

9120

**ADVANCED SOUND
ENVIRONMENT PROCESSOR**

OPERATION MANUAL

WARNING!

There is a danger of explosion if the battery is not replaced properly. Use only the same type of battery or an equivalent type as recommended by the manufacturer. Always dispose of the battery according to the manufacturer's instructions.

Congratulations and thank you for purchasing the ZOOM 9120 Advanced Sound Environment Processor. The 9120 is a sophisticated effect device with the following features and functions:

- * **A total of 22 basic effects.** They include the reverb effects of Hall, Room, Plate (each with two distinct types), as well as Gate and Early Reflection. Also available are Chorus, Delay and Pitch Shift, plus six other special effects (included in the SFX 1 and 2 settings).
- * **Exceptional high-quality sound,** for professional studio recording applications. The reverb sound, in particular, rivals the sound of professional units costing many times more, and stands up well to the exacting sonic demands of digital recording.
- * **Extremely intuitive and easy operation.** The effect selector dial allows you to instantly choose the basic effect you want, while three dedicated Data Entry controls let you instantly edit up to three parameters of the effect at a time. While all effects are of high quality and sophistication, the number of different parameters has been kept to a minimum for greater ease in editing.
- * **Unique and versatile special effects.** The 9120 also provides a wide variety of special functions and effects, including trigger control over the delay and gate reverb, built-in delay time calculator, "karaoke" effect for filtering out the vocal signal in a music mix, surround simulation, pedal-controlled pitch bend, MIDI-controlled pitch shift, and others.
- * **Extensive MIDI functions.** With MIDI, you can switch effect programs and make real-time changes in the effect parameters from another MIDI device, such as a keyboard or sequencer. You can also store your original effect programs to a connected MIDI data storage device (or to another 9120).

Please take the time to read this manual carefully, in order to get the most out of your 9120 and ensure longtime use and reliability.

Safety Precautions

Keep in mind the following safety tips and precautions for optimum safe use of the 9120.

Power Requirements

A special AC adapter is designed for use only with the 9120. Make sure to use the included AC adapter (AD-0002). Use of another AC adapter can cause malfunctions or damage.

Make sure to consult with your local ZOOM dealer about the use of a proper AC adapter or voltage converter when using the AC adapter in an area (for example, another country) having a different power supply voltage.

Environment

Avoid using your 9120 in environments where it will be exposed to:

- * Temperature extremes
- * High humidity or moisture
- * Excessive dust or sand
- * Excessive vibration or sudden shock

Handling

Since the 9120 is a precision electronic device, avoid applying excessive force to the switches and keys. Though the 9120 has been constructed for sturdiness and reliability, dropping, smashing, or applying too much weight to the product can cause damage.

Remodeling

Never open the case of the 9120 or attempt to modify the product in any way, since this can result in damage.

Connecting Cables and Input and Output Jacks

You should always turn off the power before connecting any cables. Also make sure to disconnect all cables and the AC adapter before moving the 9120.

Other Precautions

Electrical Interference

The 9120 uses digital circuitry that may cause interference and noise if placed too close to other electrical equipment, such as TV sets and radios. If such problems occur, move the 9120 further away from the affected equipment. Also, use of fluorescent lights or devices with built-in motors in close proximity to the 9120 may result in malfunctions and/or degraded performance in the 9120.

Cleaning

Use a soft, dry cloth to clean the 9120. If necessary, a slightly damp cloth can also be used. Do not use any abrasive cleansers, waxes, or solvents (such as paint thinner or alcohol), since these may dull the finish or damage the surface.

Malfunctions

If your 9120 does not perform as expected, or malfunctions occur, first make sure all related volume controls are at their minimum to avoid damaging any other equipment, then disconnect the power and other cables connected to the 9120. Contact the shop from which you purchased the 9120 and provide them with the following information: model name, serial number, description of the problem, your name, address and telephone number.

Keep this manual in a safe, convenient place for future reference.

Caution!

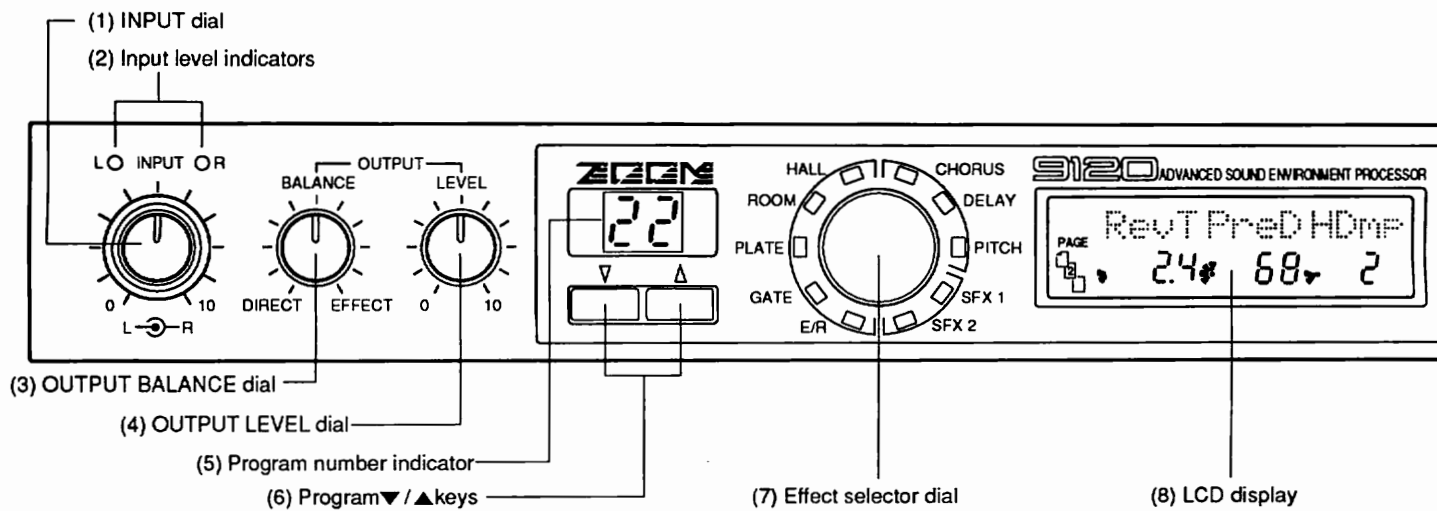
The 9120 contains a long-life lithium battery which maintains the effect programs stored to the internal memory even when the unit is turned off. With normal use, the battery should last for approximately five years. To avoid possible data loss, contact your local ZOOM dealer five years from the date of purchase and have the battery replaced by a qualified technician. Do not attempt to replace the battery yourself, since installing an improper battery could result in an explosion.

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Section I : Names and Functions of the Controls and Terminals

Front Panel



Input/Output Controls

(1) INPUT dial

For adjusting the level of the input signal. The inside dial is for adjusting the left (L) channel and the outside is for the right (R) channel. (When adjusting separately, hold one dial in place while turning the other.)

(2) Input level indicators

For monitoring the level of the input signal. When an input signal is received, the LED lights up in green and changes in color to amber as the level becomes greater. When a high level signal capable of causing distortion is input, the LED at the top lights up in red. (For best results, adjust the input level so that the LED is usually in amber.)

(3) OUTPUT BALANCE dial

For adjusting the overall balance of the sound between direct and effect. At the DIRECT position, the input sound is heard without processing. At the EFFECT position, only the processed sound is heard. This setting is applied globally to all effects.

(4) OUTPUT LEVEL dial

For adjusting the overall output level.

Program/Effect Selection Controls

(5) Program number indicator

Indicates the selected program number (1 - 99).

(6) Program ▼ / ▲ keys

For selecting programs.

(7) Effect selector dial

For selecting effects. The LED indicates the currently selected effect.

LCD Display and Editing Controls

(8) LCD display

Shows various operating information, such as the parameter values (up to three digits) and other messages.

(9) Data Entry controls 1, 2 and 3

For adjusting parameter values.

(10) Page key

For advancing through the different display "pages" in the LCD. (The selected page and number of pages available is indicated at the bottom left of the LCD.)

(11) Compare key

Used in editing a program, this switches back and forth between the currently edited values and the values of the original program, allowing comparison of the sound. When in the Utility mode, this key is used to select the previous display page.

(12) UTILITY key

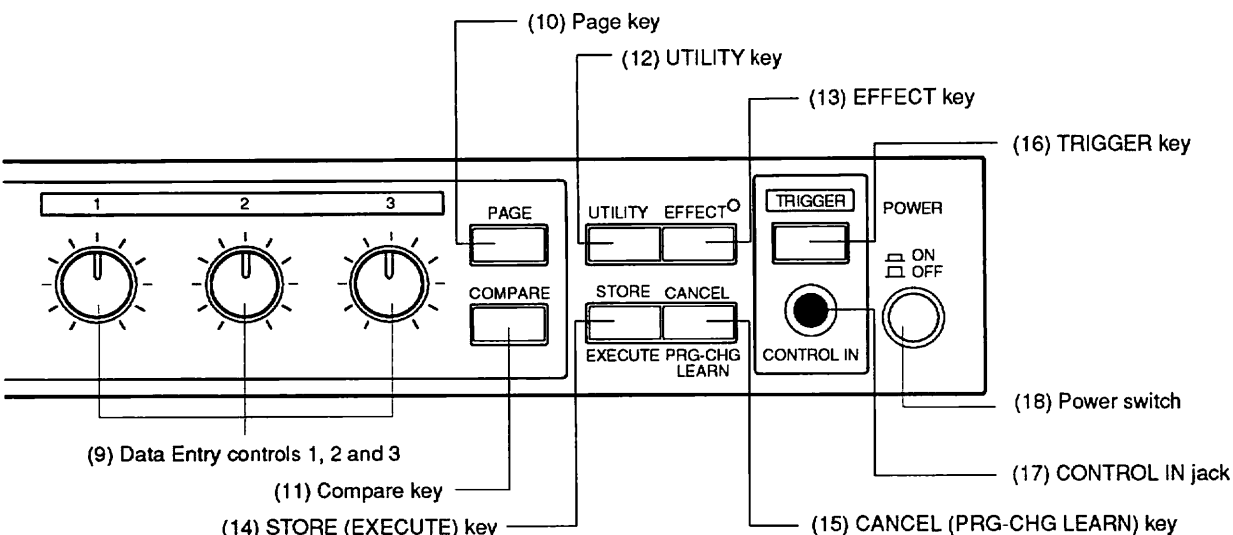
For selecting the functions of the Utility mode (such as setting the MIDI channel, transferring data, etc.).

(13) EFFECT key

For canceling the effect processing. The LED above the key lights when the effect is on.

(14) STORE (EXECUTE) key

For storing a program to internal memory. Press the key twice to store the program to the selected program number. When the LCD prompts you to confirm an operation with an "OK?" message, this key functions as an EXECUTE key to actually perform the operation.



(15) CANCEL (PRG-CHG LEARN) key

When in the Utility mode or Store function, this key is used to cancel the operation and return to normal operation. When in normal operation, it is used to call up the Program Change Learn menu.

External Control

(16) TRIGGER key

For tap-trigger control over certain effect parameters.

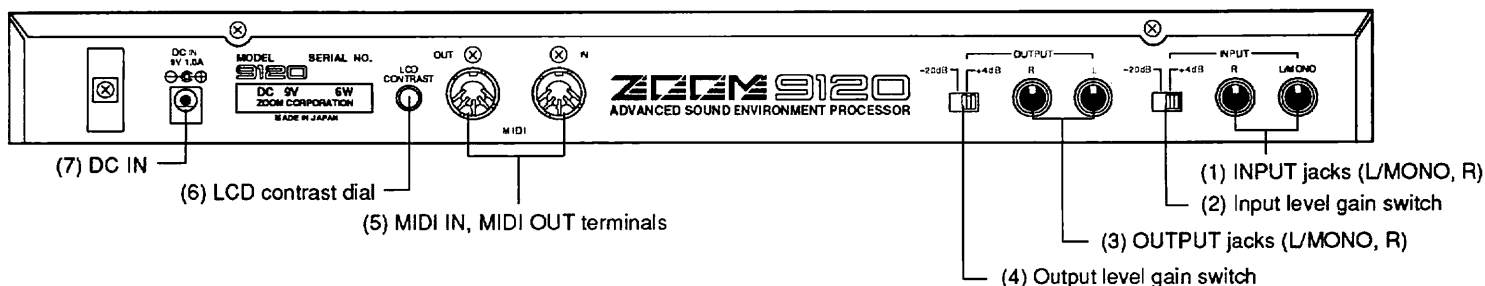
(17) CONTROL IN jack

For connection of an external footswitch or foot pedal. (You should use the optional ZOOM footswitch and foot pedal for this.)

(18) Power switch

For turning the power to the 9120 on and off.

Rear Panel



(1) INPUT jacks (L/MONO, R)

For input of the audio signal. If only the L/MONO input is used, the signal automatically becomes mono.

(2) Input level gain switch

For setting the input level gain to +4 or -20dBm.

(3) OUTPUT jacks (L/MONO, R)

For output of the audio signal.

(4) Output level gain switch

For setting the output level gain to +4 or -20dBm.

(5) MIDI IN, MIDI OUT terminals

For connection to other MIDI devices, such as a synthesizer or sequencer. These are used for remotely controlling the 9120 from a synthesizer, or for storing data of the 9120 to another device.

(6) LCD contrast dial

For adjusting the display contrast.

(7) DC IN

For connection to the included AD-0002 AC adapter.

Section II : Setting Up and Using the 9120

This section provides a guided tour of the 9120 that takes you step-by-step through the basic functions and operations of the unit. We recommend that you read through this section while actually operating the 9120 in order to better understand the unit and to get accustomed to its various functions.

Making Connections and Setting Up the 9120

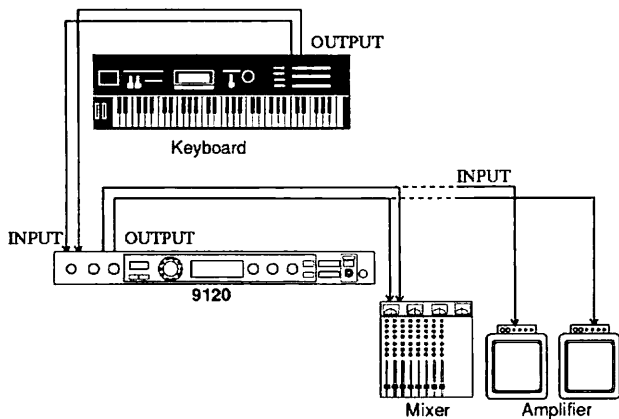
1. Connect the AC adapter.

Connect the AC adapter to the 9120, and plug it into the outlet. Do NOT turn on the power yet.

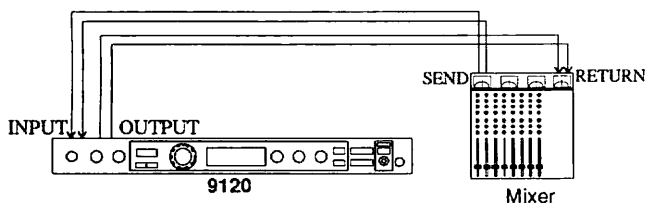
2. Connect the sound source and the amplifier/speaker system to the 9120.

First, connect the output of the sound source (keyboard, synthesizer, tape recorder, etc.) to the INPUT jack(s) of the 9120.

Next, connect the OUTPUT jacks of the 9120 to the amplification system or mixer. When using a mono signal, connect it to the either of L or R terminal; when using stereo signals, connect both outputs of the 9120 to the amplification system.



Connection Examples 1



Connection Examples 2

3. Turn on the power of the devices in the following order:

- 1) The sound source or sources which are connected to the 9120.
- 2) The 9120.
- 3) The amplifier/speaker or mixer system.

