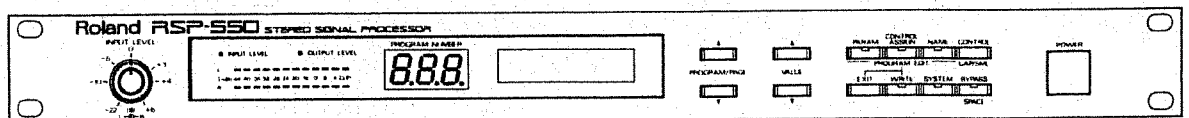


Roland

STEREO SIGNAL PROCESSOR

RSP-550

ALGORITHM GUIDE



KEY TO THE ALGORITHM GUIDE

This guide is organized so that you can easily, speedily find information about the composition and functioning of each of the algorithms. As such, it forms a convenient reference that can be used when creating effects programs, or when making settings for Control Assign.

*** For instructions on how effects are created, refer to the Owner's Manual.**





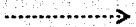
This guide is organized as follows:

- The Preset Area (Program Numbers 161 to 199) provides the fundamental settings for 39 different algorithms. Within this guide, they can be looked up by either Algorithm Name or by Program Number.

- At the top, the display page for the algorithm as it appears in the Play mode is shown, and an explanation of the algorithm's characteristics is provided.

- **Block Diagram**

The diagram graphically details the composition of the algorithm. The meanings of symbols used are as follows:

	A parameter within the same effector.
	An effector which cannot be turned off. (An effector that matches one of the criteria below.) The effector is the only one the algorithm contains. The effector is the most fundamental one of those used by the algorithm.
	An effector which can be turned On/Off.
	A filter providing automatic processing, or a unit controlling an effector.
	Control signals.

- **Parameters**

All parameters forming the algorithm, and the range of settings possible for them are shown.

*** For further details on how certain parameters work, refer to "How the Parameters Function," p. 67.**

- **Control Assign**

Shown here are the parameters that can be specified for Control Assign.

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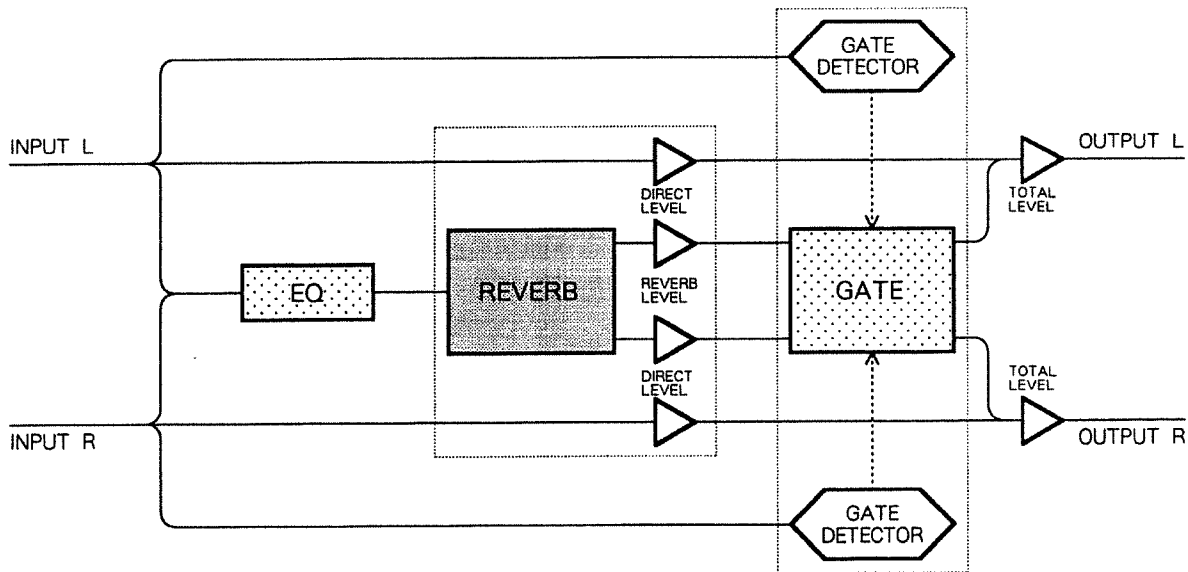
161 : Hall 1

***** Hall 1 *****

A reverb that simulates the reverberation of a large hall. Provides a quality that is virtually identical to the real thing. This is due to the fact that it employs early reflections and a high density reverberation, and in addition, offers 3-band equalization for controlling the tone of the reverberant sounds. Combined with use of a gate, you can obtain effects unobtainable with conventional gate reverbs.

- * The reverberation effect cannot be turned off.
- * The timbre of the reverberant sound's early reflections cannot be altered by means of equalization.

Block Diagram



Parameters

Reverb		Gate		Equalizer	
Reverb Time	0.1 to 480.0sec	Threshold Level	1 to 100 %	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Hold Time	100ms to 7.5s	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Attack Time	10ms to 1.2s	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Release Time	10ms to 7.5s	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120 %	Leftover Level	0 to 100 %	Total Level	- 12.0 to + 12.0dB
Early Refraction Pre Delay	0 to 450ms				
Early Refraction Level	0 to 100 %				
Reverb Level	0 to 100 %				
Direct Level	0 to 100 %				
				Total Level	0 to 100 %

 Control Assign

Reverb	Reverb Time
	Reverb Level
Gate	Gate On/Off
	Hold Time
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

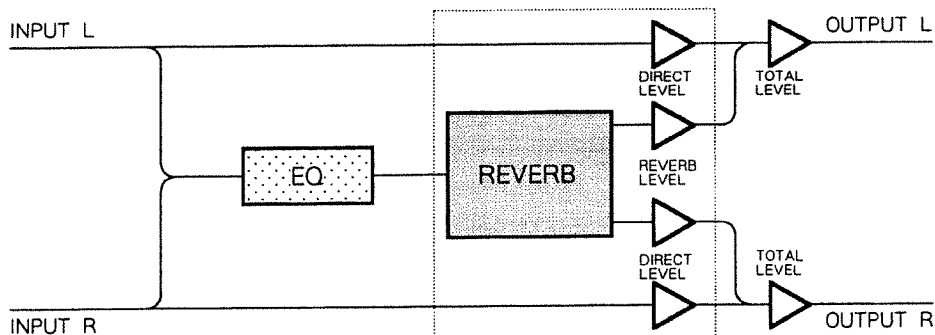
162 : Hall 2

**** Hall 2 ****

A reverb that simulates the reverberation of a hall. Has a distinctive character in the middle range that makes it effective for use with vocals or the guitar. Provides 3-band equalization for controlling the tone of the reverberant sounds.

** The reverberation effect cannot be turned off.*

Block Diagram



Parameters

Reverb		Equalizer	
Reverb Time	0.1 to 480.0sec	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120 %	Total Level	- 12.0 to + 12.0dB
Reverb Level	0 to 100 %	Total Level 0 to 100 %	
Direct Level	0 to 100 %		

Control Assign

Reverb	Reverb Time
	Reverb Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

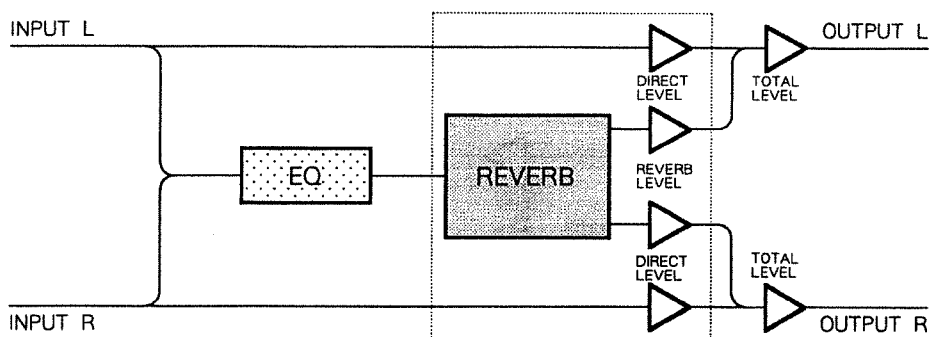
163 : Hall 3

**** Hall 3 ****

A reverb that simulates the reverberation of a hall having walls made of fairly hard materials. Provides a bright effect. Offers 3-band equalization for controlling the tone of the reverberant sounds.

- * The reverberation effect cannot be turned off.
- * The timbre of the reverberant sound's early reflections cannot be altered by means of equalization.

Block Diagram



Parameters

Reverb		Equalizer	
Reverb Time	0.1 to 480.0sec	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120%	Total Level	- 12.0 to + 12.0dB
Early Refraction Pre Delay	0 to 450ms		
Early Refraction Level	0 to 100%		
Reverb Level	0 to 100%		
Direct Level	0 to 100%		

Total Level	0 to 100%
-------------	-----------

Control Assign

Reverb	Reverb Time
	Reverb Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
	Total Level
	Bypass On/Off

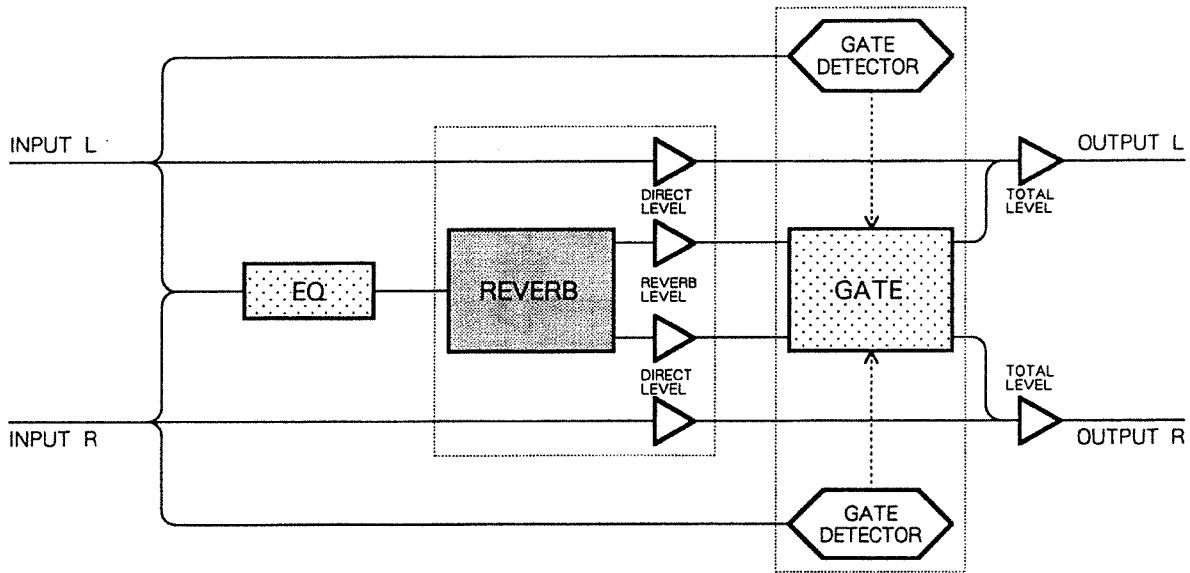
164 : Room 1

**** Room 1 ****

A reverb that simulates the reverberation obtained inside a room. By adjusting the early reflections, the most natural sound can be obtained. Additionally, it allows for creation of reverberation that uses a gate.

- * The reverberation effect cannot be turned off.
- * The timbre of the reverberant sound's early reflections cannot be altered by means of equalization.

Block Diagram



Parameters

Reverb		Gate		Equalizer	
Reverb Time	0.1 to 480.0sec	Threshold Level	1 to 100 %	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Hold Time	100ms to 7.5s	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Attack Time	10ms to 1.2s	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Release Time	10ms to 7.5s	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120 %	Leftover Level	0 to 100 %	Total Level	- 12.0 to + 12.0dB
Early Refraction Pre Delay	0 to 450ms				
Early Refraction Level	0 to 100 %				
Reverb Level	0 to 100 %				
Direct Level	0 to 100 %				
				Total Level	0 to 100 %

 Control Assign

Reverb	Reverb Time
	Reverb Level
Gate	Gate On/Off
	Hold Time
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

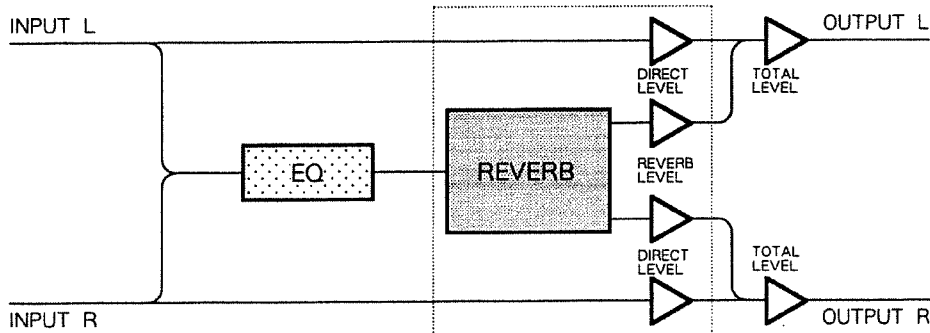
165 : Room 2

Provides a more luscious reverberation in the middle range, compared with Room 1. Most suitable when used with vocals or guitar pieces.

**** Room 2 ****

** The reverberation effect cannot be turned off.*

Block Diagram



Parameters

Reverb		Equalizer	
Reverb Time	0.1 to 480.0sec	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120 %	Total Level	- 12.0 to + 12.0dB
Reverb Level	0 to 100 %		
Direct Level	0 to 100 %		

Total Level	0 to 100 %
-------------	------------

 Control Assign

Reverb	Reverb Time
	Reverb Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

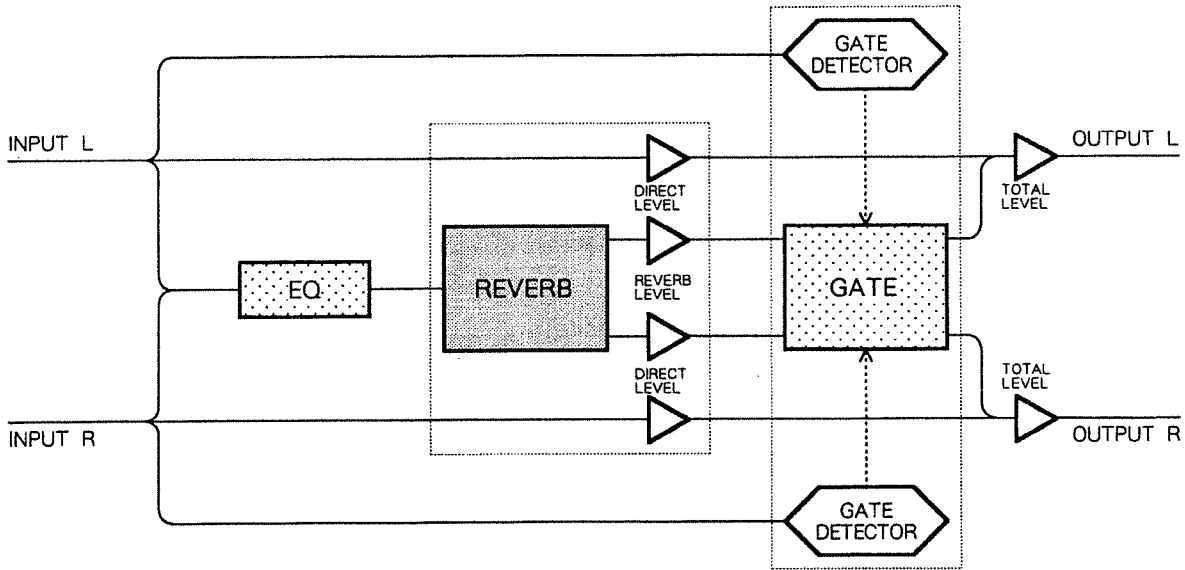
166 : Plate 1

**** Plate 1 ***

A reverb that simulates the sound obtained with a plate echo. (Unit employing the vibrations of a metal plate to produce reverb.) Provides a metallic luster. Additionally, it allows for creation of reverberation that uses a gate.

** The reverberation effect cannot be turned off.*

Block Diagram



Parameters

Reverb		Gate		Equalizer	
Reverb Time	0.1 to 480.0sec	Threshold Level	1 to 100 %	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Hold Time	100ms to 7.5s	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Attack Time	10ms to 1.2s	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Release Time	10ms to 7.5s	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120 %	Leftover Level	0 to 100 %	Total Level	- 12.0 to + 12.0dB
Reverb Level	0 to 100 %				
Direct Level	0 to 100 %			Total Level	0 to 100 %

 Control Assign

Reverb	Reverb Time
	Reverb Level
Gate	Gate On/Off
	Hold Time
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

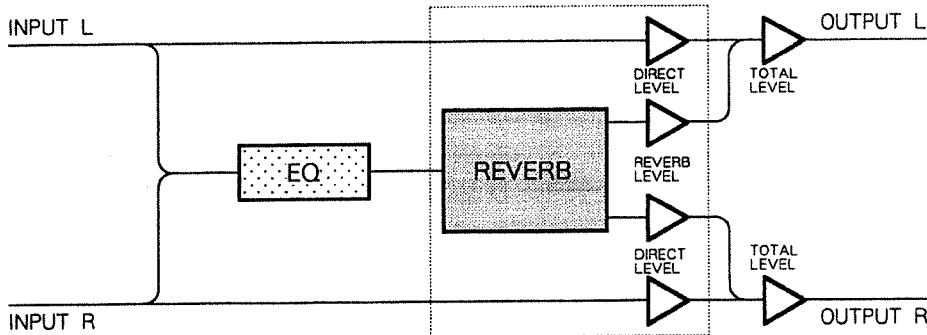
167 : Plate 2

Compared with Plate 1, it provides a more luscious reverberation in the middle range. Most suitable when used with vocals or guitar pieces.

