

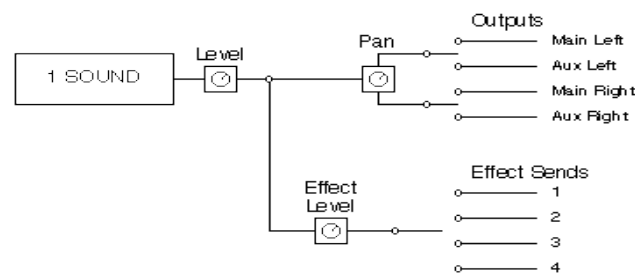
CHAPTER 7

EDITING EFFECTS

ABOUT SIGNAL PROCESSING

The built-in effects processor of the QS is similar to that of the Alesis QuadraVerb 2, capable of generating multiple, fully digital effects simultaneously. The QS effects processor has four inputs, called effect sends. You might think of these as the typical post-fader sends found on a mixing console. In a Program, each of the four Sounds can be assigned to one of the four effect sends. In a Mix, each Program can use its own effects level and bus routing or you may override these by assigning the entire Program (all 4 of its sounds) to one of the four effect sends and all at the same level. Once you assign a Sound (in Program Edit Mode) or a Program (in Mix Edit Mode) to an effect send, you can adjust the Sound's/Program's Effect Send Level.

TIP: To route a Sound/Program only to an effect send, and not the Main or Aux outputs, assign the Output parameter of the Sound/Program to "OFF," assign its Effect Bus to one of the four effect sends, and adjust its Effects Level.



The Effect Patch's *Configuration* determines the arrangement of effect functions of each effect send. Imagine a Configuration as an arrangement of multiple effects processors patched together at the end of each effect send.

Example: In one configuration, effect send 3 has its own separate reverb, while in another configuration it has its own delay and a level control feeding a reverb shared with send 1. When you're programming effects, you will need to refer to the charts on pages 88–93 for the effect configuration you're using, so you will know how the paths from different effect functions interact.

The Effect functions consist of: Pitch, Delay, Reverb and in some cases Misc. (which provides access to special effects such as EQ and Overdrive). Each function has several types to choose from. For example, the Pitch effect can be either a chorus, a flange, a resonator, etc. The Reverb can be a large hall, plate, gated, etc. The effect types available for each effect function depends on the Configuration you are using. The parameters available for an effect function depend on the selected effect type. Some effect types have very few parameters, while others have many. For example, the stereo delay effect has about twice as many parameters as the mono delay effect (since the stereo delay has two adjustments— left and right – for several parameters). Consequently, the more parameters an effect has, additional pages become available for that function. Each effect has stereo outputs, which may be routed to the MAIN [LEFT] and [RIGHT] outputs using the Mix function (this is not the same as a *Mix*, but rather a function that mixes the effects' outputs together).

SELECTING AN EFFECTS PATCH IN MIX MODE

Each Program has its own Effects Patch that is recalled when you select a Program in Program Mode. However, since a Mix can have up to 16 Programs (one on each Channel), you need to select which Channel's Program you wish to use the Effects Patch from. To select an Effects Patch, you must be in Mix Edit Mode, by pressing the [EDIT SELECT] button once so that the top line of the display reads: "ED:MIX".

Use the [80] button to select the Effect function, then press [PAGE ►] to select page 2. The display should look like this:

```
ED:MIX      πβ
FX MIDI CHAN: 01
```

This parameter lets you select which Channel (1–16) of the Mix whose Effects Patch you wish to use. If you set the Effect Channel to 1, the Mix will use the Effects Patch used by the Program on Channel 1. The Effect Channel is also used to determine what MIDI channel the Effects Patch will be set to for receiving MIDI controller information for the Modulators (see the Mod section later in this chapter for more on real-time MIDI control of effect parameters).

Press [◀ PAGE] to go back to page 1. The lower line of the display will look like this:

```
FX PRG CHNGE:0N
```

This parameter turns on and off the FX Program Change function. The FX Program Change parameter determines whether or not a MIDI Program Change message received on the Effects Channel should only recall a new Program ("Off") or if the Effects of the newly selected Program should be recalled as well ("On"). This can be set on or off. Usually you would want this off, so that the Effects in a Mix do not change even though you may select different Programs for the Effects Channel.

SETTING EFFECTS SEND LEVELS

The effect send levels and effect bus assignments are saved as part of a Program (from Program Edit Mode), or as part of each Channel in a Mix (from Mix Edit Mode). Keep in mind that these are separate from any changes that will be made to the Effects Patch itself. If you are in Mix Mode and change the settings in both Mix Edit and Effects Edit modes, you will have to STORE not only the Program that is on the Effect Channel (thus storing its Effects Patch) but the selected Mix as well, in order to have your changes remembered and heard the same way in the future. The actual arrangement of depth of reverb, delay time, etc., is saved as part of the Effects Patch when a Program is stored. It is possible for different Mixes to share the same Effects Patch. So keep in mind that when you edit an Effects Patch, it may affect the sound of any other Mixes that also use it.

CLIP

If the input to the effects becomes overloaded, the "!" symbol will temporarily appear in the upper display (between the Bank name and the Mix/Program number) when in either Mix Play or Program Play Modes. If this should occur, try reducing the Input Levels for each of the effects devices in the current configuration, and (if necessary) reduce the Effects Levels in the Mix and/or Program.

EDITING EFFECTS

The Effects Patches themselves are not edited in Program Edit Mode or Mix Edit Mode, but (could you guess it?) Effects Edit Mode. You can enter Effects Edit Mode from Program Mode by pressing the [EDIT SELECT] button twice, or until the display looks something like this:

```
ED:PRG EFFECTSπå
CONFIG: 1 REVERB
```

In Program Mode, each time the [EDIT SELECT] button is pressed the display will alternate between Program Edit and Effects Edit Modes.

You can enter Effects Edit Mode from Mix Mode by pressing the [EDIT SELECT] button three times, or until the display looks something like this:

```
ED:MIX EFFECTSπå
CONFIG: 1 REVERB
```

In Mix Mode, each time the [EDIT SELECT] button is pressed the display will cycle between Mix Edit, Program Edit and Effects Edit Modes.

NAVIGATING

The basic method of navigating through the displays in Effects Edit mode is similar to that in Program Edit Mode and Mix Edit Mode.

- The [40] – [120] buttons are used to select an effect function (Configuration, EQ, Mod, Leslie, Pitch, Delay, Reverb, Overdrive and Mix).
- If a function has more than one page, the display will indicate the current page number in the upper right corner. Use the [◀ PAGE] and [PAGE ▶] buttons to scroll through a function's pages.
- Use the [00] – [30] buttons to select which of the four effect sends you want to edit (press [00] for send 1, [10] for send 2, etc.).

The important thing to understand is the hierarchy of the displays. Think of it as a three dimensional game of Chess, where you can move among three different axes. Each function has 1 or more pages. But, the number of pages a function has available will differ when another effect send is selected (using the [00] – [30] buttons). For example, if you are using Configuration #1 and trying to edit the Reverb parameters, you would need to have effect send 1 selected, because that's where the Reverb is located. So, you not only have to be aware of how to select a function and a page, but how to select the effect send as well.

Not all effects are available in each Configuration. For example, if you were to select the Pitch function on effect send 4 in Configuration #1, the display would read, "(NOT IN CONFIG)." This is because a Pitch module is available on sends 1, 2 and 3 in Configuration #1, but not on send 4—as you can see in the chart on page 92.