This order is important to prevent speaker damage. To turn off the equipment, reverse the order of the above steps.

Now that you've completed all of the connections and turned on the unit, you will have to match the level settings of the 9120 to those of the connected sound source and amplification system.

4. Begin by setting the sound source to the optimum playback level.

5. While playing the connected sound source, adjust the input gain level.

Use the input level gain switches on the rear panel if necessary to bring an excessively low or high signal into the proper range, then adjust the level from the front panel.

Adjust the input level of the 9120 so that the INPUT LED(s) are lit in amber as much as possible. (In particular, to prevent distortion, turn down the input if the red LED is lit too often or continuously.)

6. Adjust the OUTPUT BALANCE control.

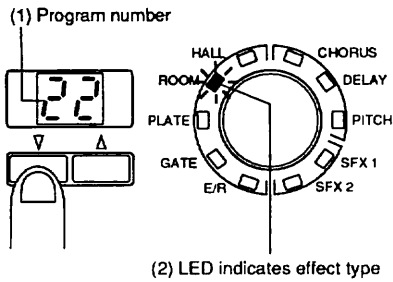
If you're using the 9120 as part of an effect send/return loop with a mixer, the output balance should be set to EFFECT. (The direct/effect balance can then be adjusted on the mixer.) If you're connecting the 9120 directly to an amplifier/speaker system, you should adjust the desired direct/effect balance on the 9120.

7. Adjust the level of the amplifier/speaker system or mixer. Adjust the OUTPUT LEVEL control on the 9120 as well until you come up with the optimum settings.

Use the output level gain switches on the rear panel if necessary to bring an excessively low or high signal into the proper range, then adjust the level from the front panel.

Using the Effect Programs

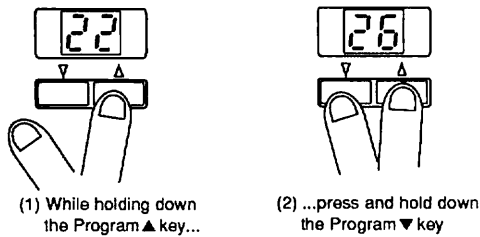
Now that you've set up the 9120, try playing with several of its effects. To do this, simply select a program with the Program ▲/▼ keys.



The program number in the indicator changes and the type of effect is indicated by the lit LED of the selector dial.

To step slowly up or down through the program numbers, hold down the appropriate key. You can move rapidly through the numbers by holding down one of the ▲/▼ keys (depending on the desired direction) and then simultaneously pressing and holding down the other key.

For example, to move rapidly forward through the program numbers:

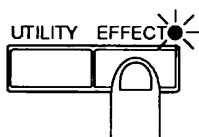


Once you've selected a program, play the connected sound source and hear the processed sound.

Bypassing Effects

The 9120 allows you to bypass, or temporarily cancel, all effects while playing. This function is useful for comparing the processed and unprocessed sounds in editing, or for instantly switching between the two in a performance or recording.

To do this, simply press the EFFECT key. Each press of the key switches between effect on and effect off. The LED above the key lights when the effect is on and goes out when the effect is off.



LED lights when effect is on.



NOTE Keep in mind that the bypass function mutes the effect processed sound and passes only the direct sound. Since the OUTPUT BALANCE dial controls the level of the direct sound, if it is set all the way to EFFECT, no sound will be output.

If you are connecting the 9120 directly between your sound source and an amplification/speaker system, you should set the output balance so that the levels of the direct sound and the effect processed sound are similar.

Editing an Effect Program

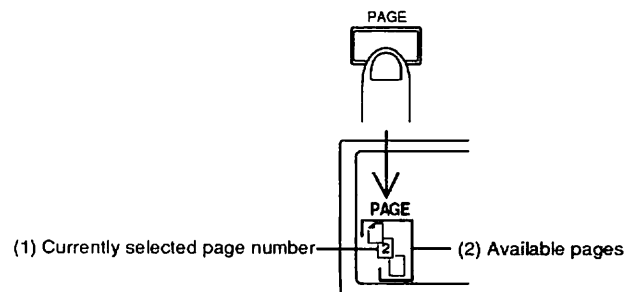
Editing with the 9120 is especially easy and intuitive. Once a program has been selected, several of its parameters and current values are shown in the LCD, and can be immediately adjusted. The basic effect can also be changed. (For more information on specific effects and their parameters, see section III, Effects and Their Parameters.)

1. First, select the program for editing with the Program ▲ / ▼ keys.

When editing, you may wish to call up an existing program that is relatively similar to the effect you intend to create, and then "tweak" certain parameters on that program until you get what you want. Normally though, it doesn't matter very much which program you select -- the basic effect can be easily changed by using the effect selector dial. Also, you don't need to worry about losing the original program, since the new edits can later be saved to any other program number without changing the settings of the original.

2. If you wish, select the basic effect with the selector dial.

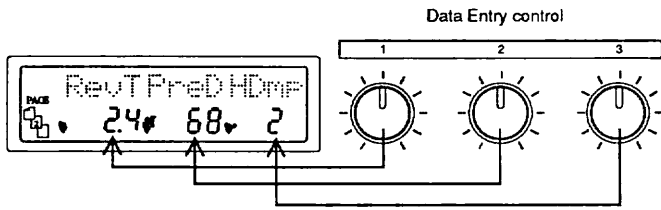
3. Use the PAGE key to select the desired parameter page.



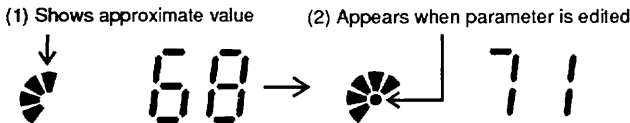
Each effect has two or three display pages, each of which contains up to three different parameters. The number of available pages is indicated by the page icon in the bottom left of the LCD, and the currently selected page is indicated by the number.

4. Adjust the parameters in the LCD with the corresponding Data Entry controls.

The LCD is divided into three basic sections, each of which shows a different parameter and corresponds to a different Data Entry control.



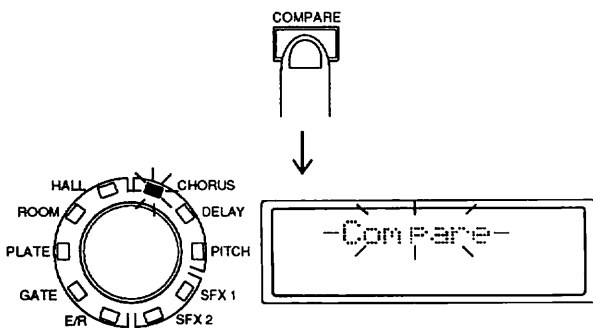
When you adjust a parameter value, the circular meter in the LCD graphically shows the approximate value (or how far the dial has been turned) and the number to the right of it shows the exact value. When a parameter value has been changed from its original value, a dot in the center of the graphic meter comes on. This dot disappears again if the original parameter value is restored.



Compare

With the compare function, you can switch between the newly edited program and the original unedited program, to hear the results of the changes you make.

1. After you've made a change or changes in the program, press the COMPARE key.



The LED of the original effect flashes along with the word "Compare" in the LCD. You can now hear the sound of the original program.

2. Press the COMPARE key again to return



While the 9120 is in the compare condition, the other keys and controls function as follows:

* Pressing the Program ▲/▼ keys, UTILITY key, or CANCEL key returns to the newly edited program.

* Pressing the PAGE key selects a different page in the original program and remains in the compare condition.

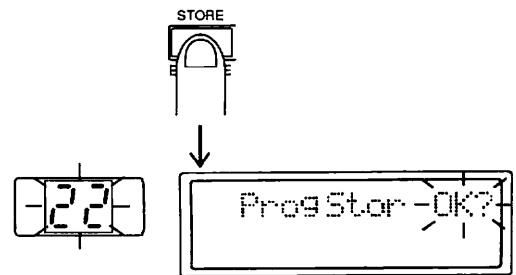
Storing an Edited Program

Once you've edited a program to your satisfaction, you'll want to store that new program to memory so that you can call it up again when you need it. Remember that any editing you have done to the parameters so far is temporary and it will be irretrievably lost if you switch to editing another program before storing the current one to memory. To avoid this, make the following a habit: once you've created a Patch you like, IMMEDIATELY store it to memory.

The 9120 has space in internal memory for 99 programs. If you've filled up those 99 spaces and wish to store more, program data can also be saved via MIDI to a sequencer or MIDI data storage device (see page 23).

To store your newly edited program:

1. Press the STORE key.



2. Use the Program ▲/▼ keys to select the program number to which you wish to save the new program.
3. The LCD shown in step #1 (along with the flashing program number) prompts you to confirm the operation. Press the STORE (EXECUTE) key to execute the operation, or press the CANCEL key to cancel it and return to the newly edited program and original program number.



When the program is stored, the program which was previously stored to the destination memory space is automatically erased. Make absolutely sure that the program at the destination can be erased.

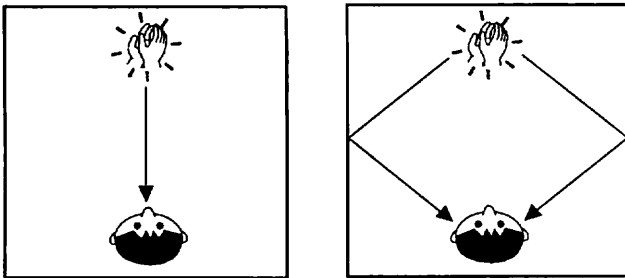
Section III : Effects and Their Parameters

An Introduction to Reverberation

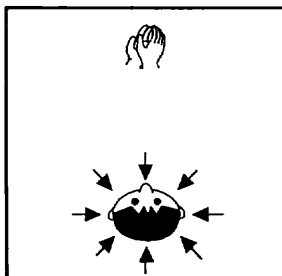
The ZOOM 9120 sound environment processor specializes in digital simulations of acoustic spaces, but also extends that capability with powerful parameter controls.

Acoustic simulations using 'Hall' 'Room'

Reverberation is the acoustic phenomenon which occurs when sound waves are reflected off surfaces such as the walls, floors and ceilings of an enclosed space. Since sound emits from a source in many directions, and encounters multiple surfaces at various distances and angles, these can be many reflections of a single instant, each repeating at slightly or greatly different times and levels, until they lose energy. These reflected waves make a sonic "residue" which reinforces the source by repeating in tiny echoes every moment of sound.



Even when the source has stopped generating the sound, reverberation will continue to decay for some time—the period depends on the size of the enclosure and the materials of which it is made. The 9120 calls this period of decay reverb time (RevT). The reverb times of average-sized, medium-surfaced rooms are usually short (0.3 - 1.4 seconds), concert halls and opera houses somewhat longer (1.8 - 3.0s), and large empty halls and churches very long (3.4 - 7.0s).



The ZOOM 9120 exceeds the focus of acoustic space modeling by extending parameter controls beyond values necessary to simulate those spaces. So, for example, reverb time range extends to a full 10.0 seconds, allowing you to create unusually spacious environments.

Reverb, then, is no more than a series of multiple echoes, enhancing sustained sounds with repetitious support, and at the same time smearing sudden changes in volume like the transient attacks of a percussion instruments. Most often, reverberation simply provides an ambient environment which we take for granted. There is such a density of reflections in an enclosed space, at so very many different levels and times, that the resulting acoustic effect is smooth and natural—so natural, in fact, that the effect in a small or medium-sized room is most often completely unnoticeable. For example, the ambient reverberations resulting from a conversation in a typical living room would not be perceived unless the room were to become instantly sound-proofed, upon which the void of natural ambience would then become uncomfortably obvious. Or perhaps, because of particular shapes and surfaces (often found in cheaply constructed meeting rooms or apartment building hallways), a space has a strong resonant reverberation at a particular frequency (known as "standing waves") which can become annoyingly obvious. The reverb algorithms in the 9120 are designed to be completely free of such resonances.

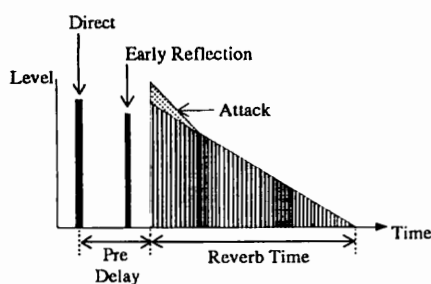
In standing very close to a person in conversation, you definitely hear the direct sound of their voice well before the first of the many reflections. But the further you are from the source, the less this is true, until the distance is large enough that you might be receiving all of them at the same time. The same is true in a concert hall. The people in the first row receive the direct sound from the stage before most of the reverberations, whereas those toward the rear of the hall hear a more equal mixture. Digital reverb devices can easily delay the beginning of the reverb effect by a specific amount. This control in the 9120 is called pre-delay time (PreD). In addition to simulating acoustic ambience, pre-delay is useful for allowing the complete attack dynamics of an instrument to sound in a music mix before becoming smoothed with reverb.

Reflected sound waves will lose their energy eventually no matter what the environment. In spaces with hard reflective surfaces, such as glass or tiled rooms, this process takes a long time because these surfaces reflect the energy efficiently so that the waves lose relatively little each time they bounce off. Conversely, softer materials, covered with carpet or heavy drapes, absorb the sounds quicker. In this case, higher frequencies lose their energy faster than long, low waves. In this way, the

bright reverb reflections decay sooner than the bass reflections. In the 9120, this effect can be controlled by a parameter called high damping (HDmp), which rolls off high frequencies as the signal decays. Hi damping can be used effectively on a total mix, letting you selectively apply reverb to the low and mid range sounds of the mix, while keeping the high frequencies (cymbals, for example) relatively dry—creating a naturally reverberant, yet clear and uncluttered sound.

Often, many sound waves first reach a surface—for example, a flat back wall—at the same time, and reflect a large part of the sound spectrum uniformly. The sound of this noticeable echo (and, depending on the shape of the enclosed space, there may be more than one of them) is called an early reflection. These reflections often tell our ears a lot about the physical environment. The 'Hall' and 'Room' reverb effects in the 9120 provide controls for the delay time (RefT) and strength (RefL) of early reflections.

Density is a measure of sound waves per unit of space. Small spaces tend to build and lose reverb density fast, whereas larger ones, like concert halls, gather and diffuse density more slowly. ZOOM DSP engineers have designed reverb algorithms accordingly, so that even before you program any parameters, the basic shape of a 'hall' or 'room' reverb is natural to those simulations. In the 9120 'halls', density is also a user-controlled parameter (Dens), which allows you to specify the basic density level of the reverb (even though that changes dynamically within the algorithm). A low density setting makes the reverb sound lighter, more airy, as in the case of a building with a very high ceiling. In 9120 'rooms', you can also change the basic shape of the reverb algorithm by applying the attack parameter (Atck). This parameter emphasizes the reverb right from the beginning of the effect, thus (if there is no pre-delay), enhancing the source material.



Ambient effects using 'E/R'

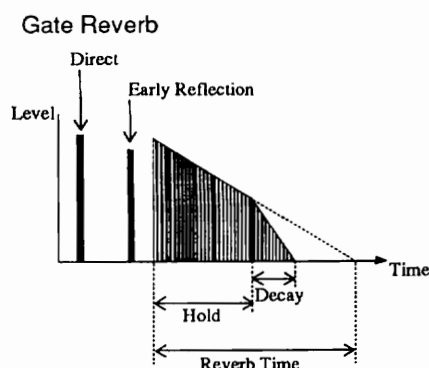
The 9120 also has an algorithm (E/R) designed to create an early reflection without much reverb decay, such as a natural echo against a wall outside or a building. In this case, use pre-delay (PDly) to indicate the distance to the wall, and tap angle (Angl) to control the direction and length of the effect decay. However, the E/R effect is especially useful in creating realistic room environments which have no obvious reverb 'tails', but indicate ambient

space. Use the size parameter for room size and control the tonal character with the low and high equalizers (LoEQ, HiEQ). The HiEQ will simulate damping. Try building a rehearsal room simulation with the E/R for your drum machine samples.