**** Plate 2 ****

** The reverberation effect cannot be turned off.*

Block Diagram



Parameters

Reverb		Equalizer	
Reverb Time	0.1 to 480.0sec	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 450ms	Middle Frequency	250Hz to 6.3kHz
HF Damp < Frequency >	2.0 to 10.0kHz	Middle Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru	Low Level	- 12.0 to + 12.0dB
Diffusion	10 to 120 %	Total Level	- 12.0 to + 12.0dB
Reverb Level	0 to 100 %		
Direct Level	0 to 100 %		

Total Level	0 to 100 %
-------------	------------

Control Assign

Reverb	Reverb Time
	Reverb Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
	Total Level
	Bypass On/Off

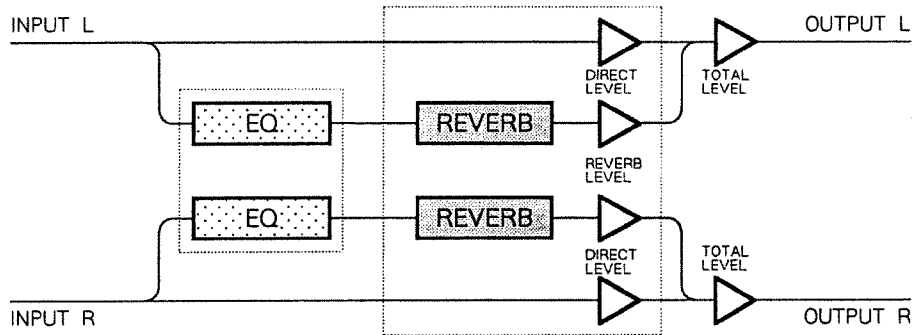
168 : Gate Reverb

* Gate Reverb *

A gated reverb providing stereo processing. The gated reverberant sounds can be output at the same point in the stereo image as the direct sound. Quite effective when used with the snare drum.

* The reverberation effect cannot be turned off.

Block Diagram



Parameters

Gate Reverb		Equalizer	
Gate Mode	Mode 1/Mode 2/Mode 3	High Level	- 12.0 to + 12.0dB
Gate Time	10 to 600ms	Middle Frequency	250Hz to 6.3kHz
Pre Delay	0 to 450ms	Middle Level	- 12.0 to + 12.0dB
Density	1 to 20	Low Level	- 12.0 to + 12.0dB
Thickness	0 to 100 %	Total Level	- 12.0 to + 12.0dB
Accent Delay	0 to 200ms		
Accent Level	0 to 100 %		
Reverb Level	0 to 100 %		
Direct Level	0 to 100 %		

Total Level	0 to 100 %
-------------	------------

Control Assign

Gate Reverb	Gate Time
	Density
	Thickness
	Accent Level
	Reverb Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

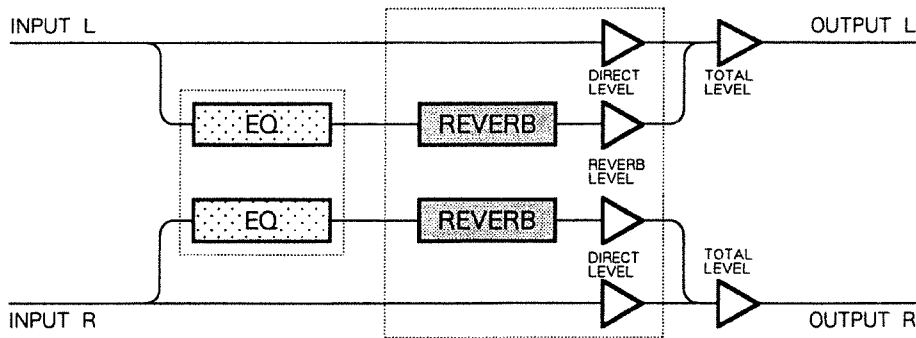
169 : Reverse Gate

* Reverse Gate *

Provides a very specialized effect, one sounding as if the reverberant sounds were reproduced in reverse. This reverse-reproduction effect can be emphasized further by adding on accent sound.

* The reverberation effect cannot be turned off.

Block Diagram



Parameters

Reverse Gate		Equalizer	
Gate Mode	Mode 1 / Mode 2	High Level	- 12.0 to + 12.0dB
Gate Time	10 to 600ms	Middle Frequency	250Hz to 6.3kHz
Pre Delay	0 to 450ms	Middle Level	- 12.0 to + 12.0dB
Density	1 to 20	Low Level	- 12.0 to + 12.0dB
Thickness	0 to 100 %	Total Level	- 12.0 to + 12.0dB
Accent Delay	0 to 200ms		
Accent Level	0 to 100 %		
Reverb Level	0 to 100 %		
Direct Level	0 to 100 %		

Total Level	0 to 100 %
-------------	------------

Control Assign

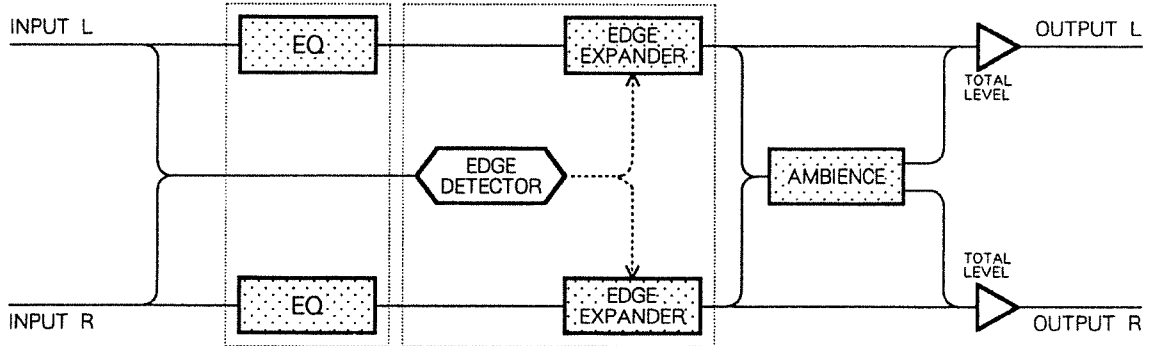
Reverse Gate	Gate Time
	Density
	Thickness
	Accent Level
	Reverb Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

170 : Ambience

*** Ambience ***

Simulates the effect obtained using an "ambience microphone". (A microphone used for recording; it is located at a distance from the sources of sound in order to add a sense of spaciousness and depth.) Additionally, the edge expander can be used to add more clarity.

Block Diagram



Parameters

Equalizer		Edge Expander		Ambience	
High Level	- 12.0 to + 12.0dB	Sensitivity	0 to 100 %	Pre Delay	0 to 140ms
Middle Frequency	250Hz to 6.3kHz	Release Time	0 to 100 %	Early Refraction Level	0 to 100 %
Middle Level	- 12.0 to + 12.0dB	Mix Level	0 to 100 %	Mix Level	0 to 100 %
Low Level	- 12.0 to + 12.0dB			Direct Level	0 to 100 %
Total Level	- 12.0 to + 12.0dB				

Total Level	0 to 100 %
-------------	------------

Control Assign

Total Level
Bypass On/Off

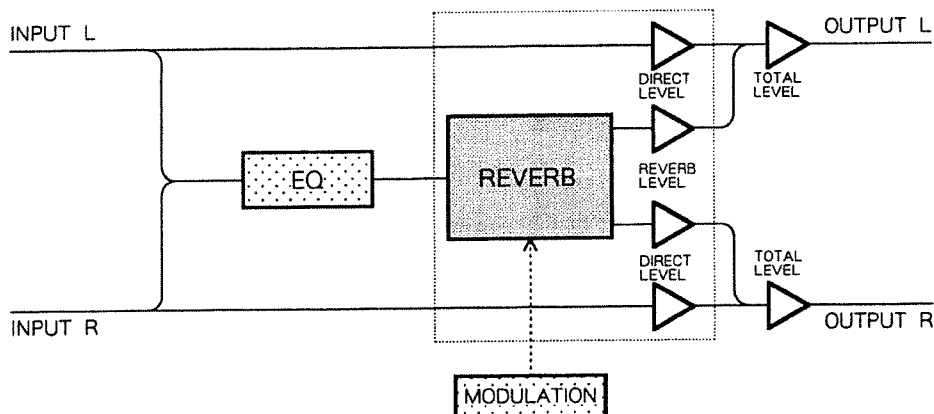
171 : Modulation Reverb

Allows for the reverberant sound to be modulated.

**** Mod. Reverb ****

** The reverberation effect cannot be turned off.*

Block Diagram



Parameters

Reverb		Modulation		Equalizer	
Reverb Time	0.1 to 480.0sec	LFO Waveform	Tri/Sin	High Level	- 12.0 to + 12.0dB
Pre Delay	0 to 140ms	Rate	1 to 100 %	Middle Frequency	250Hz to 6.3kHz
Filter < LPF >	1.00 to 20.0kHz, Thru	Depth	0 to 100 %	Middle Level	- 12.0 to + 12.0dB
Filter < HPF >	Thru, 32 to 800Hz			Low Level	- 12.0 to + 12.0dB
HF Damp < Frequency >	2.0 to 10.0kHz			Total Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru				
Mix Level	0 to 100 %				
Cross Mix	0 to 100 %				
Direct Level	0 to 100 %				
				Total Level	0 to 100 %

 Control Assign

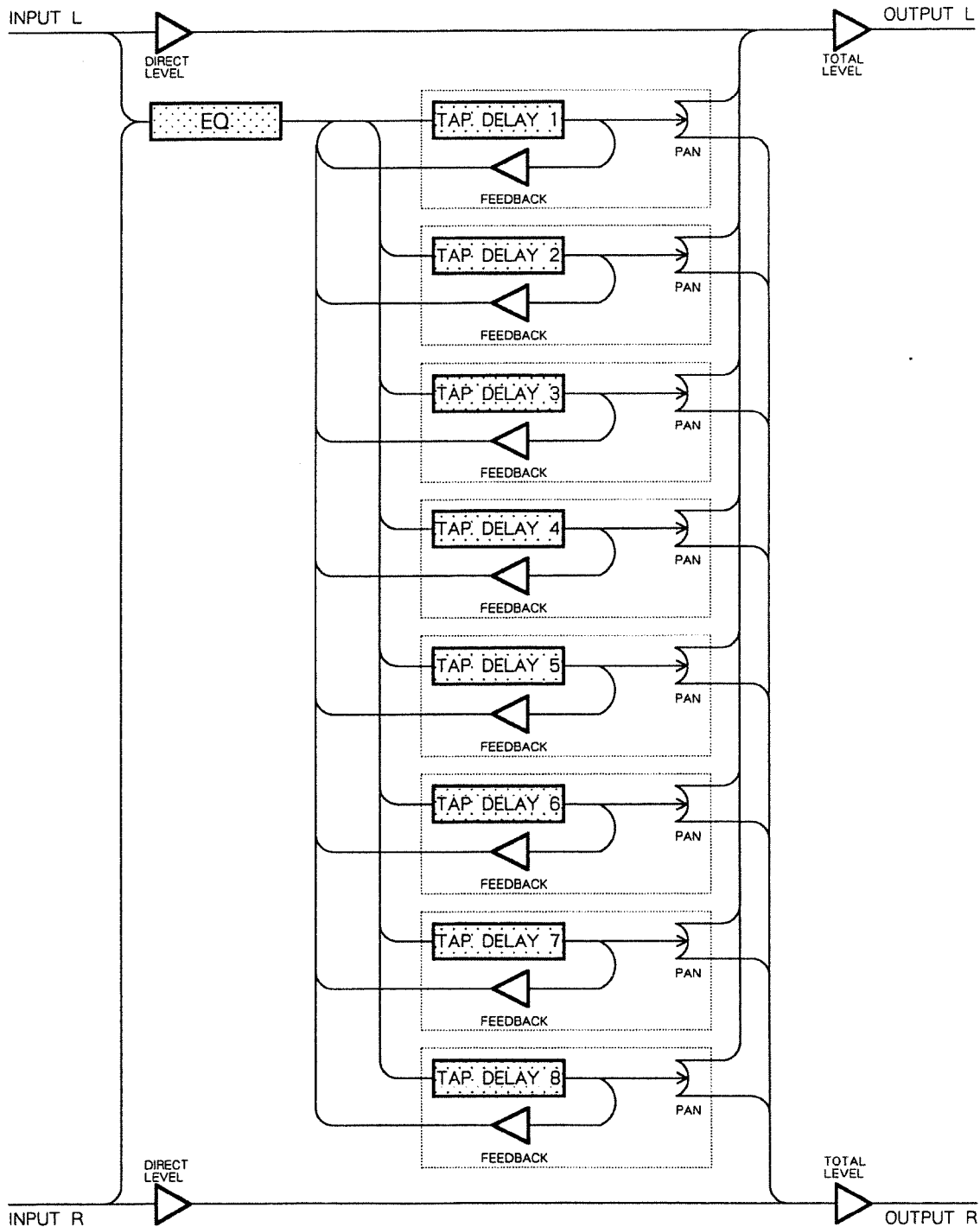
Reverb	Reverb Time
	Mix Level
	Cross Mix
Modulation	Modulation On/Off
	Rate
	Depth
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

172 : 8 Tap Delay

This delay allows the time for each of the eight delays to be set independently.

* 8 Tap Delay *

Block Diagram



Parameters

Tap Delay1 to 8		Equalizer	
Delay Time	1 to 2700ms	High Level	- 12.0 to + 12.0dB
Feedback	0 to 120 %	Middle Frequency	250Hz to 6.3kHz
Pan	0 to 100 %	Middle Level	- 12.0 to + 12.0dB
Mix Level	0 to 100 %	Low Level	- 12.0 to + 12.0dB
		Total Level	- 12.0 to + 12.0dB

Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

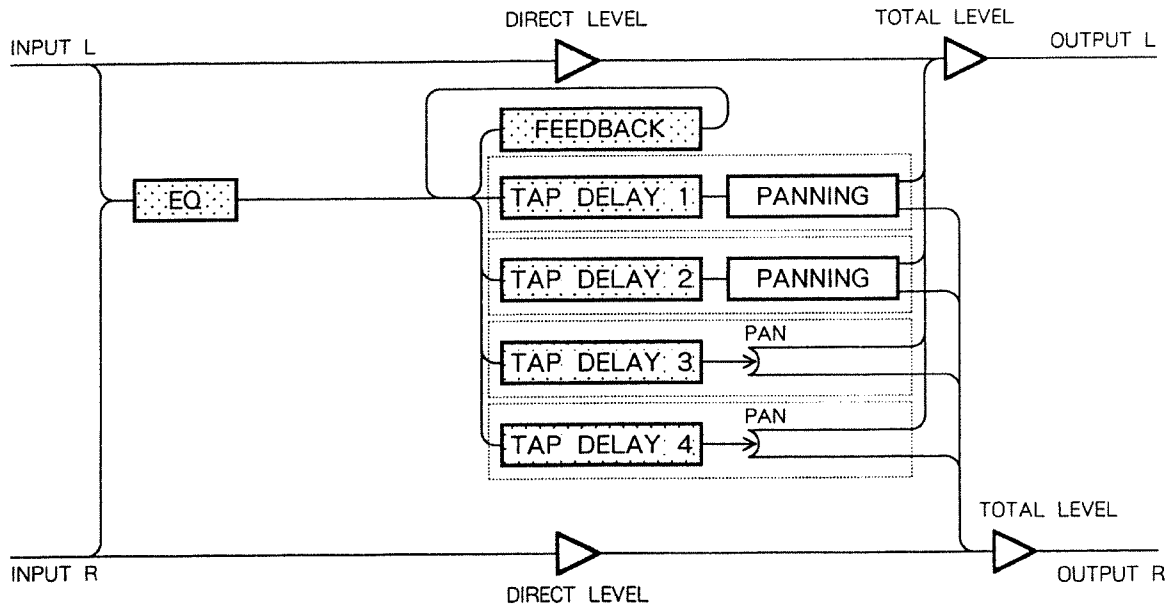
Tap Delay1	Delay On/Off
	Feedback
	Mix Level
Tap Delay2	Delay On/Off
	Feedback
	Mix Level
Tap Delay3	Delay On/Off
	Feedback
	Mix Level
Tap Delay4	Delay On/Off
	Feedback
	Mix Level
Tap Delay5	Delay On/Off
	Feedback
	Mix Level
Tap Delay6	Delay On/Off
	Feedback
	Mix Level
Tap Delay7	Delay On/Off
	Feedback
	Mix Level
Tap Delay8	Delay On/Off
	Feedback
	Mix Level
Total Level	
Bypass On/Off	

173 : 4 Tap Delay

* 4 Tap Delay*

This delay allows the time for each of the four delays to be set independently. Two of the four are equipped with a panning function. Additionally, it provides for creation of truly unique effects, since it allows feedback to be applied at timings that vary from the delay times.

