Alesis

QUADRAVERB Plus

USERS MANUAL ADDENDUM

INTRODUCTION

The *QuadraVerb Plus* is an upgraded version of the original *QuadraVerb* . The many new features that are now available are made possible by a simple software update, which requires only the replacement of its EPROM (**E**rasable **P**rogrammable **R**ead **O**nly **M**emory). The hardware of the *QuadraVerb* remains unchanged.

The operation of the *QuadraVerb Plus* is identical to the original *QuadraVerb* and all original features of the *QuadraVerb* are retained in the *QuadraVerb Plus* . All patches originally written for the *QuadraVerb* will sound the same on the *QuadraVerb Plus*. This addendum only describes the new features. Full instructions on the operation of your unit can be found in your User's Guide.

NEW FEATURES

New features available on the *QuadraVerb Plus* include Sampling, Ring Modulator, and Resonator configurations, plus the addition of Multi Tap Delay, Auto Panning, and Tremolo Modulation on original configurations where these features are applicable.

In addition, the Quadraverb's extensive MIDI implementation has been greatly enhanced to include real-time parameter control of parameters such as the Delay, Volume, and Feedback for each of the 8 individual taps in the Multi Tap Delay configuration, as well as the Auto Panning and Tremolo's Modulation Speed and Depth. Also, the Quadraverb Plus lets the user adjust parameters such as the Ring Modulator's Spectrum Shift, Output Up/Down Mix, and Delay/Reverb Up/Down Mix as well as the Pitch and Decay of the Resonator. This allows the user to achieve a greater level of creative control than ever before.

- **MULTI TAP DELAY** - The Multi Tap Delay is a new type of delay available in the 5 BAND EQ->PITCH->DELAY configuration where up to 8 taps can be defined in the delay. The Delay Time, Volume, Panning, and Feedback Amount can be individually adjusted for each tap as well.

- **SAMPLING** - The *QuadraVerb Plus* now has the ability to make a brief digital recording of the input being fed to it, commonly known as sampling.
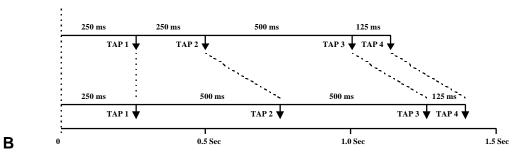
- **AUTO PANNING** - Auto Panning allows a signal to automatically pan from side to side (when the outputs are connected in stereo) at a selected rate and depth.

- **TREMOLO MODULATION** - Tremolo Modulation is an effect which automatically varies the volume at a selected rate and depth, simulating the "Surf Sound" tremolo effect found on old instrument amplifiers.

- **RING MODULATOR** - The Ring Modulator is a specialized amplitude modulator that produces an output that contains only the sum and difference frequencies of its input waveforms' harmonics. It is most useful for generating metallic, bell-like sounds.

- **RESONATORS** - A Resonator generates a pitch in addition to the original input signal, making it possible for a non-pitched sound to become pitched. There are 5 resonators in the *QuadraVerb Plus*.

MULTI TAP DELAY

The Multi Tap Delay is a new type of delay available in the 5 BAND EQ->PITCH->DELAY configuration. In this mode, up to 8 taps can be defined in the delay. The Delay Time, Volume, Panning, and Feedback Amount can be individually adjusted for each tap. The cumulative delay time of all 8 taps is 1500 milliseconds.

The Master Feedback control adjusts the global amount of feedback from all the taps, and the Mix Delay volume adjusts the amount of delay in the effect output. The Delay Time is relative to the previous tap, which means that when Tap #1 is delayed, all of the following Taps are delayed by the same amount as well. The following illustration shows how the timing of adjacent taps behave when a single delay time is modified (Tap 2 delay is changed from 250ms to 500 ms in this example):

FIGURE 7
MULTI TAP DELAYS
A

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	250 ms	250 ms	500 ms	125 ms	
	TAP 1	TAP 2		TAP 3	TAP 4

250 ms		500 ms	500 ms	125 ms
TAP 1		TAP 2		TAP 3	TAP 4

B   0   0.5 Sec   1.0 Sec   1.5 Sec

In Figure 7A, Tap #1 is set at 250ms, Tap #2 is set 250ms behind Tap #1 (500ms from the beginning), Tap #3 is set 500ms behind Tap #2 (1 second from the beginning). In Figure 7B, an additional 250ms is added to Tap #2 which means that it now occurs at 750ms (instead of 500ms as in 7A), and Tap #3 now occurs at 1250ms (instead of 1 second in Figure 7A).