Reverb effects using 'Plate' and 'Gate'

Reverb was first imitated electronically with the use of metallic springs and plates. Spring reverb was the most affordable, but was limited by the density of reflections it could produce as well as an uneven resonant response. Large plates, with far greater physical mass, achieved by great density and smooth decay of natural ambient reflections. Though expensive and cumbersome, plate technology provided the first 'real' acoustic reverb simulations, though they lacked precise control of early reflection effects. Beyond modeling acoustic environments, the smooth, bright quality of plate reverberation has become a staple in multi-track recording, used to enhance many different sounds, from drum tracks to vocals. The 9120 includes plate reverb algorithms to emulate this effect. Except for early reflection values, most of the parameters are the same as those which control the 'halls' and 'rooms' which the addition of a low pass filter parameter called Tone. This parameter allows you to establish a cutoff frequency over which the reverb will not respond. The range from 0 - 15 establishes an overall tonal quality from dark to bright.

Another popular reverb effect is gated reverb. This technique shapes the reverb dramatically by sending it through a noise gate. The noise gate is like a volume envelope in a synthesizer — it can open and close down the signal on command. The sound of a snare drum with lots of reverb which stops abruptly is a well known example. The 9120 shapes the signal with Hold and Decay parameters and allows the gate to be triggered with the sensitivity control (SENS).



Effects and Their Parameters

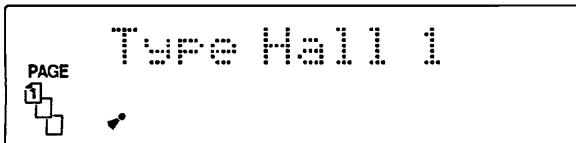
The parameters of all effects of the 9120 and their setting ranges are described here according to the order of the display pages. For brevity, repeated listing of the same parameters of that occur in different effects has been kept to a minimum. The numbers in circles ① – ③ indicate the parameters of each page as well as the corresponding Data Entry controls used to adjust them.

Hall

The Hall effect is used to simulate the ambience of large, enclosed spaces, such as concert halls, auditoriums and stadiums. It is effective in making acoustic ensembles sound larger, enhancing dramatic film soundtrack effects, and making a huge drum sound.

Hall features two different types. The parameters on all pages are the same for both types.

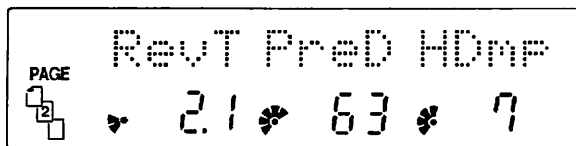
[Page 1]



① Type (Hall reverb type): Hall 1, Hall 2

This selects the basic type or configuration of the Hall reverb effect. (The type name is displayed in the spaces normally taken up by parameters 2 and 3.) Hall 1 provides a warm reverb sound, while Hall 2 provides a bright sound.

[Page 2]



① RevT (Reverb time): 0.3 - 10 seconds

This determine the time it takes for the reverberation to decay. Increasing this value creates a larger apparent room size.

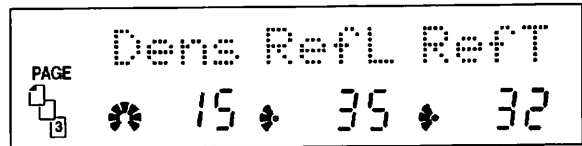
② PreD (Pre-delay time): 0 - 100 ms

This determines the pre-delay time, or the time that elapses between the direct sound and the onset of the reverb sound.

③ HDmp (Reverb high damp): 0 - 15

Determines the degree to which high frequencies are filtered out of the reverb signal over time. The higher the value, the more rapidly the high frequencies decay.

[Page 3]



① Dens (Reverb density): 0 - 15

Determines the reverberation density. The higher the value, the more detailed or dense the reverberation becomes.

② RefL (Early reflection level): 0 - 100

Determines the level of the early reflection sound.

③ RefT (Early reflection time): 0 - 100 ms

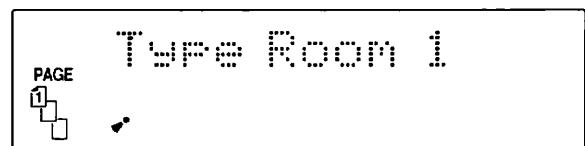
Determines the time lag between the direct sound and the first of the early reflections.

Room

The Room reverb effect simulates the acoustic characteristics of various types and sizes of rooms, from subtle ambiances to tiled room reverberation. Room is especially effective in giving more body to dry sampled piano sounds, putting "space" around sampled drums, making vocal chorus and choirs sound thicker and larger without resorting to electronic chorus, and in general adding the natural sound of a room environment (i.e., large, live studio, or small club) to nearly any dry source.

Room features two different types. The parameters on all pages are the same for both types.

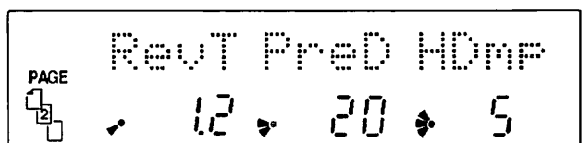
[Page 1]



① Type (Room reverb type): Room 1, Room 2

This selects the basic type or configuration of the Room reverb effect. Room 1 provides a warm reverb sound, while Room 2 provides a bright sound.

[Page 2]

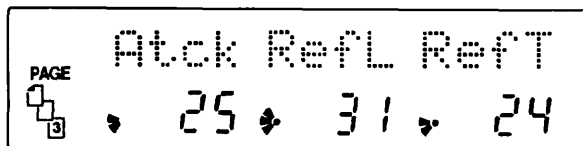


① RevT (Reverb time): 0.3 - 10 seconds

② PreD (Pre-delay time): 0 - 100 ms

③ HDmp (Reverb high damp): 0 - 15

[Page 3]



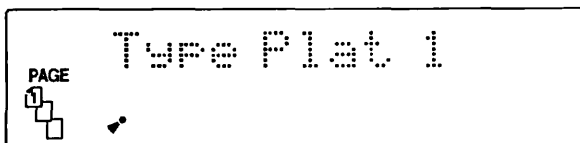
- ① **Atck (Attack): 0 - 100**
This reinforces the start of the reverberation by adding a more definite attack.
- ② **RefL (Early reflection level): 0 - 100**
- ③ **RefT (Early reflection time): 0 - 100 ms**

Plate

The Plate reverb effect simulates the special characteristics of a plate reverb. This effect is good for enhancing solo sounds, especially voice and winds, as well as snare drums in pop music styles. Often it is used (sparingly) to "fill out" or give body to the sound of a dry solo instrument before further reverb processing. It also is effective in making string ensembles sound rich and lush -- especially in lyrical music passages.

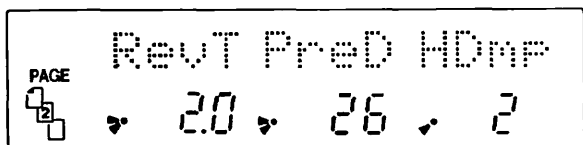
Plate features two different types. The parameters of all pages are the same for both types.

[Page 1]



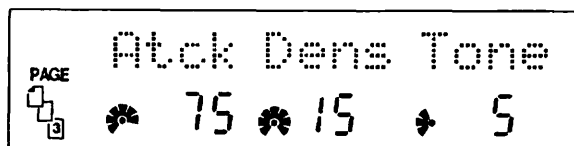
- ① **Type (Plate reverb type): Plat 1, Plat 2**

[Page 2]



- ① **RevT (Reverb time): 0.3 - 10 seconds**
- ② **PreD (Pre-delay time): 0 - 100 ms**
- ③ **HDmp (High damp): 0 - 15**

[Page 3]



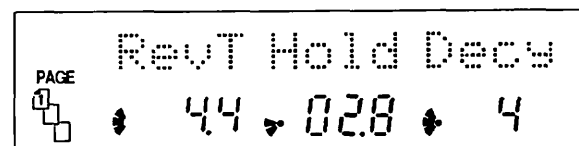
- ① **Atck (Attack): 0 - 100**
- ② **Dens (Reverb density): 0 - 15**
- ③ **Tone (Reverb tone): 0 - 15**
This determines the timbre or tone of the reverb. The lower the setting, the more the higher frequencies are filtered out. Unlike the high damp parameter of some of the other reverb effects, this parameter remains constant over time.

Gate

This is a special reverb effect that automatically cuts off the lower level decay sounds of the reverberation, shaping the reverb dynamically and adding greater punch and power to the sound. It is especially effective on drums, such as in making huge snare and kick sounds, as well as brass stabs and some guitar parts. More so than the other reverb effects, Gate is used to completely change the character of a sound, rather than just add subtle processing. Also, special rhythmic effects can be created by adjusting the Gate Hold Time to match the tempo of the music.

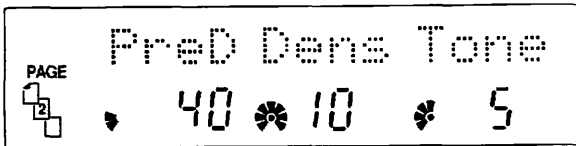
The gate of the 9120 incorporates control over gate opening according to the level of the input signal. The gate reverb effect of the 9120 has been newly developed to also provide either MIDI or manual (trigger key) control over the gate, regardless of the level of the input signal. (See the explanation on the Control Source parameter on the next page for more information.)

[Page 1]



- ① **RevT (Reverb time): 0.0, 0.5 - 10.0 seconds**
Determines the reverb time (within the gate effect).
- ② **Hold (Gate hold time): 0.1 - 2.0 seconds**
Determines the length of time the gate is open.
- ③ **Decy (Decay time): 0 - 10**
Determines how quickly the gate cuts off the reverb sound. Lower values result in the reverb being cut off abruptly, while higher values result in a slower decay in the reverb.

[Page 2]



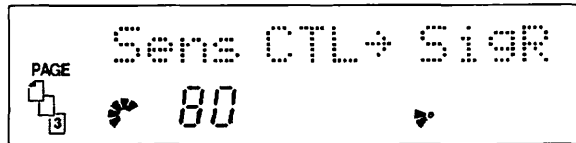
① PreD (Reverb pre-delay time): 0 - 200

Determines the time lag between the direct sound and the gate reverb sound.

② Dens (Reverb density): 0 - 10

③ Tone (Gate reverb tone): 0 - 10

[Page 3]



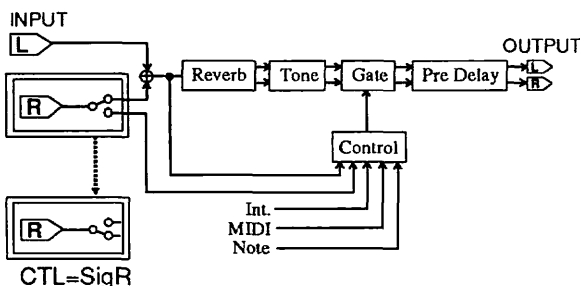
① Sens (Gate sensitivity): 1 - 100

Determines the sensitivity of the gate trigger to the input signal. Higher values allow lower level input signals to trigger the gate. This parameter has no effect unless the CTL (Control source) parameter below is set to "Sig LR" or "SigR".

③ CTL (Control source):

- SigLR (Input signal of both L and R channels)
- SigR (Input signal of R channel only)
- Int. (TRIGGER key or input from CONTROL IN jack)
- MIDI (MIDI control change message greater than 64)
- Note (MIDI note on message)

Determines the control source for the gate trigger. Use "Sig LR" source when you want the audio source itself to trigger the gate. For most purposes, this setting should be enough. The other settings are for more specialized applications, such as when you want to manually control the gate (by pressing the TRIGGER key or by pressing a footswitch connected to the CONTROL IN jack), or for using a sequencer to automatically trigger the gate via MIDI (either with a control change message or note on data).



Possible applications of these include triggering the gate at a point not possible with the automatic "Sig" setting,

or triggering the gate repeatedly for a sound whose level is relatively constant.

In a common studio recording application, a slightly sloppy bass track could be locked in more tightly to kick drum by gating the bass and using the drum sound to trigger the gate (or, if you wish, by manually pressing the TRIGGER key in time with the drum). Alternately, if the kick drum is part of a sequencer track, the MIDI note corresponding to the drum could be made to gate the bass and lock the two together.



For the above application in which the kick drum input triggers the gate for the bass, make the following settings:

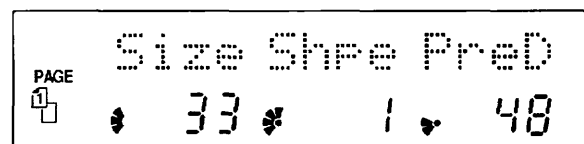
1. Route the bass signal to the left channel input, and the kick drum sound to the right.
2. Set the Reverb Time (RevT; Page 1) to 0.0.
3. Set Tone (Page 2) to 10, to make sure the frequency response of the bass signal flat.
4. Set the Control Source parameter (CTL; Page 3) to "SigR", so that the right channel is separated from the left and routed to control the gate.

Another interesting use of the gate effect and the trigger feature of the 9120 is to use a CD or other audio sound source as a kind of "sampled" sound, played from a MIDI keyboard. First, connect a MIDI keyboard to the 9120 and set the MIDI channels appropriately. Also, connect the audio outputs of the CD player to the left and right channel inputs of the 9120. Set the Reverb Time and Tone parameters as desired. Finally, set the Control Source Parameter (CTL; Page 3) to "Note". Now, when you play the CD, the sound will be gated each time you press a key on the MIDI keyboard.

E/R (Early Reflection)

This reverb effect emphasizes the distinct early reflections over the reverberant wash. It is useful for creating a spacious ambience without sacrificing the clarity and definition of the original sound. Early Reflection is good for simulating outdoor echo effects, such as the sound reflections off surrounding buildings, or the ambience of an open amphitheater or large auditorium. It is also effective in adding subtle room "Space" around dry signals (such as digital samples), enhancing brass parts, and creating special effects, such as reverse reverb.

[Page 1]

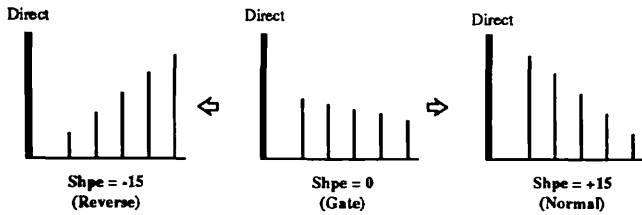


① Size (E/R room size): 0 - 100

Determines the apparent size of the room or plate by adjusting the duration of the early reflection sound.

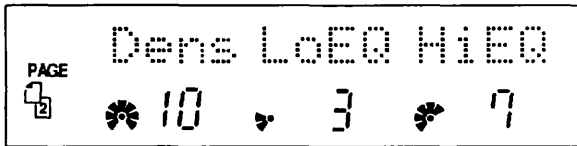
② **Shpe (E/R shape): -15 - 0 - 15**

Determines the attenuation pattern of the early reflection sound. Negative values produce a reverse reverb effect, while positive values produce a normal attenuation pattern.



③ **PreD (E/R pre-delay time): 0 - 200 ms**

[Page 2]



① **Dens (E/R density): 0 - 10**

② **LoEQ (Low frequency equalizer): 0 - 10**

Determines the amount of low frequency elements in the early reflection sound. Higher values boost the low frequencies.

③ **HiEQ (High frequency equalizer): 0 - 10**

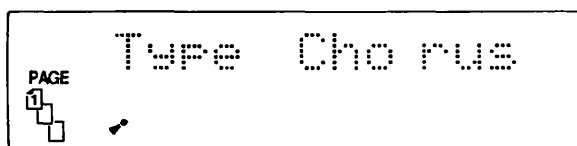
Determines the amount of high frequency elements in the early reflection sound. Higher values boost the high frequencies.

