave *sequence out* set to *off* if you are not using this feature.

system exclusive: If set to *on*, then any system exclusive message that is sent to this 4000 will be accepted and processed. If *off*, then all system exclusive messages will be ignored. This switch does not prevent this 4000 from sending system exclusive messages.

device ID: All system exclusive messages to and from *this* 4000 will have *this device ID*. This allows multiple 4000s to share a MIDI chain while allowing system exclusive messages to be sent to a specific 4000. Normally the *device ID* is left at 1, the factory default.

note mode: Note mode selects between *poly*, where one channel has all the notes (keyboards), and *mono*, where each channel only plays one note but you have multiple channels (guitars, wind controllers).

pressure: This option selects which type of pressure message (aftertouch) the 4000 should recognize: channel, where the pressure affects all the notes in a channel; or key, where pressure only affects a specific note. See *Appendix C, Page 200, midinote* module.

pitch bend: This determines how many semitones you have shifted the original pitch when the pitch wheel is moved to maximum. See *Appendix C, Page 200, midinote* module.

remote: This enables or disables the PARAMETER area [*remote*] softkey. If disabled, the soft key will not appear but all remote control of parameters continues.

Sampling Rate-Digital i/o   [*audio*]

A digital audio equipped 4000 has input jacks for *analog, S/P DIF, and AES/EBU* format audio. The unit has two channels of audio processing which must be of a single input format. The audio page is used to declare what the input format will be as well as other features listed below. To reach this page, select the SETUP menu area, then press the [*audio*] soft key.

```
Clearmntn Delays    audio configuration
input: analog       sample rate = 48000
output: analog      analog input
sample rate:48000 Hz -------------
-------------       pre-emphasis:on
[ display ][ setup ][midi/ext][ audio ]
```

```
Clearmntn Delays    audio configuration
input: AES/EBU      sample rate = 48000
output: analog      AES/EBU ok
-------------       -------------
                    pre-emphasis:off
[ display ][ setup ][midi/ext][ audio ]
```

```
Clearmntn Delays    audio configuration
input: S/P DIF      sample rate = 48000
output: analog      S/P DIF ok
-------------       SCMS in: one more
-------------       pre-emphasis:off
[ display ][ setup ][midi/ext][ audio ]
```

```
Clearmntn Delays    audio configuration
input: AES/EBU      sample rate = 48000
output: S/P DIF     AES/EBU ok
-------------       -------------
SCMS out: one more  pre-emphasis:off
[ display ][ setup ][midi/ext][ audio ]
```

Left side of audio config

input: The first line sets the input signal source. It may be set to AES/EBU, S/P DIF or analog, and is independent of the *output* parameter. If it is set to a digital mode and that digital input is not connected to an active signal source, then the 4000 will automatically go into MUTE mode and the MUTE signal will light. In addition, the *source status* line will indicate "bad".

output: The second line selects your primary audio output. All audio output paths (XLR, 1/4", AES/EBU, S/P DIF) are always active, but the selected output path has the highest quality. If analog is selected, both XLR and 1/4" are declared as primary outputs. No matter which output is selected, both digital outputs will be sending out the same digital information in the same format. This means that if you select AES/EBU as your output, the format of the digital signal on the S/P DIF output will be AES/EBU. There are minor differences between the two formats and many devices will accept this. When analog is selected, the digital output format is AES/EBU. If S/P DIF is selected the *SCMS out* parameter will appear (see below).

sample rate: The third line is used to set the sample rate when analog input is selected. It is not available if AES/EBU or S/P DIF *in source* is selected. The options available for this parameter include four different fixed sampling rates, an external input, a user-supplied crystal (see *Appendix E*) or one of S/P DIF or AES/EBU. If S/P DIF or AES/EBU is selected, then the sampling rate is driven by the signal on the associated input. If no signal is present on the associated port, then an error occurs and the *"sample rate"* message shows 0.

SCMS out: The fourth line is used to set the value of the SCMS bits written to the digital outputs when S/P DIF is selected as the output. This parameter is visible only when output is set to S/P DIF. The settings are *copy free, one more,* and *no more.*

Right side of audio config

sample rate: This is a monitor (display only) of the sample rate. If you are running digital in, this will measure the input sample rate. If you are using analog this number will show the chosen sample rate.

source status: This shows the currently selected input mode. If the input mode is digital an *ok* or *bad* message is displayed to indicate whether a valid signal is being input.

SCMS in: The third line is a monitor of the incoming SCMS bits. (Serial Copycode Management System) This will tell you what the SCMS bit settings of an incoming S/P DIF signal are.

pre_emphasis: The fourth line monitors the digital output pre-emphasis flag. This flag is generated automatically, based on the S/P DIF or AES/EBU input data. If input is analog, this flag is *on.*

Segue Time Adjustment [*segue*]

The 4000 has the ability to do slow fades into and out of programs, as well as to *crossfade* between programs whenever a new program is loaded. (See *Segue* on *Page 38* for more information on this.)

```
┌──────────────────────────────────────────────┐
│ Poly Shift              EFX segue control      │
│ fadein time:default                            │
│ fadeout time:default                           │
│ def fadein:0.00 sec                            │
│ def fadeout:0.00sec                            │
│  segue      dump     mod con  nextprog ▶       │
└──────────────────────────────────────────────┘
```

This menu sets the default fade in and fade out times for the machine, as well as the fade in and fade out time for the currently loaded program. If a program is saved with *fadein time* or *fadeout time* set to anything besides "default", then when that program is loaded again the saved values are imposed upon the 4000. Otherwise the *def fadein* and/or *def fadeout* times are used.

To access this menu, press the SETUP area button, then the [*segue*] soft key. The [*segue*] soft key will be on the first or second page of the SETUP area, depending on which options the 4000 has. Use the knob or keyboard to make adjustments and the left and right cursor keys to move between selections. All four values have a range from 0 to 60 seconds. The *fadein time* and *fadeout time* will go to "default" when the knob is rotated to a value less than 0.00 seconds. You can access any numerical value on all four entries with the numeric keypad by typing in your value (with or without a decimal point) and pressing ENT.

MIDI Data Dumps   [*dump*]

This menu lets you generate system exclusive messages which include the 4000's setup or programs. To use, just light up the box for the desired function, then press SELECT. These functions are available regardless of the settings of the MIDI parameters, however, the device ID set in the [*midi*] menu page is used as part of the system exclusive messages sent from here. While the dump is occuring, a running display of number of MIDI bytes sent is presented.

dump program

This function sends the currently loaded program out MIDI. If received (from a sequencer or other 4000), the 4000 will start running the received program.

```
┌──────────────────────────────────────────────┐
│ Octave Box              MIDI data dumps        │
│  ■ <- dump program   □ <- dump internal        │
│  □ <- dump setup                               │
│  □ <- dump files                               │
│  □ <- dump card                                │
│  segue      dump     mod con  nextprog ▶       │
└──────────────────────────────────────────────┘
```

dump setup

Send the current setup out MIDI. This includes the gaintrim and global level settings, MIDI settings, audio configuration, route, external controls, mod/trig configurations, display controls, nextprog/prevprog settings, and meter settings. The save flags used for saving a setup file do not affect what information is sent. If received, the 4000 will stop all operations, start as if from power-up, and begin using the new setup.

dump files

This function sends all *setups* and *programs* stored in internal memory to MIDI. This includes the setups that were saved under the [*setup*] soft key and all programs that have been saved in internal memory (doesn't include factory programs). If received, the 4000 will erase all of your saved setups and saved programs and will replace them with the received setups and programs. The current setup and current running program are not altered.

dump card

This function sends all setups and programs stored in the memory card to MIDI. This is similar to the dump files command except that the receiving 4000 will save the data into its memory card. If there is no memory card in the receiving 4000, or if the memory card is too small, then the incoming data is ignored and the memory card is not changed.

dump internal

This function sends the contents of the internal memory out MIDI. This is the same as *dump program*, *dump setup*, and *dump files*. If received, the 4000 will replace all of its setups and programs, load the new program, stop all operations and start as if from power-up, using the new setup and program.

Mod and Trig Setup   [*mod con*]

The 4000 allows external control of programs via MIDI, footpedal, footswitch, or front panel USER button. Since effects programs are sometimes used on different 4000s and since the installation arrangement for 4000s is often changed for various gigs, the 4000 has a built-in external control *patch panel*. Six patch points exist that are used to allow simple connection of external control devices to internal parameters. The patch points are named *mod1, mod2, mod3, mod4, trig1* and *trig2*. The difference between a mod and a trig is that mods are used to adjust, while trig is used to trigger.

```
Reso-Control          trig 1 setup
mode: MIDI note       back: tip
channel: base + 0     monitor =    1
-------------
front: off
◄[  segue  ][  dump  ][ mod con ][nextprog]►
```

```
Phased Vocal Reverb   mod 1 setup
mode: pedal
-------------
-------------
monitor = 44.14%
◄[  segue  ][  dump  ][ mod con ][nextprog]►
```

To use a patch point, determine which of the mod and trig points are to be used for each kind of external operation (pitch change, parameter adjustment, etc.) and then set up the mod and trig points appropriately. Whenever you create or use a program that depends on an external control, configure that program to use the designated mod or trig. Now, if you move your 4000 to a different rack or studio, you can load the appropriate setup using the [*setup*] soft key (described on *Page 22*) and your patch points will be taken care of.

The *mod con* menu is of a standard type that is described under *"Trig + Mod Control Panels"* on *Page 15*. Each of the Mods and Trigs has a separate control panel. Just press the *mod con* soft key several times.

The information that is set in these menus is saved in the setup memory and not saved with a program. This means that a program can be created so that particular parameters are adjusted by one or more of the four *mods*. Now it is easy to modulate those parameters with external devices, the choice of which can be changed without altering programs.

Program Change   [*nextprog*]

This menu provides up to three ways to change programs by external control. This menu works much like the menus described under *"Trig + Mod Control Panels"* on *Page 15*. Three control methods may be enabled

```
Whammy Pedal Delay    next prog setup
mode: user 1          ------------
------------          monitor =    0
------------
------------
◄[  segue  ][  dump  ][ mod con ][nextprog]►
```

at once so, for instance, a foot switch, USER1 button, and MIDI program change can all cause a progression to the next program. Pressing the *nextprog* soft key again moves to the alternate menu.

Example: Set Next Prog to user 1 and Prev Prog to user 2. Now you can step back and forth among the programs in a single bank by pressing the USER1 and USER2 buttons. This feature is more typically used to allow a musician to step through a sequence of different programs by use of a foot switch.

Service Functions   [*service*]

This menu gives access to diagnostic and repair features. To perform an operation from this menu page, use the left and right cursor keys to select the desired operation, then press SELECT.

```
2-plane Filter        service functions
■ fix internal        ▢ information
▢ format internal     ▢ clear setup
▢ fix card
▢ format card
◄ service                           ►
```

All of the functions under the service menu offer the option to exit without changes if a mistake is made.

Note: The [*service*] soft key will be on the 2nd or 3rd SETUP area page depending one which options the 4000 has.

Fixing internal memory problems

The 4000 uses solid state memory circuits to store programs and setup. These circuits use a long life battery to keep them alive while the 4000 is turned off. Whenever the computer in the 4000 updates that memory it performs an operation called a checksum. A checksum is a calculation whose result characterizes what is stored in memory but doesn't take up much memory itself. A second run of the checksum calculation should result in the same characterization, *if the memory hasn't changed.* When the 4000 is turned on it runs a checksum calculation on the memory and compares the result against the stored result. If there is an error, the 4000 displays a message.

In the unlikely event that an *internal memory checksum error* occurs there may be a critical problem with what is stored in memory. *fix internal* will remove the checksum error by forcing the new checksum result to be saved but will not get rid of corruption in the data. What you should do then is copy any important programs to a card and then *format internal.* Corruption of the information in memory may cause incorrect operation. Take care of corruption problems as soon as possible.

```
Pressing YES will fix the checksum
for the internal ram.



        <  yes  > <  no   >
```

```
Do you wish to delete all presets
and banks that are stored inside of
the DSP4000?


        <  yes  > <  no   >
```

Fixing memory card problems

If a memory card checksum error occurs your card has been corrupted in some way. It is possible that there is no loss of data. Cards can be corrupted due to static electricity, shock, loose battery, weak battery, incorrect insertion into the 4000, use in some other computer, or through a myriad of other causes. If you

```
Pressing YES will fix the checksum
and update the memory card.



        <  yes  > <  no   >
```

are worried about the contents of the memory card, you should: perform a *fix card* and then remove the card; copy all valuable *internal* programs to a different card; then copy the card's programs to internal memory and then to a different card. Finally, perform a *format card* on the faulty card. You might also put a label on the card (using adhesive tape, indelible marker etc..) indicating that a problem occurred with the card and the date it occurred. Keep track of this kind of problem and make multiple backup copies and you will be less likely to loose valuable programs.

Software Version and Accessories

The 4000 has expansion capability and upgrade capability. The *information* menus allow 4000 owners and technicians to keep track of what options are in-

```
Dual H910s          Information
Name: Debug System ROM
Revision: 1.080
Time: Thu Jan 05 12:04:15 1995
Size: 524288
        < next  > <  more  > <  exit  >
```

side a 4000 without having to open the box. Use the *<next>* key to step through the options and ROMs (memory chips). *<more>* and *<back>* toggle between the main screen for each option and a secondary page of information.

Initializing setup to factory defaults

At the factory all of the adjustable parameters in the 4000 are set to a condition called "factory defaults". *clear setup* sets the parameters defined as "setup" back to the factory defaults. The *setup* includes most adjustables under SETUP and LEVELS. The setup may also be *saved* under [*setup*] soft key in the SETUP area.

```
Do you wish to change all the setup and
levels settings back to the way they
were at the factory?


        <  yes  > <  no   >
```

PROGRAM area

The 4000 operates by processing input audio signals. The currently loaded program determines what processing is performed. A program is a series of effects that are patched together. The 4000 usually uses one program at a time (except in the case of crossfading - see *Resources* on *Page 38*).

Programs are organized in *banks*. A bank is named by the factory or by you and can contain 128 programs. Banks may include both user and factory programs. Bank numbers for 4000 *internal* user memory range from 0 to 99. The 4000 also allows the use of memory cards, giving memory card banks ranging from C0 to C99.

When the PROGRAM menu area is first selected, the display presents the currently selected bank and up to three of the programs in that bank. The bank number is displayed to the left of the bank name. The tiny triangle ▶ points to the selected program. In the example the Banks line is highlighted. This means that rotating the knob will roll through the available banks of programs. Pushing the right cursor key will move the highlight bar to the Programs part of the display. The triangle ▶ pointing at program number 12, "Dragon on speed" indicates that program number 12 is the selected program. That is the program that will be loaded if *<load>* or SELECT is pressed. This is also the program that will be highlighted when the right cursor key is pressed. Rotating the knob will scroll through the programs. If you rotate to the end of the current bank and then rotate a little more the bank will change and you will then be rotating through the next bank. The tiny delay in rotating between banks is intentional and the rotation to adjoining banks is bidirectional. Pushing the left cursor key will move the highlight bar back to the Banks line.

number of *selected*
bank and name of
selected bank

number of programs
in selected bank

pointer to
currently
selected
program

To the right of the program name are up to three symbols. They are the *link* symbol L, *user* symbol U and the *crossfade* symbol X. The *user* symbol U means that the program was saved to memory by a user, rather than by the factory. User programs take up space in *internal* program memory or on the program card. Factory programs (no user symbol) are located in other reserved memory. The number of factory programs that come with the machine does not affect the amount of space available for user programs. Factory programs cannot be deleted. The *crossfade* symbol X means that the program can be crossfaded to or from. This is discussed when we talk about the *<load>* soft key on *Page 31*. The *link* symbol L means that the program is listed in the current bank, in this case "Fred Effects" but is located in a different bank. Links are detailed later in this section.

The number to the right of the bank name indicates the number of programs in the bank.

It is convenient for you to have the programs referred to by name and to have them sorted by banks which are named. It would also be nice if the 4000 had enough memory for an infinite number of programs, but, this is of course, impossible. The organization of the programs and banks is by number, but the range of available numbers would exceed the amount of available space if they were all used (just because you still have checks in your checkbook, doesn't mean you still have money in the account). The amount of internal memory available for user programs is 121,816 bytes (a byte is a measure of memory space). Memory cards have between 32,000 to 4,000,000 bytes available for user programs. Programs range in size from 400 to 8100 bytes.

As stated above, the banks are numbered from 0 to 99. They are also named for user convenience. Although there may be two banks with the same name, there cannot be two banks with the same number. In addition, programs are numbered and named. Again, the number is critical and the name is not. Using the *save* soft key it is possible to create a program with the same name as an existing program. The number will still be different. The <*save*> soft key will not let you overwrite an existing program. You must first delete the old program. Using the <*update*> soft key you may update the last program that you loaded.

Working With The Program Menus

The program being run, as seen here, is *Dragon on speed*. The selected bank is *Pitch Effects*. The selected program is #4, *StereoExternalShift*. Also shown are programs 3 and 5. In another bank there might be a program #1, a #26, then #78, #79 and #80. In that case the three programs shown on the screen could be #1, #26 and #78. In other words, programs are listed in numerical order, ignoring gaps in the sequence.

```
Dragon On Speed        program
banks          1 Pitch Shifters      37
programs       3 Stereo Shift         X
           ►   4 StereoExternalShift  X
               5 Dual H910s           X
◄  load    ►< save  >< update >< info >►
```

Since the Banks line is highlighted, the knob may be rotated to select other banks. This next screen shows the *Delay Effects* bank. The first program in the new bank is always the one that is selected. Since the first program is #0, and since #1 and #2 exist in this bank, those are the three programs shown.

```
Dragon On Speed        program
banks          2 Delay Effects       31
programs ►     0 Mono Delay           X
               1 Stereo Delay         X
               2 Dual BPM Delays      X
◄  load    ►< save  >< update >< info >►
```

Now if the right cursor button is pressed, the "highlighted" area will move to the programs.

```
Dragon On Speed        program
banks          2 Delay Effects       31
programs ►     0 Mono Delay           X
               1 Stereo Delay         X
               2 Dual BPM Delays      X
◄  load    ►< save  >< update >< info >►
```

Rotating the knob to the right will move the highlighted area down to the second of the three displayed programs.

```
Dragon On Speed        program
banks          2 Delay Effects       31
programs       0 Mono Delay           X
           ►   1 Stereo Delay         X
               2 Dual BPM Delays      X
◄  load    ►< save  >< update >< info >►
```

Continuing to rotate will cause the page to turn until the last program in the bank becomes visible on the bottom of the list. The highlighted area now moves to the bottom of the page.

```
Dragon On Speed        program
banks          2 Delay Effects       31
programs       28 Slap Nonlinear
               29 Super Ducked Delays
           ►   30 Patch Instruct      X
◄  load    ►< save  >< update >< info >►
```

Slightly more rotation will cause the bank to change to bank #3 and the highlighted area moves to the top of the page.

```
Dragon On Speed        program
banks          3 Chorus/Flangers     36
programs ►     0 Auto Tape Flanger    X
               1 Chorused Cabinet
               2 Detune Chorus
◄  load    ►< save  >< update >< info >►
```

The numeric keypad may also be used to move around banks and to load programs. While the banks line is highlighted, pressing numbers on the keypad will search through the banks. Pressing the ENT key will load the bank. The CXL key takes back the last keypress.

Example: press 8

The banks line shows the number 8 plus the name of bank 8. If no bank exists under the entered number the line: **(NO BANK)** appears instead of the bank name. After the desired bank name shows, press ENT.

The requested bank is selected and the highlighted area moves to the programs area.

Now the numeric keypad may be used to select the program number.

Example: press 1

Now press another 1

Now press ENT.
The program "Kickback" loads.

An experienced 4000 user can move quickly through the PROGRAM menus by following this sequence (coming from the PARAMETER menu area):
PROGRAM key, left cursor, bank #, ENT, program #, ENT

The remainder of the PROGRAM menu page features are accessed by using the soft keys. There are eight different PROGRAM menu soft keys. To see the second set of four soft keys, press the PROGRAM button.

Loading a Program   *<load>*

When the *<load>* soft key is pressed the currently selected program is immediately loaded. While in this menu, pressing the SELECT button does same thing as pressing the *<load>* soft key. Additionally, the user may load a program by typing the program number and then the ENT key on the numeric keypad.

During the load operation, the old program will be unloaded and the new program will be loaded. Once this is complete, the screen will change to display the first menu in the PARAMETER area, allowing you to see or make adjustments to the program you have just loaded.

When a program is loaded, the audio will stop passing through the old program and start passing through the new program. Since an abrupt changeover from one program to the next might be disastrous to a live performance, a feature called "segue" has been created. As you might gather from the name, segue's purpose is to make the transition between two programs unobtrusive. Segue is controlled from a menu under SETUP. A related function is "crossfade", which is only available when both programs, the old and the new, are crossfadable. Programs are crossfadable when they use less than 45% of the 4000's processing power. The crossfade symbol X shows to the right of the program name. When this is the case, the fade from one program to the other includes an overlap period when both programs are *actually running at the same time*! This means that if you are segueing from a simple echo to a distortion you will still hear the echoes after you start hearing the distortion. See *Resources* on *Page 38* as well as the [*segue*] information under SETUP on *Page 25*.
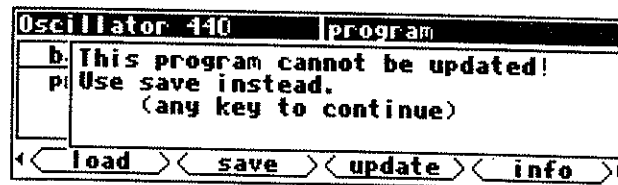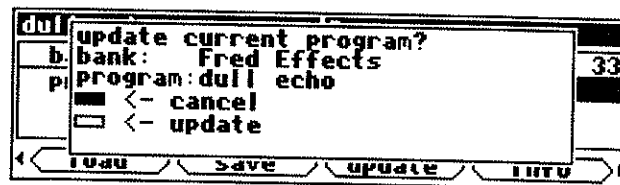
Saving a Program   *<save>*

Programs may be saved into internal memory or onto a memory card. To save a program, first select the desired bank. Next push the *<save>* soft key. This causes a menu to pop up prompting to name the program and to select a program number. The default

```
┌─────────────────────────────────────────┐
│ ┌──  save new program as:          ─┐    │
│ b.│bank:    5 Small Reverbs         │ 14 │
│ P │Program number: 14               │    │
│   │☐  name:Mod2Large Wooden Roo     │    │
│   │☐  <- cancel                     │ ▆  │
│ ◄ │☐  <- save                       │ ►  │
│   └─────────────────────────────────┘    │
└─────────────────────────────────────────┘
```

program name is the name the program had when it was loaded. The bank that is shown is the bank currently selected and the program number shown is the first available program number in the current bank (you may change the bank selection after this pop-up menu appears). This program number will always be one that is currently not in use. The *<save>* function will *not* allow overwriting of an existing program.

Note that when text is being entered for a program name the CXL key on the keypad will delete characters. If all the characters are deleted and the CXL key is pressed again, the old name will reappear. To delete a character, the cursor is moved beyond the character and then CXL is pressed.
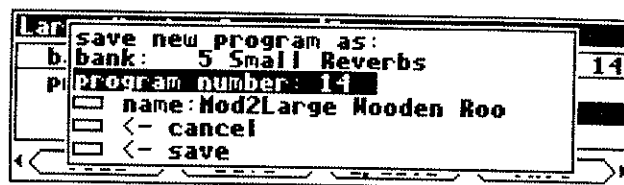
Updating a Program   *<update>*

If a user creates a program and then changes it, an updated copy may be saved using the *<update>* soft key. Once the *<update>* soft key is pressed, a menu appears which only allows two choices, *cancel* or *save*. The Bank and Program are those that the program was last saved or loaded from. This function is only available to update the stored copy of a user program. An error message will appear if *update* is attempted on a factory program or if the user's program was on a card that is not inserted into the machine.

```
┌─────────────────────────────────────────┐
│ dul│ update current program?        │    │
│ b.│bank:    Fred Effects            │ 33 │
│ P │Program:dull echo                │    │
│   │▆  <- cancel                     │    │
│   │☐  <- update                     │    │
│ ◄ │ load  │  save  │  update │  info │ ►  │
└─────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│ Oscillator 440          program         │
│ b.│This program cannot be updated!      │
│ P │Use save instead.                    │
│   │     (any key to continue)           │
│ ◄ │ load  ⟩⟨ save  ⟩⟨ update ⟩⟨  info  ⟩►│
└─────────────────────────────────────────┘
```

Info on Memory Usage   *<info>*

The *<info>* function causes a window to appear which gives information on the amount of user or card memory remaining and on the size of the current program. To use *<info>*, select a bank and then press the *<info>* soft key. The *bytes are available* information will be for the memory card if a memory card bank is selected (C ## bank number format), or for internal memory if an internal memory bank is selected (no C in the bank number).

```
Controlled Leslie     program
 ban|                                  19
 pro 5,484 bytes needed for save    U
     23,030 bytes are available      U
          (any key to continue)      U
  load  > < save > < update > < info  >
```

If info is pressed when a linked program is selected, the program info pop-up window will show the source bank name for the linked program.

```
Dual Delta            program
 ban       Program info:            1
 pro 1,056 bytes needed for save   LU
     121,742 bytes are available
     link bank: Ambience
          (any key to continue)
  lo...  /      /       /   ...fo  >
```

Deleting User Programs   *<delete>*

The *<delete>* soft key causes the selected *user* program to be erased from internal memory or from a memory card, freeing up memory for more programs. In addition, program banks that are empty may be deleted. To use *delete*, select the bank or program us-ing the normal PROGRAM screen operation, then press the *<delete>* soft key. Once *<delete>* has been pressed, a menu appears asking for verification. Press the right cursor button and then SELECT to complete the delete operation.

```
nfo  delete program?
 b. bank:       19 94 Tour Presets      3
 p  program:    2 nick's experiment    J
    ■ <- cancel                        JX
    ▢ <- delete                        J
  delete / bank / link / compare  >
```

Factory programs, factory banks and banks that are not empty may not be deleted. Attempting to do so will cause one of the following errors:

```
Oscillator 440       program
 b.   This bank not empty!          2
 P|   (any key to continue)        JX
                                    J
 < delete >< bank >< link ><compare>
```

```
Thru ( In = Out )    program
 b.  This program not deletable!    5
 P|     (any key to continue)       X
                                    X
 < delete >< bank >< link ><compare>
```

Working with Banks   *<bank>*

In order to keep track of new programs, a new bank may be created. Banks are numbered from 0 to 99 and may be in internal memory or in the memory card. If a bank 29 is created on a memory card it will show up as bank number C 29. The 4000 will ignore attempts to create a memory card bank if the memory card is not inserted.

```
Thr  name a bank:
 b. place: internal               14
 P| bank number: 29
    NEW BANK:
  ▢ <- cancel
  d▢ <- save                       e >
```

This function also allows a user to rename an existing bank. Simply use *bank* to create a bank of the desired name using an existing bank number. The contents of the bank will be unchanged.

Linking Programs *<link>*

For live performances it is sometimes necessary to have a bank containing a list of presets that will be used in order. The *nextprog* function is used to cycle between presets (see *Page 26, Program Change [nextprog]*). Copying factory presets into a list takes up huge amounts of memory and would allow only short lists or make for cumbersome usage of memory cards. The link function allows a list of presets to be made that are only pointers to actual presets. Each link takes up 18 bytes. Each new bank takes up 38 bytes. A new bank with 20 links would take up 398 bytes. Most individual *programs* take up several thousand bytes. The space for a single program could allow a dozen new banks, each with a dozen links to be created!

To use the link function, go to the bank where you want the link to show up. Press the *<link>* soft key. You may have to press the PROGRAM button to make the *<link>* soft key appear. The pop-up menu asks for the bank and program number of the program to be linked, and the program number in the current bank where the linked program is to appear.

To find out what bank a linked program is sourced from, select the linked program and use *<info>*.

If a link is made to a program that is later deleted, the filename will no longer be shown. Instead the phrase "--NO LINK SOURCE--" is displayed. Additionally, if a link is made to a program on a memory card, the filename will not be shown while the memory card is removed. Restoring the memory card will restore the filename. While the card is out the phrase "--NO LINK SOURCE--" will be shown.

Compare Programs *<compare>*

Once a change is made to a program, it may be necessary to see if the change is really desirable. This feature allows a user to listen to the original, unchanged program without losing the changes. Example:

- Load Oscillator 440 (bank 0 program 2).
- Next, set the freq to 1000.
- Compare the sound of the program with the original by pressing: PROGRAM, PROGRAM, *<compare>*. This loads Oscillator 440 again.

Having heard the difference, go back to the changed program by pressing: PROGRAM, PROGRAM, *<compare>*.

## Notes on PROGRAM operation:

Here are some notes that will help you get the most out of the 4000's load and save capability.

Renaming

To rename a program, load it, then use the update soft key (in the second set of PROGRAM soft keys) to change the name of the program.

Memory Cards

All functions which work on internal user memory also work on the memory cards. The standard memory card is 524,288 bytes although the 4000 will support cards up to 4,194,304 bytes. (Note: memory cards must be "*PCMCIA type 1 static RAM card*" and are sometimes refered to as "*type 1 PC static RAM card*".) Memory cards are very useful! When a memory card is inserted into the 4000, the 4000 may report that the card is not formatted and will offer to format it. If the memory card has already been formatted and the format question is presented then there is a problem and the card will have to be removed and reinserted. Formatting will erase all programs and banks on the card! A bank with the name Memory Card will be created on the card when you format. Use the <*bank*> soft key to create new banks on the memory card. Note: Memory cards are fragile. See *Page 27* on *Fixing memory card problems* for notes on memory card usage.
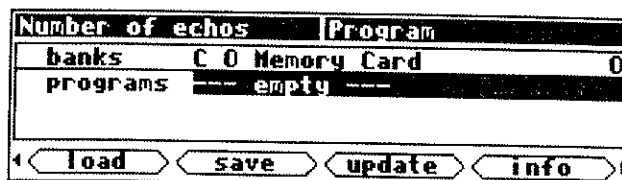
Copying one memory card to another

The easiest way to do this is:

* use the <*load*> soft key to load one program from the origin card;
* remove the origin card;
* insert the destination card;
* use the <*save*> soft key to save it to the second card;
* remove the destination card;
* insert the origin card;
* Repeat until done.

A second method, if you have two 4000s or a 4000 and a sequencer with system exclusive features, is to use the *dump card* command described under *SETUP [dump]* on *Page 25*.

Stepping through programs in a bank

The nextprog function allows the USER1 or USER2 button to step through the programs in a bank. (*Page 26 - SETUP [nextprog]*) Using links, you can create a sorted list of programs. (*Page 33 <link>*)

Using the MIDI *Program Change* message, you can select programs in any order from a bank. See *Chapter 6, MIDI*.
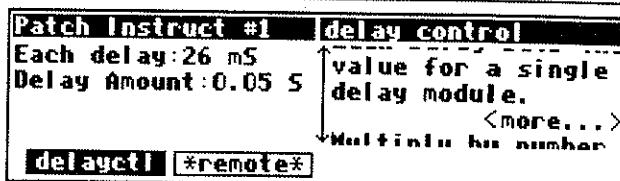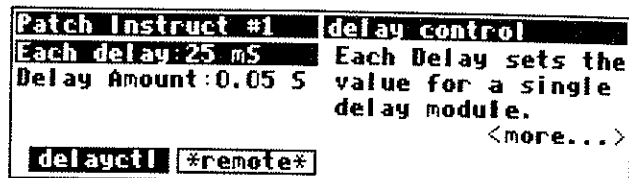
See Appendices A and B for complete lists of programs.

PARAMETER area

The PARAMETER area is special in that the menus change to reflect the options available in the currently running effects program. The number of menu pages and softkeys varies from program to program. All programs have at least one soft key. The rules of operation of these menus are the same as under SETUP and LEVELS, but there are some additional features in the PARAMETER area.

Textblock

The first feature is the scrolling text info block (also known as a "textblock"). Use the cursor keys to select the textblock. Roll the knob and notice that the text scrolls. Textblocks may be from one line to many lines. If the textblock is 4 or fewer lines it will not scroll and will not be selectable with the cursor keys. The up/down arrows to the left of the textblock indicates it has been selected.

```
Patch Instruct #1    delay control
Each delay:25 mS     Each Delay sets the
Delay Amount:0.05 S  value for a single
                     delay module.
                                  <more...>
  delayctl  *remote*
```

```
Patch Instruct #1    delay control
Each delay:26 mS     value for a single
Delay Amount:0.05 S  delay module.
                                  <more...>
                     Multiply by number
  delayctl  *remote*
```

Midi Control   [*remote*]

The second feature is the automatic addition of the [*remote*] soft key and menu page. This menu gives the user the ability to remote control parameters in a program from MIDI or other 4000 external controls.

```
Patch Instruct      Each delay
mode: pedal         □ Capture Midi
--------------        scaling = 100.00
--------------
57.42  ▮▮▮▮▮
  delayctl  *remote*
```

Most factory program parameters are remote controllable using this feature. The remote control menu page uses the format of external control pages described on *Page 15* in this chapter.
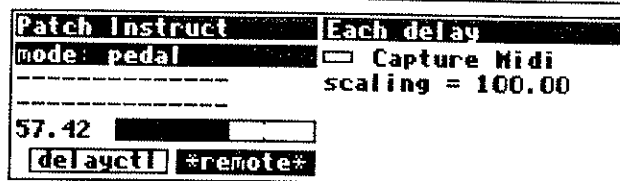
This feature may be enabled or disabled using the *remote* option under the [midi/ext] soft key in the SETUP area. See *Page 23* in this chapter. To enable remote control for a parameter:
- go to the PARAMETER menu page that the parameter appears on by pressing that page's soft key;
- using the left and right cursor keys, highlight the desired parameter;
- press the [*remote*] soft key;
- If a parameter is not remotely controllable, an error message will appear.
- Select a mode: and set the scaling factor. (See *Capture* on *page 80*.)
- Save the program to keep the changes.

Curves

The 4000 can translate a signal using a custom curve that can be controlled from a PARAMETER screen. The curve graphic shows the currently selected point (displayed as the input signal that the point represents) and the output value that would be presented when the signal is equal the point's input value. Values in between points are interpolated to produce the resulting value. The curve can have up to 32 points, each of which can be adjusted. Use the left and right cursor keys to select the adjustment point and the knob or numeric keypad to set the value of the point. Press the SELECT button to move between the input value and output value for the current point.
See *Ramp Up/Ramp Down, Bank 12, program 9*.

```
Missile Telemetry     Control Screen
testfunc:  1.1      fudge
blastvol:  0.2      0.333
warpness:  3.0        ↓
vacuum:    1.2      0.720
  test    fudge    launch  splash
```

```
Multitap Delay      multitap parameters
tap:39
dly:519.0
lvl:-18.6
pan:-1.00
  multitap  *remote*
```
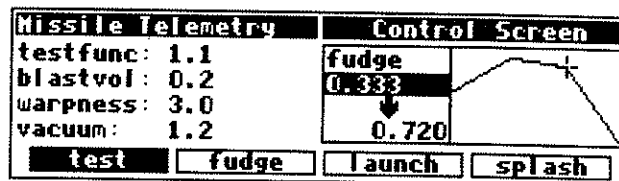
Taps

Several programs use a tapped delay line. The user interface for the delay line allows the taps to be adjusted in several ways: delay position (# of seconds of delay before the tap); tap attenuation level (in dB); and pan (between left and right outputs). Left and right cursor controls choose the tap. SELECT chooses which parameter is changed for the selected tap. The knob controls the value of the selected parameter.
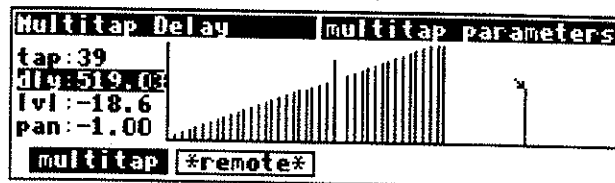
External Controls

External Controls are inputs to the 4000 that allow modulation of parameters and modulation of controls used in effects programs. Additionally, external inputs may be used to trigger events, both in the unit's controls and in effects programs.

Foot Switch

This is a two-channel input. The foot switch connector is a stereo 1/4" connector. The tip of the connector and the ring of the connector are independently handled by the 4000. The foot switch inputs may be used to trigger many different events, even at the same time. The [mod con] menu page (in SETUP), the [nextprog] menu page (in SETUP), and the [ext con] menu page (in LEVELS) all have options to have the foot switch adjust parameters and trigger operations.

It is quite possible to have each channel on the foot switch perform several operations at once. One possibility is where the tip channel on the foot switch is used to select next program while the ring channel is used to toggle the 4000 from *bypass* to *process*, and also to trigger an envelope in an effects program.

Setup parameters that may be triggered include:

Kill Key (Bypass/Mute)
Next Program
Previous Program
trig1
trig2
Any *extcontrol* or *exttrig* module in an effects program.

Foot Pedal

The foot pedal is a single-channel variable input. The connection is made using a stereo 1/4" connector on the back panel. The ring of the connector is a source of voltage. The foot switch allows that voltage to be varied and fed back to the 4000 on the tip. It can be used to modulate parameters in the 4000. The 4000 reads the foot switch as a value from 0% to 100%. Parameters that are available for modulation include:

left output (left con)
right output (right con)
mod1
mod2
mod3
mod4
Any extcontrol module in an effects program.

Relays

There are two relay outputs. These are available on the back panel of the 4000 via a stereo 1/4" connector. The relays are controlled via the [preset] menu page under the LEVELS area. Settings of the relays are saved with the effects program. A common use of relays is to have an external device enabled only when certain 4000 programs are loaded.

Start-up Options

When the 4000 is powered up, it looks at its buttons to determine if a special start-up is requested. Special start-ups are normally used exclusively for diagnostic and repair purposes.

To use a special start-up, hold down the required key and then turn the 4000 power on. Continue holding the required key until the unit has finished its power-up testing and the appropriate screen appears as shown below.

Special Keys   ***Function***

Special Keys	Function	Screen

-       erase Memory card

```
Do you wish to delete all presets
and banks that are stored on the
memory card?

        <  yes  >< no  >
```

CXL   bypass start selftests. The 4000 will skip from "Powering On..." directly to "Initializing". When the "Initializing..." message appears, you can let go of the CXL button.

5   run factory self test programs (may erase internal setup and programs). The 4000 will not start the normal program and instead will go to this menu. Rotate the knob to select a particular test. Press

```
Hit SELECT to start Test all
P=0           E=0           T=0
```

SELECT when the desired test is selected. Power down the unit to exit tests. See separately available service manual for more details of these tests.

6   select between software driver used for production contrast control or pre-production contrast control. (not useful for production version 4000 owners). The 4000 will put up this menu. Press one

```
Does this unit have a new brightness
circuit or an old one?
All revision C and above main boards
have the new circuit.  Some older
boards may be modified
        < old > < new >
```

of two soft keys. The selection is saved and will be used in all future operation. Selecting the wrong driver will not cause damage but will cause the contrast and brightness control to operate incorrectly. Since the display is not readable in the wrong mode, this start-up method is often used 'blind'. Turn off the 4000. Press and hold the 6 key. Turn on the 4000, holding the 6 key for an additional five seconds, and then press the 2nd or 3rd soft key. Press <*new*> for a production version 4000. Press <*old*> for a pre-v1.0 version 4000.

8   Clear internal programs and setup. This key does the same thing as "format internal" under SETUP, service. The purpose of this key is to initialize the unit at

```
Do you really want to clear the
information stored inside the H4000?


        < Yes > < No  >
```

the factory, and to fix a memory problem that might prevent the unit from working correctly. The need for this operation should be quite rare and if such problems result more than once the factory should be contacted.

PROGRAM   Load MUTE instead of the current program. This function is used in the event that the last-run program caused the unit to lock up.

```
Do you want to lose the current
program and load MUTE?


        < Yes > < No  >
```

Resources, and Segue with Crossfade

The 4000 loads and saves programs on demand. The crossfade capability allows the 4000 to fade into one program while still running the previous program. Crossfade requires that the 4000 has enough processing power to run two effects programs at the same time. Since crossfade is not a required feature for all 4000 users, the full processing capability is available to a single program if desired. In the PROGRAM screen, a crossfade symbol is provided to indicate that a program is small enough to be crossfaded. When a program that is not crossfadable is one of the two programs in a segue, the first program is totally unloaded, then the output of the 4000 fades briefly to silence before the second program is loaded.

The 4000 determines what programs are crossfadable by keeping track of several resources. These resources are used for storage of the actual program; reserved as audio memory for use with delays; and reserved for counters and storage of parameters needed by control process modules. In addition, some modules require processing time. Since memory and processing time are limited, these resources are eventually expended.

Notes, Hints and Answers:

Only the PATCH editor varies the amount of resources used by an effects program. There will never be a problem of an effects program growing or shrinking because parameters were changed.

Powering on and off the 4000 will not change the data on a card, in internal preset memory, or in the setup.

Pressing an area button (like LEVELS, SETUP...) while in a dialog box may cause an exit from the dialog box. You'll know if this happens because the screen will change to what you'd expect when pressing the area button. If you are saving a program or inserting a module when this happens, the insert or save will not occur and your program will not be harmed. This is a good way to abort out of an operation you hadn't intended to do.

Formatting internal memory or card memory is not reversible. Clearing the setup is not reversible unless you have saved the setup previously.

More memory card notes

Inserting or removing the card at any time that the BUSY light (next to the card slot) is *off* will not change the operation of the unit. If a program is loaded from a card and then the card is removed, the program continues to run. The card is only needed during PROGRAM operations that the user initiates to the card (this includes access to a program *linked* to the card). Back up your important programs.

The cards are no more durable than most electronics equipment.

Don't leave cards on a dash board on a sunny day.

Don't drop cards or expose them to static electricity.

Carry a card in an insulated or static proof container.

Remember to replace the batteries on your important cards.

A card will maintain memory for many minutes with the battery removed but will not maintain memory if the battery goes dead.

Keep your important copies on cards with well-maintained batteries. The battery should last in excess of a year (probably much more but this is new technology so only bet what you can afford to lose).

Chapter 3: Introduction to Patch Editor

The 4000 incorporates a graphical editor to allow users to construct custom effects programs. This chapter is an introduction to the editor. Chapter 4 is a reference manual to the features and operation of the editor and Chapter 5 covers advanced patch editor topics. Also see Appendix C for a list of effects building blocks (modules).

Contents

Modular Effects

One of the reasons the 4000 is so versatile is that its effects are modular. This means that effects are made up of smaller building blocks, called modules. Each module performs a specific function, like a pitch shift or reverb for example. Using these modules allows you to perform all sorts of operations not only on your input signal, but also on various versions of the signal that have been modified by other modules. You could use a flange and reverb on the original signal at the same time and then mix the outputs, or you could put reverb on the output of the flanger instead. Or you could flange the output of the reverb. The possibilities are nearly limitless.
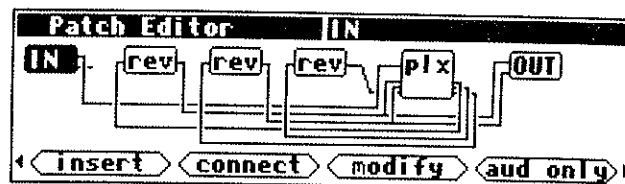
Modules are connected together with simulated *wires* carrying *signals* from outputs to inputs. There are different kinds of signals on the 4000. *Audio* signals are just what you'd think. There are also *control* signals, used to pass values between modules, and *mod* signals which are a special kind of audio signal. Control signals and mod signals are not used in simple patches and will be covered later.

The patch editor allows you to create your own effects programs from scratch, or to customize programs that already exist. You can insert or delete modules, add or remove virtual wires, and tweak parameter values. You can also create and change parameter menus, modifying the actual text of the knobs and softkeys, and change the names of individual modules.

Menupages & PARAMETER menus

Menupages are pages of information that include changeable parameters (knobs) and monitors (used to display a control signal value). The entire PARAMETER system is made up of menupages that are incorporated in programs created and edited by the PATCH editor. The PARAMETER menus are *automatically* created when certain modules are inserted. They may also be created or edited manually.

Get comfortable by doing:

Let's make a patch. This way you can get a feel for how the editor works, and you'll have a much better understanding when you read about the details later.

The patch we're going to make is an audio compressor. A compressor reduces the audio gain when louder signals are input. This compressor is built using a single *ducker* module. Here is an excerpt from Appendix C of the 4000 manual describing the module:

> The ducker module is the basic building block for most dynamics control patches. It is essentially a dynamic range compressor with separate inputs for the signal whose gain is to be processed and for the detection (*sidechain*) input.
>
> By connecting sidechain to the output, a basic compressor is built. By connecting a dry signal to the sidechain and a processed signal to the input, the processed signal can be ducked (have its gain reduced) during louder passages of audio.
>
> Ducking is often used by radio talk show hosts such that the host's audio overrides the guest or telephone caller. Each time the host talks the caller's audio is dropped down such that the host's audio is much louder. If the host talks loudly the caller's audio disappears altogether.

Since we're using the ducker as a compressor we'll loop the output audio back to the *sidechain* input. Try this tutorial out on your 4000.

Tutorial

To start, go to the PROGRAM menu and load the *Thru* program (bank 0, program 3). Next, go to the PATCH editor by pressing the PATCH button.

We're looking at an empty slate. Just the IN and OUT modules are shown. These are always in every patch. The IN module is where audio signals come into your program and the OUT module is where audio signals go out to the outside world. At this time the 4000 should be passing audio through, unchanged, just as the patch display shows.

To start creating the compressor, insert a ducker module. Press *<insert>*. You will get a list of things to insert.

We want a ducker, which is in the **Dynamic** group of modules. You can either turn the knob until you see the little arrow pointing to ducker, or we can save a little time by scrolling thru groups first. So press the left cursor key so that the group name is highlighted, then turn the knob until you see the **Dynamic** group.

The little arrow is pointing at ducker now, so you can just press SELECT and a ducker will appear in your program. It's the little box marked **dck**.

Note that the IN and OUT modules are still connected to each other, just as they were. Audio is still passing through the 4000, unchanged.

Our next step is to make a compressor from the ducker. Press *<connect>*.

Now look at the top line of the display. On the left it's asking what you want to connect. On the right, it gives the name of the current output. The picture shows that output highlighted with a little line inside the module's box. You can choose to connect something else instead by using the RIGHT and LEFT cursor keys, or by turning the knob. Right now we want to connect the ducker's output so just press SELECT.

Notice that the output we selected is still identified by a little line in its module box but the box itself is not highlighted. This tells us what we're connecting *from*. The editor is now asking what input to connect *to* and is showing that the OUT module's leftin input is offered. Rotate the knob (or use LEFT and RIGHT) to select the ducker's sidechain input. As you move between available inputs the input selected, and its modulename will show in the upper right.
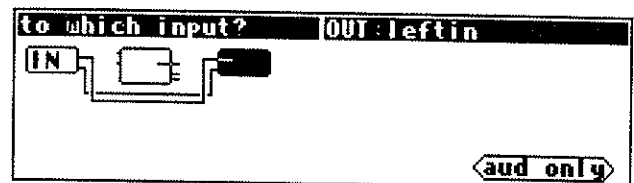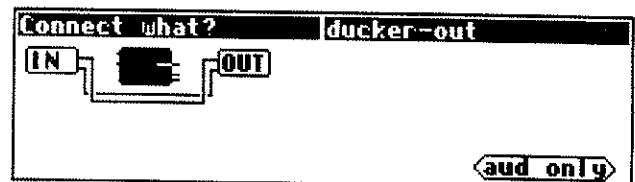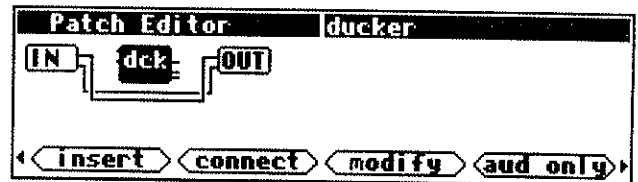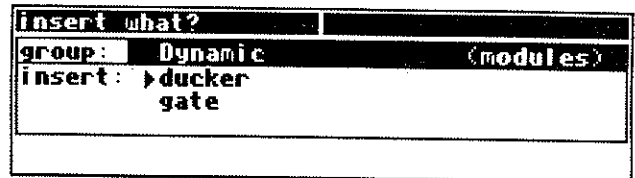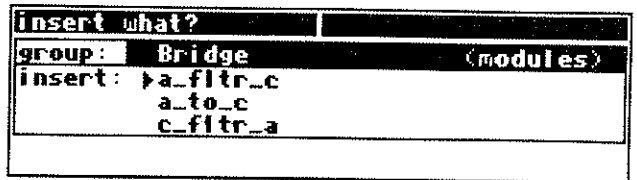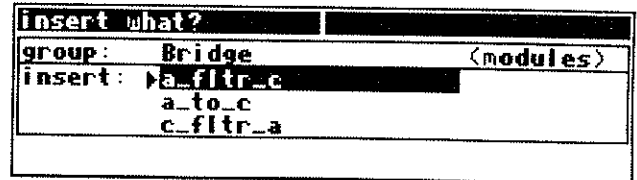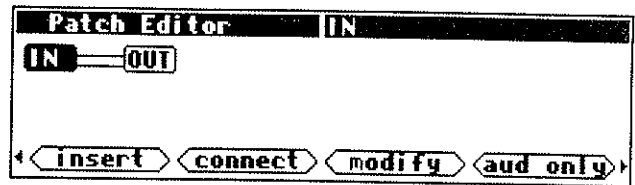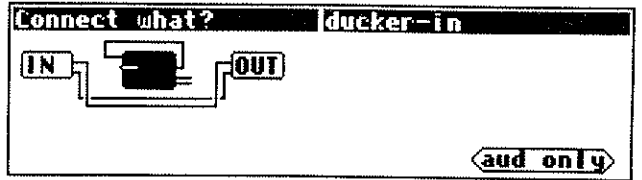
This now shows the ducker highlighted, with its output selected and its sidechain input ready to be selected. Press SELECT.
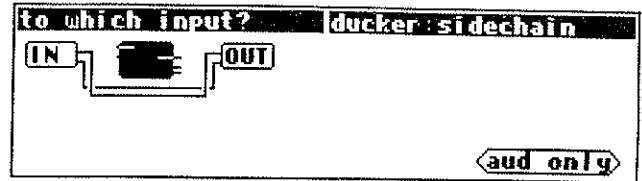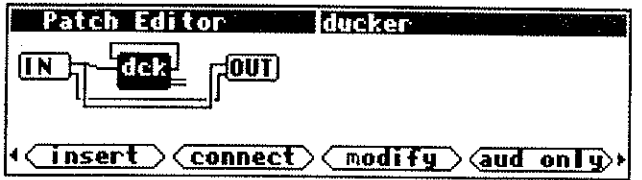
There you have it. There's a wire connecting the ducker's output to its sidechain input.
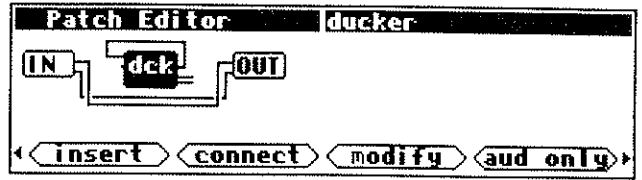
Now let's connect the ducker's main input to the IN module. Press CONNECT and then the LEFT cursor key twice, so that it shows ducker-in highlighted.

Now press SELECT and then the RIGHT cursor key so that it shows IN-left highlighted. Then press SELECT again.

The last thing we will do here is connect the OUT module to the ducker so we can hear what the compressor sounds like. Press CONNECT and then SELECT to select the ducker's output, then press SELECT again to connect that to OUT-leftin.
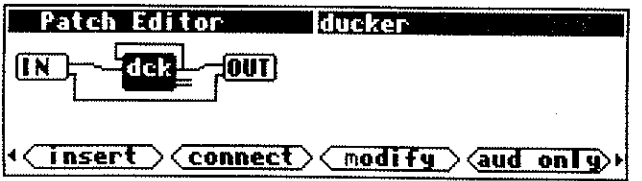
Now the compressor will be heard on the left channel, while the right channel remains uncompressed. Press the PARAMETER button to see the menupage (control panel) automatically created for the *ducker* module. To change the name displayed in the upper left, just go to PROGRAM and save it. PROGRAM attaches the name the program was saved under.
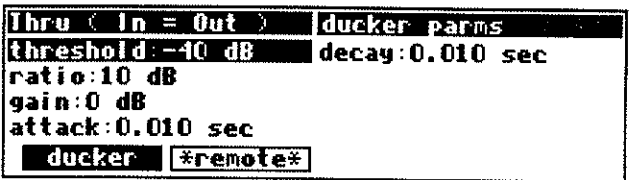
Note: parameters on automatically created menu pages are not controllable via the [*remote*] menu.

Chapter 4: Patch Editor - Basics

This chapter covers the use of the Patch Editor to create programs which will use predefined menus. Chapter 5 covers the creation of custom menus.

Readers of this chapter are assumed to have read Chapters 2 and 3 and to have some familiarity with the workings of the PROGRAM menus and with the SETUP, LEVELS, or PARAMETERS menu screens.

Contents

Programs for the 4000

IN and OUT

4000 programs are loaded and run one at a time (except during segued crossfade - see *Chapter 2*). When a program is loaded and run, the 4000 provides the program with two channels of input audio, directed *from* the back panel inputs. The 4000 takes the two channels of output audio from the program and sends it *to* the back panel outputs. The input audio and output audio connections to the program are handled through a pair of predefined modules called **IN** and **OUT**. The **IN** module has two signals to send to the program,
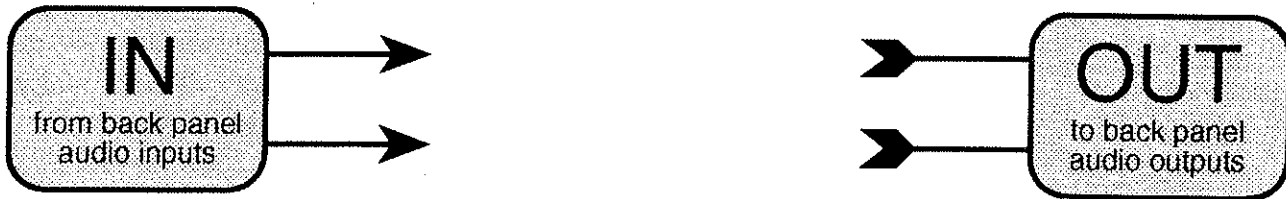
called left and right. Since these signals are coming *from* the module they are called *outputs* of the module. A small amount of confusion might result because the **IN** module has *outputs*. Similarly the **OUT** module has a *inputs* (called *leftin* and *rightin*). This difficulty is minor compared to the gain in consistency created by using the word output to refer to all signals that come *from* a module, and using the word input to refer to all signals that go *into* a module.

In the simplest of conceivable programs the signals from the **IN** module might be connected directly to the **OUT** module. Normally, other, optional modules are inserted in between the **IN** and **OUT** modules. **IN** and **OUT** remain as part of the program.

Different Kinds of Signals

In addition to the audio signals described above there are two other kinds of signals between modules. The three signals may be broken down as:

Audio Signals   carry one channel of full bandwidth audio.

Control Signals are usually used to pass parameter values between modules. Control signals are low speed and are updated inconsistently depending on how busy the 4000 is. Control signals are represented numerically by a value of range -32768.0 through 32767.999.