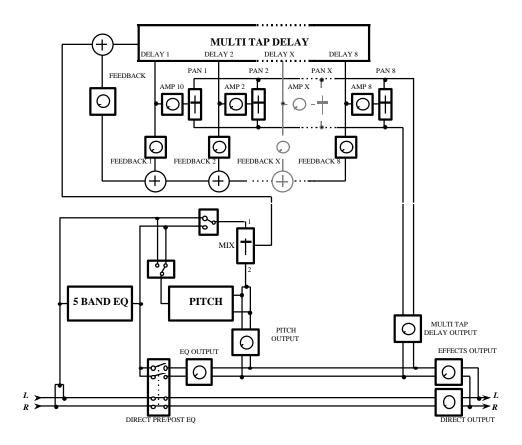# SELECTING THE MULTI TAP DELAY CONFIGURATION

Multi Tap Delay is accessed through the 5 BAND EQ->PITCH->DELAY configuration.

To select the configuration, first press the **CONFIG** button, then press the **VALUE** buttons until the display reads:

> CONFIGURATION:
> 5BAND EQ>PCH>DL

The block diagram of this configuration is as follows:

FIGURE 8
5 BAND EQ->PITCH->DELAY BLOCK DIAGRAM (with Multi Tap Delay)

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EDITING THE MULTI TAP DELAY PARAMETERS

1) To access the Multi Tap Delay parameters, press the **DELAY** button. The display will then read:

```
DELAY TYPE:
STEREO DELAY
```

Press the "Up" **VALUE** button until the next selection reads:

```
DELAY TYPE:
MULTI TAP DELAY
```

This page allows the selection of the Mono, Stereo, Ping Pong (as from the original configuration) or the new Multi Tap Delay.

2) Pressing the "Up" **PAGE** button will select the next page which will read:

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```
DELAY INPUT 1:
      POST EQ
```

Pressing the **VALUE** buttons will select the other input choice which will read:

```
DELAY INPUT 1:
      PRE EQ
```

This page selects whether the input signal to Input #1 of the Delay section is derived either before (Pre) or after (Post) the EQ. This page is also identical to the original *QuadraVerb* configuration.

3) Pressing the "Up" **PAGE** button again will select the next page which will read:

```
DELAY INPUT MIX:
      1<-00 -> PITCH
```

Pressing the **VALUE** buttons will select the mix between Delay Input #1 (which was selected on the previous page) or the second Delay input which is dedicated to the output of the Pitch section. This page is also identical to the original *QuadraVerb* configuration.

4) Pressing the "Up" **PAGE** button again will select the Delay Tap to be edited, which will read:

```
TAP NUMBER:
      1
```

Pressing the **VALUE** buttons will select the desired Tap. The range is 1 to 8.

5) Pressing the "Up" **PAGE** button again will select the Tap Delay Time page, which will read:

```
TAP 1 DELAY TIME:
      0125 millisecs
```

Pressing the **VALUE** buttons will select the desired Delay Time measured in milliseconds. The tap number selected on the previous page is displayed on the first line. *If the cumulative delay time of the 8 taps exceed 1500 milliseconds (1.5 seconds), the delay time will not be allowed to increase.*

6) Pressing the "Up" **PAGE** button again will select the individual Tap output volume to be edited, which will read:

```
TAP 1 VOLUME:
       50
```

Pressing the **VALUE** buttons will select the desired Output Volume.   The range is 0 to 99.

7) Pressing the "Up" **PAGE** button again will select the individual Tap Panning to be edited, which will read:

```
TAP 1 PANNING:
LEFT<-00->RIGHT
```

Pressing the **VALUE** buttons will select the desired Panning from Left to Right.   The range is Left 99 to Right 99.

8) Pressing the "Up" **PAGE** button again will select the individual Tap Feed-back to be edited, which will read:

```
TAP 1 FEEDBACK:
      00%
```

Pressing the **VALUE** buttons will select the desired amount of feedback. The higher the feedback value is set, the more repeats will occur. The range is 0 to 99.

9) Pressing the "Up" **PAGE** button again will select the Master Feedback to be edited, which will read:

```
MASTER FEEDBACK:
      00%
```

Pressing the **VALUE** buttons will select the desired amount of feedback. This is a global parameter, scaling the feedback of all taps at once. The range is 0 to 99.

> **PLEASE NOTE:** As a short cut, while page four through eight are active, the Tap Number under edition can be incremented by pushing the **DELAY** switch. The Tap number will fold back to 1 when Tap 8 is passed.

MODULATING THE MULTI TAP DELAY PARAMETERS

The Delay, Volume, Panning, and Feedback of each Tap, as well as the Master Feedback can also be modulated by any MIDI modulation source. This can be accomplished by referring to the *"Modulating the Parameters"* section of the *QuadraVerb* Users Manual on page 66.

EDITING THE EQ, PITCH, DELAY AND REVERB PARAMETERS

The parameters and mode of adjustment of the EQ, Pitch, and other Delay sections are identical to the original 5 BAND EQ->PITCH->DELAY configuration as found on page 76 of the *QuadraVerb* Users Manual.

SAMPLING

The *QuadraVerb Plus* now has the ability to make a 1.55 second sample of the input being fed to it. The maximum record time is 1.55 seconds. In playback, the sample start and length times can be altered for special effects or to trim the playback of the sample to the actual start point of the sound. The sample can also be played back in its entirety (one shot) or continuously repeated (looping). The playback can be further altered by having a variety of sources to trigger the sample. These sources include an incoming audio source, playback from the front panel, or a MIDI note on, note off, and note number/pitch message, which allows the sample to be played back from a MIDI keyboard.

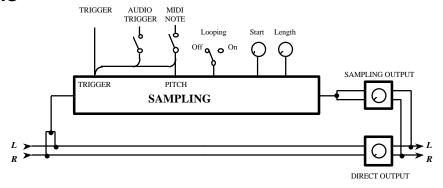## SELECTING THE SAMPLING CONFIGURATION

Sampling is accessed through new Configuration 8. All Sampling parameters reside under the **DELAY** button while in the SAMPLING configuration.

To select this configuration, first press the **CONFIG** button, then press the **VALUE** buttons until the display reads:

> CONFIGURATION:
> SAMPLING

The block diagram of this configuration is as follows:

FIGURE 4
CONFIGURATION 8
SAMPLING

RECORDING A SAMPLE

There are two ways to record a sample.   In the first (the easiest to get a good sample), the **QuadraVerb Plus** waits for the incoming audio to trigger recording. The second method requires the user to initiate recording by pressing the **BYPASS** switch on the front panel.

RECORDING BY AUDIO TRIGGER

1) Press the **DELAY** button. The display will read:

> SAMPLE PLAYBACK:
> ONE SHOT

This page is primarily for playback and can be bypassed for now.

2) Press the **PAGE** up button three times. The display will then read:

> AUDIO TRIGGER
> SAMPLING: OFF

3) Press the **VALUE** button to select the Audio Trigger On mode. The display will read:

```
┌─────────────────────────┐
│     AUDIO TRIGGER       │
│     SAMPLING: ON        │
└─────────────────────────┘
```

4) Now press the **BYPASS** button. The display will read:

```
┌─────────────────────────┐
│   WAITING FOR AUDIO     │
│      THRESHOLD          │
└─────────────────────────┘
```

5) Send a signal to the *QuadraVerb Plus*. When the first LED (-18dB) lights, the input signal has passed the audio threshold and recording has begun. *For the best recorded signal, raise the input level control so that the -6dB LED lights. The signal will be distorted if the red "Clip" LED lights.*

RECORDING FROM THE FRONT PANEL
1) Press the **DELAY** button. The display will read:

```
┌─────────────────────────┐
│   SAMPLE PLAYBACK:      │
│   ONE SHOT             │
└─────────────────────────┘
```

This page is primarily for playback and can be bypassed for now.

2) Press the **PAGE** up button three times. The display will then read:

```
┌─────────────────────────┐
│     AUDIO TRIGGER       │
│     SAMPLING: ON        │
└─────────────────────────┘
```

3) Press the **VALUE** button to select the Audio Trigger Off mode. The display will read:

```
┌─────────────────────────┐
│     AUDIO TRIGGER       │
│     SAMPLING: OFF       │
└─────────────────────────┘
```

4) Now, when ready to sample, press the **BYPASS** button. The display will read:

```
┌─────────────────────────┐
│   SAMPLING.................│
│          ..             │
└─────────────────────────┘
```

For the best recorded signal, raise the input level control so that the -6dB LED lights. The signal will be distorted if the red "Clip" LED lights.

PLAYING BACK A SAMPLE

There are three ways to play back a recorded sample: from the front panel, from an audio trigger, or through MIDI. Playback from the front panel (manual playback) would normally be used when you want to manually trigger a recorded sample. Playback from an audio trigger is normally used when replacing one audio source with a recorded sample, as in the case of replacing a snare drum on a tape track with a better recorded sample. Playback through MIDI enables a recorded sample to be played from a MIDI keyboard.

PLAYBACK FROM THE FRONT PANEL

1) Press the **DELAY** button. The display will read:

> SAMPLE PLAYBACK:
> ONE SHOT

> *One Shot means that once a sample is initiated, it will play until the end of the sample and then stop.*

2) To begin playback, press the **EQ** button. The sample will play to the end and then automatically stop. To playback again, press the **EQ** button again.

3) The volume of the sample can be increased or decreased by the **OUTPUT** control of the *QuadraVerb Plus*.

1A) If you wish to have the sample play back continuously until told to stop, press the "Down" **VALUE** button. The display will read:

> SAMPLE PLAYBACK:
> LOOPING

2A) To begin playback, press the **EQ** button. The display will then read:

> PUSH EQ TO STOP
> SAMPLE PLAYBACK

3A) To stop playback, press the **EQ** button again. The display will then read:

> PUSH EQ TO TRIG.
> SAMPLE PLAYBACK

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To play again, repeat steps 2A and 3A.

PLAYBACK FROM AN AUDIO TRIGGER
1) Press the **DELAY** button. The display will read:

```
SAMPLE PLAYBACK:
ONE SHOT
```

2) Press the "Up" **VALUE** button until the display reads:

```
SAMPLE PLAYBACK:
AUDIO TRIGGER
```

Any incoming audio signal that passes the threshold (makes the -18dB LED light) will cause the sample to play.

PLEASE NOTE:
• The recorded sample can still be manually played back by pressing the EQ button.
• "Looping" is not available in the Audio Trigger mode.
• Once a sample is audio triggered, the -18dB LED must turn off before sample can be re-audio triggered.

PLAYBACK FROM MIDI
It is also possible to MIDI trigger the recorded sample from a MIDI keyboard. This can happen in two ways. In the first, called MIDI One Shot, when a MIDI note on is received by the ***QuadraVerb Plus***, the recorded sample will play back to the selected end of the sample, regardless of how long that the key is depressed. In the second way, known as MIDI Gated, the sample will stop playing when the key has stopped being depressed. It is also possible to select the note on the keyboard that will trigger the sample at its original pitch, as well as the highest and lowest notes that the ***QuadraVerb Plus*** will respond to.

TO SELECT THE MIDI TRIGGER MODE
1) Press the **DELAY** button. The display will read:

```
SAMPLE PLAYBACK:
ONE SHOT
```

2) Press the **PAGE** "Up" button until the display reads:

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```
┌─────────────────────┐
│ MIDI TRIGGER:       │
│        GATED        │
└─────────────────────┘
```

In the MIDI Gated mode, the sample will stop playing as soon as the key is released.

3) Pressing the **VALUE** "Down" button once will select the next display, which will read:

```
┌─────────────────────┐
│ MIDI TRIGGER:       │
│        OFF          │
└─────────────────────┘
```

When the MIDI Trigger is in the "Off" state, then the ***QuadraVerb Plus*** will not respond to MIDI note on/off information.

4) Pressing the **VALUE** "Up" button two times will select the next display, which will read:

```
┌─────────────────────┐
│ MIDI TRIGGER:       │
│        ONE SHOT     │
└─────────────────────┘
```

In the MIDI One Shot mode, the recorded sample will play back to the selected end of the sample, regardless of how long that the key is depressed.

┌───┐
│ ***PLEASE NOTE:*** *If the playback mode is set to "Looping" and MIDI Trigger is set* │
│ *to One Shot, the sample will play indefinitely until the mode is changed or the* │
│ *sampling configuration is deselected.* │
└───┘

TO SELECT THE MIDI TRIGGER NOTE
1) Press the **PAGE** "Up" button. The next display will read:

```
┌─────────────────────┐
│ MIDI  TRIGGER       │
│ LOW LIMIT:   000    │
└─────────────────────┘
```

2) Press the **VALUE** "Up" button to select the lowest desired note to trigger the recorded sample. Note number 60 = Middle C.

3) Press the **PAGE** "Up" button. The next display will read:

```
MIDI  TRIGGER
BASE:      060
```

The Base value is the note where the sample will play back with no pitch change.