STORING EFFECT PATCHES IN PROGRAM MODE

Effects are an extension of a Program. So, when you store a Program, you store its Effects Patch along with it. Once a Program's Effect Patch has been altered, the display will show a "*" next to the Program's name (if in Program Mode; when editing the Effect Patch in Mix mode, a "*" will appear next to the Program's name only when assigning Program's to the Mix's channels and the Effect Channel is selected). The "*" indicates that the current Effect Patch in the edit buffer is different from what is stored in memory for the selected Program.

While in Effects Edit mode, press [STORE] at any time to go to Store mode. Store mode has several pages, but the main storing function is found in the first page.

```
SAVE? USER 000
(Press STORE)
```

To store the edited Program along with its Effect Patch into the same location it was recalled from, simply press [STORE] again, and it will be stored. To store the edited Program into a different location, use the [00] – [120] and [0] – [9] buttons to select a Program number (000 – 127) in the User Bank. If a RAM Sound Card is inserted, use the [s VALUE] and [VALUE t] buttons to select a different Bank. When you're ready, press [STORE] to save your Program.

STORING EFFECT PATCHES IN MIX MODE

When in Mix Play Mode or Mix Edit Mode, the Effect Program number shown in the display is the Program number selected as the Effect Channel. Storing the Mix will save this number, but will not store any changes you may have made to the Effect Patch itself.

- If [STORE] is pressed twice while editing a Program that is on the Effect Channel, both the Program and its Effects will be stored.
- If [STORE] is pressed twice while editing a Program that is on a Channel other than the Effect Channel, the edited Program will be stored without altering its previous Effects settings.
- If [STORE] is pressed twice while editing a Mix (Mix Edit Mode), only the Mix parameters will be stored, not the individual Programs or the Effects Patch.

COPYING EFFECT PATCHES

When you want a Program to use the Effects from a different Program, you must copy that other Program's Effects into the Program you are working on. This is done within Store Mode using the "Copy Effect" function. First, select the Program which contains the Effects you wish to copy. And, of course, you can only copy Effects to Programs that are in the User Bank or on a RAM Sound Card Bank.

For more about copying effects, see page 36.

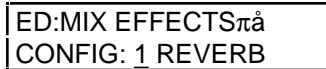
CONFIGURATIONS

A Configuration is essentially the starting point of any Effects Patch. You must select the Configuration you are going to use before making any other edits, since all routings and parameters change to their default settings each time you change the configuration. Each Configuration is a unique arrangement of multiple effect blocks, distributed across the four effect sends. Some effect sends may have three different effects (pitch, delay and reverb) on them. Configurations also determine where the signal to a block comes from, and where the output of each block goes to -- the main outputs, the next effect in line, or even to an effect block belonging to another effect send. The Configuration diagrams on the next six pages provide a crucial “road map” you’ll need to guide you through the many paths that are possible in each configuration. Refer to them as you program the effect.

The five Effect Configurations are:

- Configuration #1: 1 Reverb
- Configuration #2: 2 Reverbs
- Configuration #3: Lezlie and Reverb
- Configuration #4: Reverb and EQ
- Configuration #5: Overdrive and Lezlie

The Configuration function is used to select the Configuration for the Effects Patch you are editing. While in Effects Edit Mode, press the [40] button to select the Configuration function. The display should look like this (from Mix Edit Mode):

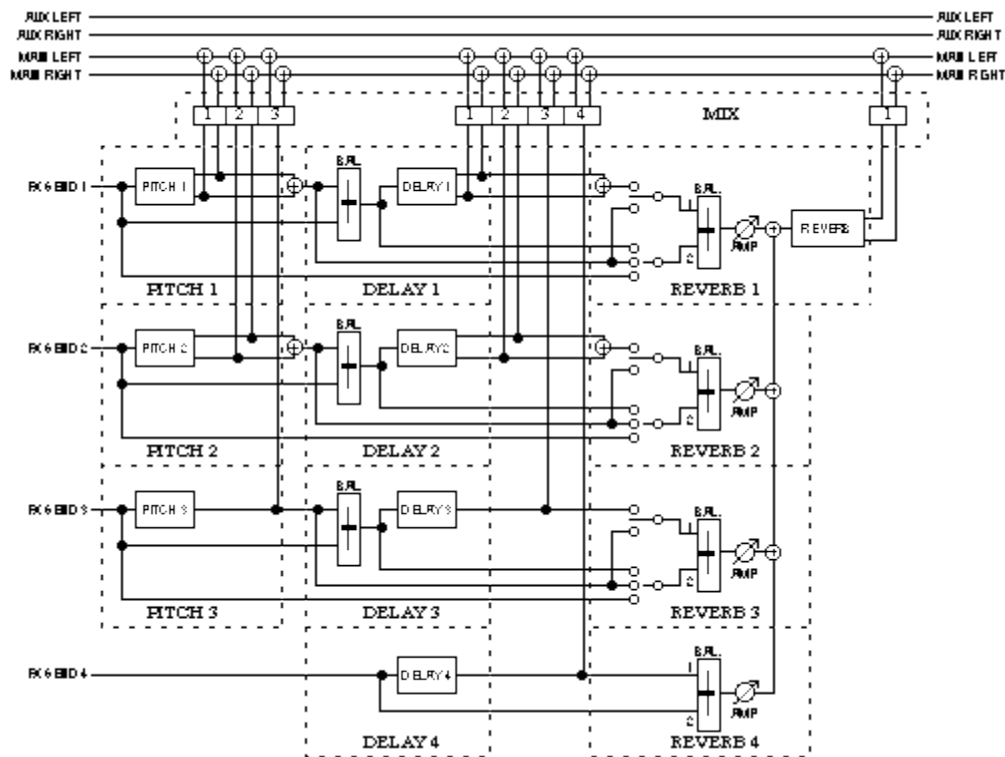


```
ED:MIX EFFECTSπâ
CONFIG: 1 REVERB
```

Use the [s VALUE] and [VALUE t] buttons or the [EDIT VALUE] slider to select the Configuration. As you scroll through the various Configurations, each one’s name will appear in the lower right section of the display.

The following is a run-down of the various Configurations:

CONFIGURATION #1: 1 REVERB



Pitch 1	Delay 1	Reverb 1
---------	---------	----------

Mono chorus	Mono delay	Plate 1
Stereo chorus	Stereo delay	Plate 2
Mono flange	Ping-pong delay	Room
Stereo flange		Hall
Pitch detune		Large
Resonator		Gate
		Reverse

Pitch 2	Delay 2	Reverb 2
---------	---------	----------

Mono chorus	Mono delay	Balance and level to Reverb 1
Stereo chorus	Stereo delay	
Mono flange	Ping-pong delay	
Stereo flange		
Pitch detune		
Resonator		

Pitch 3	Delay 3	Reverb 3
---------	---------	----------

Resonator	Mono delay	Balance and level to Reverb 1
-----------	------------	-------------------------------

Delay 4	Reverb 4
---------	----------

Mono delay	Send/delay mix and level to Reverb 1
------------	--------------------------------------

Think of the diagram as a “road map” showing all possible paths from the starting points (FX SEND 1 through 4) to the ultimate destinations (LEFT and RIGHT outputs at the top of the page). The dotted lines indicate the divisions between different functional blocks, and the solid lines indicate signal paths between the blocks and controls. The diagram is similar to a block diagram for a mixer, with signal moving generally from the left to the right. The number next to each function name represents one of the four effect sends. For example, Delay 2 refers to the Delay effect on effect send 2.