Mod Signals   Mod signals are used to carry modulation between modules. The value of a mod signal is controlled by the driving module from whose output it originates. Mod signals change at a very fast rate so modulation is smooth. Mod signals and audio signals may be interconnected but not without a loss of signal quality. Note that where control must be fast or smooth, mod signals (and modules that use mod signals) should be used instead of control signals.

Signals are available to be connected between modules by the PATCH editor and are shown as lines on the display.
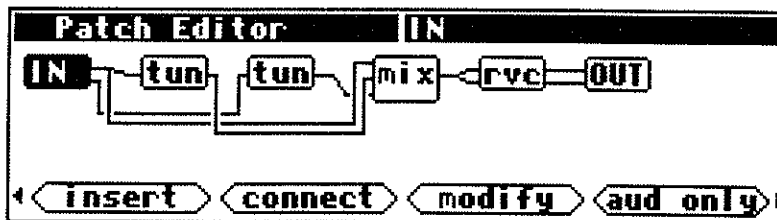
Patch Display

When the PATCH button is pressed, the 4000 presents a display of the current program and a selection of soft keys. This is the default patch screen. Unlike the PROGRAM, SETUP, PARAMETER and LEVEL menu areas, the top line of the screen is used for special purposes. The left half of the top line is used as a question field when *connect* or *unplug* are used. The upper right part of the screen shows the name of the selected module, except during *connect* or *unplug* operations when the upper right shows the input or output that is selected.

Shown is Mono Delay *from* Simple Effects *bank.*

Most of the display is taken up by a block diagram of the program. As mentioned before, the program consists of a series of *modules*. Each module is shown on the display as a block with lines indicating signals connecting inputs and outputs. Inputs are on the left of each module while outputs are on the right. Each module is shown with a three-character (or less) abbreviation of its function name. See *Appendix C* for a list of all modules.

The example screen below shows four modules and is shown in the default *audio only* mode. This means that the only modules and signals shown are audio paths and modules that work with audio. The modules shown in the example are:

IN   audio from rear panel of 4000
mix   a two-input mixer
mdl   modulatable delay
OUT audio to rear panel of the 4000

As shown, the left channel from the 4000's inputs is connected to one of the inputs of the *mixer*. The other *mixer* input comes from the output of the *modulatable delay*. The *mixer* feeds the input of the delay. The delay output may be seen to drive three module inputs: the *mixer* input and both output channels.

Front Panel Controls

There are several controls used to manipulate the Patch display.

Knob

In many programs, the patch diagram will be larger than the screen. In this case, the screen will display only part of the program. The knob may be used to shift the screen. This gives the user a window into a larger patch program. A complicated program will move more slowly across the screen as the knob is rotated. This is due to the processing required for the 4000 to draw the picture of the program. If the knob is rotated faster than the screen moves the screen will jump to catch up. If the knob is rotated very fast the screen appears to immediately jump to the end of the program. The screen will not wrap around to the other end of the program.
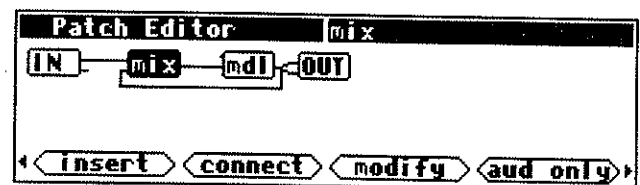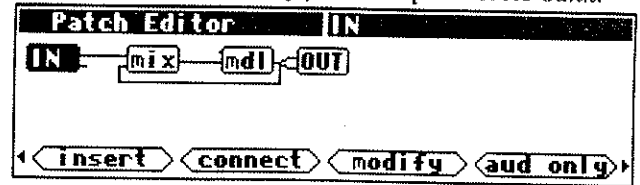
Cursor Keys

The left and right cursor keys are used to highlight (select) a module. When you first enter the PATCH editor, the **IN** module is highlighted. Pushing the right soft key will cause the **mix** module to be highlighted. The *name* of the selected module is shown in the upper right of the display.

PATCH button

The PATCH button is used to toggle between sets of soft keys.

PATCH Key Soft Key Functions

In the patch editor there are seven soft key functions. *Insert* and *Delete* are used for adding and removing modules from the program. *Connect* and *Unplug* are used to add, remove, or change a signal connection. *<scroll>* changes the direction that the knob moves the display. *<aud-only>* will change the display mode to show audio and control lines instead of just the audio lines, or to show menupage modules. *<modify>* makes changes to internal module details and userobject information.
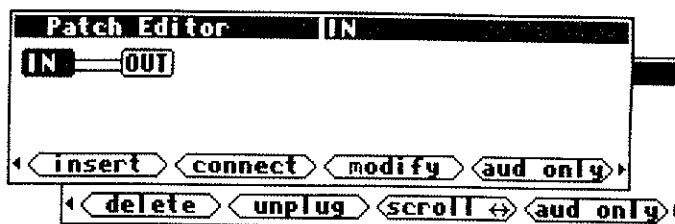
## Scroll Direction   *<scroll>*

The *<scroll>* soft key selects the direction of motion that the knob causes. This is useful if the program you are editing has so many signals that they dip below the level of the screen or if one or more modules have enough inputs that they are taller than the screen. The key changes to reflect current scroll mode. Selecting *<scroll ↕>* allows you to move the display up and down across the image, *<scroll Ö>* moves left and right. The screen will not move if there is no off-screen information in the direction you are asking to move. Thus, in the case of a simple program, selecting scroll motion up and down and then rotating the knob will cause no change. To demonstrate, experiment with *bank 2, program 0, Clearmntn Delays*.

Display Mode   ⟨aud only⟩ ⟨aud+ctrl⟩ ⟨ctrlonly⟩ ⟨ misc ⟩

It is quite possible to construct a complex patch without using control signals by only using modules which automatically create menus when inserted. Eventually, however, the patch creator will want to create custom PARAMETER menu screens. This is done using knobs, faders, and other interface modules. Most Eventide factory programs are created this way*. One of the consequences of this is that there are usually more control signals than audio signals. This means that what might have been a fairly viewable patch is suddenly extremely complex-looking. In order to allow the patch to be viewed in a simplified manner, a feature has been provided to exclude control signals from the patch display. Furthermore, modules that have no audio signals (this includes knobs, faders, etc..) are not shown in the aud-only view. Note that mod signals are treated the same as audio signals by the editor and they will show up in the aud-only view.

The right-most soft key provides display mode control. When this key is pressed, the display mode will change to the next mode in this order: *aud only, aud+ctrl, ctrlonly, misc, aud only, aud+ctrl*, etc. The key label will change to indicate the current status. Upon entering the PATCH editor, the soft key is in the *aud only* mode and only the audio path is visible. Control signals (and modules that contain only control inputs or outputs) are hidden. *Note: most modules that have audio connections also have control connections.*

The following images are composite pictures of the program *Octave Box (bank 16, program 4)* in all 4 display modes. This is done to show the entirety of the patch in the four different modes.

<aud only>

<aud+ctrl>

<ctrlonly>

<misc>
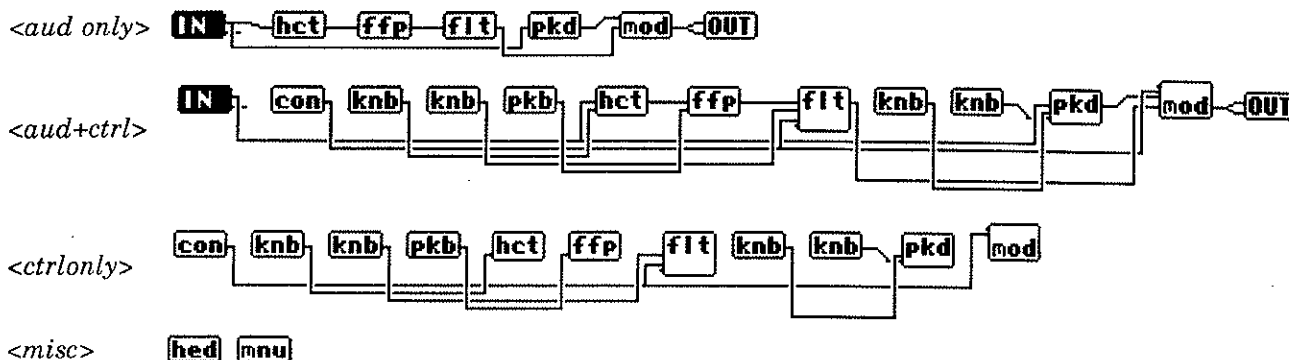
By comparing these different pictures, it can easily be determined which of the wires in the *aud+ctrl* picture carry audio signals and which carry control signals. The *misc* display mode will be discussed later.

* only discrete interface modules, like knob, may be controlled via the [*remote*] menu page..

Connect Modules   *<connect>*

A press of the *<connect>* soft key will start a process that will connect a module output to a suitable input of a different module. The Patch Editor will prompt for a starting input or output and then will prompt for a complementary destination. The program automatically limits the available destinations to a legal selection. If a connection is started from a control input, only control outputs will be offered. Similarly, if a connection is started from a mod output, only audio/mod inputs will be offered. To abort a connect, press the PATCH button.

For example, load *Patch Instruct* from *bank 2, program 30.* This program consists of a pair of *delay* modules, both on the left channel. The left channel is delayed for up to 1.32 seconds while the right channel is not delayed at all. Press the PATCH button to see what this patch looks like.

Patch Instruct's menu under PARAMETERS

As you can see, there are two delay modules. If you press the *<aud only>* button and go to audio plus control screen mode you'll see the *knobs* and *monitor* that make the Delay and Delay Amount messages work. Notice the **mul** module. That's a *c_multiply* module. It is multiplying the control signal from the *knob* module by a constant amount (in this case 2) and feeding it to the *monitor* module. Going back to PARAMETER, you can see that work. The *monitor* module is showing the actual delay, while the *knob* is setting the delay for each of the *delay* modules.

For the sake of demonstration, we'll use *<connect>* to rearrange the *delay* modules (**dly**) such that one is in each channel, thus delaying each channel by up to 0.66 seconds (660mS) which is the maximum amount of delay for a delay module.

Press PROGRAM and reload Patch Instruct. After the program is loaded, press PATCH

Press *<aud only>*.

Now press the *<connect>* soft key.

The 4000 will prompt for something to connect. Using the cursor keys, select the output of the left-most **dly** module. You'll know you have the correct output if the upper right of the display says *firstdel-out.* When the screen looks like the picture to the right, press SELECT.

As this is an audio output, the screen mode will change automatically to audio-only mode and, as you have selected an output, the screen will prompt you for an input to connect to. The PATCH editor program will automatically choose a valid audio input for you to connect to and will present it to you as shown to the right. Note that its choice may not be your choice. Use the left and right cursor controls, and the knob, and

experiment with what can be selected. Although the *<aud only>* button is presented, pressing it (and you may) will not allow connections to anything that isn't an audio input, unless this connect is started over by being aborted or finished. After you have experimented, set the screen mode back to *<aud only>*, select the *leftin* input to the **OUT** module, and press SELECT.
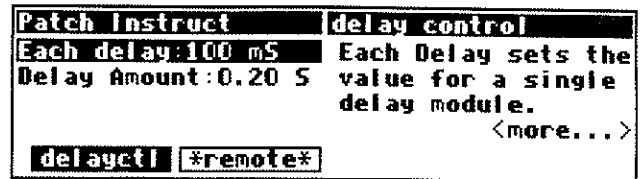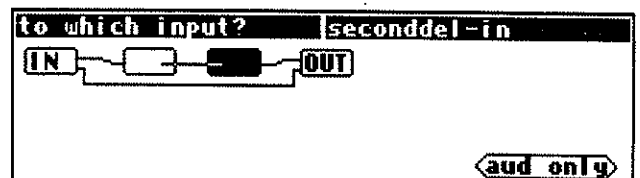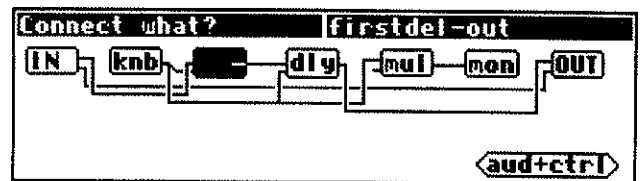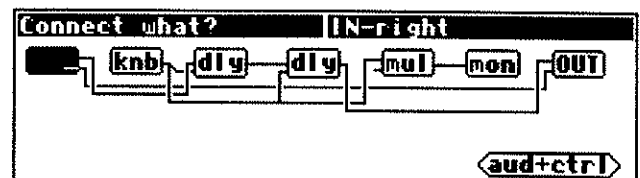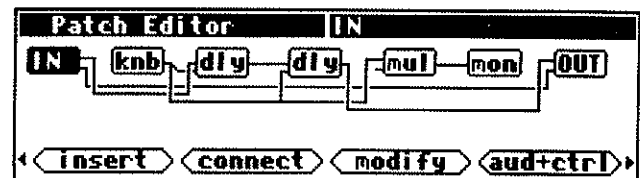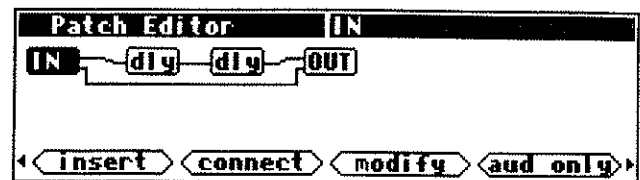
The current program now has a single *delay* module between *IN:left* and *OUT:leftin*, a *delay* module that has an input but no output, and a straight through path between *IN:right* and *OUT:rightin*. Note that the signal that previously was connected to OUT:leftin has been automatically disconnected. See *Notes* below.

You should now be able to connect *IN:right* and *seconddelay:in*. Then connect *seconddelay:out* to *OUT:rightin*.

This is what you should end up with. This patch has a *delay* module in each channel of audio. As an exercise, you could go to *<ctrlonly>* screen mode and by-pass the **mul** module by connecting *mon-in* to the *knob*. That would make the *Delay Amount* show the correct delay value.

Notes on connect

Although it *is* possible to connect a single output to multiple inputs, it is *not* possible to connect two signals to one input. If an attempt is made to connect a signal to an input that is already in use, the new signal will replace the old. In order to connect multiple audio signals to one input a *mixer* or *adder* could be used. For control signals a *c_adder* could be used.

Breaking a Connection *<unplug>*

The *<unplug>* command removes a single connection between two modules. To break a connection, press *<unplug>*, then use the cursor buttons and the knob to choose which input to disconnect. *<unplug>* will not allow disconnect to be specified by output because outputs may be connected to more than one other input.

Example: To break the connection between the two delay modules in *Patch Instruct* from *bank 2, program 30*, first load in the program and press PATCH.
After the display updates press PATCH again.
Press *<unplug>*

Use the left cursor button to select the input for the second delay module.
Press the SELECT button.
<unplug> completed.

Note that the *aud/aud+ctrl/ctrlonly/misc menus* soft key is active to aid in selecting a module and input to be unplugged. Changing the display mode does not deselect the current module. The upper right message field will indicate the current module, regardless of the display mode.
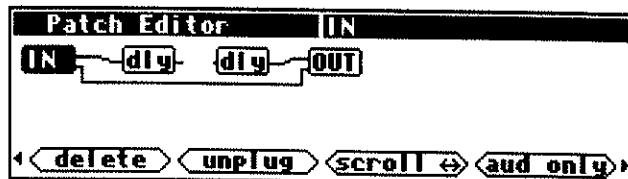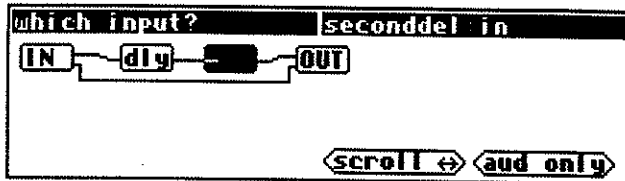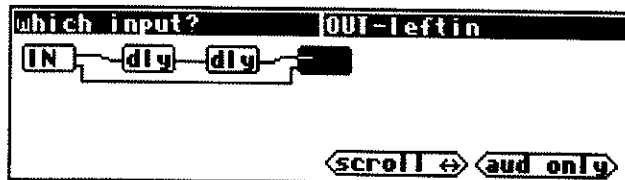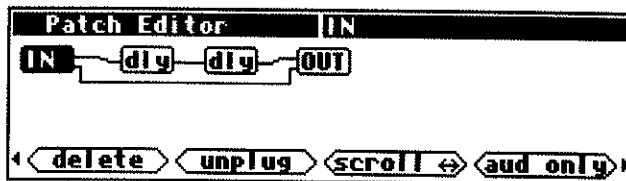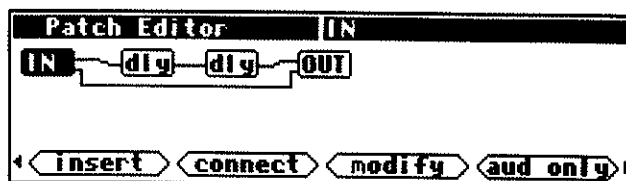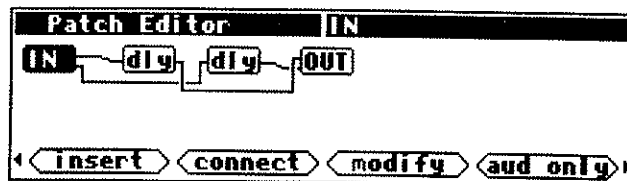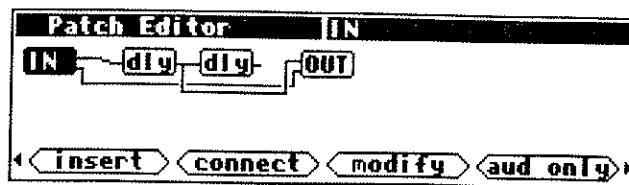
Inserting Modules   *<insert>*

The *<insert>* soft key adds a new module or group of modules into an existing program. The new module or modules will be inserted to the right of the currently selected module. Using the right and left cursor controls, select the insertion point. Note that modules need not be in any particular order because connections can run in either direction. Module placement is ordinarily chosen so that connection lines are shortest or so that the patch is easiest to understand.

After you've chosen where to place the new module or group of modules, press *<insert>*.

This display is a lot like the one given in the PROGRAM menu area. If you're unfamiliar with how to load a program, please read the section in this manual on the PROGRAM area (*Page 28*) before going further.

Just as in the PROGRAM area, the top area shows the name of the group (bank), and the field below lists the contents of that group. The difference is that here, a group can be either a bank of modules, or it could be a bank of existing *programs* (groups of modules). The module groups are at the beginning of this list, and the banks of programs are at the end. Exactly what happens when you press SELECT depends on whether you're inserting a single module, a whole program, or a program segment.

Inserting a single module

When a single module is inserted, in most cases the parameter screens will be updated so it will show up automatically (provided it has parameters that can go on a menu). To demonstrate this, first load the program *Long Mono Delay* from *Bank 2* and then press PATCH.

Insert an **eq** module by pressing *<insert>* and then scrolling to the Filter group and selecting **eq**. Then press PARAMETER.

Press the PARAMETERS button and note that now there are a menu page and associated soft key for **eq** parameters. ◄━━━━━

Most but not all modules get their own parameter soft keys automatically. If the inserted module comes from any of the following groups, it will *not* show up automatically:

* Bridge
* Control Math
* Control Process
* Interface
* Math
* Miscellaneous

If the module does not show up automatically but it does have parameters that can be set, it can still be put into the PARAMETERS screens. This is a more advanced operation and is discussed in *Chapter 5*.

Inserting a Whole Program or Program Segment

The Patch Editor allows groups of modules to be inserted. The group of modules may be an entire program or some useful organization of modules. A user might put together a good reverb to be added to all of the user's patches. This would be used to create custom 'sound' if desired.

When a program or program segment is inserted, all accompanying parameter screens will be added to the screens that already exist for the current program's parameters. To demonstrate this, first load *Mono Delay* (bank 2, program 0) and note that its soft keys are labelled [*main*], and [*info*], (plus [*remote*]).

```
┌─────────────────────────────────────┐
│ Mono Delay          main parameters  │
│ delay:25.0 ms                        │
│ feedback: 0.0 %                      │
│                                      │
│                                      │
│   main    │   info   │ *remote*      │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ Patch Instruct      delay control    │
│ Each delay:100 mS   Each Delay sets the │
│ Delay Amount:0.20 S value for a single │
│                     delay module.    │
│                          <more...>   │
│  delayctl │ *remote*                 │
└─────────────────────────────────────┘
```

Now load *Patch Instruct, bank 2, program 30*. This program has just the one parameter soft key labelled [*delayctl*] plus [*remote*].

Now press PATCH to edit the *Patch Instruct* program.

Insert a *Mono Delay* program with the following steps: Press <*insert*>. Press left cursor. Scroll past all of the *modules* to *Delay Effects* group, Select *Mono Delay*. When the 4000 is done inserting this program press the PARAMETER button and you'll see that all of the menus for both programs are now there.

```
┌─────────────────────────────────────┐
│ Patch Instruct      delay control    │
│ Each delay:100 mS   Each Delay sets the │
│ Delay Amount:0.20 S value for a single │
│                     delay module.    │
│                          <more...>   │
│  delayctl │  main   │  info  │ *remote* │
└─────────────────────────────────────┘
```

When you insert a program or program segment, if the segment was connected to the **IN** and **OUT** modules, then after you insert the segment, it will still be connected to **IN** but it will not be connected to **OUT**.

Notes on <insert>

During the insert process, if you change your mind and decide not to insert anything yet, press the PATCH key to abort. That will put you back at the main edit menu without changing the patch.

Removing a module   <delete>

The <*delete*> soft key removes a module from a program. Any signals connected to the deleted module are disconnected.

Select the module to be deleted by highlighting the module using the left and right cursor keys. Next press the <*delete*> soft key. The 4000 prompts to be sure the <*delete*> was intentional. If so, press the right cursor (choosing OK) and then press SELECT.

```
┌─────────────────────────────────────┐
│ Patch Editor        firstdel         │
│ IN   knb  dly  dly   mul   mon  OUT  │
│                                      │
│ ◄ delete ⟩⟨ unplug ⟩⟨scroll ↔⟩⟨aud+ctrl⟩► │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ Patch Editor        seconddel        │
│ IN   knb  dly   mul   mon  OUT       │
│                                      │
│ ◄ delete ⟩⟨ unplug ⟩⟨scroll ↔⟩⟨aud+ctrl⟩► │
└─────────────────────────────────────┘
```

In the examples to the right the **IN** module now has an empty output and the second **dly** module has an empty input.

Modifying a module   <modify>

This feature allows the user to make changes to the selected module. The important capabilities allowed by this command are:

- change the module's name
- set the value of specifiers (internal values used to specify maximum delay length, # of inputs, etc.)
- set the value of unconnected control inputs (autoknobs)
- set the text used in knobs, menupages, text blocks, etc.

The <*modify*> command is described in some detail later in this chapter after some more background has been discussed.
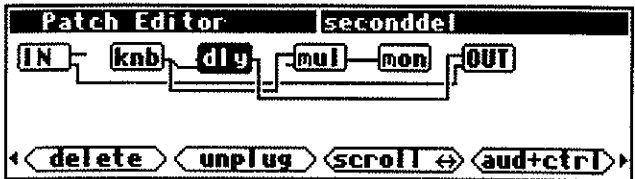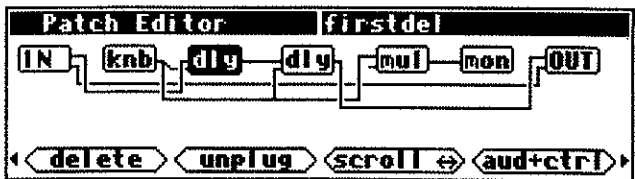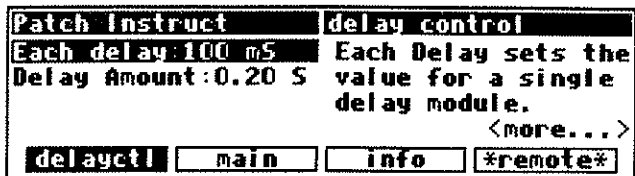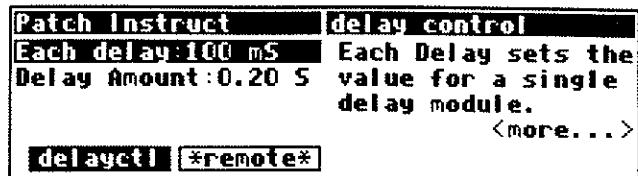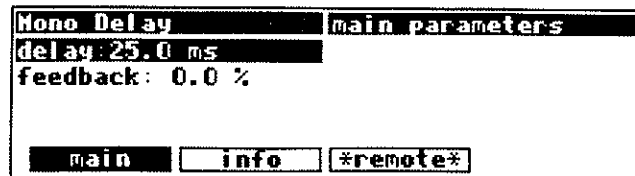
Intro to Menupages and Userobjects

The 4000 PARAMETER menu system allows user defined menus to be created using modules. Several tools exist to manipulate and construct menus. Any menu that exists in a factory program may be duplicated or enhanced by a 4000 user for the user's own custom patch. This section describes the theory behind how the menu system works. This page is background information to help with understanding the rest of this chapter. *Chapter 5* covers this information with more pictures and with more examples.

Userobjects

Userobject is a term used to describe the way parameters are made visible so they can be displayed in menus. Every parameter that is adjustable under the PARAMETER menu is a userobject. A userobject can be a parameter that displays a number and can be modified by turning the knob, or it may be a pictorial representation of a parameter. A userobject can be a grouping of parameters. A userobject can even be several pages of parameters.

There are several modules designed to create menus via userobjects. This includes *menupage, knob, monitor, meter, gang,* and others. In addition to these modules there is a predefined permanent module, called *head,* that serves as a tie-in between the 4000 and the user program.

Menupages and The head Module

Technically, a userobject is a pointer to the information that describes the look and manner of operation of a parameter. A menu *behaves* as a list of parameters but actually it is a list of pointers to the userobject information for each of the parameters in the menu. There are two special modules whose purpose is to create menus. One is *menupage. Menupage* contains a list of userobjects, a menu string (a string is a list of characters) that serves as the title for the menu, and an 8-character string that serves as a soft key label. The other special module is the *head* module. The *head* module, as mentioned above, serves as the tie in to the 4000. *Head* contains the list of userobjects that will show up with soft keys. That means that any menupage that is listed in *head* will have its 8-character name show up as a soft key. In addition *head* could list the name of any module that has a userobject, each of which would show up under parameters with its own soft key. Most modules have a userobject.

Notes:
- There is always one and only one *head* module in each program.
- The *head* module and any other modules that have no audio, mod, or control inputs or outputs will show up in the *misc* display mode.

- Some modules are designed to be used for control and display of parameter values. These are called *interface* modules.
- Most modules that have control inputs have a userobject.

This is a diagram of the userobject/menupage structure of a program called *Gym Shower:*
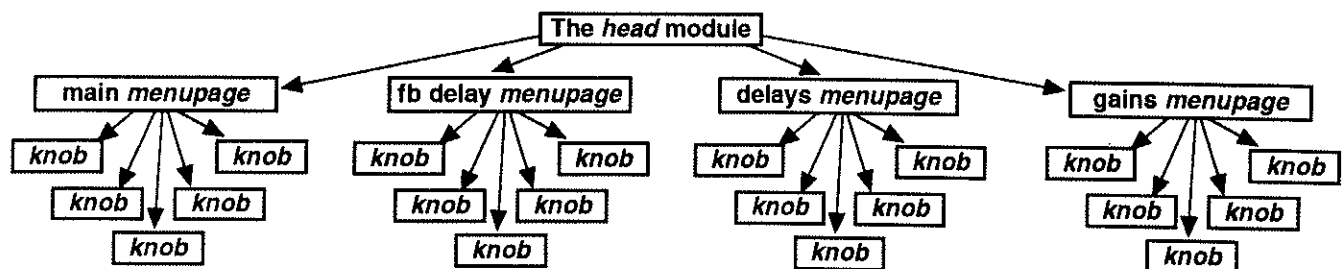
Here is what the screen looks like:

Notice the four soft keys, one for each menupage. Although the triangles ◄ indicate a 2nd page, the only other soft key is the [*remote*] soft key.

Modules, In Depth

The modules which make up programs in the 4000 have several attributes. So far, the concept of audio, mod, and control connections have been discussed, as well as the fact that some modules have userobjects and are automatically associated with menu pages and soft keys. This section goes into more detail on these items and offers a few new features of modules. In addition, some of the features of *<modify>* are discussed.

Resources

A resource is something that is needed for the operation of a 4000 program. There are several different kinds of resources. A program cannot run if it needs more of a resource than is available. The Patch editor is smart enough to know when a change is made to a program that will cause the program to be unable to run. If such a change is made, one of the pictured messages will be presented:

When the 4000 puts a message up to indicate that the program has grown too large, it will automatically reverse the last change.

```
               ERROR
insufficient memory
must un-insert

(Any Key to Continue)
```

```
               ERROR
Patch too big


(Any Key to Continue)
```
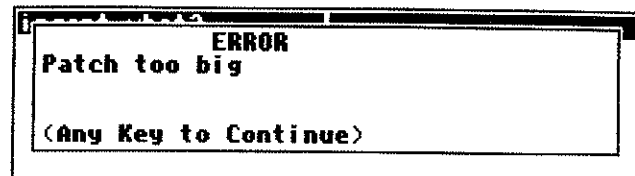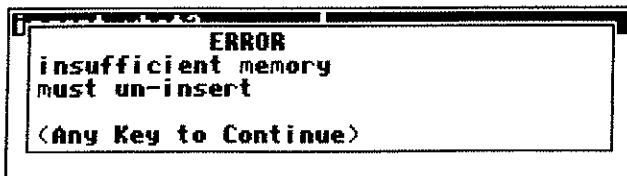
The Insides of a Module

There are several characteristics associated with any module. All modules have:
- *module type*
- *module abbreviation*
- *module name*

More complex modules have some or all of:
- *specifiers*
- *control inputs*
- *control outputs*
- *audio inputs* (and/or *mod inputs*)
- *audio outputs* (and/or *mod outputs*)
- *user objects*
- *included user objects*

Modules use memory and processing resources that can be divided into:.
- *audio memory*
- *signal processing*
- *user interface and control signal memory*
- *control processing*

Module Type

The *module type* is the kind of module. When a module is added to a program in the patch editor, using *<insert>*, the module is selected by module type. Once inserted, the module type cannot be changed. If a different module type is needed, the module must be deleted using *<delete>* and then the correct module type inserted using *<insert>*.

Appendix C is sorted by module type. When a module is mentioned in this document, it is referred to by module type. For example, a module whose module type is "samphold" would be referred to as a *samphold* module.

Module Abbreviation

The module abbreviation is the three-character identifier that is shown in the patch editor display, inside of the module icon. The module abbreviation for a *constant* module is **con** which is pictured as: [con]

The module abbreviation is fixed for a particular module type. All modules of a particular type will be shown with the same module abbreviation.

Module Name

The *module name* is a text string that is stored with a particular module. The name may be altered with the *<modify>* command. There is a default module name which is usually the same as the module type. Several modules, even of different module types, may be named the same by the user. Modules are referred to by module name during the *<connect>*, *<unplug>*, *<delete>* and *<modify>* operations. It is helpful to change the module name immediately after inserting a module so that modules of the same type can be told apart. Choose a name that reflects both the purpose of the module within the patch, and the module type. The name may be up to 18 characters in length.

Specifiers

A specifier is a parameter that controls a module's behavior. Specifiers are only adjustable by using *<modify>* on the particular module. A module may have several specifiers. The range of permitted values for a specifier is unchangeable. Specifiers have the following features:
- Specifiers are not directly visible in the patch editor display.
- Specifiers are extremely efficient in terms of resources. (A module with a specifier for a parameter is smaller than a module with a control input for the parameter.)
- Specifiers can change the amount of resources that a module needs.
- Specifiers can change the number of audio, mod, and control inputs and outputs, or even the number of specifiers.
- Specifiers can be numerical, multiple choice, or text.

Control Inputs

Control inputs are parameter inputs into a module. They are used to pass values into a module. A control input has two modes: *patched*, and *autoknob*. If a control input is set to *patched*, it is connected to another module's *control output* and that other module's control output sets the value of the control input. If a control input is set to *autoknob*, the value of the input is set either via its userobject, or via a setting in *<modify>*. A control input that is connected to a control output is automatically *patched*. If a control input is not connected to anything, it is set to *autoknob*. The range of values a control input can be set to may be determined via specifier, fixed internal programming, or even via another control input.
- The maximum value range for control signals is -32768 to +32767.
- The phrase which describes a control input in *<connect>* is the module name followed by a word or phrase that is the control input name and is specified in *Appendix C*, for example: *firstdelay-delayamt*. The module name may be changed in *<modify>* but the control input name cannot be changed.
- The amount of resources used by a module cannot change even as a control input value changes.
- The existence of a control input takes up processing and memory resources. In modules with a variable number of control inputs (like the *c_switch* module), reducing the number of inputs reduces the amount of resources used.
- Control input values may be changed by using *<modify>*, via a userobject, or from another connected module.
- Control inputs are visible from the patch editor display while in *ctl only* or *aud+ctrl* display modes, regardless of whether or not there is a signal connected.
- Control inputs can be numerical only (though autoknobs or userobjects can be text which translates to a number).
- Control inputs can be connected to up to one control output.

Control Outputs

Control outputs send numerical values to other modules, if connected.

- The phrase used to describe a control output is the module name followed by a word that is the control output name and is specified in *Appendix C,* for example: *scalemult-out.* The module name may be changed in *<modify>* but the control output name cannot be changed.
- Control outputs may be connected to any number of control inputs.
- Control outputs are visible from the patch editor display while in *ctrlonly* or *aud+ctrl* display modes, regardless of whether or not there is a signal connected.

Audio Inputs

Audio inputs are used to pass a single channel of high fidelity audio into a module. An audio input can be connected to one audio output or one Mod output. Unconnected audio inputs are actually attached to a special *null* signal provided by the 4000's program system. The *null* signal simulates a zero voltage noise-free audio source.

Audio Outputs

Audio outputs are used to pass a single channel of high fidelity audio out of a module. An audio output may be connected to any number of audio inputs or Mod inputs.

Mod Inputs

Mod inputs are used to pass high performance modulation signals into a module. A mod input may be connected to one audio output or one mod output. Unconnected mod inputs are actually attached to a special *null* signal provided by the 4000's program system. The *null* signal simulates a zero voltage noise-free audio source. Although mod signals are high performance modulation signals, they are not very good audio signals. An audio signal passed through a mod in/mod out module will lose fidelity. Mod signals have no numerical value associated with them. They are considered to be linear with a range of -1 to +1 or full negative to full positive.

Mod Outputs

Mod outputs are used to pass high performance modulation signals from a module. A mod output may be connected to any number of audio inputs or mod inputs.

Included Userobjects

Several modules (*gang, head,* and *menupage*) allow for included userobjects. This means that these modules can include other modules' userobjects. For instance, a *menupage* module may be used to create a PARAMETER screen menu by including the userobjects of other modules. This is discussed and demonstrated in *Chapter 5.*

Userobjects

Many modules have userobjects. This means that a *menupage* or the *head* module may point to the module's userobject. Some modules have multiple userobjects. The existence or use of a userobject does not affect system resources or memory. This means that menu pages can be created (by pointing to a module's userobject from the *head* module) without using much in the way of resources or program memory. Although a program may be made more elegant by making custom menu pages with *knobs, faders* etc., using the built-in userobjects and autoknobs is more efficient.

Audio memory

Modules which store audio for brief periods of time use audio memory. The total of this memory is limited to about 10.5 seconds of single-channel high fidelity audio storage. Modules that use audio memory include delay, filter, pitch shift, and reverb modules. In some modules there are specifiers that increase or decrease the amount of audio memory used by varying the number of audio channels or sometimes by specifying the amount of delay explicitly.

Signal processing

Modules which perform operations on audio use signal processing. The amount of processing done is only changed by adjustments to specifiers in the module (using *<modify>*). This is important as the amount of signal processing that can be done, in any given period is finite. Modules that perform complex effects on audio use more processing than those that perform simple effects. For example, *reverb_a* uses more processing power than *delay*, even though *delay* might use more audio memory. If a module that is inserted into a program causes the amount of signal processing required to exceed the amount available, the module will be uninserted.

User interface and control signal memory

Interface memory includes memory used to store text, adjustable range limits, default values, control inputs, control outputs, and any data used by control modules (those whose names begin with c_). Modules that use text fields use a large amount of this kind of memory. For instance, it is possible to use up all of the user interface memory with just two *textblock* modules (See *Appendix C* for a look at *textblock*).

Control processing

Control processing is a resource which cannot be exhausted, but can be strained. The 4000 will repetitively process everything which comes under the control process category as often as possible. Control operations will get slower as more operations are required. For instance, if a single menu page has eight values displayed which are all changing rapidly, the display may appear to update slowly.

Modify

The *<modify>* command gives Patch editor users the ability to make changes directly to the internals of modules. This is necessary in order to create complex, highly customized programs. *<modify>* works on one module at a time and is needed in order to change the following:

- module name
- specifiers
- included userobjects
- control inputs that are not patched and that are not controlled via their userobject

Modifying a *delay* module

To use *<modify>* from the Patch editor display, simply select the desired module using the display mode select soft key and using the left and right cursor control keys, then press the *<modify>* button.

```
Patch Editor      firstdel          Patch Editor      firstdel
                                     (select)firstdel        (DELAY)
IN   dly  dly  OUT                   ▶□ name:firstdel
                                     max delay:660 ms
                                     in:demoHED-left
◄ insert  connect  modify  aud only►   done
```
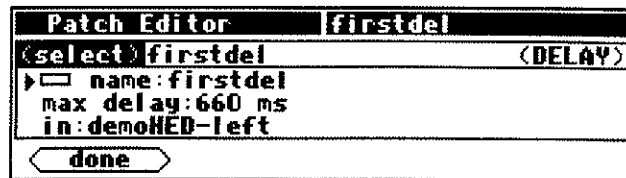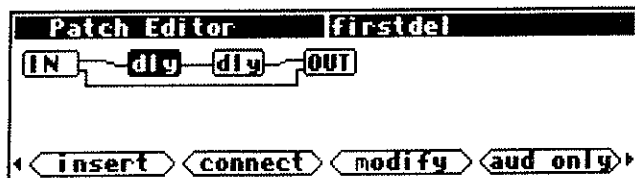
On entry to *<modify>* the display shows the current knob mode (*select* or *adjust*), the name of the module, the module type, and the first three lines of module information. The *<modify>* display is a scrolling menu, much like the PROGRAM menu. To scroll through the data for the module, rotate the knob. To change any of the data for the module, press the right cursor button. To make a change in the currently selected line of data, press the SELECT button.

Below is a composite of the information for the first *delay* module in the *Patch Instruct #1* program.

```
                                 Patch Editor      firstdel
                                 (select)firstdel              (DELAY)
           Module name→    □ name:firstdel              composite
             Specifier→    max delay:660 ms          ◄ illustration of
           Audio input→    in:demoHED-left              <modify> on a delay
Mode of delayamt control input→  delayamt*:patched       module
Output connected to delayamt→    delayamt:delayknob-out
         control input       done
```
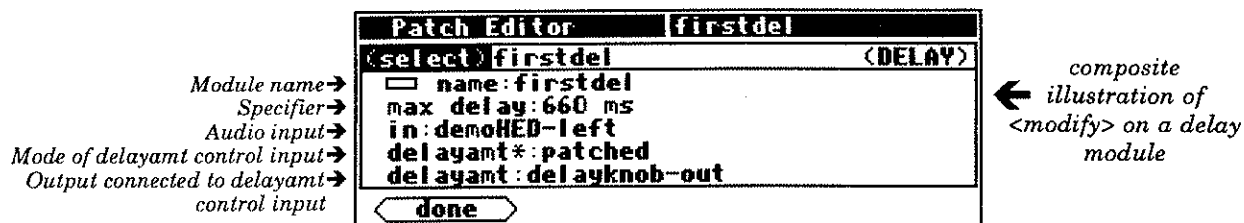
The above example includes several details that are familiar and a couple that are not. The following is a breakdown of each line of the scrollable area in the above *<modify>* screen.

Module name

This is the current name of the selected module. The name can be changed by selecting this line and pressing SELECT. After the name is changed, press SE-LECT to save changes. The 4000 will display a mes-

```
Patch Editor      firstdel
(adjust)firstdel              (DELAY)
▶ E firstdel
  max delay:660 ms
  in:demoHED-left
  done
```

sage indicating that "Modifying" and then "Loading new patch" is taking place. If *<done>* is pressed while the name is being edited, the name change will be forgotten and the machine will return to the basic Patch editor display.
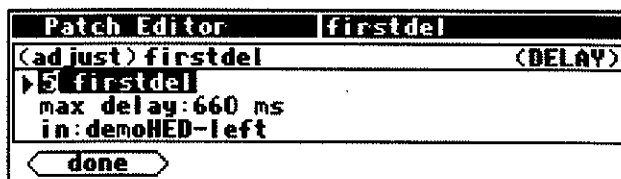
Specifier

This example (the *delay* module) has only one speci-fier. Some modules have many specifiers. To change the specifier, choose it and press the SELECT button.

```
Patch Editor      firstdel
(              (    ))
 max delay:604 ms
▶ Press SELECT or ENT to accept.
  Press any other key to cancel.
  done
```

This will bring up a menu. Change the value with the keypad or the knob. Pressing *<done>* (or any other key) will return to the *<modify>* menu without changing the value of the specifier. Press SELECT or ENT to save. If SELECT is chosen, the 4000 will display a message indicating that "Modifying" and then "Load-ing new patch" is taking place. If the change in specifiers makes the program take up too much of any re-source, the 4000 will display the "Patch too big" error message and will reverse the change.
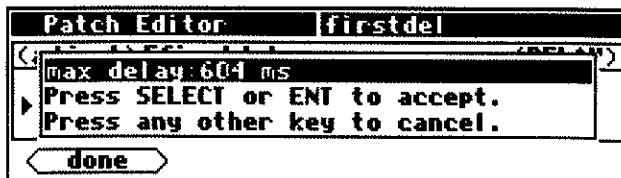
Audio input

The *delay* module has one audio input. In this program the first *delay* module is sourced from the *left* output of the **IN** module. Since the **IN** module is actually part of the *head* module and since the *head* module is named *demoHED*, the input is shown as being sourced from *demoHED-left*. *Which* module sources the audio signal to the *firstdel's* input is changeable with *<modify>* but normally it is changed by using the *<connect>* soft key from the basic Patch display.

Mode of 'delayamt' control input

Every control input has two possible modes, *autoknob* and *patched*. If *patched* is selected (as in the example) the next line of display will show the module and output connected to this input. If *autoknob* is chosen the next line of display will show the *autoknob menu statement* and the current value of the control input.

Output connected to 'delayamt' control input

Since the mode of the *delayamt* control input is set to patched, the next line will show the module and output connected to this input. By selecting this line and pressing SELECT the chosen module and output may be changed. The standard method of repatching control inputs is to use the *<connect>* soft key from the basic Patch display.

Autoknob

If this particular module's *delayamt* input is set to *autoknob,* the control input's value is adjustable. The prompt offered (in this case "firstdel") is the same prompt that would be offered if this module's userob-

```
┌─────────────────────────────────────────┐
│ Patch Editor       firstdel              │
├─────────────────────────────────────────┤
│ (adjust) firstdel                 (DELAY)│
│   in:demoHED-left                        │
│   delayamt*:autoknob                     │
│ ▶ firstdel:108.61 ms                     │
│   ⟨  done  ⟩                             │
└─────────────────────────────────────────┘
```

ject was displayed on a menu under PARAMETERS. The prompt, also called a *menu statement*, is, in this case, the same as the module name. What text is displayed is determined by the program that drives the particular module type (i.e. *delay* module) and may be different for other module types.

```
┌─────────────────────────────────────────┐
│ Patch Editor       c_switch              │
├─────────────────────────────────────────┤
│ (adjust) c_switch              (C_SWITCH)│
│ ▶ ■  name:c_switch                       │
│   number inputs:1                        │
│   select*:autoknob                       │
│   select:0                               │
│   in1*:autoknob                          │
│   input1:0.000                           │
│   ⟨  done  ⟩                             │
└─────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│ Patch Editor       c_switch              │
├─────────────────────────────────────────┤
│ (select) c_switch              (C_SWITCH)│
│ ▶ □  name:c_switch                       │
│   number inputs:4                        │
│   select*:autoknob                       │
│   select:3                               │
│   in1*:patched                           │
│   in1:extctl1-out                        │
│   in2*:patched                           │
│   in2:percentknob-out                    │
│   in3*:autoknob                          │
│   input3:-8.000                          │
│   in4*:autoknob                          │
│   input4:55.800                          │
│   ⟨  done  ⟩                             │
└─────────────────────────────────────────┘
```
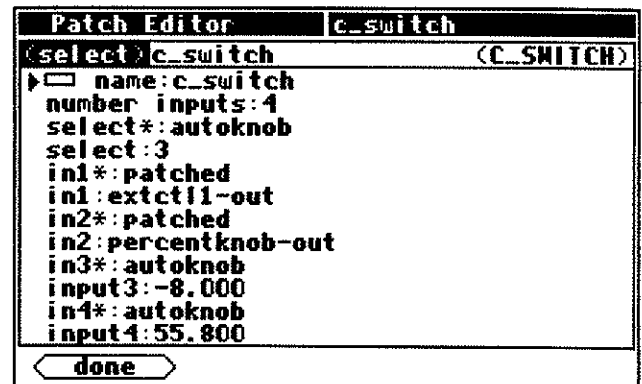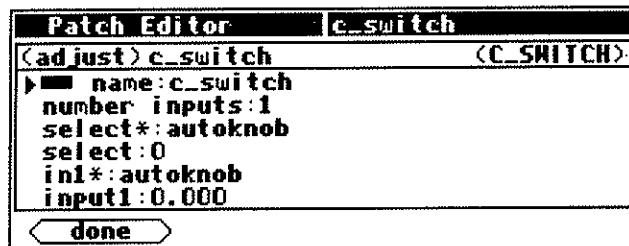
Modifying Complex Modules

Some modules have specifiers that change the *number* of specifiers or the number of some other input or output. Consider these two composite screen images:

The major difference between these two examples of the *c_switch* module is that the module on the right has its *number inputs:* specifier set to 4 where the one on the left is set to 1. Since the *c_switch* module will always have its *number inputs:* specifier set to 1 when it is first inserted, the *<modify>* command must be used in order to enable more inputs. Note that since the number of control inputs in the *c_switch* module has changed the Patch display will show a different icon for the module:

1 input switch: ⁻⌊swt⌋⁻   4 input switch: ⫢swt⌋

T. P. I. L. B.

Page 58   Chapter 4 - Patch Editor Basics   4000 Series Ultra-Harmonizer® v2.0
©Eventide Inc. 1992-1995
doc release 7

Chapter 5: Patch Editor - Advanced

The Patch editor automatically creates menus for most modules when those modules are inserted. This will allow a user to create most desired effects programs. The parameters will automatically be grouped by module and soft keys will appear, one per module. A program created this way will be fully functional and have all of the audio characteristics of a factory program. Audio, however, is where the similarities end. A program created using automatic menus will not look as slick, nor be as easy to use, as a factory program. In addition, automatic menus are not compatible with remote control via the [*remote*] menu page. Factory programs are created by hand-placing *knobs* in *menupages*, and *menupages* in the *head* module. This chapter details how this is done.

Readers of this chapter should have read *Chapters 2, 3 and 4* and should have familiarity with *Appendix C*.

Contents

Viewing Menupages

A *menupage* module has a single *userobject* and any number of *included userobjects.* Normally a *menupage* is included into the *head* module. If so, the *menupage* shows up as one or more pages of parameters, a title line, and a soft key, under the PARAMETER area. The information for the title line and soft key, and the list of included userobjects which make up the parameters, are available by using *<modify>* on the module. For example, load the program *Patch Instruct (bank 2, program 30).*

The page shown above is visible under the PARAMETERS area. It is created with a *menupage* module, a *knob* module, a *monitor* module, and a *textblock* module.

Pressing PATCH and then the *<aud only>* soft key will cause this display to be shown:

From this display the *knob* module and *monitor* module are visible. Both are visible in this display mode because they have one or more control inputs or outputs. The *menupage* module and *textblock* module have neither, so they will only be visible under the *<misc>* display mode. Press the *<aud+ctrl>* soft key twice, slowly.

The three modules, *head, menupage,* and *textblock,* can now be seen. Pressing the left or right cursor keys will select one of these modules. Select the *menupage* module and then press *<modify>*.

From this view the description "delay control" and 8-char name "delayctl" are shown. Note that these equate to the title and soft key when the menu page is viewed (see image at the top of this page).

This is a composite of the *<modify>* data that would be seen by rotating the knob:

The module names "delayknob", "delaymon", and "infotext" are for the *knob, monitor,* and *textblock* module. Those names were set by the person who wrote the *Patch Instruct* program, as was the name for the *menupage* module, i.e. "menu1", the description and 8-char names.

The obj# parameters are included userobjects. Each refers to the userobject of the given module.

As an exercise, use the knob and right cursor key to select obj2. Press SELECT. The screen should look like this:

Rotate the knob left and right though the choice of available userobjects. This is the list of choices you will have: *infotext-obj, delaymon-obj, scalemult-obj, delayknob-obj, menu1-obj,* and *demoHED-nullobj. infotext-obj, delaymon-obj* and *delayknob-obj* we already know about. *menu1-obj* is the userobject for this menupage. *scalemult-obj* is the userobject for the *c_multiply* module and *demoHED-nullobj* is the default *null* userobject provided by the 4000.

Theory

PARAMETER menus are created by the 4000 when a program is loaded, from information stored in the program. The information is organized via a particular kind of patch module called the *menupage* module. The menupage module lists included userobjects which are interpreted to create the PARAMETER menus.

The *head* module has a list of included userobjects that create the list of soft keys. Usually the *head* module's included userobjects consist exclusively of *menupage* userobjects.

Interface Modules

Control inputs may be used to send a parameter value into a module. The parameter value is generated by another module, perhaps a *knob* module. One common use for this capability is the creation of custom parameter menus (screens) to adjust the modules in a program. The custom parameter controls are special purpose modules from the *interface* module group. This group includes the common text/numerical parameter adjuster that is generated by the *knob* module, as well as several graphical parameter adjusters (*hfader, vfader, rfader*).

Parameter Adjusters

Most parameter adjuster modules have a single control output and a single userobject. If pointed to by a *menupage,* a parameter adjuster's userobject will show up on the menu page and will be selectable using the left and right cursor keys. Having selected the adjuster, rotating the front panel knob will change the value of the adjuster. This will be reflected in a textual or graphical display change. The *control output* value associated with the display change is controlled by specifiers configurable using *<modify>*. This following is a composite picture of the *<modify>* screen for a *knob* module. This example is what would be seen if the *knob* is just inserted into a patch without any changes.


```
Patch Instruct      delay control
Each delay:100 mS   Each Delay sets the
Delay Amount:0.20 S value for a single
                    delay module.
                               <more...>
 delayctl   *remote*
```

The parameter "Each delay" is an example of what the knob module's userobject creates

- The module *name* specifier is set to "knob1".
- The *menu statement* specifier is set to "knob:%f". This means that on a menu where this *knob's* menu statement shows up, the text "knob 0.000000" will show, where 0.00000 actually reflects the value that the *knob* is set to. The "%f" part is described in some detail later.


```
Patch Editor      knob1
(select)knob1                    (KNOB)
▶☐  name:knob1
 ☐  menu statement:knob:%f
 ☐  8 char name:knob
 min value:0.0000
 max value:0.0000
 resolution:0.0000
 knob:0.000000
< done >
```

- The *8 char name* is "knob". The 8-char name is what would show up as a soft key if this module were pointed to by the *head* module. (Discussed in more detail later)
- The *min value* specifier sets the minimum value the *knob* can be set to.
- The *max value* specifier sets the maximum value the *knob* can be set to.
- The *resolution* specifier sets the jump the *knob* value will make when the front panel knob is moved. In other words, when the user rotates the front panel knob this is how far the knob value changes per incremental movement.
- The last line in the *<modify>* display shows "knob:0.000000". This is called the *example line*. This is an example of what the *knob* menu statement actually looks like when viewed in the PARAMETER menu. If the example line is selected, the *knob* value can be set and the *knob* will behave the same as it does when used in the PARAMETER menu.

Because the default values were left in place for the above example there are some entries that are less meaningful than they might be. Here is a composite display example of the *knob* from the *Patch Instruct* program: Notice how the *menu statement* is different from the above example and how those differences are shown in the example line.


```
Patch Editor      delayknob
(select)delayknob                (KNOB)
▶☐  name:delayknob
 ☐  menu statement:Each delay:%2.0f
 ☐  8 char name:delay
 min value:0.0000
 max value:660.0000
 resolution:1.0000
 Each delay:100 mS
< done >
```

This is a composite picture of the <modify> menu when modifying the knob that creates the "Each delay" parameter.

Menu Statement

The *menu statement* is a crucial specifier used in the basic *knob* module that is the most common parameter controller.

The menu statement is the line that will appear in the PARAMETERS menu. The statement may contain up to 20 characters and the displayed statement will only be 20 characters long. Anything over 20 characters will not be displayed.

The first job of the statement is to indicate to the user what the adjustment is for. The statement should also contain the format for the number that will be displayed. It indicates the number of spaces that the number will take up and how many digits will be after the decimal point. The program developer must specify this format based on the range the knob will cover and what the step rate will be.

The syntax of the format is:

%Y.Xf

where **Y** is the number of spaces reserved for display and **X** is the maximum number of digits after the decimal point. The *percent, period,* and **f** must be used as shown. If the *period* is removed the 4000 will display six digits after the decimal point. Here are example formats and results. s represents a space that will be inserted.

format	for 1.2345	for 23456.0013	for .1234	for 1	for -55.234
%1.2f	1.23	23456.00	0.12	1.00	-55.23
%4.2f	1.23	23456.00	0.12	1.00	-55.23
%5.2f	s1.23	23456.00	s0.12	s1.00	-55.23
%5.0f	ssss1	23456	sssss0	ssss1	-55.23
%7.1f	ssss1.2	23456.0	ssss0.1	ssss1.0	s-55.23
%9.4f	sss1.2345	23456.2345	sss0.1234	sss1.0000	s-55.2300
%2f	1.234497	23456.001300	0.123398	1.000000	-55.234000

Refer to *Page 14* on *entering text* for a list of the characters included in the text insert menus. The formats shown here can be created using the % character, numbers, a small f, and a period.

As an experiment, load *Patch Instruct*, go to PATCH, change the screen mode to *aud+ctrl*, select

the **knb** module, then use *<modify>* to change the menu statement to "Each delay:%2.1f".

Now go to PARAMETER and see what difference that made to the display. Note the decimal value in

the "Each delay" parameter. It changed from 660 to 660.0.

Min and Max Values

The upper and lower limit of an adjustable numeric parameter are set as specifiers in the module that controls that parameter. In the example program *Patch Instruct*, the knob has a range of 0 to 660. Looking at the *<modify>* screen composite at the right, these limits can be seen as min value and max value. In the *<modify>* screen, these two values can be adjusted (us-

ing the keypad or front panel knob). As an experiment, load *Patch Instruct,* go to PATCH, change the screen mode to *aud+ctrl*, select the **knb** module, then use *<modify>* to change the min value and max value to different values. Now go to the PARAMETER screen and test the parameter.