Block Diagram



Parameters

Tap Delay 1, 2		Tap Delay 3, 4		Feedback	
Delay Time	1 to 2700ms	Delay Time	1 to 2700ms	Feedback Position	1 to 2700ms
Mix Level	0 to 100%	Pan	0 to 100%	Level	0 to 120%
Panning : LFO Waveform	Tri/Sin	Mix Level	0 to 100%	HF Damp < Frequency >	2.0 to 10.0kHz
Panning : Rate	1 to 100%			HF Damp < Level >	-9 to -1dB, Thru
Panning : Depth	0 to 100%			Feedback Filter (HPF)	Thru, 20 to 250Hz

Equalizer	
High Level	-12.0 to +12.0dB
Middle Frequency	250Hz to 6.3kHz
Middle Level	-12.0 to +12.0dB
Low Level	-12.0 to +12.0dB
Total Level	-12.0 to +12.0dB

Direct Level	0 to 100%
Total Level	0 to 100%

Control Assign

Tap Delay1	Delay On/Off
	Mix Level
Tap Delay2	Delay On/Off
	Mix Level
Tap Delay3	Delay On/Off
	Mix Level
Tap Delay4	Delay On/Off
	Mix Level
Feedback	Feedback On/Off
	Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

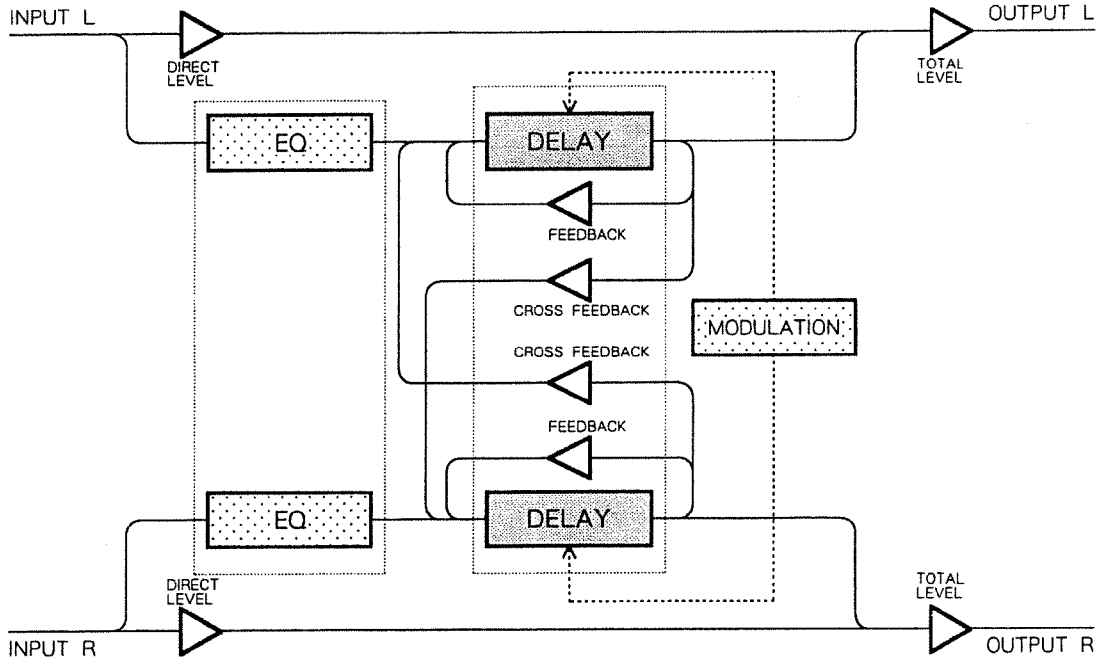
174 : Stereo Delay

This is a stereo delay which allows modulation to be applied.

* Stereo Delay *

* The delay effect cannot be turned off.

Block Diagram



Parameters

Delay		Modulation		Equalizer	
Delay Time	1 to 1300ms	LFO Waveform	Tri/Sin	High Level	- 12.0 to + 12.0dB
Feedback	0 to 120 %	Rate	1 to 100 %	Middle Frequency	250Hz to 6.3kHz
Cross Feedback	0 to 120 %	Depth	0 to 100 %	Middle Level	- 12.0 to + 12.0dB
HF Damp < Frequency >	2.0 to 10.0kHz	LR Polarity	Invert/Syncro	Low Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru			Total Level	- 12.0 to + 12.0dB
Feedback Filter (HPF)	Thru, 20 to 250Hz				
Mix Level	0 to 100 %				
Direct Level	0 to 100 %				
				Total Level	0 to 100 %

 Control Assign

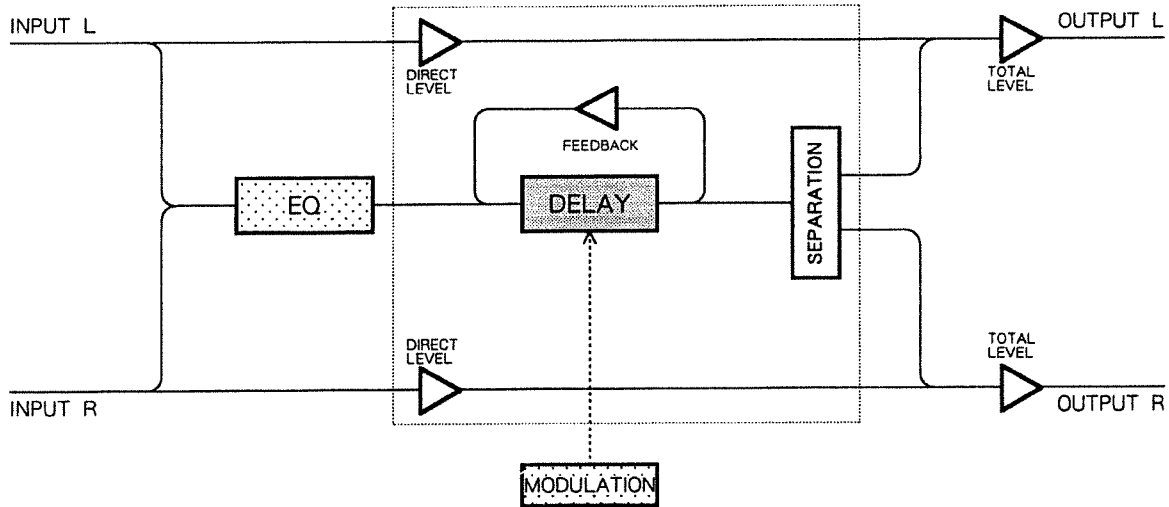
Delay	Feedback
	Mix Level
Modulation	Modulation On/Off
	Rate
	Depth
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

175 : Tempo Delay

A delay allowing for delay times that are set to match the tempo/notes of the music played.

** Tempo Delay *

Block Diagram



Parameters

Tempo Delay		Modulation		Equalizer	
Tempo	46 to 280	LFO Waveform	Tri/Sin	High Level	- 12.0 to + 12.0dB
Interval	16th note/ Tri 8th note/ 8th note/ Dot 8th note/ Tri Quarter note/ Quarter note	Rate	1 to 100 %	Middle Frequency	250Hz to 6.3kHz
		Depth	0 to 100 %	Middle Level	- 12.0 to + 12.0dB
				Low Level	- 12.0 to + 12.0dB
				Total Level	- 12.0 to + 12.0dB
Feedback	0 to 120 %				
HF Damp < Frequency >	2.0 to 10.0kHz				
HF Damp < Level >	- 9 to - 1dB, Thru				
Feedback Filter (HPF)	Thru, 20 to 250Hz				
Separation	- 100 to 100 %				
Mix Level	0 to 100 %				
Direct Level	0 to 100 %				
				Total Level	0 to 100 %

□ Control Assign

The Control Assign available for Tempo Delay functions somewhat differently than that with other algorithms. For controlling the tempo, the three choices below are provided. Note that the manner in which settings should be made also differs from that of other algorithms.

- | | |
|-------------------|--|
| No Control: | The unit operates constantly at the tempo that has been set for the "Tempo" parameter. |
| Control SW: | The tempo can be changed to whatever desired by pressing the panel's CONTROL button (or stepping on a pedal connected to the CONTROL jack) for more than 4 times, at the tempo you wish. This allows changes in tempo to easily be made to suit the mood during a performance. |
| MIDI Tempo Clock: | The unit operates in synchronization with the tempo that is being sent as MIDI clocks to its MIDI IN connector. This setting is most suitable when the unit is to be played in keeping with the tempo of music arriving from a sequencer. |

**** Note that noise may in some cases be produced if the tempo is changed while something is playing.***

[Procedure]

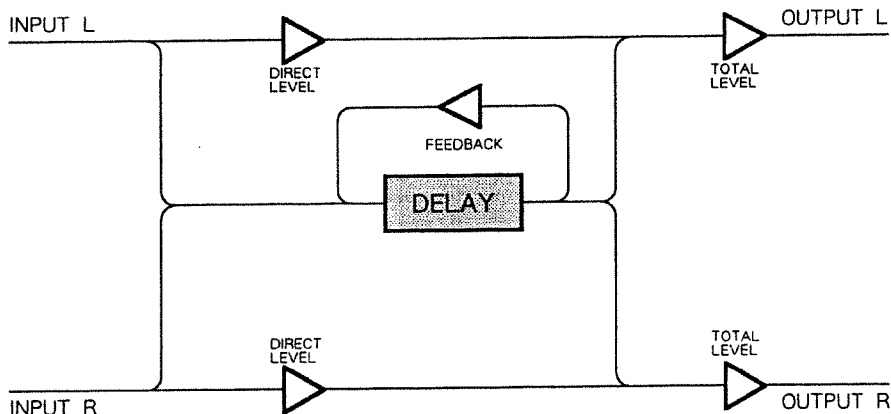
- ① Have the Program Number for the Tempo Delay algorithm currently selected, then press CONTROL ASSIGN.
The page used to select the method of control will appear.
- ② Select the type of control desired using VALUE ▲ ▼.

176 : Simple Delay

This is a simple, single delay that allows for a Delay Time of up to 2,600 ms.

* Simple Delay *

Block Diagram



Parameters

Delay Time	1 to 2600ms
Feedback	0 to 120 %
Mix Level	0 to 100 %
Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

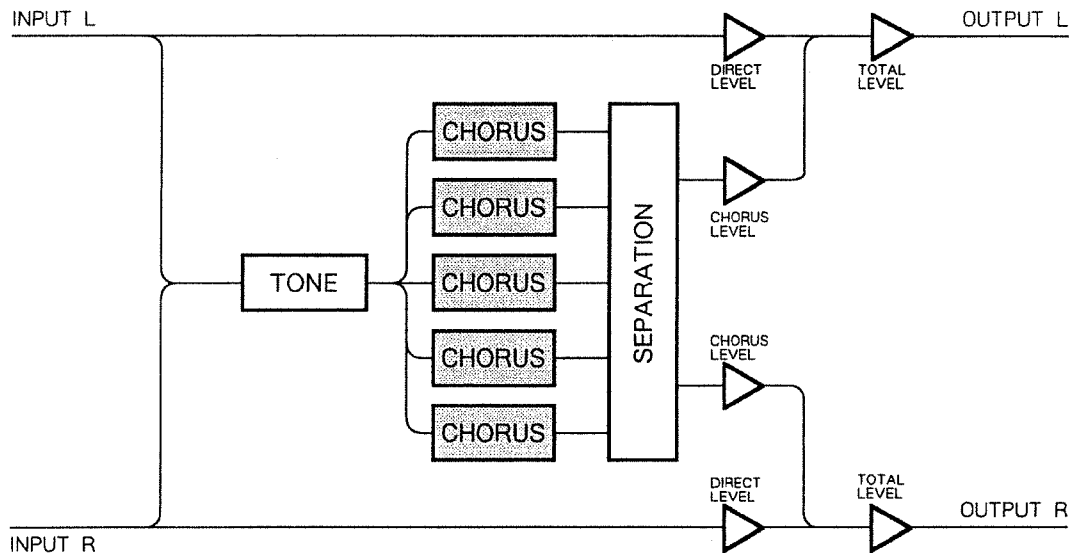
Total Level
Bypass On/Off

177 : Penta Chorus

Allows for the creation of broad-ranging chorus effects, from single-phase chorus to five-phase chorus.

* Penta Chorus *

Block Diagram



Parameters

Chorus Mode	Single/Dual/3 states/4 states/5 states
LFO Waveform	Tri/Sin
Pre Delay	0 to 125ms
Chorus Rate	1 to 100 %
Chorus Depth	0 to 100 %
Separation	0 to 100 %
Chorus Tone	- 12.0 to + 12.0dB
Chorus Level	0 to 100 %
Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

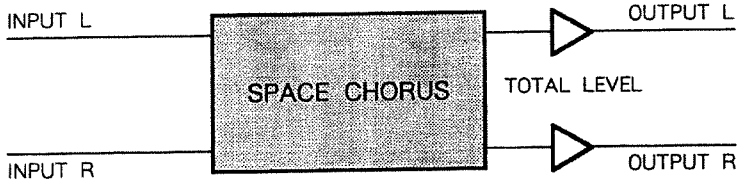
Chorus Rate
Chorus Depth
Chorus Level
Total Level
Bypass On/Off

178 : Space Chorus

A chorus which simulates the one provided by the acclaimed Roland Dimension D (SDD-320).

* Space Chorus *

Block Diagram



Parameters

Space Mode	Mode 1/Mode 2/Mode 3/Mode 4
Direct Mix	Cut/Mix
Total Level	0 to 100 %

Control Assign

Total Level
Bypass On/Off

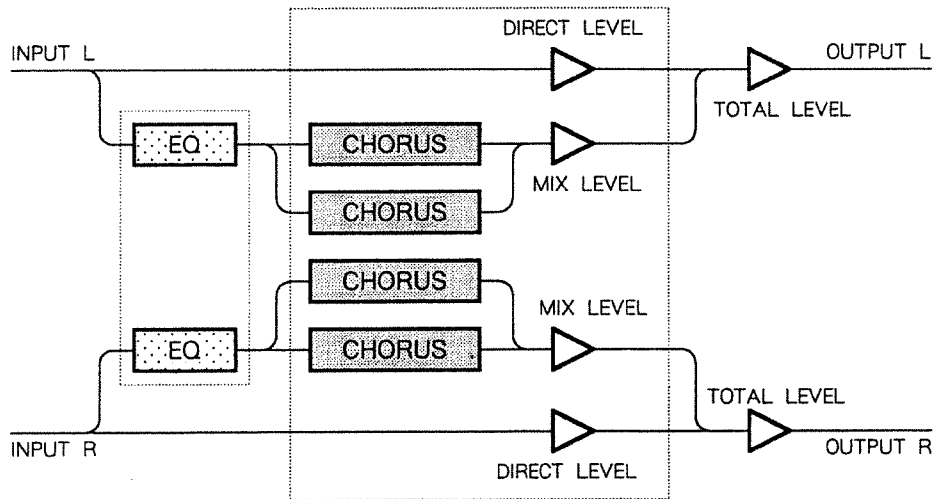
179 : Stereo Chorus

**** Stereo Cho ****

A chorus providing stereo processing. The chorus sounds can be localized at the same point in the stereo image as the direct sound when output. Offers 3-band equalization for controlling the tone of the chorus sounds.

** The chorus effect cannot be turned off.*

Block Diagram



Parameters

Chorus		Equalizer	
Mode	Single/Dual	High Level	- 12.0 to + 12.0dB
LFO Waveform	Tri/Sin	Middle Frequency	250Hz to 6.3kHz
Pre Delay	0 to 125ms	Middle Level	- 12.0 to + 12.0dB
Rate	1 to 100 %	Low Level	- 12.0 to + 12.0dB
Depth	0 to 100 %	Total Level	- 12.0 to + 12.0dB
Mix Level	0 to 100 %		
Direct Level	0 to 100 %		

Total Level	0 to 100 %
-------------	------------

Control Assign

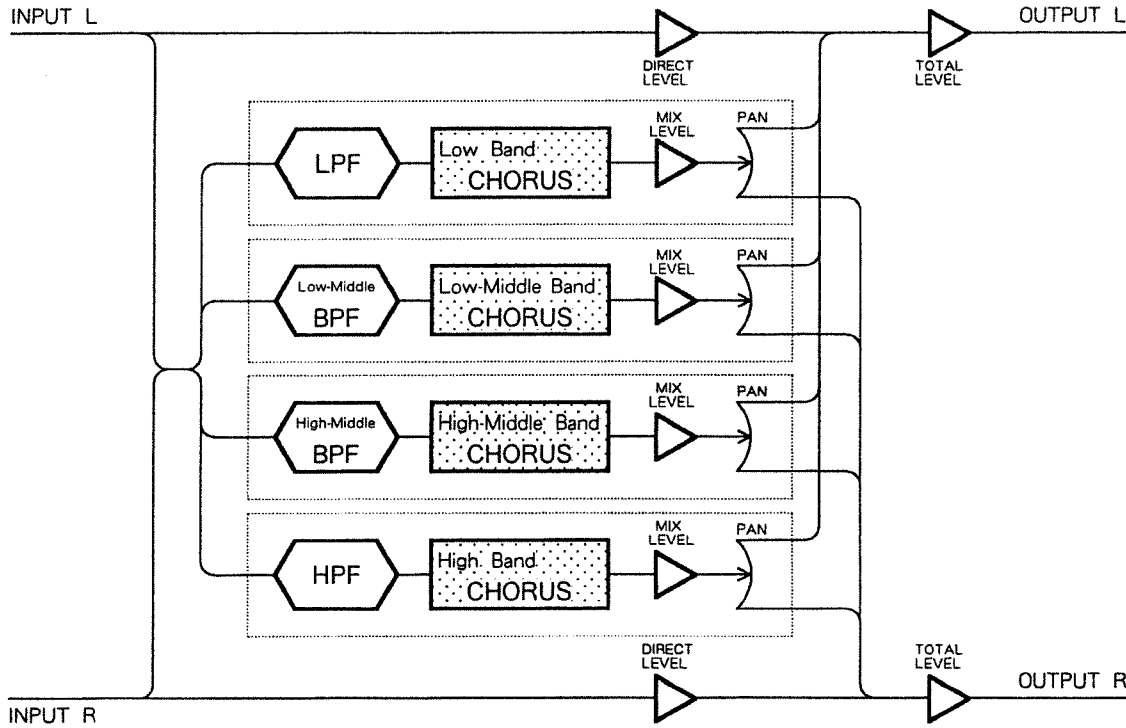
Chorus	Rate
	Depth
	Mix Level
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Total Level	
Bypass On/Off	

180 : 4-Band Chorus

**** 4 Band Cho ****

A new type of chorus, whereby the frequency content of the direct sound is divided into four bands. Separate settings can be made for each of the bands. Additionally, individual, band-specific pan settings can be made, allowing each of the chorus bands to be localized wherever desired.