Chorus

This is a rich chorus effect with complex modulation waveforms. Chorus is generally used to take a thin sound and make it thicker and fatter. It is best applied on individual instruments rather than an entire mix. It is effective for making a single instrument sound like an ensemble, and also for processing acoustic guitar, clean electric guitar, bass, and keyboard sounds.

Chorus features two different types: a stereo chorus effect with eight separate voices, and a multi effect combining delay, chorus and reverb. (The Parameters are different for each type.)

[Page 1]



① **Type (Chorus type): Chorus, Chor>Rev(Delay-Chorus-Reverb)**

Chorus

This Chorus type splits the signal into eight separate "voices" and routes them through different modulation waveforms, before combining the signals to stereo.

[Chorus/Page 2]



① **ModD (Chorus modulation depth): 0 - 100**

Determines the depth of the modulation. This effectively sets how widely the pitch of each voice will be varied. Higher values result in more intense modulation.

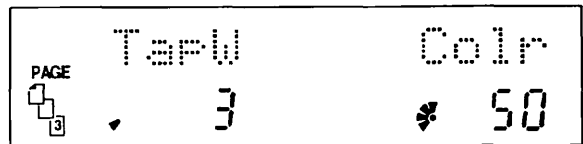
② **Rate (Chorus rate): 1 - 100**

Determines the speed of the modulation.

③ **Tone (Chorus tone): -12 - 0 - 12**

Determines the timbre or tone of the chorus sound. Negative values filter out the high frequencies, and higher values boost the high frequencies.

[Chorus/Page 3]



① **TapW (Chorus tap width): 0 - 100**

Adds depth to the overall chorus sound by controlling the pre-delay time difference among the separate eight voices.

③ **Colr (Chorus color): 0 - 100**

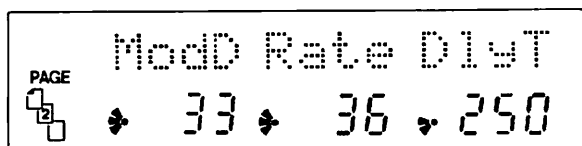
Determines the overall timbre of the chorus sound. This effectively divides the eight voices into two groups (according to their waveform type) and controls the balance of the two to create tumbrel variation in the sound.

Chor>Rev (Delay-Chorus-Reverb)

This multi effect processes the signal with mono delay, stereo chorus and stereo reverb effects.

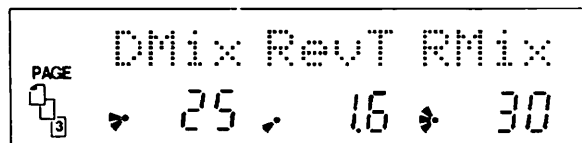


[Chor>Rev/Page 2]



- ① **ModD (Chorus modulation depth):** 0 - 100
- ② **Rate (Chorus rate):** 1 - 100
- ③ **DlyT (Delay time):** 0 - 990 ms, 1.00 second
Determines the delay time (pre-chorus).

[Chor>Rev/Page 3]



- ① **DMix (Delay mix):** 0 - 100
Determines the level of the delay sound in the effect mix.
- ② **RevT (Reverb time):** 0.5 - 10.0 seconds
Determines the reverb time (post chorus).
- ③ **RMix (Reverb mix):** 0 - 100
Determines the level of the reverb sound in the effect mix.

Delay

Delay is used to create echo effects, with discrete, regular repeats of the sound. Applications of delay include double-tracking a vocal (making one voice sound like two), slap-back echo (a very short delay with single repeat, commonly used on guitar and vocals in "rockabilly" and old rock 'n' roll styles), as well as flanging effects (with very short delay times and long feedback).

Delay can also be used rhythmically; by adjusting the delay time to match the tempo of the music, the delayed signal can be made to repeat precisely on the beat. (A built-in delay time calculator on the 9120 helps in this.) One interesting application involves using a relatively long single delay on a solo instrument; playing short single line melodies can create a kind of call-and-response effect.

The Delay on the 9120 is a sophisticated effect that features four separate modes: simple mono, mono-into-stereo, independent two-channel delay, and independent two-channel with cross feedback. In the mono modes, a maximum delay time of two seconds can be set.

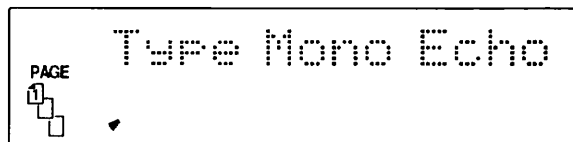
The delay time can also be manually "played" by pressing the TRIGGER key or by pressing a footswitch

connected to the CONTROL IN jack. (Press the key or pedal twice; once for the start of the delay time, the other for the end.) In the mono delay types (Mono Echo and Ping Pong), this tap delay function can be used from any page -- 1, 2 or 3. In the stereo delay types, using the tap delay in Page 1 sets the delay time for both the left and right channels. Using it in Page 2 sets only the left delay time, and using it in Page 3 sets only the right delay time.

A built-in time calculator is also provided for calculating and automatically inputting rhythmically correct delay times (given a specific tempo).

NOTE The ZOOM 8050 MIDI Foot Controller can also be used for manual "playing" or tap control of the delay time on the 9120. (Also refer to the 8050 manual, page 32, for more details). To properly use the 8050 to tap in the delay time on the 9120, set the 8050 to transmit over one of the MIDI control change numbers 1 - 31 (excepting 6 or 7) and set the same control change number in Page 2 of the Utility mode on the 9120 (see page 23).

[Page 1]

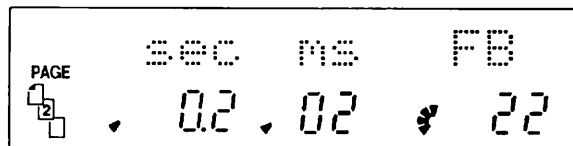


- ① **Type (Delay type):** Mono Echo, Ping Pong, Ster 2ch (Stereo 2-channel), Ster X FB (Stereo cross-feedback)
Determines the type of delay. Four types are available. The two mono types and two stereo types have different parameters.

- Mono Echo:** Simple mono delay
- Ping Pong:** Mono signal is delayed with repeats alternating between left and right channels.
- Ster 2 ch:** Independent two-channel delay.
- Ster X FB:** Same as "Str", but with cross-feedback delay.

Mono Delay Types (Mono Echo, Ping Pong)

[Mono Delay Types/Page 2]



- ① **sec (Delay time coarse):** 0.0 - 2.0 seconds
Determines the delay time in units of 100ms. (Use this with Delay time fine below).
- ② **ms (Delay time fine):** 0 - 99 ms
Used with the coarse time parameter above to finely set the delay time. (Since the maximum delay time is 2.0 seconds, this parameter cannot be changed when the sec parameter above is set to 20.)

③ **FB (Feedback): -98 - 0 - 98**

Determines the amount of feedback, or the number of delayed repeats of the signal. For negative values, the phase of the feedback signal is reversed.



Reversed phase settings are effective for using Delay as a flanging effect.

[Stereo Delay Types/Page 3]

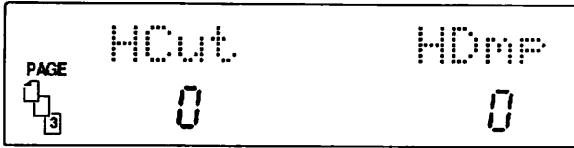


① **Rsec (Right channel delay time coarse): 0.0 - 1.0 second**

② **ms (Right channel delay time fine): 0 - 99 ms**
 (Since the maximum delay time in the stereo modes is 1.0 second, this parameter cannot be changed when the Rsec parameter above is set to 1.0.)

③ **FB (Right channel feedback): -98 - 0 - 98**

[Mono Delay Types/Page 3]



① **HCut (High cut): 0 - 15**

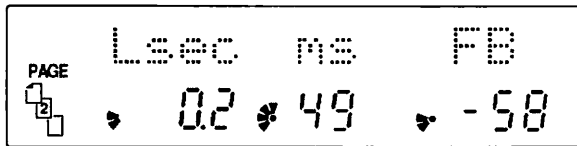
Determines the tone of delay sound.

③ **Hdmp (High damp): 0 - 15**

Progressively filters out the high frequencies as the delay sound repeats over time. The greater the value, the more rapidly the high frequencies are cut.

Stereo Delay Types (Ster 2 ch, Ster X FB)

[Stereo Delay Types/Page 2]



① **Lsec (Left channel delay time coarse): 0.0 - 1.0 second**

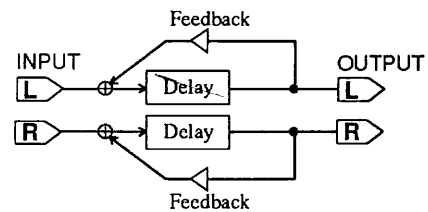
② **ms (Left channel delay time fine): 0 - 99 ms**
 (Since the maximum delay time in the stereo modes is 1.0 second, this parameter cannot be changed when the Lsec parameter above is set to 1.0.)

③ **FB (Left channel feedback): -98 - 0 - 98**

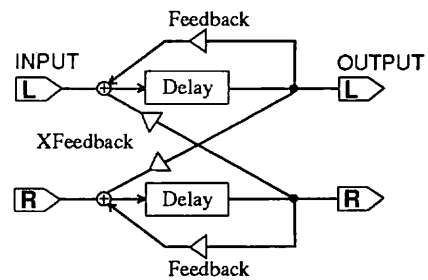


In the stereo cross-feedback type, the FB parameters in Pages 2 and 3 have a built-in automatic control to prevent self-oscillation from occurring when the value is set too high.

Ster 2ch

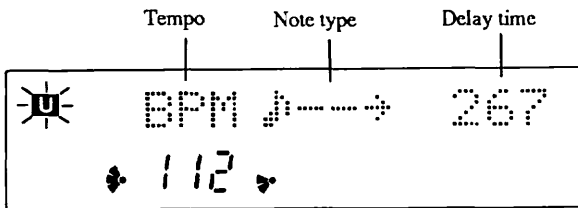


Ster X FB



Delay Time Calculator Utility

To call up the Delay Time Calculator utility, press the UTILITY key from either Page 2 or Page 3. This function lets you automatically calculate and input rhythmically correct delay times for specified tempo settings. In other words, if you know the tempo of the music being played, you can automatically program the delay time so that the delayed repeats fall precisely on the beat. To automatically enter the calculated value and exit the Delay Time Calculator utility, press the STORE (EXECUTE) key.



① BPM (Tempo; beats per minute): 40 - 240 bpm

Determines the tempo

In addition to being able to set the tempo manually here, you can also have the tempo automatically set by:

...a MIDI clock signal (receive from a connected sequencer or rhythm machine).

...tapping the tempo on the TRIGGER key or a switch connected to the CONTROL IN jack.

...tapping the tempo on a key from a connected MIDI keyboard.

② Note type:

- ♪ 3→ : Eighth note triplet
- ♪ → : Eighth note
- ♪ 3→ : Quarter note triplet
- ♪ → : Quarter note
- ♪ → : Half note

Determines the basic note value. (This parameter value is shown at the top middle section of the display.)

To use the calculator function:

1. Set the tempo with Data Entry control 1. The range is from 40 to 240 beats per minute.
2. Set the note type with Data Entry control 2. (The setting is shown at the top middle section of the display.)

The delay time is automatically calculated and appears at the top right (third section) of the display.

If the calculated delay time is longer than the maximum (2.0 seconds for mono, 1.0 second for stereo), the word "out" appears at the bottom right of the display.

3. To actually enter the calculated delay time, press the STORE (EXECUTE) key. To cancel the function without entering the calculated delay time and return to the original display, press the CANCEL key.

Pitch

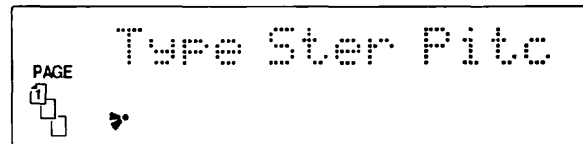
This effect lets you change the pitch of the sound, either an octave above or below normal pitch. Since the amount of pitch shift can be set independently for the left and right channels, three separate pitches (the two processed ones and the one of the direct sound) can be heard. This lets you create a natural yet complex chorus effect in which the left and right sounds are slightly detuned compared to the direct sound. Other applications include setting the pitch shift to an octave above or below (for example, to make a six-string guitar sound like a twelve-string), or setting the pitch to other intervals (such as a fourth or a fifth) to create instant harmonies.

The Pitch effect features two different types: a stereo pitch shift effect with independent left/right settings, and a Pitch-Reverb effects that combines a mono pitch shift with reverb. (The parameters are different for each type.)



For more sophisticated pitch shift applications in which the pitch shift changes according to MIDI note input, the 9120 also features an "intelligent" pitch shift function (MIDI Harmonized Pitch Shift) in the SFX 2 effects. (See page 20)

[Page 1]



- ① Type (Pitch shift type): Ster Pitc (Stereo pitch Shift), Pitc>Rev (Pitch-Reverb)

Stereo Pitch Shift

This type provides independent pitch shift control over the left and right channels.

[Stereo Pitch Shift/Page 2]



- ① PitL (Left channel shift chromatic): -12 - 0 - 12 semitones

Determines the number of semitones over which the pitch is changed. The range is one octave above or below the input pitch.

- ② FinL (Left channel shift fine): -50 - 0 - 50 cents

Determines the fine tuning of the pitch-shifted signal, in cents (1/100 of a semitone).

- ③ MixL (Left channel shift mix): 0 - 100

Determines the level of the pitch-shifted signal of the left channel.

[Stereo Pitch Shift/Page 3]

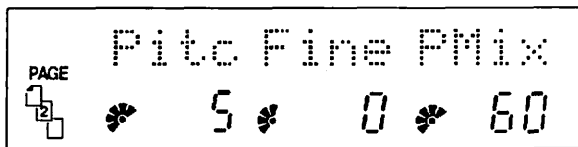


- ① **PitR (Right channel shift chromatic):** -12 - 0 - 12 semitones
- ② **FinR (Right channel shift fine):** -50 - 0 - 50 cents
- ③ **MixR (Right channel shift mix):** 0 - 100
Determines the level of the pitch-shifted signal of the right channel.

Pitch>Reverb

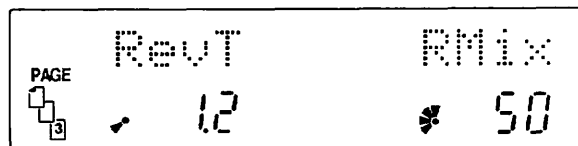
This is a multi effect that provides a single pitch shift setting (the left and right channels are shifted by the same amount) with a reverb effect.

[Pitch>Reverb/Page 2]



- ① **Pitc (Shift chromatic):** -12 - 0 - 12 semitones
- ② **Fine (Shift fine):** -50 - 0 - 50 cents
- ③ **PMix (Pitch shift mix):** 0 - 100
Determines the level of the pitch-shifted signal.

[Pitch>Reverb/Page 3]

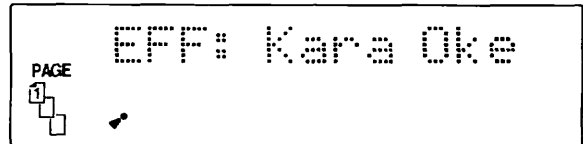


- ① **RevT (Reverb time):** 0.5 - 10.0 seconds
- ③ **RMix (Reverb mix):** 0 - 100
Determines the level of the reverb signal.

SFX 1

The SFX 1 effect group features three different stereo effects: Karaoke, Surround, Swp Flng (Sweep Flanger). The different effects are selected from Page 1, and the parameters for each effect appear in the following pages.