Max value and *min value* specifiers exist in most of the modules in the *interface* group.

Resolution

The *resolution* specifier controls what minimum change in a parameter can be achieved by rolling the front panel knob or by using the up and down buttons on the numeric keypad. This also controls the speed of change as the front panel knob is moved. If the selected parameter displays 45.30 and the resolution is 1.0000, then slow motion clockwise on the front panel knob will change the display to 46.30 (unless the max value is less than 46.30!). As an experiment, use *<modify>* the same way as in the *Min/Max* section and adjust the *resolution* specifier of the *knob* module.

Simple Parameter Adjusters

There are seven simple parameter adjusters. They have several things in common:
*   All have a single control output and no other signal inputs or outputs.
*   All have a userobject that can be pointed to by a *menupage, gang,* or *head* module.
*   All have a menu statement and an 8-char name.

Each has a special purpose. *rfader, hfader,* and *vfader* use a graphical display instead of numerics. *textknob* presents a list of text selections where one text statement is on the screen at a time and the user rolls between selections with the front panel knob. *tapknob* looks like a *knob* on the screen but acts like a tapered control. The shape of the taper is adjustable as is the number of steps between the minimum and maximum value. *percentknob* looks like a *knob* on the screen but the value of the number displayed is 100 times as large as the number that *percentknob* presents on its control output.

These modules are used by listing the module's user object in a *menupage* module (using *<modify>*) and also listing the *menupage* in the *head* module (using *<modify>*). The PARAMETER menus will then show the text or graphic for the parameter adjuster module. The following pages describe the parameter adjusters.

Preview of control signal monitors

Control signal monitors are described in detail on Page 67. A brief discussion of how they work is needed here in order to show how simple parameter adjusters work.

In addition to modules that have single control outputs, used to introduce user-controlled parameters into a program as control signals, there are also modules whose purpose is to display the value of a control signal. These modules are called "control signal monitors" and are part of the *interface* group.

The *monitor* module, a typical control signal monitor, has a single control input and a userobject which, when used, will cause a numeric text display on a PARAMETER menu. Since the *monitor* module's value cannot be changed directly with the front panel knob, it also cannot be selected using cursor controls. The *Patch Instruct* program has a single *monitor* module used to display the total delay.

> *Important note on the use of control signal monitors: A newly inserted module will have minimum and maximum values which are unusable. <modify> must be used to set these specifiers before the control signal monitor may be used.*

hfader module

This module creates a horizontal graphic on the PA-RAMETER screen. The area taken up by the graphic is one half of the width of the screen and one text line long. Eight of these could fit on a single menu page. Six characters of the *8 char name* are presented on the display to the left of the graphic. The *menu statement* is not used. *Refer to Appendix C for complete information.*

```
┌────────────────────────────────────────┐
│ Patch Editor        dollup fader        │
├────────────────────────────────────────┤
│ <select>dollup fader            <HFADER>│
│ ▶☐  name:dollup fader                   │
│   ☐  menu statement:Dollups:%2f         │
│   ☐  8 char name:dollups                │
│   min value:-5.0000                     │
│   max value:20.0000                     │
│   resolution:1.0000                     │
│   dollup┠─[]──────────────────────────┤ │
│  ◁  done  ▷                             │
└────────────────────────────────────────┘
```

```
┌────────────────────────────────────────┐
│ Patch Editor        dollup fader        │
├────────────────────────────────────────┤
│ [IN]┤ fdr─mon {OUT}                     │
│                                         │
│                                         │
│ ◄⟨ insert ⟩⟨ connect ⟩⟨ modify ⟩⟨aud+ctrl⟩► │
└────────────────────────────────────────┘
```

```
┌────────────────────────────────────────┐
│ fader               Test Display        │
├────────────────────────────────────────┤
│ dollup─[]──────────────────────┤        │
│ TEST:-2.00                              │
│                                         │
│                                         │
│   ■ test ■  [*remote*]                  │
└────────────────────────────────────────┘
```
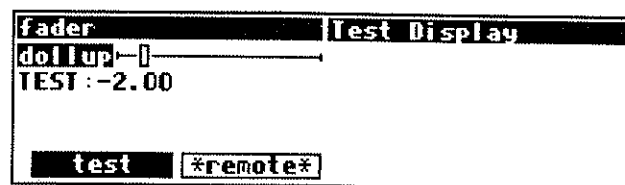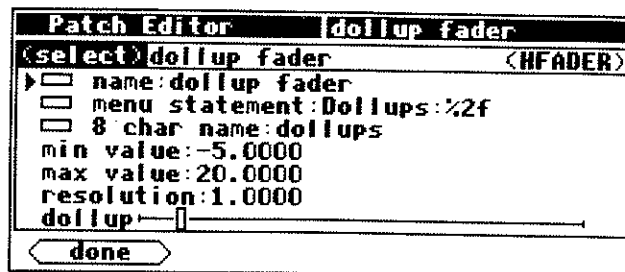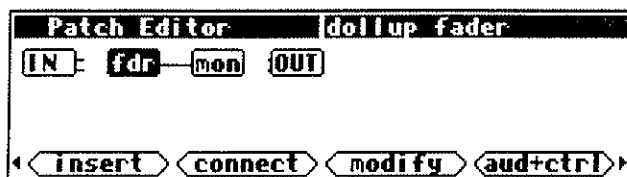
knob module

This is the most popular module (in factory programs). It generates a 20-character text string, including a very versatile numerical display (as discussed on *Page 62*) from the *menu statement*. Eight of these could fit on a single menu page. The *8 char name* is used only if this module is listed from the *head* module. Normally it is listed from a *menupage* module. *Refer to Appendix C for complete information.*

```
┌────────────────────────────────────────┐
│ Patch Editor        Basicknob           │
├────────────────────────────────────────┤
│ <select>Basicknob                <KNOB> │
│ ▶☐  name:Basicknob                      │
│   ☐  menu statement:Basic:%3.2f%        │
│   ☐  8 char name:basic                  │
│   min value:-999.0000                   │
│   max value:999.0000                    │
│   resolution:0.1000                     │
│   Basic:0.00                            │
│  ◁  done  ▷                             │
└────────────────────────────────────────┘
```

```
┌────────────────────────────────────────┐
│ Patch Editor        Basicknob           │
├────────────────────────────────────────┤
│ [IN]┤ knb─mon {OUT}                     │
│                                         │
│                                         │
│ ◄⟨ insert ⟩⟨ connect ⟩⟨ modify ⟩⟨aud+ctrl⟩► │
└────────────────────────────────────────┘
```

```
┌────────────────────────────────────────┐
│ fader               Test Display        │
├────────────────────────────────────────┤
│ Basic:0.00                              │
│ TEST:0.00                               │
│                                         │
│                                         │
│   ■ test ■  [*remote*]                  │
└────────────────────────────────────────┘
```
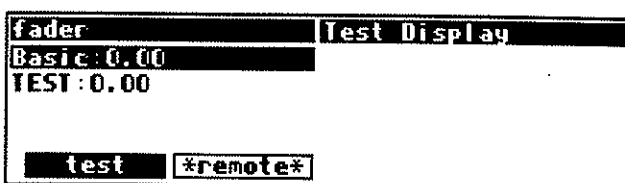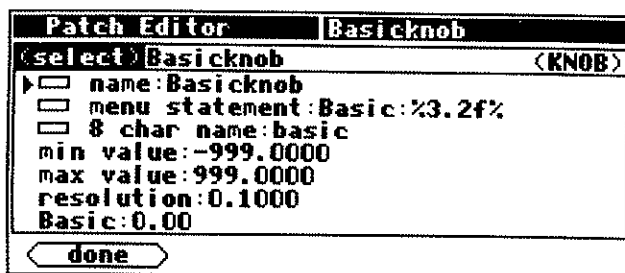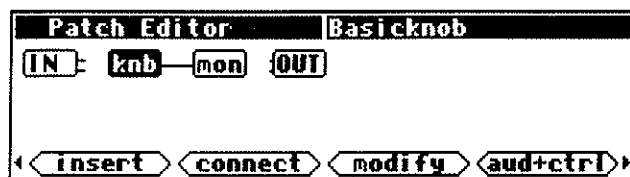
percentknob module

This module is very similar to the *knob* module. The only difference is that the control output value is divided by 100. *Refer to Appendix C for complete information.*

```
┌────────────────────────────────────────┐
│ Patch Editor        Kick knob           │
├────────────────────────────────────────┤
│ <select>Kick knob          <PERCENTKNOB>│
│ ▶☐  name:Kick knob                      │
│   ☐  menu statement:Kickstr:%2.0f %%    │
│   ☐  8 char name:Kpercen                │
│   min value:0.0000                      │
│   max value:100.0000                    │
│   resolution:1.0000                     │
│   Kickstr:46 %                          │
│  ◁  done  ▷                             │
└────────────────────────────────────────┘
```

```
┌────────────────────────────────────────┐
│ Patch Editor        Kick knob           │
├────────────────────────────────────────┤
│ [IN]┤ pkb─mon {OUT}                     │
│                                         │
│                                         │
│ ◄⟨ insert ⟩⟨ connect ⟩⟨ modify ⟩⟨aud+ctrl⟩► │
└────────────────────────────────────────┘
```

```
┌────────────────────────────────────────┐
│ fader               Test Display        │
├────────────────────────────────────────┤
│ Kickstr:46 %                            │
│ TEST:0.46                               │
│                                         │
│                                         │
│   ■ test ■  [*remote*]                  │
└────────────────────────────────────────┘
```
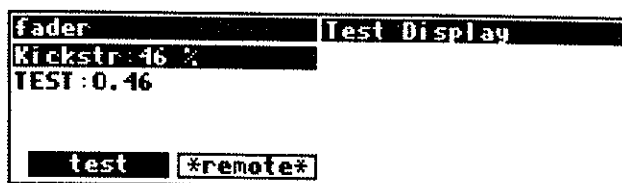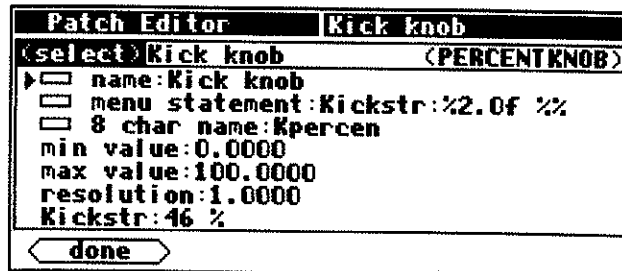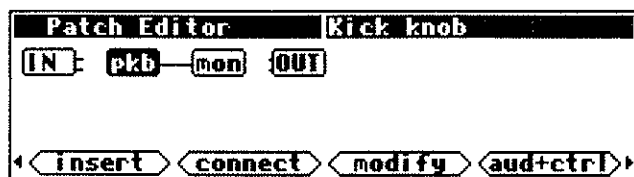
rfader module

This module creates a graphic on the PARAMETER screen. The graphic, including title, takes up four lines of the screen and one quarter of the width of the screen. Up to four of these modules could fit on one screen. Nine characters of the *menu statement* are displayed above the graphic as a title. *Refer to Appendix C for complete information.*

```
 Patch Editor        Highfader
(select)Highfader                  (RFADER)
▶□  name:Highfader
   □  menu statement:high freq
   □  8 char name:Tweet
 min value:0.0000
 max value:1.0000
 resolution:0.0010
 high freq
 <   done   >
```

```
 Patch Editor        Highfader
IN |- fdr—mon  OUT

◄< insert >< connect >< modify ><aud+ctrl>►
```

```
fader                 Test Display
high freq TEST:0.65


    test     *remote*
```
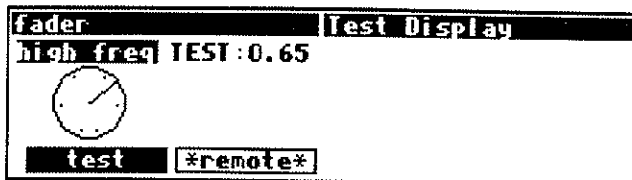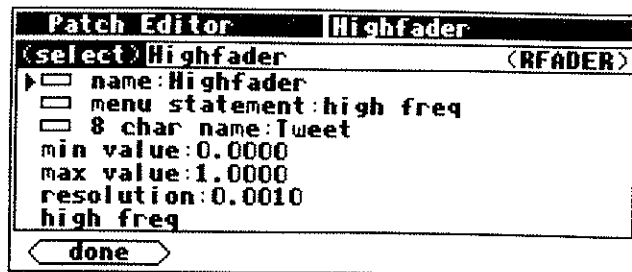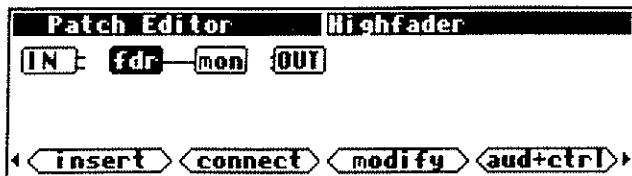
tapknob module

This module is a modification of the standard *knob* module. Just like the *knob* module the *menu statement* is used to create the 20-character text display. However, instead of using the %f format the %s format is used. The *tapknob* creates an 8-character numeric result that is inserted in place of the %s.

The *tapknob* module creates a tapered control that can have a selectable number of steps (instead of dialling a resolution) and a selectable taper waveform. *Refer to Appendix C for complete information.*

```
 Patch Editor        tapknob
(select)Wierdctl                  (TAPKNOB)
▶□  name:Wierdctl
   □  menu statement (use %s):wierd:%s
   □  8 char name:tapknob
 min value:0.0000
 max value:60.0000
 steps:100
 taper:1
 wierd: 57.6002
 <   done   >
```

```
 Patch Editor        Wierdctl
IN |- knb—mon  OUT

◄< insert >< connect >< modify ><aud+ctrl>►
```

```
fader                 Test Display
wierd: 57.6002
TEST:57.60


    test    *remote*
```

textknob module

This module creates a multiple choice selection in a single line by half screen width area of a PARAMETER menu screen. The choices appear in place of the %s in the *menu statement*. The *8 char name* is only used if the module is placed on the *head* module.

The control output reflects which selection is made. If the 1st selection is made the output will equal 0. If the 3rd selection is made output value will equal 2. *Refer to Appendix C for complete information.*

```
 Patch Editor        textknob
(select)SELECTknob                (TEXTKNOB)
▶□  name:SELECTknob
   □  menu statement:Sel:%s
   □  8 char name:TK
 # of values:6
 Sel:tuba
   □  value1 name:trombone
   □  value2 name:tuba
   □  value3 name:violin
   □  value4 name:sax
   □  value5 name:piccolo
   □  value6 name:keyboard
 <   done   >
```

```
 Patch Editor        SELECTknob
IN |- tkb—mon  OUT

◄< insert >< connect >< modify ><aud+ctrl>►
```

```
fader                 Test Display
Sel:tuba
TEST:1.00


    test    *remote*
```
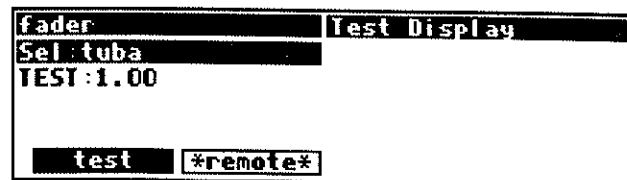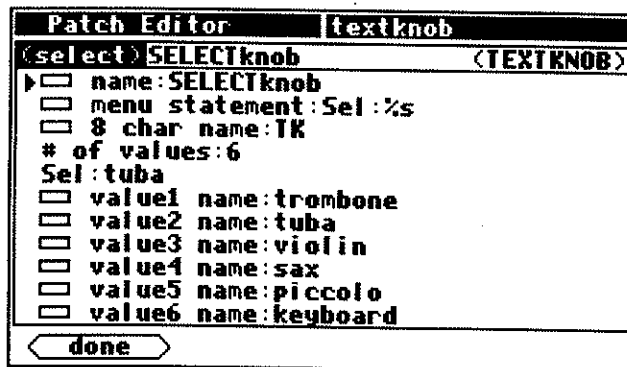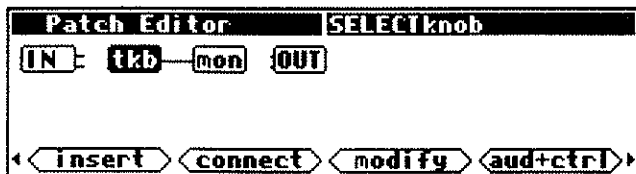
vfader module

This module creates a graphic on the PARAMETER screen. The graphic, including title, takes up four lines of the screen and one sixth of the width of the screen. Up to six of these modules could fit on one screen. Six characters of the *8 char name* are displayed in the graphic as a title. *Refer to Appendix C for complete information.*
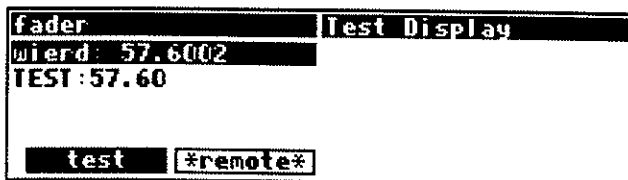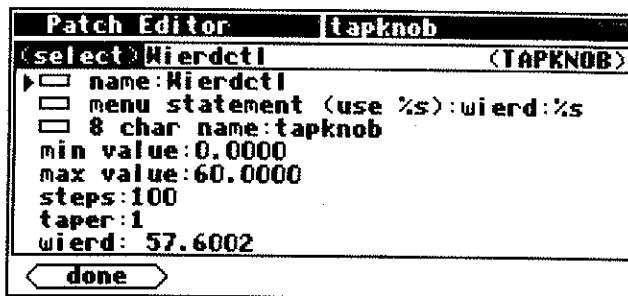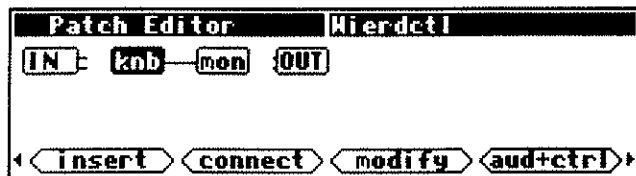
```
 Patch Editor      Relaxfader
(select)Relaxfader           (VFADER)
▶□  name:Relaxfader
  □  menu statement:Relax Time:%f
  □  8 char name:Relax
min value:0.0000
max value:1.0000
resolution:0.0010
high freq
  (   done   )
```

```
 Patch Editor      Relaxfader
[IN]: [fdr]—[mon] [OUT]


◄( insert )( connect )( modify )(aud+ctrl)►
```

```
fader                 Test Display
         TEST:5.00

[Relax]
       ↓
  [ test ] [*remote*]
```
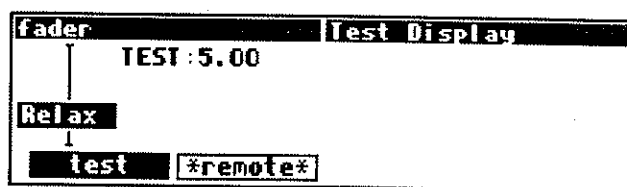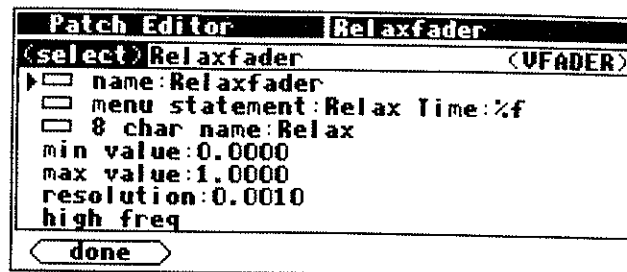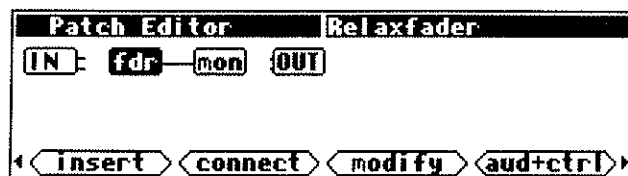
Control Signal Monitors

Just as parameter adjusters are used to generate control signals and are presented on the PARAMETER menus, control signal monitors display the value of control signals and may be presented on those menus.

Graphical Control Signal Monitors

There are five different monitor modules which display using a graphical or numerical value. Three of these, *hmonitor, meter,* and *vmonitor,* produce graphical displays. This screen has the three graphical monitors:

Each of the graphical control signal monitors has a control signal input and four specifiers: *minimum, maximum, name* and *tag.*

```
Empty Program     Test of monitors
      ┬    hmon  ▮▯▯▯▯▯▯▯    meter
      ┴                     ┌──────┐
[vmonit]                    │╲     │
[menupag] [*remote*]        │ ╲    │
                            └──────┘
```

- *minimum* sets the lowest value that may be indicated by the monitor.
- *maximum* sets the highest value that may be indicated by the monitor.
- For *vmonitor* and *hmon,* the *tag* specifier is used to generate the text for the monitor.
- For *meter* the *name* specifier is used to generate the text for the monitor.
- The text fields of the monitors may include %f format numeric displays.
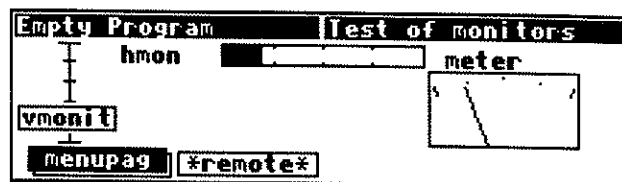
For all three graphical monitors, the graphic will indicate whether the control input's value falls above or below the range set by the minimum and maximum specifiers.

The *vmonitor* module creates a graphic that is one sixth of a screen width and four lines high. The *hmonitor* module creates a graphic that is one half of a screen width and one line high. The *meter* module creates a graphic that is one quarter of a screen width and four lines high.

To explore the capabilities of these graphics a program may be created that has a *knob,* a *vmonitor,* an *hmonitor,* and a *meter* module, plus a *menupage* module to tie it all together. The next section discusses in detail the use of *menupages* to create custom PARAMETER menus.

Textual Control Signal Monitors

Two of the monitor modules use text to display the control signal values. These modules are *monitor* and *tmonitor. Monitor* is the analog to the *knob* module, it displays the decimal value of its control input. The format for the display is set using the text and %f format described earlier. The *tmonitor* module is the analog to the textknob module. It uses the control input to determine which of several text strings will be shown. A control input value of 0 chooses the first text string, a value of 3 chooses the fourth text string.

Both the textual monitor modules create displays that are half of a screen width and one line long.

Menupages and Userobject Placement

The use of *menupage* modules to create menus is crucial to the creation of easy-to-use programs. This section discusses many of the fine points of menu creation and the care and feeding of userobjects. There are several important points regarding menupages:

- Null userobjects are invisible. They do not take space on a menu. Null userobjects are created by having the *head* module or a *menupage* include a *nullobj* (sometimes titled *adc-nullobj* or *head-nullobj*).

- Any userobject that is included in the *head* module creates a soft key (with the exceptions of those userobjects that are null). The order in which a userobject is listed in the *head* module determines what location the soft key will appear in the PARAMETER menu. The first *menupage* gets the first soft key. The fifth *menupage* gets the first soft key on the second page.

- The order in which a userobject (including *menupage*) is listed in a *menupage* determines where under a PARAMETER menu soft key the object appears. Objects are placed on a menu in upper left to lower right order, as listed in the *menupage* module. If an object is too large to appear on a menu, it is placed on a later menu page in a menu stack, thus creating a soft key stack.

- *menupage* modules may be listed in other *menupage* modules. A *menupage* object is the same as any other module's object, except that a *menupage* object is always big enough to warrant being placed on its own page or pages.

- Userobjects may be used multiple times. This means a single module's object can show up in several menus. This is true for a normal module's object and for a *menupage*'s object. *Note: If an object is shown more than once on a single menu page, the object might not be updated if its value changes.*

- When a module with a userobject from the *delay, detector, dynamic, external, filter, mixer, oscillator, pitchshift,* or *reverb* module groups is inserted using *<insert>*, the *head* module automatically includes the new module's userobject.

Menupage Placement

This section goes through a tutorial to show:

- The *head* module's list of included userobjects changes automatically when certain modules having userobjects are inserted.
- userobject placement in the *head* module affects soft key location in the PARAMETER menus.
- A *nullobj* in the *head* module or in a menupage module does not show in the PARAMETER menus but still acts as a place holder. Automatic userobject placement in the *head* module still places the new userobject after the last included userobject.

Start from empty

- Start from *Empty Program* from the *Utilities* Bank.
- Go to the Patch Editor
- Select the *misc* display mode by pressing the *<aud only>* button several times. Select the module marked **hed** with the left/right cursor controls. Press *<modify>*. This is a composite image of what *<modify>* can see in the *head* module at this time:

```
Patch Editor          adc
<select>adc                        <HEAD>
▶□ name:adc
   leftin:adc-null
   rightin:adc-null
   □ description:Empty Program
   □ 8 char name:my prog
   # entries:0
<  done  >
```

Automatically add userobject to **head**

- Press *<done>*. Press the *<misc>* button twice to select the *aud+ctrl* display mode.

- Press *<insert>* and then the left cursor button. Roll the front panel knob until the *Delay* group is shown. Press the right cursor button and SELECT the *allpass* module.

- Press PARAMETER to see that there is now a menu and soft key for allpass:

```
Empty Program         allpass parms
delay:1.00 ms
g:0.00


  allpass  *remote*
```

- Go back to the Patch editor and the *misc* display mode and use *<modify>* on the *head* module. This is a composite of what *<modify>* can see in the *head* module now:
  This shows that the *allpass-obj* userobject was automatically included in the *head* module.

```
Patch Editor        adc
(select)adc                    (HEAD)
▶□  name:adc
    leftin:adc-null
    rightin:adc-null
    □  description:Empty Program
    □  8 char name:my prog
    # entries:1
    obj1:allpass-obj
  <  done  >
```

Auto-create a new menu page

- Change the *# entries* parameter in the *head* module to 2, using *<modify>*.

- Change *obj2* to *allpass-obj* and then change *obj1* to *adc-nullobj*. This is what you should have now: At this time there are two userobjects included in the *head* module. One might guess there would be three soft keys including the [*remote*], but, one of the userobjects is null and therefore will not be visible.

```
Patch Editor        adc
(select)adc                    (HEAD)
▶□  name:adc
    leftin:adc-null
    rightin:adc-null
    □  description:Empty Program
    □  8 char name:my prog
    # entries:2
    obj1:adc-nullobj
    obj2:allpass-obj
  <  done  >
```

- Press PARAMETER and observe that there is still only two soft keys:

```
Empty Program       allpass parms
delay:1.00 ms
g:0.00



  allpass   *remote*
```

- Go back to the Patch editor and go into *<insert>*. *<insert>* an *easytaps* module.

- Press PARAMETER and observe that there is now a second soft key. This soft key is stacked because the *easytaps* userobject is more than one page.

```
Empty Program       allpass parms
delay:1.00 ms
g:0.00



  allpass   easytaps   *remote*
```

- Go back to the Patch editor and *<modify>* the *head* module. Note there are now three userobjects listed and that the new userobject was added after the existing two userobjects.

```
Patch Editor        adc
(select)adc                    (HEAD)
▶□  name:adc
    leftin:adc-null
    rightin:adc-null
    □  description:Empty Program
    □  8 char name:my prog
    # entries:3
    obj1:adc-nullobj
    obj2:allpass-obj
    obj3:easytaps-obj
  <  done  >
```

Adding a menupage module

This section demonstrates how an empty menupage shows up in the PARAMETER menus with a soft key.

- *<insert>* a *menupage* module (from the *Interface* group).

- *<modify>* the *head* module and change the *obj1:* specifier to *menupage-obj*.

- Press PARAMETER and observe that the *menupage* has created a new menu page and that the *allpass* and *easytaps* soft keys were bumped over when the *nullobj* was replaced.

```
Empty Program



  menupage   allpass   easytaps   *remote*
```
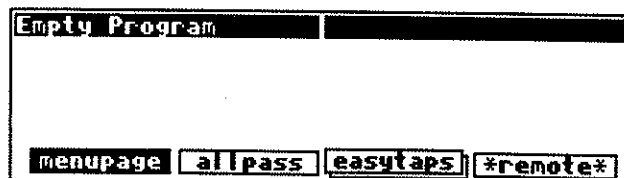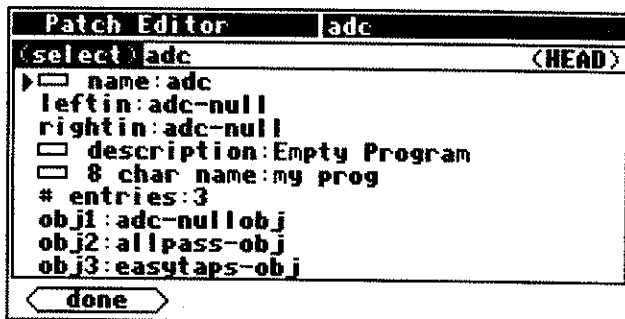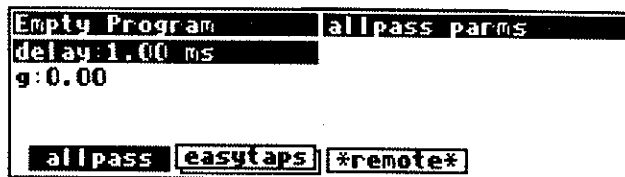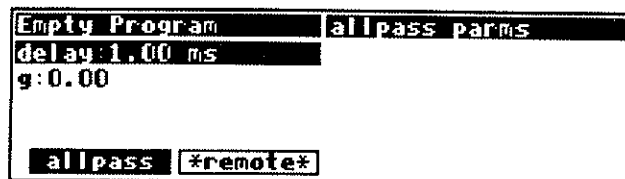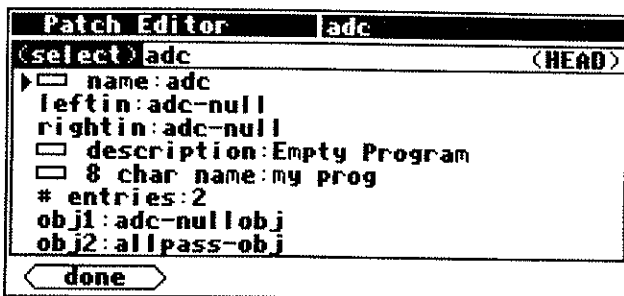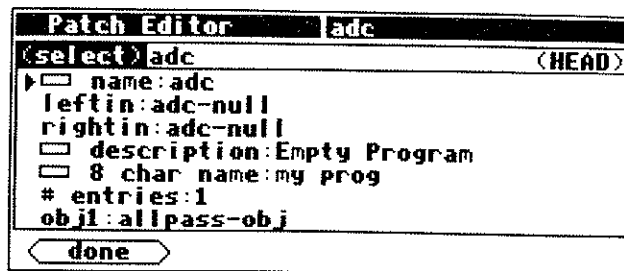
Stacked Menupages

This section goes through a tutorial to show:

- Userobjects are presented on a menu when listed in the menu's *menupage* module.
- Multiple listings of the same module-userobject create multiple images of the module's object.
  Note: The second image of a module, on the same menu page, may not be active.
- M*enupages* may be inserted into other menupages to create menu stacks.

Inserting multiple menupages

- Start from *Empty Program* from the *Utilities* Bank.

- Go to the Patch editor.

- Select the *misc* display mode by pressing the *<aud only>* button several times.

- Insert a *menupage* module from the *interface* group.

- Important step so we can tell the menupages apart: *<modify>* the *menupage* and change its modulename to "Amenupage". Do this by selecting the *name:* specifier, press SELECT, roll the knob right until the highlighted line says "Amenupage" and then press SELECT. Then press *<done>*. Note the module name is displayed in the upper right of the screen. It should say "Amenupage".

- Select the *aud+ctrl* display mode.

- Insert a *meter* module.

- Go back to the *misc* display mode and use *<modify>* on the *menupage* module. (use the left and right cursors to choose the *menupage* module)

- Set the *# entries* specifier to 1 and then set the *obj1* specifier to *meter-obj*. Make sure SELECT is used to save each change and *<done>* to exit from *<modify>*.

- Use *<modify>* on the *head* module. Change its *# entries* parameter to 1 and set *obj1* to "Amenupage-obj".

- Now press PARAMETER and observe the menu. Note that it has one *meter* object. Notice that the soft key is not stacked and that the menu's title is "menupage"

- Go back to the Patch editor, *misc* display mode and *<modify>* the *menupage* module.

- Set the *#entries* specifier to 2 and then set the *obj2* specifier to *meter-obj* (same as *obj1*).
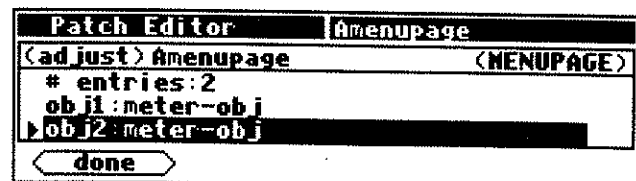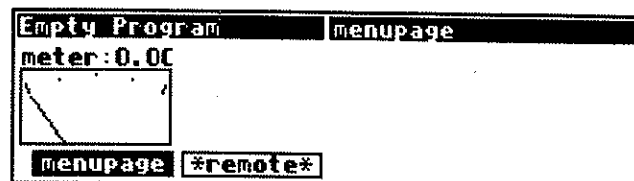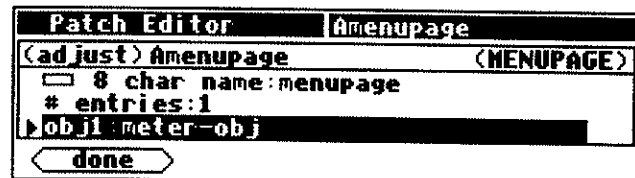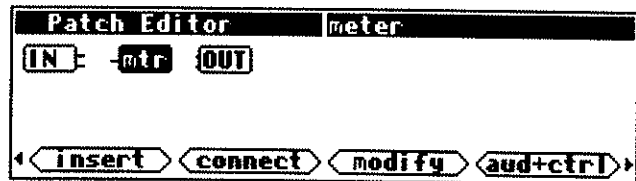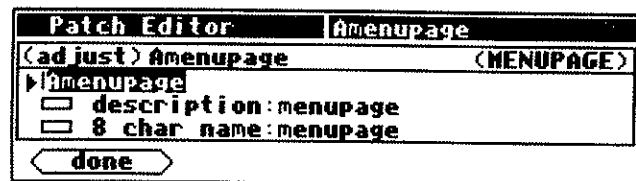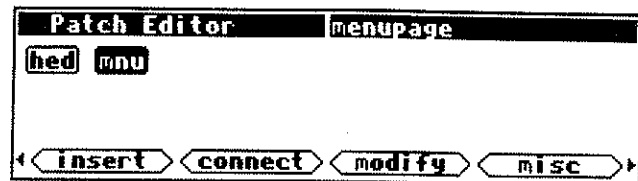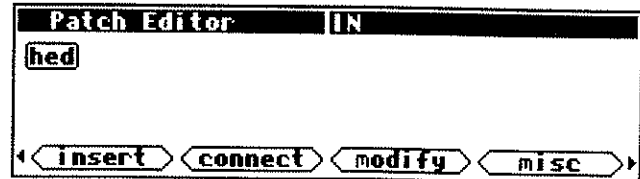
- Press PARAMETER and observe the menu. Note that it shows two *meter* objects. (This is in fact two pictures of the same *meter* module). Notice that the soft key is not stacked.

```
Empty Program         menupage
meter:0.0[meter:0.0[
\         /\         /
 \          \
menupage  *remote*
```

- Go back to the Patch editor, *misc* display mode and insert another *menupage* module. Edit this one's module name using <*modify*> and set it to "aaaamenupage". Do this as above but roll the knob to the left. Change the *description* specifier to "aaaa". This will make it easier to follow what is going on in a moment. After getting back to the <*modify*> menu, press <*done*> to exit. Note the module name in the upper right corner of the display.

```
Patch Editor          menupage
(adjust) aaaamenupage         (MENUPAGE)
  ▢ name:aaaamenupage
► ■ description:aaaa
  ▢ 8 char name:menupage
   done
```

```
Patch Editor          aaaamenupage
hed  mnu  mnu

◄ insert   connect   modify   misc ►
```
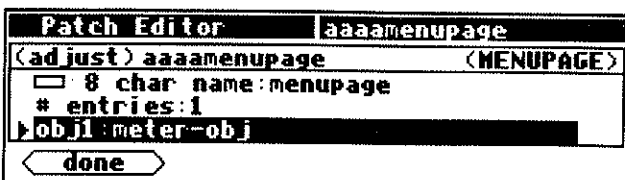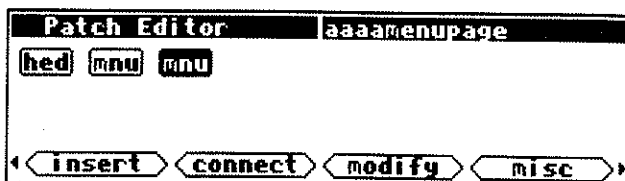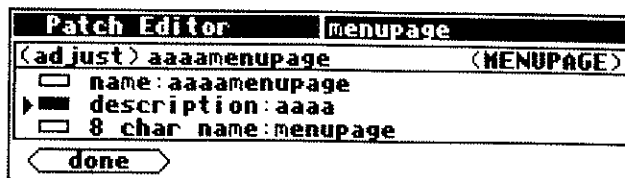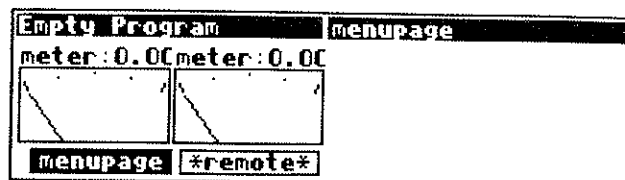
- Go back into <*modify*> for the *aaaamenupage* module and set the *#entries* specifier to 1 and then change the *obj1*: specifier to "meter-obj". Exit from <*modify*> using <*done*>.

```
Patch Editor          aaaamenupage
(adjust) aaaamenupage         (MENUPAGE)
  ▢  8 char name:menupage
  # entries:1
► obj1:meter-obj
   done
```

- Now, using the left and right cursor controls, select the other *menupage*, whose module name is "Amenupage". Use <*modify*> and change its *# entries* to 3 and its *obj3* to "aaaamenupage-obj". Press <*done*>.

- Go to the PARAMETER screen. Notice that there is now a stack of menu pages under the soft key. The title of the top menu page is still "menupage". Press the soft key. The second menu, whose title is "aaaa", has only one *meter* on it.

```
Empty Program         menupage
meter:0.0[meter:0.0[
\         /\         /
 \          \
menupage  *remote*
```

```
Empty Program         aaaa
meter:0.0[
\         /
 \
menupage  *remote*
```
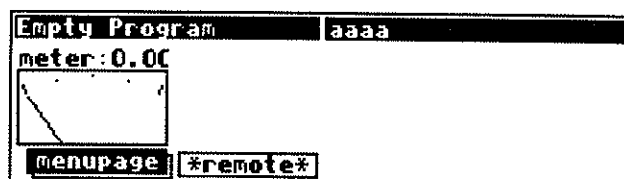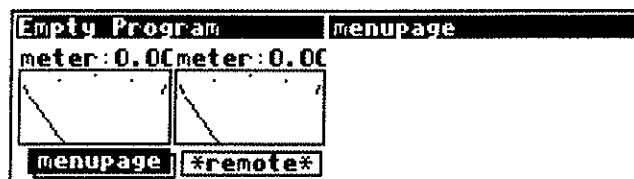
Userobject Placement

Menu design may be highly individualized. The look and feel of a menu is important if a program is complex or if there are displayed reactions to adjustments that must be viewed and understood quickly. For instance, if a program uses a *meter* to display the signal level in a given frequency range while a *knob* gives adjustment of the compression level in that frequency range, it is important to have the *knob* and the *meter* on the same menu page. It may also be possible to show the relationship between *a fader* and *a meter* by placing them on the same page. This kind of look and feel control is performed through placement of userobjects in *menupage* modules.

This section goes through a tutorial to show:

- Userobjects are presented on a menu in the order they are listed in the *menupage* and are placed from upper left to lower right across the menu.
- Modules that have text objects will take up one eighth of the screen (exception is *textblock*). Other modules have graphical objects that take up some other portion of the screen. Ordering of the modules in the menupage may cause the modules to be placed badly so as to allow only a few display objects while good placement might allow more.

Placing a vfader, *a* meter *and four* knobs

It is possible to build a good looking menu page using six modules inserted into a menupage module. The placement in the menupage is important.

This display shows a typical arrangement of the six modules: In order to achieve this placement the display objects must be listed in the menu page in exactly this order:

left lows knob
main vfader   left highs knob
right lows knob
right highs knob
out lvls meter

This is a composite picture of the menupage module showing the actual inclusion of the modules:

In order to create a menu such as the one shown the programmer inserts the six modules using *<insert>* and then uses *<modify>* on the *menupage* module. The # of entries is first set to the desired number (six)

and then the obj entries are adjusted, one at a time, to indicate the order of objects. Note that if the objects were in a different order that the menu items not only might look bad but might not all fit on the same menu page. For instance, placing the objects in this order:

main vfader
left lows knob
left highs knob
out lvls meter
right lows knob
right highs knob

results in two menu pages:

Since objects are always placed from upper left, to lower right (top to bottom first), once the *meter* is placed, (not fitting below the left highs *knob*) there is no more room below the *meter* or to the right of the *meter*, on the first page. Therefor a new page is created for the latter two *knobs*.

Chapter 6: MIDI

MIDI   MIDI   MIDI
IN   OUT   THRU

The 4000 series supports MIDI operation. This chapter describes how to use the 4000's MIDI features. *Appendix D* describes what MIDI is and how it is used. The MIDI Configuration screen is described in *Chapter 2.*

Contents

Introduction

4000 Series MIDI Hardware

The 4000 has three MIDI connectors: IN, OUT and THRU. Any MIDI information that is received by the MIDI IN connector is echoed directly to the MIDI THRU connector regardless of the 4000's configuration. While the 4000 is powered off, the MIDI IN -> MIDI THRU connection is disabled. The 4000 generates messages out via the MIDI OUT connector and accepts (and processes) MIDI messages received on its MIDI IN connector.

4000 Series MIDI Configuration

The 4000 has one configuration screen, a series of external control screens, and a program dump screen that control MIDI. In addition, there are many external modulation control screens, as part of the 4000 setup, as part of the PARAMETER menus (if enabled), and optionally as part of various effects programs.

```
Wobbly Dobbly        MIDI system config
base channel:   1    sequence out:   off
omni  mode:  off      system exclusive:  on
MIDI:    enabled      device ID:   1
program load: on
 display    setup      midi      audio
```

```
Empty Swimming Pool  MIDI data dumps
▢ <- dump program    ▢ <- dump internal
▬ <- dump setup
▢ <- dump files
▢ <- dump card
 segue      dump      mod con  nextprog
```

```
Moose breath          next prog setup
mode: MIDI single     back: off
channel: base + 0     monitor =   0
con:    2 breath
front: off
 segue      dump      mod con  nextprog
```

```
Techno Clank          left out setup
mode: pitch wheel     ▢ Capture Midi
channel: base + 0
--------------
0.00    [         ]
 meter      ext con
```

What does the 4000 do with MIDI?

There are a variety of things that a user can do with MIDI and a 4000 series Harmonizer®.

- select a specific program in the current bank
- sequencing
- send and receive setup and effects programs
- switch to next program or previous program in a bank
- adjust parameters in the current effects program
- trigger events in effects programs
- adjust output levels
- adjust mix percentage
- toggle the BYPASS/MUTE switch (kill switch)
- control one 4000 from another.

Configuration Details

For actual menu instructions refer to *Page 23*. This section describes each of the MIDI features of the 4000 and what to do with them.

All MIDI configuration details are adjusted via the MIDI Configuration screen. Press SETUP, then the [*midi*] soft key.

```
┌─────────────────────┬─────────────────────┐
│Techno Clank         │MIDI system config   │
│base channel:    1   │sequence out:    off │
│omni mode: off       │system exclusive: on │
│MIDI:    enabled     │device ID:    1      │
│program load: on     │                     │
│┌─display─┐┌─setup─┐  ┌─midi─┐┌─audio─┐    │
└─────────────────────┴─────────────────────┘
```

```
┌─────────────────────┬─────────────────────┐
│Techno Clank         │global MIDI setting  │
│note mode: mono      │                     │
│pressure: channel    │                     │
│Pitch Bend:   0      │                     │
│                     │                     │
│┌─display─┐┌─setup─┐  ┌─midi─┐┌─audio─┐    │
└─────────────────────┴─────────────────────┘
```

MIDI Enable

The 4000 will ignore any MIDI data on its MIDI IN connector if MIDI is not enabled. The THRU connector is still electrically connected to the MIDI IN connector regardless of the settings of MIDI enable. All MIDI transmit features (sequence out, program, and setup dump) are available, regardless of the settings of MIDI enable.

Base Channel and Omni Mode

The 4000 may be set to any of the MIDI channels or to Omni Mode. The 4000 does not accept the Omni mode on/off MIDI command although Omni mode may be controlled from the MIDI Configuration menu under SETUP. Each external modulation/trigger control panel allows separate selection of a channel offset for more flexibility. If the 4000 is set to omni mode in the [*midi*] screen, then the *channel:* parameter in any other external control screen will always show "omni".

Note Mode

The 4000 allows selection of mono and poly mode. Poly means one channel has all the notes (keyboards), and mono means each channel only plays one note but you have multiple channels (guitars, wind controllers). The 4000 does not allow remote control of note mode.

Program Load

The 4000 may receive compiled (4000 generated) programs via the MIDI port. This is commonly used by a sequencer that is loading presets in sequence during a performance. The presets may be sent to the sequencer using the *dump program* command. If *program load* is set to off, *MIDI* is set to disabled, or *system exclusive* is set to off, incoming programs will be ignored. Note that *device ID* must be set correctly. See below.

Sequence Out

Each time a parameter is changed in the 4000, a system exclusive message is generated for sequencing purposes. If *sequence out* is set to off, these messages are not sent.

System Exclusive

All sequencing messages that the 4000 will understand and all setup or program dumps that might be sent to the 4000 are sent as system exclusive messages. If *system exclusive* is set to off, none of those messages will be processed when received. System exclusive transmission is not affected by the *system exclusive* on/off setting.

Device ID

Every Eventide system exclusive message includes a device ID. If the device ID in a received system exclusive message doesn't match that of the receiving 4000, the message is ignored, with one exception. A device ID of 0 is received regardless of the *device ID* setting. This might be used by an **Eventide** compatible remote control product. The 4000 may be set to a device ID of from 1 to 99. The 4000 cannot generate a device ID of 0. The factory default is a device ID of 1.

Using The MIDI Features

MIDI Program Change

The 4000 will change programs within the current bank when a MIDI Program Change message is received. The MIDI Program Change message can be sent by many MIDI keyboards and synthesizers. You can use the program linking feature to create a list of programs that will be remotely selected. See *Page 33* for information on *program linking*. The MIDI Program Change will only work within the current bank.

In order for MIDI Program Change to function, the 4000 must have Omni mode on, or the base channel will have to agree with your MIDI equipment. MIDI must be enabled. Your instrument's MIDI OUT must be routed to the 4000's MIDI IN.

Sequencing With MIDI

Most MIDI Sequencers will receive system exclusive messages and store them for later playback to the originating instrument. The 4000 series fully supports this. Instead of sending keyboard presses and knob turns the 4000 sends parameter change messages. When the sequencer sends the parameter change message back to the 4000 the parameter will be adjusted, even if the display on the 4000 is looking at a different menu entirely. This means that you can operate the front panel of the 4000 while the 4000 is receiving sequencer commands. You can adjust parameters or peek at a menu while the sequencer is off adjusting other parameters in the 4000.

All adjustments made to the 4000 while *sequence out* is turned on are sent out the MIDI OUT port of the 4000 (except for PATCH editor commands), including any changes received over the MIDI IN port. This means that if the sequencer is sending and receiving at the same time it will receive an echo of its commands to the 4000. This also means that if you change something while sequencing (and echoing) is going on that your changes will also be sent with the echo information, to the sequencer. This might be useful for editing or touching up a sequence.

MIDI Sequencing Details

To enable sequence recording (the 4000 sending to your sequencer), set *sequence out* to on. To enable sequence receiving (your sequencer playing back to the 4000) set *MIDI* to enabled. You do not have to have *sequence out* turned on when you are playing back a sequence. The 4000 receiving the sequence playback must be set to the same device ID as the originating 4000.

In order to adjust a PARAMETER area parameter, the 4000 must have the same program loaded as when the sequence was recorded.

MIDI *Program* and *Setup Data* Transfer

The 4000 has three distinct kinds of memory information:

1 The setup: MIDI configuration, screen brightness, meter action, audio in/out configuration, specific *setup* items (see *Page 22*)
2 Presets: This includes the Banks and Programs
3 The current effects program: This is the program that is running right now.

The MIDI Dump commands allow you to selectively send the setup, current effects program, or stored programs, via MIDI system exclusive messages, to a sequencer, another 4000, or to some other external MIDI device. See *Page 25, MIDI Data Dumps*, for use instructions.
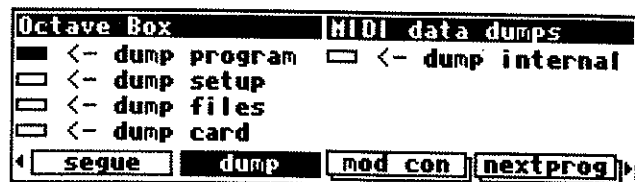
When the 4000 receives the Dump message, it automatically loads and uses the received information. A sequencer can be used to store 4000 setups or programs. This capability can be used in the middle of any operations sequence.

Device ID of a receiving 4000 must match that of the sending 4000. The send function operates regardless of the state of the other MIDI configuration parameters. In order for MIDI receive (playback) of the Dump message to operate, *MIDI*, must be *enabled*. *Program load* must be *on* in order for Program Dump messages to be received and processed. *System exclusive* must be set to *on* for either Dump message to be received and processed.

MIDI Configuration [*midi*] menu

The MIDI configuration menu is available at any time to make immediate changes to the configuration of MIDI operations. Turning a feature on or off is immediately effective. See *Page 23*.

Make Adjustments In An Effects Program

There are two basic ways to adjust an effects program from MIDI control. One is to use the remote control capabilities under the [*remote*] soft key in the PARAMETER area. The second is by building an external control module into a program.

```
Mute                    MIDI system config
base channel: 1         sequence out:     on
omni mode:    on        system exclusive: on
MIDI: enabled           device ID:   1
program load: on
| display | setup |  midi/ext | audio |>
```

External Control using modules

An effects program can be written using an external control input (the *extcontrol* module). The external control screen is of the same type described under *Trig and Mod Control Panels* in *Page 15*. When creating a program that is remotely controlled, whether by MIDI or by a foot pedal directly attached to the 4000, the program should reference a *mod* value, not MIDI directly. Then the mod value can be configured using the [*mod con*] setup page (under the SETUP area). Since the program is saved with the reference to a mod, instead of directly to MIDI, and since the mod Setups are saved in the internal setup memory on the 4000, your program can be moved onto another 4000 that has a different setup. Now, without modifying your program, it can function using whatever hardware the new 4000 is connected to.

Several factory programs (*bank 2, programs 4, 12* and others) are constructed this way and almost all programs can be modified using the patch editor to include external control modules.

External Control using [*remote*]

The [*remote*] menu gives the user the ability to set up remote control of parameters in a program, on the fly. The control may be done from MIDI or other 4000 external controls. Most factory program parameters are remote controllable using this feature. The remote control menu page uses the format of external control pages described under *Trig and Mod Control Panels* in *Page 15*.

Access to this feature may be enabled or disabled using the *remote* option under the [*setup/ext*] soft key in the SETUP area. If disabled, old *remote* configurations still function. To remote control a parameter:

```
Patch Instruct #1       delay control
Each delay:25 mS        Each Delay sets the
Delay Amount:0.05 S     value for a single
                        delay module.
                               <more...>
| delayctl | *remote* |
```

```
Patch Instruct          Each delay
mode: pedal             □ Capture Midi
---------------         scaling = 1.00
---------------
60.55 ▮▮▮▮▮▮    □  |
| delayctl | *remote* |
```

- go to the PARAMETER menu page that the parameter appears on by pressing that page's soft key;
- using the left and right cursor keys, highlight the desired parameter;
- press the [*remote*] soft key;
- If a parameter is not remotely controllable, an error message will appear.
- Select a mode, manually or by using MIDI Capture (see page 80), and set the scaling factor.
- Verify operation and then save the program to keep the changes.

Switch To Next or Previous Program
Toggle The BYPASS/MUTE Switch (Kill Key)
Trigger Event In An Effects Program

The 4000's external trigger capability allows several functions to be triggered from remote MIDI devices. These all require that MIDI be enabled via the MIDI Configuration menu. The configuration menus for the different functions are as follows:

switch to next program:	SETUP area, [*nextprog*] soft key
switch to previous program:	SETUP area, [*nextprog*] soft key, second page
toggle the BYPASS/MUTE switch:	LEVELS area, [*ext con*] soft key
trigger events in effects program:	An *ext trig* module must exist in the effects program. Then go to the PARAMETERS area and select the soft key appropriate to that function.

Next program/previous program will step forward or backwards through the programs in the current bank. The control panel for that function allows just about any MIDI controller to be used to trigger the program change. The trigger occurs as the controller value goes from less than 128 to more than 128 (out of 255).

Bypass/Mute switch operation is nearly identical to the Next/Previous trigger except that the mute switch toggles each time the controller rises through 128.

Triggering events in an effects program is also similar to the next/previous. When you are creating a program that will use an external trig (using the exttrig module) you should save the program such that the exttrig refers to a trig redirector (see *Chapter 2*). This way the actual hardware that controls the trigger is defined in the mod con menu and is saved in the 4000 setup, not with the program. Now when your program is moved onto a different 4000 or when you change your hardware setup, you don't have to go through each program and modify it for the new hardware. Just change the trig setup in the [*mod con*] menu.

For all of these functions a review of *Chapter 2* under the section "Trigger Control Panels" is in order.

Adjust output levels

In the LEVELS area the menu page accessed with the [global] soft key has two adjustments, *left con* and *right con*, which may be remote controlled by a MIDI device. To do this go to the LEVELS area's second page of soft keys and select [ext con].

The Left Out/Right Out controls adjust using a linear taper and are scaled in percentages (0 -> 100%). An incoming MIDI controller is mapped such that full value, 255, maps to 100%.

```
multishift              Global Parameters
left  in:  0.0 dB       left  mix:    0 % wet
right in:  0.0 dB       right mix:  100 % wet
left  out: 0.0 dB       left  con:  100.0 %
right out: 0.0 dB       right con:  100.0 %
◀ gaintrim   global       preset    meter  ▶
```

```
Empty Program           right out setup
mode: off                ▭ Capture Midi
----------------
----------------
monitor = 0.00%
◀ meter    ext con                        ▶
```

Adjust Mix Percentage

Mix is a feature which allows a percentage of the input signal (dry signal) to be mixed with a percentage of the output/processed signal (wet signal). If the percentage of wet signal is 0% then the output will be totally unprocessed. 100% wet signal means that none

```
Empty Program           left mix setup
mode: foot con           ▭ Capture Midi
channel: base + 0
----------------
monitor = 0.00%
◀ meter    ext con                        ▶
```

of the input signal is mixed into the output. There are two adjustments of mix, in the [global] menu and in the [preset] menu under the LEVELS area. The two percentages are multiplied together. This means that if both controls are at 100% wet then the 4000 supplies 100% wet to the output. If both are set to 50% then the output gets 25% wet. If one control is set to 0 and the other is set to 100% then the output is 0%. The MIDI mix percentage adjustment gives an external MIDI device control over the *global* mix percentage.