Block Diagram



Parameters

Low Band Chorus		Low-Middle Band Chorus		High-Middle Band Chorus	
LFO Waveform	Tri/Sin	LFO Waveform	Tri/Sin	LFO Waveform	Tri/Sin
Pre Delay	0 to 125ms	Pre Delay	0 to 125ms	Pre Delay	0 to 125ms
Rate	1 to 100 %	Rate	1 to 100 %	Rate	1 to 100 %
Depth	0 to 100 %	Depth	0 to 100 %	Depth	0 to 100 %
Pan	0 to 100 %	Pan	0 to 100 %	Pan	0 to 100 %
Mix Level	0 to 100 %	Mix Level	0 to 100 %	Mix Level	0 to 100 %

High Band Chorus	
LFO Waveform	Tri/Sin
Pre Delay	0 to 125ms
Rate	1 to 100 %
Depth	0 to 100 %
Pan	0 to 100 %
Mix Level	0 to 100 %

Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

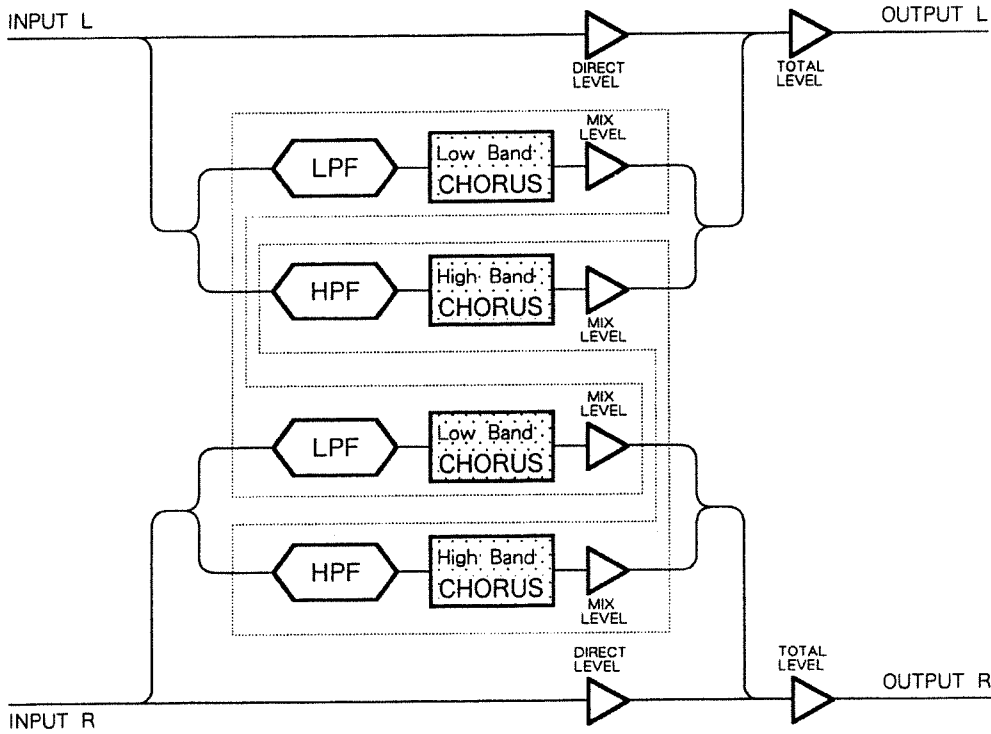
Low Band Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
Low- Middle Band Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
High- Middle Band Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
High Band Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
Total Level	
Bypass On/Off	

181 : 2-Band Chorus

Employs a new concept for chorus, whereby the frequency content of the direct sound is divided into two bands ("band-split chorus"). Separate settings can be made for each of the bands.

**** 2 Band Cho ****

Block Diagram



Parameters

Low Band Chorus		High Band Chorus	
LFO Waveform	Tri/Sin	LFO Waveform	Tri/Sin
Pre Delay	0 to 125ms	Pre Delay	0 to 125ms
Rate	1 to 100 %	Rate	1 to 100 %
Depth	0 to 100 %	Depth	0 to 100 %
Mix Level	0 to 100 %	Mix Level	0 to 100 %

Crossover Frequency	400Hz to 4kHz
Direct Level	0 to 100 %
Total Level	0 to 100 %

** Crossover Frequency is an adjustment for the frequency at which the sound is split into the Low and High Bands.*

 Control Assign

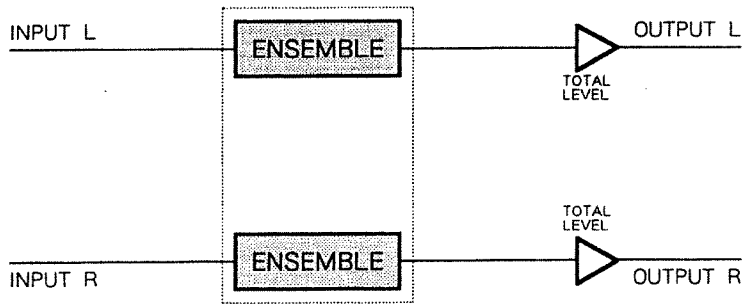
Low Band Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
High Band Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
Total Level	
Bypass On/Off	

182 : Ensemble

This is a chorus effect which is controlled by two LFOs carrying varying rates. It is capable of providing a chorus effect that is much fatter than conventional choruses.

*** Ensemble ***

Block Diagram



Parameters

Ensemble Mode	Mode 1/Mode 2/Mode 3/Mode 4/Mode 5/Mode 6
Total Level	0 to 100%

Control Assign

Total Level
Bypass On/Off

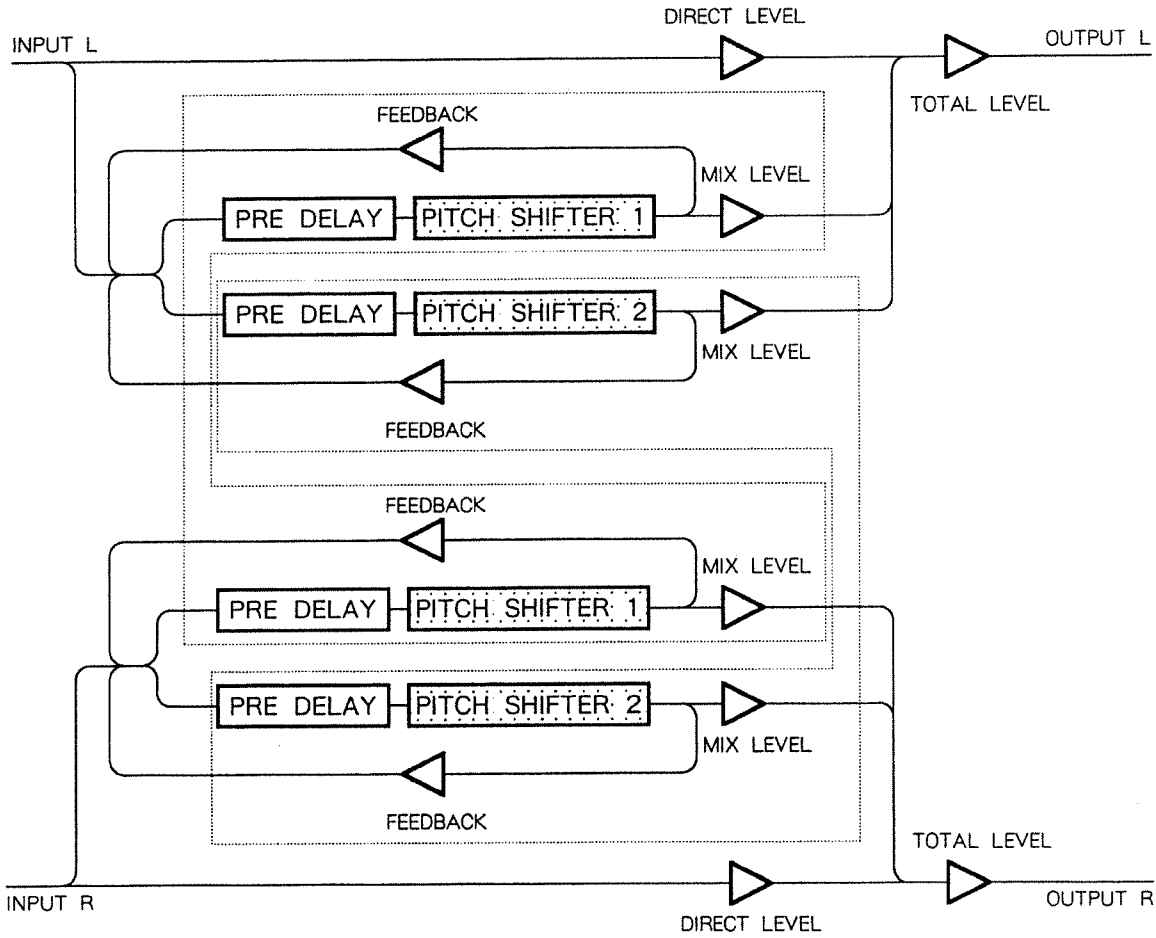


183 : Stereo Pitch Shifter

A stereo-compatible pitch shifting effect. Two different pitch shifted portions can be localized separately in the stereo image when output.

```
** Stereo P.S.**
```

□ Block Diagram



Parameters

Pitch Shifter1		Pitch Shifter2	
Shift Mode	High Quality/High Speed	Shift Mode	High Quality/High Speed
Chromatic	- 24 to + 24semitone	Chromatic	- 24 to + 24semitone
Fine	- 50 to + 50 %	Fine	- 50 to + 50 %
Pre Delay	0 to 600ms	Pre Delay	0 to 600ms
Feedback	0 to 120 %	Feedback	0 to 120 %
Mix Level	0 to 100 %	Mix Level	0 to 100 %

Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

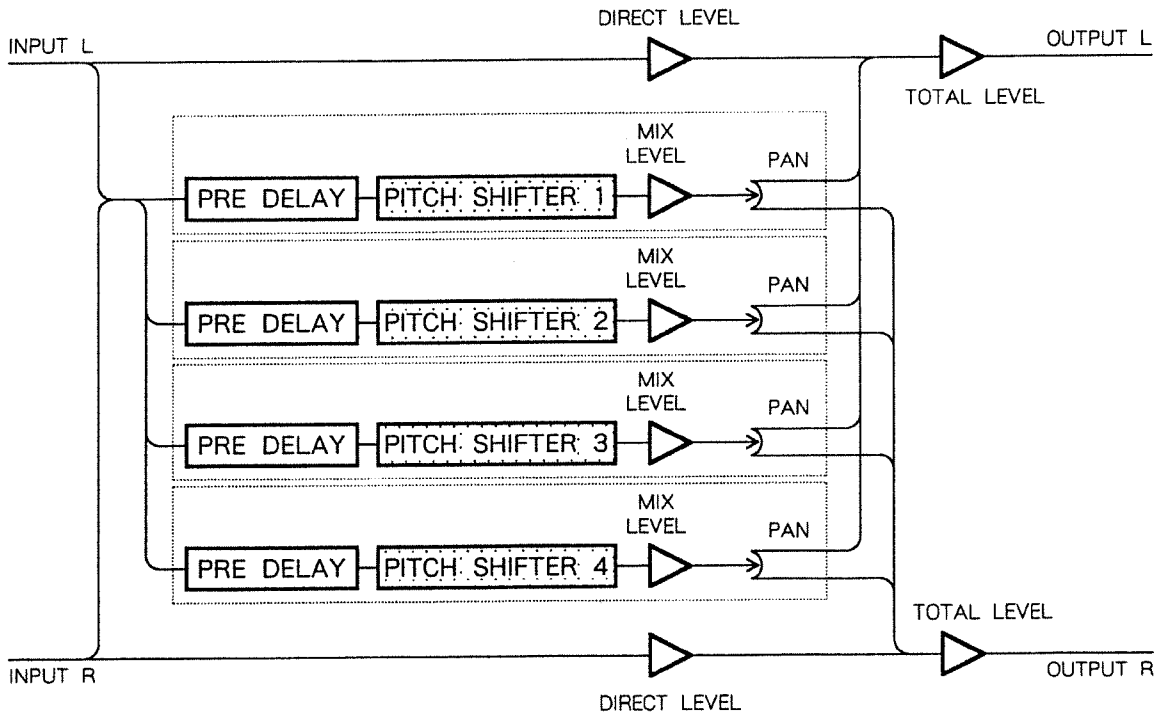
Pitch Shifter1	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter2	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Total Level	
Bypass On/Off	

184 : Quad Pitch Shifter

Allows for the output of four different pitch shifted portions. If these pitch shifted sounds are used so they form chords, single notes can be played to obtain harmonies.

*** Quad P.S.***

Block Diagram



Parameters

Pitch Shifter 1		Pitch Shifter 2		Pitch Shifter 3	
Shift Mode	High Quality/High Speed	Shift Mode	High Quality/High Speed	Shift Mode	High Quality/High Speed
Chromatic	- 24 to + 24semitone	Chromatic	- 24 to + 24semitone	Chromatic	- 24 to + 24semitone
Fine	- 50 to + 50 %	Fine	- 50 to + 50 %	Fine	- 50 to + 50 %
Pre Delay	0 to 600ms	Pre Delay	0 to 600ms	Pre Delay	0 to 600ms
Mix Level	0 to 100 %	Mix Level	0 to 100 %	Mix Level	0 to 100 %
Pan	0 to 100 %	Pan	0 to 100 %	Pan	0 to 100 %

Pitch Shifter 4	
Shift Mode	High Quality/High Speed
Chromatic	- 24 to + 24semitone
Fine	- 50 to + 50 %
Pre Delay	0 to 600ms
Mix Level	0 to 100 %
Pan	0 to 100 %

Direct Level	0 to 100 %
Total Level	0 to 100 %

□ Control Assign

Pitch Shifter1	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter2	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter3	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter4	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Total Level	
Bypass On/Off	

This algorithm allows for the chords composed as a result of each Pitch Shifter to be altered as desired during performance. In order to have chords altered in accord with what is played, a keyboard should be connected to the MIDI IN connector, and the various Control Assign numbers should be set to conform with the data shown below.

The amount of pitch shifting that takes place can be changed depending on the chords (note numbers) played on the keyboard. The amount by which the pitch is shifted changes based on middle C (note number 60).

The higher above middle C that the key pressed is, the higher the pitch will be. Whereas the further below middle C that the key pressed is, the lower the pitch will be.