This Configuration #1 provides three Pitch effects, four Delay effects and one Reverb effect. The Pitch effects are found on effect sends 1, 2 and 3, but while the Pitch effects on sends 1 and 2 are stereo and their types are selectable (Mono Chorus, Mono Flange or Resonator), the Pitch effect on send 3 is mono and can only be used as a Resonator. Effect send 4 has no Pitch effect.

Each of the four sends has its own Delay effect, but while the Delay effects on sends 1 and 2 are stereo, the Delay effects on sends 3 and 4 are mono.

Each effect send can be routed through the Reverb. Since there is only one Reverb effect, it is found in the first effect send (see next section on Reverb). Reverb parameters that set the sound of the reverb itself (such as high and low decay, reverb type, predelay, etc.) are found only when “SND1” is displayed. However, each of the 4 effect sends has controls for how much dry signal and how much effected signal are sent to the Reverb effect.

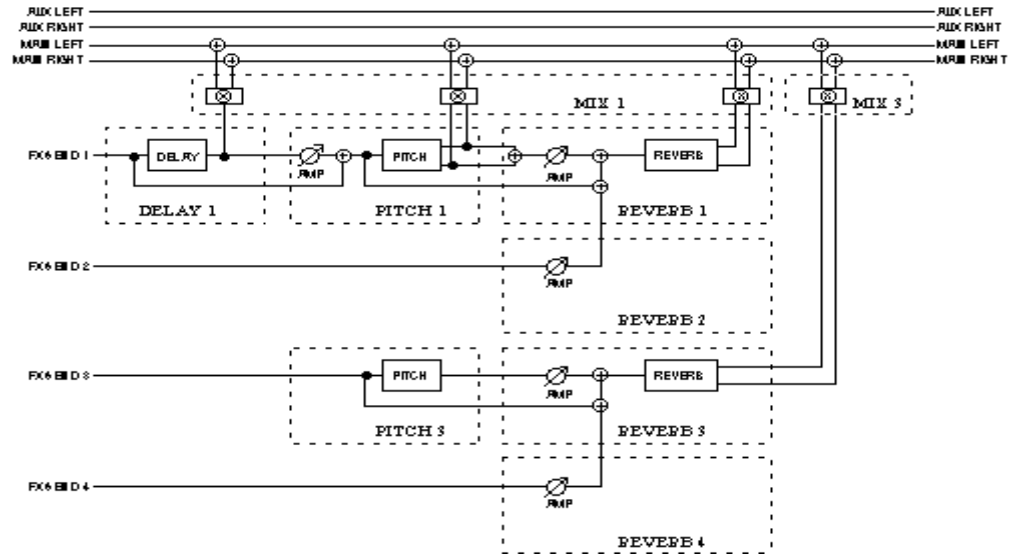
Example: The Reverb 2 block allows you to send signal to the reverb from four different points in the second effects chain: a) the send input itself, b) the output of Pitch 2, c) the input of Delay 2, or d) the output of Delay 2. You can even send a combination of these to the reverb. But to change any other reverb parameters, you must return to editing Reverb 1.

Each Pitch, Delay and Reverb module has its own independent Mix output level (i.e., how much of their output is routed directly to the Main Left and Right outputs). The Mix function is where you determine how the effects will actually be heard.

Mix 1, for example, is where you can control the outputs of Pitch 1, Delay 1, and Reverb 1 to the main outputs. The Mix parameter controls how much an effect block feeds directly to the main outputs, but doesn't control how much it feeds to any other blocks that may follow it. For example, when Pitch 1's Mix control is set to 0, it is still available as an input to Delay 1 and Reverb 1.

Think of the Mix function in the QS's effects section as being similar to the effect return control on a mixing console. For example, if Effect Send 1's Mix Reverb Output parameter is set to 0, you won't be able to hear reverb regardless of how much input you feed it from any of the effect buses.

CONFIGURATION #2: 2 REVERBS

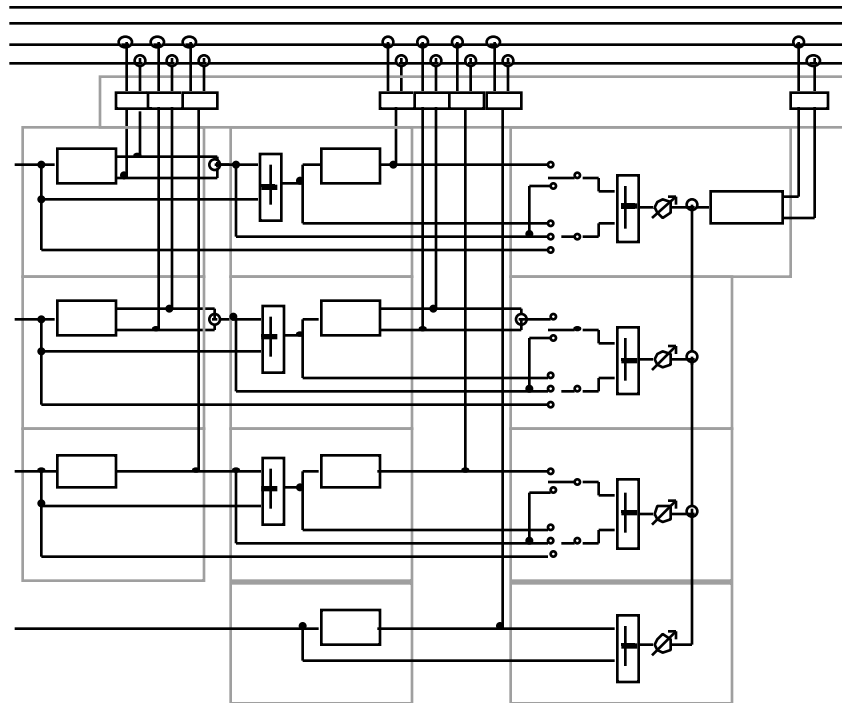


Delay 1	Pitch 1	Reverb 1
Mono delay	Mono chorus Stereo chorus	Plate 1 Plate 2 Room Hall Large Gate Reverse
		Reverb 2
		Level to Reverb 1
	Pitch 3	Reverb 3
	Mono chorus	Plate 1 Plate 2 Room Hall Large Gate Reverse
		Reverb 4
		Reverb 4 Level to Reverb 3

This Configuration differs from Configuration #1 in many ways. In this Configuration, there is only one Delay effect, two Pitch effects and two Reverb effects. Effect send 1 is routed through the mono Delay, then a stereo Pitch effect, and finally a stereo Reverb effect. Send 2 has no effects of its own, but can be routed to the same Reverb effect as send 1. Send 3 is routed through a mono Pitch effect, and then a stereo Reverb effect. Send 4 has no effects of its own, but can be routed to the same Reverb effect as send 3.

Effect send 1's Delay, Pitch, and Reverb can feed the Mix output directly. Unlike the first configuration, however, Pitch 3 can be routed to the Mix only after passing through Reverb 3.