One of the modes set as a setup is to enable or disable mix. If disabled the mix is always set to 100% wet. The enable for this is under the LEVELS area under the [route] soft key. Set *mode:* to *guitar*(use mix).

To remotely control mix, go to the LEVELS area's second page of soft keys and select ext con. As we've discussed, *Left Mix/Right Mix* controls adjust using a linear taper and are scaled in percentages (0 -> 100%). An incoming MIDI controller is therefore mapped such that full value, 255, maps to 100%.

Control One 4000 From Another

The 4000 can send system exclusive messages detailing all changes to its parameters, both effects program specific and preset values, and the system is designed so that a sequencer can receive and then play back these values to the same 4000. Two 4000s can be adjusted to have the same device ID and then be slaved to each other.

To set this up, on both units, set *MIDI* to enabled, *sequence out* to on, *system exclusive* to on and *device ID* to 1. Then turn off *sequence out* on one of the units. Warning: do not have both 4000s writing to each other while having *sequence out* enabled on both. The resulting feedback loop will tie up your MIDI lines in an unpredictable manner.

MIDI Capture Feature

Each *mod control* screen has a control called MIDI Capture. This control is used to start a process which records the first MIDI command operation received by the 4000 and saves it as the mod control source for the selected parameter. This may be used to program many PARAMETER menu controls, and additionally may be used for level control through the use of the *ext con* menu pages (under LEVELS).

Example: Connecting a MIDI source to the knob in the *Patch Instruct* program.

Connect your MIDI keyboard or other source.

```
Patch Instruct      MIDI system config
base channel:   1    sequence out:    on
omni mode: off       system exclusive: on
MIDI:  enabled       device ID:  1
program load: on
◄ display  setup  midi/ext  audio ►
```

Go to the SETUP area and press the [*midi/ext*] soft key. Make sure that *MIDI:* is set to *enabled*.

Load the *Patch Instruct* program from *Bank 2, Program 30*.

```
Patch Instruct      delay control
Each delay:100 mS   Each Delay sets the
Delay Amount:0.20 S value for a single
                    delay module.
                            <more...>
delayctl  *remote*
```

Make sure the "*Each delay*" parameter is highlighted and then press the [*remote*] soft key. (Note the current setting of the *Each delay* parameter (100).

Highlight the *Capture Midi* control and press SELECT.

```
Patch Instruct      Each delay
mode: off           ▄ Capture Midi
----------------      scaling = 1.00
----------------
50.00 ▮▮▮▮▮▯▯▯▯
delayctl  ►remote◄
```
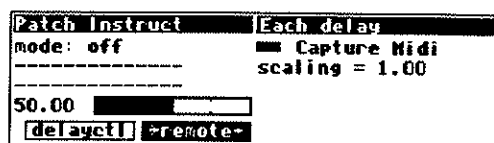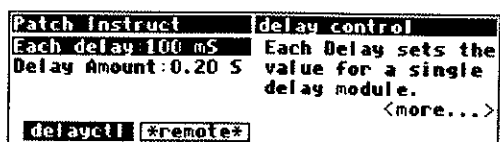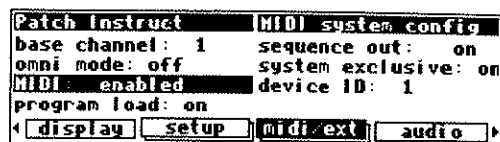
The screen now shows mode: of *CAPTURE*. This means that the 4000 is waiting for *any* MIDI control message.

```
Patch Instruct      Each delay
mode: CAPTURE       ▄ Capture Midi
----------------      scaling = 1.00
----------------
50.00 ▮▮▮▮▮▯▯▯▯
delayctl  ►remote◄
```
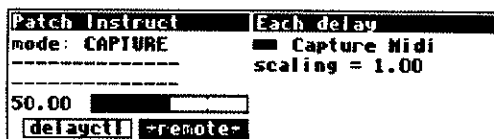
Now use a MIDI control on the MIDI source. This sample was created using a MIDI keyboard's MODULATION wheel. The change in the MIDI source's control should immediately be reflected on the 4000's display. Notice that for this setup the MIDI channel number received was *base + 2*.

```
Patch Instruct      Each delay
mode: mod wheel     ▄ Capture Midi
channel: base + 2     scaling = 100.00
----------------
6.25 ▮▯▯▯▯▯▯▯▯
delayctl  ►remote◄
```
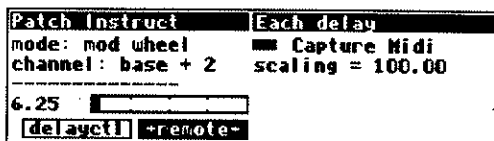
The scaling control sets the range of adjustment the MIDI control will perform. The Each delay parameter has a range of 0 through 660. The 4000 interprets the MIDI input with a range of 0 through 1, multiplied by the scaling number and then added to the setting of the parameter. Since the parameter being controlled was left at 100, the range of adjustment with scaling set to 100 will be 100 to 200. The number and horizontal bar graph on the bottom left of the screen reflect the MIDI input and will range from 0 to 99.

Appendix A: DSP4000 Factory Programs

his section has a list of all of the factory programs included with the DSP4000. The use of factory programs is explained in *Chapter 2.*

Utilities
Empty Program
Mute
Oscillator 440
Thru (In = Out)
Universal Matrix
White Noise

Pitch Shifters
Mono Shift
Dual Shift
Dual External Shift
Stereo Shift
StereoExternalShift
Dual H910s
Diatonic Shifter
2 Voice Diatonic
3/4 DelayDiaShift
Multiple Diatonic
8 voice Diatonic
User-defined scale
Multishift
8 Pitch Shifts
Power Trip
Quad Detuners
5th Place
Dubbler
Warm Shift
5ths&Oct Multiply
120BPM ShifterDelay
Big Heartbeat
Chim-Chiminee
Crystal Pad 2
Dual Reverse Shift
Fake Pitch Shift
Freq Shifter
Freqshift Chorus
Freqshift Vibrato
Gil's Pitch&Reverb
Jimmy's Bottom
Large Poly Shift
Organizer
Pitch Sequencer
Poly Shift
Ring Modulator
Stereo Backwards

Delay Effects
Mono Delay
Stereo Delay
Dual BPM Delays
Dual Long Delay
Ext Control Delay
Frippertronics
Long Mono Delay
Long Stereo Delay
Mono Delay BPM
Precision Delay
Clearmntn Claps
Envelope Taps
Ext NumberofEchoes
Multitap Delay
Number of Echoes
Panning Delay
Quad Flange Echoes
3B Delayz
Centering Echoes
Clearmntn Delays
Dual Ducked Delay
Dual Flanged delays
Echospace Of God
Ext Morphic Echos
Man's Pan & Delay3
Panning Delays
Phase Delay
Resonechos

28 Slap Nonlinear
29 Super Ducked Delays
30 Patch Instruct

3 Chorus/flangers
0 Auto Tape Flanger
1 Chorused Cabinet
2 Detune Chorus
3 Digest Inn
4 Drew's Throatflange
5 External Detune
6 Ext Control Flange
7 Ext Control Leslie
8 Ext PhaZse Flange
9 Ext Tape Flanger
10 Ext Wave Guide
11 freqshift flange
12 Hiccup Chorus
13 Leslie-like
14 Leslie Simulator
15 Manual Tape Flanger
16 Mess With Stereo
17 Phaser
18 Phase Flange
19 Real Chorus
20 Real Chorus TNG
21 Reso-Control
22 Sky Slaw
23 St.Phaser & Reverb
24 Stereo Chorus
25 Stereoize
26 Stereo Flange
27 Stereo Flange 1968
28 Stereo Tremolo
29 StereoMUTRONPhaser
30 Str. Smoove Flange
31 Strata Chorus
32 Swirl Flanges
33 Tripple Track
34 Vox Double and Slap
35 We're Triplets

4 Small Spaces
0 Bass Space
1 Chorus & Plate
2 Close Nonlinear
3 Drew's Closet
4 Drews Double Closet
5 Empty Swimming Pool
6 Masterverb Room 1
7 Medium Booth
8 New Air
9 Pantry
10 Shifting Booth
11 Small Ambience
12 Soft n Small Room
13 Stereo Mic's w/Room

5 Room Reverbs
0 Basic Reverb C
1 Big Room
2 Blue Box Verb
3 Boston Chamber
4 Chamber2
5 Denny's Echo Room
6 Der Verb
7 Don's Small Room
8 Drew's Small Room
9 Drew's Dense Room
10 FIR Glass Shower
11 Funny Gated Room
12 GaderVerb
13 Gated Water Snare
14 Gym Shower
15 LRMS reverb
16 Masterverb Dullroom
17 Masterverb Hall 1

18 Masterverb Room 2
19 Medium Chamber
20 Noo Room!
21 Reverb w/Diff & Eq
22 RMX Simu Ambience
23 Roomy Hall
24 Semi-Gated Room
25 Slight Chorus Room
26 Small Club
27 Small Drum Room
28 UK Ambience
29 UK Bright
30 UK Nonlinear
31 Wooden Men's Room

6 Hall Reverbs
0 Arena Soundcheck
1 Barking Chamber
2 Beeg Garage
3 Big Hall
4 Big Hall 2
5 Big Hall/Med Hall
6 Big Room Reverb
7 Black Hole
8 Bob's New Room
9 Dynamic Reverb
10 E-noseChorusCanyon
11 Enormo Hall
12 Gated Splash
13 GloriousFingCanyon
14 Jr. High School Gym
15 Master Hall
16 Masterverb Hall 2
17 Matt's Fat Room
18 Medium Hall
19 Mono Easytap Hall
20 Ridiculous Room DMC
21 SIZ Verb 7
22 SplashVerb
23 Stereo room
24 Swept Hall
25 Swept Room
26 The Megaverb Final
27 Wormhole

7 Plate Reverbs
0 EMT-style Plate
1 Cheap Springverb
2 Great Plate
3 Metallic Plate
4 Pretty Smooth Plate
5 Sizzler Plate
6 Spring Reverb
7 Springverb
8 St.Plate+Chorus
9 Stereo Plate
10 Swept Plate

8 Alternative Verbs
0 Cheap Verb
1 Choruspace O'Brian
2 E-nose Flanged Canyon
3 Flutter booth
4 Gated Gong Verb
5 Ghost Air
6 GloriousChrsCanyon
7 Gong Swell Verb 7
8 Horrors
9 Jurassic Space
10 Key Morphic Reverb
11 Kickback
12 MetallicChamber
13 Phantom & Reverb
14 Phaser and Reverb
15 Pop Up
16 Predelay Nonlin
17 Preverberator

18 Reverse Nonlinear
19 Reverserize Hall
20 shift verb
21 Sizzle Verb
22 SplashVerb maxsweep
23 Square Tremolo Verb
24 Stereo Deetoon Room
25 Swell Verb 9
26 Thicken Verb
27 Tremolo Ambience
28 Vibra Spread DMC
29 Zipper Up

9 Vocal Processors
0 Big Voice
1 Ext Pitch Correct
2 FixaVocal: 1/2 step
3 Phased Vocal Reverb
4 Auto Pitch Correct
5 Rap Bass Hype
6 Voice Disguise
7 Voice Processor
8 Vox Shimmer
9 Voxplate / Chorus

10 Drum Processors
0 1+a Delay
1 1e+a Delay
2 4 Your Toms Only
3 808 Rumble Tone
4 Arena Soundcheck
5 Basement Drums
6 Beatbox Reverb
7 Big Bottom
8 Big Gateverb
9 Big UK
10 Chim-Chiminee
11 Clap Thickener
12 Drew's Drum Box
13 Drew's Drumsqueez
14 Drum Chamber
15 Drum Filter
16 Drum Flanger
17 Drum Flutters
18 Firecracker Snare
19 Frippertronics
20 Group Claps
21 Hat Flange
22 Li'l Drum Space
23 Liquid Toms
24 Live Nonlin Room
25 Live Snare Verb
26 Medium Gateverb
27 Nerve Drums
28 Nonlinear#1
29 Panning Delays
30 PercussBoingverb
31 Percussion Industry
32 Percussion Room DMC
33 Rhythm Delay
34 Ring Snareverb
35 Small Drumspace
36 Small Drumspace II
37 Small Gateroom
38 Sonar Room
39 Stereo Delays
40 Swept Band Delay
41 Techno Clank
42 The Ambience Kit
43 Tight Snare Verb
44 Trigger Tone 4
45 Vibra Pan
46 Wide Room

11 Guitar Effects
0 1st Reich
1 Bass Suite

2 Fuzz-o-mania Four
3 Gig Reverb
4 Guitar Mania
5 Inst Process
6 Kill the Guy
7 Jan&Jeff
8 Little Man
9 Octave Box
10 Phaser Rack
11 Pickers Paradise
12 Soft Attack Fuzz
13 Tremolo Rack
14 Vai-a-tonic Trio
15 Virtual Pedalboard
16 W-I-D-E SOLO

12 Dynamics
0 4-band compress
1 Auto V/O Ducker
2 Bigger is Wider
3 Compressor & EQ
4 Dual Gates
5 Ext Control Panner
6 Ext Gain Control
7 Man's Pan
8 Quad Pan Chorus's
9 Ramp Up/Ramp Down
10 SemiClassic Squeeze
11 Stereo Compressor
12 Stereo Two-Bander
13 Top 40 Compressor
14 Tremolo Lux
15 2 Mono Compressors

13 EQ/Filters
0 Mono Filter
1 Stereo Filter
2 100\300^1K^3K10K/4K
3 100^400^1K5^4K8K15K
4 2 Band Crossover
5 40^100^300^1K^5K10K
6 60\100^500^1K4K/1K5
7 80\160^400^2K^5K/2K
8 80^200^500^2K6K12K
9 Band Delay
10 Band Filter
11 Big Dipper
12 Crossover/Limiter
13 Cup Mute
14 Detuned Band Delay
15 Down Band Delay
16 Envelope Filter
17 Ext Mono Wahwah
18 Ext Stereo Wahwah
19 Ext Vocal Wahwah
20 LMS Filter
21 Mono Eight Band EQ
22 Mouth-a-lator
23 Simple Vocoder
24 SweepBand Delay
25 Up Band Delay
26 VerbTrashSweeping
27 Vocal Filter
28 VocalFilterModwheel

14 Distortion
0 CrudeDistortion Tap
1 ARKHAMLEAD
2 Band Distort
3 Ben's Grungy Guitar
4 Big Muff
5 Big Muff w/ Dead 9v
6 Bite Distort
7 Chorus Distort
8 Class A Distortion
9 Crunchy
10 Fluxion Distort

11 Fuzz Frippertronics
12 Fuzz Maker
13 Fuzz-o-mania
14 Fuzz-o-mania Too
15 Fuzz-o-mania Tree
16 hmmm distort
17 QuadHyperMod
18 Thick Distort
19 Transistor Distort
20 Tubey Distortion

15 Mastering Suite
0 Compress Highs Only
1 Dist Master Box
2 Grunge Compress
3 Radio Compress

16 Mixdown Suite
0 Clrmtn's NemWhipper
1 Mixer's Toolbox #1
2 Mixer's Toolbox #2
3 Mixer's Toolbox #3
4 Mixer's Toolbox #4
5 NemWhipper Stereo
6 NemWhipper Dual
7 Pickshift Paradise

17 Post Suite
0 33 RPM w/ scratches
1 Bell Constr. Kit
2 Headphone Filter
3 Long Distance
4 Noise Canceller
5 Plug Puller
6 Public Address
7 Real Call-in
8 Real Dialer
9 Sharp Vocal Filter
10 Solo Zapper
11 TimeSqueeze(R)
12 Woosh Maker

18 H3000 Emulation
0 470 PhoneRingDelay
1 474 Sextuplets
2 502 Analog Thick
3 507 DGDLY+WAH+MICRO
4 533 Voice Doubler
5 535 Analog Delays
6 537 Circles
7 542 Fat Slap
8 546 Ping Pong Ball
9 550 Subtle Sweep
10 560 De-Burr
11 598 Random Gate
12 605 A Minor Chords
13 606 Arpeggios
14 608 Deepen
15 609 Diatonic Dance
16 612 Gregorian Chant
17 613 H949
18 623 Pitch Quantize
19 625 Third & Fifth
20 626 Third & Octave
21 630 Aliens
22 640 Cannons
23 641 Critical Band
24 644 Filter Pan
25 645 Future Shift
26 657 Scary Movie

19 Bizarre
0 7 Spacer
1 Enoesque 1
2 Enoesque 2
3 Fantasy Backgrounds
4 Time+Pitch Manifold
5 VR Backgr01

6 VR Backgr02
7 Warm Chorpustle

20 Curiosities
0 5th Mega
1 5th Quantizer
2 Adaptive Reverb
3 Angel Echos
4 Computerizer
5 Crystal 5th Caves
6 Crystal Heaven
7 Crystal Octaves
8 Crystal Sevenths
9 Crystal Worlds
10 Dinosaur Legs
11 DrWho Diatonic 6ths
12 Duck Soup
13 Ducked Tails
14 Garmonbozia
15 Genesis Worlds
16 Heen
17 Latin Cathedral
18 Mod-U-Mania
19 Pitch->FreqShift
20 Sample Hold Filter
21 Smooth Crystals
22 Squareworld Shifter
23 Star Space
24 Synth Reverb
25 Triggered Arpeggio
26 UFO in My Church
27 War with PhaserGuns
28 Waterized
29 WeKnowBeetBoxTrtMe

21 Dual Effects
0 2 Reverb-C/1L,1R
1 A-B Synth & Drums
2 Dualverb
3 Glistenvrb/Ekoplex
4 GtrChorvrb/Kbd Chordelay
5 L=Shift/R=Reverb
5 Leddroom/ Flanger
6 RoomA / HallB
7 Sml Booth/Sml Room
8 Sml Room/Big Plate
9 Tunnel/Burrow

22 Multiple Effects
0 2Reverb-C/STEREO
1 4 FShifts+Delay
2 Big Squeezolo
3 Chorus Delay
4 Combi EFX #3
5 Detune & Reverb
6 Dist Leslie Verb
7 Eastemizer
8 Env Filtered Reverb
9 FatFunkVocal Filter
10 Gig Echo & Verb
11 Gig Pitch & Reverb
12 Glitterous Verb
13 L=Rev-C/R=fl/Inv/dd/RcF/lDDl
14 M Sh,L=DDL,R=no DDL
15 Moon Solo
16 Octashift Glissverb
17 Pitch & Reverb
18 Rev-C/4 PitchShifts
19 ReverseVerb 6/4 8v
20 Reverse Worlds
21 Room 2 Go Downdelay
22 Space Station
23 StereoDelay>Flanger
24 Str2Fl/Cmp/Fing/DdSt/c/F/d
25 Tremolo Reverb

Eventide would like to thank the following people for their help
with and contributions to the DSP4OOO's factory presets:

Jon Anderson

Sean Beresford & MesaBoogie

Ken Bogdanowicz and Crescent Engineering

Bob Bradshaw

Mary Campbell and Electric Lady Studios

Bob Clearmountain

John Cuniberti

Dave Derr and Studio E

John & Dino Elefante

Brian Eno

Joe Franco

Scott Gilfix

Rob Grenoble & Water Music

Trey Gunn

Michael James

Henry Kaiser

Kevin Killen

George Massenburg

Kooster McCallister & Record Plant Remote

Denny McNerney

Glenn Meadows

Roger Nichols

Jimmy Orlander

Don Pearson & UltraSound

Angela Piva

Vernon Reid

Tad Rollow

Jay Rose

Joe Satriani

Frank Serafine

Andrew Schlesinger

Roey Shamir

Enno Vandermeer

Steve Vai

Keith Wechsler

Richard Zvonar

0 Utilities

) Empty Program Crossfadable

f you want to patch a program from the ground up, you can
tart with an empty program.
Jothing in, nothing out.

l Mute Crossfadable

,oading this program will simply turn off the output.
Jothing in, stereo (silent) out.

! Oscillator 440 Crossfadable

ieneral purpose oscillator. On loading, it is set to a 440 Hz
ine wave for tuning.
Jothing in, mono out.

3 Thru (In = Out) Crossfadable

Simply passes the inputs to the output. Just like bypass.
Stereo in, stereo out.

4 Universal Matrix Crossfadable

M/S (mid/side) recording lets you air stereo events with com-
plete mono compatibility. This setting decodes M/S recordings
& controls their stereo width. It also lets you fix mono and
stereo routing.
Stereo in, stereo out.

5 White Noise Crossfadable

A single noise source is output on both channels.
Nothing in, mono out.

1 Pitch Shifters

0 Mono Shift   Crossfadable

A single mono pitch shifter.
Mono in, mono out.

1 Dual Shift   Crossfadable

Two independent pitch shifters. One for each channel. Common LFO.
Stereo in, stereo out.

2 Dual External Shift   Crossfadable

Two independent pitch shifts that are controlled externally. The shift range is set by endpoints.
Dual mono in, dual mono out, external control.

3 Stereo Shift   Crossfadable

A simple stereo pitch shifter.
Stereo in, stereo out.

4 StereoExternalShift   Crossfadable

Stereo pitch shift that is controlled externally. The shift range is set by endpoints.
Stereo in, stereo out, external.

5 Dual H910s   Crossfadable

Two of **Eventide**'s classic H910 pitch shifters, one for each channel.
Dual mono in, dual mono out.

6 Diatonic Shifter   Crossfadable

A single diatonic shifter.
Mono in, mono out.

7 2 Voice Diatonic

One diatonic shift per channel.
Dual mono in, dual mono out.

8 3/4 DelayDiaShift

Two diatonic echoes. A 4th and an octave.
Stereo in, stereo out.

9 Multiple Diatonic   Crossfadable

Four diatonic shifts from one source.
Mono in, stereo out.

10 8 voice Diatonic

Eight diatonic pitch shifts. Four on the left, four on the right.
Dual mono in, dual mono out.

11 User-defined scale

Two diatonic shifters with user-defined scales into reverb chorus.
Mono in, stereo out.

12 Multishift

4 pitch shifters into a stereo mixer.
Mono in, stereo out.

13 8 Pitch Shifts

From the left mono input you get 8 shifted and delayed sign that are combined with a stereo mixer.
Mono in, stereo out.

14 Power Trip

8 pitch shifts set to give you a "POWER" sound.
Mono in, stereo out.

15 Quad Detuners   Crossfada

Makes music sound way out of tune. Channels 1 and 3 are fi the left, and channels 2 and 4 are from the right.
Stereo in, mono out.

16 5th Place

The perfect fifth effect in stereo with color.
Stereo in, stereo out.

17 Dubbler

Doubles up your signal with 4 micro pitch shifts.
Mono in, stereo out.

18 Warm Shift   Crossfada

One pitch shifter per channel. Each has a gentle lowpass the feedback loop.
Dual mono in, dual mono out.

19 5ths&Oct Multiply

Fifth and octave pitch shifts.
Mono in, stereo out.

20 120BPM ShifterDelay

Play a note, get a riff. The output of each shifted voice is layed 125ms from the previous voice.
Mono in, stereo out.

1 Big Heartbeat Crossfadable

pitch shifters intertwined with just a little feedback.
tereo in, stereo out.

2 Chim-Chiminee

ice arpeggiated shifts with octaves and fifths.
lono in, stereo out.

3 Crystal Pad 2

himmering, squeaky fields.
lono in, stereo out.

4 Dual Reverse Shift Crossfadable

wo separate reverse pitch shifters.
ual mono in, dual mono out.

5 Fake Pitch Shift

:odulated up/down 3rd pitch shift with reverb. Adjust feed-
ack/decay for echo effect.
lono in, stereo out

6 Freq Shifter Crossfadable

ne frequency shifter per channel. This has a high amount of
equency shift that yields a ring modulation effect.
ual mono in, dual mono out.

7 Freqshift Chorus Crossfadable

ne frequency shifter per channel. With a frequency shifter,
.e lower frequencies are pitch shifted more than the higher
equencies.
ual mono in, dual mono out.

8 Freqshift Vibrato

ice chorus/vibrato created by four frequency shifters. Experi-
ent with shifts and delays for more interesting effects.
.ereo in, stereo out.

9 Gil's Pitch&Reverb

very clean pitch shift with a smidgen of reverb to make it
nooth. Great for vocals.
ono in, stereo out.

30 Jimmy's Bottom

Gives a great bottom to any solo instrument. There's an oc-
tave shift down, compression, EQ, and chorus.
Mono in, stereo out

31 Large Poly Shift

A kind of pitch shifter you use with chords. Like Poly Shift but
now you can shift up and down by octaves.
Mono in, mono out.

32 Organizer

Turns any line into an organ solo. Pure tones get you a
Hammond, complex tones get you a pipe.
Mono in, stereo out.

33 Pitch Sequencer Crossfadable

Continuously plays a scale by shifting your signal. Try chang-
ing the sequence.
Mono in, mono out.

34 Poly Shift

Breaks signal into comb bands and shifts each. Gives an in-
teresting detune chorus. Be careful with small shift amounts
and large feedback.
Mono in, mono out.

35 Ring Modulator Crossfadable

The classic ring modulator effect, now in stereo. However much
the left channel is frequency shifted up, the right is shifted
down.
Stereo in, stereo out.

36 Stereo Backwards Crossfadable

Breaks input into little pieces and plays them backwards.
Adjust optional pitch shift in 'Expert' menu. Uses m/s process-
ing to maintain stereo image.
Stereo in, stereo out.

2 Delay Effects

0 Mono Delay Crossfadable

Mono delay with feedback.
Mono in, mono out.

1 Stereo Delay Crossfadable

Two delays with common controls.
Stereo in, stereo out.

2 Dual BPM Delays Crossfadable

Allows you to adjust a delay in beats per minute. An input parameter will connect the right delays to the right tone controls giving you dual mono.
Mono in, stereo out

3 Dual Long Delay Crossfadable

Two long delays each 2.5 seconds.
Dual mono in, dual mono out.

4 Ext Control Delay Crossfadable

Externally controlled delay. MOD1 controls the length of the delay line.
Stereo in, stereo out, external.

5 Frippertronics

The modern alternative to two Revoxes and a reel of tape. Five second repeats, adjustable high cut and feedback.
Mono in, mono out.

6 Long Mono Delay

Simple 10-second delay.
Mono in, mono out.

7 Long Stereo Delay

A stereo 5-second stereo delay.
Stereo in, stereo out.

8 Mono Delay BPM Crossfadable

A simple delay where you set the delay time in beats per minute.
Mono in, mono out.

9 Precision Delay Crossfad

Allows you to adjust delay in microsecond increments. delay per channel.
Dual mono in, dual mono out.

10 Clearmntn Claps Crossfad

A multitap specifically adjusted for claps.
Mono in, stereo out.

11 Envelope Taps

The tap envelope is formed from an attack multitap and a cay multitap.
Mono in, stereo out.

12 Ext NumberofEchoes

The 'Number of Echoes' with much external control. MC number of echoes. MOD2: delay between echoes. MOD3: range for MOD2. MOD4: The glide rate.
Mono in, stereo out, external.

13 Multitap Delay Crossfad

A single delay line with many taps. You have individual . trol over each tap.
Mono in, stereo out.

14 Number of Echoes

You control how many repeats with one knob.
Mono in, stereo out.

15 Panning Delay Crossfad

A long delay line feeding into a dynamically responsive a panner. Great for guitar solos.
Mono in, stereo out.

16 Quad Flange Echoes

Each of 4 echoes are flanged and panned.
Stereo in, stereo out.

7 BB Delayz

Very fast and close feedback delays in the center of the stereo field, with long echo repeating/panning delays on the outside of the stereo field. Interesting on percussives as well as tuned instruments.
Mono in, stereo out.

8 Centering Echoes

Multitap echoes that start at edges of the stereo field and move progressively closer to center as they decay.
Mono in, stereo out.

9 Clearmntn Delays

More than your usual echoes. Has subtle filtering and shifting going on.
Mono in, stereo out.

0 Dual Ducked Delay   Crossfadable

Two delays (one for each channel) that will duck out of the way when you play a lead, and come back up when you're done. "Ratio" adjusts how much to duck.
Dual mono in, dual mono out.

1 Dual Flanged delays

Two delays where the echoes are flanged.
Dual mono in, dual mono out.

2 Echospace Of God

Massively verbed echoes that give you that "awe" sound.
Mono in, stereo out.

3 Ext Morphic Echos

This is a 5 tap multitap delay that you change between settings externally. Delay 1 is also fed back to the input.
Mono in, stereo out, external.

24 Man's Pan & Delay3   Crossfadable

This program will delay and pan mono signal with a LFO. At 60 percent full pan will occur. Above 60% and you will engage 3-D effect.
Mono in, stereo out.

25 Panning Delays

Four delay lines. Each is panned by its own LFO. Also, each has another LFO modulating its delay.
Stereo in, stereo out.

26 Phase Delay

A variable amount of 'phase shift'. This is real phase shift in degrees and it applies to each frequency. You also have precision delay and feedback.
Dual mono mode.

27 Resonechos

Echoes that blur into a verb.
Mono in, stereo out.

28 Slap Nonlinear

A slapback where the echo is really a clump of diffused echoes with EQ.
Mono in, stereo out.

29 Super Ducked Delays

Dual ducked delays with plenty of control and visual feedback.
Dual mono in, dual mono out.

30 Patch Instruct   Crossfadable

This program is used to demonstrate several Patch Editor basics in *Chapter 4 and 5* of the DSP4000 Operator's Manual.

3 Chorus/flangers

0   Auto Tape Flanger   Crossfadable

A stereo tape flanger where one delay is swept by another. The sweeping is controlled by an LFO.
Stereo in, stereo out.

1   Chorused Cabinet

The sound of a mic'd speaker cabinet with a touch of modulating chorus.
Mono in, stereo out.

2   Detune Chorus

Similar to real chorus with lots of detuned echoes.
Mono in, stereo out.

3   Digest Inn

Slimy, resonant, and peaky flange and short repeating delay echo. Sounds like you're inside someone's stomach.
Mono in, stereo out.

4   Drew's Throatflange

Deep negative resonant flange that adds a throaty quality to sounds. Sounds cool on drums as well.
Mono in, stereo out.

5   External Detune

Externally controlled 'real' chorus. The amount of detune is tied to MOD1, the tightness is tied to MOD2.
Mono in, stereo out, external.

6   Ext Control Flange   Crossfadable

Allows you to switch control of the flanger from LFO to external. (MOD1)
Stereo in, stereo out, external.

7   Ext Control Leslie

Rotating speaker effect where the speed of rotation can be externally controlled. MOD1 controls the speed.
Mono in, stereo out, external.

8   Ext Phase Flange   Crossfadable

A different kind of flanger, where the group phase changes instead of the group delay. MOD1 controls the group phase. Adjust 'delay mod' to also change the group delay.
Mono in, mono out, external.

9   Ext Tape Flanger   Crossfadable

Externally-controlled tape flanger. MOD1 controls the tape sync. MOD2 controls the depth of the effect.
Stereo in, stereo out, external

10   Ext Wave Guide

Experimental filter where you determine the shape and c acteristics of a 'tube' that your sound goes through.
Mono in, mono out, external.

11   freqshift flange   Crossfad

This is a different kind of flanger using the frequency shi:
Mono in, stereo out.

12   Hiccup Chorus

This a stuttering tremolo effect. You can engage an exte: control to change the rate.
Mono in, stereo out, external.

13   Leslie-like   Crossfad:

A combination of chorus, delay, and phaser that give you 1 rotating speaker effect.
Mono in, mono out.

14   Leslie Simulator

Basic rotating speaker effect with a little reverb. There actually two speakers (high and low) and you can alter eac your taste. When you load this preset, the settings are for w we believe to be most natural.
Mono in, stereo out.

15   Manual Tape Flanger   Crossfad:

A manual tape flanger. Run your signal thru the DSP4000 turn the knob. Flanging occurs when flange and delay are c to each other. Depth controls how much of the flange dela mixed in.
Stereo in, stereo out.

16   Mess With Stereo

The left/right input is converted to sum/difference. The number of modifiers act upon the signal. Finally it is conve: back to left/right. This gives some interesting stereo enhal ments. Note: There is a slight delay in processing.
Stereo in, stereo out

17   Phaser   Crossfad:

Old-fashioned phaser. Use with sound going thru effect.
Mono in, mono out.

18   Phase Flange   Crossfad:

A different flanger because the component phases move inst of the delay. Adjust "delay mod" to get the delay moving a
Mono in, mono out.

19   Real Chorus

A simulation of having eight more of the input.
Mono in, stereo out.

0 Real Chorus TNG

. simulation of additional musicians. Tuning: How well they
re in tune. Timing: How tight they are. Hunting: How fast
ey find the note. Best on single note instruments. Note: some
istruments don't hunt. (keyboard, drums, etc.)
fono in, stereo out.

1 Reso-Control

emotely controls the frequencys of two comb filters. One for
ich channel.
tereo in, stereo out, external.

2 Sky Slaw

iodulated deep resonant flange feeds a second resonant sweep-
ig flange. Great for guitar. Sounds like a player who rhymes
ith trip.
iono in, stereo out.

3 St.Phaser & Reverb

iereo phase shifter with reverb.
iereo in, stereo out.

4 Stereo Chorus   Crossfadable

moving delays each with its own LFO.
ono in, stereo out.

5 Stereoize   Crossfadable

ids a stereoized chorus to a mono signal.
ono in, stereo out.

6 Stereo Flange   Crossfadable

vo flangers with a common LFO. Run your sound thru this
eset for the proper mix.
ereo in, stereo out.

7 Stereo Flange 1968   Crossfadable

nice stereo flange. There are separate delay controls but a
mmon LFO.
ereo in, stereo out.

28 Stereo Tremolo   Crossfadable

This gives you the tremolo effect in stereo.
Stereo in, stereo out.

29 StereoMUTRONPhaser   Crossfadable

This sounds like that classic phaser.
Mono in, stereo out.

30 Str. Smoove Flange   Crossfadable

This is a smooth subtle stereo flanger.
Stereo in, stereo out.

31 Strata Chorus

This is a tight chorus with some reverb added in. For the ex-
perimenter, there are a lot of adjustments.
Stereo in, stereo out

32 Swirl Flanges

Four flangers that also pan around you.
Stereo in, stereo out.

33 Tripple Track

Adds a triple track effect to vocals and instruments with cho-
rus and delay. You also can add other effects. To add reverb,
turn up reverb level and decay time.
Mono in, stereo out.

34 Vox Double and Slap

This is a doubler and a slap echo. Good for vocals. You can
add reverb by adjusting the reverb level and decay time.
Mono in, stereo out

35 We're Triplets   Crossfadable

Three distinct voices. The higher one sometimes gets a little
behind the others, then catches up. HINT: use less 'pitch' for
higher input voices.
Mono in, stereo out.

4 Small Spaces

0   Bass Space

Slight ambience with an adjustable delay, initially set very small. Sounds good on bass, too.
Mono in, stereo out.

1   Chorus & Plate

Nice tight ambience with some built-in chorusing.
Stereo in, stereo out.

2   Close Nonlinear

Bright, small, non-real, nonlinear decaying space. Great on drums and all types of pitched sounds.
Mono in, stereo out.

3   Drew's Closet

Andrew's master bedroom closet, with the door open.
Switchable mono/stereo in, stereo out.

4   Drews Double Closet

A semi-closed-in space like a large closet with a touch of s
delay adds presence but has very short decay time.
Mono in, stereo out.

5   Empty Swimming Pool

Sounds like my friend's swimming pool in the winter.
Switchable mono/stereo inputs.

6   Masterverb Room 1

Sounds like someone down the hall in the living room playi
Natural tight ambience.
Stereo in and out.

7   Medium Booth   Crossfada

Small & square, like an old classmate of mine. Ringy ref
tive space.
Mono in, stereo out.

New Air

ery small ambient space that stereoizes a signal and adds a
it of 'air' around instruments.
[ono in, stereo out.

Pantry   Crossfadable

[uted space. Cans, cupboards and towels are probably dead-
1ing it.
[ono in, stereo out.

0 Shifting Booth

his little booth is not quite rectangular and one wall is on
heels, slightly shifting its size.
.ono in, stereo out.

11 Small Ambience

Small office-sized reverb/ambience.
Stereo/mono in, stereo out.

12 Soft n Small Room

Self-descriptive.
Stereo in and out.

13 Stereo Mic's w/Room

Stereoizes a mono signal and adds a close-mic'd air and ambi-
ence, something sounding like a little room leakage.
Mono in, stereo out.

5 Room Reverbs

0   Basic Reverb C   Crossfadable
Nice basic version of our module 'Reverb C'.
Mono in, stereo out.

1   Big Room
Sounds pretty close to a large recording studio room.
Stereo in, stereo out.

2   Blue Box Verb
Medium size, and medium bright room.
Mono in stereo out.

3   Boston Chamber
This is a large warm room/small hall reverb. Tone controls in
and out.
Mono in, stereo out.

4   Chamber2
This boy is a large room.
Mono in, stereo out.

5   Denny's Echo Room
Dense module 'A' reverb, with two discrete delays lines caus-
ing interesting reflections in the room. Reflection times and
levels can be adjusted on reverb page two.
Mono in, stereo out.

6   Der Verb
Switchable stereo in and out reverb built of discrete delays and
Reverb A module.
Switchable mono/stereo in, stereo out.

7   Don's Small Room
Very sizzly, metal & concrete room.
Switchable mono/stereo in, stereo out.

8   Drew's Small Room
Warm small room, like an old conference room with 15-foot
ceilings.
Switchable mono/stereo in, stereo out.

9   Drew's Dense Room
Warm example of a simple stereo version of Reverb A module.
Mono in, stereo out.

10   FIR Glass Shower
Bright and even, this is an FIR filter (Finite Impulse Respo
the engineering term for a filter that uses fixed amount of
lay taps). Gated type reverb sound.
Mono in, stereo out.

11   Funny Gated Room
A dynamic reverb with headroom, gate & envelope filter b
in. The dynamic envelope filter offers possibilities found in
other reverb units. Try adjusting *sweepwidth* to a nega
number! You can effectively disable gate by turning thres
-100 and hold time to 9 seconds.
Mono in, stereo out.

12   GaderVerb
A dynamic reverb with headroom, gate & envelope filter b
in. The dynamic envelope filter offers possibilities found in
other reverb units. Lower your monitor volume while carefi
adjusting filter since instabilities will occur with extreme
tings and low Q's.
[*Env Filt*] soft key: Try adjusting *sweepwidth* to a nega
number!
The switch *bypass* in the lower right may be set to "]
PASSED!" to disable the envelope filter. Press the SELF
button or turn the knob to the left to bypass. The filter (
adjustable on second press of [*Env Filt*] soft key.
[*GateParm*] soft key: Disable gate by turning *gate thresh*
100 or *ungated level* to 100.
Mono in, stereo out.

13   Gated Water Snare
A dynamic reverb with headroom, gate & envelope filter b
in. The dynamic envelope filter offers possibilities found in
other reverb units. Lower your monitor volume while carefi
adjusting filter since instabilities will occur with extreme
tings and low Q's.
[*Env Filt*] soft key: Try adjusting *sweepwidth* to a nega
number!
The switch *bypass* in the lower right may be set to "]
PASSED!" to disable the envelope filter. Press 'SELECT' t
ton or turn knob left to bypass. The filter Q is adjustable
second press of [*Env Filt*] soft key.
[*GateParm*] soft key: Disable gate by turning *gate thresh*
100 or *ungated level* to 1.
Mono in, stereo out.

14   Gym Shower
Really big tiled shower. Built of discrete delays and diffus
Mono in, stereo out.

5 LRMS reverb

The left/right input is converted to sum/difference. Each of the four signals then go through a reverb. The reverberated sum/difference is converted back to left/right and mixed with the reverberated left/right. You get a reverb that echoes and has an interesting space quality.
Stereo in, stereo out.

26 Masterverb Dullroom

Small, muted, wooden room.
Stereo in, stereo out.

27 Masterverb Hall 1

Large VFW-type room, with input and output EQ.
Stereo in, stereo out.

28 Masterverb Room 2

Small wooden room.
Stereo in, stereo out.

29 Medium Chamber

This is a bright, reflective room, with built in pre-delay.
Mono in, stereo out.

20 Noo Room!

A versatile, bright EQ'd room.
Stereo in, stereo out.

21 Reverb w/Diff & Eq   Crossfadable

Another bright medium room reverb.
Mono in, stereo out.

22 RMX Simu Ambience

Gated room kind of sound. Nice on kick drums and other percussion.
Mono in, stereo out.

23 Roomy Hall

Nice room with a warm hall body and a touch of chorus.
Mono in, stereo out

24 Semi-Gated Room

A dynamic reverb with headroom, gate & envelope filter built in. The dynamic envelope filter offers possibilities found in no other reverb units. Try adjusting *sweepwidth* to a negative number! Lower your monitor volume while carefully adjusting filter since instabilities will occur with extreme settings and low Q's. The filter Q is adjustable on second press of [*Env Filt*] key. Envelope filter has a bypass switch at lower right. Press SELECT key or turn knob to bypass. Disable gate by turning thresh to -100 or ungated lvl to 100.
Mono in, stereo out.

25 Slight Chorus Room

Deep room with a dash of chorus. Goes well with white meat.
Mono in, stereo out.

26 Small Club

This simulates a small concrete-floored club. There's a Greenwich Village pub under a building with scrap in front that sounds just like this.
Mono in, stereo out

27 Small Drum Room   Crossfadable

Small verbette, nice on drums but also on Armenian Sazbush.
Stereo in, stereo out.

28 UK Ambience

Short & bright, this 'gatey' type reverb has input and output tone controls.
Mono in, stereo out.

29 UK Bright

A short and bright room. Watch your levels.
Mono in (LEFT), stereo out.

30 UK Nonlinear

An FIR-type filter with a short gated sound.
Mono in, stereo out.

31 Wooden Men's Room

Effective emulation of one of those big, old hotel bathrooms. Has a slow sweep added.
Mono in, stereo out.

6 Hall Reverbs

0 Arena Soundcheck
Sounds like a huge arena 'Testing 1,2,3'.
Mono in, stereo out.

1 Barking Chamber
Severely EQ'd verb with midrange bark.
Mono in, stereo out.

2 Beeg Garage
This sounds like a huge, city parking garage.
Mono in, stereo out.

3 Big Hall
Large hall-like reverb with EQ and delay control.
Mono in, stereo out.

4 Big Hall 2
Newer version of *Big Hall* with extra accessibility.
Mono in, stereo out.

5 Big Hall/Med Hall
Two reverbs - one on left input, one on the right. They are submixed at the output.
Dual mono in, dual mono right.

6 Big Room Reverb
Big rich room echo, for use with mono or stereo input. Use *Muting* switch to test echo characteristic. A tunable version of this patch is *Big Hall*.
Stereo in, stereo out.

7 Black Hole
An abnormally large reverb, sucking everything in to a bottomless chamber. Try setting the diffuser to 68 and the size to 91 for a reverse hole.
Mono in, stereo out.

8 Bob's New Room
Large, warm hall built of discrete delays, diffusors, and ple
Mono in, stereo out.

9 Dynamic Reverb
A versatile reverb with headroom, gate & dynamic filter b in. **Turn monitor volume down while adjusting fil** since instabilities & overload may occur with low q's and v sweepwidths.
[*Env Filt*] soft key: Try adjusting *sweepwidth* to a nega number!
The switch *bypass* in the lower right may be set to "' PASSED!" to disable the envelope filter. Press 'SELECT' l ton or turn knob left to bypass.
[*GateParm*] soft key: Disable gate by turning *gate thresh* 100 or *ungated level* to 100.
Mono in and stereo out.

10 E-noseChorusCanyon
Giant canyon-sized verb with chorus effect.
Mono in, stereo out.

11 Enormo Hall
Big and deep.
Mono in, stereo out.

12 Gated Splash   Crossfad
Nice gated reverb. Gate is triggered by reverb level. Tr snares.

13 GloriousFlngCanyon
Huge canyons with flange on reverb.
Mono in, stereo out.

4 Jr. High School Gym

ounds like a junior high school gymnasium.
ono in, stereo out.

5 Master Hall

ig warm concert hall with input and output EQ.
witchable mono/stereo in, stereo out.

6 Masterverb Hall 2

arm, medium hall. Larger version of Masterverb Hall 1.
ereo in, stereo out.

7 Matt's Fat Room

arm room with slight chorus effect then input and output EQ.
witchable mono/stereo in, stereo out.

8 Medium Hall

irge sizzly Room. Nice sizzle tail.
ono in, stereo out.

9 Mono Easytap Hall

irge bright, hissy verb. One of many with input and output
Q.
ono in, stereo out.

0 Ridiculous Room DMC

i over the top room program. Huge low end.
ono in, stereo out.

21 SIZ Verb 7

A dynamic reverb with headroom, gate & envelope filter built
in. The dynamic envelope filter offers possibilities found in no
other reverb units. Try adjusting *sweepwidth* to a negative
number! You can effectively disable gate by turning *thresh* to -
100 and hold time to 9 seconds.
Mono in, Stereo out.

22 SplashVerb   Crossfadable

A very long, tunnel-like hall with gateable inputs.
Stereo in, stereo out.

23 Stereo room

Nice wide stereo room.
Switchable mono/stereo in, stereo out.

24 Swept Hall

A somewhat modulated hall reverb with interesting flutters.
Mono in, stereo out.

25 Swept Room

Large sweepable room. Has output EQ.
Mono in, stereo out.

26 The Megaverb Final

Bright and large, this reverb has input and output tone controls.
Mono in, stereo out.

27 Wormhole

Mega-sized, tilting reverb.
Mono in, stereo out.

7 Plate Reverbs

0   EMT-style Plate

Warm emulation of a big plate with child-proof controls.
Mono in, stereo out.

1   Cheap Springverb

Bright, dense, medium long and somewhat fluttery, this verb
is reminiscent of an older type of medium to high quality spring
reverb.
Mono in, stereo out.

2   Great Plate

Nice basic, stereo plate reverb effect.
Stereo in, stereo out.

3   Metallic Plate

Bright, dense, and metallic, as the name says.
Mono in, stereo out.

4   Pretty Smooth Plate

Large, bright plate with input and output tone controls.
Mono in, stereo out.

5   Sizzler Plate

Sizzly-sounding platelike reverb.
Mono in, stereo out.

Spring Reverb

oinky little thing, and very bright.
:ono in, stereo out.

Springverb

oinky, ringy, cheapo spring reverb sound.
:ono in, stereo out.

St.Plate+Chorus

stereo input goes to L/R tone controls, then to a chorus and
platelike reverb.
:ereo in, stereo out.

9 Stereo Plate

Dense, midrangy plate. A little like most plates but different.
Switchable mono/stereo in, stereo out.

10 Swept Plate

Platelike with EQs built in.
Mono in, stereo out.

8 Alternative Verbs

0 Cheap Verb Crossfadable

A reverb that is inexpensive in terms of signal processing resources. Very discrete.
Mono in, stereo out.

1 Choruspace O'Brian

Huge plex verb run through stereo delays set to heavy chorus. Both verb and direct get chorused, good for slow melodic attack sounds.
Mono in, stereo out.

2 E-nose Flanged Canyon

Large booming, reverbs, built of flanged delays.
Mono in, stereo out.

3 Flutter booth

Try to find this sound elsewhere! A deeply fluttering ambience.
Mono in, stereo out.

4 Gated Gong Verb

A gongy reverb with a gate.
Stereo in, stereo out.

5 Ghost Air

A deep backwards, breathing reverb. Has EQ.
Mono in, stereo out.

6 GloriousChrsCanyon

Friggin huge canyon verb with adjustable EQ and chorus.
Mono in, stereo out.

7 Gong Swell Verb 7

A dynamic reverb with headroom, gate & envelope filter built in. The dynamic envelope filter offers possibilities found in no other reverb units. Try adjusting *sweepwidth* to a negative number! You can effectively disable gate by turning *thresh* to -100 and *hold time* to 9 seconds.
Mono in, stereo out.

8 Horrors

Squeeking and squelching, this big cave reverb is aptly nam
The program is actually a multi-effects patch with pitch-shifter going into a delay set, and finally a reverb. T overall effect is a really weird reverb.
Stereo in, stereo out.

9 Jurassic Space

It's almost a delay, yet it's thick like a reverb. Has EQ to
Mono in, stereo out.

10 Key Morphic Reverb Crossfada

Hitting the 'morph' soft key will cause this reverb to mor between two settings. Note: to adjust the allpass expert rameters, use patch editor.
Mono in, Stereo out.

11 Kickback

An early-reflection type effect with a large adjustable pre-lay.
Mono in, stereo out.

12 MetallicChamber

Another pitch shifter going into a reverb c.
Stereo in, stereo out.

13 Phantom & Reverb

Unusual sliding harmony mixed w/input & thrown into an a reverb. Try on moody vocals. Never sounds same twice.
Mono in, stereo out.

14 Phaser and Reverb

Nice mixture of verb and phaser.
Stereo in, stereo out.

15 Pop Up

A multitude of soft delays that can be radically manipulat Try going to [*expert*]. On the "taps cntrls" page, scroll to " lays" and hit SELECT button (while listening).
Mono in, stereo out.

5 Predelay Nonlin

popular-sounding nonlinear verb with a long predelay set.
ono in, stereo out.

7 Preverberator

put is delayed .5 to 1.2 seconds while repeats grow and echo.
l effects fade out once input hits threshold. Good pre-echo
· sound effects or music.
vitchable stereo/mono in, stereo out.

3 Reverse Nonlinear

iother version of a nonlinear reverb, with extreme predelay.
ono in, stereo out.

) Reverserize Hall

ultitap with linearly increasing levels, feeding a large hall
verb. Gives you a backwards sound even while the words are
·ward.
ono in, stereo out.

) shift verb

iu won't hear this anywhere else (except Klikton, an undis-
vered planet in our solar system). It is a UFO taking off from
ziant canyon. Might be a great effect to end a song with.
ono in, stereo out.

l Sizzle Verb

.rge, alternative, sizzly verb. Easy to control.
ono in, stereo out.

l SplashVerb maxsweep   Crossfadable

unique swept reverb with some unusual gating options on
e input.
ereo in, stereo out.

3 Square Tremolo Verb

reverb with square wave modulation.
ereo in, stereo out.

24 Stereo Deetoon Room

This is a multi-effect that is mostly reverb to the ear. Shift,
reverb, and EQ modules in series.
Stereo in, stereo out.

25 Swell Verb 9

A dynamic reverb with headroom, gate & envelope filter built
in. The dynamic envelope filter offers possibilities found in no
other reverb units. Try adjusting sweepwidth to a negative
number! Lower your monitor volume while carefully adjust-
ing filter since instabilities will occur with extreme settings and
low Q's. The filter Q is adjustable on second press of Env Filt
key. Envelope filter has a bypass switch at lower right. Press
select key or turn knob to bypass. Disable gate by turning
thresh to -100 or ungated lvl to 100.
Mono in, stereo out.

26 Thicken Verb

Short dark ambience, deepens anything applied.
Mono in, stereo out.

27 Tremolo Ambience

Small ambience, with addable shake.
Mono in, stereo out.

28 Vibra Spread DMC

A variation on Vibra-Pan. Wide stereo effect, with increasing
delays.
Mono in, stereo out.

29 Zipper Up

Fast increasing diffused echoes with reverb.
Mono in (LEFT), stereo out

9 Vocal Processors

0   Big Voice

Very smooth voice shifter down to 1.5 octave below original.
True stereo or mono. Adjustable echo depth with auto control
('blur') based on voice level.
Stereo in, stereo out.

1   Ext Pitch Correct   Crossfadable

Use this to change or correct pitch. 'Manual' or MOD1 will shift
the pitch by the amount in 'shift mod.'
Stereo in, stereo out, external.

2   FixaVocal: 1/2 step   Crossfadable

Pitch shifter set up to enable the 'fix it in the mix' engineer to
ride flat vocals with the pitch wheel of a MIDI keyboard. Plug
keyboard's MIDI out to this MIDI in.
Mono in, mono out.

3   Phased Vocal Reverb   Crossfada

Not much of a challenge to figure out what 'Phased Vocal
verb' does.
Mono in, stereo out.

4   Auto Pitch Correct   Crossfada

Automatically corrects any vocal that is within half a semit
from where it should be. Outside of this range it will pul
the next note.
Mono in, stereo out.

5   Rap Bass Hype   Crossfada

Bass hype effect for rap vocals.
Stereo in, stereo out.

Voice Disguise

isguises voice for stool pigeon to appear on *60 Minutes*. Pitch
iifts up and down using random lengths and random direc-
ons.
[ono in, mono out

Voice Processor

[ake your voice tracks more compelling. Automatic upward
velling, full EQ, DS, limiting. Save a version for each vo!
aution: Includes 1-second delay.
[ono in, Mono out.

8 Vox Shimmer

Beautiful, complex, multi-effect vocal processor. Acts like dual
processors, each a mono in, stereo out multieffects box.
Dual mono in, stereo out.

9 Voxplate / Chorus

Excellent one-stop vocal treatment. Has EQ for left and right
inputs, a pitch shifter for thickening, a reverb, and a delay with
modulation capabilities.
Stereo in, stereo out.

10 Drum Processors

0   1+a Delay

Creates echoes in the rhythm pattern 'One and a' - An eighth note (the input) followed by two sixteenths.
Mono in, stereo out.

1   1e+a Delay

Produces the 3 last sixteenth notes of a 120 beat. 'One ee and a.'
Mono in, stereo out.

2   4 Your Toms Only

Tom ambience with a little verb, a little chorus, a little EQ, a little anchovy sauce.
Mono in, stereo out.

3   808 Rumble Tone   Crossfadable

Adds sub-harmonics to a kick drum. An oscillator is gated until triggered.
Mono in, mono out.

4   Arena Soundcheck

Huge empty arena, and there's this guy on a mic saying 'test 1,2,3' over and over.
Mono in, stereo out.

5   Basement Drums

Giant basement underneath Shea Stadium. Some employee brought his drums in and it sounds like this.
Mono in, stereo out.

6   Beatbox Reverb   Crossfadable

One of a kind talking reverb with adjustable vowels and words.
Mono in, stereo out.

7   Big Bottom

Really smooth and thick, this is an elegant interconnection of diffusors. Check patch.
Mono in, stereo out.

8   Big Gateverb

A gated-type ambience good on snare. Uses lots of delay taps thrown into a short reverb.
Mono in, stereo out.

9   Big UK

A gated-type ambience good on snare, made popular by British engineers. Uses lots of delay taps thrown into a short reverb.
Mono in, stereo out.

10 Chim-Chiminee

Unusual, rhythmic pitch shifts that go chim-chiminee.
Mono in, stereo out.

11 Clap Thickener

A beautiful shifter useful to thicken percussives. It chan its pitch parms slightly between every clap.
Mono in, stereo out.

12 Drew's Drum Box

Tight flanging ambience. Interesting on overheads.
Mono in, stereo out.