4) Press the **VALUE** buttons to select the desired note. Note number 60 = Middle C.

5) Press the **PAGE** "Up" button. The next display will read:

```
MIDI  TRIGGER
HIGH LIMIT:    127
```

6) Press the **VALUE** "Down" button to select the highest desired note to trigger the recorded sample. Note number 60 = Middle C.

PLEASE NOTE:
• Because of the nature of sampling, the timing of the sample as well as the pitch will change substantially the farther away from the base note that it's triggered, with the higher notes sounding like "munchkins" and the lower notes like "giants". This is a normal phenomena that occurs during sample playback.
• The pitch of the sample will follow within a 2 octave range and will loop back into the range if any note information falls outside of the 2 octave range. For instance, if the base note has been selected to note number 60 (Middle C or C3) and note number 84 (C5) is played, the sample pitch will be triggered 1 octave higher than the bass (C4).

ADJUSTING THE SAMPLE PLAYBACK LENGTH
In any playback mode it is possible to adjust the sample playback length in order to either ignore unwanted sampled material or "dead air", or in order to make a loop more musical. This is accomplished in the following manner.

1) Press the **DELAY** button. The display will read:

```
SAMPLE PLAYBACK:
ONE SHOT
```

2) Press the **PAGE** "Up" button. The display will read:

```
SAMPLE START:
0.00   SECONDS
```

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This page will determine at what point in the sample that playback will start.

3) Press the **VALUE** button to select the desired Start time.
The start can be anywhere in the sample in 10 millisecond steps. When the start of the sample is moved, the length of a loop is maintained unless the end of the sample is reached before the loop duration. In this case, the loop duration will be from the start to the actual end of the sample regardless of the loop duration. However, the duration value will remain intact and in effect as soon as the user adjustment of the loop start will permit the proper length. The range is from 0 through 1.5 seconds in 10 millisecond increments.

4) Press the **PAGE** "Up" button. The display will read:

```
SAMPLE LENGTH:
1.55   SECONDS
```

This page will determine the length of the sample playback.

5) Press the **VALUE** button to select the desired Sample length time.

ADJUSTING THE SAMPLE MIX PARAMETERS

The MIX section allow for adjusting the relative balance between the direct signal, and the recorded sample playback signal.

1) Press the **MIX** button. The display will read:

```
DIRECT SIGNAL
LEVEL:   + 50
```

This page controls the level of the direct signal.

2) Press the **VALUE** buttons to select the desired direct signal level. The range is 0 to 99 with 0 being off.

3) Press the "Up" **PAGE** button to select the next page. The display will read:

```
SAMPLE PLAYBACK
SIGNAL LEVEL:  + 50
```

This page controls the output level of the recorded sample.

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4) Press the **VALUE** buttons to select the desired recorded Sample signal level. The range is 0 to 99 with 0 being off.

PANNING AND TREMOLO MODULATION

Auto Panning and Tremolo modulation of the EQ output has been added to the EQ->PITCH->DELAY->REVERB and 5 BAND EQ->PITCH->DELAY configurations.

Auto Panning allows a signal that has first been routed through the EQ section of either of the above configurations to automatically pan from side to side at a selectable rate. Please note that the effect will only be heard when both the left and right outputs of the *Quadraverb* are in use.

Tremolo Modulation means that a signal that has first been routed through the EQ section of either of the above configurations will vary in volume at a selected rate. Both the depth and rate of the Auto Panning and Tremolo Modulation can be varied and/or modulated by any MIDI modulation source.

SELECTING THE PANNING OR TREMOLO CONFIGURATION

Auto Panning or Tremolo Modulation is accessed through the EQ->PITCH->DELAY->REVERB or 5 BAND EQ->PITCH->DELAY configurations.