CONFIGURATION #3: LEZLIE AND REVERB



Pitch 1	Delay 1	Reverb 1
Lezlie	Mono delay	Plate 1 Plate 2 Hall Room Hall Large Gate Reverse

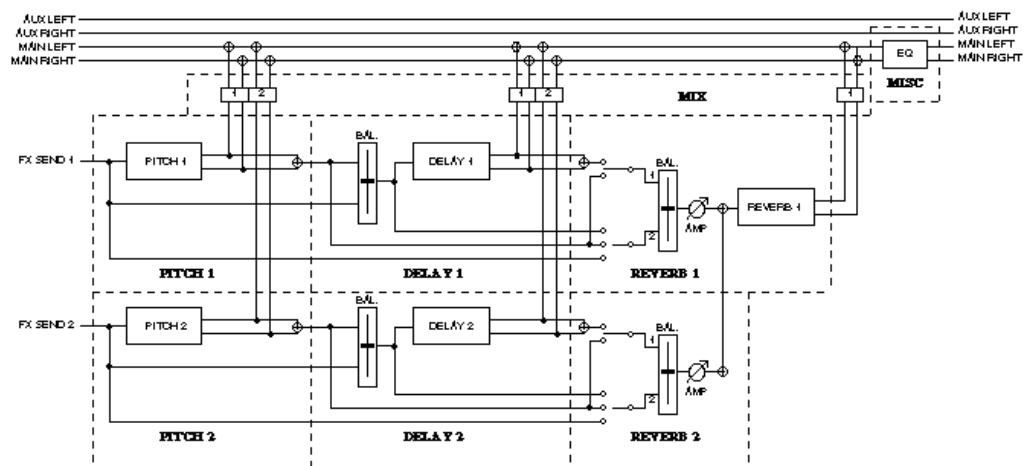
Pitch 2	Delay 2	Reverb 2
Mono chorus Stereo chorus Mono flange Stereo flange Pitch detune Resonator	Mono delay Stereo delay Ping-pong delay	Balance and level to Reverb 1

Pitch 3	Delay 3	Reverb 3
Resonator	Mono delay	Balance and level to Reverb 1

Delay 4	Reverb 4
Mono delay	Mix and level to Reverb 1

This Configuration is similar to Configuration 1, except it provides a stereo “Lezlie” effect on send 1, which emulates a rotating speaker effect commonly heard with organ sounds. This is followed by a Delay effect before going to the single stereo Reverb effect. Sends 2 and 3 have Pitch modules preceding Delay modules, which are then routed to Reverb 1. Send 4 has only a Mono Delay effect, which may also be routed to Reverb 1.

CONFIGURATION #4: REVERB AND EQ



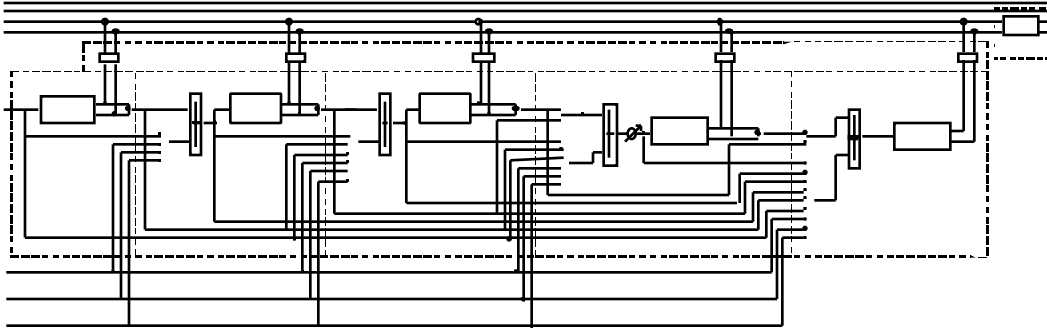
Pitch 1	Delay 1	Reverb 1
Mono chorus	Mono delay	Plate 1
Stereo chorus	Stereo delay	Plate 2
Mono flange	Ping-Pong delay	Room
Stereo flange		Hall
Pitch detune		Large
Resonator		Gate
		Reverse

Pitch 2	Delay 2	Reverb 2
Mono chorus	Mono delay	Balance and level to Reverb 1
Stereo chorus	Stereo delay	
Mono flange	Ping-Pong delay	
Stereo flange		
Pitch detune		
Resonator		

In this Configuration, note that Sends 1 and 2 are identical to that of Configuration #1. However, Sends 3 and 4 have been removed. In their place, we have added a shelving EQ module to the main outputs. This means you have bass and treble boost controls for all sounds coming out of the main outputs (not just the sounds routed to the Effects Sends).

J *If you are using Configuration #4, routing any of the Program's Sounds to Sends 3 or 4 will have no effect. In other words, it's as if you routed channels of your mixing console to effects sends that aren't connected to anything.*

CONFIGURATION #5: OVERDRIVE AND LEZLIE



Pitch 1	Delay 1	Reverb 1
Mono chorus	Mono delay	Plate 1
Mono flange	Stereo delay	Plate 2
Resonator	Ping-Pong delay	Room
		Hall
		Large
		Gate
		Reverse

This is an “all-for-one” Configuration. You get six effects all at once, and they are all found in the Send 1 section. Send 1 feeds the Overdrive effect which provides classic distortion. The Overdrive output then feeds the Pitch effect. The Pitch effect has a second input which can come from either Sends 1, 2, 3 or 4. These two inputs can be mixed together.

The Delay effect has two inputs which can be mixed together. The first input comes from the Pitch effect’s output. The second input can come from either Sends 1, 2, 3 or 4, or the Overdrive effect’s output, or Pitch effects input.

The Reverb effect has two inputs which can be mixed together. The first input can come from the Pitch effect’s output or the Delay effect’s output. The second input can come from either Sends 1, 2, 3 or 4, or the Overdrive effect’s output, or the Delay effect’s input.

The Lezlie effect has two inputs which can be mixed together. The first input can come from the Delay effect’s output or the Reverb effect’s output. The second input can come from either Sends 1, 2, 3 or 4, or the Overdrive effect’s output, or the Pitch effect’s input or output, or the Delay effect’s input, or the Reverb effect’s input.

The outputs of all these effects are routed back to the Outputs, and sent through the shelving EQ effect.

EQ

The shelving EQ is only available in Configuration #s 4 and 5. It provides bass and treble boost, and effects the entire Main Output (not just the Effects Sends). Four EQ parameters are included: Low Frequency (range: 30Hz to 180Hz), Low Frequency Gain (0dB to +12dB), High Frequency (3kHz to 10kHz), High Frequency Boost (0dB to +9dB).

Lo EQ Frequency (30Hz to 180Hz)

Page 1

This allows you to adjust the cutoff frequency of the Lo EQ. It can be set between 30Hz and 180Hz. If the Lo EQ Gain parameter is set above 0dB, all frequencies below and including the one selected by the Lo EQ Frequency parameter will be affected.

Lo EQ Gain (0dB to +12dB)

Page 2

This controls how much boost will be applied to frequencies below and including the one selected by the Lo EQ Frequency. It can be set between 0dB and +12dB.

Hi EQ Frequency (3kHz to 10kHz)

Page 3

This allows you to adjust the cutoff frequency of the Hi EQ. It can be set between 3kHz and 10kHz. If the Hi EQ Gain parameter is set above 0dB, all frequencies above and including the one selected by the Hi EQ Frequency parameter will be affected.

Hi EQ Gain (0dB to +9dB)

Page 4

This controls how much boost will be applied to frequencies above and including the one selected by the Hi EQ Frequency. It can be set between 0dB and +9dB.

MOD

The Mod Function lets you control various effects parameters from the various controls on the QS (keyboard, after-touch, pitch-bender, etc.) or from the MIDI input. This is extremely useful when dynamic or real-time control is required in a live playing situation. It is possible to control up to 2 parameters simultaneously. The Modulation assignments are saved with the Effects Patch.

Don't confuse this Mod Function with the Mod Function used by the Programs; they are independent destinations, though they can come from the same source.

Note: Modulating any effect parameter (with the exception of chorus speed) while audio is passing through it can result in audio artifacts or noises due to discontinuities in the modulation source.

SELECTING THE MODULATOR

There are two Modulators. You can select between these by using the [◀ PAGE] and [PAGE ▶] buttons. Page 1 through 3 display the parameters of Modulator #1, while pages 4 through 6 display the parameters for Modulator #2.