13 Drew's Drumsqueez

Slooowww flangy effect with close ambient delays.
Mono in, stereo out.

14 Drum Chamber

Really bitey snare ambience. EQ'd.
Mono in, stereo out.

15 Drum Filter   Crossfada

Excellent triggered filter. Has sweep rate and envelope para
Mono in, mono out.

16 Drum Flanger   Crossfada

Another flanger tweaked for drums.
Stereo in, stereo out.

17 Drum Flutters

Unusual fluttery, gated-sounding thing. Sampled indust dishwasher?
Mono in, stereo out.

18 Firecracker Snare

A versatile reverb with gate & dynamic filter built in. The ter is controlled by an envelope follower, unlike Dynamic verb whose filter is controlled by a less dynamic gate envel **Turn monitor volume down while adjusting filter** si instabilities & overload may occur with low Q's and w sweepwidths. Try adjusting sweepwidth to a negative n ber! You can disable gate by turning thresh to -100 or unga lvl to 100.
Mono in, stereo out.

19 Frippertronics   Crossfada

A long delay with feedback that turns a single drum into a t of percussionists.
Mono in, stereo out.

20 Group Claps

A useful clap thickener built from 8 pitch shifters with del
Mono in, stereo out.

21 Hat Flange   Crossfada

Guess what this does.
Stereo in, stereo out.

2 Li'l Drum Space

ght space, reminds us of our rear, unfinished basement.
ono in, stereo out.

3 Liquid Toms

atery, band delays. Tweaked on tom drums.
ono in, stereo out.

4 Live Nonlin Room

nall little ambience that can add a touch of reality to close
ics or drum machines.
ono in, stereo out.

5 Live Snare Verb   Crossfadable

sonant reverb, good on snares.
ono in, stereo out.

6 Medium Gateverb

lf-descriptive.
ono in, stereo out.

7 Nerve Drums

ngy, close delay taps.
ono in, stereo out.

8 Nonlinear#1

little nonlinear ambience. Has gated effect, nice on snare.
ono in, stereo out.

9 Panning Delays   Crossfadable

delay with auto-panning.
ono in, stereo out.

0 PercussBoingverb   Crossfadable

zarre boingy verb. Need a new color for that off-color song?
ono in, stereo out.

1 Percussion Industry

iis patch will turn incoming percussive signals into noisy
lustrial percussion. Use the external controls MOD1 and
OD2 to modify filter frequency and q.
ono in, mono out, external

2 Percussion Room DMC

very bright room program, optimized for high end percussion,
e cow bells, shakers etc.
ono in, stereo out.

3 Rhythm Delay

number of echoes with new parameters. Sounds bossa nova.
ono in, stereo out.

4 Ring Snareverb   Crossfadable

ry pitchy reverb. Emphasizes ring frequencies. Maybe use
conjunction with other snare reverb.
ono in, mono out.

35 Small Drumspace

Nice ambience reminiscent of long, unfinished, basement room.
Stereo in, stereo out.

36 Small Drumspace II

Small basement type ambience. Put some carpet in, will you?
Stereo in, stereo out.

37 Small Gateroom

Small Gated Reverb. Nice on kick, snare, over salads, pasta.
Mono in, stereo out.

38 Sonar Room

A dynamic reverb with headroom, gate & envelope filter built
in. The dynamic envelope filter offers possibilities found in no
other reverb units. Try adjusting sweepwidth to a negative
number! You can effectively disable gate by turning thresh to
-100 and hold time to 9 seconds.
Mono in, stereo out.

39 Stereo Delays

A stereo multitap, simple to control.
Mono in, stereo out.

40 Swept Band Delay   Crossfadable

Rhythmic up-sweeping band delays. Very high tech.
Mono in, stereo out.

41 Techno Clank   Crossfadable

Shaky metallic resonance, with vowel-shaping. This can be
truly undefinable. Kind of like... you know... the ..sound...of..a
dropped coffee pot triggered.
Mono in, stereo out.

42 The Ambience Kit

Cute little FIR-type ambience. Try on snare.
Mono in, stereo out.

43 Tight Snare Verb   Crossfadable

Very ringy reverb, meant for snares.
Mono in, stereo out.

44 Trigger Tone 4   Crossfadable

An adjustable oscillator is gated on & off when the input on the
left channel exceeds a user-setable threshold. This program
differs from Rumble Tone in that the oscillator level is not
dynamic. It is turned all the way on. Attack, hold, and decay
controls available.
Mono in, mono out.

45 Vibra Pan

This uses panning delays to form an FIR panning ambience.
Mono in, stereo out.

46 Wide Room

Complex reverb that sounds much the size of some recording
studio rooms.
Mono in, stereo out.

11 Guitar Effects

0   1st Reich
With this preset you get eight pitch shifts with delay. A modern jazz sound.
Mono in, stereo out.

1   Bass Suite
This patch consists of a compressor, an octaver, a 4-band EQ, and a phaser. Mod1 controls the octaver level, and Mod2 controls the phaser level.
Mono in, mono out, external.

2   Fuzz-o-mania Four
Hard distortion with compression, EQ, shifters, chorus, reverb, and more.
Mono in, stereo out

3   Gig Reverb
Just a pitch shift into reverb. Simple to use.
Mono in, stereo out.

4   Guitar Mania
Tone, shift, phaser, chorus, and delay. The almost everything rack.
Mono in, mono out.

5   Inst Process
This preset gives you a pitch shift, phaser, chorus, and delay rack.
Mono in, mono out.

6   Kill the Guy   Crossfadable
One-of-a-kind, envelope-triggered 'talking effect'. Apply input and play with vowels for new filtering. Used on Steve Vai's 'Kill the Guy with the Ball' from his Alien Love Secrets CD.
Mono in, mono out.

7   Jan&Jeff
As in, Hammer & Beck. Synth will follow your input guitar line... sorta. If you don't understand it, you're too young.
Mono in, stereo out.

8   Little Man
A plex loop with reverse shifters and filters inside. I think this little man is trying to say something.
Mono in, stereo out.

9   Octave Box   Crossfade
This is what people used before **Eventide** invented the pi shifter. The effect is a square wave an octave below your put. The volume of the output follows your input. Adjust lowpass filter on the input to get the output pitch to tr Adjust the lowpass filter on the output for the timbre you w
Mono in, mono out.

10 Phaser Rack
This rack includes EQ, compressor, pitch shift, delay, . phaser.
Mono in, mono out.

11 Pickers Paradise
This rack has compressor, EQ, delay chorus, reverb, tremolo.
Mono in, stereo out.

12 Soft Attack Fuzz
This preset puts a soft attack on the notes and a reedy f on the sound.
Mono in, stereo out.

13 Tremolo Rack
This is a rack with EQ, compressor, chorus, reverb and a stereo tremolo.
Mono in, stereo out.

14 Vai-a-tonic Trio
Now you have three other guitarists, each with a differ sound. Player three likes his fuzz.
Mono in, stereo out.

15 Virtual Pedalboard
Rather than lug your pedalboard and rack into the studio, this pedalboard emulation. Six separate effects, each with dividual controls.
Mono in, mono out.

16 W-I-D-E SOLO
Uses a lot of very small pitch shifts to widen the stereo im:
Mono in, stereo out.

4-band compress

ompresses four bands separately for punchier voices. Sepa-
te De-Esser in Compress menu. Save a different version for
ch announcer!
ono in, mono out.

Auto V/O Ducker   Crossfadable

noothly fades music (or sfx) before voice or other 'priority'
gnal. No pumping, unaffected by input level over threshold.
cludes one-second delay.
ono in, mono out.

Bigger is Wider   Crossfadable

nergy below 200 Hz (bass notes and male voices) triggers ste-
o width enhancement. Completely compatible: mono listen-
s hear original signal.
ereo in, stereo out.

Compressor & EQ

ie 2 left faders are the left & right inputs to compressor.
iere's one band of EQ and hi/lo shelving followed by an out-
t level fader. The compressor is built from four compressors,
o for each channel. Use the input controls on left to set level
d compressor drive.
ereo in, stereo out.

Dual Gates   Crossfadable

vo independent gates, each with its own attack, decay, and
reshold. Check patch for simplicity.
ereo in, stereo out.

Ext Control Panner   Crossfadable

ies exactly what you might think. MOD1 controls position.
obal Mix MUST be set to 100.
ono in, stereo out, external.

Ext Gain Control   Crossfadable

OD1 controls the gain of both channels.
ereo in, stereo out, external.

Man's Pan   Crossfadable

ins left input with an LFO. Four waveforms available. At
percent full pan will occur. Above 60% and you will engage
D effect.
ono in, stereo out.

8   Quad Pan Chorus's

Four delays are panned and swept with 8 oscillators, creating
a rich but tight field of voices.
Stereo in, stereo out.

9   Ramp Up/Ramp Down   Crossfadable

This presets gives you the ability to create audio fades in & out,
either exponentially, linearly, or define your own envelope.
Stereo in, stereo out, external.

10   SemiClassic Squeeze   Crossfadable

A classic compressor topology is used in this algorithm. Has a
knee and considerable overshoot. You can overload a little
without harsh clipping.
Dual mono in, dual mono out.

11   Stereo Compressor   Crossfadable

This compressor is built from four compressors, two for each
channel. They're set to provide a knee function. All you have
to adjust is the input drive fader.

12   Stereo Two-Bander

Each channel is split into 2 bands (high and low freq) which
are processed separately, while preserving the high frequency
stereo imaging.
Dual mono in, Dual mono out.

13   Top 40 Compressor   Crossfadable

A classic compressor topology is used in this algorithm. Has a
knee and considerable overshoot. You can overload a little with-
out harsh clipping. Two channels.

14   Tremolo Lux   Crossfadable

Tremolo with some envelope modulation. Has rate and tremolo
depth.
Stereo in, stereo out.

15   2 Mono Compressors   Crossfadable

Two independent compressors with delays placed to achieve
predictive attacks and decays. Not optimized for true stereo
operation.
Dual mono in, dual mono out.

13 EQ/Filters

0 Mono Filter
Crossfadable

A single mono filter.
Mono in, mono out.

1 Stereo Filter
Crossfadable

Two filters with common controls.
Stereo in, stereo out.

2 100\300^1K^3K10K/4K

This is a stereo 6-band parametric EQ. The 1st and last band are shelving EQ's. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode!

3 100^400^1K5^4K8K15K

This is a stereo 6-band parametric EQ. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode!

4 2 Band Crossover
Crossfadable

2-band crossover. Mono in, high & low bands out.

5 40^100^300^1K^5K10K

This is a stereo 6-band parametric EQ. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode!

6 60\100^500^1K4K/1K5

This is a stereo 6 band parametric EQ. The 1st and last band are shelving EQ's. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode!

7 80\160^400^2K^5K/2K

This is a stereo 6 band parametric EQ. The 1st and last band are shelving EQ's. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode!

8 80^200^500^2K6K12K

This is a stereo 6 band parametric EQ. The name lists center frequencies. Bandwidth is in octaves. Check mix m
Stereo in, stereo out.

9 Band Delay
Crossfad

Breaks mono signal into 8 bands, delays each, sums all stereo mixer.
Mono in, mono out.

10 Band Filter

This is a band pass filter where you set the upper and l frequencies of the band.
Mono in, mono out.

11 Big Dipper
Crossfad

This is one sharp filter (actually eight). Dips at tuned quency and at the next seven harmonics.
Switchable mono in, mono out.

12 Crossover/Limiter

2-band crossover. Mono in, high & low bands out. This has phase-invert switches, *microdelay*, limiters.

13 Cup Mute

Simulates the sound of a trumpet-like bell with a cupmut generalized mod input is accepted to modulate the input or fly. Hit parameter to get second page of parameters.
Mono in, stereo out, external.

14 Detuned Band Delay

8 bands each with a *delay* and *detuner* built in.
Mono in, mono out.

15 Down Band Delay

12 bands, each with a delay. Set for high frequencies firs
Mono in, mono out.

16 Envelope Filter Crossfadable

Two filters controlled by the signal level.
Mono in, mono out

17 Ext Mono Wahwah Crossfadable

Just a wahwah. You select the on (pedal down) and off (pedal up) frequencies and Q. MOD1 sweeps the effect.
Mono in, mono out, external.

18 Ext Stereo Wahwah Crossfadable

Externally-controlled dual filters. MOD1 is the external control. You can specify the frequency and Q at each end of the external sweep.
Stereo in, stereo out, external.

19 Ext Vocal Wahwah Crossfadable

A different kind of wahwah where you sweep thru a vocal filter. MOD1 sweeps the effect.
Mono in, mono out, external.

20 LMS Filter Crossfadable

Adaptive filter. Signal goes in left, noise goes in right. There is a delay for the noise input. Signal minus noise comes out left. Noise from signal comes out right. Check out the LMS module in the manual.
Dual mono in, dual mono out

21 Mono Eight Band EQ Crossfadable

This is a mono, 8-band, full parametric EQ.
Mono in, mono out

22 Mouth-a-lator Crossfadable

Another version of I-Yai-Yai program with different settings.
Mono in, mono out.

23 Simple Vocoder

A simple 10-band channel vocoder. Not as intelligible as a real vocoder, but useful for vocal-like effects. The ratio control shifts the formants: .5 = octave down, 2 = octave up. You also have control over the individual bands.

24 SweepBand Delay Crossfadable

Filtered echoes.
Mono in, stereo out.

25 Up Band Delay

12 bands, each with a delay, set for low frequencies first.
Mono in, mono out.

26 VerbTrashSweeping

Talking, reverby, and resonant with an LFO vibrato applied - it's hard to describe.
Mono in, stereo out.

27 Vocal Filter Crossfadable

Vocal filter consists of three filters that are adjusted to simulate the human vocal tract, making vowels. You get to choose which vowels to sweep between, and the signal envelope will sweep the filters.
Mono in, mono out.

28 VocalFilterModwheel Crossfadable

Nice MIDI-modulatable vocal filter. Uses mod wheel.
Mono in, mono out.

14 Distortion

0 CrudeDistortion Tap Crossfadable

A fuzz ambience effect. The rectified signal is put thru two multitaps where the signal is inverted for one of the multitaps.
Mono in, stereo out

1 ARKHAMLEAD

Fun distortion box with a couple of delays thrown in.
Mono in, stereo out.

2 Band Distort

Several distortion methods are applied to the left input. The top and bottom halves of a waveform are distorted independently with a nonlinear curve and slew rate limiting. The distorted signal is passed through some complex shifting & mixed to stereo outputs.
Mono in, stereo out.

3 Ben's Grungy Guitar

Compressor followed by tubelike distorters and EQ.
Mono in, mono out

4 Big Muff Crossfadable

Full and fat, a guitar straight in the -10 inputs is all you'll need for pretty pumpin' sound. Roll off top if using direct guitar input.
Mono in, stereo out.

5 Big Muff w/ Dead 9v Crossfadable

Sounds like its time to change that 9-volt battery in your distortion pedal. Distortion and EQ.
Mono in, mono out.

6 Bite Distort

User-definable distortion curves opens up new possibilities. Offers control over several distorted signals (some pitch shifted), summed back together in a pannable stereo field.
Mono in, stereo out.

7 Chorus Distort

Fat & effected distortion program. User-definable distortion curves. Chorusing can be mixed separately.
Mono in, stereo out.

8 Class A Distortion Crossfadable

This is a 2nd harmonic generator. A lowpass circuit is used to limit input bandwidth to distortion cell, to prevent aliasing. The left two faders are separate left & right input levels. The fader on the right is output level. Meters 1 & 2 show left & right distortion (THD). The distortion induced is not guitar-type hard clipping. It is subtle and can be applied to stereo signals to make them more 'analog'.
Stereo in, stereo out.

9 Crunchy

Metal-type distortion combined with chorus, EQ, and gate.
Mono in, mono out.

10 Fluxion Distort

Like normal distortions, this will warp the amplitude of wave. In addition, this will warp the flux of the wave. Flu how fast the wave moves from one amplitude to another.
Mono in, stereo out.

11 Fuzz Frippertronics Crossfad

A dirty distortion is followed by a serious delay - up to 5 onds for looping and playing with yourself, so to speak.
Mono in, mono out.

12 Fuzz Maker Crossfad

Two distortion approaches are combined here. One is a s rate limiter, the other is a user-definable gain curve.
Mono in, mono out.

13 Fuzz-o-mania

Rasty fuzz made from hard clippers with shifters, modula delays and phaser.
Mono in, stereo out.

14 Fuzz-o-mania Too

Hard clipper followed by compressor. EQ, phaser, and full verb to embellish the distorted signal.

15 Fuzz-o-mania Tree

Hard clipper mixed with original signal, compressed and s to effects with a slow phaser sweep.
Mono in, stereo out.

16 hmmm distort

User-defined curves induce distortion on left input. Has eral shifters all submixed and panned at the stereo outpu
Mono in, stereo out.

17 QuadHyperMod

A rich, full distortion with a modulatable delay on it.
Mono in, stereo out.

18 Thick Distort

Extreme fuzzed, user-setable distortion is filled out with n tiple pitch shifters.
Mono in, stereo out.

19 Transistor Distort Crossfad

Simulates distortion of a transistor amplifier. Has gain ad & EQ before and after the transistor simulator.
Mono in, mono out

20 Tubey Distortion Crossfad

Simulates the distortion of a tube amplifier. Has gain ad and EQ before and after the tube simulator.
Mono in, mono out

) Compress Highs Only

ι stereo compressor is followed by a compressor that limits a
and or a shelving response. Use as a de-esser or other versa-
ile frequency-conscious processor.

'he left two faders on the Main page are separate left & right
ιput levels. First meter is compression, second is H.F. limit-
ιg. Output level adjust is on the right. Duplicate controls and
ιeters are found on different pages for convenience. They will
lways match.

2dB of internal headroom is allowed for processing of full scale
ignals. Often you can just adjust the input levels to drive into
ɔmpression.

tereo in, stereo out.

. Dist Master Box

. stereo compressor is followed by a compressor that limits the
igh frequency response. Can be used as a de-esser.

he left two faders are separate left and right input levels.
irst meter is compression, second is high-frequency limiting.
ιn output level adjust is on the right.

tereo in, stereo out.

2 Grunge Compress

A stereo compressor is followed by a compressor that limits a
band or a shelving response. Use as a de-esser or other versa-
tile frequency-conscious processor.

The left two faders on the Main page are separate left & right
input levels. First meter is compression, second is H.F. limit-
ing. Output level adjust is on the right. Duplicate controls &
meters are found on different pages for convenience. They will
always match.

12dB of internal headroom is allowed for processing of full scale
signals. Often you can just adjust the input levels to drive into
compression.

Stereo in, stereo out.

3 Radio Compress

A stereo compressor is followed by a compressor that limits a
band or a shelving response. Use as a de-esser or other versa-
tile frequency-conscious processor.

The left two faders on the Main page are separate left & right
input levels. First meter is compression, second is H.F. limit-
ing. Output level adjust is on the right. Duplicate controls &
meters are found on different pages for convenience. They will
always match.

12dB of internal headroom is allowed for processing of full scale
signals. Often you can just adjust the input levels to drive into
compression.

Stereo in, stereo out.

16 Mixdown Suite

0   Clrmtn's NemWhipper   Crossfadable

This is a pitch shifter set up to allow precise correction of out of tune notes. Each of four selectable settings permits specifying of a maximum and minimum pitch shift limit, so the engineer can 'whip' the knob quickly to the desired degree of correction, without fear of overshooting. The response of the knob may be set with the 'scaler' parameter.
Mono in, mono out.

1   Mixer's Toolbox #1

The ultimate mixing tool for producers. It provides EQ, pitchshift, reverb, and an all purpose delay along with a highly flexible routing and mixing scheme. The delay has hi cut on the input as well as the regeneration path to warm the signal up and make it more analog if so desired. The out mix provides level control of the shifted, reverb and delay signals as well as the pan placement of the delay and shifted signals. The two additional parameters allow you to separately set the amount of shifted signal sent into the reverb and delay, providing endless variations.
Mono in, stereo out.

2   Mixer's Toolbox #2

Similar to #1 except that you can also send the delay into the reverb adding a higher degree of flexibility and greater permutations. Keep in mind that the balance/mix set at the "shift->delay" parameter determines what type of audio mix of direct and shifted signals are sent into the delay, as well as appearing as the "delayed" signal entering the verb.
Mono in, stereo out.

3   Mixer's Toolbox #3

As above but with reverse shift replacing regular shift. ' allows "crystal echoes" to be added to the signal path.
Mono in, stereo out.

4   Mixer's Toolbox #4

Mono in, stereo out.

5   NemWhipper Stereo   Crossfad:

This is a pitch shifter set up to allow precise correction of of tune notes. Each of four selectable settings permits sp fying of a maximum and minimum pitch shift limit, so engineer can 'whip' the knob quickly to the desired degre correction, without fear of overshooting. The response of knob may be set with the 'scaler' parameter.
Stereo in, stereo out.

6   NemWhipper Dual   Crossfad

This is a pitch shifter set up to allow precise correction of of tune notes. Each of four selectable settings permits sp fying of a maximum and minimum pitch shift limit, so engineer can 'whip' the knob quickly to the desired degre correction, without fear of overshooting. The response of knob may be set with the 'scaler' parameter.
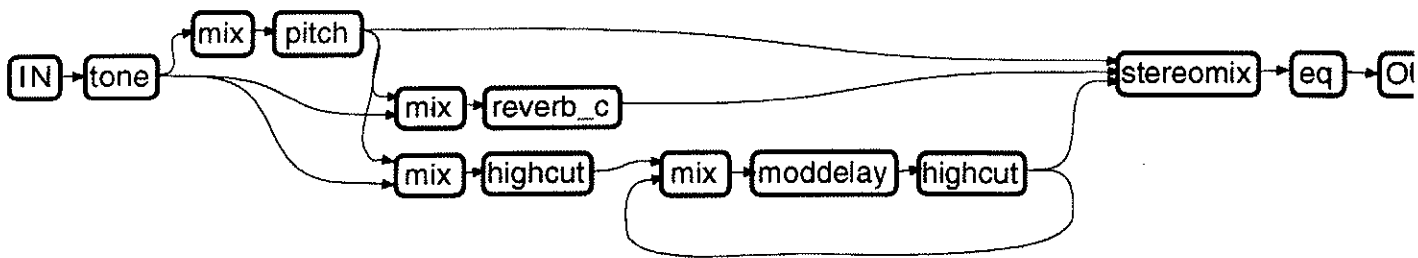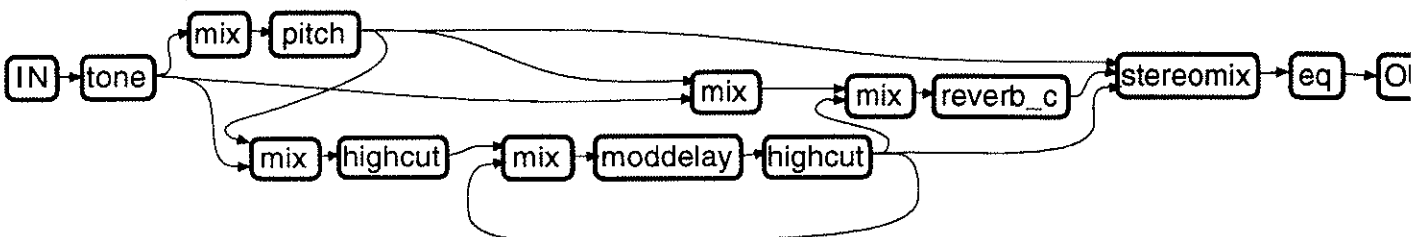Dual mono in, dual mono out.

7   Pickshift Paradise

This rack includes compressor, EQ, pitch shift, reverb, tremolo.
Mono in, stereo out.

This diagram is a pictorial of the program used for Mixer's Toolbox #1. It includes only the audio path.

This diagram is a pictorial of the program used for Mixer's Toolbox #2, 3 and 4. It includes only the audio path.

) 33 RPM w/ scratches   Crossfadable

andwidth limiting, stereo blend, and scratches! Use 'Qual-
y' setting for quick choices, or choose custom settings. Ticks
ave 33 1/3 RPM rhythm.
tereo in, stereo out.

Bell Constr. Kit   Crossfadable

reate any telephone or beeper 'chirp' with complete control.
ISER2 makes it ring... Bounce a bunch together for ambience.
othing in, stereo out.

Headphone Filter   Crossfadable

fakes left input sound like a set of headphones on the floor.
fono in, mono out.

Long Distance   Crossfadable

elect the long distance phone company of your choice, chang-
ig filters, echo, crosstalk, discounts, etc. Select L or R input.
Torks best with voice.
fono in, mono out.

Noise Canceller   Crossfadable

roper adjustment should allow one to subtract out noise from
signal. You must put the noise source into right channel and
ith proper alignment, that noise should be eliminated from
ie source to be fixed (on the left input).
ual mono in, duao mono out.

Plug Puller

nagine you've got a disk on a turntable or a cart playing.
nagine you pull the plug. Now you can do the same effect to
Ds, DATs, and network!
tereo in, stereo out.

Public Address

ypical auditorium with feedback, slap, and reverb. "Freq" sets
edback pitch; "Thresh" sets volume (at that pitch) that will
art feedback. "Amt" sets feedback volume. "Echo" sets slap
nd reverb simultaneously. If it howls because you set "Amt"
o high, remove the input and it'll stop.
fono in, stereo out.

7 Real Call-in

Mixes host and phone-patch output with equalization on phone
line, automatic ducking of caller when host talks, and adjust-
able reverb on entire mix.
Dual mono in, dual mono out.

8 Real Dialer   Crossfadable

Hilite on-screen button and hit SELECT to advance through a
full dial tone & dialing sequence. Adjust speed, rhythm and
real phone number to fit the copy. Try stepping though client's
number in time with the jingle! Uses real telco tones.
Nothing in, mono out.

9 Sharp Vocal Filter   Crossfadable

Unusual resonant talking filters. Gotta try it!
Mono in, mono out.

10 Solo Zapper

Adjust "locate" for minimum soloist, then slowly raise "bottom"
to preserve bass. "Width" restores stereo, yet is mono compat-
ible. Looks for mono solo in stereo mix, but can't read your
mind:most pop music zaps well, leaving just echo; singer with
solo acoustic doesn't do as well; mono sources and old Beatle
records won't zap at all.
Stereo in, stereo out.

11 TimeSqueeze(R)   Crossfadable

Stereo shift with a percentage pitch change.
Stereo in, stereo out.

12 Woosh Maker   Crossfadable

Turns your DSP4000 into analog synth, for classic 'woosh'
sound effects. Fine-tune the sound from the [expert] menu
while pressing USER1 to trigger.
Nothing in, stereo out.

0   470 PhoneRingDelay
Crossfadable

Delays timed to sound like an old phone-ring effect.
Switchable mono/stereo in, stereo out.

1   474 Sextuplets
Crossfadable

This is, well, sextuplet delays.
Switchable mono/stereo in, stereo out.

2   502 Analog Thick
Crossfadable

A warm chorused echo sound. Two adjustable lowpass filters
provide the warmness.
Mono in, stereo out.

3   507 DGDLY+WAH+MICRO
Crossfadable

This is an unusual combination of a digital delay, a cycling
'wah-wah' filter, and a micro pitch shift.
Mono in, stereo out.

4   533 Voice Doubler

Sweeps two pitch shifters in opposite directions, giving a con-
vincing doubling effect.
Mono in, stereo out.

5   535 Analog Delays
Crossfadable

Warm echoes provided by lowpass filters.
Mono in, stereo out.

6   537 Circles
Crossfadable

A stereo delay effect that seems to circle around your head. The
effect is most noticeable on short sounds, like hand claps.
Stereo in, stereo out.

7   542 Fat Slap
Crossfadable

A slap delay with an ambient sound.
Stereo in, stereo out.

8   546 Ping Pong Ball
Crossfadable

Another echo that bounces side to side, but the echo shortens
with time.
Stereo in, stereo out.

9   550 Subtle Sweep

Two subtle sweeping delays. This is ideal for turning m
sources into stereo. Pan original source to one side and
sweeping delay to the other. Use on two sources. Very ur
trusive.
Stereo in, stereo out.

10 560 De-Burr
Crossfad:

Takes the edge off sharp attacks.
Mono in, stereo out.

11 598 Random Gate
Crossfad:

A 'gated reverb' sound created with the multitap module. G
for drums.
Stereo in, stereo out.

12 605 A Minor Chords
Crossfad:

Play or sing a solo line in A minor. The DSP4000 will gei
ate two perfect 'in-key' harmonies.
Stereo in, stereo out.

13 606 Arpeggios

Adds a fifth and an octave rhythmically, along with a sł
delay.
Stereo in, stereo out.

14 608 Deepen
Crossfad:

Adds lower octave harmonies with a pitch shifter sweep.
Mono in, stereo out.

15 609 Diatonic Dance
Crossfad:

You play a note and, after half a second, you get a harm
Use only one note at a time and in an effect loop.
Mono in, stereo out.

16 612 Gregorian Chant
Crossfad:

This program filters and pitch shifts input voices to produ
chorus of droning monks.
Mono in, stereo out.

17 613 H949

This gives you what the **Eventide** H949 gave you. One output is a straight delay while the other is pitch shifted. Both outputs are fed back to the input.
Stereo in, stereo out.

18 623 Pitch Quantize

Automatically corrects any vocal that is within half a semitone from where it should be. Outside of this range it will pull to the next note.
Mono in, stereo out.

19 625 Third & Fifth Crossfadable

Generates an 'in-key' 3rd and 5th above the input.
Stereo in, stereo out.

20 626 Third & Octave Crossfadable

This generates a diatonic 3rd above and an octave below the input.
Stereo in, stereo out.

21 630 Aliens Crossfadable

Transforms voice into a rough, alien-like sound.
Stereo in, stereo out.

22 640 Cannons Crossfadable

A unique sweeping sound that's great on drums. Try playing a tom solo through this.
Stereo in, stereo out.

23 641 Critical Band Crossfadable

Close approximation to Fletcher/Munson bandpass curves. Use to brighten signals, or key compressors and gates to frequencies to which our ears are most sensitive.
Mono in, stereo out.

24 644 Filter Pan Crossfadable

A filter sweep that seems to pan as it sweeps.
Stereo in, stereo out.

25 645 Future Shift

A shimmering orchestral effect. Try on swelling monophonic synths or single-line voices.
Stereo in, stereo out.

26 657 Scary Movie Crossfadable

This program uses reverse shift to create an evil-sounding voice. Use with guitar to create that tape splice, psychedelic sound.
Stereo in, stereo out.

19 Bizarre

0   7 Spacer

Endless rising echoes diffusing into noise.
Mono in, stereo out.

1   Enoesque 1

Slight pitch shift with feedback goes through a bit of chorus
and finally into a reverb.
Mono in, stereo out.

2   Enoesque 2

This is kinda chorusy and wobbly but real strange.
Mono in, stereo out.

3   Fantasy Backgrounds

Generates randomly-changing, different sci-fi or fantasy e⟋
ronments, also 'relaxation' backgrounds. Experiment with
tings.
Nothing in, stereo out.

Time+Pitch Manifold

This preset rearranges the time and pitch of whatever you play into it.
Mono in, stereo out.

VR Backgr01

Generates randomly-changing, different sci-fi or fantasy environments, also 'relaxation' backgrounds. Experiment with settings.
Nothing in, stereo out.

6   VR Backgr02

Generates randomly-changing, different sci-fi or fantasy environments, also 'relaxation' backgrounds. Experiment with settings.
Nothing in, stereo out.

7   Warm Chorpustle

A real squishy sloshy sort of pitchshifted echo. Sounds like the blood travelling through your veins.
Mono in, stereo out.

20 Curiosities

0 5th Mega

An interesting effect texture with a fifth shift, reverb and flange.
Mono in, stereo out.

1 5th Quantizer

An interesting tremolo echo effect.
Mono in, stereo out.

2 Adaptive Reverb

The delays of a reverb follow the pitch of your input. Make sure you have a good strong input for the pitch detect.
Mono in, stereo out.

3 Angel Echos

Angelic echoes with chorus and reverb. If you're an experimenter, this preset has lots of control for different sounds.
Stereo in, stereo out.

4 Computerizer

Kinda makes your instrument sound like a computer from the 1950s trying to figure something out.
Mono in, stereo out.

5 Crystal 5th Caves

Simpler pitched echoes with reverb. Try different shift amounts.
Mono in, stereo out.

6 Crystal Heaven

Octaves chorused and reverbed.
Mono in, stereo out.

7 Crystal Octaves

Octave echoes build upon each other to add a crystalline string sound to your instrument.
Mono in, stereo out.

8 Crystal Sevenths

Just like "Crystal Octaves" except some fifths are thrown in for a more organlike effect.
Mono in, stereo out.

9 Crystal Worlds

A mellow crystal octave effect.
Stereo in, stereo out.

10 Dinosaur Legs

Somehow, 'Dinosaur Legs' seems the best description for preset.
Mono in, stereo out.

11 DrWho Diatonic 6ths   Crossfad:

A synth-like effect in which a square wave shifts the sound and down an octave. This is after you have a diatonic 6th sl
Mono in, mono out.

12 Duck Soup

Very weird swept pitch shift and delays. But it will duck of the way when you play something.
Stereo in, stereo out.

13 Ducked Tails

Adds rising or falling echo, but only on the ends of sounds; ne during a sound. Raise *Sens* until effect does not compete v input... it'll be there when the input stops. Hint: A slow, ward tail makes a nice transition to cover pauses when p ing songs from the same CD.
Stereo in, stereo out.

14 Garmonbozia

Does all sorts of unnatural things to the left input: reve shift, and psychotic panning.
Mono in, stereo out.

15 Genesis Worlds

A simple note creates a myriad of repeating pitch-shifted lays with a nice reverb. Play simply for best results.
Stereo in, stereo out.

16 Heen   Crossfad:

A sequence of random notes. Try playing with the sample i and droop.
Nothing in, mono out.

.7 Latin Cathedral Crossfadable

.n interesting reverb made by using reverse delays.
Iono in, stereo out.

.8 Mod-U-Mania Crossfadable

haser and modulated delay. Very altered echoes.
Iono in, mono out.

9 Pitch->FreqShift Crossfadable

itch shifter into a frequency shifter. Very interesting modu-
itions.
Iono in, mono out.

0 Sample Hold Filter Crossfadable

random signal feeds a sample hold which then controls a fil-
:r. Gives a watery effect.
Iono in, mono out.

1 Smooth Crystals Crossfadable

ery smooth crystal octave effect.
:ono in, stereo out.

2 Squareworld Shifter

:odulated pitch shifts give you a computer synth sound.
:ono in, stereo out.

3 Star Space

ctave shifted echoes. A combination of pitch shift, chorus,
:verb.
:ono in, stereo out.

24 Synth Reverb

A mono FM type synth driven by your input with a reverb.
"Freqmult1" will tune the synth.
Mono in, stereo out.

25 Triggered Arpeggio Crossfadable

You strike a note and this preset will pitch shift a scale. You
can dial in your own melody if you want.
Mono in, mono out.

26 UFO in My Church

Close Encounters sequencer with reverb.
Nothing in, stereo out.

27 War with PhaserGuns

If you put in two or more voices of tones which are shifting
slowly, this program will make all sorts of nifty ray gun and
explosion noises.
Mono in, stereo out.

28 Waterized

An underwater reverb.
Mono in, stereo out.

29 WeKnowBeetBoxTrtMe Crossfadable

This is something between a choir and a washing machine.
Mono in, mono out.

21 Dual Effects

0 2 Reverb-C/1L,1R

Two identical mono reverbs. One for each channel. Adjust to taste.
Dual mono in, dual mono out

1 A-B Synth & Drums

2 sets of EQ, stereo chorus, and reverb. Left is a huge synth chorus space, right is chorused short drum slap.
Dual mono in, dual mono out.

2 Dualverb

Two mono in, stereo out reverbs summed at the outputs.
Dual mono in, dual mono out.

3 Glistenvrb/Ekoplex

Left input: EQ, pitch shift, reverb. Right input: EQ a echoplex.
Dual mono in, dual mono out.

4 Gtr Chorvrb/Kbd Chordelay

Chorus & reverb for guitar on left, for keyboard on right.
Dual mono in, dual mono out.

5 L=Shift/R=Reverb

Left: pitch shifter. Right: reverb.
Dual mono in, dual mono out.

Leddroom/ Flanger

:ft input: EQ, pitch shift, reverb. Right input: EQ, flanger.
.al mono in, dual mono out.

RoomA / HallB

:ft: Room reverb. Right: Hall reverb.
.al mono in, dual mono out.

Sml Booth/Sml Room

:ft: a small booth reverb. Right: a small room reverb.
.al mono in, dual mono out.

8 Sml Room/Big Plate

Left input: small room reverb. Right input: big plate reverb.
Dual mono in, dual mono out.

9 Tunnel/Burrow

You have two independent effects chains with EQ, chorus, and
reverb. The outputs are summed in stereo.
Dual mono in, dual mono out.

22 Multiple Effects

0 2Reverb-C/STEREO

Two identical Reverb_C type reverbs. One for each channel, summed to stereo out. Adjust to taste.
Dual mono in, dual mono out.

1 4 FShifts+Delay

4 frequency shifters each with a delay. Very unusual echoes.
Stereo in, stereo out.

2 Big Squeezolo

Pitch shifts with a slight modulation. Squish!
Mono in, stereo out.

3 Chorus Delay

A chorus followed by a delay. The delay gets a mix of dry and chorus.
Stereo in, stereo out.

4 Combi EFX #3

This has octave shifted echoes. There is a reverb that you can turn up.
Mono in, stereo out.

5 Detune & Reverb

Micro pitch shift into reverb.
Stereo in, stereo out.

6 Dist Leslie Verb

Goes into tube distortion, thru a rotating speaker system, into a room.
Mono in, stereo out.

7 Easternizer

This preset has the combination of a flanger, a 5th shift, aɪ reverb.
Mono in, stereo out.

8 Env Filtered Reverb

A reverb with an envelope filter on the output.
Stereo in, stereo out.

9 FatFunkVocal Filter

Vocal filter after a reverb. The sweep of the vocal filter is ʈ gered by your sound. The reverb makes your sound hanɡ while being swept by the filter.
Mono in, mono out.

10 Gig Echo & Verb

Echo fed into a reverb. You can add some pitch shifting the echo if you like, too.
Mono in, stereo out.

11 Gig Pitch & Reverb

Pitch shifter feeds into a reverb.
Mono in, stereo out.

12 Glitterous Verb

A shifted echo and your sound go thru a reverb.
Stereo in, stereo out.

13 L=Rev-C/R=fl/fln/ddlRcFflDDl

Left input feeds a reverb. Right input feeds a rack consis of two filters, flanger, and a delay. Outputs of both chɑ summed to stereo.
Dual mono in, dual mono out.

4 M Sh,L=DDL,R=no DDL

ie delayed left input and straight right input are summed and
ed a 4-output multishift.
ial mono in, stereo out.

5 Moon Solo

nique combination of pitchshift, phaser, chorus, and delay.
ono in, mono out.

6 Octashift Glissverb

anger, octave shift, and reverb.
ereo in, stereo out.

7 Pitch & Reverb

i octave pitch shift into a reverb.
ono in, stereo out.

8 Rev-C/4 PitchShifts

ift input feeds a reverb. Right input feeds a 4 output
iltishifter. Outputs are then summed to stereo.
ial mono in, dual mono out.

9 ReverseVerb 6/4 8v

iat reverb with reversed echoes. Use with mix or an effect
ip.
ereo in, stereo out.

20 Reverse Worlds

Much like mixer's toolbox but with a reverse shifter instead of
a regular shifter. Input & output EQ included. Very power-
ful.
Mono in, stereo out.

21 Room 2 Go Downdelay

This has chorus and strange rhythmic echoes going into a re-
verb.
Mono in, stereo out.

22 Space Station

Big thick reverb that echoes, but there's a lot more going on
here.
Mono in, stereo out.

23 StereoDelay>Flanger

With this preset, each channel has a delay that goes into a
flanger.
Stereo in, stereo out.

24 Str2Flt/Cmp/Flng/DdlSf/c/F/d

A stereo rack consisting of filters, compressors, flangers, and
delays.
Stereo in, stereo out.

25 Tremolo Reverb

A reverb followed by a tremolo. The tremolo rate is modified
by the input level.
Stereo in, stereo out.

Appendix B: GTR4000 Factory Programs

is section has a list of all of the factory programs included with the GTR4000. The use of factory programs is explained in *Chapter 2.*

Utilities
Empty Program
Mute
Oscillator-440
Thru (In = Out)
Universal Matrix
White Noise

Pitch Shifters
Mono Shift
Dual Shift
Dual External Shift
Stereo Shift
StereoExternalShift
Dual H910s
Diatonic Shifter
2-Voice Diatonic
3/4 DelayDiaShift
Multiple Diatonic
3-voice Diatonic
User defined scale
Multi-Shift
9-Pitch Shifts
Power Trip
Quad Detuners
5th Place
Dubbler
Warm Shift
5ths&Oct Multiply
20BPM ShifterDelay
Big Heartbeat
Chim-Chiminee
Crystal Pad 2
Dual Reverse Shift
Fake Pitch Shift
Freq Shifter
Freqshift Chorus
Freqshift Vibrato
Gil's Pitch&Reverb
Jimmy's Bottom
Large Poly Shift
Organizer
Pitch Sequencer
Poly Shift
Ring Modulator
Stereo Backwards

Delay Effects
Mono Delay
Stereo Delay
Dual BPM Delays
Dual Long Delay
Ext Control Delay
Ripper-tronics
Long Mono Delay
Long Stereo Delay
Mono Delay BPM
Envelope Taps
Number of Echos
Ext NumberofEchoes
Multitap Delay
Panning Delays
Quad Flange Echoes
3B Delay2
Centering Echoes
Dual Ducked Delay
Dual Flanged delays
Echospace Of God
Ext Morphic Echos
Phase Delay
Resonechos
Slap Nonlinear
Super Ducked Delays
Patch Instruct

3   Chorus/Flangers
1   Auto Tape Flanger
2   Chorused Cabinet
3   Detune Chorus
4   Digest Inn
5   Drew's Throatflange
6   External Detune
7   Ext Control Flange
8   Ext Control Leslie
9   Ext Phase Flange
10 Ext Tape Flanger
11 Ext Wave Guide
12 Freqshift Flange
13 Hiccup Chorus
14 Leslie-like
15 Leslie Simulator
16 Manual Tape Flanger
17 Mess With Stereo
18 Phaser
19 Phase Flange
20 Real Chorus
21 Real Chorus TNG
22 Reso-Control
23 Sky Slaw
24 St.Phaser & Reverb
25 Stereo Chorus
26 Stereoize
27 Stereo Flange
28 Stereo Flange 1968
29 Stereo Tremolo
30 StereoMUTRONPhaser
31 Str. Smoove Flange
32 Strata Chorus
33 Swirl Flanges
34 Tripple Track

4   Small Spaces
1   Chorus & Plate
2   Drew's Closet
3   Drew's Double Closet
4   Empty Swimming Pool
5   Masterverb Room 1
6   Medium Booth
7   New Air
8   Pantry
9   Small Ambience
10 Soft'n Small Room

5   Room Reverbs
1   Basic Reverb C
2   Big Room
3   Blue Box Verb
4   Boston Chamber
5   Chamber2
6   Denny's Echo Room
7   Der Verb
8   Don's Small Room
9   Drew's Small Room
10 Slight Chorus Room
11 Small Club
12 Wooden Mens Room

6   Hall Reverbs
0   Arena Soundcheck
1   Barking Chamber
2   Beeg Garage
3   Big Hall
4   Big Hall 2
5   Big Hall/Med Hall
6   Big Room Reverb
7   Black Hole
8   Bob's New Room
9   Dynamic Reverb
10 E-noseChorusCanyon

11 Enormo Hall
12 Gated Splash
13 GloriousFlngCanyon
14 Jr. High School Gym
15 Master Hall
16 Masterverb Hall 2
17 Matt's Fat Room
18 Medium Hall
19 Mono Easytap Hall
20 Ridiculous Room
21 SIZ Verb 7
22 SplashVerb
23 Stereo room
24 Swept Hall
25 Swept Room
26 The Megaverb Final
27 Wormhole

7   Plate Reverbs
1   EMT-style Plate
2   Cheap Springverb
3   Metallic Plate
4   Springverb
5   St.Plate+Chorus

8   Alternative Verbs
1   Choruspace O'Brian
2   E-noseFlangedCanyon
3   Flutter booth
4   Ghost Air
5   GloriousChrsCanyon
6   Horrors
7   Jurassic Space
8   Kickback
9   MetallicChamber
10 Phantom & Reverb
11 Phaser and Reverb
12 Reverserize Hall
13 Square Tremolo Verb
14 Thicken Verb
15 Tremolo Ambience
16 Zipper Up

11 Guitar Effects
1   1st Reich
2   Fuzz-o-mania Four
3   Gig Reverb
4   Guitar Mania
5   Jan&Jeff
6   Octave Box
7   Soft Attack Fuzz
8   Tremolo Rack

13 EQ/Filters
1   Mono Filter
2   Stereo Filter
3   100^400^1K5^4K8K15K
4   Two Band Crossover
5   40^100^300^1K^5K10K
6   80\160^400^2K^5K/2K
7   Cup Mute
8   Envelope Filter
9   Ext Mono Wah-wah
10 Ext Stereo Wah-wah
11 Ext Vocal Wah-wah
12 Mono Eight Band EQ

14 Distortion
0   CrudeDistortion Tap
1   ARKHAMLEAD
2   Band Distort
3   Ben's Grungy Guitar
4   Big Muff w/ Dead 9v
5   Big Muff

6   Bite Distort
7   Chorus Distort
8   Class A Distortion
9   Crunchy
10 Fluxion Distort
11 Fuzz Frippertronics
12 Fuzz Maker
13 Fuzz-o-mania Too
14 Fuzz-o-mania Tree
15 Fuzz-o-mania
16 Hmmm Distort
17 QuadHyperMod
18 Thick Distort
19 Transistor Distort
20 Tubey Distortion

18 H3000 Emulation
1   502 Analog Thick
2   507 Dgdly+Wah+Micro
3   533 Voice Doubler
4   535 Analog Delays
5   537 Circles
6   542 Fat Slap
7   546 Ping Pong Ball
8   550 Subtle Sweep
9   560 De-Burr
10 598 Random Gate
11 605 A Minor Chords
12 606 Arpeggios
13 608 Deepen
14 609 Diatonic Dance
15 612 Gregorian Chant
16 613 H949
17 625 Third & Fifth
18 626 Third & Octave
19 641 Critical Band
20 644 Filter Pan
21 645 Future Shift
22 657 Scary Movie

20 Curiosities
1   5th Mega
2   5th Quantizer
3   Adaptive Reverb
4   Angel Echos
5   Computerizer
6   Crystal 5th Caves
7   Crystal Heaven
8   Crystal Octaves
9   Crystal Sevenths
10 Crystal Worlds
11 Dinosaur Legs
12 DrWho Diatonic 6ths
13 Duck Soup
14 Ducked Tails
15 Garmonbozia
16 Genesis Worlds
17 Heen
18 Latin Cathedral
19 Mod-U-Mania
20 Pitch->FreqShift
21 Sample Hold Filter
22 Smooth Crystals
23 Squareworld Shifter
24 Star Space
25 Synth Reverb
26 Triggered Arpeggio
27 UFO in My Church
28 War with PhaserGuns
29 Waterized
30 WeKnowBeetBoxTrtMe

22 Multiple Effects
1   4 FShifts+Delay
2   Big Squeezolo
3   Chorus Delay
4   Detune & Reverb
5   Dist Leslie Verb
6   Easternizer
7   Env Filtered Reverb
8   Gig Echo & Verb
9   Gig Pitch & Reverb
10 Glitterous Verb
11 L=Rev-C/R=fVln/ddRcFflDDl
12 M Sh.L=DDL,R=no DDL
13 Moon Solo
14 Octashift Glissverb
15 Pitch & Reverb
16 Rev-C/4 PitchShifts
17 ReverseVerb 6/4 8v
18 Reverse Worlds
19 Room 2 Go Downdelay
20 Space Station
21 StereoDelay>Flanger
22 Str2FlCmpFlngDdlSt/cF/d

40 Virtual Pedalboard
1   5Series Pedalboard
2   Parallel Pedalboard
3   Series Pedalboard
4   Virtual Pedalboard
5   PANacea
6   Stairway To Hell
7   Steel Drum Guitar
8   Subtle Overkill
9   Sweep Guitar
10 MidiStomp Chorus
11 MidiStomp Ekkoplex
12 MidiStomp Flanger
13 MidiStomp Harmonize
14 MidiStomp Phaser
15 MidiStomp Reverb
16 Stomp Chorus
17 Stomp Ekkoplex
18 Stomp Flanger
19 Stomp Harmonizer
20 Stomp Phaser
21 Stomp Reverb

41 Templates
1   Gtr/Kbd ChorVerbDly
2   L=Shift/R=Reverb
3   Pickshift Paradise
4   RoomA / HallB
5   Combi EFX #3
6   Inst Process
7   Phaser Rack
8   Pickers Paradise

42 Looping & Delays
1   MONOLOOP
2   STEREOLOOP
3   HELIXLOOP
4   4RESONATORS+LOOP
5   NIMBUS
6   RITUALDELAY
7   LOOPVERB
8   REFRACTIONLOOP
9   MANIFOLD TWO
10 DUAL PINGPONG
11 Time+Pitch Manifold
12 BPM POLYRHYTHM 3/4
13 BPM POLYRHYTHM 5/4

43 Textures
1   PORCELAIN FLANGE
2   POLYMOD CHORUS
3   POLYMOD DELAY
4   SDG REVERB_A TWO
5   TREATMENT TWO
6   DERVISH
7   POLYTONALRYTHYM 1
8   POLYTONALRYTHYM 2
9   TRIO 4
10 WATERGARDEN 1
11 Stereo Tri-Chorus
12 Stereo Tri-Chorus 3
13 STEEPLECHASE
14 GEODESIC
15 FERMILAB
16 WHIRLWIND
17 THRU ZERO 2
18 STRATOSPHERICS
19 ORGANUM
20 DIATONIC ORGANUM
21 GRAVITY WELL 1
22 CATACOMB 1
23 CATACOMB 2
24 LARYNX DELAY

44 Colouration
1   TRIFUZZCHORUS 1
2   TRIFUZZCHORUS 2
3   GHOST GUITAR
4   GEOMANTIC GUITAR 2
5   ESCHER LATTICE A
6   ESCHER LATTICE B
7   CYBER BLOSSOM A
8   POLYWAAFUZZDLY 1
9   CHARACTERIZOR A
10 CHARACTERIZOR D
11 CEREMONIAL TWO
12 PERPETUALGUITAR
13 ARKHAMLEAD
14 TRIGRAM 342
15 TRIGRAM 541
16 TETRAGRAMMATON
17 BANSHEE STRINGS 2
18 ARTICULATE FUZZ 1
19 ARTICULATE FUZZ 2
20 SPHERE GUITAR 1
21 HARMONICON 1
22 HARMONICON 2

45 Blend Distortion
1   TUBESMEER 3
2   CARBON 14
3   CHRYSANTHEMUM FUZZ
4   CHRYSANTHEMUM TWO
5   HYPERCLEANFUZZ
6   HYPERCUBEFUZZ 3
7   BRONZE PIPES
8   ONYX PIPES
9   METALLURGY
10 PENTAFUZZ
11 HYPERREEDS
12 HYPERWINDS
13 BRUNDLEFLY 1
14 BRUNDLEFLY 3
15 HOLLOWREEDS

46 Bass Prersets
1   Bass Space
2   Bass Suite
3   Bass Swells

4   ANTEDILUVIAN BASS
5   PRIMITIVE BASS
6   TRANCEBASS
7   Treatment Two Bass
8   CEREMONIAL BASS
9   Hyper for Bass

47 Stick Presets
1   BASSISTICK
2   STICK EQ+VOLUME
3   STICKIST ONE
4   STICKIST ONE-BASS
5   CABALISTICK 1
6   CABALISTICK 2
7   DESERTSTICK A
8   DESERTSTICK B
9   DESERTSTICK C
10 RESONSTICK
11 TAOISTICK FOUR
12 PIANISTICK PEDAL EQ

48 Satriani Presets
1   50's Stereo Delay
2   Detune Delays 1
3   Gorgeous Delay
4   DI Compress
5   J.C.Stereo Compress
6   Lead Compress
7   Old Valve
8   Satchelope Filter
9   Enhancer
10 Water-Like
11 W-I-D-E Solo
12 Oscillator 1k 0vu
13 20>20 Audio Sweep

49 Trey Gunn Presets
1   TG DUO clean wetter
2   TG DUO dry
3   TG DUO long sustain
4   SonicDisorderVerb
5   TREYS FILTER 1
6   AMP-U-LATION 2
7   Garden halo
8   2 Octave Delays
9   Backward Garden 3
10 BANSHEE EnglishHorn
11 DALI DELAY short
12 GRAVITY FLANGE 1
13 HyperFuzz
14 IMP WAVE 2
15 octave fuzz
16 out-of-phase Widen
17 Panner Ddls
18 Random Verb Long
19 Seethy TWO Reverb
20 Stereo trill
21 Whirly mellow

50 Steve Vai Presets
1   Kill the Guy
2   Little Man
3   Vai-a-tonic Trio

51 ARTIST BANK A
1   140 EMT Plate
2   easy 140 EMT Plate
3   AMS DMX 1580S
4   AMS Guitar
5   Guitarmonizer
6   Tom's Acoustic Gtr
7   AutoPan>Delay

Eventide would like to thank the following people for their help with and contributions to the *DSP4000*'s and *GTR4000*'s factory presets:

Jon Anderson

Sean Beresford & MesaBoogie

Ken Bogdanowicz and Crescent Engineering

Bob Bradshaw

Mary Campbell and Electric Lady Studios

Bob Clearmountain

John Cuniberti

Dave Derr and Studio E

John & Dino Elefante

Brian Eno

Joe Franco

Scott Gilfix

Rob Grenoble & Water Music

Trey Gunn

Michael James

Henry Kaiser

Kevin Killen

George Massenburg

Kooster McCallister & Record Plant Remote

Denny McNerney

Glenn Meadows

Roger Nichols

Jimmy Orlander

Don Pearson & UltraSound

Angela Piva

Vernon Reid

Tad Rollow

Jay Rose

Joe Satriani

Frank Serafine

Andrew Schlesinger

Roey Shamir

Enno Vandermeer

Steve Vai

Keith Wechsler

Richard Zvonar

0 Utilities

This bank contains important basic programs.

Empty Program

you want to patch a program from the ground up, you can
art with an empty program.
othing in, nothing out.

Mute

)ading this program will simply turn off the output.
othing in, nothing out.

Oscillator-440

?neral-purpose oscillator. On loading it is set to a 440 Hz sine
ave for tuning. Allows addition of an offset and modulation.
utput will clip above +12dB. Aliasing will be audible on tri-
igular and square waves at higher frequencies.
othing in, dual mono out.

3 Thru (In = Out)

Simply passes the inputs to the outputs. Just like bypass.
Stereo in, stereo out.

4 Universal Matrix

M/S (mid/side) recording lets you air stereo events with com-
plete mono compatibility. This setting decodes M/S recordings
and controls their stereo width. It also lets you fix mono and
stereo routing.
Stereo in, stereo out.