Control Assign Number 1

Controller: Note Number

Parameter Controlled: Chromatic for PS1 (Pitch Shifter 1)

Control Assign Number 2

Controller: Note Number

Parameter Controlled: Chromatic for PS2 (Pitch Shifter 2)

Control Assign Number 3

Controller: Note Number

Parameter Controlled: Chromatic for PS3 (Pitch Shifter 3)

Control Assign Number 4

Controller: Note Number

Parameter Controlled: Chromatic for PS4 (Pitch Shifter 4)

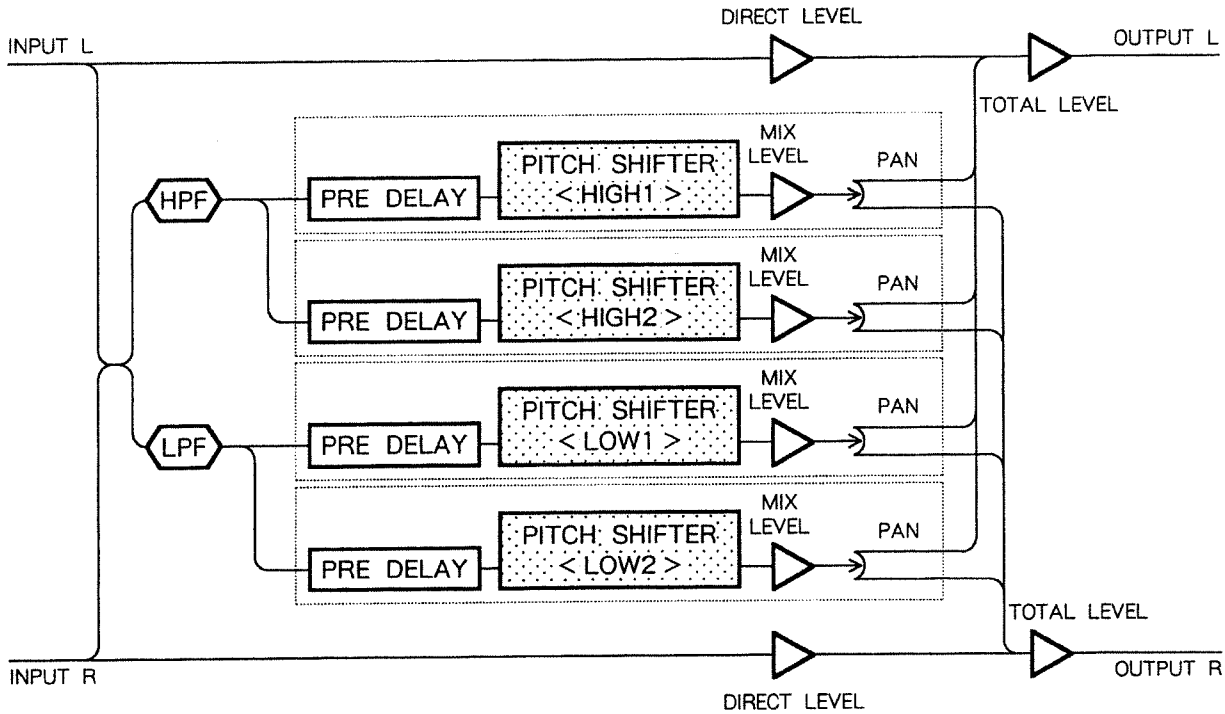
*** If you do not wish to have all four pitch-shifted sounds played, turn off those pitch-shifters that are unnecessary.**

185 : 2-Band Pitch Shifter

**** 2 Band P.S.****

This algorithm divides the frequency content of the direct sound into two bands. Separate settings can then be made for each of the bands. Since individual, band-specific pan settings can also be made, the pitch-shifted bands can be localized wherever desired.

□ Block Diagram



□ Parameters

Pitch Shifter: Low1, 2		Pitch Shifter: High1, 2	
Chromatic	- 24 to + 24semitone	Chromatic	- 24 to + 24semitone
Fine	- 50 to + 50 %	Fine	- 50 to + 50 %
Pre Delay	0 to 600ms	Pre Delay	0 to 600ms
Mix Level	0 to 100 %	Mix Level	0 to 100 %
Pan	0 to 100 %	Pan	0 to 100 %

Crossover Frequency	400Hz to 4kHz
Direct Level	0 to 100 %
Total Level	0 to 100 %

*** Crossover Frequency is an adjustment for the frequency at which the sound is split into the Low and High Bands.**

Control Assign

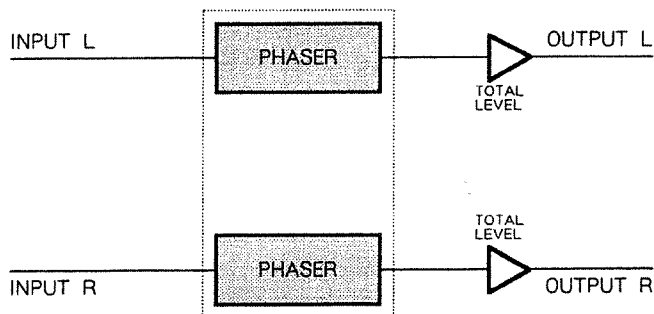
Pitch Shifter Low1	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter Low2	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter High1	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Pitch Shifter High2	Pitch Shifter On/Off
	Chromatic
	Fine
	Mix Level
Total Level	
Bypass On/Off	

186 : Multi Phaser

* Multi Phaser *

Produces a more spacious sound by adding to the direct sound other portions which have been shifted in phase. Since it supports stereo, the phaser effect is obtained while still preserving the localization of the stereo image.

Block Diagram



Parameters

Phasing Mode	Mode 1/Mode 2/Mode 3/Mode 4/Mode 5/Mode 6
Phasing Rate	1 to 100 %
Phasing Depth	0 to 100 %
Manual	0 to 100 %
Resonance	- 100 to 100 %
Step Rate	0 to 100
Modulation Phase	- 180 to 180deg
Tremolo Depth	0 to 100 %
Total Level	0 to 100 %

Control Assign

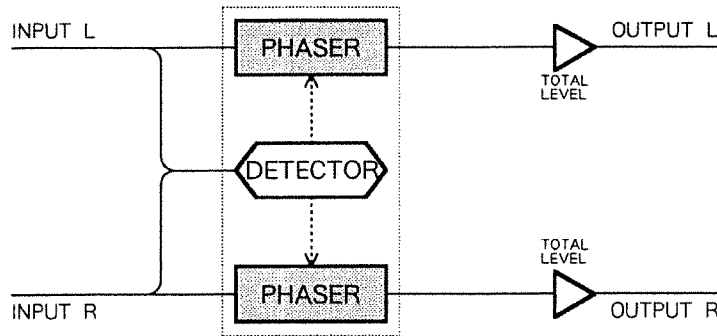
Phasing Rate
Phasing Depth
Manual
Resonance
Step Rate
Tremolo Depth
Total Level
Bypass On/Off

187 : Dynamic Phaser

This is a Phaser effect which dynamically alters the Rate in accord with the input level.

Dynamic Phaser

Block Diagram



Parameters

Phasing Mode	Mode 1/Mode 2/Mode 3/Mode 4/Mode 5/Mode 6
Sensitivity	0 to 100 %
LFO Rate MAX	1 to 100 %
Control Range	0 to 100 %
Phasing Depth	0 to 100 %
Manual	0 to 100 %
Resonance	- 100 to 100 %
Step Rate	0 to 100
Modulation Phase	- 180 to 180deg
Tremolo Depth	0 to 100 %
Total Level	0 to 100 %

Control Assign

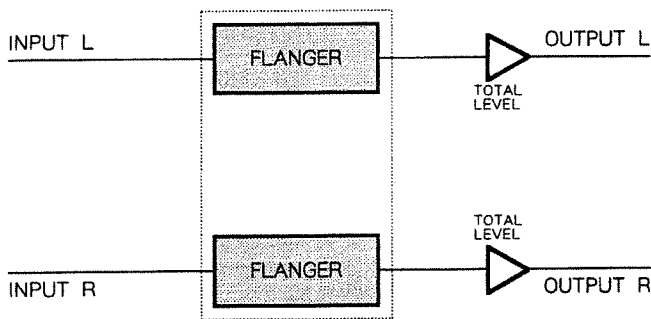
Phasing Depth
Manual
Resonance
Step Rate
Tremolo Depth
Total Level
Bypass On/Off

188 : Stereo Flanger

A two-channel, fully stereo-compatible flanging effect. Even deeper flanging can be obtained by setting MODE at "Bi-Flanger".

** Stereo FL **

Block Diagram



Parameters

Mode	Normal/Bi-Flanger
Flanging Rate	1 to 100 %
Flanging Depth	0 to 100 %
Manual	0 to 100 %
Resonance Mode	Mixed/Unmixed
Resonance	- 100 to 100 %
Modulation Phase	- 180 to 180deg
Mix Level	0 to 100 %
Tremolo Depth	0 to 100 %
Direct Mix	Cut/Mix
Total Level	0 to 100 %

Control Assign

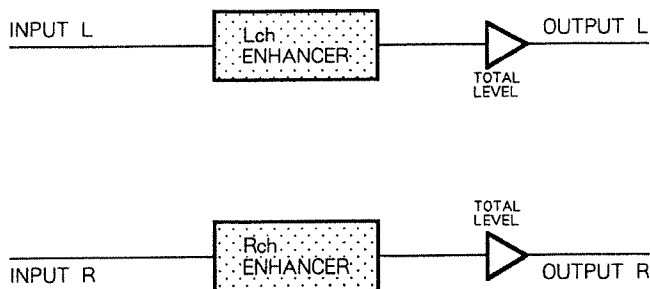
Flanging Rate
Flanging Depth
Manual
Resonance
Tremolo Depth
Total Level
Bypass On/Off

189 : Enhancer

This enhancer handles two completely independent channels.

*** Enhancer ***

Block Diagram



Parameters

Lch Enhancer		Rch Enhancer		Total Level	
Frequency	0 to 100 %	Frequency	0 to 100 %		
Mix Balance	0 to 100 %	Mix Balance	0 to 100 %		
				Total Level	0 to 100 %

Control Assign

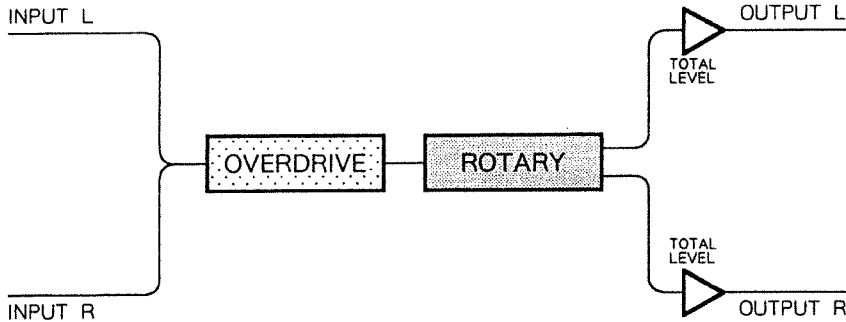
Lch Enhancer	Enhancer On/Off
	Frequency
	Mix Balance
Rch Enhancer	Enhancer On/Off
	Frequency
	Mix Balance
Total Level	
Bypass On/Off	

190 : Rotary 1

*** Rotary 1 ***

This algorithm simulates the sound of rotary speakers recorded "off mike". The fluctuations are at a minimum, making it ideal for jazz – type organ music. Alterations in the speed of the rotation, as well as the manner in which the speed changes when switched, can be made as desired using Control Assign.

Block Diagram



Parameters

Rotary		OverDrive	
Speed Select	Slow/Fast	Gain	0 to 100 %
Horn Speed (fast)	5.00 to 9.95Hz	Drive	1 to 100 %
Rotor Speed (fast)	5.00 to 9.95Hz	Level	0 to 100 %
Horn Speed (slow)	0.05 to 5.00Hz		
Rotor Speed (slow)	0.05 to 5.00Hz		
Rise Time ; Horn	1 to 100 %		
Rise Time ; Rotor	1 to 100 %		
Fall Time ; Horn	1 to 100 %		
Fall Time ; Rotor	1 to 100 %		
Mix Balance	10 to 90		

Total Level	0 to 100 %
-------------	------------

Control Assign

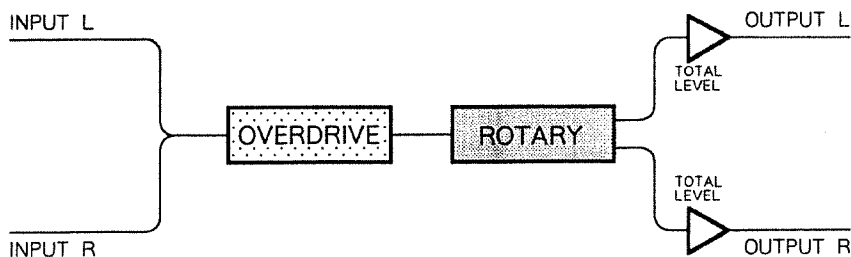
Rotary	Horn Speed
	Rotor Speed
	Fast/Slow
OverDrive	Gain
	Drive
	Level
Total Level	
Bypass On/Off	

191 : Rotary 2

*** Rotary 2 ***

This algorithm simulates the sound of rotary speakers recorded "on mike". The fluctuations are at a maximum, making it ideal for organs in rock arrangements. Alterations in the speed of the rotation, as well as the manner in which the speed changes when switched, can be made as desired using Control Assign.

Block Diagram



Parameters

Rotary		OverDrive	
Speed Select	Slow/Fast	Gain	0 to 100 %
Horn Speed (fast)	5.00 to 9.95Hz	Drive	1 to 100 %
Rotor Speed (fast)	5.00 to 9.95Hz	Level	0 to 100 %
Horn Speed (slow)	0.05 to 5.00Hz		
Rotor Speed (slow)	0.05 to 5.00Hz		
Rise Time ; Horn	1 to 100 %		
Rise Time ; Rotor	1 to 100 %		
Fall Time ; Horn	1 to 100 %		
Fall Time ; Rotor	1 to 100 %		
Mix Balance	10 to 90		

Total Level	0 to 100 %
-------------	------------

Control Assign

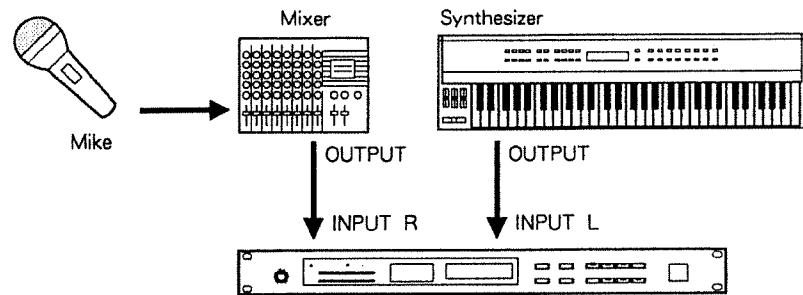
Rotary	Horn Speed
	Rotor Speed
	Fast/Slow
OverDrive	Gain
	Drive
	Level
Total Level	
Bypass On/Off	

192 : VOCODER

*** Vocoder ***

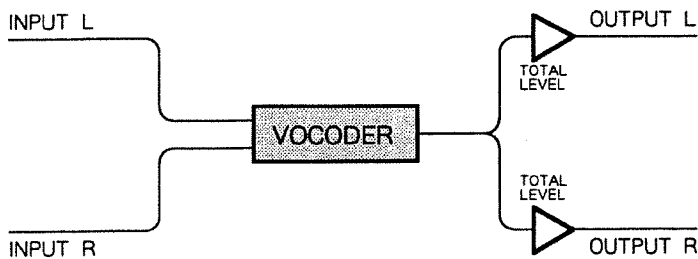
When used with a synthesizer or other instrument, in combination with a microphone, the Vocoder provides an effect whereby a person's voice sounds as if it were being sung by the instrument. Since the Vocoder is equipped with 8 BPFs (Band Pass Filters), it is capable of the highest quality sound production.

To employ the Vocoder, connect your equipment as illustrated below.



- * Although a microphone can be connected directly to the RSP-550, it is preferable if you first run its output through a preamplifier or mixer, since in many cases the input gain of the microphone could prove to be insufficient.
- * With the Vocoder, sound will be produced only at the times that sound is being input from the instrument and microphone. As a result, if you employ decaying-type sounds such as the piano, the sound will stop sounding whenever the piano sound fades. For this reason, you should always use a sustaining-type sound such as a string sound.

□ Block Diagram



Parameters

Gate Threshold	0 to 100 %
Mic Mix Level	0 to 100 %
Hiss Mix Level	0 to 100 %
Voice Character (200Hz)	0 to 100 %
Voice Character (320Hz)	0 to 100 %
Voice Character (500Hz)	0 to 100 %
Voice Character (800Hz)	0 to 100 %
Voice Character (1.2kHz)	0 to 100 %
Voice Character (1.8kHz)	0 to 100 %
Voice Character (2.7kHz)	0 to 100 %
Voice Character (4.4kHz)	0 to 100 %
Total Level	0 to 100 %

Control Assign

Character Hold On/Off
Mic Mix Level
Total Level
Bypass On/Off

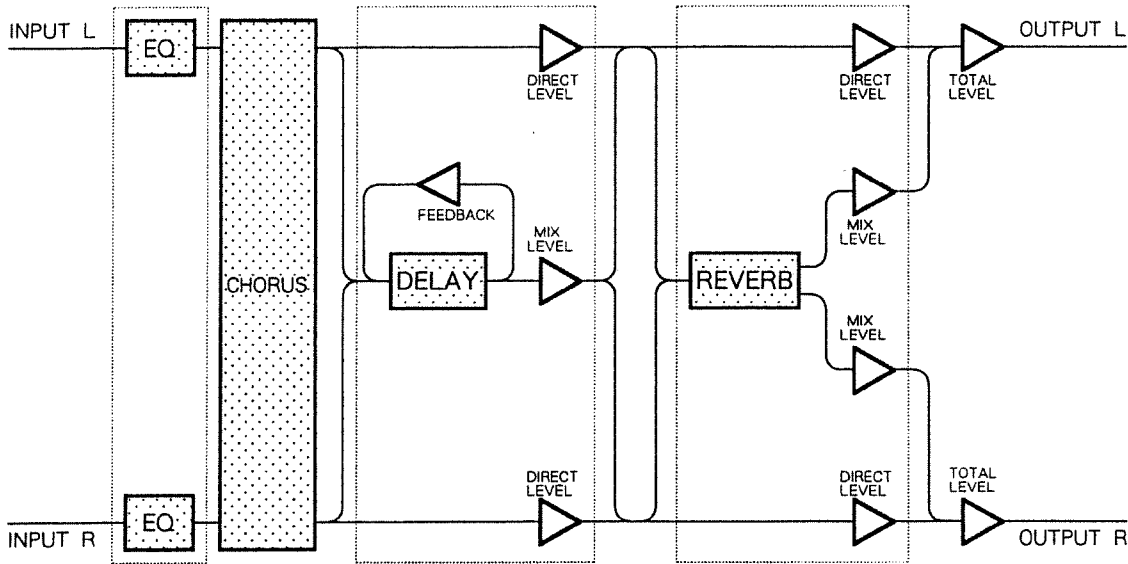
** Character Hold On/Off can be used whenever you wish to hold the sound which has arrived from the microphone. If turned on while the Vocoder is producing sound, you will not need to continue inputting sound into the microphone -- all you need do is press the keyboard's keys and sound will be played.*

193 : Multi 1

*** Multi 1 ***

A multi-effects algorithm that combines equalization, chorus, delay, and reverb; connected in series. Most effective when used with sounds that tend to be sustained, such as that of strings, organs, etc.