To select either configuration, first press the **CONFIG** button, then press the **VALUE** buttons until the display reads:

```
CONFIGURATION:
EQ>PCH>DL>REVERB
```

or

```
CONFIGURATION:
5BAND EQ>PCH>DL
```

The block diagram of this configuration is as follows:

FIGURE 5
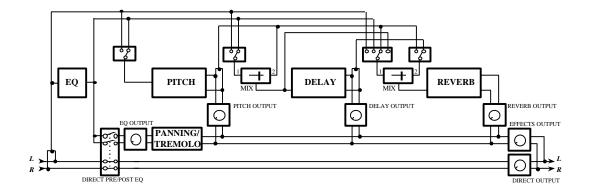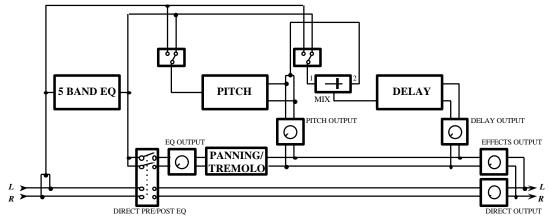**EQ->PITCH->DELAY->REVERB BLOCK DIAGRAM**

FIGURE 6
5 BAND EQ->PITCH->DELAY BLOCK DIAGRAM

EDITING THE PANNING OR TREMOLO PARAMETERS

1) To access the Auto Panning parameters, press the **MIX** button. The display will then read:

```
DIRECT SIGNAL:
PRE-EQ
```

2) Press the "Up" **VALUE** button until the next page reads:

```
DIRECT SIGNAL:
POST-EQ PANNING
```

or

```
DIRECT SIGNAL:
POST-EQ TREMOLO
```

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This page allows the selection of the direct signal going either Pre-EQ, Post-EQ (both with no panning or tremolo), or Post-EQ with Panning or Post-EQ with Tremolo.

3) Pressing the "Up" **PAGE** button repeatedly will select the Panning Depth or Tremolo Depth page which will read:

```
EQ PANNING DEPTH
        99
```

or

```
EQ TREMOLO
DEPTH      99
```

.........depending on if Panning or Tremolo was selected above.

Pressing the **VALUE** buttons will select the desired amount of Panning or Tremolo Depth.   The range is 0 to 99.

4) Pressing the "Up" **PAGE** button again will select the Panning Speed or Tremolo Speed page which will read:

```
EQ PANNING SPEED
        30
```

or

```
EQ TREMOLO SPEED
        30
```

.........depending on if Panning or Tremolo was selected above.

Pressing the **VALUE** buttons will select the desired amount of Panning or Tremolo Speed.   The range is 0 to 99.

MODULATING THE PANNING OR TREMOLO PARAMETERS

The Auto Panning Speed and Depth and the Tremolo Modulation Speed and Depth can also be modulated by any MIDI modulation source. This can be

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accomplished by referring to the *"Modulating the Parameters"* section of the **QuadraVerb** Users Manual on page 66.

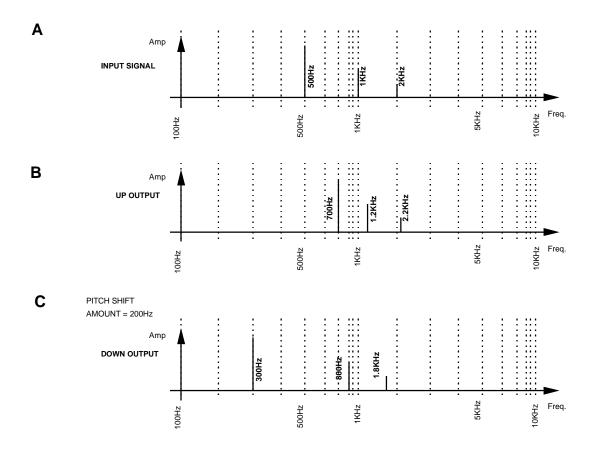# EDITING THE EQ, PITCH, DELAY AND REVERB PARAMETERS

The parameters and mode of adjustment of the EQ, Pitch, Delay and Reverb sections are identical to the original EQ->PITCH->DELAY->REVERB configuration as found on page 48 of the **QuadraVerb** Users Manual, and 5 BAND EQ->PITCH->DELAY configuration as found on page 76 of the **QuadraVerb** Users Manual.

RING MODULATOR

The Ring Modulator is a specialized amplitude modulator that produces an output that contains only the sum and difference frequencies of its input waveforms' harmonics. It is most useful for generating metallic, bell-like sounds. The Ring Modulator in the **QuadraVerb Plus** creates two signals (Up and Down) from the initial input signal. The up output signal is a version of the input signal with its harmonic spectrum shifted up, while the down output signal is the input signal with its harmonic spectrum shifted down. The amount of shift is identical for the up, and down outputs, and is specified in Hertz by the *Shift Amount* parameter.

The following illustration shows how the output spectrums relate to the input spectrum.