[Page 1]



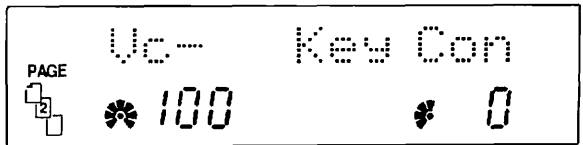
- ① **EFF (Effect type):** Kara Oke, Surround, Swp Flng

Karaoke

This effectively removes the vocal sound from a stereo music track, allowing you to sing the vocal part yourself. The pitch or key of the music can be adjusted up to five semitones up or down.

 **NOTE** For this to work properly, the output balance setting should be set to **EFFECT**.

[Karaoke/Page 2]

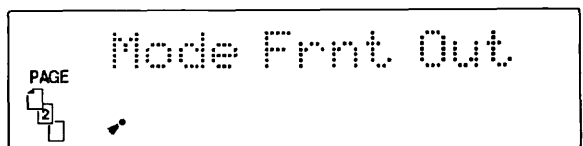


- ① **Vc- (Vocal cancel):** 0 - 100
Determines the degree to which the vocal sound is filtered out of the input signal.
- ③ **Key Con (Key control):** -5 - 0 - 5 semitones
Determines the number of semitones over which the pitch of the input signal is changed.

Surround

This effect simulates stereo surround processing, expanding the stereo image and making the sound seem to jump out of the speakers. The effect features two modes: one simulates surround processing for a pair of front speakers only, while the other simulates surround processing for a pair of rear speakers in a four-speaker arrangement.

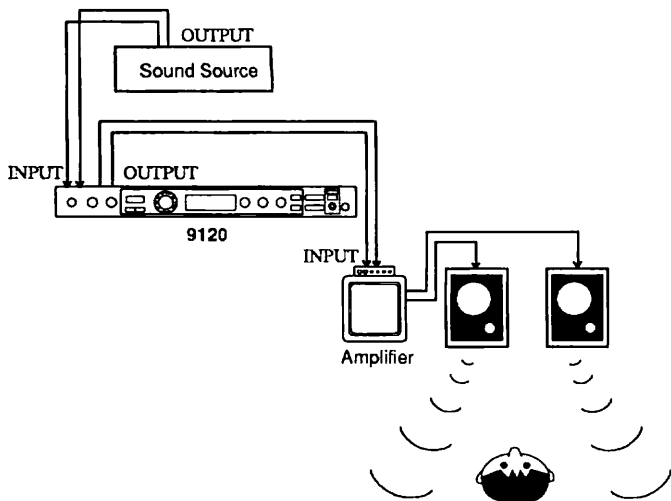
[Surround/Page 2]



- ① **Mode (Surround mode):**
Frnt Out (Front Out; two channel; front),
Rear Out (two-channel; rear)

Front Out

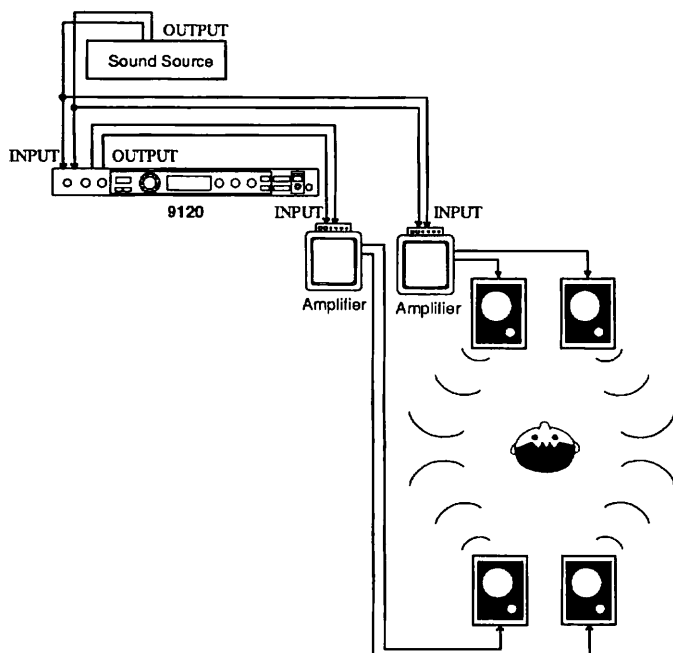
The Front Out mode processes the stereo input and outputs it to a two-channel front speaker system. The effect expands the source sound and makes it seem more three-dimensional and spacious than conventional stereo sound.



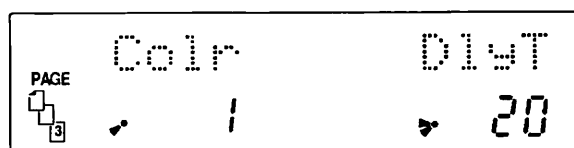
Rear Out

The Rear Out mode applies the surround effects to a stereo source for use with a pair of rear speakers in a four-speaker system. In this setup, the source signal is split, one set of stereo signals going to the 9120 for processing (and then to the rear channels), and the other set going unprocessed to a separate amp/speaker system for the front channels.

In another setup example similar to the one above, two 9120s could be used to create the optimum four-channel surround system. One 9120 could be used in Front Out mode to drive a pair of front speakers, while the other is set to Rear Out mode and drives a pair of rear speakers.



[Surround/Page 3]



① Colr (Surround color): 1 - 100

Determines the timbre of the surround sound.

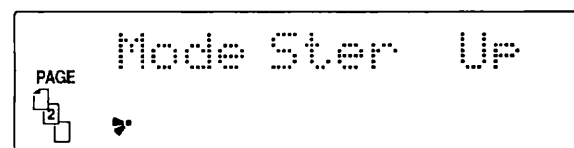
③ DlyT (Delay time): 0 - 100 ms

This control is used to adjust delay time; however, the time difference set here has the sonic effect of altering the character of the surround processed sound.

Sweep Flanger

This is a special flanging effect that provides three different types of modulation waveforms, selectable from five different modes. With the three-phase LFO operation and the automatic gradual application of the effect, Sweep Flanger creates an effect in which the resonant frequency is continuously swept up or down.

[Sweep Flanger/Page 2]



① Mode (Sweep flanger mode):

Mono Up: Mono sweep up

Ster Up: Stereo sweep up

Mono Down: Mono sweep down

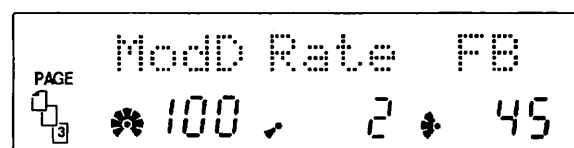
Stereo Down: Stereo sweep down

Tri LFO: Stereo three-phase flanger



All modes feature three-phase LFO operation, not only the Tri LFO mode.

[Sweep Flanger/Page 3]



① ModD (Modulation depth): 1 - 100

② Rate (Flanging rate): 1 - 100

Determines the speed of the modulation.

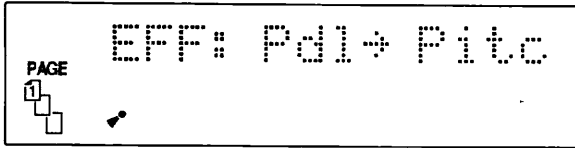
③ FB (Feedback): 0 - 99

Determines the level of the feedback.

SFX 2

The SFX 2 effect group features three different effects, especially for use with single instrument sound sources: Pedal Pitch Shift, MIDI Harmonized Pitch Shift, and Hold Delay. The different effects are selected from Page 1, and the parameters for each effect appear in the following pages.

[Page 1]

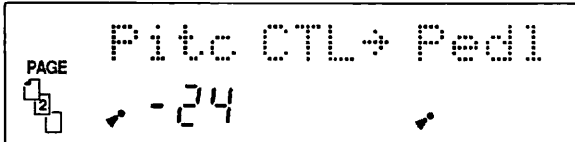


- ① **EFF (Effect type): Pdl->Pitc (Pedal Pitch Shift), MIDI->HPS (MIDI Harmonized Pitch Shift), Hold Delay (Hold Delay)**

Pedal Pitch Shift

This effect allows you to continuously change the pitch of the input signal, either by an expression or volume pedal (connected to the CONTROL IN jack) or via MIDI (with control change or bender).

[Pedal Pitch Shift/Page 2]



- ① **Pitc (pitch shift max.):**

- ∞, -24, -12 - 0 - 12 semitones

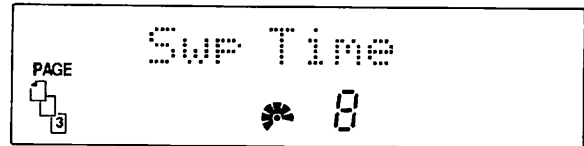
Determines the amount of pitch shift for the maximum control signal received. If this value is set to -12 and a pedal is used, pressing the pedal all the way down shifts the pitch an octave down.

The pitch shift effect is dynamic and continuous; in other words, the pitch changes smoothly as you move the pedal (or MIDI controller). A setting of infinity (- ∞) results in the pitch dropping lower and lower until the sound fades out, much like the sound of a record being played as the turntable slows down and stops.

- ③ **CTL (Control source): Pedl, MIDI, Bend**

Determines which control source is used to shift the pitch. Select "MIDI" when you wish to use a MIDI control change number. (Note: Select the control change number from page 2 of the Utility mode; see page 23.) Selecting "Bend" automatically sets the 9120 to respond to the pitch bender (wheel or lever) on a connected MIDI keyboard.

[Pedal Pitch Shift/Page 3]



- ② **Swp Time (Sweep time): 0 - 10**

Determines how quickly the pitch change responds to the control signal (pedal movement). The lower value, the more rapid response. At the higher values, the pitch changes more slowly; even using a simple on/off trigger, such as a footswitch or the front panel TRIGGER key, changes the pitch continuously, as if a pedal control were used.

MIDI Harmonized Pitch Shift

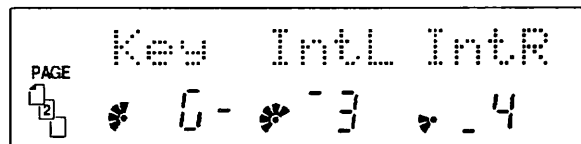
This is an "intelligent" harmonized pitch shifter that allows you to change the pitch of the input according to the notes played from a connected MIDI device.

The pitch shift interval can be set independently for the left and right channels, letting you create pitches of the different intervals from the input sound. A User Scale utility is also provided for manually setting the pitch shift intervals and storing those settings to user presets.



The MIDI Harmonized Pitch Shift effect responds to the last note number received. If no MIDI device is connected or played, the pitch shift interval will be constant, according to the last note received.

[MIDI HPS/Page 2]



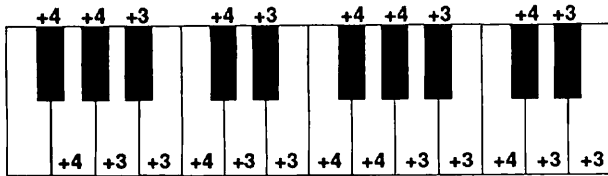
- ① **Key (Bass key): C, d-, d, E-, E, F, G-, G, A-, A, b-, b**

Determines the bass key for both the left and right channels. (The minus symbol in the settings indicates a flatted note; e.g., "d-" indicates Db.) This also determines the base key used in the User Scales.

- ② **IntL (Left channel interval):**

_7: Major 7th down
_6: 6th down
_5: 5th down
_4: 4th down
_3: Major 3rd down
_3-: Minor 3rd down
_2: 2nd down
U1: User Scale 1
U2: User Scale 2
-2: 2nd up

- 3-: Minor 3rd up
- 3 : Major 3rd up
- 4 : 4th up
- 5 : 5th up
- 6 : 6th up
- 7 : Major 7th up



Example of Harmonized Effect
(Key = C IntL = -3)

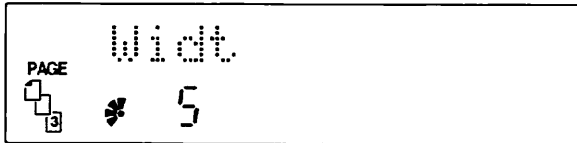
Determines the interval by which the pitch is shifted for the left channel. The actual interval also depends on the MIDI note received. User Scale 1 and 2 are two user presets that let you store your own pitch shift settings for future recall.

The User Scale setting calls up pitch shift intervals programmed with the User Scale Utility. (To call up the User Scale utility, press the UTILITY key from Page 2; for more information refer to the section on the User Scale utility below.)

- ③ IntR (Right channel interval): -7, -6, -5, -4, -3, -3-, -2, U1, U2, -2, -3-, -3, -4, -5, -6, -7

Determines the interval by which the pitch is shifted for the right channel. (See Left Channel Interval parameter above for details.)

[MIDI HPS/Page 3]



- ① Widt (Effect stereo width): 0 - 10

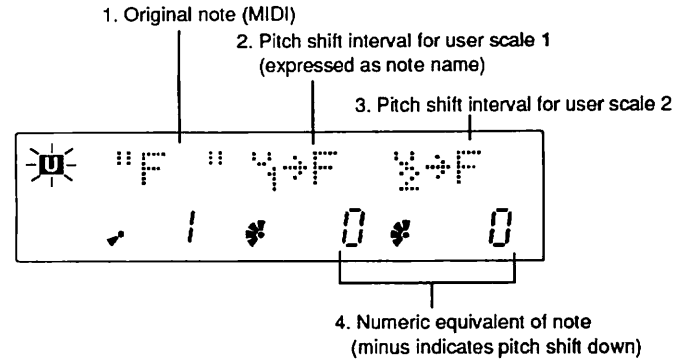
Determines the relative stereo separation of the effect. The zero setting results in a mono signal.

User Scale Utility

This function lets you create your own pitch shift interval settings, for each of the twelve notes in an octave and independently for the left and right channel intervals. These settings can then be saved to one of two User Scales. When you call up one of your User Scales, the 9120 monitors the MIDI note you play and then shifts the pitch according to the settings in the scale.

To use the User Scale Utility:

1. Press the UTILITY key from Page 2 or Page 3 to call up the User Scale Utility display.

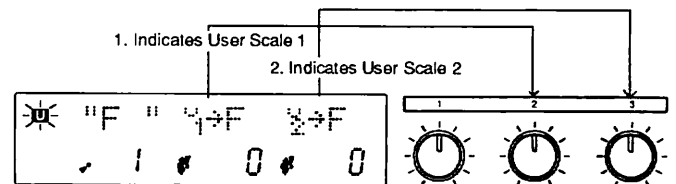


2. Use Data Entry control 1 to select the original or MIDI input note (the MIDI note that is played to shift the pitch according to the intervals set in the following parameters). The twelve notes of an octave are available.

NOTE The setting of the Base key in Page 2 of the MIDI Harmonized Pitch Shift effect determines the first note of this twelve-note scale. If you have programmed the intervals in the User Scale for one base key (for example, C) and later change the base key for that scale (for example, to G), the interval settings will NOT change relative to the new scale.

3. Use Data Entry control 2 to select the pitch shift interval for the original note set in step #2.

Data Entry control 2 corresponds to User Scale 1 and Data Entry control 3 corresponds to User Scale 2.



4. Repeats steps #2 and #3 above until you have set pitch shift intervals for all twelve notes of User Scale 1. Follow the same procedure using Data Entry control 3 to set User Scale 2.

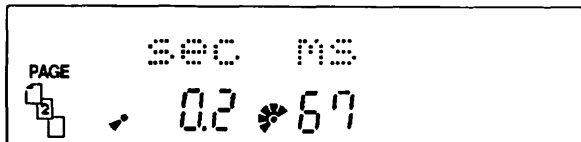
5. To save the new scale to memory, press the STORE key. The display will return to the MIDI Harmonized Pitch Shift pages. To abandon the new settings, press the CANCEL key.

To use your new User Scale, simply select it with either Data Entry control 2 or 3 from Page 2 of this effect.