Block Diagram



Parameters

Equalizer		Chorus		Delay	
High Level	- 12.0 to + 12.0dB	LFO Waveform	Tri./Sin	Delay Time	1 to 1600ms
Middle Frequency	250Hz to 6.3kHz	Pre Delay	0 to 125ms	Feedback	0 to 120 %
Middle Level	- 12.0 to + 12.0dB	Rate	1 to 100 %	HF Damp < Frequency >	2.0 to 10.0kHz
Low Level	- 12.0 to + 12.0dB	Depth	0 to 100 %	HF Damp < Level >	- 9 to - 1dB, Thru
Total Level	- 12.0 to + 12.0dB	Mix Level	0 to 100 %	Mix Level	0 to 100 %
		Cross Mix	0 to 100 %	Direct Level	0 to 100 %
		Direct Level	0 to 100 %		

Reverb	
Reverb Time	0.1 to 480.0sec
Pre Delay	0 to 140ms
Filter < LPF >	1.00 to 20.0kHz, Thru
Filter < HPF >	Thru, 32 to 800Hz
HF Damp < Frequency >	2.0 to 10.0kHz
HF Damp < Level >	- 9 to - 1dB, Thru
Mix Level	0 to 100 %
Direct Level	0 to 100 %

Total Level	0 to 100 %
-------------	------------

Control Assign

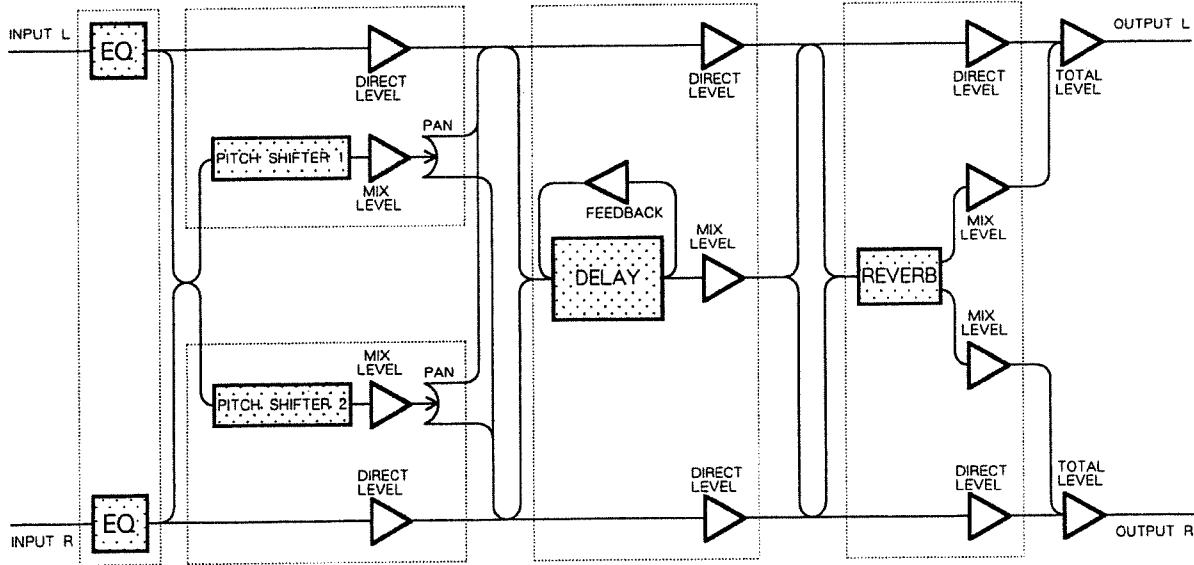
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
	Cross Mix
Delay	Delay On/Off
	Feedback
	Mix Level
Reverb	Reverb On/Off
	Reverb Time
	Mix Level
Total Level	
Bypass On/Off	

194 : Multi 2

A multi-effects algorithm focussed mainly on pitch shifting.

*** Multi 2 ***

Block Diagram



Parameters

Equalizer		Pitch Shifter	
High Level	- 12.0 to + 12.0dB	Shift Mode1	High Quality/High Speed
Middle Frequency	250Hz to 6.3kHz	Chromatic1	- 24 to + 24semitone
Middle Level	- 12.0 to + 12.0dB	Fine1	- 50 to + 50 %
Low Level	- 12.0 to + 12.0dB	Mix Level1	0 to 100 %
Total Level	- 12.0 to + 12.0dB	Pan1	0 to 100 %
		Shift Mode2	High Quality/High Speed
		Chromatic2	- 24 to + 24semitone
		Fine2	- 50 to + 50 %
		Mix Level2	0 to 100 %
		Pan2	0 to 100 %
		Direct Level	0 to 100 %

Delay		Reverb	
Delay Time	1 to 1600ms	Reverb Time	0.1 to 480.0sec
Feedback	0 to 120 %	Pre Delay	0 to 140ms
HF Damp < Frequency >	2.0 to 10.0kHz	Filter < LPF >	1.00 to 20.0kHz, Thru
HF Damp < Level >	- 9 to - 1dB, Thru	Filter < HPF >	Thru, 32 to 800Hz
Mix Level	0 to 100 %	HF Damp < Frequency >	2.0 to 10.0kHz
Direct Level	0 to 100 %	HF Damp < Level >	- 9 to - 1dB, Thru
		Mix Level	0 to 100 %
		Direct Level	0 to 100 %
		Total Level	0 to 100 %

Control Assign

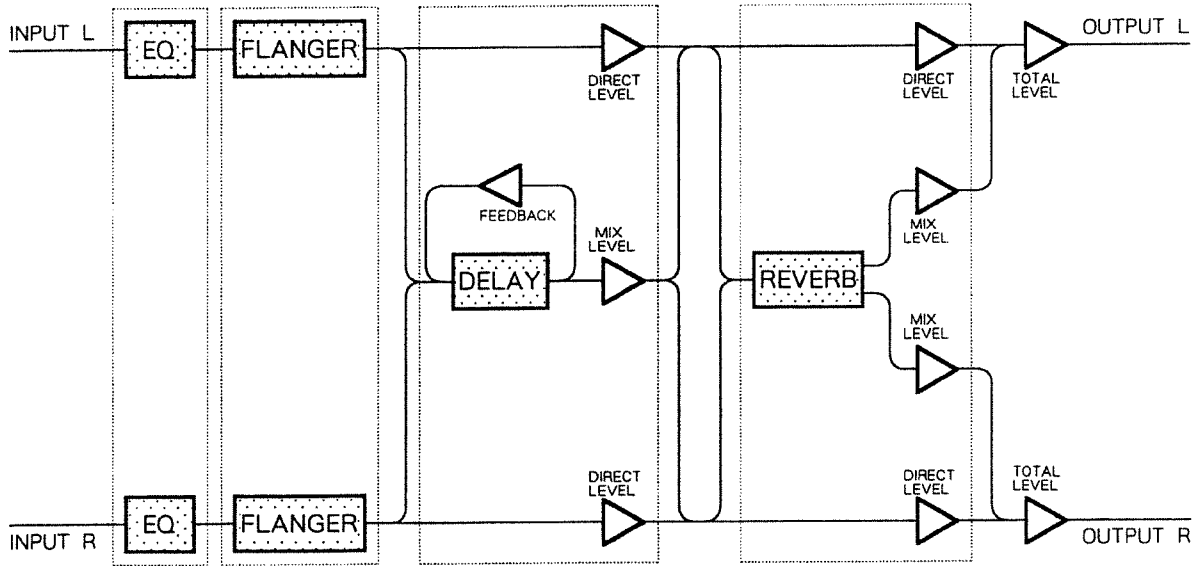
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Pitch Shifter 1	Pitch Shifter On/Off
	Fine
	Mix Level
Pitch Shifter 2	Fine
	Mix Level
Delay	Delay On/Off
	Feedback
	Mix Level
Reverb	Reverb On/Off
	Reverb Time
	Mix Level
Total Level	
Bypass On/Off	

195 : Multi 3

A multi-effects algorithm focussed mainly on flanging.

*** Multi 3 ***

Block Diagram



Parameters

Equalizer		Flanger		Delay	
High Level	- 12.0 to + 12.0dB	Rate	1 to 100 %	Delay Time	1 to 1600ms
Middle Frequency	250Hz to 6.3kHz	Depth	0 to 100 %	Feedback	0 to 120 %
Middle Level	- 12.0 to + 12.0dB	Manual	0 to 100 %	HF Damp < Frequency >	2.0 to 10.0kHz
Low Level	- 12.0 to + 12.0dB	Resonance Mode	Mixed/Unmixed	HF Damp < Level >	- 9 to - 1dB, Thru
Total Level	- 12.0 to + 12.0dB	Resonance	- 100 to 100 %	Mix Level	0 to 100 %
		Modulation Phase	- 180 to 180deg	Direct Level	0 to 100 %
		Mix Level	0 to 100 %		

Reverb	
Reverb Time	0.1 to 480.0sec
Pre Delay	0 to 140ms
Filter < LPF >	1.0 to ~20.0kHz, Thru
Filter < HPF >	Thru, 32 to 800Hz
HF Damp < Frequency >	2.0 to 10.0kHz
HF Damp < Level >	- 9 to - 1dB, Thru
Mix Level	0 to 100 %
Direct Level	0 to 100 %

Total Level	0 to 100 %
-------------	------------

Control Assign

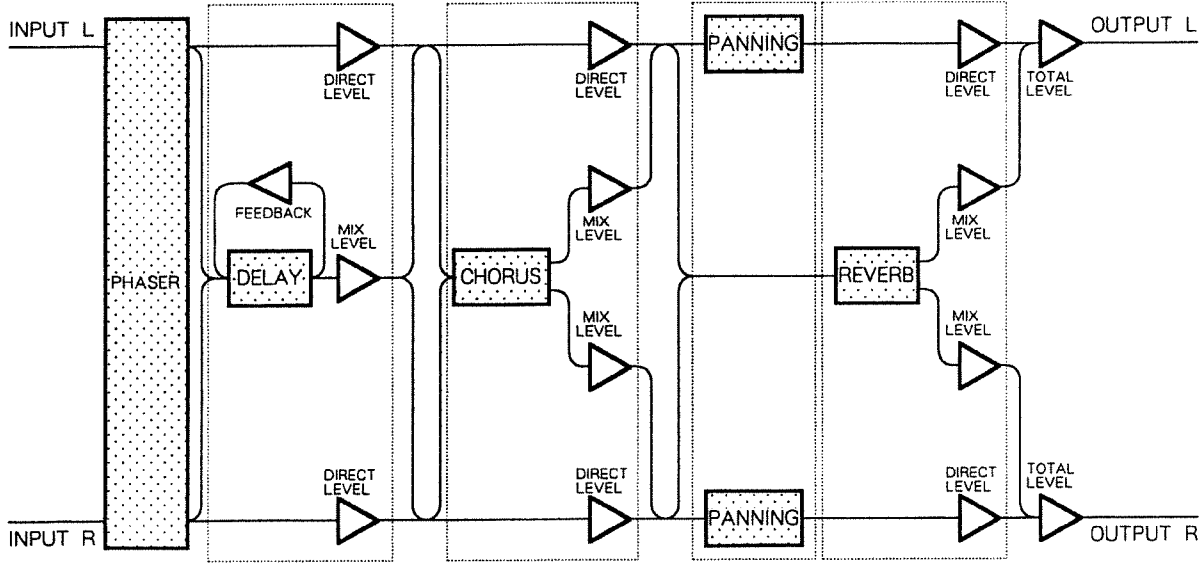
Equalizer	Equalizer On/Off
	High Level
	Middle Level
	Low Level
	Total Level
Flanger	Flanger On/Off
	Rate
	Depth
	Resonance
	Mix Level
Delay	Delay On/Off
	Feedback
	Mix Level
Reverb	Reverb On/Off
	Reverb Time
	Mix Level
Total Level	
Bypass On/Off	

196 : Multi 4

A multi-effects algorithm that combines phaser, delay, chorus, panning, and reverb, connected in series. Most effective when used for an electronic piano.

*** Multi 4 ***

Block Diagram



Parameters

Phaser		Delay		Chorus	
Rate	1 to 100 %	Delay Time	1 to 1600ms	Pre Delay	0 to 125ms
Depth	0 to 100 %	Feedback	0 to 120 %	Rate	1 to 100 %
Manual	0 to 100 %	HF Damp < Frequency >	2.0 to 10.0kHz	Depth	0 to 100 %
Resonance	0 to 100 %	HF Damp < Level >	- 9 to - 1dB, Thru	Mix Level	0 to 100 %
		Mix Level	0 to 100 %	Direct Level	0 to 100 %
		Direct Level	0 to 100 %		

Panning		Reverb		Total Level	
Rate	1 to 100 %	Reverb Time	0.1 to 480.0sec	Total Level	0 to 100 %
Depth	0 to 100 %	Pre Delay	0 to 140ms		
		Filter < LPF >	1.00 to 20.0kHz, Thru		
		Filter < HPF >	Thru, 32 to 800Hz		
		HF Damp < Frequency >	2.0 to 10.0kHz		
		HF Damp < Level >	- 9 to - 1dB, Thru		
		Mix Level	0 to 100 %		
		Direct Level	0 to 100 %		

Control Assign

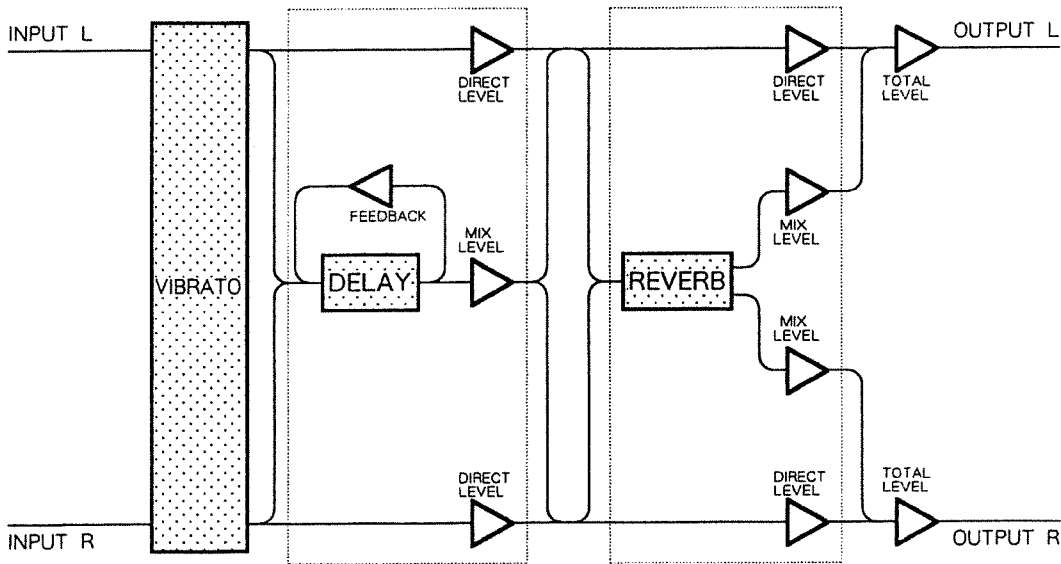
Phaser	Phaser On/Off
	Rate
	Depth
Delay	Delay On/Off
	Feedback
	Mix Level
Chorus	Chorus On/Off
	Rate
	Depth
	Mix Level
Panning	Panning On/Off
	Rate
	Depth
Reverb	Reverb On/Off
	Reverb Time
	Mix Level
Total Level	
Bypass On/Off	

197 : Multi 5

*** Multi 5 ***

This algorithm combines the vibrato and tremolo/panning effects. Natural sounding changes in the vibrato can be produced by turning vibrato On/Off using Control Assign.