FIGURE 1
RING MODULATOR HARMONIC SPECTRUM SHIFT

A

INPUT SIGNAL

Amp

500Hz · 1KHz · 2KHz

100Hz · 500Hz · 1KHz · 5KHz · 10KHz · Freq.

B

UP OUTPUT

Amp

700Hz · 1.2KHz · 2.2KHz

100Hz · 500Hz · 1KHz · 5KHz · 10KHz · Freq.

C

PITCH SHIFT
AMOUNT = 200Hz

DOWN OUTPUT

Amp

300Hz · 800Hz · 1.8KHz

100Hz · 500Hz · 1KHz · 5KHz · 10KHz · Freq.

In Figure 1A, the fundamental (or frequency that we perceive as the instrument's pitch) is 500 Hz. The harmonics are normally even multiples of the fundamental, or 2 times the fundamental, 3 times the fundamental, 4 times the fundamental, etc. In this case, the 2nd harmonic is 1KHz (1000 cycles per second), or twice the fundamental of 500Hz, and the 4th harmonic is 2KHz, or 4 times the fundamental.

In Figure 1B, the Pitch Shift amount has been set to 200Hz, which means that the fundamental and all of its related harmonics are shifted **up** by the same 200Hz amount. This means that the fundamental has been shifted to 700Hz, the 2nd harmonic is now at 1.2KHz (normally it should be 2 times the fundamental, or 1.4KHz), and the 4th harmonic is 2.2KHz (normally it should be 2.8KHz).

In Figure 1C, the Pitch Shift amount is shifted **down** by 200Hz, which means that the fundamental and all of its related harmonics are shifted down by the same 200Hz amount. This means that the fundamental has been shifted to 300Hz, the 2nd harmonic is now at 800Hz (normally it should be 2 times the fundamental, or 600Hz), and the 4th harmonic is 1.8KHz (normally it should be 1.2KHz).
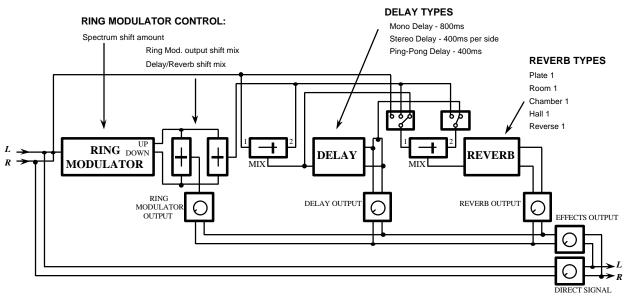
Since the ratio between the input signal's harmonics is not preserved, the resulting sound is drastically different from the original.   While usual ring modulators only provide a fixed mix of the Up and Down spectrums, the

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algorithm implemented in the *QuadraVerb Plus* gives independent access to the Up and Down version of the original spectrum. The ring modulator treatment will be most valuable for special effect on voices or sound effects.

SELECTING THE RING MODULATOR

The Ring Modulator is accessed through new Configuration 6, which is RING MODULATOR->DELAY->REVERB. The block diagram of this configuration is:

FIGURE 2
CONFIGURATION 6
RING MODULATOR->DELAY->REVERB BLOCK DIAGRAM

To select this configuration, first press the **CONFIG** button, then press the **VALUE** buttons until the display reads:

```
CONFIGURATION:
RING->DL->REVERB
```

EDITING THE RING MODULATOR PARAMETERS

1) To access the Ring Modulator parameters, press the **PITCH** button. The display will then read:

```
SPECTRUM SHIFT:
      100Hz
```

Pressing the **VALUE** buttons will select the desired Spectrum Shift. The range is 1 Hertz to 300 Hertz in 1 Hertz increments.

2) Pressing the "Up" PAGE button will select the next page which will read:

```
┌─────────────────────────┐
│   RING MOD OUTPUT       │
│   MIX:  DOWN<-00->UP    │
└─────────────────────────┘
```

Pressing the VALUE buttons will select the desired mix of Up to Down Ring Modulator outputs.

3) Pressing the "Up" PAGE button again will select the third page which will read:

```
┌─────────────────────────┐
│   DEL/REVERB INPUT      │
│   MIX: DOWN<-00->UP     │
└─────────────────────────┘
```

Pressing the VALUE buttons will select the desired ratio of Up to Down Spectrum Shift which can then be used as input for the Delay or Reverb. This differs from the second page in that it is possible to send a different mix of Ring Modulator outputs to the Delay and Reverb than the mix that will appear in the MIX section of the *QuadraVerb Plus*.