Mod Source**Page 1 (Mod 1) & Page 4 (Mod 2)**

The Mod Source parameter selects the MIDI controller which will remotely cause a change (modulate) in one or two of the parameters in the effects processor. Nearly every MIDI controller can become a Mod Source (using controllers A-D, set in Global mode, page 3), with the most common controllers appearing as a direct option in the display. Pages 1 and 4 let you select the Mod Source for Mod 1 and 2, respectively. The options for the Mod Source are:

- Aftertouch
- Sustain Pedal
- Mod Wheel
- Pedal 1
- Pitch Wheel
- Pedal 2
- MIDI Volume
- Controllers A–D

Mod Destination**Page 2 (Mod 1) & Page 5 (Mod 2)**

The Mod Destination is the parameter that will be controlled by the selected Mod Source. Pages 2 and 5 let you select the Mod Destination for Mod 1 and 2, respectively. The possible Destination parameters are:

- Pitch Speed
- Pitch Balance
- Delay Level
- Reverb Decay
- Reverb Diffusion
- Overdrive Bright
- Lezlie Balance
- Lezlie Motor
- Pitch Depth
- Delay Time
- Reverb Balance
- Reverb Low Decay
- Reverb Level
- Overdrive Balance
- Lezlie Level
- Pitch Level
- Delay Feedback
- Reverb Input
- Reverb High Decay
- Overdrive Threshold
- Overdrive Level
- Lezlie Speed

If the selected Configuration has a particular effect on more than one effect send (for example, Config. #1 has a delay on each send), then some Mod Destination parameters will be listed more than once. For example, the Delay Time parameter will appear four times (“D1 Time,” “D2 Time,” “D3 Time,” and “D4 Time”). In the case of Pitch, where you can choose from various pitch effects, different parameters are available depending on the effect chosen. However, the Mod Destinations retain their names. *Example:* If the Resonator is the Pitch effect, the Pitch Speed Modulation Destination controls the first parameter in the Resonator (Tuning).

Mod Level**Page 3 (Mod 1) & Page 6 (Mod 2)**

The Mod Level is the amount that the Destination parameter will be affected by the Mod Source. Pages 3 and 6 let you adjust the Level parameter by a positive or negative amount. *Example:* If the Reverb Decay was selected as the Destination with the mod wheel as the Source, the mod wheel could be programmed to cause the Reverb to increase the decay (positive) or decrease the decay (negative).

PITCH

The Pitch function is used to edit Pitch parameters.

Pitch Type

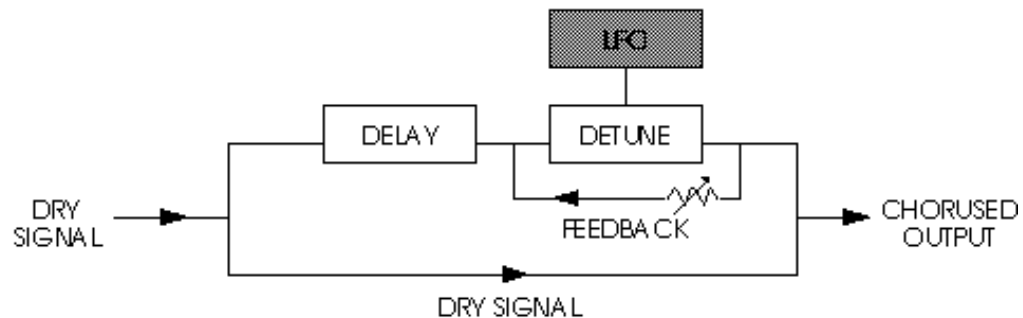
Page 1

The Pitch Type function allows access to 6 pitch altering modes. The Pitch types available are: Mono Chorus, Stereo Chorus, Mono Flange, Stereo Flange, Pitch Detune and Resonator. Although some of these effects can sound similar to one another depending on the parameter settings, each is achieved differently and can be quite dramatic under the right circumstances. Pitch effects are achieved by splitting the signal into two parts, effecting the pitch of one of the parts, then mixing them back together. This eventual mixing is essential since the overall sound of the effect is achieved by the actual difference between the normal, unaffected signal and the effected signal.

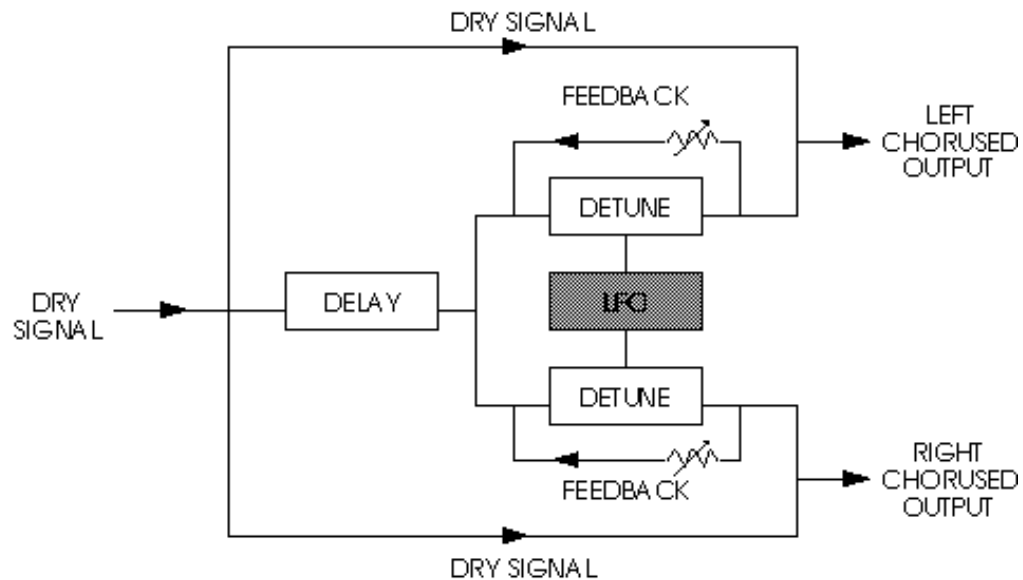
```
ED:MIX FX SND1πâ
PITCH: MN CHORUS
```

So that you can better understand the differences between the Pitch type effects, and therefore better apply them to your music, here is a brief explanation of each.

Mono Chorus. The Chorus effect is achieved by taking part of the signal, slightly delaying it, and then slightly detuning it as well. The detuning is further effected by being modulated by an LFO which causes the detuning to vary. Many variables are available in this scheme. The LFO depth can be varied, the LFO speed can be varied, and a portion of the detuned signal can be fed back to the input to increase the effect. Finally, the waveform shape of the LFO can be changed from a smooth triangle to a more abrupt squarewave to make the pitch detuning more pronounced.

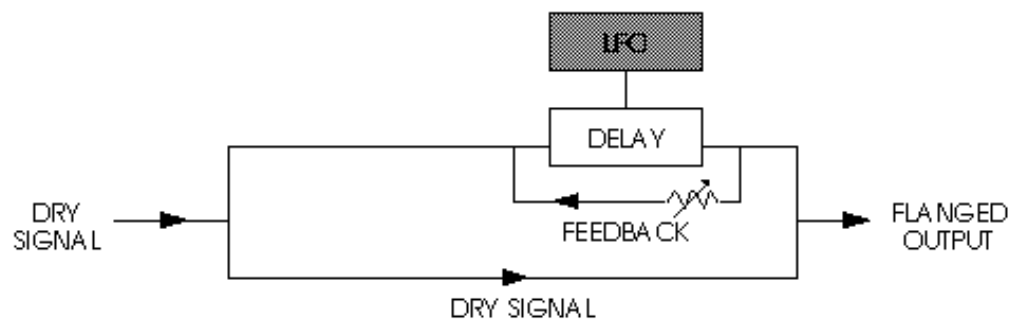


Stereo Chorus. In the case of a Stereo Chorus, the signal is split into three parts with a dry signal and a separate Detuning section for both left and right channels. When the left channel is detuned sharp, the right is detuned flat, and vice versa. Once again, this causes the effect to become more pronounced and dramatic.