Block Diagram



Parameters

Vibrato		Delay	
Rate	1 to 100 %	Delay Time	1 to 1600ms
Depth	0 to 100 %	Feedback	0 to 120 %
Rise Time	1 to 100 %	HF Damp < Frequency >	2.0 to 10.0kHz
Fall Time	1 to 100 %	HF Damp < Level >	-9 to -1dB, Thru
Panning : Mode	Tremolo/Panning	Mix Level	0 to 100 %
Panning : LFO Waveform	Tri/Sin	Direct Level	0 to 100 %
Panning : Depth	0 to 100 %		

Reverb	
Reverb Time	0.1 to 480.0sec
Pre Delay	0 to 140ms
Filter < LPF >	1.00 to 20.0kHz, Thru
Filter < HPF >	Thru, 32 to 800Hz
HF Damp < Frequency >	2.0 to 10.0kHz
HF Damp < Level >	-9 to -1dB, Thru
Mix Level	0 to 100 %
Direct Level	0 to 100 %

Total Level	0 to 100 %
-------------	------------

Control Assign

Vibrato	Vibrato On/Off
	Rate
	Depth
	Panning Depth
Delay	Delay On/Off
	Feedback
	Mix Level
Reverb	Reverb On/Off
	Reverb Time
	Mix Level
Total Level	
Bypass On/Off	

198 : Modulation Delay/Reverb

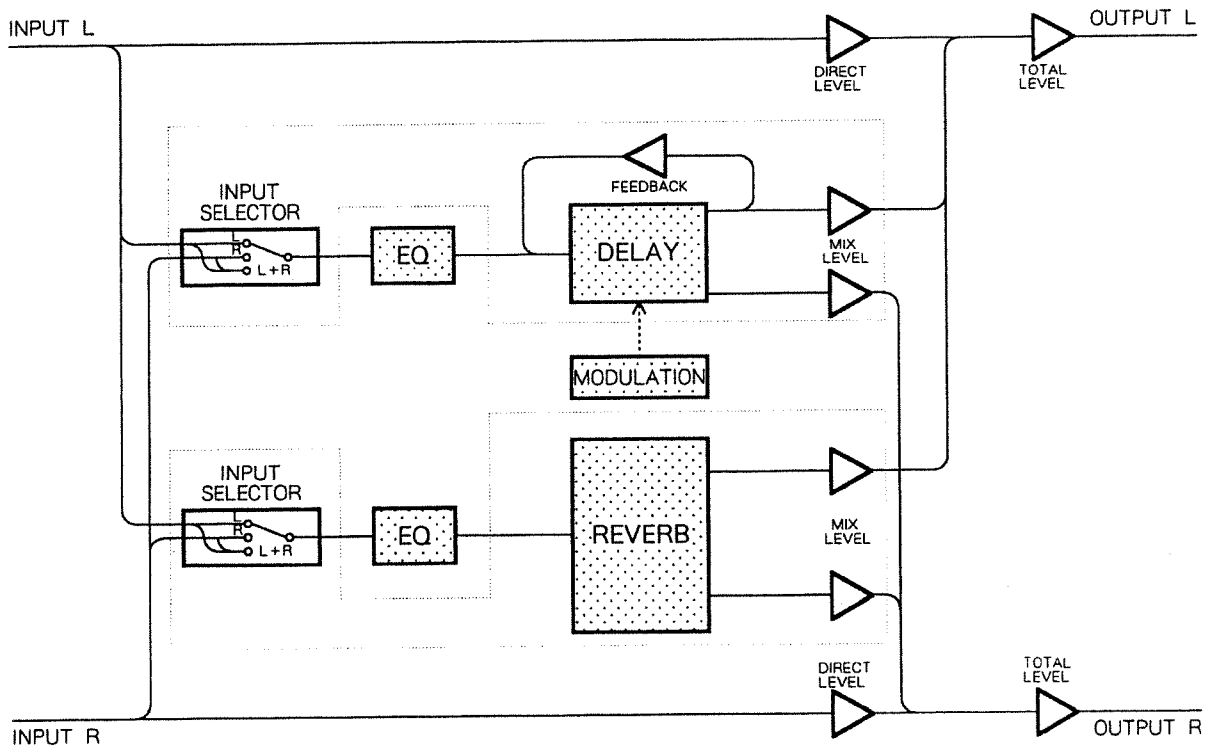
* Mod.Dly/Rev *

This algorithm connects Modulation Delay and Reverb in parallel. Using the Input Selector for each effector, you can create effects such as one where Modulation Delay is applied to the L input signals, while Reverb is applied to the R input signals. Effective when connected to Send/Return on a mixer.

** When Delay is turned Off, modulation and equalization are also turned Off, regardless of any settings made for them.*

** When Reverb is turned Off, equalization is also turned Off, regardless of any settings made for it.*

Block Diagram



Parameters

Delay		Modulation		Equalizer (Delay)	
Input Select	Lch/Rch/L + R	LFO Waveform	Tri/Sin	High Level	- 12.0 to + 12.0dB
Delay Time	1 to 1600ms	Rate	1 to 100 %	Middle Frequency	250Hz to 6.3kHz
Feedback	0 to 120 %	Depth	0 to 100 %	Middle Level	- 12.0 to + 12.0dB
HF Damp < Frequency >	2.0 to 10.0kHz			Low Level	- 12.0 to + 12.0dB
HF Damp < Level >	- 9 to - 1dB, Thru			Total Level	- 12.0 to + 12.0dB
Mix Level	0 to 100 %				
Cross Mix	0 to 100 %				

Reverb		Equalizer (Reverb)	
Input Select	Lch/Rch/L + R	High Level	- 12.0 to + 12.0dB
Reverb Time	0.1 to 480.0sec	Middle Frequency	250Hz to 6.3kHz
Pre Delay	0 to 140ms	Middle Level	- 12.0 to + 12.0dB
Filter < LPF >	1.00 to 20.0kHz, Thru	Low Level	- 12.0 to + 12.0dB
Filter < HPF >	Thru, 32 to 800Hz	Total Level	- 12.0 to + 12.0dB
HF Damp < Frequency >	2.0 to 10.0kHz		
HF Damp < Level >	- 9 to - 1dB, Thru		
Mix Level	0 to 100 %		

Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

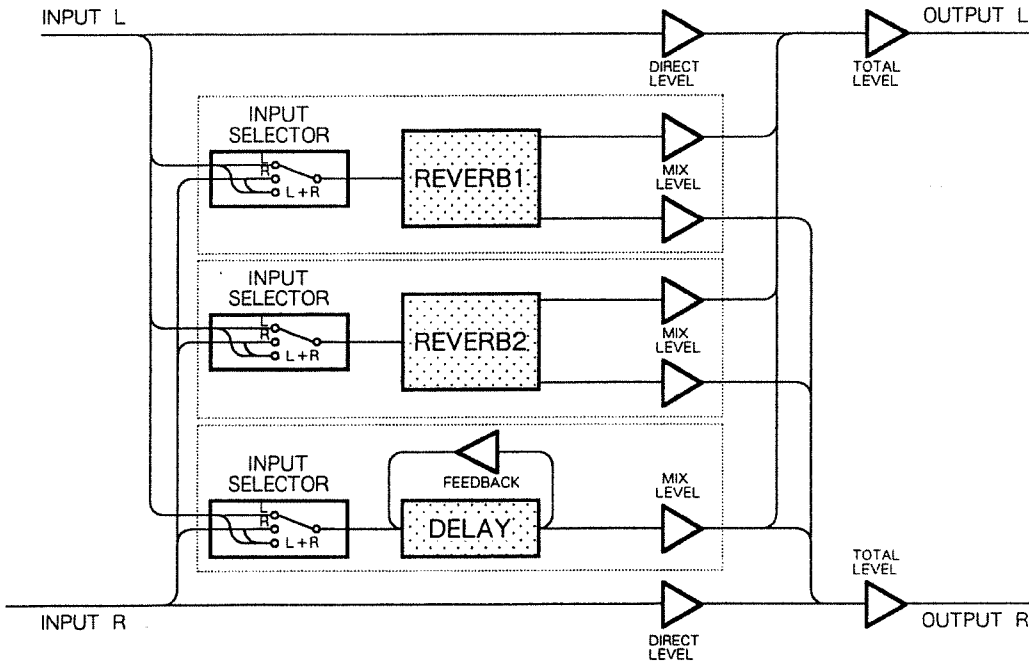
Delay	Delay On/Off
	Feedback
	Mix Level
Modulation	Modulation On/Off
	Rate
	Depth
Equalizer (Delay)	Equalizer On/Off
	Total Level
Reverb	Reverb On/Off
	Reverb Time
	Mix Level
Equalizer (Reverb)	Equalizer On/Off
	Total Level
Total Level	
Bypass On/Off	

199 : Reverb/Reverb/Delay

* Rev/Rev/Dly **

This algorithm connects two types of Reverb and Delay in parallel. Through creative use of the Input Selector for each effector, you can setup effects such as one where Reverb is applied to the L input signals, while Delay is applied to the R input signals. Effective when connected to Send/Return on a mixer.

□ Block Diagram



Parameters

Reverb1		Reverb2	
Input Select	Lch/Rch/L + R	Input Select	Lch/Rch/L + R
Reverb Time	0.1 to 480.0sec	Reverb Time	0.1 to 480.0sec
Pre Delay	0 to 140ms	Pre Delay	0 to 140ms
Filter < LPF >	1.00 to 20.0kHz, Thru	Filter < LPF >	1.00 to 20.0kHz, Thru
Filter < HPF >	Thru, 32 to 800Hz	Filter < HPF >	Thru, 32 to 800Hz
HF Damp < Frequency >	2.0~10.0kHz	HF Damp < Frequency >	2.0 to 10.0kHz
HF Damp < Level >	- 9 to - 1dB, Thru	HF Damp < Level >	- 9 to - 1dB, Thru
Mix Level	0 to 100 %	Mix Level	0 to 100 %

Delay	
Input Select	Lch/Rch/L + R
Delay Time	1 to 620ms
Feedback	0 to 120 %
HF Damp < Frequency >	2.0 to 10.0kHz
HF Damp < Level >	- 9 to - 1dB, Thru
Mix Level	0 to 100 %

Direct Level	0 to 100 %
Total Level	0 to 100 %

Control Assign

Reverb1	Reverb On/Off
	Reverb Time
	Mix Level
Reverb2	Reverb On/Off
	Reverb Time
	Mix Level
Delay	Delay On/Off
	Feedback
	Mix Level
Total Level	
Bypass On/Off	

How the Parameters Function

Each Algorithm employs a number of Effectors, combined to provide a specific effect. This section explains the workings of the individual parameters provided by each Effector.

Note that any one Effector may offer a different selection of parameters, and the range of values for them may vary, depending on the particular algorithm it is used in.

AMBIENCE

Simulates the effect obtained with the ambience recording technique. (A microphone is placed at a distance from the sources of sound when recording in order to add a sense of spaciousness and depth.)

● PRE DELAY

Adjusts the Pre-Delay.

● EARLY REFLECTION LEVEL

Adjusts the volume of the Early Reflections.

● MIX LEVEL

Adjusts the volume of the Ambience sound.

● DIRECT LEVEL

Adjusts the volume of the Direct sound.

CHORUS

This effect adds warmth and spaciousness to sound.

● CHORUS MODE

Allows you to select the type of Chorus to be applied. The higher the value, the thicker the sound becomes.

● LFO WAVEFORM

Allows you to select the LFO Waveform used when the Chorus effect is produced.

Tri (triangle wave): Provides a smooth Chorus.

Sin (sine wave): Provides a distinctly unique Chorus.

● PRE DELAY

Determines the amount of time before the Chorus sound is to be heard. With Pre-Delay set to a high value, you obtain an effect that produces sound which seems to be generated by numerous sources (doubling effect).

● RATE

Adjusts the rate of Chorus fluctuations.

● DEPTH

Adjusts the depth of Chorus fluctuations.

● **PAN**

Allows you to adjust the panning (position of sound image) of the Chorus sound.

● **SEPARATION**

Adjusts the breadth of the Chorus sound.

● **CHORUS TONE**

Adjusts the tone of the Chorus sound.

● **CHORUS LEVEL**

● **MIX LEVEL**

Adjusts the volume of the Chorus sound.

● **CROSS MIX**

Adjusts the volume of the Chorus sound that is output on the other channel after it has passed through the hi-pass filter.

● **DIRECT LEVEL**

Adjusts the volume of the Direct sound.

● **TOTAL LEVEL**

Adjusts the overall volume.

DELAY

Provides specialized effects and thickens sounds by adding delayed portions to the direct sound.

● **DELAY TIME**

Adjusts the delay time.

● **FEEDBACK**

This feature controls the amount of Feedback. Feedback refers to the process of feeding portions of the delayed signal back into the delay circuitry. By changing the amount of feedback, you can alter the number of repetitions made by the delay.

● **CROSS FEEDBACK**

With algorithms that include this parameter, the delayed signals can be fed back into the other channel. Here, the amount of such feedback can be adjusted.

● **HF DAMP < FREQUENCY >**

Provides adjustment for the Base Frequency of the HF Damp (attenuation of the higher frequency portions of the reverberant sound). Sounds above the base frequency will be attenuated.

● **HF DAMP < LEVEL >**

Adjusts the degree of attenuation obtained with HF Damp. When at THRU, there is no high frequency damping.

● **FEEDBACK FILTER HPF**

Controls the cut-off frequency of the High-pass Filter that affects only the Feedback signals. When at THRU, the High-pass Filter is inactive.

● **PAN**

Allows you to adjust the panning (position of sound image) of the Delay sound.

● **MIX LEVEL**

Adjusts the volume of the Delayed sound.

● **CROSS MIX**

Adjusts the volume of the Delayed sound that is output on the other channel after it has passed through the hi-pass filter.

● **PANNING : LFO WAVEFORM**

Allows you to select the Waveform used for the LFO (Low Frequency Oscillator) which applies the Panning modifications to the delayed sounds when output.

Tri (triangle wave): The time sound is localized on only one channel is shortened.

Sin (sine wave): The time sound is localized on only one channel is lengthened.

● **PANNING : RATE**

Adjusts the rate at which the output sound is panned left and right.

● **PANNING DEPTH**

Adjusts the distance over which the output sound is panned left and right.

● **DIRECT LEVEL**

Adjusts the volume of the Direct sound.

● **TOTAL LEVEL**

Adjusts the overall volume.

EDGE EXPANDER

This effect creates clarity and presence as a result of its expansion of the attack portions of the original sounds.

● SENSITIVITY

Controls the degree to which the Expansion effect will be applied relative to the input level. The higher the value, the lower the Expansion effect threshold level (the level at which the effect begins to work).

● RELEASE TIME

This setting determines the amount of time it will take for the Expansion effect to become inaudible (starting from the moment the signal falls below the threshold level).

● MIX LEVEL

Adjusts the amount of Expanded sound to be mixed with the original.

ENHANCER

A two-channel, completely independent Enhancer.

The Enhancer produces sound with much greater definition (enhances it) by adding to the original sound other portions which have been shifted in phase.

● FREQUENCY

Adjusts the frequency band to which the enhancement is to be applied.

● MIX BALANCE

Adjusts the mixture of direct versus enhanced sound that will be output.

ENSEMBLE

This is a chorus which is controlled by two LFOs having varying rates. It is capable of providing a chorus effect that is much fatter than conventional choruses.

● ENSEMBLE MODE

Allows you to select the type of Ensemble to use.

● TOTAL LEVEL

Adjusts the overall volume.

EQUALIZER

A three-band equalizer is provided. A parametric equalizer controls the mid-range.

● HIGH LEVEL

Adjusts the tone of the upper range.

● MIDDLE FREQUENCY

Determines the center frequency to be used when adjusting the tone of the mid-range.

● MIDDLE LEVEL

Adjusts the tone of the mid-range.

● LOW LEVEL

Adjusts the tone of the lower range.

● TOTAL LEVEL

Adjusts the overall volume.

FEEDBACK

Controls the delayed signals that are fed back into the circuitry. Since Feedback is processed independently, an independent setting (different from that for Delay Time) can be made.

● FEEDBACK POSITION

Determines when the delayed signals are fed back into the circuitry's input.

● LEVEL

Controls the amount of feedback. By altering the amount of Feedback, you change the number of times the Delayed signals will be repeated.

● HF DAMP < FREQUENCY >

Provides adjustment for the Base Frequency of the HF Damp (attenuation of the higher frequency portions of the reverberant sound). Sounds above the base frequency will be attenuated.

● HF DAMP < LEVEL >

Adjusts the degree of attenuation obtained with HF Damp. When at THRU, there is no high frequency damping.

● FEEDBACK FILTER (HPF)

Controls the cut-off frequency of the High-pass Filter that affects only the Feedback signals. When at THRU, the High-pass Filter is inactive.

FLANGER

At its greatest depth, the flanger can produce an effect that could be likened to the sound of a jet plane's ascent and descent. A two-channel, full stereo effect is provided.

● **MODE**

Provides selection of the type of Flanging desired.

Normal: Provides ordinary Flanging.

Bi-Flanger: Links two flangers in series on each channel to provide an even wilder Flanging effect!

● **RATE**

Adjusts the rate of Flanging.

● **DEPTH**

Adjusts the depth of Flanging.

● **MANUAL**

Adjusts the Center Frequency to be employed with the Flanging effect.

● **RESONANCE MODE**

Provides for selecting the manner in which Resonance will be applied.

Mixed: Applies Resonance to both Direct and Flanged sounds.

Unmixed: Applies Resonance to only the Flanged sounds.

● **RESONANCE**

Controls the amount of resonance. The higher the value, the more distinctive the sound becomes.

● **MODURATION PHASE**

Adjusts the phase differential for the Rate relative to left and right channels.

● **MIX LEVEL**

Adjusts the volume of the Flanged sound.

● **TREMOLO DEPTH**

Adjusts the Depth of Tremolo (synchronized with Flanging) for the output stage.

** When at "0%", no effect will be obtained from the Tremolo function.*

● **DIRECT MIX**

Provides selection for whether or not the Direct sound is to be mixed in with the Flanged sound when output takes place.

Cut: The direct sound will not be output.