MODULATING THE RING MODULATOR PARAMETERS

The Spectrum Shift, Ring Modulator Output up/down mix, and Delay/Reverb up/down mix can also be modulated by any MIDI modulation source. This can be accomplished by referring to the *"Modulating the Parameters"* section of the *QuadraVerb* Users Manual on page 66.

EDITING THE DELAY AND REVERB PARAMETERS

The parameters and mode of adjustment of the Delay and Reverb sections are identical to the original LEZLIE-> DELAY->REVERB configuration as found on page 69 of the *QuadraVerb* Users Manual.
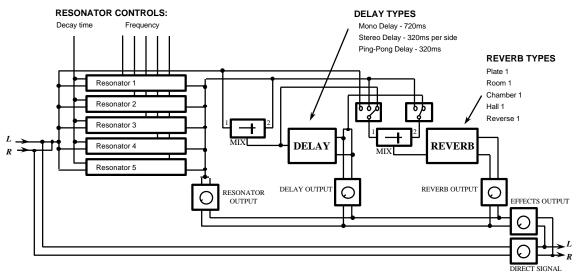
RESONATORS

Instead of just processing a signal such as Delay or Reverb, a resonator generates a pitch in addition to the original input signal. There are 5 resonators in the *QuadraVerb Plus*. The initial resonating frequency of each resonator can be individually adjusted (tuned) on a chromatic scale. The resonator frequencies also chromatically follow incoming MIDI notes. The decay time of the five resonators can also be adjusted simultaneously.

SELECTING THE RESONATOR CONFIGURATION

The Resonators are accessed through new Configuration 7, which is RESONATOR->DELAY->REVERB. The block diagram of this configuration is as follows:

FIGURE 3
CONFIGURATION 7
RESONATORS->DELAY->REVERB BLOCK DIAGRAM

To select this configuration, first press the **CONFIG** button, then press the **VALUE** buttons until the display reads:

```
CONFIGURATION:
RESONATOR>DL>REV
```

EDITING THE RESONATOR PARAMETERS

1) To access the Resonators parameters, press the **PITCH** button. The display will then read:

```
RESONATOR GATE
MODE: CONTINOUS
```

This page determines if the resonators are gated by an incoming MIDI note on/off. If the MIDI GATE is on, the input of each resonator will be connected to the input signal only while its corresponding MIDI gate is on. Consequently, when a note is released, the output of the resonator driven by this note will decay to zero even if the input signal is active. Pressing the **VALUE** buttons will select the MIDI GATED mode.

23

```
┌─────────────────────────┐
│   RESONATOR GATE        │
│   MODE: MIDI GATED      │
└─────────────────────────┘
```

┌──┐
│ **PLEASE NOTE:** When playing the resonators from MIDI, the five pitches are │
│ determined by up to five notes played on the MIDI keyboard. When used this │
│ way, the resonator's tunings should be set to zero for proper keyboard tuning. │
└──┘

2) Pressing the "Up" **PAGE** button will select the next page which will read:

```
┌─────────────────────────┐
│   RESONATOR DECAY:      │
│           49            │
└─────────────────────────┘
```

This page simultaneously adjusts the decay time of the five resonators. The range is from 0 through 99, with 99 being maximum decay time. Pressing the **VALUE** buttons will select the desired decay time.

3) The next five pages adjusts the initial pitch of resonator 1 through 5. Pressing the "Up" **PAGE** button continually will select each Resonator page which will read:

```
┌─────────────────────────┐
│ RESONATOR 1             │
│ TUNE        +00 SEMI    │
│ TONE                    │
└─────────────────────────┘
```

```
┌─────────────────────────┐
│ RESONATOR 2             │
│ TUNE        +00 SEMI    │
│ TONE                    │
└─────────────────────────┘
```

.... up to Resonator 5

Pressing the **VALUE** buttons will select the desired tuning of the resonator. The range is -24 to +36 semi tones, and covers 5 octaves from C1 through C6 (0=C3).

MODULATING THE RESONATOR PARAMETERS

The Resonator Decay can also be modulated by any MIDI modulation source. This can be accomplished by referring to the *"Modulating the Parameters"* section of the **QuadraVerb** Users Manual on page 66.

EDITING THE DELAY AND REVERB PARAMETERS

The parameters and mode of adjustment of the Delay and Reverb sections are identical to the original LEZLIE-> DELAY->REVERB configuration as found on page 69 of the *QuadraVerb* Users Manual.