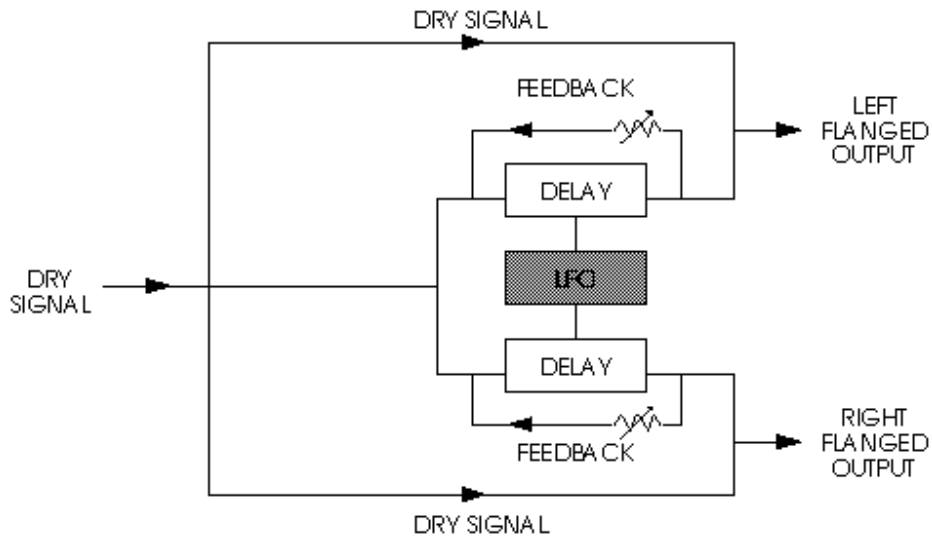
Mono Flange. First used in the 1960s, “Flanging” was achieved by the use of two tape recorders that would record and play back the same program in synchronization. By alternately slowing down one tape machine, and then the other, different phase cancellations would occur. Since the slowing down of the tape machines was done by hand pressure against the flanges of the tape supply reels, the term “Flanging” came into being.

The effect of Flanging is achieved by splitting and slightly delaying one part of the signal, then varying the time delay, again with an LFO. The delayed signal is then mixed back with the original sound to produce the “swishing” or “tunneling” sound.

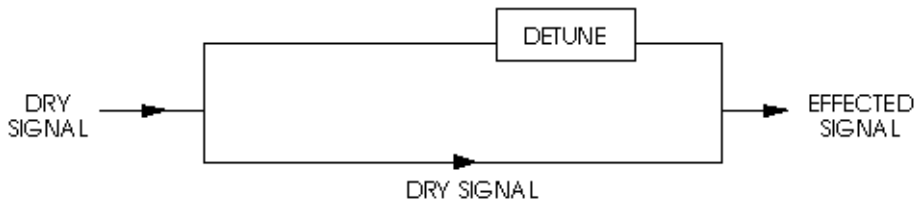


Many variables are available, from varying the speed and depth of the LFO to feeding back part of the signal to make the effect stronger. The Flanger’s feedback can be either “Normal” or “Inverted”. Use the “Inverted” setting for a more dramatic flange effect.

Stereo Flange. In the case of the Stereo Flange, the signal is split into three parts with a dry signal and a separate Delay section for both left and right channels with one channel flanging up while the other channel flanges down. Once again, this causes the effect to become more pronounced and dramatic.



Pitch Detune. As the name implies, Pitch Detune takes a part of the signal and detunes it either sharp or flat. When mixed back with the original dry signal, the popular “12 string guitar” effect is produced.



Resonator. This can be thought of as a highly resonant filter, or a filter that is tuned to a specific frequency with a lot of emphasis, which will cause the frequency that the resonator is set at to be highly accentuated.

Delay Input (<99 to <0> to 99>)

Page 2 (Config. 2 Only)

This parameter adjusts the level of the signal coming from the Delay output going into the Pitch Input. The Delay Input parameter is only available when editing a effects bus which has the Delay effect ahead of the Pitch effect in the selected Configuration (Example: Configuration #2, effect send 1).

```
ED:MIX FX SND1πβ
DEL-IN:SND<00PCH
```

If the Pitch type is Mono Chorus, Stereo Chorus, Mono Flange or Stereo Flange, page 2 through 5 of the Pitch function contain the following four parameters:

Waveform Shape (Sine or Square) Page 2

This determines the LFO's waveform shape. This parameter only appears when the Mono or Stereo Chorus or Flange are selected. The Waveform Shape of the LFO can be changed from a sine waveform, which provides a smoother, more even sound, to a square waveform, which makes the Chorus or flange effect more pronounced.

Speed (00 to 99) Page 3

This parameter adjusts the LFO Speed of all Pitch types, with the exception of Pitch Detune and Resonator.

Depth (00 to 99) Page 4

This parameter adjusts the LFO Depth of all Pitch types, with the exception of Pitch Detune and Resonator. The LFO Depth, which is the amount of pitch alteration, can be adjusted to produce the desired effect.

Feedback (00 to 99) Page 5

This parameter adjusts the LFO Feedback of all Pitch types, with the exception of Pitch Detune and Resonator. A portion of the output of the Pitch section can be "fed back" into the input in order to make the effect more tonal or pronounced.

The following three parameters only appear if the Pitch type is set to Pitch Detune or Resonator, respectively.

Detune (-99 to +99) Page 2 (Pitch Detune only)

If the Pitch type is Pitch Detune, page 2 will have only this parameter. This adjusts the tuning of the Pitch Detune effect. This can be set between -99 and +99, in 1 cent increments.

Resonator Tuning (00 to 60) Page 2 (Resonator only)

If the Pitch type is Resonator, page 2 of the Pitch function will let you adjust the Resonator tuning. This can be tuned from 00 to 60.

Resonator Decay (00 to 99) Page 3 (Resonator only)

If the Pitch type is Resonator, page 3 will let you adjust the Resonator Decay. This can be set 00 to 99, whereby 00 is a very fast decay and 99 is a very slow decay.

DELAY

The Delay function is used to edit Delay parameters. The QS's effects processor has three different Delay types available.

Note: Some Configurations only feature a mono Delay, and therefore the Delay Type parameter will be unavailable. Instead the parameters normally found on page 2 of the Delay function are shown in page 1, and there are no other pages (please refer to next section for a description of those parameters).

Delay Type (3 types)

Page 1

Ping-Pong. This is called a “Ping Pong Delay” because the output bounces from side to side (left to right) in stereo with the speed determined by the delay time. The maximum delay time is 399 milliseconds.

Stereo Delay. The Stereo Delay is actually two separate delays, which can be individually varied. The maximum delay time for each delay is 399 ms.

Mono. The Mono Delay has the advantage of twice the available delay time, or 799 ms in Configuration #1, 1199 ms in Configuration #2.