5 White Noise

A single noise source is output on both channels.
Nothing in, dual mono out.

1 Pitch Shifters

This bank offers a large array of general purpose Harmonizer® presets.
From simple mono shifting to more complex 8-voice effects.

1 Mono Shift

A single, mono pitch shifter.
Mono in, mono out.

2 Dual Shift

Two independent pitch shifters. One for each channel. Common LFO.
Stereo in, stereo out.

3 Dual External Shift

Two independent pitch shifts that are controlled externally.
The shift range is set by endpoints. External control.
Dual mono in, dual mono out.

4 Stereo Shift

A simple, stereo pitch shifter.
Stereo in, stereo out.

5 StereoExternalShift

Stereo pitch shift that is controlled externally. The shift range
is set by endpoints. With external control.
Stereo in, stereo out.

6 Dual H910s

Two of our classic H910 pitch shifters, one for each channel.
Dual mono in, dual mono out.

7 Diatonic Shifter

A single, diatonic shifter.
Mono in, mono out.

8 2-Voice Diatonic

One diatonic shift per channel.
Dual mono in, dual mono out.

9 3/4 DelayDiaShift

Two diatonic echos. A 4th and an octave.
Stereo in, stereo out.

10 Multiple Diatonic

Four diatonic shifts from one source.
Mono in, stereo out.

11 8-voice Diatonic

Eight diatonic pitch shifts. Four on the left, four on the right.
Dual mono in, dual mono out.

12 User defined scale

Two diatonic shifters with user defined scales into reverb
chorus.
Mono in, stereo out.

13 Multi-Shift

Four pitch shifters into a stereo mixer.
Mono in, stereo out.

14 8-Pitch Shifts

From the mono input you get eight shifted and delayed sig┐
that are combined with a stereo mixer.
Mono in, stereo out.

15 Power Trip

Eight pitch shifts set to give you a \POWER\ sound.
Mono in, stereo out.

16 Quad Detuners

Makes music sound way out of tune. Channels 1 and 3 are f┐
the left, and channels 2 and 4 are from the right.
Stereo in, mono out.

17 5th Place

The perfect fifth effect in stereo with color.
Stereo in, stereo out.

18 Dubbler

Doubles up your signal with four micro pitch shifts.
Mono in, stereo out.

19 Warm Shift

One pitch shifter per channel. Each has a gentle lowpas┐
the feedback loop.
Dual mono in, dual mono out.

20 5ths&Oct Multiply

Fifth and octave pitch shifts.
Mono in, stereo out.

21 120BPM ShifterDelay

Play a note, get a riff. The output of each shifted voice is
layed 125ms from the previous voice.
Mono in, stereo out.

2 Big Heartbeat
vo pitch shifters intertwined with just a little feedback.
ereo in, stereo out.

3 Chim-Chiminee
ce, arpegiated shifts with octaves and fifths.
)no in, stereo out.

4 Crystal Pad 2
immering, squeaky fields.
)no in, stereo out.

5 Dual Reverse Shift
/o separate reverse pitch shifters.
ıal mono in, dual mono out.

6 Fake Pitch Shift
)dulated up/down 3rd pitch shift with reverb. Adjust fdbk/
:ay for echo effect.
)no in, stereo out.

7 Freq Shifter
ıe frequency shifter per channel. This has a high amount of
quency shift that yields a ring modulation effect.
ıal mono in, dual mono out.

8 Freqshift Chorus
ıe frequency shifter per channel. With a frequency shifter,
ı lower frequencies are effectively pitch shifted more than
ı higher frequencies.
ıal mono in, dual mono out.

9 Freqshift Vibrato
ce chorus/vibrato created by four frequency shifters. Experi-
nt with shifts and delays for more interesting effects.
ıreo in, stereo out.

10 Gil's Pitch&Reverb
/ery clean pitch shift with a smidgen of reverb to make it
.ooth. Great for vocals.
)no in, stereo out.

31 Jimmy's Bottom
Gives a great bottom to any solo instrument. There's an oc-
tave shift down, compression, eq, and chorus.
Mono in, stereo out.

32 Large Poly Shift
A kind of pitch shifter you use with chords. Like Poly Shift but
now you can shift up and down by octaves.
Mono in, mono out.

33 Organizer
Turns any line into an organ solo. Pure tones gets you a
Hammond, Complex tones get you a pipe.
Mono in, stereo out.

34 Pitch Sequencer
Continuously plays a scale by shifting your signal. Try chang-
ing the sequence.
Mono in, mono out.

35 Poly Shift
Breaks signal into comb bands and shifts each. Gives an in-
teresting detune chorus. Be careful with small shift amounts
and large feedback.
Mono in, mono out.

36 Ring Modulator
The classic ring modulator effect, now in stereo. However much
the left channel is frequency shifted up, the right is shifted
down.
Stereo in, stereo out.

37 Stereo Backwards
Breaks input into little pieces and plays them backwards.
Adjust optional pitch shift in 'Expert' menu. Uses m/s process-
ing to maintain stereo image.
Stereo in, stereo out.

2 Delay Effects

This bank shows off many useful delay based presets.

1 Mono Delay

Mono delay with feedback.
Mono in, mono out.

2 Stereo Delay

Two delays with common controls.
Stereo in, stereo out.

3 Dual BPM Delays

Allows you to adjust a delay in beats per minute. An input parameter will connect the right delays to the right tone controls giving you dual mono.
Mono in, stereo out.

4 Dual Long Delay

Two long delays each 2.5 seconds.
Dual mono in, dual mono out.

5 Ext Control Delay

Externally controlled delay. MOD-1 controls the length of the delay line.
Stereo in, stereo out.

6 Fripper-tronics

The modern alternative to two Revox's and a reel of tape. Five second repeats, adjustable high cut and feedback.
Mono in, mono out.

7 Long Mono Delay

Simple, 10 second delay.
Mono in, mono out.

8 Long Stereo Delay

A stereo five second delay
Stereo in, stereo out.

9 Mono Delay BPM

A simple delay where you set the delay time in beats per minute.
Mono in, mono out.

10 Envelope Taps

The tap envelope is formed from an attack multitap and a cay multitap.
Mono in, stereo out.

11 Number of Echos

You control how many repeats with one knob.
Mono in, stereo out.

12 Ext NumberofEchoes

The 'Number of Echos' with much external control.
MOD1: number of echos.
MOD2: delay between echos.
MOD3: The range for MOD2.
MOD4: The glide rate.
Mono in, stereo out, external.

13 Multitap Delay

A single delay line with many taps. You have individual c trol over each tap.
Mono in, stereo out.

14 Panning Delays

Four delay lines. Each is panned by its own LFO. Also, e has another LFO modulating its delay.
Stereo in, stereo out.

15 Quad Flange Echoes

Each of four echos are flanged and panned.
Stereo in, stereo out.

16 BB Delayz

Very fast and close feedback delays in the center of the ste field, with long echo repeating/panning delays on the outs of the stereo field. Interesting on percussives as well as tu instruments.
Mono in, stereo out.

17 Centering Echoes

Multitap echoes that start at edges of the stereo field and m progressively closer to center as they decay.
Mono in, stereo out.

8 Dual Ducked Delay

wo delays (one for each channel) that will duck out of the way
hen you play a lead, and come back up when you're done.
atio' adjusts how much to duck.
ual mono in, dual mono out.

9 Dual Flanged delays

wo delays where the echos are flanged.
ual mono in, dual mono out.

0 Echospace Of God

assively verbed echos that give you that \awe\ sound.
ono in, stereo out.

1 Ext Morphic Echos

his is a 5 tap multitap delay that you change between settings
ternally. Delay 1 is also fed back to the input.
ono in, stereo out, external.

2 Phase Delay

variable amount of 'phase shift'. This is real phase shift in
grees and it applies to each frequency. You also have preci-
on delay and feedback.
ual mono in, dual mono out.

23 Resonechos

Echos that blur into a verb.
Mono in, stereo out.

24 Slap Nonlinear

A slapback where the echo is really a clump of diffused echos
with eq.
Mono in, stereo out.

25 Super Ducked Delays

Dual ducked delays with plenty of control and visual feedback.
Dual mono in, dual mono out.

30 Patch Instruct

This program is used to demonstrate several Patch Editor ba-
sics in Chapter 4 and 5.
Dual mono in, dual mono out.

3 Chorus/Flangers

This bank contains a wide variety of modulated delays and phasers.
Not only emulation's of old favorites, but sophisticated stereo manipulations are also included.

1 Auto Tape Flanger

A stereo tape flanger where one delay is swept by another. The sweeping is controlled by an LFO.
Stereo in, stereo out.

2 Chorused Cabinet

The sound of a miked speaker cabinet with a touch of modulating chorus.
Mono in, stereo out.

3 Detune Chorus

Similar to real chorus with lots of detuned echos.
Mono in, stereo out.

4 Digest Inn

Slimy, resonant, peaky flange, and short repeating delay echo.
Sounds llike you're inside someone's stomach. Yukk!
Mono in, stereo out.

5 Drew's Throatflange

Deep, negative, resonant flange that Adds a throaty quality to sounds. Sounds cool on drums as well.
Mono in, stereo out.

6 External Detune

Externally controlled 'real' chorus. The amount of detune is tied to MOD1, the tightness is tied to MOD2.
Mono in, stereo out, external.

7 Ext Control Flange

Allows you to switch control of the flanger from lfo to external.
(MOD1)
Stereo in, stereo out, external.

8 Ext Control Leslie

Rotating speaker effect where the speed of rotation can be externally controlled. MOD1 controls the speed.
Mono in, stereo out, external.

9 Ext Phase Flange

A different kind of flanger, where the group phase changes instead of the group delay. MOD1 controls the group phase.
Adjust 'delay mod' to also change the group delay.
Mono in, mono out, external.

10 Ext Tape Flanger

Externally controlled tape flanger. MOD1 controls the (
sync. MOD2 controls the depth of the effect.
Stereo in, stereo out, external.

11 Ext Wave Guide

Experimental filter where you determine the shape and cl
acteristics of a 'tube' that your sound goes through.
Mono in, mono out, external.

12 Freqshift Flange

This is a different kind of flanger using the frequency shil
Mono in, stereo out.

13 Hiccup Chorus

This a stuttering, tremolo effect. You can engage an exter
control to change the rate.
Mono in, stereo out, external.

14 Leslie-like

A combination of chorus, delay and phaser that give you (
rotating speaker effect.
Mono in, mono out.

15 Leslie Simulator

Basic rotating speaker effect with a little reverb. There's
tually two speakers (high and low) and you can alter eac
your taste. When you load this preset, the settings are for w
we believe to be most natural.
Mono in, stereo out.

16 Manual Tape Flanger

A manual tape flanger. Run your signal thru the 4000 and t
the knob. Flanging occurs when flange and delay are clos
each other. Depth controls how much of the flange dela
mixed in.
Stereo in, stereo out.

7 Mess With Stereo

'he left/right input is converted to sum/difference. then, a umber of modifiers act upon the signal. finally It is converted ack to left/right. This gives some interesting stereo enhance-lents. Note: There is a slight delay in processing.
tereo in, stereo out.

8 Phaser

ιld fashioned phaser. Use with sound going through effect.
[ono in, mono out.

9 Phase Flange

different flanger because the component phases move instead the delay. Adjust <delay mod> to get the delay moving also.
[ono in, mono out.

0 Real Chorus

simulation of having eight more of the input.
:ono in, stereo out.

1 Real Chorus TNG

simulation of additional musicians. Tuning: How well they ·e in tune. Timing: How tight they are. Hunting: How fast ιey find the note. Best on single-note instruments.
ote: some instruments don't hunt. (Keyboard, drums, etc.)
ono in, stereo out.

2 Reso-Control

϶motely controls the frequencies of two comb filters. One for ιch channel.
;ereo in, stereo out, external.

3 Sky Slaw

odulated deep, resonant flange feeds a second resonant, veeping flange. Great for guitar.
ono in, stereo out.

4 St.Phaser & Reverb

ereo phase shifter with reverb.
ereo in, stereo out.

25 Stereo Chorus

Eight moving delays each with its own LFO.
Mono in, stereo out.

26 Stereoize

Adds a stereoized chorus to a mono signal.
Mono in, stereo out.

27 Stereo Flange

Two flangers with a common LFO. Run your sound through this preset for the proper mix.
Stereo in, stereo out.

28 Stereo Flange 1968

A nice, stereo flange. There are separate delay controls but a common LFO.
Stereo in, stereo out.

29 Stereo Tremolo

This gives you the tremolo effect in stereo.
Stereo in, stereo out.

30 StereoMUTRONPhaser

This sounds like that classic phaser.
Mono in, stereo out.

31 Str. Smoove Flange

This is a smooth, subtle, stereo flanger.
Stereo in, stereo out.

32 Strata Chorus

This is a tight chorus with some reverb added in. For the ex-perimenter, there are a lot of adjustments.
Stereo in, stereo out.

33 Swirl Flanges

Four flangers that also pan around you.
Stereo in, stereo out.

34 Tripple Track

Adds a triple-track effect to vocals and instruments with cho-rus and delay. You also can add other effects. To add reverb, turn up reverb level and decay time.
Mono in, stereo out.

4 Small Spaces

This bank of reverb effects replicate tight ambiences. Great for 'enhancement'.

1 Chorus & Plate

Nice, tight ambience with some built-in chorusing.
Stereo in, stereo out.

2 Drew's Closet

Andrew's master bedroom closet, with the door open. Switchable mono/stereo in, stereo out.

3 Drew's Double Closet

A semi-closed-in space like a large closet with a touch of slap delay adds presence but has very short decay time.
Mono in, stereo out.

4 Empty Swimming Pool

Sounds like my friend's swimming pool in the winter. Switchable mono/stereo inputs.

5 Masterverb Room 1

Sounds like someone down the hall in the living room playing. Natural, tight ambience.
Stereo in, stereo out.

6 Medium Booth

Small and square, like an old classmate of mine. Ringy, ref tive space.
Mono in, stereo out.

7 New Air

Very small, ambient space that stereoizes a a signal and a a bit of 'air' around instruments.
Mono in, stereo out.

8 Pantry

Muted space. Cans, cupboards and towels are probably de ening it.
Mono in, stereo out.

9 Small Ambience

Small, office sized reverb/ambience. Stereo/mono in, stereo

10 Soft'n Small Room

Self descriptive.
Stereo in, stereo out.

5 Room Reverbs

Larger than small spaces, this bank offers rooms and chambers.

Basic Reverb C

ice, basic version of our famous 'Reverb C.'
[ono in, stereo out.

Big Room

ounds pretty close to a large, recording studio room.
tereo in, stereo out.

Blue Box Verb

.edium size, and medium-bright room.
.ono in, stereo out.

Boston Chamber

nis is a large, warm room/small hall reverb. Tone controls
and out.
ono in, stereo out.

Chamber2

nis boy is a large room.
ono in, stereo out.

Denny's Echo Room

ense module 'A' reverb, with two discrete delay lines caus-
g interesting reflections in the room. Reflection times and
vels can be adjusted on reverb page 2.
ono in, stereo out.

7 Der Verb

Switchable stereo in and out reverb built of discrete delays and
Reverb A module.
Switchable mono/stereo in, stereo out.

8 Don's Small Room

Very sizzly, metal and concrete room.
Switchable mono/stereo in, stereo out.

9 Drew's Small Room

Warm, small room, like an old, conference room with 15 foot
ceilings.
Switchable mono/stereo in, stereo out.

10 Slight Chorus Room

Deep room with a dash of chorus. Goes well with white meat.
Mono in, stereo out.

11 Small Club

This simulates a small, concrete-floored club. There's a Green-
wich Village pub under a building with scrap in front that
sounds just like this.
Mono in, stereo out.

12 Wooden Mens Room

Effective emulation of one of those big, old, hotel bathrooms.
Has a slow sweep added..
Mono in, stereo out.

6 Hall Reverbs

These reverbs offer a wide variety of large and (some) unusual reverbant spaces and effects.

0 Arena Soundcheck

Sounds like a huge arena. Testing 1,2,3...
Mono in, stereo out.

1 Barking Chamber

Severely eq'd verb with midrange bark.
Mono in, stereo out.

2 Beeg Garage

This sounds like a huge, city, parking garage.
Mono in, stereo out.

3 Big Hall

Large, hall-like reverb with eq and delay control.
Mono in, stereo out.

4 Big Hall 2

Newer version of Big Hall with extra accessibility.
Mono in, stereo out.

5 Big Hall/Med Hall

Two reverbs - one on left input, one on the right. They are submixed at the output.
Dual machine mode.

6 Big Room Reverb

Big, rich, room echo, for use with mono or stereo input. Use 'Muting' switch to test echo characteristic. A tunable version of this patch is 'Big Hall'.
Switchable mono/stereo inputs, stereo outputs.

7 Black Hole

An abnormally large reverb, sucking everything into a bottomless chamber. Try setting the diffuser to 68 and the size to 91 for a reverse hole.
Mono in, stereo out.

8 Bob's New Room

Large, warm hall built of discrete delays, diffusors and ple
Mono in, stereo out.

9 Dynamic Reverb

A versatile reverb with gate and dynamic filter built in. filter is cont- rolled by an envelope follower, unlike Dyna Reverb whose filter is controlled by a less dynamic gate e elope. TURN MONITOR VOLUME DOWN WHILE ADJU ING FILTER since instabilities and overload may occur v low Q's and wide sweepwidths. Try adjusting sweep- widt a negative number! You can disable gate by turning thres -100 or ungated lvl to 100%%.
Mono in and stereo out.

10 E-noseChorusCanyon

Giant, Chorusy Canyon sized verb.
Mono in, stereo out.

11 Enormo Hall

Big and deep.
Mono in, stereo out.

12 Gated Splash

Nice, gated reverb. Gate is triggered by reverb level. Try snares.
Stereo in, stereo out.

13 GloriousFlngCanyon

Huge canyons with flange on reverb.
Mono in, stereo out.

14 Jr. High School Gym

Sounds like a junior high school gymnasium.
Mono in, stereo out.

5 Master Hall

g, warm, concert hall with input and output eq.
vitchable mono/stereo in, stereo out.

6 Masterverb Hall 2

arm, medium-hall. Larger version of Masterverb Hall 1.
ereo in, stereo out.

7 Matt's Fat Room

arm, slightly chorusy room with input and output eq.
vitchable mono/stereo in, stereo out.

3 Medium Hall

irge sizzly Room. Nice sizzle tail.
ono in, stereo out.

) Mono Easytap Hall

irge, bright, hissy verb. One of many with input and output
‌l.
ono in, stereo out.

) Ridiculous Room

i over-the-top room program. Huge, low end.
ono in, stereo out.

l SIZ Verb 7

dynamic reverb with headroom, gate and envelope filter built
   The dynamic envelope filter offers possibilities found in no
her reverb units. Try adjusting sweepwidth to a negative
mber! You can effectively disable gate by turning thresh to
)0 and hold time to 9 seconds.
ono in, Stereo out.

22 SplashVerb

A very long, tunnel-like hall with gateable inputs.
Stereo in, stereo out.

23 Stereo room

Nice, wide, stereo room.
Switchable mono/stereo in, stereo out.

24 Swept Hall

A somewhat modulated hall reverb with interesting flutters.
Mono in, stereo out.

25 Swept Room

Large, sweepable room. Has output EQ.
Mono in, stereo out.

26 The Megaverb Final

Bright and large, this reverb has input and output tone controls.
Mono in, stereo out.

27 Wormhole

Mega-sized, tilting reverb.
Mono in, stereo out.

: release 7

7 Plate Reverbs

Plate and spring emulation's for all occasions.

1 EMT-style Plate

Warm emulation of a big plate with childproof controls.
Mono in, stereo out.

2 Cheap Springverb

Bright, dense, medium long and somewhat fluttery, this verb
is reminiscent of an older type of medium to high quality spring
reverb.
Mono in, stereo out.

3 Metallic Plate

Bright, dense and metallic, as the name says.
Mono in, stereo out.

4 Springverb

Boinky, ringy, cheapo-spring, reverb sound.
Mono in, stereo out.

5 St.Plate+Chorus

A stereo input goes to L/R tone controls, then to a chorus
a platelike reverb.
Stereo in, stereo out.

8 Alternative Verbs

These presets show off some of the more unusual possibilities in our modular architecture.
With effects combined and/or imbedded inside the reverbs themselves new and exiting effects are now possible.

1 Choruspace O'Brian

Huge plex verb run through stereo delays set to heavy chorus.
Both verb and direct get chorused, good for slow melodic, attack sounds.
Mono in, stereo out.

2 E-noseFlangedCanyon

Large, booming, reverbs, built of flanged delays.
Mono in, stereo out.

3 Flutter booth

Try to find this sound elsewhere! A deeply fluttering ambience.
Mono in, stereo out.

4 Ghost Air

A deep backwards, breathing reverb. Has EQ.
Mono in, stereo out.

5 GloriousChrsCanyon

Friggin huge, canyon verb with adjustable eq and chorus.
Mono in, stereo out.

6 Horrors

Squeeking and Squelching, this big, cave reverb is aptly named.
The program is actually a mult-ieffects patch with a pitch shifter going into a delay set, and finally a reverb. The overall effect is a really weird reverb.
Stereo in, stereo out.

7 Jurassic Space

It's almost a delay, yet it's thick like a reverb. Has eq, too
Mono in, stereo out.

8 Kickback

An early reflection type effect with a large, adjustable pre-delay.
Mono in, stereo out.

9 MetallicChamber

Another pitch-shifter going into a reverb C.
Stereo in, stereo out.

10 Phantom & Reverb

Unusual sliding harmony mixed with input and thrown into an airy reverb. Try on moody vocals. Never sounds same twice.
Mono in, stereo out.

11 Phaser and Reverb

Nice mixture of verb and phaser.
Stereo in, stereo out.

12 Reverserize Hall

Multitap with linearly increasing levels, feeding a large hall reverb. Gives you a backwards sound even while the words are forward.
Mono in, stereo out.

13 Square Tremolo Verb

Reverb with modulation of the tails decay.
Mono in, stereo out.

14 Thicken Verb

Short, dark ambience deepens anything applied.
Mono in, stereo out.

15 Tremolo Ambience

Small ambience with addable shake.
Mono in, stereo out.

16 Zipper Up

Fast, increasing, diffused echos with reverb.
Mono in (LEFT), stereo out

11 Guitar Effects

A short list of things to come. Culled from the DSP4000, these include rack emulation's, stompboxes, reverbs and distortions.

1 1st Reich

With this preset you get eight pitch shifts with delay. A modern jazz sound, maybe.
Mono in, stereo out.

2 Fuzz-o-mania Four

Hard distortion with compression, eq, shifters, chorus, reverb and more
Mono in, stereo out.

3 Gig Reverb

Just a pitch shift into reverb. Simple to use.
Mono in, stereo out.

4 Guitar Mania

Tone, shift, phaser, chorus, and delay. The almost everything rack.
Mono in, mono out.

5 Jan&Jeff

As in, Hammer and Beck. Synth will follow your input guitar line... sorta. If you don't understand it, you're too young.
Mono in, stereo out.

6 Octave Box

This is what people used before Eventide invented the pit shifter. The effect is a square wave an octave below your put. The volume of the output follows your input. Adjust t lowpass filter on the input to get the output pitch to tra Adjust the lowpass filter on the output for the timbre you wa
Mono in, mono out.

7 Soft Attack Fuzz

4band distortion with Envelope control.
Summed in, stereo out.

8 Tremolo Rack

This is a rack with EQ, compressor, chorus, reverb, and a n stereo tremulo.
Mono in, stereo out.

This bank shows off the sonic clarity of our digital EQ's.
From single filter examples to full blown stereo EQ's and Wa-Wa pedals.

Mono Filter

single, mono-filter
Iono in, mono out.

Stereo Filter

wo filters with common controls.
tereo in, stereo out.

100^400^1K5^4K8K15K

his is a stereo six-band parametric EQ. The name lists the
enter frequencies. Bandwidth is in octaves. Check mix mode!
tereo in, stereo out.

Two Band Crossover

wo-band crossover.
Iono in, high and low bands out.

40^100^300^1K^5K10K

his is a stereo six-band parametric EQ. The name lists the
enter frequencies. Bandwidth is in octaves. Check mix mode!
tereo in, stereo out.

80\160^400^2K^5K/2K

his is a stereo six-band parametric EQ. The 1st and last band
re shelving EQ's. The name lists the center frequencies.
andwidth is in octaves. Check mix mode!
tereo in, stereo out.

Cup Mute

imulates the sound of a trumpet-like bell with a cupmute. A
eneralized mod input is accepted to modulate the input on the
y. Hit PARAMETER to get second page of parameters.
Iono in, stereo out, external.

8 Envelope Filter

Two filters controlled by the signal level.
Mono in, mono out.

9 Ext Mono Wah-wah

Just a wah-wah. You select the on (pedal down) and off (pedal
up) frequencies and Q. MOD1 sweeps the effect.
Mono in, mono out, external.

10 Ext Stereo Wah-wah

Externally controlled dual filters. MOD1 is the external con-
trol. You can specify the frequency and Q at each end of the
external sweep.
Stereo in, stereo out, external.

11 Ext Vocal Wah-wah

A different kind of wah-wah where you sweep through a vocal
filter. MOD1 sweeps the effect.
Mono in, mono out, external.

12 Mono Eight Band EQ

This is a mono, eight-band, full parametric EQ.
Mono in, mono out.

14 Distortion

Our basic distortion bank. From stompbox replication to Class-A enhancement to sophisticated multiband arrays. Something for everyone.

0 CrudeDistortion Tap

A fuzz, ambience effect. The rectified signal is put thru two multitaps where the signal is inverted for one of the multitaps. Mono in, stereo out.

1 ARKHAMLEAD

Fun distortion box with a couple of delays thrown in. Sounds nice.
Summed in, stereo out.

2 Band Distort

Several distortion methods are applied to the left input. The top and bottom halves of a waveform are distorted independently with a non-linear curve and slew rate limiting. The distorted signal is passed through some complex shifting and mixed to stereo outputs.

3 Ben's Grungy Guitar

Compressor followed by tubelike distorters and EQ. Input gain on first page.
Mono in, mono out.

4 Big Muff w/ Dead 9v

Sounds like its time to change that 9-volt battery in your distortion pedal. Distortion and EQ.
Mono in, mono out.

5 Big Muff

Full and fat, a guitar straight in the -10 inputs is all you'll need for pretty pumpin' sound. Try rolling off more top if you use a direct guitar input.
Mono in, stereo out.

6 Bite Distort

User-definable distortion curves open up new possibilit
Offers control over several distorted signals (some pi shifted), summed back together in a pannable stereo fi
Mono in.

7 Chorus Distort

Fat and effected distortion program. User-definable distort
curves. Chorusing can be mixed seperately.
Mono in, stereo out.

8 Class A Distortion

This is a second harmonic generator. A low-pass circuit is u
to limit input bandwidth to distortion cell and to prev
alienism. The left two faders are separate left and right in
levels. The fader on the right is output level. Meters 1 an
show left and right distortion (THD). The distortion indu
is not guitar-type hard clipping. It is subtle and can be app
to stereo signals to make them more 'analog.' Use amt fa
to control 2nd harmonic distortion.
Stereo in, stereo out.

9 Crunchy

Metal-type distortion combined with chorus, eq and gate.
Mono in, mono out.

10 Fluxion Distort

Like normal distortions, this will warp the amplitude of
wave. In addition, this will warp the flux of the wave. Flu
how fast wave the moves from one amplitude to another.
Mono in, stereo out.

1 Fuzz Frippertronics

dirty distortion is followed by a serious delay - up to five :conds for looping and playing with yourself, so to speak.
:ono in, mono out.

2 Fuzz Maker

wo distortion approaches are combined here. One is a slew te limiter, the other is a user-definable gain curve.
ono in, mono out.

3 Fuzz-o-mania Too

ard clipper followed by compressor. EQ, phaser, and full re-rb to embellish the distorted signal.
ono in, stereo out.

4 Fuzz-o-mania Tree

ard clipper mixed with original signal, compressed and sent effects with a slow, phaser sweep.
ono in, stereo out.

5 Fuzz-o-mania

isty fuzz made from hard clippers with shifters, modulating lays and phaser.
ono in, stereo out.

16 Hmmm Distort

User-defined curves induce distortion on left input. Has several shifters all submixed and panned at the stereo output.
Mono in, stereo out.

17 QuadHyperMod

A rich, full distortion with a modulatable delay on it.
Summed in, stereo out.

18 Thick Distort

Extreme fuzzed, user-settable distortion is filled out with multiple pitch shifters.
Mono in, stereo out.

19 Transistor Distort

Simulates distortion of a transistor amplifier. Has gain adjust and EQ before and after the transistor simulator.
Mono in, mono out.

20 Tubey Distortion

Simulates the distortion of a tube amplifier. Has gain adjust and EQ before and after the tube simulator.
Mono in, mono out.

18 H3000 Emulation

Replication of some favorites from the industry standard.
A bank of fun and useful H-3000 type effects.

1 502 Analog Thick

A warm, chorused, echo sound. Two adjustable, lowpass filters provide the warmness.
Mono in, stereo out.

2 507 DGDLY+WAH+MICRO

This is an unusual combination of a digital delay, a cycling 'wah, wah' filter, and a micro pitch shift.
Mono in, stereo out.

3 533 Voice Doubler

Sweeps two pitch-shifters in opposite directions, giving a convincing doubling effect.
Mono in, stereo out.

4 535 Analog Delays

Warm echoes provided by lowpass filters.
Mono in, stereo out.

5 537 Circles

A stereo delay-effect that seems to circle around your head. The effect is most noticeable on short sounds, like hand-claps.
Stereo in, stereo out.

6 542 Fat Slap

A slap delay with an ambient sound.
Stereo in, stereo out.

7 546 Ping Pong Ball

Another echo that bounces side-to-side, but the echo shor with time.
Stereo in, stereo out.

8 550 Subtle Sweep

Two subtle, sweeping delays. This is ideal for turning m sources into stereo. Pan original source to one side anc sweeping delay to the other. Use on two sources. V inobtrusive.
Stereo in, stereo out.

9 560 De-Burr

Takes the edge off sharp attacks.
Mono in, stereo out.

10 598 Random Gate

A 'gated reverb' sound created with the multitap module. G; for drums.
Stereo in, stereo out.

11 605 A Minor Chords

Play or sing a solo line in A minor. The 4000 will generate perfect 'in-key' harmonies.
Stereo in, stereo out.

2 606 Arpeggios

dds a fifth and an octave rhythmically, along with a short
play.
tereo in, stereo out.

3 608 Deepen

dds lower octave harmonies with a pitch-shifter sweep.
ono in, stereo out.

4 609 Diatonic Dance

u play a note and, after half a second, you get a harmony.
se only one note at a time and in an effect loop.
ono in, stereo out.

5 612 Gregorian Chant

is program filters and pitch shifts input voices to produce a
orus of droning monks.
ono in, stereo out.

6 613 H949

is gives you what the H949 gave you. One output is a
raight delay while the other is pitch shifted. Both outputs
e fed back to the input.
ereo in, stereo out.

7 625 Third & Fifth

nerates an 'in-key' third and fifth above the input.
ereo in, stereo out.

18 626 Third & Octave

This generates a diatonic 3rd above and an octave below the
input.
Stereo in, stereo out.

19 641 Critical Band

Close approximation to Fletcher/Munson band-pass curves.
Use to brighten signal, or key compressor and gates to frequen-
cies to which our ears are most sensitive.
Mono in, stereo out.

20 644 Filter Pan

A filter sweep that seems to pan as it sweeps.
Stereo in, stereo out.

21 645 Future Shift

A shimmering, orchestral effect. Try on swelling monophonic
synths or single-line voices.
Stereo in, stereo out.

22 657 Scary Movie

This program uses reverse-shift to create an evil-sounding
voice. Use with guitar to create that tape splice, psychedelic
sound.
Stereo in, stereo out.

20 Curiosities

Some of the more unusual programs, these
include 'Adaptive' reverbs, 'crystal' effects and others.

1 5th Mega

An interesting effect texture with a fifth shift, reverb and
flange.
Mono in, stereo out.

2 5th Quantizer

An interesting tremolo-echo effect.
Mono in, stereo out.

3 Adaptive Reverb

The delays of a reverb follow the pitch of your input. Make sure
you have a good, strong input for the pitch detect.
Mono in, stereo out.

4 Angel Echos

Angelic echos with chorus and reverb. If you're an experi-
menter, this preset has lots of control for different sounds.
Stereo in, stereo out.

5 Computerizer

Kinda makes your instrument sound like a computer from the
1950's trying to figure something out.
Mono in, stereo out.

6 Crystal 5th Caves

Simpler, pitched echos with reverb. Try different shift
amounts.
Mono in, stereo out.

7 Crystal Heaven

Octaves chorused and reverbed.
Summed in, stereo out.

8 Crystal Octaves

Octave echos build upon each other to add a crystalline st
sound to your instrument.
Summed in, stereo out.

9 Crystal Sevenths

Just like 'Crystal Octaves' except some fifths are thrown ir
a more organ-like effect.
Summed in, stereo out.

10 Crystal Worlds

A mellow, crystal octave effect.
Stereo in, stereo out.

11 Dinosaur Legs

Somehow, 'Dinosaur Legs' seems the best description for
preset.
Summed in, stereo out.

12 DrWho Diatonic 6ths

A synth-like effect in which a square wave shifts the sounc
and down an octave. This is after you have a diatonic si
shift.
Mono in, mono out.

13 Duck Soup

Very weird, swept pitch shift and delays. But it will duck
of the way when you play something.
Stereo in, stereo out.

14 Ducked Tails

Adds rising or falling echo, but only on the ends of sounds; n
during a sound. Raise 'sens' until effect does not compete \
input... It will be there when the input stops.
Hint: A slow, upward tail makes a nice transition to c
pauses when playing songs from the same CD.
Stereo in, stereo out.

5 Garmonbozia

oes all sorts of unnatural things to the left input: reverse,
ift, and psychotic panning.
ono in, stereo out.

6 Genesis Worlds

simple note creates a myriad of repeating, pitch-shifted de-
ys with a nice reverb. Play simply for best results.
ereo in, stereo out.

7 Heen

sequence of random notes. Try playing with the sample freq
d droop.
thing in, mono out.

3 Latin Cathedral

i interesting reverb made by using reverse delays.
ono in, stereo out.

) Mod-U-Mania

aser and modulated delay. Very altered echos.
ono in, mono out.

) Pitch->FreqShift

ch shifter into a frequency shifter. Very interesting modu-
:ions.
ono in, mono out.

| Sample Hold Filter

random signal feeds a sample hold which then controls a fil-
·. Gives a watery effect.
ono in, mono out.

! Smooth Crystals

ry, smooth, crystal octave effect.
ono in, stereo out.

23 Squareworld Shifter

Modulated pitch-shifts give you a computer synth-sound.
Mono in, stereo out.

24 Star Space

Octave-shifted echos. A combination of pitch shift, chorus,
reverb.
Mono in, stereo out.

25 Synth Reverb

A mono FM type synth driven by your input with a reverb.
Freqmult-1 will tune the synth.
Mono in, stereo out.

26 Triggered Arpeggio

You strike a note and this preset will pitch shift a scale. You
can dial in your own melody if you want.
Mono in, mono out.

27 UFO in My Church

Close Encounters sequencer with reverb.
Nothing in, stereo out.

28 War with PhaserGuns

If you put in two or more voices of tones which are shifting
slowly, this program will make all sorts of nifty ray gun and
explosion noises.
Mono in, stereo out.

29 Waterized

An underwater reverb.
Mono in, stereo out.

30 WeKnowBeetBoxTrtMe

This is something between a choir and a washing machine.
Mono in, mono out.

22 Multiple Effects

A set of multi-effects and dual machine mode programs, again showing
just some of the many possibilities with our open architecture.

1 4 FShifts+Delay

Four frequency shifters each with a delay. Very unusual echos.
Stereo in, stereo out.

2 Big Squeezolo

Pitch-shifts with a slight modulation. Squish!
Mono in, stereo out.

3 Chorus Delay

A chorus followed by a delay. The delay gets a mix of dry and
chorus.
Stereo in, stereo out.

4 Detune & Reverb

Micro pitch-shift into reverb.
Stereo in, stereo out.

5 Dist Leslie Verb

Goes into tube distortion, through a rotating speaker system,
into a room.
Mono in, stereo out.

6 Easternizer

This preset has the combination of a flanger, a fifth-shift, and
a reverb.
Summed in, stereo out.

7 Env Filtered Reverb

A reverb with an envelope filter on the output.
Stereo in, stereo out.

8 Gig Echo & Verb

Echo fed into a reverb. You can add some pitch-shifting
the echo if you like, too.
Mono in, stereo out.

9 Gig Pitch & Reverb

Pitch-shifter feeds into a reverb.
Mono in, stereo out.

10 Glitterous Verb

A shifted echo and your sound go through a reverb.
Stereo in, stereo out.

11 L=Rev-C/R=fl/fln/ddlRcFflDDl

Left input feeds a reverb. Right input feeds a rack consis
of two filters, flanger and a delay. Outputs of both cha
summed to stereo. Dual machine mode.
Dual mono in, stereo out.

12 M Sh,L=DDL,R=no DDL

The delayed left input and straight right input are summed
feed a four output multishift.
Dual mono in, stereo out.

13 Moon Solo

Unique combination of pitch-shift, phaser, chorus, and de
Mono in, mono out.

.4 Octashift Glissverb

`langer, octave shift and reverb.
`tereo in, stereo out.

.5 Pitch & Reverb

`n octave pitch-shift into a reverb.
`lono in, stereo out.

.6 Rev-C/4 PitchShifts

`eft input feeds a reverb. Right input feeds a four output multi-
`hifter. Outputs are then summed to stereo. Dual machine
`lode.
`ual mono in, stereo out.

7 ReverseVerb 6/4 8v

`eat reverb with reversed echos. Use with mix or an effect
`op.
`tereo in, stereo out.

8 Reverse Worlds

`uch like mixer's toolbox, but with a reverse shifter instead
`a regular shifter. Input and output EQ included. Very pow-
`ful.
`ono in, stereo out.

19 Room 2 Go Downdelay

This has chorus and strange rhythmic echos going into a re-
verb.
Mono in, stereo out.

20 Space Station

Big, thick echoey reverb, but there's a lot more going on here.
Mono in, stereo out.

21 StereoDelay>Flanger

With this preset, each channel has a delay that goes into a
flanger.
Stereo in, stereo out.

22 Str2Flt/Cmp/Flng/DdlSf/c/F/d

A stereo rack consisting of filters, compressors, flangers and
delays.
Summed in, stereo out.

40 VIRTUAL PEDALBOARD

This bank is for 'stompbox' style effects. These effects retain the full character of your treasured instrument with no compromises in sonic quality, while offering straightforward basic effects.

1 5Series Pedalboard

Series pedalboard with pitch, chorus, phaser, echo and reverb.
Mono in, stereo out.

2 Parallel Pedalboard

Parallel pedalboard with compressor, pitch, flanger, echo and reverb with pan control.
Mono in, stereo out.

3 Series Pedalboard

Series pedalboard with compressor, pitch, flanger, echo and reverb.
Mono in, stereo out.

4 Virtual Pedalboard

Series pedalboard with pitch, chorus, flanger, phaser and echo.
Mono in, stereo out.

5 PANacea

Artfully tuned parallel pedalboard with pitch, flanger, echo and reverb with pan control.
Mono in, stereo out.

6 Stairway To Hell

Sensitively tuned parallel pedalboard with pitch, flanger, echo and reverb with pan control.
Mono in, stereo out.

7 Steel Drum Guitar

Carefully tuned series pedalboard with pitch, flanger, echo and reverb.
Mono in, stereo out.

8 Subtle Overkill

Discreetly tuned series pedalboard with pitch, flanger, echo and reverb.
Mono in, stereo out.

9 Sweep Guitar

Delicately tuned series pedalboard with pitch, flanger, echo and reverb.
Mono in, stereo out.

10 MidiStomp Chorus

Fully MIDIed chorus module for pedalboard building.
Mono in, mono out.

11 MidiStomp Ekkoplex

Fully MIDIed echo module for pedalboard building.
Mono in, mono out.

12 MidiStomp Flanger

Fully MIDIed flanger module for pedalboard building.
Mono in, mono out.

13 MidiStomp Harmonize

Fully MIDIed pitch shifter module for pedalboard buildii
Mono in, mono out.

14 MidiStomp Phaser

Fully MIDIed phaser module for pedalboard building.
Mono in, mono out.

15 MidiStomp Reverb

Fully MIDIed reverb module for pedalboard building.
Mono in, stereo out.

16 Stomp Chorus

Tuned unMIDIed chorus module for preset building.
Mono in, mono out.

17 Stomp Ekkoplex

Tuned unMIDIed echo module for preset building.
Mono in, mono out.

18 Stomp Flanger

Tuned unMIDIed flanger module for preset building.
Mono in, mono out.

19 Stomp Harmonizer

Tuned unMIDIed pitch shift module for preset building.
Mono in, mono out.

20 Stomp Phaser

Tuned unMIDIed phaser module for preset building.
Mono in, mono out.

21 Stomp Reverb

Tuned unMIDIed reverb module for preset building.
Mono in, stereo out.

41 TEMPLATES

This bank is full of multi effects algorithms which like the VIRTUAL PEDALBOARDS are intended for remote control of the preset so recompile delays may be avoided.

. Gtr/Kbd ChorVerbDly

Chorus and reverb for guitar on left, for keyboard on right.
Dual mono in, stereo out.

L=Shift/R=Reverb

Left, pitch-shifter. Right, reverb.
Dual mono in, dual mono out.

Pickshift Paradise

This rack includes compressor, EQ, pitch-shift, reverb and remulo.
Summed in, stereo out.

RoomA / HallB

Left: Room reverb. Right: Hall reverb.
Dual mono in, stereo out.

5 Combi EFX #3

This has octave-shifted echos. There is a reverb that you can turn up.
Mono in, stereo out.

6 Inst Process

This preset gives you a pitch shift, phaser, chorus, and delay rack.
Mono in, mono out.

7 Phaser Rack

This rack includes EQ, compressor, pitch shift, delay and phaser.
Mono in, mono out.

8 Pickers Paradise

This rack has compressor, EQ, delay chorus, reverb and tremulo.
Summed in, stereo out.

42 LOOPING & DELAYS

Primarily long delay effects set up with performance in mind,
this set also includes some non-looping delays as well.

1 MONOLOOP

10-sec mono 'performance' delayloop.
Summed in, stereo out.

2 STEREOLOOP

5-sec stereo 'performance' delayloop with metering.
Stereo in, stereo out.

3 HELIXLOOP

5-sec stereo delay with crosspatched feedback paths. Stereo
flips left and right with each repeat.
Stereo in, stereo out.

4 4RESONATORS+LOOP

4 voice tuned multitap resonators into a long delay.
Summed in, stereo out.

5 NIMBUS

Rhythmic delays with stereo spread via non outputted feed
paths and subtle modulation.
Summed in, stereo out.

6 RITUALDELAY

Dimminishing delay times, stereo spread and subtle moc
tion, make for an interesting delay effect.
Summed in, stereo out.

7 LOOPVERB

Long mono delayloop into reverb, which spreads to stereo
gives depth and animation to the loop.
Stereo in, stereo out.

8 REFRACTIONLOOP

Stereo multitaps - refracts left and right timing within
stereo loop.
Stereo in, stereo out.

⟩ MANIFOLD TWO

A 5-tap delay into a long delayloop. Lets you play with polyrythms into a loop.
Summed in, stereo out.

10 DUAL PINGPONG

Dual Mono PingPong-ing Moddelays.
Dual mono in, stereo out.

11 TIME+PITCH MANIFOLD

This preset rearranges the time and pitch of whatever you play into it.
Summed in, stereo out.

12 BPM POLYRHYTHM 3/4

Lets you play with true polyrhythmic figures. Choose BPM, note values and # of repeats. Play a note get 3 against 4 out. Summed in, stereo out.

13 BPM POLYRHYTHM 5/4

Lets you play with true polyrhythmic figures. Choose BPM, note values and # of repeats. Play a note get 5 against 4 out. Summed in, stereo out.

43 TEXTURES

A diverse collection of some of our more complex effects. These include many new types of processes such as 'Interactive Harmonizing'. Great for all instuments, think 'textural'.

1 PORCELAIN FLANGE

A true 'Thru Zero Flange' via two parallel stereo delays and a stereo delay path for the 'dry' signal. Smooth and lush ambience.
Stereo in, stereo out.

2 POLYMOD CHORUS

Very lush and wide chorus effect via three parallel stereo chorus delays, each with FM LFOs.
Stereo in, stereo out.

3 POLYMOD DELAY

Very lush and wide chorus and delay effect via three parallel stereo chorus delays, each with FM LFOs. This one with longer delays.
Stereo in, stereo out.

4 SDG REVERB_A TWO

Uncluttered reverb without localization cues, doesn't get in the way of player. Good for basic guitar work.
Stereo in, stereo out.

5 TREATMENT TWO

Lush Chorusing and Verb. Chorus/delays are Stereo and Dual band so highs and lows get independent treatments.
Stereo in, stereo out.

6 DERVISH

Smooth swirling delays via enveloped series chorus delays and stereo flanging.
Summed in, stereo out.

7 POLYTONALRYTHYM 1

Polyrhythmic pitched delays. Play a note get a 6 note line plus a delaytap of the original.
Summed in, stereo out.

8 POLYTONALRYTHYM 2

Polyrhythmic pitched delays. Play a note get a 6 note line plus a delaytap of the original.
Summed in, stereo out.

9 TRIO 4

Two voice interactive shifter. Instant String Trio. Choc intervals per voice and input triggers one of them. Envel and Verb add dimension. Bias is trigger threshold.
Stereo in, stereo out.

10 WATERGARDEN 1

4 resonated delays into verb. Nice texture thats subtler shifters.
Stereo in, stereo out.

11 STEREO TRI-CHORUS

Just what the title says. Gives Very rich and full choru and image as each frequency has its own fx path.
Stereo in, stereo out.

12 STEREO TRI-CHORUS 3

Just what the title says. Gives Very rich and full choru and image as each frequency has its own fx path.
Stereo in, stereo out.

13 STEEPLECHASE

Polyrhythmic shifted delays. Modulation of the shifters will have you wandering who's chasing who.
Summed in, stereo out.

14 GEODESIC

Polyrhythmic shifted delays. Try with an arppegiated motif.
Summed in, stereo out.

15 FERMILAB

Phased Multitap Delays. A single delay then shorter multiple repeats pan from left to right. An audio particle accelerator.
Summed in, stereo out.

16 WHIRLWIND

Smooth and swirling. Panners tied to delay modulation. With q and stereo flange.
Dual mono in, stereo out.

17 THRU ZERO 2

Stereo 'Thru Zero' Flanger. Asymmetric flange sweep gives a serious rhythm to sustained notes and chords. Try it clean and dirty.
Stereo in, stereo out.

18 STRATOSPHERICS

Strange oscillating delays with modulation. Unusual rhythmic effect or ambience if used with volume swells.
Summed in, stereo out.

19 ORGANUM

Two voice interactive shifter. Instant Trio. Choose 3 intervals per voice and input triggers one of them. Verb adds dimension. Bias is trigger threshold.
Stereo in, stereo out.

20 DIATONIC ORGANUM

Two voice diatonic interactive shifter. Instant Trio. Choose 3 intervals per voice and input triggers one of them. Verb adds dimension. Bias is trigger threshold.
Stereo in, stereo out.

21 GRAVITY WELL 1

Series stereo flanger/delays embedded inside a reverb make unusual textures.
Stereo in, stereo out.

22 CATACOMB 1

Long decay of reverb kept animated via sophisticated delay lines. Full and ambient.
Stereo in, stereo out.

23 CATACOMB 2

Long decay of reverb kept animated via sophisticated delay lines. Full and ambient.
Stereo in, stereo out.

24 LARYNX DELAY

Throaty envelope filters and modulating ping-pong delays.
Summed in, stereo out.

44 COLOURATION

These, like BLEND DISTORTION, offer many flavors of polyphonic or multiband distortion. This allows chordal playin sonically react like single lines. This set with added processing. Also try blended with your amp/preamp.

1 TRIFUZZCHORUS 1

Tri-band compression / distortion / chorus delays. Very fuzzy. 3-band distortion from separate curves and lots of gain induced clipping.
Summed in, stereo out.

2 TRIFUZZCHORUS 2

Tri-band compression / distortion / chorus delays. Very fuzzy. 3-band distortion from separate curves and lots of gain induced clipping.
Summed in, stereo out.

3 GHOST GUITAR

Multiband distortion into stereo chorus delays. Nice for those late night leads.
Summed in, stereo out.

4 GEOMANTIC GUITAR 2

Sophisticated preamp simulation into a delayline. Great for blending with your own amp. Gives true stereo image and depth.
Summed in, stereo out.

5 ESCHER LATTICE A

Multiband dist/band delays. Each of 4 bands gets independent overdrive and its own band delay. Unusual texture.
Summed in, stereo out.

6 ESCHER LATTICE B

Multiband dist/band delays. Each of 4 bands gets independent overdrive and its own band delay. Unusual texture.
Summed in, stereo out.

7 CYBER BLOSSOM A

Very different flavor with independent fuzz and band de
Summed in, stereo out.

8 POLYWAAFUZZDLY 1

Real fun multiband version of wa+fuzz+delay.
Summed in, stereo out.

9 CHARACTERIZOR A

Multiband compression/distortion into reverb. Adds c character and articulation to guitar and bass.
Summed in, stereo out.

10 CHARACTERIZOR D

Multiband compression/distortion into reverb. Adds overdr character and articulation to guitar and bass.
Summed in, stereo out.

11 CEREMONIAL TWO

Compression into multiband distortion, into stereo choru: lays. Great for guitar and bass harmonics.
Summed in, stereo out.

12 PERPETUALGUITAR

The serious sustain of the compression+multiband distor coupled with the long mono delay, allow for cool overlap lines.
Summed in, stereo out.

13 ARKHAMLEAD

Fun distortion box with a couple of delays thrown in. Sor nice.
Summed in, stereo out.

14 TRIGRAM 342

3band compression/distortion into multitap delays. Subtle overdrive and polyrhythms.
Summed in, stereo out.

15 TRIGRAM 541

3band compression/distortion into multitap delays. Subtle overdrive and polyrhythms.
Summed in, stereo out.

16 TETRAGRAMMATON

Biblical Multiband dist/band delays.
Summed in, stereo out.

17 BANSHEE STRINGS 2

Compression+ 4band distortion, into stereo chorus delays. Good lead sound, with a vocal quality.
Summed in, stereo out.

18 ARTICULATE FUZZ 1

Compression into multiband distortion, into stereo chorus delays. Like the title says an articulate lead sound.
Summed in, stereo out.

19 ARTICULATE FUZZ 2

Compression into multiband distortion, into stereo chorus delays. Like the title says an articulate lead sound.
Summed in, stereo out.

20 SPHERE GUITAR 1

Compression+4band distortion into dual long delays. Instant fugues.
Summed in, stereo out.

21 HARMONICON 1

Compression+ whammy pedal, into 4band distortion finally into long mono delay. Long delay times create whammy-ed sonic beds.
Summed in, stereo out.

22 HARMONICON 2

Compression+ whammy pedal, into 4band distortion finally into long mono delay. Long delay times create whammy-ed sonic beds.
Summed in, stereo out.

45 BLEND DISTORTION

This band offers sophisticated multiband distortions. These programs process each band independently, allowing precise manipulation of the signal as well as similar character to chordal and lead playing. Try as is and as enhancement to your amp/preamp. Adds depth and width without delays!

1 TUBESMEER 3

Sophisticated 'tube' emulation preset. Each frequency band has independent distortion and filters. Note the SLEW params. Very fat and stereo without any delays!
Summed in, stereo out.

2 CARBON 14

Sophisticated preamp simulation. Full rich fuzz via multiband distortion gives real stereo out without delays. Good for chords and leads.
Summed in, stereo out.

3 CHRYSANTHEMUM FUZZ

Compression + multiband distortion. Envelope controls for each band allows for slow attacks.
Summed in, stereo out.

4 CHRYSANTHEMUM TWO

Compression + multiband distortion. Envelope controls for each band allows for slow attacks.
Summed in, stereo out.

5 HYPERCLEANFUZZ

This multiband fuzz gives the ability to play chords with the same sonics as leads. Try it out with the biggest chord you can muster!
Summed in, stereo out.

6 HYPERCUBEFUZZ 3

Sophisticated preamp simulation. Full rich fuzz via multiband distortion gives real stereo out without delays. Good for chords and leads.
Summed in, stereo out.

7 BRONZE PIPES

Sophisticated preamp simulation. Full rich fuzz via multiband distortion gives real stereo out without delays. Good for chords and leads.
Summed in, stereo out.

8 ONYX PIPES

Sophisticated preamp simulation. Full rich fuzz via multiband distortion gives real stereo out without delays. Good for chords and leads.
Summed in, stereo out.

9 METALLURGY

Sophisticated preamp simulation. Full rich fuzz via multil distortion gives real stereo out without delays. Good for ch and leads.
Summed in, stereo out.

10 PENTAFUZZ

Sophisticated preamp simulation. Full rich fuzz via multil distortion gives real stereo out without delays. Good for ch and leads.
Summed in, stereo out.

11 HYPERREEDS

4band distortion with a smooth yet reedy fuzz and unu attack.
Summed in, stereo out.

12 HYPERWINDS

4band distortion with a smooth yet reedy fuzz and unu attack.
Summed in, stereo out.

13 BRUNDLEFLY 1

Morphing PolyFuzz. External pedal controls morph betv fuzz styles.
Summed in, stereo out.

14 BRUNDLEFLY 3

Morphing PolyFuzz. External pedal controls morph betv fuzz styles.
Summed in, stereo out.

15 HOLLOWREEDS

5 band distortion. This sophisticated preamp simulatic hollow and aggressive.
Summed in, stereo out.

46 BASS PRESETS

This bank created with bass in mind. Reverbs, multi-effects and polyfuzz for bass.

1 Bass Space

Slight ambience with an adjustable delay, initially set very small. Sounds good on bass, too.
Mono in, stereo out.

2 Bass Suite

This patch consists of a compressor, an octaver, a 4-band eq, and a phaser. MOD1 controls the octaver level, and MOD2 controls the phaser level.
Mono in, mono out.

3 Bass Swells

Panning delays add depth and animation. Also try it with volume pedal.
Stereo in, stereo out.

4 ANTEDILUVIAN BASS

Compression into multiband distortion with envelope control.
Fuzz bass smooth and vocal.
Summed in, stereo out.

5 PRIMITIVE BASS

Compression+4band distortion, into stereo chorus delays. This one for bass more character than overdrive with delays as thickeners.
Summed in, dual mono out.

6 TRANCEBASS

Compression+4band distortion, into stereo chorus delays. For bass, more character than overdrive plus rhythmic delays.
Summed in, stereo out.

7 TREATMENT TWO BASS

Lush Chorusing and Verb. Chorus/delays are Stereo and Dual band so highs and lows get independent treatments.
Stereo in, stereo out.

8 CEREMONIAL BASS

Compression+4band distortion, into stereo chorus delays. Great for bass harmonics gives a slight bell quality plus delays as thickeners.
Summed in, stereo out.

9 Hyper for Bass

Multiband distortion. For bass this one has a throaty soft attack.
Summed in, stereo out.