Hold Delay

This is a mono hold delay effect with a maximum delay time of two seconds. The delay time can be set manually or tapped in via the CONTROL IN jack or MIDI.

[Hold Delay/Page 2]



① sec (Delay time coarse): ---, 0.1 - 2.0 seconds

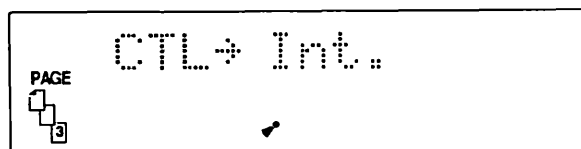
Determines the delay time in units of 100 ms. Turning Data Entry control 1 all the way counterclockwise selects the "no time" setting (---), which automatically sets the Delay Time Fine parameter below to "Tap".

The Tap setting allows you to set the delay time by "feel", tapping a signal twice (once for the start of the delay, the other for the end). The TRIGGER key, a switch connected to the CONTROL IN jack, or a MIDI control change message can be used for the tap signal. (Select the desired tap source from the Control Source parameter in Page 3 below.)

② ms (Delay time fine): 0 - 99 ms

Determines the delay time in single millisecond (ms) units. When the Delay Time Coarse parameter above is set to "---", this parameter is automatically set to "Tap", allowing you to tap in the delay time.

[Hold Delay/Page 3]



② CTL (Control source):

Int. Trig: TRIGGER key or CONTROL IN on the front panel

MIDI Trig: MIDI control change message

Determines the tap signal source for setting the delay time.

Delay Time Calculator Utility

Pressing the UTILITY key from Page 2 calls up the Delay Time Calculator utility. The calculated value can be used as the delay time for the Hold Delay effect. (See page 16 for more information.)

Section IV : Utility Mode and Program Change Learn

Utility Mode

The Utility mode contains miscellaneous global features of the 9120, such as setting of the MIDI channel and control number, bulk dump operations, and initializing of parameter data.

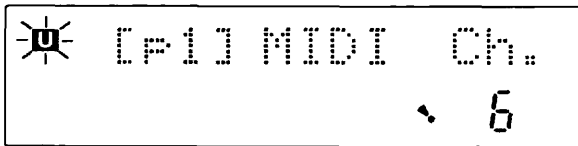
Press the UTILITY key to enter the Utility mode, then use the PAGE (Page >) and COMPARE (Page <) keys to select the display pages. (The UTILITY key also functions as the page > key in this mode.) A "U" appears in reverse display and flashes at the top left of the LCD, indicating that the Utility mode has been selected.



NOTE *Note: The Delay Time Calculator and User Scale utilities also have the flashing "U" indication; however, these can only be selected from their related effects and not from the Utility mode.*

To exit from the Utility mode at any time, press the CANCEL key.

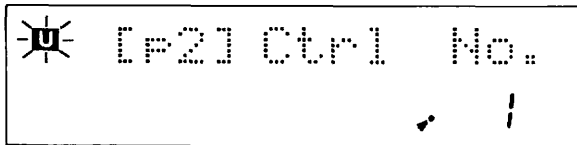
[Page 1] Selecting the MIDI Channel



Settings: ALL (Omni), 1 - 16

This determines the channel over which the 9120 receives MIDI data. Change this with Data Entry control 3. The "ALL" setting corresponds to Omni, which allows the 9120 to receive data over all MIDI channels simultaneously.

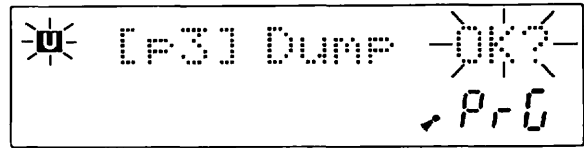
[Page 2] Setting the Control Change Number



Settings: 1 - 5, 8 - 31, 64 - 90

Some of the parameters of the 9120 can be controlled over MIDI by various control change numbers (depending on the MIDI controller used). This function determines the control change number that the 9120 will respond to. Change the setting with Data Entry control 3. Refer also to the owner's manual of your MIDI device for information on control change numbers and their corresponding controllers.

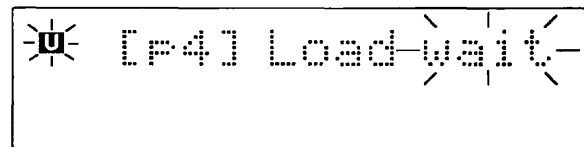
[Page 3] MIDI Bulk Dump



Settings: PrG (Single program), ALL (All programs)

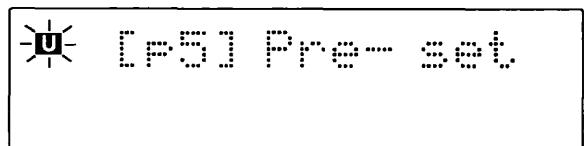
This function transmits either a single effect program or all effect programs via MIDI to a MIDI data storage device, such as a sequencer. Select "PrG" (single program) or "ALL" (all programs) with Data Entry control 3, then press the STORE (EXECUTE) key to actually transmit the data. If you have selected "PrG," the current active program data will be sent. Refer also to the owner's manual of your MIDI device for information on receiving bulk data with that device.

[Page 4] Loading MIDI Bulk Data



This function allows you to receive bulk data from a MIDI data storage device or another 9120. When this page is selected, the 9120 automatically waits for data to be received – no keys need be pressed. Once you set the connected MIDI device to transmit, the program data is automatically loaded.

[Page 5] Factory Preset Program Recall

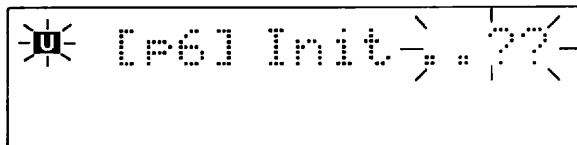
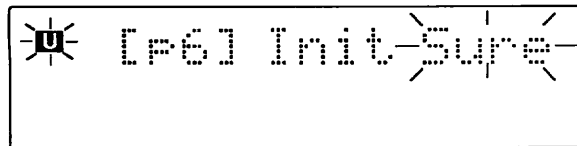
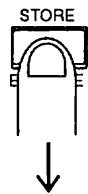
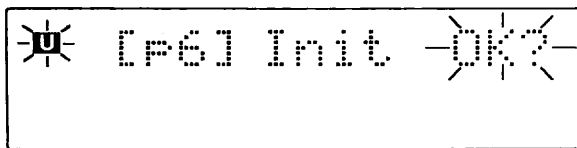


The 9120 has a secondary memory system (ROM) for backup of the 99 factory preset programs. This preset program call function lets you restore individual factory preset programs you may have previously erased to accommodate your own program. Use the Program▼ / ▲ keys to select the desired program number, then press the STORE (EXECUTE) key to call up the Program Store menu. Press STORE again to execute the operation, or CANCEL to abort. Make sure that you can erase the program at the selected number; that data will be irretrievably lost if it has not been saved beforehand.

This function is similar to the factory preset program call function above, except that it replaces all 99 programs in internal memory with the factory preset data, and resets all other parameters to their factory settings.

To use this function:

1. First make sure that you wish to replace the programs in internal memory; they will be irretrievably lost if they have not been saved beforehand.
2. From this page, press the STORE key.

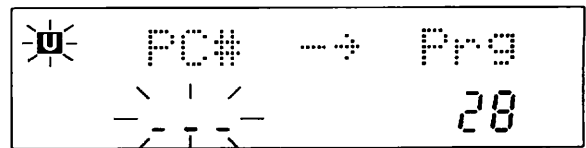


The display prompts you to confirm the operation. Press the STORE key again to execute the operation, or press the CANCEL key to abort and exit from the Utility mode.

Program Change Learn

Program Change Learn is a convenient function that registers or memorizes program change numbers received from a connected MIDI device. This lets you call up a certain numbered program on the 9120 by selecting a different numbered program on your MIDI device. For example, this would come in handy when you want to have 9120 program number 62 automatically selected when you select preset number 8 on your synthesizer. To use this function:

1. Make sure that the MIDI device has been properly connected to the 9120 and that the MIDI channel settings for both units have been properly made.
2. Select the desired program on the 9120 with the ▼/ ▲ keys.
3. Press the PRG-CHG LEARN key then continue holding down the key.



4. Select the desired program or preset on your MIDI device and transmit the program change message.

SPECIFICATIONS

Frequency Response	20Hz to 14.5kHz (Effect) 20Hz to 20kHz (Direct)
Dynamic Range	90dB
A/D Conversion	16-bit stereo with 64 time over-sampling
D/A Conversion	16-bit stereo
Input	2 channels, 1/4", -20/+4dBm
Output	2 channels, 1/4", -20/+4dBm
Program Memory	99 (Programmable)
Number of Effects	22 Hall 1, Hall 2, Room 1, Room 2, Plate 1, Plate 2, Gate, E/R, Chorus, Chorus → Reverb, Mono Echo, Ping Pong Delay, Stereo 2ch Delay, Stereo X Feedback Delay, Stereo Pitch, Pitch → Reverb, Karaoke, Surround, Sweep Flanger, Pedal → Pitch, MIDI → HPS, Hold Delay
Control	MIDI IN/OUT, CONTROL IN
Power	DC 9V 1A (AC Adaptor AD-0002)
Dimensions	440 (w) × 272 (D) × 44 (H)mm (19 × 10 $\frac{3}{4}$ × 1 $\frac{3}{4}$ inches) EIA 19-inch rack 1 Unit
Weight	2.5Kg (5.55lbs.)

9 1 2 0 M I D I I M P L E M E N T A T I O N

1. TRANSMITTED DATA

NONE

2. RECOGNIZED DATA

1) CHANNEL VOICE MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION
1001 nnnn	0kkk kkkk	0vvv vvvv	NOTE ON kkk kkkk : Note Number vvv vvvv : Note On Velocity Effect real time control value (See NOTE 1)
1011 nnnn	0ccc cccc	0vvv vvvv	CONTROL CHANGE ccc cccc : Control No. (1-5, 8-31, 64-90) vvv vvvv : Effect real time control value (See NOTE 1)
	0000 0111	0vvv vvvv	Master Effect Level vvv vvvv : level
	0101 1011	0vvv vvvv	Effect mute vvv vvvv : mute on/off (See NOTE 2)
1100 nnnn	0ppp pppp	---- ----	PROGRAM CHANGE ppp pppp : Program Number (See NOTE 3)
1110 nnnn	0xxx xxxx	0vvv vvvv	PITCH BENDER CHANGE xxx xxxx will be ignored vvv vvvv : Effect real time control value (See NOTE 1)

NOTE:

* nnnn = MIDI channel number (0000 - 1111)

1. Note On, Control Change and Pitch Bender Change messages are recognized only when the message and the control numbers are matched with setting on the panel.

NOTE ON : Note number is used to look up the Preset/User scale table for Pitch shifter in "MIDI->HPS" effect.

NOTE ON message can be used as the control source for gate trigger in "GATE" effect.

Pitch Bender : In "Pdl->Pitc", used as the control source to change the pitch continuously according the data byte value .

2. Effect mute function is always recognized in BASIC channel.

When value vvvvvvv is 0, Effect will be activated.

When value vvvvvvv is 127, Effect will be muted.

3. Relationship between MIDI Program No. and program No. of 9120(on the panel) is assignable.

2) RPN/NRPN

STATUS	SECOND	THIRD	DESCRIPTION
1011 nnnn	0000 0110	0vvv vvvv	MSB of DATA ENTRY vvv vvvv : MSB of parameter value (LSB of DATA ENTRY will be ignored.)
1011 nnnn	0110 0010	0ppp pppp	LSB of NRPN ppp pppp : parameter No.
1011 nnnn	0110 0011	0ttt tttt	MSB of NRPN ttt tttt : parameter select

NOTE:

1. Assignment of NRPN

NRPN		Parameter
MSB	LSB	
0	0	Effect parameter 0
	1	Effect parameter 1
	2	Effect parameter 2
	3	Effect parameter 3
	4	Effect parameter 4
	5	Effect parameter 5
	6	Effect parameter 6
	7	Effect parameter 7
	8	Effect parameter 8
127	0	Effect Category number
	1	Effect Algorithm number

- Number of Effect parameter depends on Effect Algorithm.
When the incoming NRPN LSB value is out of range, it will be ignored.
- Relationship between NRPN and Effect parameter is shown in "4. Effect parameter List".

3) SYSTEM COMMON MESSAGE, SYSTEM REAL TIME MESSAGE

STATUS	SECOND	THIRD	DESCRIPTION
1111 1000	---- ----	---- ----	TIMING CLOCK

NOTE:

- * MIDI clock is used to determine the tempo measuring the time interval. And the calculated tempo can be entered as the value of the BPM parameter in "Delay time calculator utility".

3. SYSTEM EXCLUSIVE MESSAGE

All System Exclusive(SysEx) messages are recognized in Bulk Load Menu(UTILITY [p4]) except Identity Request and Communication Request message.

1) Identity Request

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0111 1110	Universal System Exclusive Non-Real Time Header
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0110	General Information (Sub-ID #1)
0000 0001	Identity Request (Sub-ID #2)
1111 0111	EOX

NOTE:

* Recognized only.

1. When this message is received on channel No. 7FH, it should be recognized on any channel. Then, Identity Reply Message will be transmitted on Basic Channel. (Rule of Universal System Exclusive Message Communication)

2) Identity Reply

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0111 1110	Universal System Exclusive Non-Real Time Header
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH (See NOTE 1)
0000 0110	General Information (Sub-ID #1)
0000 0010	Device Identity Reply (Sub-ID #2)
0101 0010	ZOOM ID 52H
0000 0101	DEVICE ID 05H : ZOOM 9120
0000 0000	Reserved
0000 0000	Reserved
0000 0000	Reserved
0011 ssss	1000th digit of Software Revision No. '0' - '9'
0011 ssss	100th digit of Software Revision No. '0' - '9'
0011 ssss	10th digit of Software Revision No. '0' - '9'
0011 ssss	1th digit of Software Revision No. '0' - '9'
1111 0111	EOX

NOTE:

* Transmitted when Identity Request Message is recognized.
Software revision No. is 4-digits ASCII characters.

1. If MIDI channel setting parameter(UTILITY [p1])is "All" , basic channel No. is set to 1.

3) Communication Request

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 0111	FUNCTION ID 17H : Communication Request
1111 0111	EOX

NOTE:

* Recognized only.

When this message is recognized, "Bulk Load menu" will be opened. Then the "Completed" message will be transmitted.

If "Bulk Load menu" can not be opened, the "Fault" message will be transmitted.

1. When this message is received on channel No. 7FH, it should be recognized on any channel.

4) Write Request

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 0010	FUNCTION ID 12H : Write Request
0ppp pppp	Program No. ppp pppp : 1 - 99
1111 0111	EOX

NOTE:

* Recognized only.

When this message is recognized, the Program Data in Edit Buffer will be stored into Program memory #<Program No.>. Then the "Completed" message will be transmitted.

If write operation is imcompleted, the "Fault" message will be transmitted.

1. When this message is received on channel No. 7FH, it should be recognized on any channel.

5) Completed

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 0100	FUNCTION ID 14H : Completed
1111 0111	EOX

NOTE:

* This message is transmitted when received Dumps(Program Dump, All Program Dump and System Data Dump) is processed successfully, Write operation is completed for Write Request message , or Communication Request is accepted.

1. If MIDI channel setting parameter(UTILITY [p1])is "All" , basic channel No. is set to 1(00H).

6) Fault

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 1111	FUNCTION ID 1FH : Fault
1111 0111	EOX

NOTE:

* This message is transmitted when received Dumps(Program Dump, All Program Dump and System Data Dump) is processed unsuccessfully, Write operation is imcompleted for Write Request message , or Communication Request is ignored.