In Pages 2 through 5 of the Delay Function you will find the remaining parameters for the Delay function. If the Stereo Delay type is selected, you can use [PAGE ►] to advance through pages 6 – 8. This is because the Stereo Delay type has parameters for both the Left and Right channels.

Input (<99 to <0> to 99>)

Page 2

This parameter is used to balance the Delay Input between the signal coming from the Pitch effect output (if applicable in the selected Configuration) and the dry effect send.

Time (0 to 799ms total) Pages 3 & 4 (and 6 & 7 in Stereo Delay)

This is the actual Delay time, which determines the amount of time the input signal will be delayed. The Stereo and Ping Pong Delay types can have a delay time of up to 399ms. However, the Mono Delay can have up to 799ms per channel. Use Page 3 to adjust the delay time in 10 ms intervals; use page 4 to adjust the delay time in 1 ms intervals. When using the Stereo Delay, pages 3 & 4 let you adjust the delay time of the left channel, while pages 6 & 7 let you adjust the same for the right channel.

Feedback (00 to 99)

Page 5 (and Page 8 in Stereo Delay)

This adjusts the Delay Feedback, which is a portion of the delay signal output being “fed back” into the input. This results in the delay repeating itself. The more feedback, the more repeats. When using the Stereo Delay, page 5 lets you adjust the feedback level of the left channel, while page 8 lets you adjust the same for the right channel.

REVERB

Reverb can be thought of as a great number of distinct echoes, called reflections, that occur so fast that our ear hears them blurred together as one. In nature, different sized spaces give distinctly different sounding reverbs, depending on the size and shape of the space, and the texture of surfaces that the reflections bounce off of. The various parameters in the effects processor make it possible to simulate nearly any natural reverberant space that can be imagined, and a few artificial ones as well.

ED:MIX FX SND1	πå
RVB-IN1:	PITCHout

The Reverb function is used to edit Reverb input levels and other parameters. In all configurations, page 1 of the Reverb function selects what the reverb is “hearing” (i.e., where the input of the reverb is coming from). The source can come directly from the Effect bus, the output of other effects in the chain before it, or a mix of several of them. *Example:* In Configuration #1, page 1 of the Reverb function (shown above) allows you to select the first of two sources to be routed to the reverb’s input. You can choose from the Delay output or the Pitch output. In page 2, you can choose the second input for the reverb to process, which can be the dry, send 1 signal, the Delay output or the Pitch output. You can then adjust a balance between these on page 3 and set an overall input level on page 4.

INPUT LEVELS

Input 1

Page 1 (Config 1, 3, 4 and 5)

In Configurations 1 and 3, there are two inputs to the Reverb. Both Inputs 1 and 2 can select a signal from several locations in the signal chain. You can select either the Pitch output or the Delay output as Input 1. If the signal is taken from the Pitch output, the Reverb will be chorused, flanged, detuned or resonating, depending upon which Pitch type is selected. (Note that the delay signal may already have passed through the Pitch module, depending on the Input settings of the Delay module.)

Input 2

Page 2 (Config 1, 3, 4 and 5)

Input 2 can have as its source either the Pitch output, the Delay output, or the dry effect send signal. If the signal is taken from the Delay output, the Reverb will be delayed by the amount of delay time set for the Delay. If the signal is taken from the Pitch output, the Reverb will be chorused, flanged, detuned or resonating, depending upon which Pitch type is selected. If the signal is taken from the effect send, the Reverb will receive direct, unaffected signal.

Input Balance (<99 to <0> to 99>)

Page 3 (Config 1, 3, 4 and 5)

This allows you to control the balance between Reverb Inputs 1 and 2 and therefore control the blend between the various input sources. This makes it possible to have the signal from the Pitch or Delay sections, or the direct effect send in any combination or amount.

Input level (00 to 99)

Page 4 (Config 1 and 3)

This controls the overall Input Level going into the Reverb.

Chorus Input Level (00 to 99)**Page 1 (Config 2 Only)**

If Configuration #2 is selected (refer to block diagram of Configuration #2, earlier in this chapter), the first page of the Reverb function will look like this:

```
ED:MIX FX SND1πå
RVB CHRin LEV:08
```

The Configuration has two Reverbs, one on send 1 (which send 2 can share), the other on send 3 (which send 4 can share). There is only one parameter in this page: Chorus Input Level. This lets you adjust the level of the signal coming from the Pitch output going into the Reverb, otherwise the signal comes purely from the Pitch input.

The other parameters and pages in the Reverb function are identical, regardless of which Configuration is being used. Only page 1 is different, because of the fewer input choices the Reverb has in this Configuration.

Send Input Levels (<99 to <0> to 99>) Page 1 (Sends 2 through 4)

If Configuration #1 is selected and you press [10] to select effect send 2, the display will now show you the parameters that represent the signal levels on send 2 going into the Reverb. Note that there is now only 1 page available, since the other reverb parameters are found back on effect send 1.

Press [20] to select send 3, and the display will still look the same, but now the parameters adjust the signal levels on send 3 going into the Reverb. If you press [30] to select send 4, the display will look like this:

```
ED:MIX FX SND4πå
RVB-IN:SN4<35DEL
```


There are only two parameters: Balance and Input Level. This is because in Configuration #1, effect send 4 only has a Delay effect, and not a Pitch effect like the other effect sends do. Page 1 controls the Balance between the Delay output and the dry effect send signal, while page 2 controls the overall input level to the Reverb.

If Configuration #2 is selected and you press [10] to select effect send 2 while the Reverb function is selected, the display will look like this:

```
ED:MIX FX SND2πå
RVB-IN SEND2: 99
```

This lets you adjust the level of the signal coming from effect send 2 going into the Reverb. Send 2 in this Configuration has no effects of its own. Therefore, there are no input or input mix controls in this page, since there is only one possible signal choice. Send 2 is intended to be used for signals that you want to send to Reverb 1, but bypass Delay and Pitch 1. In Configuration #2, send 4 is similar to send 2, in that it has no effects of its own but serves as a bypass going directly to Reverb 3.

REVERB PARAMETERS

Use the [PAGE ] button to advance the display through the remaining pages of the Reverb function. However, you must have the correct effect send selected (1–4) in order to get at the Reverb parameters (in Config. #1, the Reverb parameters are found only on effect send 1; in Config. #2, they are found on sends 1 and 3 since there are two separate Reverbs). Here you will find parameters for selecting the Reverb type, adjusting Pre-Delay Time and Pre-Delay Mix.

Reverb Type (7 types)

Page 5

The QS has seven different reverb types, all stereo, each of which simulates a different space or produce a different ambient effect. The different Reverb types are:

Plate 1 & 2. The two Plate reverb types simulate an artificial device known as a Plate. In the early days of recording, Plates were extremely popular because they were almost the only way to provide any sort of artificial ambiance to a recording. The sound of a well-tuned Plate has become quite popular over the years especially when used on vocal or drum sounds. The two Plate reverbs differ in subtle tonal characteristic changes such as those found in different manufacturers' plate reverbs.

Room. The Room reverb type simulates not only rooms of different sizes, but rooms with different surface materials. A room with soft surfaces such as carpet will produce a reverberant sound with much less high end (treble) than a room with hard surfaces. This reverb type can easily simulate both examples and many, many more.

Hall. Much larger than a room, Halls are characterized by their high ceilings, irregular shapes, and generally uniform density of reflections.

Large. Much larger than a hall, this reverb type emulates large ambient spaces such as amphitheatres, gymnasiums, etc.