47 STICK PRESETS

An industry first. These presets created specifically for stickists. These are also excellent for guitar and bass.
Stick® Is a registered trademark of Stick Enterprises, Inc. and is used by permission.

1 BASSISTICK

Your basic stereo compression and EQ with all the quality. Stereo in, dual mono out.

2 STICK EQ+VOLUME

Stereo EQ and mixer with programmable volume pedal. Stereo in, stereo out.

3 STICKIST ONE

Like EQ+Volume but add stereo compression and reverb. High quality and very playable texture. Stereo in, stereo out.

4 STICKIST ONE-BASS

Like EQ+Volume but add stereo compression and reverb. High quality and very playable texture. This one with deeper lows. Stereo in, stereo out.

5 CABALISTICK 1

Dual mono comp+EQ+4tap delay. Slight variations in the left and right path give thickness to the rhythmic delays. Dual mono in, stereo out.

6 CABALISTICK 2

Dual mono comp+EQ+4tap delay. Slight variations in the left and right path give thickness to the rhythmic delays. Dual mono in, stereo out.

7 DESERTSTICK A

Compression into multiband distortion into diffuse granular verb. Lots of character in this atmospheric texture. Summed in, stereo out.

8 DESERTSTICK B

Like DESERTSTICK A with more overdrive. MOD 1 con external volume pedal. Summed in, stereo out.

9 DESERTSTICK C

Like DESERTSTICK A but with much more overdrive. \ and fat. Summed in, stereo out.

10 RESONSTICK

Stereo comp+eq into multitap resonating delays into verb. clusion of an external vol pedal allows ambient textures as as rhythmic ones. Stereo in, stereo out.

11 TAOISTICK FOUR

Stereo comp+eq into delays and verb. Clean and bright great articulation. External vol pedal allows beautiful sw Stereo in, stereo out.

12 PIANISTICK PEDAL EQ

Piano sustain pedal emulation via morphing reverb and ex nal pedal. And yes it really works. Stereo in, stereo out.

48 SATRIANI PRESETS

Presets tweeked or created and in use by Mr. Satriani.

. 50's Stereo Delay

'wo long delays each 2.5 seconds.
)ual mono in, dual mono out.

! Detune Delays 1

weeps two pitch shifters in opposite directions, giving a con-
incing doubling effect.
Iono in, stereo out.

! Gorgeous Delay

/arm echoes provided by lowpass filters.
Iono in, stereo out.

. DI Compress

\ stereo compressor is followed by a compressor that limits a
and or a shelving response. Use as a de-esser or other versa-
le frequency-conscious processor. The left two faders on the
!ain page are separate left & right input levels. First meter
 compression, second is H.F. limiting. Output level adjust
on the right. Duplicate controls and meters are found on dif-
rent pages for convenience. They will always match. 12dB
`internal headroom is allowed for processing of full scale sig-
als. Often you can just adjust the input levels to drive into
›mpression.

J.C.Stereo Compress

stereo compressor is followed by a compressor that limits a
ind or a shelving response. Use as a de-esser or other versa-
le frequency-conscious processor. The left two faders on the
:ain page are separate left & right input levels. First meter
 compression, second is H.F. limiting. Output level adjust
on the right. Duplicate controls and meters are found on dif-
rent pages for convenience. They will always match. 12dB
`internal headroom is allowed for processing of full scale sig-
ıls. Often you can just adjust the input levels to drive into
mpression.

Lead Compress

stereo compressor is followed by a compressor that limits a
ınd or a shelving response. Use as a de-esser or other versa-
e frequency-conscious processor. The left two faders on the
ain page are separate left & right input levels. First meter
 compression, second is H.F. limiting. Output level adjust
on the right. Duplicate controls and meters are found on dif-
‹ent pages for convenience. They will always match. 12dB
internal headroom is allowed for processing of full scale sig-
ıls. Often you can just adjust the input levels to drive into
mpression.

Old Valve

ono delay with feedback
ono in, mono out.

8 Satchelope Filter

Two filters controlled by the signal level.
Mono in, mono out.

9 Enhancer

Slow chorus-like rotation and tight reverb effect. Full and
warm.
Mono in, stereo out.

10 Water-Like

Basic rotating speaker effect with a little reverb. There's ac-
tually two speakers (high and low) and you can alter each to
your taste. When you load this preset, the settings are for what
we believe to be most natural.
Mono in, stereo out.

11 W-I-D-E Solo

Uses a lot of very small pitch shifts to widen the stereo image.
Mono in, stereo out.

12 Oscillator 1k 0vu

General purpose oscillator. On loading it is set to a 440 Hz sine
wave for tuning.
Nothing in, mono out.

13 2O>20 Audio Sweep

20 Hz to 20KHz swept waveform. On loading audio begins to
sweep. Good for sound-check applications and general 'sys-
tems' tests.
Nothing in, mono out.

49 TREY GUNN PRESETS

Presets tweeked or created and in use by Mr. Gunn.

1 TG DUO clean wetter

Comp+distortion+4-tap delay, in parallel with EQ+4-tap delay. Subtly mixed clean and distorted paths for just the right texture.
Summed in, stereo out.

2 TG DUO dry

Comp+distortion+4-tap delay, in parallel with EQ+4-tap delay. This one dirtier and drier.
Summed in, stereo out.

3 TG DUO long sustain

Like other TG DUO presets this one is great for single string leads.
Summed in, stereo out.

4 SonicDisorderVerb

This wild atmosphere is both unusual and extreme. A must listen.
Mono in, stereo out.

5 TREYS FILTER 1

Three parallel envelope filters and stereo mixing give a subtle effect.
Summed in, stereo out.

6 AMP-U-LATION 2

Tube power amp/speaker emulation. This little guy can re do the trick of cleaning up harsh fuzz or to feed a P.A.
Stereo in, stereo out.

7 Garden halo

Reverse 'type' sound via multitap and verb. Nice atmosph
Mono in, stereo out.

8 2 Octave Delays

Multiple pitches with longer delay gives stereo shimmer w out the normal feedback sound of other shift programs.
Summed in, stereo out.

9 Backward Garden 3

Reverse 'type' sound via multitap and verb. Nice atmosph
Mono in, stereo out.

10 BANSHEE EnglishHorn

Compression+ 4band distortion, into stereo chorus del Good lead sound, with a horn quality.
Summed in, stereo out.

11 DALI DELAY short

Smooth swirling delays via enveloped series chorus delays stereo flanging.
Summed in, stereo out.

12 GRAVITY FLANGE 1

Like GRAVITY WELL this one without the verb.
Stereo in, stereo out.

13 HyperFuzz

Multiband distortion. Low end fuzz with a slight attack.
Summed in, stereo out.

14 IMP WAVE 2

A short lived impulse wave. Used as a thickener and imager.
Summed in, stereo out.

15 octave fuzz

Input goes to two parallel distortions and shifters.
Mono in, stereo out.

16 out-of-phase Widen

Psycoacoustic enhancement via skewing the phase angle of left
and right signal.
Stereo in, stereo out.

17 Panner Ddls

Subtle modulation make these panning delays rich and smooth.
Stereo in, stereo out.

18 Random Verb Long

Like the title says. This is one that you need to experience.
Mono in, stereo out.

19 Seethy TWO Reverb

Envelope filters into reverb. Try it with bass and guitar.
Stereo in, stereo out.

20 Stereo trill

This is a sophisticated slap device with much more subtly than
the usual, via multitap, diffusion and verb.
Mono in, stereo out.

21 Whirly mellow

Smooth and swirling. Panners tied to delay modulation. With
eq and stereo flange.
Dual mono in, stereo out.

50 STEVE VAI PRESETS

Presets tweeked or created and in use by Mr. Vai.

1 Kill the Guy

A plex loop with reverse shifters and filters inside.
Mono in, stereo out.

2 Little Man

A plex loop with reverse shifters and filters inside. I think this little man is trying to say something.
Mono in, stereo out.

3 Vai-a-tonic Trio

Now you have three other guitarists, each with a differ
sound. Player three likes his fuzz.
Mono in, stereo out.

51 ARTIST BANK A

This bank contains the first of an ongoing library of artist presets.

. 140 EMT Plate

'late reverb with simple parameter layout.
Iono in, stereo out.

easy 140 EMT Plate

late reverb with simple parameter layout.
Iono in, stereo out.

AMS DMX 1580S

MS emulation with parameters at null settings.
tereo in, stereo out.

AMS Guitar

MS emulation with parameters set for 'thickening' effect.
tereo in, stereo out.

5 Guitarmonizer

'Stomp' type reverse shifter. Use splice knob to get more of a
reverse effect.
Mono in, dual mono out.

6 Tom's Acoustic Gtr

Subtle enrichment effect. As the name implies try it with
acoustic guitar or guitar played with an acoustic feel.
Mono in, stereo out.

7 AutoPan>Delay

Nice panning delays.
Mono in, stereo out.

Appendix C: DSP4000B Factory Programs

0 Utilities
1 Empty Program
2 Thru (In = Out)
3 Mute
4 Oscillator-440
5 White Noise
6 Universal Matrix

1 Commerce
1 Airplane Background
2 Clock Radio
3 Fries With That?
4 Office Intercom
5 Sound Truck
6 Talking Dashboard

2 Communication
1 Bullhorn
2 Cellular Phone
3 CB Radio
4 Crazy Dialer
5 Long Distance
6 Megaphone
7 More's Code
8 Off Hook!
9 Public Address
10 Real Dialer
11 Shortwave Radio
12 Traffic Report

3 Fantasy
1 Cussing It
2 Cousin It
3 Elves
4 Fantasy Backgrounds
5 Magic Echo
6 Morph to Magic
7 Singing Mouse
8 Trolls

4 Entertainment
1 33 RPM w/ scratches
2 45 RPM Oldie
3 Big Movie
4 Boom Box
5 Fake Call-in
6 Page Three!
7 Real Call-in
8 TV in Next Room

5 Science Fiction
1 Artoo Chatter
2 C3P-Yo!
3 Lasers!
4 Martian Rock Band
5 Robot Band
6 Theremin
7 Tribbles

6 Production Gimmicks
1 Backwards
2 Can't Carry Tune
3 Ducked Tails
4 Dynamic Stereo
5 Go Crazy
6 Plug Puller Pro
7 Round & Round
8 Solo Zapper Pro
9 Bell Constr. Kit
10 Headphone Filter
11 Woosh Maker

7 Voice Tools
1 Big Voice Pro
2 Chipmunks
3 We're a Big Crowd
4 We're a Small Crowd
5 Doubletalk
6 Mega-Dragway
7 'Max' Stutter

8 Nervous Talker
9 Triplets
10 Voice Process Pro
11 Fast Voice Process
12 Voice Disguise
13 Vox Shimmer
14 Voxplate / Chorus
15 Auto Pitch Correct
16 FixaVocal: 1/2 step
17 Phased Vocal Reverb
18 Sharp Vocal Filter
19 Rap Bass Hype

8 Mix Tools
1 1 kHz Oscillator
2 Awfultones
3 Brightener
4 Easy Timesqueeze
5 Hiss Eliminator
6 Hum Eliminator
7 Sfx Filter/Compress
8 Simple Compressor
9 Simple Equalizer
10 Stereo Simulator
11 Stereo Spreader
12 Super Punch
13 Three Band Compress
14 TimeSqueeze(R)
15 Noise Canceller

9 Delays
1 Ducked Delays
2 Easy Chorus
3 Easy Phaser
4 Long Delay w/ Loop
5 Video Delay

10 Echoes
1 Basic Stereo Echo
2 Big Church
3 Classroom
4 Crypt Echo
5 Infinite Corridor
6 Kitchen Reverb
7 Plate Reverb
8 Spring Reverb
9 Tape Reverb
10 Tile Men's Room
11 Union Station verb

11 Sound Effects
1 401 ALERT
2 403 DOORBELL
3 404 JET
4 405 JETTISON
5 407 PLUCKED STRING
6 408 SIREN
7 409 SONAR
8 410 STEREOCOPTER
9 411 TANK ATTACK
10 412 THUNDER
11 413 UFO
12 414 WAVE
13 415 WINDSTORM
14 SFX FLINTLOCK
15 SFX LOCOMOTIVE
16 SFX MORTAR
17 SFX LIGHTNING

12 Dynamics
1 2 Mono Compressors
2 4-band compress
3 Auto V/O Ducker
4 Bigger is Wider
5 Compressor & EQ
6 Dual Gates
7 Man's Pan
8 Quad Pan Chorus's
9 Ramp Up/Ramp Down
10 SemiClassic Squeeze

11 Stereo Compressor
12 Stereo Two-Bander
13 Top 40 Compressor

13 EQ/Filters
1 100\300\1K3K10K/4K
2 40\100^300\1K5K10K
3 80\160^400^2K5K/2K
4 Band Delay
5 Big Dipper
6 Cup Mute
7 Mouth-a-lator
8 Up Band Delay
9 Vocal Filter
10 Simple Vocoder
11 Two Band Crossover
12 Band Filter
13 SweepBand Delay
14 Mono Filter
15 Stereo Filter

14 Distortion
1 ARKHAMLEAD
2 Band Distort
3 Big Muff
4 Bite Distort
5 Class A Distortion
6 CrudeDistortion Tap
7 Fuzz Maker
8 Thick Distort
9 Transistor Distort

18 H3000 Emulation
1 470 PhoneRingDelay
2 474 Sextuplets
3 502 Analog Thick
4 507 DGDLYWAH+MIC
5 533 Voice Doubler
6 535 Analog Delays
7 537 Circles
8 542 Fat Slap
9 546 Ping Pong Ball
10 550 Subtle Sweep
11 560 De-Burr
12 598 Random Gate
13 605 A Minor Chords
14 606 Arpeggios
15 608 Deepen
16 609 Diatonic Dance
17 612 Gregorian Chant
18 613 H949
19 623 Pitch Quantize
20 625 Third & Fifth
21 626 Third & Octave
22 630 Aliens
23 640 Cannons
24 641 Critical Band
25 644 Filter Pan
26 645 Future Shift
27 657 Scary Movie

19 Bizarre
1 7 Spacer
2 Time+Pitch Manifold
3 VR Backgr01
4 Warm Chorpustle

20 Curiosities
1 Adaptive Reverb
2 Angel Echos
3 Computerizer
4 Crystal Heaven
5 Crystal Worlds
6 Dinosaur Legs
7 Duck Soup
8 Ducked Tails
9 Genesis Worlds
10 Heen
11 Latin Cathedral
12 Mod-U-Mania

13 Pitch->FreqShift
14 Sample Hold Filter
15 Squareworld Shifter
16 Star Space
17 Synth Reverb
18 Triggered Arpeggio
19 UFO in My Church
20 War with PhaserGuns
21 Waterized
22 WeKnowBeetBoxTrt

21 Dual Effects
1 L=Shift/R=Reverb
2 Leddroom/ Flanger
3 RoomA / HallB
4 Sml Booth/Sml Room
5 Sml Room/Big Plate
6 Tunnel/Burrow

22 Multiple Effects
1 Big Squeezolo
2 Chorus Delay
3 Combi EFX #3
4 Easternizer
5 Env Filtered Reverb
6 FatFunkVocal Filter
7 M Sh,L=DDL,Rno DDL
8 Moon Solo
9 Octashift Glissverb
10 Pitch & Reverb
11 Reverse Worlds
12 Room 2 Go Downdelay
13 StereoDelay>Flanger
14 StrFltCmpFlngDdlSfc
15 Tremolo Reverb

61 Pitch Shifters
1 Mono Shift
2 Dual Shift
3 Stereo Shift
4 Dual H910s
5 Diatonic Shifter
6 2-Voice Diatonic
7 Multiple Diatonic
8 8-voice Diatonic
9 User defined scale
10 Multi-Shift
11 8-Pitch Shifts
12 Quad Detuners
13 5th Place
14 Dubbler
15 Warm Shift
16 5ths&Oct Multiply
17 120BPM ShifterDelay
18 Big Heartbeat
19 Chim-Chiminee
20 Crystal Pad 2
21 Dual Reverse Shift
22 Fake Pitch Shift
23 Freq Shifter
24 Freqshift Chorus
25 Freqshift Vibrato
26 Large Poly Shift
27 Organizer
28 Pitch Sequencer
29 Ring Modulator
30 Stereo Backwards

62 Delay Effects
1 Mono Delay
2 Stereo Delay
3 Dual BPM Delays
4 Dual Long Delay
5 Fripper-tronics
6 Long Mono Delay
7 Long Stereo Delay
8 Precision Delay
9 Multitap Delay
10 Number of Echos
11 Quad Flange Echoes

12 Dual Ducked Delay
13 Dual Flanged delays
14 Echospace Of God
15 Man's Pan & Delay3
16 Panning Delays
17 Phase Delay
18 Slap Nonlinear
19 Super Ducked Delays
20 #30 Patch Instruct

63 Chorus/Flangers
1 Auto Tape Flanger
2 Chorused Cabinet
3 Digest Inn
4 Drew's Throatflange
5 Freqshift Flange
6 Hiccup Chorus
7 Leslie Simulator
8 Leslie-like
9 Manual Tape Flanger
10 Mess With Stereo
11 Phaser
12 Phase Flange
13 Real Chorus
14 Real Chorus TNG
15 Sky Slaw
16 Stereo Chorus
17 Stereoize
18 Stereo Flange
19 Stereo Tremolo
20 StereoMUTRONPhase
21 Swirl Flanges
22 Tripple Track
23 Vox Duble and Slap

64 Small Spaces
1 Chorus & Plate
2 Drew's Closet
3 Drew's Double Closet
4 Empty Swimming Pool
5 Masterverb Room 1
6 Medium Booth
7 New Air
8 Small Ambience
9 Stereo Mic's w/Room

65 Room Reverbs
1 Basic Reverb C
2 Big Room
3 Blue Box Verb
4 Boston Chamber
5 Chamber2
6 Der Verb
7 Drew's Small Room
8 Drews Dense Room
9 GaderVerb
10 LRMS reverb
11 Masterverb Dullroom
12 Masterverb Hall 1
13 Masterverb Room 2
14 Medium Chamber
15 Noo Room!
16 Reverb w/Diff & Eq
17 RMX Simu Ambience
18 Roomy Hall
19 Slight Chorus Room
20 Small Club
21 Small Drum Room

66 Hall Reverbs
1 Arena Soundcheck
2 Barking Chamber
3 Beeg Garage
4 Big Hall
5 Big Hall 2
6 Big Hall/Med Hall
7 Big Room Reverb
8 Black Hole
9 Bob's New Room
10 Dynamic Reverb

11 E-noseChorusCanyon
12 Enormo Hall
13 Gated Splash
14 GloriousFlngCanyon
15 Jr. High School Gym
16 Master Hall
17 Masterverb Hall 2
18 Matt's Fat Room
19 Medium Hall
20 Stereo room
21 Swept Hall
22 Swept Room
23 The Megaverb Final

67 Plate Reverbs
1 EMT-style Plate
2 Cheap Springverb
3 Great Plate
4 Metallic Plate
5 Pretty Smooth Plate
6 Sizzler Plate
7 Stereo Plate
8 Swept Plate

68 Alternative Verbs
1 Cheap Verb
2 Choruspace O'Brian
3 E-noseFlangedCanyon
4 Flutter booth
5 Gated Gong Verb
6 Ghost Air
7 GloriousChrsCanyon
8 Gong Swell Verb 7
9 Horrors
10 Jurassic Space
11 Key Morphic Reverb
12 Kickback
13 MetallicChamber
14 Phantom & Reverb
15 Phaser and Reverb
16 Reverse Nonlinear
17 Reverserize Hall
18 Shift Verb
19 Sizzle Verb
20 SplashVerb
21 Square Tremolo Verb
22 Thicken Verb
23 Tremolo Ambience
24 Zipper Up

DSP4000B Factory Programs

0 Utilities

This Bank contains a number of simple but useful programs

1 Empty Program

If you want to patch a program from the ground up, you can start with an empty program (like this). Nothing in, nothing out.

2 Thru (In = Out)

Simply passes the inputs to the outputs, just like DSP bypass. This however, will route a digital input to an analog output (or vice-versa) which the bypass switch will not do. Stereo in, stereo out.

3 Mute

Loading this program will simply turn off the output. It is useful in performance, if your kill mode is set to one of the bypass options. Nothing in, nothing out.

4 Oscillator-440

A general-purpose oscillator. On loading. it is set to a 440 Hz sine wave for tuning. Allows addition of an offset and modulation. Note that the output will clip above +12dB, and aliasing will be audible on triangular and square waves at higher frequencies. The oscillator level defaults at -20 dB upon loading. Nothing in, dual mono out.

5 White Noise

A single noise source is output on both channels. Nothing in, dual mono out.

6 Universal Matrix

M/S (mid/side) recording lets you air stereo events with complete mono compatibility. This setting decodes M/S recordings and controls their stereo width. It also lets you fix mono and stereo routing. Stereo in, stereo out.

1 Commerce

The effects in this Bank should in general be used 100 percen. 'wet', as they incorporate their own mixing.

1 Airplane Background

This generates a complex machine hum that's great in stereo. \ little extra filtering, it can be just about any background from a interior to a starship. The <Throttle> button makes the engine speed up and slow down, while <Bong> gives you a realistic flig attendant call. Nothing in, stereo out.

2 Clock Radio

What does your morning show really sound like to the listeners Heres an authentic-sounding 3" speaker in a plastic box, with s annoying alarm-clock beeps, so you can find out. Summed in, m out.

The loudspeaker and intercom effects aren't just variations of single program, and there's a lot of different algorithms gener. them. Try them all: what we think is a sound truck might be y ideal radio-on-the-porch...

3 Fries With That?

A typical drive-through's outdoor speaker, with adjustable dist and muffle. Quality and intelligibility varies with your choice o restaurant The Ritz, MacBurger, or Road Kill Unlimited. The <Distrt> (distortion) and <Muffle> settings are slightly interac so, if you decide to customize one, you should also adjust the ot Mono in, mono out.

4 Office Intercom

This is a traditional squawk box - it beeps when you call someo and there's some reverb thrown in to make the speaker sound natural. Select the kind of office, which influences the quality (sound and also the reverb. The input is muted until you hit the <Call> button. Mono in, stereo out.

5 Sound Truck

Truck speakers plus realistic city echoes and the ability to pan whole thing across the stereo image. The Candidates Office kn selects how good a speaker system they could afford: choose Pr dent, Governor, or Dogcatcher. Mono in, stereo out.

You can't Pan manually while <Autopan> is working. Allow a 1 extra seconds for autopan to reach its limits.

6 Talking Dashboard

Makes your voice sound badly digitized, mixes it with warning and adds a stereo car-interior slap... just like a seat belt or bur alarm warning. The distortion, band limiting, and stereo diffus also makes this great for simulating a pair of open headphones in, stereo out.

DSP4000B Factory Programs

2 Communication

The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.

1 Bullhorn

Bullhorn simulates the distortion and metallic ring of a hand-held electronic amplifier the kind the cops use when they surround a hideout. There's also an adjustable big-city slap echo. Move the <Dist> slider to bring it from far away to in-your-face. Mono in, stereo out.

Bullhorn and Megaphone are totally different. The first one simulates the distortion and metallic ring of a hand-held electronic amplifier — the kind the cops use when they surround a hideout. There's also an adjustable big-city slap echo. The second is a rolled-cardboard thing, with lots of resonance but no distortion. It's often used by cheerleaders and old-time big band singers.

2 Cellular Phone

Sound quality varies from almost-good on the open highway, to unintelligible when you press the <Tunnel> button. Or advance the <Random> slider for automatic tunneling. Mono in, mono out.

3 CB Radio

Like the popular H3000 program, only we've also added a <Pickup> switch - <Direct> gives you the sound as broadcast - <Speaker> adds distortion and some room echo, so it sounds more like a radio set. The <Bzzap!> button does exactly what you'd think. Mono in, stereo out.

4 Crazy Dialer

Rapid random dialing, with real phone company tones, to use as a sound effect. Or hook it up to your phone... who knows where you'll end up calling. Nothing in, mono out.

5 Long Distance

The filter and noise sliders do exactly what you'd expect. <SideT> controls the electronic echoes you often hear on long distance phone lines. <Crosstalk> simulates weird foreign-language jabbering in the background. (It's actually your own voice raised higher, flipped, and delayed but it sounds like crossed wires.) Mono in, mono out.

6 Megaphone

In contrast to "Bullhorn," this is a rolled-cardboard thing, with lots of resonance but no distortion. It's often used by cheerleaders and old-time big band singers. Use it to add more Macho when you're leading a racing-boat crew. Mono in, stereo out.

7 More's Code

It's not Morse code, since the beeps are totally random. But it sure sounds convincing. The operator sounds a little nervous...maybe the Secret Police are closing in. Nothing in, mono out.

8 Off Hook!

This is the annoying breep-breep-breep the phone company sends when your cat knocks over the handset. Use it for production, or let it play softly out of a cue speaker and watch the Operations Manager go nuts... Nothing in, mono out.

9 Public Address

This is an enhanced version of Public Address in Bank 17 of the DSP4000. We've added a <Panic> button to kill feedback quickly, and a <Tap Mic> button that does just what it implies "Hey, is this thing on?" <Feedback Disabled> shows after you hit <Panic>. Hit it again to re-enable. Mono in, stereo out.

10 Real Dialer

Similar to the version in DSP4000 Bank 17, but much faster and easier to use. Numbers can be spun in, or entered directly from the 10-key pad. Use the knob or type with the keypad and then hit Enter to set the numbers. Enter the first three digits, then press the < cursor to set the last four. <Tap> to advance through the dialing sequence. (Try stepping though a clients number in time with their jingle!) Nothing in, mono out.

11 Shortwave Radio

Bad reception. Program includes the heterodyning that's typical of an SSB radio (adjust it with the <Manual> slider). You can add an automatic shift with the <Drift> slider. The <Gate> slider acts like a squelch control. Takes a good signal and turns it into 'London Calling', or makes it sound like your competition.. Mono in, dual mono out.

12 Traffic Report

Adds a classic helicopter warble to the input, much less painfully than hitting your throat. There's also a pretty good blade and engine simulation. Input and engine are keyed on and off when you press the button, just like the switched mic in a real chopper. If you want just the shaky voice, turn the engine volume down. If you want only the engine sound effect, uh, don't talk. Mono in, mono out.

DSP4000B Factory Programs

3 Fantasy

1 Cussing It

This is a big guy, and now he's angry. Extra harmonics are added for energy, and a stereo simulator to make him bigger. If you rewind a voice track through "Cussing It", the results are positively freaky. Adjust <Width> for compatible stereo out. Mono in, stereo out.

Cousin It and Cussing It are both monsters, but the first one is friendly and the second one is angry.

2 Cousin It

Your voice input becomes the friendly, hairy little guy popularized in the movies. It does strange, foreign, things to pop music. Mono in, stereo out.

3 Elves

This program turns your voice into a flock of munchkins. Mono in, stereo out.

The <Ragged> slider appears in a number of voice multipliers. It lets you control how much in unison the group is when it speaks: think of the difference between a trained choir, a group singing 'Happy Birthday', and a bunch of drunks.

4 Fantasy Backgrounds

Generates a rich stereo background for magic or science fiction scenes. In Xanadu did Kubla Khan a stately pleasure-dome decree: where Alph, the sacred river, ran through caverns measureless to men... (Coleridge, 1797). Nothing in, stereo out.

5 Magic Echo

Tuned repeats climb up or down at various intervals and speeds. Try different presets on voice, or select one of the scale settings and manually adjust the speed to fit a piece of music. Stereo in, stereo out.

6 Morph to Magic

These magicians have deep, echoed voices with mysterious chanting overtones. This is a true morphing, not a crossfade. Morph manually or use button. <Chant> adds bell-like resonances, <shift> adjusts pitch, <echo> adjusts... you know. Good on voices or music. If the chant fader is very high, faster morph speeds might develop a clicking sound. Slow down to eliminate the clicks. Mono in, stereo out.

7 Singing Mouse

Mickey Unplugged! Raises the midrange an octave or more, but keeps the bass in place. It works best with songs that have a soloist over a low bass line. Try it on Billy Joel's "Still Rock n Roll" or almost anything of Johnny Cash's. A schmaltzy vibrato can be added, if desired. Stereo in, stereo out.

8 Trolls

Your voice gets converted to your choice of one, two, or many low-pitched talkers (trolls cant count higher than two). They get even more menacing as you advance <Ragged>. Also, neat on sfx. Mono in, stereo out.

DSP4000B Factory Programs

sounds most convincing at a low volume, panned to one side. Mono in, stereo out.

The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.

1 33 RPM w/ scratches

Bandwidth limiting, stereo blend and scratches! Use <Quality> setting for quick choices, or choose custom settings. Ticks have 33 1/3 RPM rhythm. Stereo in, stereo out.

2 45 RPM Oldie

Sheer Torture. Use the sliders to adjust how badly the record was cut. Sliders adjust bandwidth, overcut distortion and bad center-hole placement (warp). Or select a preset: AM includes some awful transmitter processing. Amazing, what we used to listen to. Stereo in, stereo out.

3 Big Movie

Did you ever notice how movie theaters sound like nothing else on earth? Program lets you control the room size, speaker quality... and even add the rumbling bass notes that leak from other theaters in the cineplex. (The leakage is actually your input, modified and delayed. But it sounds real.) Stereo in, stereo out.

4 Boom Box

Just listen to that bass, man! And that awful distortion. Includes <H-Bass> button to make it even boomier. Stereo in, stereo out.

5 Fake Call-in

Feed it two clean voice signals - one for the host, and one for the guest - and they'll turn into a complete call-in show. Includes telephone effect on the guest mic, automatic ducking, so the host overrides the guest, and an optional studio echo overall. It sounds okay if there's a little leakage between mics when you record, but works best when the inputs are isolated or cleaned up in a DAW... particularly if the voices interrupt each other. Caller number four, you're on the air.. Dual mono in, stereo out.

6 Page Three!

There's a famous syndicated radio personality who likes to speed up or slow down at random while reading the news. He's on a lot of stations, so it must be a good idea. Feed in a voice and press <Do It!> to change the pacing when you want to, or select Automatic for totally random changes. The Drag meter indicates how much memory is left for the voice to slow down into. When it gets full, the buffer empties and the voice speeds up. Stereo in, stereo out.

7 Real Call-in

This preset is designed for use with a live mic on one input and a phone patch on the other. The program is similar to the one in Bank 17 of the DSP4000, but adds switchable processing and tone controls on the phone input, along with the automatic ducking and adjustable reverb. (You can also use it to process just the phone signal to clean up telephone interviews.) The DSP4000 shouldn't be connected directly to a telephone line. You'll need a transformer, phone patch, hybrid, or QHT coupler to provide the necessary electrical isolation. Stereo in, stereo out.

8 TV in Next Room

There's a similarly named program in the H3000B, but this one sounds a lot more authentic. The <Tinniness> knob cuts the lows and adds a slight pitch shift - <Distance> adds house-like reflections. It

---

5 Science Fiction

The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.

1 Artoo Chatter

Tracks spoken input and turns it into swept tones. Now you can sound like a famous (metallic) Hollywood star..Use <Smooth> to adjust how much the tones slide, and <Deep> to set their pitch. Switchable in, left out.

Artoo Chatter and C3P-Yo are totally different kinds of robots (well, C3's an android). R2 turns a voice or rhythmic music signal into sliding tones and whistles; C3 has a metallic ring and staccato beeps.

2 C3P-Yo!

<Metal> adjusts the twanginess of the voice, <Beeps> changes the pitch of the computer tones. Mono in, mono out.

3 Lasers!

Press <Zap>, <Bzoop>, and <Thhup> for everything from an outer-space war to a video game. Nothing in, stereo out.

[Authors note: Programmers working in high-level languages like the DSP4000's try to assign descriptive object names to make debug-ging easier. In this case it might have gotten out of hand. Try reading this chunk of Lasers aloud:

```
AMPMOD zapamp zapfilt-band zapenv-out 1 0
LFO bzoopwarb hed-null 10 0 0 0 0
TRIGGER bzooptrig longname "Bzoop"
C_TO_A bzoop bzooptrig-out
ENVELOPE bzoopenv bzoop-out bzoopwarb-out 1.85 0 1
.01 0 -10 0 .001
MIX bzoopmix bzoopenv-out bzoopwarb-out .61 -.34
MODFILTER bzoopfilt zapsource-out bzoopmix-out
hed-null 0 15000 1000 0
AMPMOD bzoopamp bzoopfilt-band bzoopenv-out 1 0
STEREOMIXER premix 4 zapamp-out bzoopamp-out
crossbronx-out1  crossbronx-out2 zapvol-out bzoopvol-
out bronxvol-out bronxvol-out zappan-out bzooppan-out
bronxpan-out bronxpanadd-out
```

4 Martian Rock Band

It's impossible to describe this effect. Plug something rhythmic with a strong melody a rock song with a male vocalist and let it fly. You'll get an unrecognizable set of instruments playing random lines based on the original melody... but hey, you might like it.
Doesn't work very well on piano or classical music - it's best on basic guitar/male voice/drums rock. Adjust Weird until you're satisfied.
Note that "Martian Rock Band" is totally different from "Robot Band". Stereo in, stereo out.

5 Robot Band

Attempts to analyze the input melody, add a harmonically related bass line, and a new melody based on the rhythm.
<Groove> controls how well the robots stay with the input. The normal output is a mix of the input and those jamming robots. Press <Solo> to let the bots take a few bars on their own.
Since the program has to analyze the melody in real time, it works best with simple lines and worst with chords. Try it with a variety of different inputs. Stereo in, stereo out.

6 Theremin

Leo Theremin created one of the first synthesizers in the 1920s played by waving your hands in front of an antenna. For the te cal, it used two RF oscillators beating together to produce the l dyne tone...
While a few composers put it to work as a serious instrument (ing the Beach Boys in Good Vibrations), it received more accep from science fiction producers. This is the classic "ooh-wee-ooh' sound of a bad flick, or accompaniment to a late lamented chan It works best with solo, not chords. Pick up a microphone and s into it. Adjust <Shift> to put the sound in its proper octave - Tl mins are much higher than most singing voices. <Mute> keeps from responding to background sounds. Mono in, mono out.

7 Tribbles

Breaks up input into random animal- sounding squeals. No con Just voice in = thingies out.

DSP4000B Factory Programs

6 Production Gimmicks

The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.

1 Backwards

This is like the popular H3000 effect, only it's matrixed to stay in true stereo and it's more controllable. Breaks the input up into little pieces, and then plays each of them backwards. Try it on voice, mixed music and on solo instruments like violin. Switchable in, stereo out.

2 Can't Carry Tune

Play a song into it: whenever the soloist takes a breath, the whole thing changes key. Funniest on well-known songs or if you record the boss singing. Press <Tune> and adjust the slider to pick out the melody. Then adjust <Key Mangle> for any setting from 'Slight' to 'Yike!' If you pick 'Tin Ear', it'll shift the melody in exact half-steps. Stereo in, stereo out.

This program looks for the rhythm, and applies pitch shifts to the whole band in time with the music.

3 Ducked Tails

Holds the last note of a song for a long time with a repeating echo. Adjust <Sense> to keep the echoes from interfering with the input. Make the echo slide up or down with the Pitch control.
A slowly rising pitch can be used to blend the pause between two elements (try it for quickie concert spots, where you don't want to worry about crossfades). A fast downward pitch gives a different running down effect than "Plug Puller". Stereo in, stereo out.

4 Dynamic Stereo

Manual or automatic width enhancer for stereo signals. Dynamic mode lets you adjust the <Dynam> slider until the width pulses with the rhythm. Fully compatible, doesn't add flanging or artifacts for mono listeners. Stereo in, stereo out.

5 Go Crazy

They're coming to take you away! Press the <Go> button to send voice to never-never land, press it again for sanity. Think of it as "Anti-Zac". Switchable in, stereo out.

6 Plug Puller Pro

Make CDs and DATs slow down, stop, and run up to speed again on cue. Add <Grease> to make the 'turntable' run longer after you pull the plug. This is similar to the program in Bank 17 of the DSP4000, but sounds better and is more controllable. Stereo in, stereo out.

7 Round & Round

This autopanner uses volume and delay effect to rock stereo or mono signals from side to side. Mono inputs and tight stereo vocals can handle more of the delay effect (Precedence) without obvious flanging - you might have to use more <Level> effect on stereo inputs. Stereo in, stereo out.

8 Solo Zapper Pro

This enhanced version of Solo Zapper (in DSP4000 Bank 17) lets you automatically fade the soloist, add reverb, or even redo a mix. Adjust <locate> for minimum soloist, then slowly raise <Solo Bottom> to preserve bass. <Width> restores stereo (but is mono compatible). Use <Instant> to switch soloists in or out without changing the stereo image. Adjust <Amount> to control how much soloist appears in the mix.

The algorithm expects the solo to be centered in the stereo field and occupy the mid-band. Live and acoustic recordings won't zap very well, but most studio pop songs will. If the original mix includes a stereo echo, some of it might remain - but this echo is usually covered by the new vocal or song parody lyrics you add. Add extra reverb to help hide these ghosts.

The program won't work correctly unless the input channels are balanced. Make sure the pan or balance pots on your board are adjusted, and check the DSP4000's Level screen to make sure both channels match. Some original mixes may develop an artificial bass - if this happens, lower <Solo Bottom>.

9 Bell Constr. Kit

Create any telephone or beeper 'chirp' with complete control. <Ring> or an external trigger toggle the effect... bounce a bunch together for ambience. Nothing in, mono out.

10 Headphone Filter

Makes left input sound like a set of headphones on the floor. Left in, mono out.

11 Woosh Maker

Turns your DSP4000 into analog synth, for classic 'woosh' sound effects. Fine-tune the sound from the EXPERT menu while pressing USER-1 to trigger. Nothing in, stereo out.

DSP4000B Factory Programs

> ## 7 Voice Tools

1 Big Voice Pro

This is a downward pitch shifter with serious reverb and slap on the ends of words only. Small amounts add depth to an announcer, while large amounts are Oz-like. It's similar to "Big Voice" in DSP4000 Bank 9, but a lot more versatile and with additional processing. <Reverb> is the open, spacious effect you get in a large hall. <Slap> is a repeating echo (echo... echo...). Choose either or both, and make them duck out of the way with the <Sense> slider. Switchable in, stereo out.

2 Chipmunks

A small rodent of eastern North America (Tasmias striatus), or any of similar rodent of western N America, N Asia, or pop stars singing solo, duo or-- ALVIN!!
Turn your voice into furry little guys who like to sing harmony. Go from solo to duo to trio by hitting the <Add Munk> button. Switchable in, stereo out.

3 We're a Big Crowd

Smooth variation from 2 to 100 people. Press <Auto> to make the group grow or shrink on cue, or dial a desired sound. Switchable in, stereo out.

> The Small and Big Crowd effects are totally different. "We're a Small Crowd" adds individuals until you have eight distinct voices at different pitches and timings. "We're a Big Crowd" flows smoothly from a small crowd party to a stadium, but as an effect rather than as individual voices.

4 We're a Small Crowd

Adjust <Ragged> to control how well the voices keep up with each other: the more people in the crowd, or faster the copy, the less you should use. To add or subtract people on cue ("I told one friend, and she told two friends..."), select <Size> and tap the up- or down-arrow keys. Switchable in, stereo out.

5 Doubletalk

Automatically turns parts of words inside out, or use softkeys to do it on cue. Great on comic effects, obscuring lyrics, campaign speeches... no, wait, they're already full of doubletalk. Use it in the foreground as a trick effect, and it's also useful to keep background voices from interfering. Automatic switches from normal speech to doubletalk at random. Manual lets you tap <Garble> and <Normal> on cue. (Why two buttons? So you can use two fingers and cue the effect more tightly.) Stereo in, stereo out.

6 Mega-Dragway

All the screaming excitement of a "SUNDAY..." racetrack spot. Like the H3000B effect, but cleaner and with an optional third voice and echo. Adjust <Pitch> to make them more macho, and press <Classic> or <Mega> to select two or three announcers. Switchable in, stereo out.

7 `Max' Stutter

<Width> sets length of each stutter, <Repeat> is how long it keeps stuttering, <Pitch> makes them rise up or down. If Width and Repeat are less than half, output will try to catch up after the effect. Switchable in, mono out.

8 Nervous Talker

Put a voice in, and it'll repeat itself nervously, at random. Grea your next aircheck... The input voice is essentially unchanged, except it repeats words at random. Slide <Nerves> to make it r more often. Switchable in, mono out.

9 Triplets

If you need just three voices, this works better than "Were a Si Crowd." All three voices speak in unison, but with random vari so it doesn't sound mechanical. Adjust <Timing> to control how the highest voice keeps up with the others. Use less <Pitch> on voices. Switchable in, stereo out.

10 Voice Process Pro

Instant mike technique with upward gain levelling, compress, (lo-cut, equalize, and noise gate. Microphone technique in a box! Almost any voice will sound better through this program, whicl includes upward gain leveling, rolloff, equalization, compressio de-essing, and a noise gate. Tighter and more powerful than th version in DSP4000 Bank 9.

> The Hold indicator shows when leveling is frozen during pause background noises aren't boosted. Adjust Thresh, so it respond the voice: this slider also has a locking position fully right, wh instantly freezes the gain.

WARNING: Program delays the audio by two thirds of a secon catch transients and maximize level without sounding limited. you're working in video, use a -20 frame offset. If you need a non-delay version (for headphones or live broadcast), use "Fast Process." Switchable in, mono out.

11 Fast Voice Process

This is a zero-delay version of "Voice Process Pro." Because it I react in real-time, you may hear clicks on sharp transients. If s lower the 4000's input level. Switchable in, mono out.

12 Voice Disguise

Disquises voice for stool pigeon to appear on '60 Minutes'. Pitc shifts up and down using random lengths and random directio Mono in, mono out.

13 Vox Shimmer

Beautiful, complex, multi-effect vocal processor. This is a twee "Voxplate/Chorus." Stereo in, stereo out.

14 Voxplate / Chorus

Excellent one-stop vocal treatment. Has EQ for left and right i a pitch shifter for thickening, a reverb, and a delay with modul capabilities. Stereo in, stereo out.

15 Auto Pitch Correct

Automatically corrects any vocal that is within half a semitone where it should be. Outside of this range it will pull to the nex Note that this process will quantize the pitch of the signal (yo have control over the quantize factor) so be careful, as you ma; slides and inflection. Mono in, stereo out.

16 FixaVocal: 1/2 step

Pitch-shifter set up to enable the 'fix it in the mix' engineer to flat vocals with the pitch wheel of a MIDI keyboard. Plug keyl MIDI out to this MIDI in. This is another variant to externally correct pitch, so the note above applies. In this one a simplifiec control layout has been used. Mono in, mono out.

DSP4000B Factory Programs

17 Phased Vocal Reverb

Not much of a challenge to figure out what 'Phased Vocal Reverb' does. It has s smooth slow sweep pattern on the phase, and then a basic reverb. Mono in, stereo out.

18 Sharp Vocal Filter

Unusual, resonant, talking filters. Gotta try it! This is another variation of "Vocal Filter." This one is tuned to different formants. Mono in, mono out.

19 Rap Bass Hype

Bass hype effect for rap vocals. This stereo effect is a pair of selectable filters. It defaults as lowpass, with a slight resonant peak from the 'Q' setting. This cuts highs, as opposed to adding lows, so you will not muddy the sound. Stereo in, stereo out.

DSP4000B Factory Programs

The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.

1 1 kHz Oscillator

Lineup tone. Default level is -18 dBfs, for digital use. If your studio uses a different standard level, adjust and save a new version. The <On/Off> button does what you'd suspect. Nothing in, mono out.

2 Awfultones

Need some 'real-world' speakers for checking a mix? They don't get any worse than these doggies. It's also a handy production effect, any time you want a quick, lousy sound (portable radios, jukeboxes, etc.). Distortion, Honking, Bandlimit, and Mono/Stereo are separately switchable. Stereo in, switchable out.

3 Brightener

Adds clean second harmonic to signals above the <Tuning> frequency, like the popular 'Enhancer' efx... only silkier. Like perfume, a little goes a long way. Stereo in, stereo out.

4 Easy Timesqueeze

Easier and better-sounding than an H3000B, and with perfect pitch accuracy! Enter the current length and the desired length. Then set your decks varispeed to match the PCT or SPEED display. Switchable in, stereo out.

The [Audio] page is for fine-tuning quality. More delay, or higher lowest sound, does a smoother job. <Manual Pitch> lets you tweak the pitch determined by the [Timings] page - sometimes, setting it a little lower than normal helps make squeezed voices more natural.

5 Hiss Eliminator

This is a single-ended, high-frequency noise reducer. You can use it to reduce tape hiss without having to record through an encoder, and also to cut down sync whine, air conditioner or computer noises, and other high frequencies. Bring <Gate> all the way down, then adjust <Highs> until the filter opens on the desired sound but closes when the sound goes away. Then advance <Gate> and <Bypass> for additional broadband reduction. Stereo in, stereo out.

6 Hum Eliminator

Uses three different processes to fix noisy bottoms. <Notch> gives a sharp dip every 60 Hz, using a comb filter - it's useful for powerline hum and dimmer noise. <DeHum> is a sliding lo-cut filter for low-level noises: adjust it to pass the desired signal and close on the junk. <LoCut> is a sharp filter useful for pure waves.
Since low frequencies often have harmonics throughout the spectrum, they're harder to remove. Experiment with different combinations of the three until you get the best results... and don't expect miracles on particularly noisy signals.
The Notch filter depends on system timing. It'll work properly when the DSP4000 is set to a precise 44.1 kHz or 48 kHz sample rate, but may have problems at other frequencies. (If you want to accommodate other hum or sample frequencies, set C_CONSTANT Tune in the Patch editor.) Stereo in, stereo out.

7 Sfx Filter/Compress

Extremely sharp hi/lo cutoff filter followed by a stereo compressor. Use the Presets (Table Radio / Pocket Radio / The Shadow) as effects or as starting points for your own settings. If you want just the filter, set the compressors <Threshold> to 0 dB. To use just the compressor, set <LoCut> and <HiCut> to 40 Hz and 19 kHz. Switchable in, out.

8 Simple Compressor

Basic, tight little one-knob stereo compressor with compression meter and channel linking. Adjust <More> until you've got eno' The processing takes three thousandths of a second not enough noticeable, but it'll cause flanging if the output is mixed with th input. Stereo in, stereo out.

9 Simple Equalizer

Anything but simple. While it looks like a four-band graphic, yc change any frequency as well as the bandwidth of the two midr The O`LOAD indicator samples the level at various points, and bounces if your settings drive the signal into clipping. If this happens, lower the input level. Stereo in, stereo out.

10 Stereo Simulator

Makes mono signals into stereo, using allpass filters and split-k processing to keep the individual outputs sounding good. It avo the doorspring and thinness you get on individual channels wit other simulators, and is fully mono-compatible. Switchable in, s out.

11 Stereo Spreader

Makes stereo wider, with two separate processes. <Center Sup adds a static widening by reducing the center - it's most useful acoustic recordings. <Dynamic Pan> brings up the louder side, for pop music with a bass or drum on one side. Of course, you c; the two effects in any proportion.
Extreme combinations of settings will warn you to check mono compatibility. There's a <Test> button to make checking easier Stereo in, stereo out.

12 Super Punch

Heres a general-purpose mix maximizer, with lots of tunability advanced production gurus. The author has used it as the final processing on just about every mix for the past year, and saves differently-tuned versions for different clients and media.
Left and right inputs are de-essd separately, then matrixed an(through a gentle compressor and hard limiter. The result is dematrixed, equalized, and gated. Stereo in, stereo out.

13 Three Band Compress

Call it 'classic 3-band mix processor with matrix-stabilized ster or just call it 'magic'. Whatever. Most useful on music, to makt mix fuller. Set the <Tweaks> by ear or by watching the three n and then adjust <Output>, so the overall level matches when y press <Bypass>.
If you add too much high-end processing you might bring up hi: from the original recording. If this happens raise the <HF Gate Stereo in, stereo out.

14 TimeSqueeze(R)

Stereo shift with a percentage pitch change. Have the math do: you to repitch to a varispeed source. Note the range control in <expert> menu instead of the usual min/max pitch limits. Ster(stereo out.

15 Noise Canceller

Left: audio in Right. noise in Uses LMS filter. Proper adjustm should allow one to subtract out noise from a signal. You must the noise source into right channel and, with proper alignment noise should be eliminated from the source to be fixed (on the l input). Dual mono in, dual mono out.

DSP4000B Factory Programs

<div style="border:1px solid black; padding:10px">

9 Delays

</div>

This Bank includes a small number of useful
delay effects. A wider range can be found in Bank
62

> *The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.*

1 Ducked Delays

Repeating echoes that get out of the way when the input is above a
certain threshold. Adjust <Delay> for rhythm, and <Duck> for sensi-
tivity. Use with mono or stereo inputs. The echoes bounce from side
to side on the output. Switchable in, stereo out.

2 Easy Chorus

Classic pop-music effect uses multiple vibratos to turn one sound into
many. Adds thickness, richness, and widening. Use with mono or
stereo inputs - matrixing is added to stereo to preserve the image.
Switchable in, stereo out.

3 Easy Phaser

Adds deep whooshing effect to any sound, but it's particularly good
on broadband signals (full mixes, voices, and synthesizers). Make the
effect sharper with the <Depth> control. Choose <Spin> mode for
manual effects while you rotate the 4000s front-panel knob, or
<Automatic> for continuous phasing with adjustable <Speed>.
Switchable in, stereo out.

4 Long Delay w/ Loop

Mono inputs are delayed up to five seconds. Adjusting <Delay> while
a sound is being processed adds interesting pitch effects. Press
<Trap> to record up to five seconds and have it repeat forever. You
can mix repeating output with live input. Switchable in, mono out.

5 Video Delay

This program will delay the input by a fixed number of video frame
times. It can be used to, for example, compensate for the delay intro-
duced by a Standards Converter or other video effects unit. Note that
thus patch only delays the audio. For a true video delay, you will
need another Eventide product. Stereo in, stereo out.

DSP4000B Factory Programs

10 Echoes

The effects in this Bank should in general be used 100 percent 'wet', as they incorporate their own mixing.

Each of these effects has a <Mute Inp> button to turn off the input suddenly, so you can check the echo decay. You can also use this button to end a sound while adding a smooth ringout. All echoes have selectable right/left/mono input switch and stereo output. Those with additional "Stereo" input selection have true stereo processing.

1 Basic Stereo Echo

Big rich room echo, for use with mono or stereo input. Switchable in, stereo out.

2 Big Church

Very large room with warm sound. Switchable in, stereo out.

3 Classroom

Tight, warm echo with wooden walls and floor. Switchable in, stereo out.

4 Crypt Echo

Deep, long echo for voice or sfx. Very big, very full, but still intelligible. Switchable in, stereo out.

5 Infinite Corridor

Big and bright with medium-long decay. Switchable in, stereo out.

6 Kitchen Reverb

Tight medium room with hard walls, for voice or sfx. Switchable in, stereo out.

7 Plate Reverb

Classic tight, dense echo good for voice and music. Switchable in, stereo out.

8 Spring Reverb

The pre-digital favorite, complete with boinginess. Found in guitar amps and most 1960s rock radio stations. Switchable in, stereo out.

9 Tape Reverb

Back in the days when a production room meant two tape recorders and a cart machine, we sometimes added echo by mixing the tape output of a deck with its input signal. (Sometimes this was the unintentional effect of a bad power supply filter.)
This preset emulates that effect, including the cumulative high-end loss and tape noise, tuned for studio-deck head spacing and with selectable speed. Mono or stereo in, each output is processed separately. Truly retro, man.

10 Tile Men's Room

Fast, tight, dense echo.

11 Union Station verb

Big, BIG warm room. (It's even bigger than its name, but we couldn't fit Grand Central Station in the display.) Summed in, stereo out.

DSP4000B Factory Programs

11 Sound Effects

This is a collection of sound effects, some based on the numbered presets on the 3000B, others new to the 4000. In most cases they should be used 100 percent 'wet.'

1 401 ALERT

This program produces a harsh sound: <rate> controls the alarm sweep rate <tone> controls the tone of the sound Nothing in, stereo out.

2 403 DOORBELL

This program generates a familiar doorbell sound when triggered: <ring> will ring the doorbell <tone> adjusts the tone <tune> controls the pitch Nothing in, stereo out.

3 404 JET

Look out ! A 747 is buzzing your control room ! <flyby> triggers the jet sound <speed> controls the speed <rumble> controls the bass <whine> adds complaints Nothing in, stereo out.

4 405 JETTISON

Similar to 'jet', this sound is reminiscent of rocket stages being jetti-soned, or perhaps a spaceship blasting off. <jettison> triggers the jet sound <speed> controls the speed <rumble> controls the bass <whine> adds complaints Stereo in, stereo out.

5 407 PLUCKED STRING

This effect is a convincing simulation of a string being plucked in stereo: <pluck> does it <detune> controls the pitch of left o/p <tone> controls the harshness <tune> changes the pitch Nothing in, dual mono out.

6 408 SIREN

If the police are after you, here is where to look: <rate> controls the sweep <range> controls the pitch Nothing in, stereo out.

7 409 SONAR

This simulates the sound of a submarine's sonar: <ping> does it Nothing in, stereo out.

8 410 STEREOCOPTER

Use this if you need an easy helicopter sound: <speed> controls the rotors Nothing in, stereo out.

9 411 TANK ATTACK

This has the familiar sound of an arcade tank game: <fire> goes boom <rumble> tunes the explosion   Nothing in, stereo out.

10 412 THUNDER

Try some thunder to appreciate our New Jersey weather: <bolt> does it Nothing in, stereo out.

11 413 UFO

This is an authentic (according to all local observers) version of a spaceship lifting off: <takeoff> will make it happen. Press it again to land. Nothing in, stereo out.

12 414 WAVE

A life on the ocean wave for me: <waveit> makes it crash Nothing in, stereo out.

13 415 WINDSTORM

Put your parka on before loading. Here is the howling arctic wind: <gales> controls the intensity of the storm <mix> allows a voice to be mixed over the wind Stereo in, stereo out.

14 SFX FLINTLOCK

This is a careful simulation of an antique flintlock rifle. If you listen carefully, you will hear the fine quality of the engraving on the beautiful rosewood handle. Nothing in, stereo out.

15 SFX LOCOMOTIVE

Those of us of advanced years can dimly remember the sound of a steam engine. Here is a jog for the memory. Nothing in, stereo out.

16 SFX MORTAR SHELLS

War has broken out in the next street (again). Here are a few sound effects to complete the picture.

17 SFX SHEET LIGHTNING

Looks like the weather's getting worse. Better cancel the barbecue.

DSP4000B Factory Programs

12 Dynamics

Our basic dynamics Bank. These presets include everything from compression to duckers to gates. Also perfect for patch construction as the building blocks of larger programs.

Dynamic effects primarily are automatic gain controls, used to increase or reduce the 'dynamic range' of a signal, whether to avoid overloading following equipment, or, alternatively, to increase the subjective loudness of the sound.

1 2 Mono Compressors

Two independent compressors, with delays placed to achieve predictive attacks and decays. Not optimized for true stereo operation. Dual mono in, dual mono out.

2 4-band compress

Compresses four bands separately for punchier voices. Separate De-Esser in Compress menu. Save a different version for each announcer! Mono in, mono out.

3 Auto V/O Ducker

Smoothly fades music (or sfx) before voice or other 'priority' signal. No pumping, unaffected by input level over threshold. Includes one-second delay. Mono in, mono out.