1. If MIDI channel setting parameter(UTILITY [p1])is "All" , basic channel No. is set to 1(00H).

7) Program Dump

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0010 0001	FUNCTION ID 21H : Program Dump
0vvv vvvv	Effect Category No. rowspan="4">} 11bytes
0vvv vvvv	Effect Algorithm No.
0vvv vvvv	Effect Parameter 0
0vvv vvvv	Effect Parameter 8
1111 0111	EOX

NOTE:

- * 11bytes of Program DATA are;
 - on transmit : Current setup data in Edit Buffer will be transmitted.
 - on receive : Received data will be stored into Edit Buffer, and current effect sound will be changed.

1. When this message is received on channel No. 7FH, it should be recognized on any channel.

8) Program Dump Request

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 0001	FUNCTION ID 11H : Program Dump Request
1111 0111	EOX

NOTE:

- * Recognized only.

1. When this message is received on channel No. 7FH, it should be recognized on any channel. Then, Program Dump message will be transmitted on basic Channel. If MIDI channel setting parameter(UTILITY [p1])is "All" , basic channel No. is set to 1(00H).

9) All Program Dump

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0010 0010	FUNCTION ID 22H : All Program Dump
0vvv vvvv	
:	Program Data x 99 : 1089 bytes
0vvv vvvv	
1111 0111	EOX

NOTE:

* Receiving "All Program Dump" is ineffective to the current active setup.

1. When this message is received on channel No. 7FH, it should be recognized on any channel.

10) All Program Dump Request

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 0011	FUNCTION ID 13H : All Program Dump Request
1111 0111	EOX

NOTE:

* Recognized only.

1. When this message is received on channel No. 7FH, it should be recognized on any channel. Then, All Program Dump message will be transmitted on basic Channel. If MIDI channel setting parameter(UTILITY [p1])is "All", basic channel No. is set to 1(00H).

11) System Data Dump

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0010 0011	FUNCTION ID 23H : System Data Dump
0vvv vvvv	
:	System Data 153bytes (See NOTE 2)
0vvv vvvv	
1111 0111	EOX

NOTE:

1. When this message is received on channel No. 7FH, it should be recognized on any channel.
2. System Data Includes
 - (1) Active MIDI Control Change number
: 0vvv vvvv(1-5, 8-31, 64-90) x 1byte
 - (2) Program Change Map : 0vvv vvvv(1-99) x 128bytes
 - (3) User scale setting : 000v vvvv(0-24) x 12bytes x2And transmitted/received in this sequence.

12) System Data Dump Request

BYTE	DESCRIPTION
1111 0000	Exclusive Status
0101 0010	ZOOM ID 52H
0nnn nnnn	Channel nnn nnnn : channel 00H-0FH or 7FH (See NOTE 1)
0000 0101	DEVICE ID 05H : ZOOM 9120
0001 0110	FUNCTION ID 16H : System Data Dump Request
1111 0111	EOX

NOTE:

- * Recognized only.
1. When this message is received on channel No. 7FH, it should be recognized on any channel. Then, System Data Dump message will be transmitted on basic Channel. If MIDI channel setting parameter(UTILITY [p1]) is "All", basic channel No. is set to 1(00H).

4. Effect parameter List

1) Relationship of Effect Category and Algorithm

Effect Category	Effect Algorithm
0 : CHORUS	0 : Chorus 1 : Chor >>Rev
1 : DELAY	0 : Mono Delay 1 : Stereo Delay
2 : PITCH	0 : Ster Pitc 1 : Pitc >>Rev
3 : SFX 1	0 : Kara Oke 1 : Surround 2 : Swp Flng
4 : SFX 2	0 : Pdl->Pitc 1 : MIDI->HPS 2 : Hold Dely
5 : E/R	0 : Early Reflection
6 : GATE	0 : Gate Reverb
7 : PLATE	0 : Plat 1 1 : Plat 2
8 : ROOM	0 : Room 1 1 : Room 2
9 : HALL	0 : Hall 1 1 : Hall 2

NOTE:

* Effect Category No. is calculated as follows;

$$[\text{Effect Category No.}] = [\text{MSB of DATA ENTRY}] \times 10 / 128$$

(Omit the figure below the decimal point)

* Effect Algorithm No. is calculated as follows;

$$[\text{Effect Algorithm No.}] =$$

$$[\text{MSB of DATA ENTRY}] \times [\text{number of Effect Algorithm in current Category}] / 128$$

(Omit the figure below the decimal point)

2) Effect Parameter List

NOTE:

1. Parameters with "*" on the side of Parm No. can be edited by SysEx or NRPN.
2. The data byte of Effect Parameter 0-8 in Program Dump should be 0 ~ ([Value steps]-1) (except Stereo Delay).
3. Parameter DATA value is calculated as follows ;

$$[\text{Parameter DATA value}] = [\text{MSB of DATA ENTRY}] \times [\text{Value steps}] / 128$$
 (Omit the figure below the decimal point)
4. Transferred/received data values are not always same with the displayed values.

0 - 0 : Chorus

Parm No.	Parm name	Value steps
0	Modulation Depth	100
1	LFO Rate	100
2	Tone	25
3	Tap Width	101
4	Color	101

0 - 1 : Chorus >> Reverb

Parm No.	Parm name	Value steps
0	Modulation Depth	101
1	LFO Rate	100
2	Delay Time	101
3	Delay Mix	101
4	Reverb Time	96
5	Reverb Mix	101
6*	Delay Feed Back	100
7*	Reverb Tone	16

1 - 0 : Mono Delay

Parm No.	Parm name	Value steps
0	Type of Effect	2
1	sec(Delay time course)	21
2	ms (Delay time fine)	100
3	Feed Back	99
4	Hi Frequency Cut	16
5	Hi Frequency Damp	16
6*	Additional Delay Tap time course	20
7*	Additional Delay Tap time fine	100
8*	Additional Delay Tap Level	101

Parm No.0 "Type of Effect" :

When value is "0", "Mono Echo" is selected.
 Value is "1", "Ping Pong".

1 - 1 : Stereo Delay

Parm No.	Parm name	Value steps
0	Type of Effect	2
1	L channel sec (Delay time course)	11
2	L channel ms (Delay time fine)	100
3	L channel Feed Back	99
4	R channel sec (Delay time course)	11
5	R channel ms (Delay time fine)	100
6	R channel Feed Back	99
7*	Additional Delay Tap time (x10 ms)	101
8*	Additional Delay Tap Level	101

Parm No.0 "Type of Effect" :

When value is "0", "Ster 2 ch" is selected.

Value is "1", "Ster X FB".

In SysEx data stream :

Set the value to "2" ,to select the "Ster 2 ch".

Set the value to "3" ,to select the "Ster X FB".

2 - 0 : Stereo Pitch

Parm No.	Parm name	Value steps
0	Shift cromatic L	25
1	Shift cent L	101
2	Mix L	101
3	Shift cromatic R	25
4	Shift cent R	101
5	Mix R	101
6*	Width	11

2 - 1 : Pitch >> Reverb

Parm No.	Parm name	Value steps
0	Pitch shift cromatic	25
1	Pitch shift cent	101
2	Pitch shift Mix	101
3	Reverb Time	96
4	Reverb Mix	101
5*	Reverb Tone	16

3 - 0 : Kara Oke

Parm No.	Parm name	Value steps
0	Vocal cancel	101
1	Key Control	11

3 - 1 : Surround

Parm No.	Parm name	Value steps
0	Mode select	2
1	Color	100
2	Delay Time	101

3 - 2 : Sweep Flanger

Parm No.	Parm name	Value steps
0	Mode select	5
1	Modulation Depth	100
2	LFO Rate	100
3	Feed Back	100

4 - 0 : Pedal -> Pitch

Parm No.	Parm name	Value steps
0	Pitch shift depth	27
1	Control Source	3
2	Sweep Time	11

4 - 1 : MIDI -> HPS

Parm No.	Parm name	Value steps
0	Base Key	12
1	L channel Interval	16
2	R channel Interval	16
3	Width	11

4 - 2 : Hold Delay

Parm No.	Parm name	Value steps
0	sec(Hold time course)	21
1	ms (Hold time fine)	100
2	Control source	2

5 - 0 : Early Reflection

Parm No.	Parm name	Value steps
0	Room Size	101
1	Tap Shape	31
2	Pre Delay Time	101
3	Density	11
4	Lo Frequency EQ	11
5	Hi Frequency EQ	11

6 - 0 : Gate Reverb

Parm No.	Parm name	Value steps
0	Reverb Time	97
1	Hold Time	56
2	Decay Time	11
3	Pre Delay Time	101
4	Density	11
5	Tone	11
6	Sensitivity	100
7	Control Source	5

7 - 0 : Plate Reverb 1

7 - 1 : Plate Reverb 2

Parm No.	Parm name	Value steps
0	Reverb Time	58
1	Pre Delay Time	101
2	Hi Frequency Damp	16
3	Attack	101
4	Density	16
5	Reverb Tone	16
6*	Early Ref Time L ch	101
7*	Early Ref Time R ch	101
8*	Early Ref Level	101

8 - 0 : Room Reverb 1

8 - 1 : Room Reverb 2

Parm No.	Parm name	Value steps
0	Reverb Time	58
1	Pre Delay Time	101
2	Hi Frequency Damp	16
3	Attack	101
4	Early Ref Level	101
5	Early Ref Time	101
6*	Density	16
7*	Reverb Tone	16
8*	Diffusion	16

9 - 0 : Hall Reverb 1

Parm No.	Parm name	Value steps
0	Reverb Time	58
1	Pre Delay Time	101
2	Hi Frequency Damp	16
3	Density	16
4	Early Ref Level	101
5	Early Ref Time	101
6*	Reverb Tone	16
7*	Attack	101
8*	Diffusion	16

9 - 1 : Hall Reverb 2

Parm No.	Parm name	Value steps
0	Reverb Time	58
1	Pre Delay Time	101
2	Hi Frequency Damp	16
3	Density	16
4	Early Ref Level	101
5	Early Ref Time	101
6*	Attack	101
7*	Reverb Time cross over	28
8*	Reverb Time H-Multiply	25

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	×	1 - 16 1 - 16	Memorized
Mode Default Messages Altered	×	1, 3 ×	Memorized
Note Number True voice	×	○	Effect Real time control
Velocity Note ON Note OFF	×	○ ×	
After Key's Touch Ch's	×	×	
Pitch Bend	×	○	Effect Real time control
Control Change	×	○ 1-5, 8-31, 64-90 7 6, 98, 99 91	Effect Real time control Master Effect Level NRPN Effect Mute
Prog Change True #	×	○(0-127) (1-99)	*1
System Exclusive	○	○	
System Song Pos Song Sel Common Tune	×	×	
System Clock Real Time Commands	×	○ ×	
Aux Local ON/OFF All Notes OFF Mes- Active Sense sages Reset	×	×	
Notes	*1; For Program 0-127, Memory No.1-99 is selected with Prog No. Assign table.		

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

Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, MONO

o : Yes
x : No

PRESET PROGRAM LIST

#	Program	Effect	Parameter Setting	★ ★
01	Ensemble Hall	Hall	P1: Hall 1 P2: 2.3 40 9 P3: 12 42 32	Concert hall simulation, perfect for any size acoustic ensemble. Edit RevT and RefT to change the perceived size.
02	Major Space	Hall	P1: Hall 2 P2: 8.0 60 13 P3: 15 12 100	Memories, dreams, reflections... inner spaces larger than the largest buildings. Excellent setting for cinematic effects.
03	Roomie	Room	P1: Room 1 P2: 1.1 36 7 P3: 72 12 0	Adds a halo of reality behind any drum machine pattern. Use sparingly for ambience on any dry source.
04	Ballroom	Room	P1: Room 2 P2: 1.5 18 5 P3: 48 40 41	Simulation of a large dance room with wood floors. Good for acoustic instrumental mixes, excellent for solo strings.
05	Cool Vocals	Plate	P1: Plate 1 P2: 2.2 0 3 P3: 85 9 10	Good vocal plate setting. HDap and Tone control tonality.
06	Rich Plate	Plate	P1: Plate 2 P2: 4.2 2 5 P3: 64 15 9	Incredibly beautiful on lyrical tracks - enhances pads, strings, choirs - add just a touch to mallet percussion.
07	Bouncing Verb	Gate	P1: 1.1 0.12 7 P2: 6 10 5 P3: 60 SigLR	Great for rock drums - adjust Tone for specific drum (raise for snares, lower for toms, etc.)
08	Acoustic Tile	E/R	P1: 100 4 5 P2: 7 4 2	Subtle ambience effect to sweeten harp, acoustic guitar, and other plucked or picked acoustic instruments.
09	Bass Chorus	Chorus	P1: Chorus P2: 25 17 -3 P3: 10 50	Works well on guitar, bass, some types of drums. Differentiates a single instrument in the mix.
10	Choral Voice	Chorus	P1: Chor>Rev P2: 24 3 300 P3: 68 16 68	Sweet reverb with chorus, nice for vocals or choirs.
11	Contra Danse	Delay	P1: Ping Pong P2: 0.7 17 0 P3: 0 14	Percussion sounds dance from left to right. Sustaining sounds are imbued with dynamic stereo motion. Three crisps distinct images. Original center, then left, then right.
12	Harmonium	Pitch	P1: Ster Pitc P2: -12 4 100 P3: -12 -18 100	Adds an extra pitch, that is chorused with itself, an octave below the input signal.
13	NuAge Solo Fifths	Pitch	P1: Pitc>Rev P2: 5 0 24 P3: 1.6 100	Adds a perfect fifth above the source signal note and then both go swimming in reverb. Adjust PMix and RMix to music.
14	Turning Japanese	SFX 1	P1: Karaoke P2: 14 0	Provides interesting phasing effect on bass sounds. Applied to a mix, vocals will be suppressed and the bass will flower.
15	Stereoize	SFX 1	P1: Surround P2: Fmt Out P3: 60 80	A spatial enhancer for stereo mixes, broadens and widens.
16	Electric Slide	SFX 1	P1: Swp Fing P2: Tri LFO P3: 16 12 92	The picks edge smoothly glides up and down the strings of the electric guitar, infusing the input sound with plastic pick on wound metal string.
17	Octave Sweep	SFX 2	P1: PdI>Pitc P2: 12 Pedl P3: 6	Use pedal or front panel trigger to send the sound gliding up an octave. Adjust the glide rate with the Swp Time.
18	Aeolian Mode	SFX 2	P1: MIDI->HPS P2: C 3 3 P3:	Harmonizes the input signal in thirds above in harmony with the aeolian scale (all white keys).
19	Two Second Capture	SFX 2	P1: Hold Dely P2: 2.0 00 P3: Int.	Set up to record and repeat a two second performance - just hit the trigger key or pedal to begin capture.
20	Piano Recital	Hall	P1: Hall 1 P2: 1.4 20 5 P3: 5 48 24	Designed to be used sparingly for solo piano tracks. Use less HDap with real pianos, more on brittle PCM samples.
21	Cathedral	Hall	P1: Hall 1 P2: 6.5 48 11 P3: 15 60 36	Developed with choral source, to simulate a large stone church. Also works as general 'wash' on complete mix used sparingly.
22	Smallhalla	Hall	P1: Hall 1 P2: 1.3 4 1 P3: 2 32 16	Suggests the spatial spread of a concert hall, but without the longer decay. Good for solo instruments or small instrument choirs (like french horns) when mixed with other effects.
23	Slapback Hall	Hall	P1: Hall 2 P2: 3.6 60 12 P3: 9 74 100	Exaggerated reflections suggest multiple effects, like DDL mixed with large reverb. Adjust RefT to match music tempo.
24	Bright Hall	Hall	P1: Hall 2 P2: 3.0 30 1 P3: 6 42 12	Low density and damping make an open, empty space. Use on smooth lyrical sources. Increase Dens for percussion.