Gate. Gated Reverb is a very popular effect on drums first found on English records in the early 1980s. This reverb type can simulate applying a noise gate (a device that automatically decreases the volume once the signal falls below a certain level) across the output of the reverb thereby causing the initial attack of the reverb to sound very big, but the tail of the reverb to be cut off very quickly. Although this effect is not found in nature, it works great for modern drums, percussion, and any quickly repeated, transient source.

Reverse. The Reverse Reverb type is an inverted reverb in which the volume envelope is reversed. This means that the signal begins softly but grows louder until it is cut off, rather than loud to soft as normal.

Pre-Delay Time (0 to 299ms)

Pages 6 & 7

Pre-Delay is the slight delaying of the Reverb itself so that the dry signal more easily stands out from the Reverb. A bit of Pre-Delay can sometimes make certain instruments (such as snare drums) sound bigger. Use page 6 to adjust the Pre-Delay Time in 10ms intervals, and/or use page 7 to adjust the Pre-Delay Time in 1ms intervals. This Pre-Delay is part of the Reverb itself; don't confuse it with the separate Delay modules available under the Delay function.

Pre-Delay Mix (<99 to <0> to 99>)**Page 8**

This allows you to mix the amount of Pre-Delay into the Reverb signal path. This gives you the ability to hear a bit of the Reverb before the loudest part of the Reverb (the Pre-Delayed Reverb) sounds. This makes for bigger and smoother sounding Reverb settings.

Input Filter (00 to 99)**Page 9**

This adjusts the frequency of the low-pass filter which comes before the Reverb input. Lower the Input Filter value to remove high frequencies from the input signal before they go into the Reverb.

Decay (00 to 99)**Page 10**

The Reverb Decay determines how long the Reverb will sound before it dies away. When using the Reverse Reverb type, Reverb Decay controls the Reverse Time.

Low Decay and High Decay (00 to -99)**Pages 11 & 12**

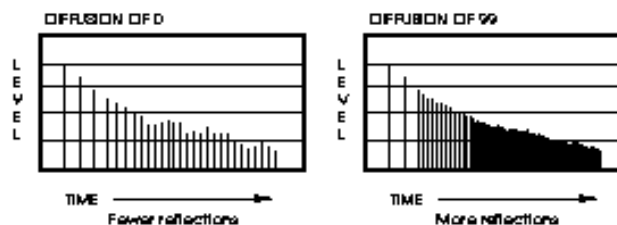
These two parameters allow the Decay Time to be set separately for both the low and high frequencies of the Reverb. This means that you have control over the tonal shape of the Reverb itself, being able to make the high frequencies die faster if the effect is too bright, and being able to make the lows die faster if the effect is too boomy. This allows you to simulate different surfaces of a room or hall, with softer surfaces absorbing more high frequencies and smaller rooms having faster low frequency decay. If the selected Reverb type is Gate, the Low Decay parameter is unavailable.

Density (00 to 99)**Page 13 (Page 12 if Gated or Reverse type)**

Density controls how the first reflection of the reverb effect will appear. When set to 0, the first reflection is heard alone without any other reflections. When set to 99, the first reflection appears to “fade-in” and then “fade-out”. This is because a number of reflections will occur just before and just after the first reflection, in addition to the remaining reflections heard after the first reflection; the reverb sounds more “dense”. If the select Reverb type is Large, the Density parameter is unavailable.

Diffusion (00 to 99)**Page 14 (Page 13 if Gated or Reverse type)**

Diffusion determines the “thickness” of the reverb sound by adding more reflections to the reverb’s decay. With lower diffusion settings, you may be able to actually hear the individual echoes that make up the overall reverb sound. With higher diffusion settings, the echoes increase in number and blend together, washing out the reverb’s decay. Greater diffusion works better with percussive sounds, whereas less amounts of diffusion work well with vocals and other sustained sounds.



Note: The illustration above reflects a Density setting of 0.

OVERDRIVE

The Overdrive effect provides four parameters spread across four editing pages. It is only used in Configuration #5.

Overdrive Type (Hard or Soft) Page 1

This selects one of two Overdrive Types: Soft and Hard. The Soft Overdrive has less gain and provides slightly less distortion than the Hard Overdrive. Also, there will still be a slight bit of distortion when using the Soft setting, if the signal feeding the Overdrive effect is below the Overdrive Threshold setting (see below). The Hard setting will only provide distortion when the signal feeding the Overdrive effect is above the Overdrive Threshold setting.

Overdrive Threshold (00 to 99) Page 2

This sets the level the signal feeding the Overdrive effect must be reach before the Overdrive effect will begin distorting. It can be set between 00 and 99. If this number is very low, the Overdrive effect will start to distort almost right away. When set to a high number, the distortion will not occur until the signal feeding the overdrive becomes louder than the Threshold setting.

Overdrive Brightness (00 to 99) Page 3

This sets the tone of the Overdrive effect. It can be set between 00 and 99. Higher numbers result in a brighter sounding overdrive. Lower numbers result in a duller distortion sound.

Overdrive Balance (<99 to <0> to 99>) Page 4

This controls the output mix of the Overdrive effect. It can be set anywhere from “<99” to “<0>” to “99>”. When set to “<99”, the Overdrive effect cannot be heard at all. When set to “<0>”, you have an even mix between the original, unaffected signal and the overdriven signal. When set to “99>”. only the overdriven effect is heard.

MIX

Not to be confused with an actual Mix or Mix mode, the Effect's Mix function is where you can mix the various signal levels of all the effects to the Main Left and Right outputs of the QS. Only effect modules that have access to the Main outputs will appear on the Mix page. There is a separate Mix page for each of the four effect busses whose effect modules feed the main output. Note that the Mix page doesn't control how much the individual effect modules feed to each other; only how much they feed to the Main outputs.

ED:MIX FX SND1
PITCH OUTPUT: 00

Depending on the selected Configuration, the order of the effects will differ (for example: in Configuration #1, the order reads Pitch, Delay, Reverb; but in Configuration #2, the order is Delay, Pitch, Reverb).

Pitch Level (00 to 99) Page 1 (Config 1 and 4); Page 2 (Config 2 & 5)

Adjusting this value will cause the Pitch Output Level to increase or decrease. The Pitch Output level is the level for the Pitch Section of the QS's effects processor to the Main outputs, and should be set as desired. Even if this parameter is set to 00, the output of the Pitch section is still available (depending on the bus and configuration) to following Delay and Reverb sections.

Delay Level (00 to 99) Page 2 (Config 1, 3, 4); Page 1 (Config 2); Page 3 (Config. 5)

Adjusting this value will cause the Delay Output Level to increase or decrease. The Delay Output level is the level for the Delay Section of the QS's effects processor to the Main outputs, and should be set as desired. Even if this parameter is set to 00, the output of the Delay section is still available (depending on the bus and configuration) to following Pitch and Reverb sections.

Reverb Level (00 to 99) Page 3 (Config. 1 – 4); Page 4 (Config. 5)

Adjusting this value will cause the Reverb Output Level to increase or decrease. The Reverb Output level is the level for the Reverb Section of the QS's effects processor to the main outputs, and should be set as desired.

Lezlie Level (00 to 99) Page 1 (Config. 3); Page 5 (Config. 5)

This is only available in Configurations 3 and 5. Adjusting this value will cause the Lezlie Output Level to increase or decrease. Even if this parameter is set to 00, the output of the Pitch section is still available (depending on the bus and configuration) to following Delay and Reverb sections.

Overdrive Level (00 to 99) Page 1 (Config. 5 Only)

This is only available in Configuration 5. Adjusting this value will cause the Overdrive Output Level to increase or decrease. The Overdrive Output level is the level for the Overdrive Section of the QS's effects processor to the main outputs, and should be set as desired.