4 Bigger is Wider

Energy below 200 Hz (bass notes and male voices) triggers stereo width enhancement. Completely compatible - mono listeners hear original signal. Summed in, stereo out.

5 Compressor & EQ

The two left faders are the left and right inputs to compressor. There's one band of EQ and hi/lo shelving followed by an output level fader. The compressor is built from four compressor modules, two for each channel. Use the input controls on left to set level and compressor drive. Stereo in, stereo out.

6 Dual Gates

Two independent gates, each with its own attack, decay and threshold. Check patch for simplicity. Dual mono in, dual mono out.

7 Man's Pan

Pans left input with an LFO. Four waveforms available. At 60 percent, full pan will occur. Above 60 percent and you will engage 3-D effect. Mono in, stereo out.

8 Quad Pan Chorus's

Four delays are panned and swept with eight oscillators, creating a rich but tight field of voices. Stereo in, stereo out.

9 Ramp Up/Ramp Down

This preset gives you the ability to create audio fades in and out, either exponentially, linearly, or define your own envelope. Stereo in, stereo out.

10 SemiClassic Squeeze

A classic compressor topology is used in this algorithm. Has a knee, and considerable overshoot. You can overload a little without harsh clipping. Dual mono in, dual mono out.

11 Stereo Compressor

This compressor is built from four compressors, two for each cha They're set to provide a knee function. All you have to adjust is input drive fader. Stereo in, stereo out.

12 Stereo Two-Bander

Each channel is split into two bands (high and low freq) which a processed separately, while preserving the high frequency stere imaging. Dual mono in, dual mono out.

13 Top 40 Compressor

A classic compressor topology is used in this algorithm. Has a k and considerable overshoot. You can overload a little without ha clipping. Dual mono in, dual mono out.

DSP4000B Factory Programs

13 EQ/Filters

This Bank shows off the sonic clarity of our digital EQs. From single filter examples to full-blown stereo EQ's and band delays.

These effects are particularly useful in the digital domain, where sophisticated EQ control is often hard to achieve.

EQ usually works in parallel with the dry signal as part of the EQ module itself, so if you have the global wet/dry mix at 50 percent, you 'lighten' the effect (which may be what you want), but be aware of the situation.

1 100\300^1K^3K10K/4K

This is a stereo six-band parametric EQ. The first and last band are shelving EQs. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode! Stereo in, stereo out.

2 40^100^300^1K^5K10K

This is a stereo six-band parametric EQ. The first and last band are shelving EQs. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode! Another tweak of a stereo six band EQ. This one with different center frequencies. And, again, you probably want to feed through 100 percent wet, so watch the mix level and/or console situation. Stereo in, stereo out.

3 80\160^400^2K^5K/2K

This is a stereo six-band parametric EQ. The first and last band are shelving EQs. The name lists the center frequencies. Bandwidth is in octaves. Check mix mode! Another tweak of a stereo 6 band EQ. This one with different center frequencies. Stereo in, stereo out.

4 Band Delay

Breaks mono signal into eight bands, delays each, sums all in a stereo mixer. By filtering delay lines, each 'tap' has a significant frequency peak, giving each tap an independent flavor. This preset tastes somewhat watery. Mono in, stereo out.

5 Big Dipper

This is one sharp filter (actually eight). Dips at tuned frequency and at the next seven harmonics. Variable tuned filters add resonance to source. For percussion, this would give the feel of being in tune. Mono in, mono out.

6 Cup Mute

Simulates the sound of a trumpet-like bell with a cup mute. A generalized mod input is accepted to modulate the input on the fly. Hit parameter to get second page of parameters. Another tweak of "Ext Wave Guide." In this preset you have the ability to model a vocal cavity. Mono in, stereo out.

7 Mouth-a-lator

Another version of the "I-Yai-Yai" program with different settings. This is another tweak of this now notorious effect. Mono in, mono out.

8 Up Band Delay

Twelve bands, each with a delay, set for low frequencies first. There is an upward motion on this tweak of "Down Band Delay." Mono in, mono out.

9 Vocal Filter

A vocal filter that consists of three filters that are adjusted to simulate the human vocal tract, making vowels. You get to choose which vowels to sweep between, and the signal envelope will sweep the filters. This preset is an envelope follower version of "Kill The Guy/Yai-Yai." Mono in, mono out.

10 Simple Vocoder

A simple, ten-band channel vocoder. Not as intelligible as a real vocoder, but useful for vocal-like effects. The ratio control shifts the formants (0.5 = octave down, 2 = octave up). You also have control over the individual bands. Analysis left, and play right on this basic vocoder effect. Dual mono in, dual mono out.

11 Two Band Crossover

Two-band crossover high and low bands out. This preset lets you choose second or fourth order filters and the crossover frequency. Mono in, dual mono out.

12 Band Filter

This is a band-pass filter where you set the upper and lower frequencies of the band. A simple and variable filter, this one should be self evident. Summed in, mono out.

13 SweepBand Delay

This tweak of "Band Delays" has a much deeper and intriguing effect.

14 Mono Filter

A single, mono filter. Our simplest example of EQ/filtering, this is a perfect place to start experimenting with the filter module, and for use in patch creation. Mono in, mono out.

15 Stereo Filter

Two filters with common controls. No surprise, this is a stereo version of "Mono Filter." Stereo in, stereo out.

14 Distortion

Our basic distortion Bank. From 'Stomp Box'
replications to Class-A enhancement to
sophisticated multi-band arrays. Something for
everyone. Again, look to the GTR4000 for more
sophisticated distortion effects.

1 ARKHAMLEAD

Fun distortion box, with a couple of delays thrown in. Sounds nice.
Summed in, stereo out.

2 Band Distort

Several distortion methods are applied to the left input. The top and
bottom halves of a waveform are distorted independently with a
nonlinear curve and slew rate limiting. The distorted signal is
passed through some complex shifting and mixed to stereo outputs.
Mono in, stereo out.

3 Big Muff

Full and fat, a guitar straight in the -10 inputs is all you'll need for
pretty pumpin' sound. Try rolling off more top if you use a direct
guitar input. This sounds like its nine-volt has seen better days as
well. Mono in, stereo out.

4 Bite Distort

User-definable distortion curves open up new possibilities. Offers
control over several distorted signals (some pitch shifted), summed
back together in a pannable stereo field. Tweak of "Band Distort,"
with the shift set to detune. Again, a very synthetic sounding fuzz.
Mono in, stereo out.

5 Class A Distortion

This is a second harmonic generator. A lowpass circuit is used to
limit input bandwidth to distortion cell and to prevent alienism. The
left two faders are separate left and right input levels. The fader on
the right is output level. Meters 1 and 2 show left and right distor-
tion (THD).
The distortion induced is not guitar-type hard clipping - it is subtle
and can be applied to stereo signals to make them more 'analog.' Use
<amt> fader to control second harmonic distortion. Stereo in, stereo
out.

6 CrudeDistortion Tap

A fuzz, ambience effect. The rectified signal is put through two
multitaps where the signal is inverted for one of the multitaps. Mono
in, stereo out.

7 Fuzz Maker

Two distortion approaches are combined here. One is a slew rate
limiter, the other is a user-definable gain curve. Mono in, mono out.

8 Thick Distort

Extreme fuzzed, user-settable distortion is filled out with multiple
pitch shifters. Mono in, stereo out.

9 Transistor Distort

Simulates distortion of a transistor amplifier. Has gain adjust and
EQ before, and after, the transistor simulator. Mono in, mono out.

DSP4000B Factory Programs

18 H3000 Emulation

Replication of some favorites from the industry standard. A Bank of fun and useful H3000-type effects. The 3000 was introduced in the late eighties and is both useful and popular today. These effects were produced in response to repeated requests from our users.

1 470 PhoneRingDelay

Delays timed to sound like an old, phone-ring effect. Stereo in, stereo out.

2 474 Sextuplets

This is, well, sextuplet delays. Stereo in, stereo out.

3 502 Analog Thick

A warm, chorused, echo sound. Two adjustable, lowpass filters provide the warmth. Mono in, stereo out.

4 507 DGDLY+WAH+MICRO

This is an unusual combination of a digital delay, a cycling 'wah-wah' filter, and a micro pitch shift. Mono in, stereo out.

5 533 Voice Doubler

Sweeps two pitch shifters in opposite directions, giving a convincing doubling effect. Mono in, stereo out.

6 535 Analog Delays

Warm echoes provided by lowpass filters. Mono in, stereo out.

7 537 Circles

A stereo delay-effect that seems to circle around your head. The effect is most noticeable on short sounds, like hand-claps. Stereo in, stereo out.

8 542 Fat Slap

A slap delay, with an ambient sound. Stereo in, stereo out.

9 546 Ping Pong Ball

Another echo that bounces side-to-side, but the echo shortens with time. Stereo in, stereo out.

10 550 Subtle Sweep

Two subtle, sweeping delays. This is ideal for turning mono sources into stereo. Pan original source to one side and its sweeping delay to the other. Use on two sources. Very unobtrusive. Stereo in, stereo out.

11 560 De-Burr

Takes the edge off sharp attacks. Mono in, stereo out.

12 598 Random Gate

A 'gated reverb' sound created with the *multitap* module. Great for drums. Stereo in, stereo out.

13 605 A Minor Chords

Play or sing a solo line in A minor. The DSP4000 will generate two perfect 'in-key' harmonies. Stereo in, stereo out.

14 606 Arpeggios

Adds a fifth and an octave rhythmically, along with a short delay. Stereo in, stereo out.

15 608 Deepen

Adds lower octave harmonies with a pitch-shifter sweep. Mono in, stereo out.

16 609 Diatonic Dance

You play a note, and, after half a second, you get a harmony. Use only one note at a time and in an effect loop. Mono in, stereo out.

17 612 Gregorian Chant

This program filters and pitch shifts input voices to produce a chorus of droning monks. Mono in, stereo out.

18 613 H949

This gives you what the H949 gave you. One output is a straight delay, while the other is pitch shifted. Both outputs are fed back to the input. Stereo in, stereo out.

19 623 Pitch Quantize

Automatically corrects any vocal that is within half a semitone from where it should be. Outside this range it will pull to the next note. Summed in, stereo out.

20 625 Third & Fifth

Generates an 'in-key' third and fifth above the input. Stereo in, stereo out.

21 626 Third & Octave

This generates a diatonic third above, and an octave below the input. Stereo in, stereo out.

22 630 Aliens

Transforms voice into a rough, alien-like sound. Stereo in, stereo out.

23 640 Cannons

A unique, sweeping sound that's great on drums. Try playing a tom solo through this. Stereo in, stereo out.

24 641 Critical Band

Close approximation to Fletcher/Munson band-pass curves. Use to brighten signal, or key compressor and gates to frequencies to which our ears are most sensitive. Mono in, stereo out.

25 644 Filter Pan

A filter sweep that seems to pan as it sweeps. Stereo in, stereo out.

26 645 Future Shift

A shimmering, orchestral effect. Try on swelling monophonic synths or single-line voices. Stereo in, stereo out.

27 657 Scary Movie

This program uses reverse-shift to create an evil-sounding voice. Use with guitar to create that tape splice, psychedelic sound. Stereo in, stereo out.

DSP4000B Factory Programs

19 Bizarre

This is a short Bank of very different effect types, includes environmental backgrounds, as well as some processors of a highly unusual sort. Each of these is different, so give them an ear and judge for yourself. Some of these are sound generators rather than effects processors.

1 7 Spacer

Endless, rising echoes diffusing into noise. This 'sound effect' effect would make an interesting background texture or segue effect between movements. Summed in, stereo out.

2 Time+Pitch Manifold

This preset rearranges the time and pitch of whatever you play into it. Summed in, stereo out.

3 VR Backgr01

Generates randomly changing, different sci-fi or fantasy environments, also 'relaxation' backgrounds. Experiment with settings. This tweak of "Fantasy Backgrounds" starts machine-like, and rises to an eerie wind. Very reminiscent of "Forbidden Planet." Nothing in, stereo out.

4 Warm Chorpustle

A real squishy, sloshy sort of pitch-shifted echo. Sounds like the blood traveling through your veins. Might be time for a cardiovascular checkup. Mono in, stereo out.

DSP4000B Factory Programs

20 Curiosities

This Bank contains some of the more unusual programs on the DSP4000. This bank includes 'adaptive' reverbs, 'crystal' effects and others. These need to be experienced rather than described. They may be just the thing for that unique sound treatment.

1 Adaptive Reverb

The delays of a reverb follow the pitch of your input. Make sure you have a good, strong input for the pitch detector. Difficult to describe the oddness, as parts of this reverb react drastically to the source material. Very unusual. Would be good for sound effects or as a highlight. Mono in, stereo out.

2 Angel Echos

Angelic echoes with chorus and reverb. If you're an experimenter, this preset has lots of control for different sounds. The beat created by the delay gives a definite pulse, and the shimmer of the verb and the shift a very nice atmospheric quality. Best for sparse playing styles. Stereo in, stereo out.

3 Computerizer

Kinda makes your instrument sound like a computer from the 1950's trying to figure something out. Mono in, stereo out.

4 Crystal Heaven

Octaves chorused and reverbed. This 'crystal' effect with its octave shifts is very smooth and warm. Summed in, stereo out.

5 Crystal Worlds

A mellow, crystal octave effect. A darker effect than "Crystal Octaves," this preset seems the estranged brother to "Crystal Heaven." Stereo in, stereo out.

6 Dinosaur Legs

Somehow, "Dinosaur Legs" seems the best description for this preset. This tweak of "Crystal World" shifts downward, giving a very different feel to this 'crystal' effect. Summed in, stereo out.

7 Duck Soup

Very weird, swept pitch shift and delays. But it will duck out of the way when you play something. Another 'sound effect' type patch, this one sits more in the background and reminds me of helicopters. Could be used for a mood atmosphere with sparse playing. Stereo in, stereo out.

8 Ducked Tails

Adds rising or falling echo, but only on the ends of sounds, never during a sound. Raise 'sens' until effect does not compete with input... it will be there when the input stops.

A slow, upward tail makes a nice transition to cover pauses when playing songs from the same CD. This 'broadcast' effect gives a strange machine-like warble to your sound while you sustain the notes, then well... Stereo in, stereo out.

9 Genesis Worlds

A simple note creates a myriad of repeating, pitch-shifted delays with a nice reverb. Play simply for best results. By using the length and delay parameters, this tweak of "Crystal Worlds" gives an almost bouncing, very full and rich sonic texture. Stereo in, stereo out.

10 Heen

A sequence of random notes. Try playing with the sample freq and droop. This arpeggiated sequence preset is a sound 'source' not a sound 'modifier.' Nothing in, mono out.

11 Latin Cathedral

An interesting reverb made by using reverse delays. I've found this preset to be great for segues with other presets, as it has a very distinct quality when contrasted with other delay effects. Mono in, stereo out.

12 Mod-U-Mania

Phaser and modulated delay. Very altered echoes. With a very deep warble through the phaser and the chorus, the delays each get a different twist. Mono in, mono out.

13 Pitch->FreqShift

A pitch shifter into a frequency shifter produces some very interesting modulations. This is a very squeaky, 'klang' type ring modulator effect that certainly is 'tuned' A 440. Mono in, mono out.

14 Sample Hold Filter

A random signal feeds a sample hold which then controls a filter. Gives a watery effect. You definitely will hear water drips in this one. If that's what you are after, this program's ability to 'track' the input lends it variety. Mono in, mono out.

15 Squareworld Shifter

Modulated pitch shifts give you a computer synth-sound. Mono in, stereo out.

16 Star Space

Octave-shifted echoes. A combination of pitch shift, chorus, reverb. This program does lend an almost epic quality to a sound. Try playing sparsely. Mono in, stereo out.

17 Synth Reverb

A mono FM type synth driven by your input with a reverb. Freqmult-1 will tune the synth. This is one of a few monophonic 'guitar' synth patches. Nice timbre. Mono in, stereo out.

18 Triggered Arpeggio

You strike a note and this preset will pitch shift a scale. You can dial in your own melody if you want. Add more flash to your flash, they won't know what's up. Mono in, mono out.

19 UFO in My Church

Close Encounters sequencer with reverb. This one, like "Heen," is a sound source, not a sound modifier. Nothing in, stereo out.

20 War with PhaserGuns

If you put in two or more voices of tones which are shifting slowly, this program will make all sorts of nifty ray gun and explosion noises. Another highly unusual sound effect. You'll just have to try it. Mono in, stereo out.

21 Waterized

An underwater reverb. Highly modulated . May sit best with drones, and low ones especially. Mono in, stereo out.

22 WeKnowBeetBoxTrtMe

This is something between a choir and a washing machine. Should this not be what you seek, try it with percussives. Mono in, mono out.

DSP4000B Factory Programs

These dual machine mode presets (in this case dual mono in and out) are primarily for independent processing of two signals. Also great for immediate switching of two effects or parallel processing of one source.

A dual machine is one that acts as two distinct effects boxes, with a different and possibly unrelated effect on each of two channels, often used to treat two separate signals. These are also known as A/B or L/R machines.

1 L=Shift/R=Reverb

Left, pitch-shifter. Right, reverb. Again, great for parallel processing of your signal. Simple to navigate. Dual mono in, dual mono out.

2 Leddroom/Flanger

Left input EQ, pitch-shift, reverb. Right input EQ, flanger. This tweak of "Glistenverb/Eckoplex" shows off its versatility. The name tells the tale. Dual mono in, stereo out.

3 RoomA / HallB

Two independent reverbs. Left input goes to Room A and right input to Hall B. This one is great if you have two sources, or put your clean sound in one side and your overdrive in the other. Dual mono in, stereo out.

4 Sml Booth/Sml Room

Left, a small, booth reverb. Right, a small, room reverb. Great for when two verbs are the ticket. This tweak of "Dualverb" is a nice tutorial in verb-alise. Dual mono in, stereo out.

5 Sml Room/Big Plate

Left input, small, room reverb. Right input, big, plate reverb. Ditto and ditto. Dual mono in, stereo out.

6 Tunnel/Burrow

You have two independent effects chains with EQ, chorus and reverb. This tweak of "A-B Synth & Drums" contains two intriguing textures, but not of this earth. Dual mono in, stereo out.

DSP4000B Factory Programs

22 Multiple Effects

A set of multi-effects and some dual machine mode programs, again showing just some of the many possibilities with our open architecture.

Most of these effects offer a combination of distinct processes, which would otherwise require a number of dedicated or less capable units.

1 Big Squeezolo

Squish! Octave shifting with slight modulation for thickness. Hey, what's that on your shoe? Mono in, stereo out.

2 Chorus Delay

A chorus followed by a delay. The delay gets a mix of dry and chorus. Your basic deal here. Nice general-purpose effect. Stereo in, stereo out.

3 Combi EFX #3

This has octave-shifted echoes. There is a reverb that you can turn up. There is a rich, yet straightforward feel to this sophisticated preset. It can be very moody if you play sparsely. For your edification, the inputs feed an Eq+Shifter+Reverb, the shifter also feeds another Eq+Delay. Summed in, stereo out.

4 Easternizer

This preset has the combination of a flanger, a fifth-shift, and a reverb. With all the mixing onboard, you can do a lot with this one. Here it is set up with a slow, watery flange that implies phasing. Very 'retro.' Summed in, stereo out.

5 Env Filtered Reverb

A reverb with an envelope filter on the output. A different kind of space here, with the reverb tail into an envelope follower. Very animated. Stereo in, stereo out.

6 FatFunkVocal Filter

Vocal filter after a reverb. The sweep of the vocal filter is triggered by your sound. The reverb makes your sound hang on while being swept by the filter. This is a tweak of "VerbTrashSweeping," with a different feel. Mono in, mono out.

7 M Sh,L=DDL,R=no DDL

The delayed left input and straight right input are summed and feed a four output multishift. To translate: multishift, left with delay, right without. The shifter here used as smooth detuners for a natural chorus sound. Dual mono in, stereo out.

8 Moon Solo

Unique combination of pitch shift, phaser, chorus, and delay. The most prominent thing here is the deep sweep pattern. Lots of shimmer and stuff. Mono in, mono out.

9 Octashift Glissverb

Flanger, octave shift and reverb. With an octave up and a slow sweep on the delay this preset has a very clear ringing quality. Stereo in, stereo out.

10 Pitch & Reverb

An octave pitch shift into a reverb. This is a tweak of "Gig Pitch&Reverb," with some of the dry mixed into the verb, whose decay sounds more natural as a result. Mono in, stereo out.

11 Reverse Worlds

Much like "Mixer's Toolbox," but with a reverse shifter instead of a regular shifter. Input and output EQ included. Very powerful. This variation of "Octashift Glissverb" features reverse shifting. A more aggressive sound than "ReverseVerb 6/4 8v" because of its feedback characteristic. Mono in, stereo out.

12 Room 2 Go Downdelay

This has chorus and strange rhythmic echoes going into a reverb. This tweak of "Octashift Glissverb" has a detune and delay atmosphere rather than an octave effect. Nice polyrhythm to the delays. Hit a note and a very definite sense of rhythm pulls you in while still being much subtler than other delay presets. Also, there's some gremlin running around in there on load up ! Mono in, stereo out.

13 StereoDelay>Flanger

With this preset, each channel has a delay that goes into a flanger. Lots of interaction and swimming if you feed it a mono signal, so in a true stereo situation this is very wide and rich. Stereo in, stereo out.

14 Str2Flt/Cmp/Flng/DdlSf/c/F/d

A stereo rack consisting of filters, compressors, flangers and delays. With very slow and very deep modulation, the feedback on these flanger/delays cause pitch bend. The stereo delay at the end is set to default at zero, but try playing with it for adding a second rhythm. Unusual feel. Summed in, stereo out.

15 Tremolo Reverb

A reverb followed by a tremolo. The tremolo rate is modified by the input level. An unusual combination, the tremolo wavers the decay of the reverb. It has a smooth and light texture. Stereo in, stereo out.

DSP4000B Factory Programs

61 Pitch Shifters

This Bank offers a large array of general-purpose pitch shifting presets. From simple mono shifting to more complex eight-voice presets which show off the 4000's multi-voice capabilities.

Historical note: Eventide introduced digital pitch shifting to a waiting world with the H910 Harmonizer® in 1975. Since then, the power of these instruments has grown significantly, as you can see..

All pitch shifters work best with a clean input, with a clearly defined pitch - they will be less successful on chords or heavily distorted signals.

1 Mono Shift

A single, mono pitch shifter - the simplest version of its type. Only the basic controls (shift and delay) are available on its menu. Useful and utilitarian. Mono in, mono out.

2 Dual Shift

Two independent pitch shifters. One for each channel, with common LFO. This patch builds upon Mono Shift, not only with its two-channel operation, but with the addition of feedback and shift amount modulation. Stereo in, stereo out.

3 Stereo Shift

A simple, stereo pitch shifter. This is a stereo version of "Mono Shift," with simple structure and parameters, for true stereo operation. Stereo in, stereo out.

4 Dual H910s

Two of our classic H910 pitch shifters, one for each channel. What needs to be said about this vintage device ? Here it has been emulated, with all the familiar quirkiness. Great for thickening any source (sauce). Dual mono in, dual mono out.

5 Diatonic Shifter

A single, diatonic shifter. This preset is good if you desire one voice of shifting, or as an easy patch to experiment with if diatonic shifting is a new arena for you. A diatonic shifter is one that keeps its shifted output in key, rather than just shifting a fixed number of cents (or octaves). For example, with a conventional shifter, when you shift by a Major Third while playing in the key of C, if you play C, F or G, the result will be in key. Conversely, if you play D, E, A or B, the shifted output will be the wrong note, because these notes require a Minor Third shift. With the Diatonic Shifter, you define the harmonies and the final key you want, and the algorithm does the rest. Mono in, mono out.

A diatonic shifter is one that keeps its shifted output in key, rather than just shifting a fixed number of cents (or octaves). For example, with a conventional shifter, when you shift by a Major Third while playing in the key of C, if you play C, F or G, the result will be in key. Conversely, if you play D, E, A or B, the shifted output will be the wrong note, because these notes require a Minor Third shift. With the Diatonic Shifter, you define the harmonies and the final key you want, and the algorithm does the rest.

6 2-Voice Diatonic

One diatonic shift per channel. This preset is essentially a two-channel version of "Diatonic Shifter." The logical next step mono in, dual mono out.

7 Multiple Diatonic

Four diatonic shifts from one source. Heres where the fun star Four voices of Eventide! Mono in, stereo out.

8 8-voice Diatonic

Eight diatonic pitch shifts. Four on the left, four on the right. channel version of "Multiple Diatonic." Even more fun! Dual m dual mono out.

9 User defined scale

Two diatonic shifters with user defined scales into reverb and This is where the 4000 series begins to show its colors, with mi effects and complex processing. User defined scales let you pla unusual or non-western scales, while reverb and chorus add de Mono in, stereo out.

10 Multi-Shift

Four pitch shifters into a stereo mixer. Four voices of pitch shi A good place to experiment with voicings. MIDI has been prese major global control. Great for stage or studio. Mono in, stereo

11 8-Pitch Shifts

From the mono input you get eight shifted and delayed signals are combined with a stereo mixer. This is an eight-voice versic "Multi-Shift." This preset shows off the musicality of detuning vals via multiple shifters, thickening not only the source but al new voices. Mono in, stereo out.

12 Quad Detuners

Makes music sound way out of tune. Channels 1 and 3 are fror left, and channels 2 and 4 are from the right. Well, there are ti when being Out is In, right? Stereo in, mono out.

13 5th Place

The perfect fifth effect in stereo with color. Stereo shifter with into lush verb. With both shifting and reverb this preset shows many variations with 'complete' processing. This one with glob MIDI control preset. Stereo in, stereo out.

14 Dubbler

Doubles up your signal with four micro pitch shifts. With four detuned shifters slightly delayed and panned in stereo, this pr full and smooth, with a mild natural chorus through natural si beating instead of swept modulations. Mono in, stereo out.

15 Warm Shift

One pitch shifter per channel. Each has a gentle lowpass in th feedback loop. Dual mono shifter, with all the controls to twea sound. With hicut filters in the feedback path, this preset lets always keep it warm and smooth. Global MIDI included. Dual in, dual mono out.

16 5ths&Oct Multiply

Fifth and octave pitch shifts. Another tweak of "Dubbler," this uses larger intervals and modulation of the pitches for added richness. Mono in, stereo out.

17 120BPM ShifterDelay

Play a note, get a riff. The output of each shifted voice is delay 125ms from the previous voice. This gives a rhythmic effect wi multiple shifts and longer delay times, showing one of the mar possibilities inherent in our multishift module. Mono in, stereo

DSP4000B Factory Programs

18 Big Heartbeat

Two pitch shifters intertwined, with just a little feedback. By having the detuned shift feed back to an intertwined feedback path, this preset creates a very full effect with a small number of modules. Stereo in, stereo out.

19 Chim-Chiminee

Nice, arpeggiated shifts with octaves and fifths. Covering several octaves, judicious use of detuning and related delay times, this preset is great for rhythmic playing, as well as volume swells. Mono in, stereo out.

20 Crystal Pad 2

Shimmering, squeaky fields. Reversible shifters and filters in our *plex* module give new meaning to the idea of reverb effects. This is a shimmering example of what has been termed a 'crystal' effect. Mono in, stereo out.

21 Dual Reverse Shift

Two separate reverse pitch shifters. Dual channel reverse shifting with controls at the ready. A great place to start experimenting with reverse effects. Global MIDI control included. Dual mono in, dual mono out.

22 Fake Pitch Shift

Modulated up/down third pitch shift with reverb. Adjust fdbk/decay for echo effect. Modulated delays in a *plex* module create a reverb and 'fake shift.' Interesting detuned texture. Mono in, stereo out.

23 Freq Shifter

One frequency shifter per channel. This has a high amount of frequency shift that yields a ring modulation effect. A simple, dual channel frequency shifter with independent controls. A good place to experiment with this module. Not as harsh as ring modulation, this sits well with the original signal. Dual mono in, dual mono out.

24 Freqshift Chorus

One frequency shifter per channel. With a frequency shifter, the lower frequencies are effectively pitch shifted more than the higher frequencies. Another tweak of "Freq Shifter." This one, being only slightly detuned, gives a nice, natural beating chorus. Dual mono in, dual mono out.

25 Freqshift Vibrato

Nice chorus/vibrato created by four frequency shifters. Experiment with shifts and delays for more interesting effects. With four frequency shifters and delays, this is the logical next stage of development. Again a good preset for experimentation. Global MIDI control. Stereo in, stereo out.

26 Large Poly Shift

A kind of pitch shifter you use with chords. Like "Poly Shift," but now you can shift up and down by octaves. Even with five shifting paths, this preset is simple to use and, as the man says, great for chords. Mono in, mono out.

27 Organizer

Turns any line into an organ solo. Pure tones gets you a Hammond, complex tones get you a pipe. Well, it does exactly what it says. Mono in, stereo out.

28 Pitch Sequencer

Continuously plays a scale by shifting your signal. Try changing the sequence. This is an interesting algorithm that shows just one of the things your imagination can create with our open user platform, resulting in instant arpeggiation through sequencing a shifter's interval value. Mono in, mono out.

29 Ring Modulator

The classic ring modulator effect, now in stereo. However much the left channel is frequency shifted up, the right is shifted down. Built in mixing allows control over image. Stereo in, stereo out.

30 Stereo Backwards

Breaks input into little pieces and plays them backwards. Adjust optional pitch shift in 'Expert' menu. Uses M/S processing to maintain stereo image. With use of mid/side band processing, this reverse shifter is compatible with diverse formats. It is also simple to use, and a good one for experimenting with reverse effects. Stereo in, stereo out.

DSP4000B Factory Programs

62 Delay Effects

This Bank is full of many useful delay based presets. Whether used for imaging effects, doubling or long delay and poly-rhythms, there is something here for all applications.

Historical note: the first Eventide Digital Delay Line (DDL), the 1745, appeared in 1971, offering a staggering 200 mS of delay time in its expanded version, using a total of 980 shift register chips to achieve this. A DSP4000 with sampler, in contrast, offers almost 200 seconds of storage, a thousandfold increase.

1 Mono Delay

Mono delay with feedback. A singe delay module with feedback. This is useful for early steps in patch editing. Mono in, mono out.

2 Stereo Delay

Two delays with common controls. This preset is a stereo version of "Mono Delay." Stereo in, stereo out.

3 Dual BPM Delays

Allows you to adjust a delay in beats per minute. An input parameter will connect the right delays to the right tone controls giving you dual mono. A jump to something more complex. This program offers dual BPM style delays with tone control. Perfect for basic delays, when you know the tempo. Mono in, stereo out.

4 Dual Long Delay

Two long delays, each 2.5 seconds. Dual mono delays created by stringing delay modules together. Dual mono in, dual mono out.

> For Patch creation, note the *c_multiply* after the 'Delay' amount *knob*. Each delay module receives a delay value proportional to the number of delays in the line - in this case, a quarter of the time shown at the delay amount knob. This is because each delay has a *maxdelay* time of 660 ms each, so if you did not multiply the delay parameter by a quarter when the knob reached 660, you would have 2640 ms of delay, which might be useful, but not what you asked for.

5 Fripper-tronics

The modern alternative to two Revox's and a reel of tape. Five-second repeats, adjustable high cut and feedback. This is a simplified modern emulation of this classic process. High cut filters in the feedback paths simulate tape rolloff. Mono in, mono out.

6 Long Mono Delay

Simple, 10-second delay. Yes Jessica, this is a mono version of "Dual Long Delays." The same clue to stringing delays together applies. This time, multiplying delay knob value by one-eighth, prior to connection to the delay modules control input. Mono in, mono out.

7 Long Stereo Delay

A stereo five-second delay It is in fact a stereo version of "Dual Long Delays," achieved by the use of ganged parameters. Stereo in, stereo out.

8 Precision Delay

Allows you to adjust delay in microsecond increments. One dela channel. With a default of one millisecond, this utility delay is most precise, giving control of the delays in increments of a frac of an audio sample. How do we do it ? Dual mono in, dual mono

9 Multitap Delay

A single delay line with many taps. You have individual control each tap. An excellent place to experiment with the *multitap* m A single module lets you take advantage of each individual tap. in, stereo out.

10 Number of Echos

You control the number of repeats with one knob. This allows s quent repeats to be louder than previous delays, as well as allo you to set the exact number of delays. Note that each delay has scaler to choose a percentage value of the main menu's delay ti Mono in, stereo out.

11 Quad Flange Echoes

Each of four echoes are flanged and panned. Four modulating c lines, two per side, are also panned independently to stereo, gi very full and animated effect. Stereo in, stereo out.

12 Dual Ducked Delay

Two delays (one for each channel) that will duck out of the way you play a lead and come back up when you're done. 'Ratio' adj how much to duck. A ducker is the same module that is used ii different form to create a compressor. In this case, it is used to or 'duck' the volume of the delay's feedback level, so that input level effects the number of repeats in an active (or interactive) manner. Dual mono in, dual mono out.

13 Dual Flanged delays

Two delays where the echoes are flanged. Two delays into two microdelays used to flange the delays. The use of microdelay m for the flangers gives very precise modulation times. Dual mon dual mono out.

14 Echospace Of God

Massively verbed echoes that give you that \awe\ sound. Anot *plexverb* program, this one is more verb-ish than echo-ish. Mor stereo out.

15 Man's Pan & Delay3

This program will delay and pan a mono signal with an LFO. A percent depth, full pan will occur. Above 60, and you will enga effect. Summed in, stereo out.

16 Panning Delays

Four delay lines, each panned by its own LFO. Also, each has another LFO modulating its delay. The result of this is four mc ing delay lines, two per side, panned independently to stereo. ' effect is very full and animated. Stereo in, stereo out.

17 Phase Delay

A variable amount of 'phase shift.' This is real phase shift in de and it applies to each frequency. You also have precision delay feedback. This patch defaults to zero parameter values, and is designed for precise control of phase angle and delay times. Du mono in, dual mono out.

18 Slap Nonlinear

A slapback where the echo is really a clump of diffused echoes EQ. Another version of "Centering Echos," this one provides a diffuse slap. Mono in, stereo out.

DSP4000B Factory Programs

19 Super Ducked Delays

Dual ducked delays with plenty of control and visual feedback. This preset supplies a complex example of ducking delays with EQ, precise control and neat meters. Dual mono in, dual mono out.

20 #30 Patch Instruct

Each Delay sets the value for a single delay module.   <more...>
"Multiply by number of delays in series to get Delay Amount" This program is specifically here as a tutorial for the patch editor, found in the user manual. Dual mono in, dual mono out.

DSP4000B Factory Programs

63 Chorus/Flangers

This Bank contains a wide variety of modulated delays and phasers. Not only emulations of old favorites, but sophisticated stereo manipulations are also included.

For those unclear of the difference between *chorus* and *flanger*, both are essentially *delays* whose length can be modulated to sweep the effect, but a *flanger* has feedback around the *delay*, whereas a chorus does not.

A *phaser*, on the other hand, has no implicit delay, but uses a *filter*, whose phase shift can be modulated.

1 Auto Tape Flanger

A stereo tape flanger where one delay is swept by another. The sweeping is controlled by an LFO. A stereo tape flanger where one delay is swept by another. The sweeping is controlled by an LFO. Although designed for tape flange simulation, this preset is a very smooth and sweet flange. When 100 percent wet, its sound is similar to phasing. Stereo in, stereo out.

2 Chorused Cabinet

The sound of a miked speaker cabinet with a touch of modulating chorus. Another *plexverb* preset. This one simulates a miked speaker EQ curve and adds depth with modulation of the delays. A very smooth enhancement program. Mono in, stereo out.

3 Digest Inn

Slimy, resonant, peaky flange, and short, repeating delay echo. Sounds like you are inside someone's stomach. Yukk! This *plexverb* has much shorter delay times, and a very resonant flange-type modulation. It shows, when compared to its siblings, the variations possible with a *plex* module used with delays. Mono in, stereo out.

4 Drew's Throatflange

Deep, negative, resonant flange that adds a throaty quality to sounds. Sounds cool on drums, as well. This *plex* program used with moddelays adds resonant flanges that are still kept in their place. Similar to eight parallel delay lines, with some global parameters. Mono in, stereo out.

5 Freqshift Flange

This is a different kind of flanger using the frequency shifter. The use of feedback yields a very subtle resonance. Mono in, stereo out.

6 Hiccup Chorus

A stuttering, tremolo effect. You can engage an external control to change the rate. A stuttering, tremolo effect. You can engage an external control to change the rate. This chorus variation adds a hiccup sounding vibrato. Notice the slew rates that slightly round the hiccups square wave. Summed in, stereo out.

7 Leslie Simulator

Basic rotating speaker effect with a little reverb. There are actually two speakers (high and low) and you can alter each to your taste. When you load this preset, the settings are for what we believe to be most natural. This patch is essentially an auto version of "External Controlled Leslie." Mono in, stereo out.

8 Leslie-like

A combination of chorus, delay and phaser that gives you that r ing speaker effect. Another version of a Leslie sound, not as sm as some, but, none the less, interesting. Mono in, mono out.

9 Manual Tape Flanger

A manual tape flanger. Run your signal through the 4000 and the knob. Flanging occurs when flange and delay are close to e other. Depth controls how much of the flange delay is mixed in Good for when you simply need to ride that exact sweet spot. S in, stereo out.

10 Mess With Stereo

The left/right input is converted to sum/difference. Then, a nu of modifiers act upon the signal. Finally, it is converted back tc left/right. This gives some interesting stereo enhancements. Nc There is a slight delay in processing. This is an unusual sum ar difference program that does, in fact, let you mess with the ster field. It offers capabilities not found elsewhere. Stereo in, stere

11 Phaser

An old fashioned phaser. Use with sound going through the ef This is the classic sound, from the people who brought you the Instant Phaser. Mono in, mono out.

12 Phase Flange

A different flanger, because the component phases move instea the delay. Adjust <delay mod> to get the delay moving also. Th patch is an auto version of "Ext Phase Flange." Mono in, mono

13 Real Chorus

A simulation of having eight more of the input. This gives a so cated chorus effect, which is very rich, yet subtle. Mono in, ster out.

14 Real Chorus TNG

A simulation of additional musicians. Tuning: How well they a tune. Timing: How tight they are. Hunting: How fast they fir note." Best on single-note instruments. Note: some instrument: hunt. (Keyboard, drums, etc.) Mono in, stereo out.

Real Chorus - The Next Generation. A very special preset tha. simulates what happens in a real choir. Voices 'hunt' and then into pitch. This very sophisticated process begins chorused an settles. Cool! A simulation of additional musicians, it is best o single-note instruments. Note: Some instruments don't hunt. (Keyboard, drums, etc.)

15 Sky Slaw

Modulated deep, resonant flange feeds a second resonant, swee flange. Great for guitar. This simulation of a famous texture ha full and deep sweep pattern. Try with clean, as well as distorte complex sources. Mono in, stereo out.

16 Stereo Chorus

Eight moving delays, each with its own LFO. Summed inputs i: eight modulating delays give a very full and stereo field. Indep LFOs offer complex sweep patterns. Mono in, stereo out.

17 Stereoize

Adds a stereo-ized chorus to a mono signal. Like "Stereo Choru this *plex* version creates a rich, stereo field. Mono in, stereo ou

DSP4000B Factory Programs

65 Room Reverbs

Larger than small spaces, this Bank offers rooms and chambers. These presets include emulations of real and imaginary environments.

Room reverbs are typically used where more ambience is needed than the 'small rooms' can offer, but where a natural sound is wanted, without a distinct 'reverb' effect being audible. These reverbs are also useful for adding a stereo depth-of-field to a mono source.

Some of the wilder effects may not suit all applications.

1 Basic Reverb C

Nice, basic version of our famous reverb_c. ' This is a good one to experiment with. All the basic ingredients - diffusion and reverb. Set up with some space, and some ringing. Mono in, stereo out.

2 Big Room

Sounds pretty close to a large, recording-studio room. This is a more sophisticated patch than those before it. Like all reverbs, you usually have to find the preset that is close to what you are after, and then turn a knob or two. This has a nice atmosphere, although, notwith-standing the title, there is some swimming in this 'room.' Stereo in, stereo out.

3 Blue Box Verb

Medium size, and medium-bright room. The addition of a two-octave downward pitch, felt more than heard, gives this verb a twist. Try with a slap-guitar (as if you were playing funk bass). Mono in, stereo out.

4 Boston Chamber

This is a large, warm room/small hall reverb, with tone controls in and out. It gives a natural sounding space, with very slight motion to stop resonances. Mono in, stereo out.

5 Chamber2

This boy is a large room. He is bright as well, with a slap (but not much tickle). Mono in, stereo out.

6 Der Verb

Switchable stereo in and out reverb, built of discrete delays and reverb_a module. The result is very similar to "Denny's Echo Room," but this one gives you control of the input and output EQ's. Stereo in, stereo out.

7 Drew's Small Room

Warm, small room, like an old, conference room with 15-foot ceilings. Yes, Jeeves, coffee and brandy...there's a good lad. Stereo in, stereo out.

8 Drews Dense Room

Warm example of a simple stereo version of reverb_a module. This variation of "Drews Small Room" is larger, and adds multitaps for a denser and more diffuse space. Mono in, stereo out.

9 GaderVerb

A dynamic reverb with headroom, gate and envelope filter built in. The dynamic envelope filter offers possibilities found in no other reverb units. This variation of "Funny Gated Room" places the gate monitor on the first menu for convenience. Mono in, stereo out.

Try adjusting *sweepwidth* to a negative number! Lower your monitor volume while carefully adjusting filter, since instabilities will occur with extreme settings and low Q's. The filter Q is adjustable on second press of Env Filt key. Envelope filter has a bypass switch at lower right. Press 'select' key or turn knob to bypass. Disable gate by turning *thresh* to -100 or *ungated lvl* to 100.

10 LRMS reverb

The left/right input is converted to sum/difference. Each of the four signals then go through a reverb. The reverberated sum/difference is converted back to left/right and mixed with the reverberated left/right. You get an echo-y reverb with an interesting space quality. This true stereo reverb uses sum/difference information to create an extremely wide and dense field through four independent reverbs. Stereo in, stereo out.

11 Masterverb Dullroom

Small, muted, wooden room. This "Masterverb" tweak is just the ticket for a close, non-reflective atmosphere. Stereo in, stereo out.

12 Masterverb Hall 1

Large VFW type room, with input and output EQ. Larger and brighter than "Masterverb Dullroom," this smooth space has no motion. Stereo in, stereo out.

13 Masterverb Room 2

Small, wooden room. This tweak of "Masterverb Dullroom" has less emphasis on the 'dull.' Stereo in, stereo out.

14 Medium Chamber

This is a bright, reflective room, with built-in pre-delay. It is a chamber reverb which has the sparkle, without the sizzle. Mono in, stereo out.

15 Noo Room!

A versatile, bright EQ'd room. Bright, and without the multitaps of "Medium Chamber," this empty space may be just right. Stereo in, stereo out.

16 Reverb w/Diff & Eq

Another bright, medium-room reverb. It is larger, roomier and more diffuse than some. This general reverb is reflective, with a percepti-ble wave build up. Mono in, stereo out.

17 RMX Simu Ambience

Gated room kinda sound. Nice on kick drums and other percussion. Although the parameter layout is not the same, this verb creates a texture reminiscent of that now classic British box. Mono in, stereo out.

18 Roomy Hall

Nice room with a warm hall body and a touch of chorus. Two reverbs give this space independent build and area. A very nice, diffuse space adds character. Stereo in, stereo out.

19 Slight Chorus Room

Deep room with a dash of chorus. Goes well with white meat. Easy parameter layout let you quickly change this preset to your exact tastes...meat or fish. Mono in, stereo out.

20 Small Club

This simulates a small, concrete-floored club. There's a Greenwich Village pub under a building with scrap in front that sounds just like

this. Not desiring to be under any building, scrap or not, I'll take your word for it. Oh look, the sun is out. Mono in, stereo out.

21 Small Drum Room

Small verbette, nice on drums but also on Armenian Sazbush. In the finest tradition of Mullah Nassr Eddin, we decline to comment further. Stereo in, stereo out.

DSP4000B Factory Programs

66 Hall Reverbs

Halls being more reverberant than rooms, these presets offer a wide variety of large and (some) unusual reverb spaces and effects.

A hall reverb, as the name suggests, usually has a more profound reverb effect than a room, often with distinct echoes and reflections. These will usually be used when a noticeable reverberant background is wanted.

1 Arena Soundcheck

Sounds like a huge arena. Testing 1,2,3... 10 to 1 says he can't make it up to 4. Mono in, stereo out.

2 Barking Chamber

Severely EQ'd verb with midrange bark. Post reverb EQ keeps the dog under control. Pets aside, it is a nice, middy (as opposed to muddy) sounding reverb that can take up some space. Mono in, stereo out.

3 Beeg Garage

This sounds like a huge, city, parking garage. Closets, basements, bathrooms and now garages... take a nice, long walk in the woods...or something ! Mono in, stereo out.

4 Big Hall

Large, hall-like reverb with EQ and delay control. Very nice. Smooth, diffuse and rich. Mono in, stereo out.

5 Big Hall 2

Newer version of "Big Hall" with extra accessibility. Very, very nice, this update of the popular preset is even smoother. Mono in, stereo out.

6 Big Hall/Med Hall

Two reverbs - one on left input, one on the right. They are sub-mixed at the output. Dual machine mode. Great for two signals, amps etc., or as a way to avoid load times. Sound good too...two... Dual mono in, stereo out.

7 Big Room Reverb

Big, rich, room echo, for use with mono or stereo input. Use 'Muting' switch to test echo characteristic. A tunable version of this patch is "Big Hall." Switchable mono/stereo inputs. This is the broadcast version of "Big Hall," for the easiest control possible. Stereo in, stereo out.

8 Black Hole

An abnormally large reverb, sucking everything into a bottomless chamber. Try setting the diffuser to 68 and the size to 91 for a reverse hole. This creature is made from diffusors only and is a good way to get to know them, as they can be good friends. Very cool, 'spatial' effect. Mono in, stereo out.

9 Bob's New Room

Large, warm hall built of discrete delays, diffusors and plexes. One definitely hears the walls in this very nice and animated space. Mono in, stereo out.

10 Dynamic Reverb

A versatile reverb with gate and dynamic filter built in. The filter is controlled by an envelope follower, unlike some other effects, whose filter is controlled by a less dynamic gate envelope. Mono in, stereo out.

11 E-noseChorusCanyon

Giant, chorusy, canyon-sized verb. This *plexverb* gives a large, ambient space, with a smooth and rich chorus without pitch artifacts in the reverb. Mono in, stereo out.

12 Enormo Hall

Big and deep. This environment may not be a place to live, but could certainly be useful in many applications where reality is not the goal. Very smooth and slow decay. Mono in, stereo out.

13 Gated Splash

Nice, gated reverb, where the gate is triggered by reverb level. Try on snares. If you don't know what a gated reverb is for, experiment with this. The suggestion is well advised. Stereo in, stereo out.

14 GloriousFlngCanyon

Huge canyons, with flange on reverb. Another *plexverb*, this one has a different build up of echoes from "E-noseChorusCanyon." Mono in, stereo out.

15 Jr. High School Gym

Sounds like a junior high school gymnasium. Not all of us can remember that far back, but this is an evocative reminder. Mono in, stereo out.

16 Master Hall

Big, warm, concert hall with input and output EQ. Stereo in, stereo out.

17 Masterverb Hall 2

Warm, medium hall. Larger version of "Masterverb Hall 1." Stereo in, stereo out.

18 Matt's Fat Room

Warm, slightly chorusy room with input and output EQ. Stereo in, stereo out.

19 Medium Hall

Large sizzly room, with a nice sizzle tail. Mono in, stereo out.

20 Stereo room

Nice, wide, stereo room. Stereo in, stereo out.

21 Swept Hall

A somewhat modulated hall reverb, with interesting flutters. Mono in, stereo out.

22 Swept Room

Large, sweepable room. Has output EQ. Mono in, stereo out.

23 The Megaverb Final

Bright and large, this reverb has input and output tone controls. Mono in, stereo out.

DSP4000B Factory Programs

67 Plate Reverbs

With some smooth, some metallic and some swept, this Bank contains plate and spring emulations for all occasions.

A plate used to be just what the name suggests, being preferred to the cheaper spring alternative. They are particularly popular among vocalists, who want a diffuse background, without recognizable reflections or placement cues.

Spring reverbs are also included for the traditionalists who long for the simplicity of that 'retro' sound.

1 EMT-style Plate

Warm emulation of a big plate, with childproof controls. Mono in, stereo out.

2 Cheap Springverb

Bright, dense, medium long and somewhat fluttery, this verb is reminiscent of an older type of medium-to-high-quality spring reverb. Mono in, stereo out.

3 Great Plate

Nice, basic, stereo-plate, reverb effect. Brighter than "EMT," this plate is in vibration. Stereo in, stereo out.

4 Metallic Plate

Bright, dense and metallic, exactly as the name says. Mono in, stereo out.

5 Pretty Smooth Plate

Large, bright plate with input and output tone controls. This is a smoother tweak of "Metallic Plate," without the sizzle. Mono in, stereo out.

6 Sizzler Plate

Sizzly sounding, plate-like reverb. This plate has lots of color...and it's all you can eat! Mono in, stereo out.

7 Stereo Plate

Dense, midrange-y plate. A little like most plates, but yet discreetly different. This very nice plate simulation has just the right color and motion. Stereo in, stereo out.

8 Swept Plate

Platelike with EQ's built in. There is a very smooth and dense texture to this dark plate reverb. Mono in, stereo out.

DSP4000B Factory Programs

68 Alternative Verbs

These presets show off some of the more unusual possibilities in our modular architecture. With effects combined and/or imbedded inside the reverbs themselves, new and exciting effects are now possible.

This Bank offers a range from the unusual to the absurd, giving a number of effects not found on any other signal processing platform.

1 Cheap Verb

A reverb that is inexpensive in terms of DSP resources. Very discrete. This mini *plexverb* is good for embedding into other programs when you need...something. Mono in, stereo out.

2 Choruspace O'Brian

A huge *plexverb* run through stereo delays set to heavy chorus. Both verb and direct get chorused, good for slow, melodic, attack sounds. Extremely long-lived, reverberant and chorused field. Mono in, stereo out.

3 E-noseFlangedCanyon

Large, booming reverbs, built of flanged delays. This *plexverb* has a slightly shorter life than "Choruspace O'Brian," and a smoother flanged texture. It is one of many unusual sonic beds available on the 4000 platform. Mono in, stereo out.

4 Flutter booth

Try to find this sound elsewhere! A deeply fluttering ambience. Almost a post production or sound design effect. This long-lived verb is aptly named. Mono in, stereo out.

5 Gated Gong Verb

A dynamic reverb with headroom, gate and envelope filter built in. The dynamic envelope filter offers possibilities found in no other reverb units. Try adjusting sweepwidth to a negative number! You can effectively disable gate by turning thresh to -100 and hold time to nine seconds. This unusual texture is a variant of "Gated Room." Note there are no gate monitors. Very hip. Mono in, stereo out.

6 Ghost Air

A deep backwards, breathing reverb, with EQ. Built from a tone module and three diffusors, this preset creates a reverse reverb build up of delays, which is very resonant in the bass. Mono in, stereo out.

7 GloriousChrsCanyon

Friggin huge, canyon verb with adjustable EQ and chorus. This is a *plexverb* tweak of "FlangedCanyon," with a richer chorus, but similar texture. Mono in, stereo out.

8 Gong Swell Verb 7

A dynamic reverb with headroom, gate and envelope filter built in. The dynamic envelope filter offers possibilities found in no other reverb units. Try adjusting sweepwidth to a negative number! You can effectively disable gate by turning thresh to -100 and hold time to nine seconds. This is a tweak of "Gated Room" with the gate swelling open, adding a very distinct color to the verb. Mono in, stereo out.

9 Horrors

Squeaking and squelching, this big, cave reverb is aptly named. The program is actually a multi-effects patch, with a pitch shifter going into a delay set, and finally a reverb. The overall effect is a really weird reverb. What does one do with a pitch shifter three octaves up? Well, here is a truly unusual sound. Stereo in, stereo out.

10 Jurassic Space

It's almost a delay, yet it's thick like a reverb. Has EQ, too. A tweak of "Ghost Air," this version has more highs and deeper modulation. Mono in, stereo out.

11 Key Morphic Reverb

Hitting the 'morph' softkey will cause this reverb to morph between two settings. Note: To adjust the allpass expert parameters, use the patch editor. This unusual 'staggering' morph between two reverbs could be used for an quirky segue at its default settings of smooth if set to higher values and/or glide rates. Summed in, stereo out.

12 Kickback

An early reflection type effect, with a large, adjustable predelay. This is a sophisticated and very diffuse slap effect with a lot of controls. Its short-lived ambience may be just the thing to fill space. Mono in, stereo out.

13 MetallicChamber

Another pitch shift going into a reverb_c. Through four voices of detuning, diffusion and reverb, these resonant reflections may lift your sound or, conversely, bury it. Stereo in, stereo out.

14 Phantom & Reverb

Unusual sliding harmony mixed with input and thrown into an airy reverb. Try on moody vocals. Never sounds the same twice. These resonant and long-lived ghost notes might be just that strange texture you are after. Lots of mixing parameters for the exact balance needed. Try it with harmonics and wammy bar. Mono in, stereo out.

15 Phaser and Reverb

A nice mixture of verb and phaser. Stereo in, stereo out.

16 Reverse Nonlinear

Another version of a nonlinear reverb, with extreme predelay. This reverse reverb preset is extremely diffuse and linear...ah...non...linear...well...no...linear! Mono in, stereo out.

17 Reverserize Hall

Multitap with linearly increasing levels, feeding a large hall reverb. Gives you a backwards sound even while the words are forward. Through the use of both the *multitap* and a verb, this preset gives real character to your source, while at the same time staying out of the way. Mono in, stereo out.

18 Shift Verb

You won't hear this anywhere else (except Klikton, the undiscovered planet in our solar system). It is a UFO taking off from a giant canyon. Might be a great effect to end a song with. I'm sorry to contradict the gentleman, but as everyone (in the know) knows, the tenth planet in our system is Yuggoth. The astronomers have, unwittingly, coined her Persephone, as she is just beyond Pluto. Mono in, stereo out.

19 Sizzle Verb

Large, alternative, sizzly verb. Easy to control. This gives a very bright texture built from parallel delay paths with non-diffuse delay patterns. Mono in, stereo out.

20 SplashVerb maxsweep

A unique, swept reverb with some unusual gating options on the input. A gate for each input, used as envelope modifiers into a stereo

reverb. The gates loose the transient nature of the source, and the reverbs sweep turns it into Turkish taffy. Stereo in, stereo out.

21 Square Tremolo Verb

Reverb with modulation of the tail's decay. With your source sustaining, this verb gives a choppy flutter/trem on the tail. When using staccato sources, the flutter feels much more pronounced. Mono in, stereo out.

22 Thicken Verb

A short, dark ambience deepens anything applied. This verb gives a resonant low end and detuned tail. Mono in, stereo out.

23 Tremolo Ambience

Small ambience with add-able shake. The cyclic quality of the tremolo in this reverb would be quite nice when in time to your tempo. With that in mind, note that the 'trem freq' parameter IS actually in Hz, not percents! Mono in, stereo out.

24 Zipper Up

Fast, increasing, diffused echoes with reverb. The tonality of this metallic *multitap* adds a prominent and unnatural build up to this reverb. Mono in, stereo out.