#	Program	Effect	Parameter Setting	★	★
25	Triple Hit	Hall	P1: Hall 2 P2: 1.2 4 5 P3: 2 64 100	<i>Simulates the sound of distinct early reflections against hard walls. Use sparingly on percussion, increase HDmp for toms.</i>	
26	Far Explosion	Hall	P1: Hall 1 P2: 10.0 97 5 P3: 1 52 36	<i>The low density reflections turn a kick drum into a not too distant battle.</i>	
27	High Tower	Hall	P1: Hall 1 P2: 1.8 100 6 P3: 15 2 12	<i>A tall space, a sound that carries itself upward.</i>	
28	Bowed Room	Hall	P1: Hall 2 P2: 8.5 49 15 P3: 6 100 100	<i>Reverb that liven sustained sounds with a slight bowing motion. Solo lines leave a harmonic residue.</i>	
29	Big Blue	Hall	P1: Hall 2 P2: 2.2 49 2 P3: 12 20 33	<i>Aqueous and silky smooth. Large, loud, and clear.</i>	
30	Baroque Chamber	Hall	P1: Hall 1 P2: 0.3 0 0 P3: 0 0 14	<i>A tight, constrained, and intimate room. Designed for Harpsichord and good for piano or other instruments in need of a warming effect.</i>	
31	Inverse Reflections	Hall	P1: Hall 2 P2: 0.3 11 0 P3: 15 100 0	<i>The sound is recursive and suggestive of traveling backwards through itself. Works nice on brass, percussion, harp, and other instruments.</i>	
32	Dream Hall	Hall	P1: Hall 2 P2: 2.3 2 0 P3: 11 23 100	<i>Bright reverb with long decay for synths and ambient dreamscapes.</i>	
33	Large Chamber	Room	P1: Room 1 P2: 1.7 22 1 P3: 24 70 66	<i>Excellent reverberant wash. Reduce PreD and add more Atck to thicken source (such as vocals).</i>	
34	Cold Chamber	Room	P1: Room 1 P2: 3.0 0 15 P3: 64 6 100	<i>Long reverb decay time and lots of high damping combine create this cool ambience. Adjust Atck to color source signal.</i>	
35	Dark Room	Room	P1: Room 1 P2: 2.0 24 12 P3: 28 72 100	<i>Redeems little digital sins like a luxurious sonic coat - short loops, sample artifacts, close-miked presence, etc.</i>	
36	Ambient Age	Room	P1: Room 2 P2: 3.0 22 3 P3: 12 24 67	<i>Open & revealing, this reverb wash is perfect for synth colors & exotic percussion. Experiment raising RevT and HDmp.</i>	
37	Bath Room	Room	P1: Room 2 P2: 0.4 24 1 P3: 68 18 8	<i>Very short reverb tail and bright response suggest a small tiled room. Edit RevT for specific applications.</i>	
38	Wooden Room	Room	P1: Room 2 P2: 0.9 1 15 P3: 18 7 100	<i>General purpose wood room - can be used liberally. (More than 50% dry/wet balance, try turning down HDmp.)</i>	
39	Movie Strings	Room	P1: Room 1 P2: 5.5 73 10 P3: 77 93 82	<i>Perfect reverb to make those movie strings or that orchestral section sound huge and larger than life.</i>	
40	Mouthpiece	Room	P1: Room 2 P2: 3.0 97 0 P3: 100 100 98	<i>A deep reverb especially well suited to saxophones, oboes, other brass and woodwind instruments.</i>	
41	Piano Reverb 1	Room	P1: Room 1 P2: 4.3 48 15 P3: 100 72 56	<i>Smooth subdued reverb that brings out the tones of the piano without letting the signal get clouded or muddy. A classical acoustic grand piano sound.</i>	
42	Piano Reverb 2	Room	P1: Room 1 P2: 2.9 5 8 P3: 20 89 56	<i>Adds more sustain to the signal than Piano Reverb 1. Nice effect for electric piano or sampled piano sounds.</i>	
43	Small Bloom	Room	P1: Room 1 P2: 3.3 52 0 P3: 79 100 67	<i>Reverb patch that is designed for use with vocals or synth pads.</i>	
44	Endless Room	Room	P1: Room 1 P2: 10.0 47 7 P3: 25 31 24	<i>A long reverb tail in a room that is endless and is resistant to getting muddy. Good for use on drum hits that need to ring out as accents.</i>	
45	Lasting Effect	Room	P1: Room 2 P2: 6.5 76 0 P3: 13 29 26	<i>Reverb for fattening orchestral or synth strings, provides a big sound. Medium long decay time, sounds good with fast string runs or big majestic sustained passages.</i>	
46	Large Plate	Plate	P1: Plate 1 P2: 2.8 12 8 P3: 70 15 2	<i>Good for reverberant wash on complete mix. Lower Dens value to lighten and open up the sound.</i>	
47	Percussiveness	Plate	P1: Plate 1 P2: 1.1 1 1 P3: 100 12 14	<i>Excellent for Latin percussion tracks. Try using more reverb in the balance and increasing HDmp.</i>	
48	Plate Ambience	Plate	P1: Plate 1 P2: 0.4 4 0 P3: 64 2 4	<i>Adds electronic coating to signal. Very by increasing Dens and Tone together.</i>	
49	Bright Plate	Plate	P1: Plate 2 P2: 3.0 0 1 P3: 100 12 15	<i>High, long and sandy - perfect for turning mini snares into memorable ones. Adjust RevT to fit music.</i>	

#	Program	Effect	Parameter Setting	★	★
50	High Snap	Plate	P1: Plate 2 P2: 0.3 0 1 P3: 100 5 15	<i>Bright and to the point - adds high end ambience without a long reverb. Raise Dens for use with bass instruments.</i>	
51	Tunnel	Plate	P1: Plate 2 P2: 6.0 12 15 P3: 85 15 14	<i>Suggests a long, cool ambience. Lengthen the tunnel by increasing RevT to 10.</i>	
52	TOM Plate	Plate	P1: Plate 1 P2: 0.3 63 7 P3: 100 15 15	<i>Simulation of a big, metal plate, but this one's huge. Gives wimpy toms a long tail & a big gated reverb sound.</i>	
53	Bright Cavern	Plate	P1: Plate 1 P2: 10.0 94 0 P3: 7 1 3	<i>Deep and bright without the mud, like large caverns, constructed of marble.</i>	
54	Speedy Gonzalez	Plate	P1: Plate 2 P2: 0.3 86 12 P3: 8 15 15	<i>Reverb that takes fast musical lines, and makes them go faster. Liven up that track that is dragging.</i>	
55	Electric Plate	Plate	P1: Plate 1 P2: 3.2 27 7 P3: 100 11 15	<i>Great for electric rhythm or lead guitar. Fat and chunky, this makes for a big sound and adds sustain to the signal. Swears and lengthens the attack while retaining full impact.</i>	
56	Clean Plate	Plate	P1: Plate 2 P2: 0.7 66 8 P3: 50 4 5	<i>Go ahead and pile it high on this one, the reverb will eat it up and still sound clean. Very non-intrusive reverb with a short decay. Good for single instrument tracks, or complete mixes.</i>	
57	Straight Plate	Plate	P1: Plate 1 P2: 0.3 67 7 P3: 71 14 15	<i>Straight ahead plate sound. No frills, just reverb.</i>	
58	Synthetix	Plate	P1: Plate 1 P2: 4.3 100 0 P3: 100 15 15	<i>An ultra long decay in a beautiful, yet unnatural sounding room.</i>	
59	Gate Snare in Kit	Gate	P1: 1.0 0.20 1 P2: 10 10 3 P3: 3 SigLR	<i>Gated reverb effect for snare - adjust the Sens control to affect only the snare drum while the whole kit is playing.</i>	
60	Bare Ambience	Gate	P1: 0.8 0.10 10 P2: 42 7 7 P3: 80 SigLR	<i>Designed for clean electric or acoustic guitar playing - adding space without a lot of reverb sound.</i>	
61	Boomer	Gate	P1: 2.0 1.3 4 P2: 0 10 0 P3: 80 SigLR	<i>More bass for kicks, toms, more boom for basses (try lowering Hold and Decay or opening gate by MIDI).</i>	
62	Noise Gate	Gate	P1: 0 0.50 10 P2: 0 10 10 P3: 92 SigLR	<i>Without reverb, this becomes a simple noise gate template. Try cleaning up a humming distorted guitar track with it.</i>	
63	Percussive Box	E/R	P1: 75 15 16 P2: 10 10 6	<i>Build a small space around the drum kit without messing with a lot of verb.</i>	
64	Brass Stab	E/R	P1: 50 9 24 P2: 8 8 4	<i>Fills out horn hits with a crisp bounce. Provides subtle ambience for mallet percussion or plucked instruments.</i>	
65	Image Machine	E/R	P1: 64 2 2 P2: 10 8 5	<i>Especially designed for applications such as jazz guitar and fretless bass.</i>	
66	Hollow Body	E/R	P1: 98 12 178 P2: 3 10 4	<i>Provides an airy lightness while retaining a solid low end. Well suited to acoustic guitar, classical or modern steel string.</i>	
67	Overall Mix	E/R	P1: 100 10 46 P2: 5 6 9	<i>Adds ambience and retains clarity. A global reverb setting.</i>	
68	Wall Reverb	E/R	P1: 89 3 42 P2: 8 10 6	<i>An outdoor reverb effect. Hear the sound bounce off nearby wall surfaces and disappear into the sky.</i>	
69	Reverse Reflections	E/R	P1: 46 -12 12 P2: 10 10 3	<i>Negative tap angle (shape) adds bounce to drums. Adjust tone for drum type.</i>	
70	Lushness	Chorus	P1: Chorus P2: 58 80 12 P3: 12 83	<i>A swirling thickening effect reminiscent of the old analogs.</i>	
71	Energizer	Chorus	P1: Chorus P2: 61 39 12 P3: 3 50	<i>Great for lead sounds, B3 and other organs, anything in need of more life force. Also works as a snare fattener, on toms, whatever needs to jump out of the mix.</i>	
72	Bell Chorus	Chorus	P1: Chorus P2: 25 17 -1 P3: 10 82	<i>An effect well suited to bells & chimes such as crotales, glockenspiel, triangle, or tubular bells. Also works with electric piano and other instruments.</i>	
73	Laslie Spit	Chorus	P1: Chorus P2: 83 47 12 P3: 8 26	<i>Imparts rotary motion and a breathy "spit" to the high end. Nice on B3 organs, vocal/choir, flute. Fattens Mini Moog bass, thickens string patches. A multitude of applications.</i>	
74	Solo Flights	Chorus	P1: Chor>Rev P2: 16 32 25 P3: 44 2.2 92	<i>Designed for solo winds in a spacious texture. Tweak the DMix to change feedback as well as the level of the DDL.</i>	

#	Program	Effect	Parameter Setting	★	★
75	Lyrical Voice	Chorus	P1: Chor>Rev P2: 12 69 440 P3: 50 2.2 92	<i>Solo voices, especially long sustained vowels in ballad settings, grow very large with this multi effect.</i>	
76	Percussive Slap	Chorus	P1: Chor>Rev P2: 0 1 80 P3: 38 0.8 24	<i>Perfect with hand percussion and smaller drums which have small resonators. Play with the chorus settings to customize.</i>	
77	Basement	Chorus	P1: Chor>Rev P2: 100 1 30 P3: 100 0.5 100	<i>A big basement, kind of dark, but isolated. A Place to cut free. Hip snare sounds emerge from the Basement.</i>	
78	DDL 250ms	Delay	P1: Mono Echo P2: 0.2 50 42 P3: 1 4	<i>Simplicity is truth. This is your basic echo template.</i>	
79	Static Flange	Delay	P1: Mono Echo P2: 0.0 0.3 -96 P3: 0 1	<i>A non-modulating flange delay. Great for adding attack sheen to any sound. Adjust milliseconds to produce many tonalities.</i>	
80	Space Echo	Delay	P1: Ping Pong P2: 0.8 42 96 P3: 2 10	<i>Slowly tapering series of repeats bounce back and forth across the stereo image.</i>	
81	Phraseology	Delay	P1: Mono Echo P2: 1.6 02 26 P3: 0 0	<i>Long delay program for stacking one phrase on top of the next.</i>	
82	Resonator	Delay	P1: Mono Echo P2: 0.0 00 72 P3: 0 0	<i>Transform and fattens snare drums and other instruments.</i>	
83	Rhythm Method	Delay	P1: Ster 2 ch P2: 0.1 75 -58 P3: 0.3 49 30	<i>Ideal for generating percussive rhythms with drums or synth basses.</i>	
84	Shimmer	Delay	P1: Ster X FB P2: 0.0 55 -48 P3: 0.0 09 98	<i>Adds just a hint of sparkle and shimmer to the sound.</i>	
85	Tiney Flange	Delay	P1: Ster X FB P2: 0.0 01 98 P3: 0.0 24 98	<i>A tiny little flanger that is very well behaved.</i>	
86	Chorus Release	Delay	P1: Ster 2 ch P2: 0.0 88 -98 P3: 0.3 49 40	<i>The perfect antidote to tension, reflection and release. A widening and opening with periodic musical patterns.</i>	
87	Subtle Motion	Delay	P1: Ster X FB P2: 0.0 10 38 P3: 0.0 25 44	<i>Just a hint of chorus and motion, called for when the producer asks for something subtle for a sustaining sound.</i>	
88	Reverb Trailer	Delay	P1: Ster X FB P2: 0.9 0.0 86 P3: 0.9 49 62	<i>Wherever traveled, it follows. Reverb with delayed echos in the tail.</i>	
89	Soul Chord	Pitch	P1: Ster Pitc P2: -9 0 40 P3: -5 0 60	<i>This voices a 1st inversion minor triad, which sounds good in parallel motion, especially with vocal sources.</i>	
90	12 String	Pitch	P1: Ster Pitc P2: 0 5 92 P3: 12 2 48	<i>Guess what this is for? Right - double the sound of your six-string acoustic or electric. The original notes are also thickened by detuning.</i>	
91	Stereo Detune	Pitch	P1: Ster Pitc P2: 0 10 100 P3: 0 12 100	<i>This effect features a 22 cent pitch spread around the original source note. For a honky tonk effect, double the fine tune amounts.</i>	
92	Room Detune	Pitch	P1: Pitc>Rev P2: 0 12 72 P3: 0.7 92	<i>An all purpose sound thickener with reverb wash.</i>	
93	Euro Chord	Pitch	P1: Ster Pitc P2: 5 11 100 P3: -7 -21 100	<i>Elegant harmony complexerizer. Especially nice on pads, stabs, and strings.</i>	
94	Flangey Verb	Pitch	P1: Pitc>Rev P2: 0 -1 100 P3: 2.4 26	<i>Slight pitch detuning of input signal then fed into reverb. Provides flangey ambience effect subtle enough for use on flutes and other delicate instruments.</i>	
95	Sympathetic	Pitch	P1: Pitc>Rev P2: -12 -1 18 P3: 1.4 19	<i>A room where strings an octave below gently sound without actually being played. For pianos, basses, anything that sounds good in octaves and needs a little more activity in the low end.</i>	
96	Rising Flange	SFX 1	P1: Swp Flng P2: Stereo Up P3: 44 8 48	<i>Sounds great with sustained or plucked sounds, the ever rising mod waveform makes a buoyant musical effect.</i>	
97	Sound Pulsar	SFX 1	P1: Swp Flng P2: Stereo Down P3: 60 92 0	<i>This harmonic pulsing establishes a quiet but certain rhythm in the sound.</i>	
98	Subtle Flange	SFX 1	P1: Swp Flng P2: Mono Down P3: 15 35 25	<i>A subtle steady flange that moves forward steadily.</i>	
99	Atmosphere	SFX 2	P1: MIDI->HPS P2: b U2 U1 P3: 10	<i>Very subtle chorusy effect that lifts a sound gently away.</i>	



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