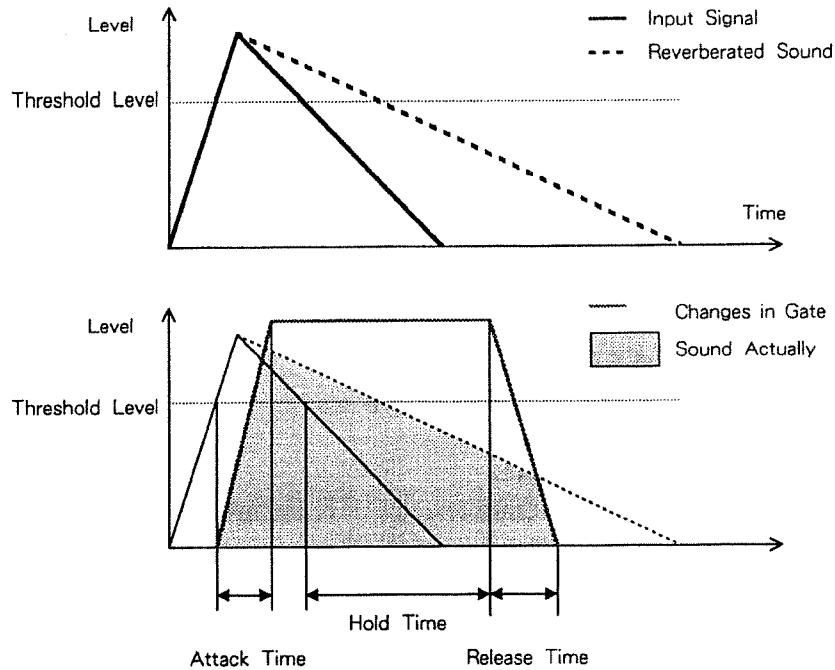
Mix: The direct sound will be mixed in with the sound output.

● **TOTAL LEVEL**

Adjusts the overall volume.

□ GATE

Although Gate is used with Reverb, it provides an effect quite unlike that of Gated Reverb. The Gate effect is threshold activated.



● THRESHOLD LEVEL

This setting determines the level used to control the Gate. Whenever the input signal is above the Threshold Level, the Gate will open. Conversely, whenever the input signal falls below the Threshold Level, the Gate will close.

● HOLD TIME

Specifies the amount of time the Gate will remain open before starting to close (from the moment the input signal falls below the Threshold Level).

● ATTACK TIME

This setting specifies the amount of time it will take for the Gate to completely open (from the moment the input signal rises above the Threshold Level).

● RELEASE TIME

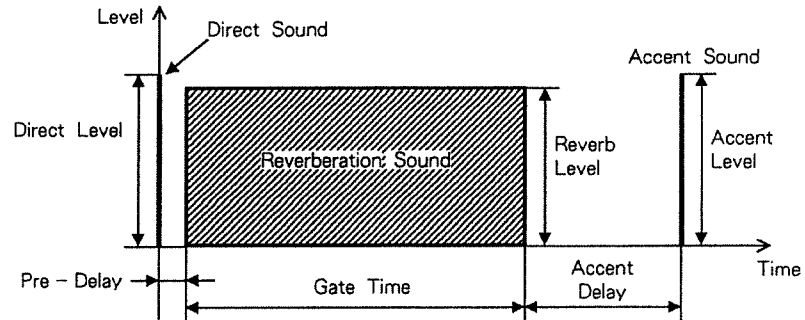
Specifies the amount of time that will pass before the sound is completely muted (after the Hold Time has passed).

● LEFTOVER LEVEL

This is a balance setting which allows you to select the level of reverberant sounds that can be muted with the Gate, relative to the level of standard reverberant sounds. The higher the value you select, the higher the level of the standard reverberant sounds.

□ GATE REVERB

This type of Reverb mutes the sounds midway through their natural reverberation. Two-channel, full stereo performance is provided. When used with Accent sounds, truly interesting effects can be obtained.



● GATE MODE

Provides selection for the manner in which Gate Reverb is applied.

- Mode 1: An ordinary Gate Reverb.
- Mode 2: Reverberant sound moves from left to right.
- Mode 3: Reverberant sound moves from right to left.

** When using Modes 2 or 3, always use an identical input signal for both left and right channels.*

● GATE TIME

Adjusts the duration of the reverberant sound.

● PRE DELAY

Determines the amount of time before the reverberant sound is to be heard.

● DENSITY

Adjusts the density of the reverberant sounds.

● THICKNESS

Adjusts the thickness of the reverberant sound.

● ACCENT DELAY

Determines the amount of time (after the reverberant sound has been muted) before the Accented sound will be heard.

● ACCENT LEVEL

Adjusts the volume of the Accented sound.

● REVERB LEVEL

Adjusts the volume of the reverberant sound.

● DIRECT LEVEL

Adjusts the volume of the Direct sound.

MODULATION

This effect applies modulation to the signals using an LFO. It produces effects similar to Chorus and Flanging.

● LFO WAVEFORM

Allows you to select the LFO Waveform that is to be used to modify the sounds.

Tri (triangle wave): Provides a smooth modulation.

Sin (sine wave): Provides a distinctly unique modulation.

● RATE

Adjusts the modulation rate.

● DEPTH

Adjusts the modulation depth.

● LR POLARITY

Adjusts the phase of the Rate relative to left and right channels.

Syncro: Changes on both channels occurs in phase with each other.

Invert: Change on one channel occurs 180 degrees out of phase with the other channel.

OVERDRIVE

Simulates the distortion produced by rotary speakers.

● GAIN

Adjusts the level of input to the Overdrive. The higher the gain, the greater the distortion becomes.

** At 0% no sound will be output.*

● DRIVE

Adjusts the amount of distortion.

● LEVEL

Adjusts the level of sound output by the Overdrive.

PANNING

This effect periodically pans the output sound to the left and right.

● RATE

Adjusts the rate at which the sound will periodically pan to the left and right.

● DEPTH

Adjusts the distance over which the output sound is panned left and right.

□ PHASER

By varying the phase of a signal and mixing it with the original, a more expansive sound can be obtained. This is a two-channel, full stereo Phaser.

● MODE

Provides selection of the type of Phaser desired.

Mode 1: A Phaser employing Four-stage Phase-shift circuitry.

Mode 2: A Phaser employing Eight-stage Phase-shift circuitry.

Mode 3: A Phaser employing Ten-stage Phase-shift circuitry.

Mode 4: A Phaser employing Eight-stage Phase-shift circuitry, each having a different character.

Mode 5: A Phaser employing two Six-stage Phase-shift circuits connected in series.

Mode 6: A Phaser employing Twelve-stage Phase-shift circuitry.

● SENSITIVITY

Controls the Rate for the Phaser effect that will be obtained respective to the input level.

The higher the value, the more you cause a higher Phaser Rate to be used for even lower level signals.

● LFO RATE MAX

Allows you to set the Rate that will pertain at the maximum level of input.

● CONTROL RANGE

Adjusts the allowable range for the alterations in the Rate that occur in correspondence with the input level.

● RATE

Adjusts the Phaser rate.

● DEPTH

Adjusts the Phaser depth.

● MANUAL

Adjusts the Base Frequency for the Phaser.

● RESONANCE

Controls the amount of resonance obtained with the Phaser. The higher the value, the more distinctive the sound becomes.

● STEP RATE

Causes changes in Rate and Depth to be in stepped form.

The higher the value, the finer the steps become. If set to "100," no effect will be obtained from Step Rate.

● MODULATION PHASE

Adjusts the phase differential for the Rate relative to left and right channels.

● TREMOLO DEPTH

Adjusts the Depth of Tremolo (synchronized with Phaser) for the output stage.

** When at "0%", no effect will be obtained from the Tremolo function.*

● TOTAL LEVEL

Adjusts the overall volume.

□ PITCH SHIFTER

This Effector makes it possible to shift the pitch of the original sound to any pitch within a range of +/- 2 octaves.

** The shifted sound may tend to be slightly delayed even if Pre-Delay is set to "0 ms".*

● SHIFT MODE

Allows you to select the desired characteristics of the Pitch Shift.

High Quality: Results in very little wavering in the shifted sounds and provides a relatively precise pitch. Most effective when wishing to make wide ranging pitch changes.

The shifted sounds may be somewhat delayed, however.

High Speed: Effective when wishing to make sensitive changes in pitch. Very little delay occurs in the shifted sound.

● CHROMATIC

Setting for the amount of Pitch Change desired; in semitones.

● FINE

Provides precise adjustment of the pitch change.

** If the value for FINE is changed from - 50 to +50, the pitch will shift by one semitone.*

** If you assign "FINE" to Control Assign, the values available for controlling pitch will range from - 2400 to +2400 (± 2 octaves).*

** The pitch can only be shifted within the range of +/- 2 octaves.*

● PRE DELAY

Determines the amount of time before the shifted sound is heard. Ordinarily, it should be set to "0 ms".

● FEEDBACK

Controls the amount of feedback for the shifted sounds.

● MIX LEVEL

Adjusts the volume of the shifted sound.

● PAN

Allows you to adjust the panning (position of sound image) for the shifted sound.

● DIRECT LEVEL

Adjusts the volume of the Direct sound.

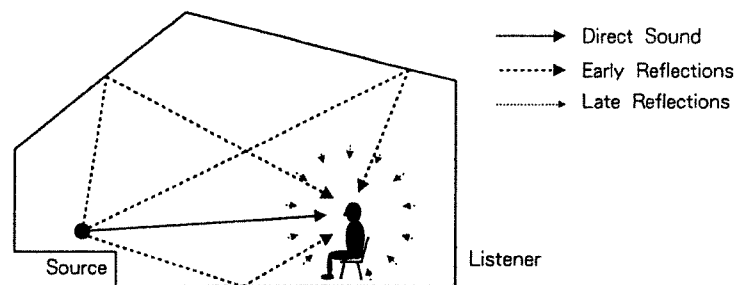
□ REVERB

Reverberation is the result of numerous reflected sounds. For example, if you clap your hands inside a large building (such as a church) you will hear the sound gradually fade away. Reverberation refers to sound which decays in this way.

A number of factors determine the character of a particular reverberation. These include the size (hall, room, etc.) and shape of the space, as well as the type of material making up the reflective surfaces (ceiling, floor, and walls). The RSP-550 is equipped with the ability to digitally simulate all these factors.

< Types of Reflected Sounds >

In analyzing sounds we find that they can be divided into the following three categories:



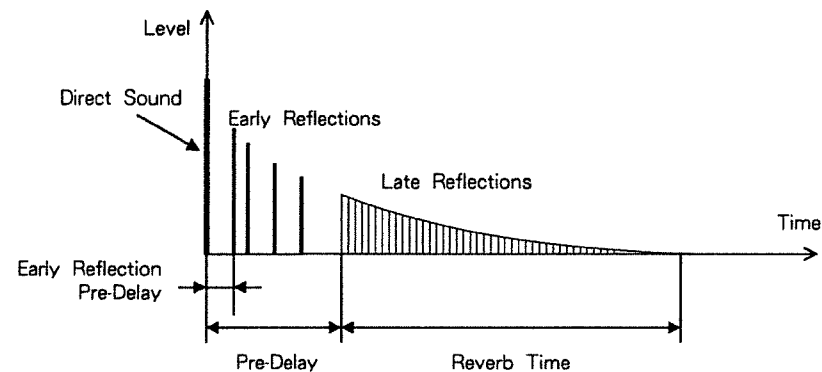
Direct Sound: sound which travels in a straight line from the source to the listener.

Early Reflections: sounds which have been reflected back one or more times from walls, etc.

Late Reflections: the time the last remaining sound continues to resound.

< Relationship Between Reflections and Time >

Reflected sounds reach the listener in this manner:



Early Reflection Pre-Delay: the amount of time it takes before the early reflections are heard.

Pre-Delay: the amount of time it takes for the late reflections to be heard.

Reverb Time: the amount of time the late reflections continue to sound.

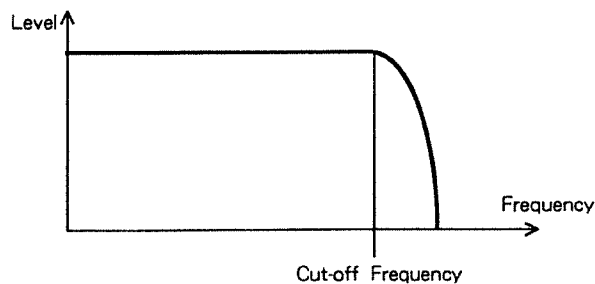
< Other Factors >

HF Damp (High Frequency Damp)

Different materials in the reflecting surfaces have different affects upon high frequency sounds. HF Damp is a parameter which provides control over the manner in which attenuation of higher frequencies takes place.

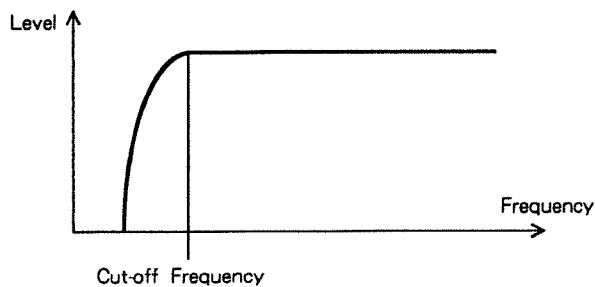
Low-Pass Filter (LPF)

Cuts the higher frequency content while allowing the lower frequencies to pass.



High-Pass Filter (HPF)

Cuts the lower frequency content while allowing the higher frequencies to pass.



● **REVERB TIME**

Adjusts the Reverb Time.

● **PRE DELAY**

Adjusts the Pre-Delay.

● **FILTER < LPF >**

Controls the cut-off frequency of the Low-pass Filter. When at THRU, the Low-pass Filter is inactive.

● **FILTER < HPF >**

Controls the cut-off frequency of the High-pass Filter. When at THRU, the High-pass Filter is inactive.

● **HF DAMP < FREQUENCY >**

Provides adjustment for the Base Frequency of the HF Damp (attenuation of the higher frequency portions of the reverberant sound). Sounds above the base frequency will be attenuated.

● **HF DAMP < LEVEL >**

Adjusts the degree of attenuation obtained with HF Damp. When at THRU, there is no high frequency damping.

● **DIFFUSION**

Controls the expansiveness of the reverberant sound.

● **EARLY REFLECTION PRE DELAY**

Adjusts the Pre-Delay time of Early Reflections.

● **EARLY REFLECTION LEVEL**

Adjusts the volume of the Early Reflections.

● **REVERB LEVEL**

● **MIX LEVEL**

Adjusts the volume of the reverberant sound.

● **CROSS MIX**

Adjusts the volume of the reverberant sound that is output on the other channel, after it has passed through the hi-pass filter.

● **DIRECT LEVEL**

Adjusts the volume of the Direct sound.

REVERSE GATE

Provides a very specialized effect, one sounding as if the reverberant sounds were reproduced in reverse. This reverse gate effect can be emphasized further by adding on accent sound.

● GATE MODE

Provides selection for the manner in which Gate Reverb is applied.

Mode 1: A reverse Reverb effect.

Mode 2: A specialized Reverse Gate that first attenuates the reverberant sounds, then amplifies them again.

● GATE TIME

Determines the amount of time the reverberant sound is heard.

● PRE DELAY

Determines the amount of time before the reverberant sound is heard.

● DENSITY

Adjusts the density of the reverberant sounds.

● THICKNESS

Adjusts the thickness of the reverberant sound.

● ACCENT DELAY

Determines the amount of time (after the reverberant sound has been muted) before the Accented sound will be heard.

● ACCENT LEVEL

Adjusts the volume of the Accented sound.

● REVERB LEVEL

Adjusts the volume of the reverberant sound.

● DIRECT LEVEL

Adjusts the volume of the Direct sound.

ROTARY

Simulates the effects of rotary speakers. Rotary speakers provide rotation speed selection (Slow, Fast). In addition, a horn rotates for the higher frequency ranges and a rotor spins for the lower frequency ranges. For this reason, separate settings can be made for upper and lower ranges.

● SPEED SELECT

Provides selection for the speed of the sound's oscillations.

Slow: Revolves slowly.

Fast: Revolves rapidly.

● HORN SPEED < FAST >

While "Fast" is selected, this controls the rotation speed of the Horn.

● ROTOR SPEED < FAST >

While "Fast" is selected, this controls the rotation speed of the Rotor.

● HORN SPEED < SLOW >

While "Slow" is selected, this controls the rotation speed of the Horn.

● ROTOR SPEED < SLOW >

While "Slow" is selected, this controls the rotation speed of the Rotor.

● RISE TIME < HORN >

Allows you to set the time it will take for the Horn's speed to increase from "Slow" to "Fast".

● RISE TIME < ROTOR >

Allows you to set the time it will take for the Rotor's speed to increase from "Slow" to "Fast".

● FALL TIME < HORN >

Allows you to set the time it will take for the Horn's speed to decrease from "Fast" to "Slow".

● FALL TIME < ROTOR >

Allows you to set the time it will take for the Rotor's speed to decrease from "Fast" to "Slow".

● MIX BALANCE

Adjusts the volume balance between the Horn and Rotor.

SPACE CHORUS

The Chorus provided by this effect simulates the characteristics of the renowned Roland Dimension D (SDD-320).

● SPACE MODE

Allows selection of the manner in which Chorus fluctuations occur.

- 1: Provides a relatively shallow effect, at a slow rate.
- 2: Provides a deeper effect, at a slow rate.
- 3: Provides a relatively shallow effect, at a fast rate.
- 4: Provides a deeper effect, at a fast rate.

● DIRECT MIX

Allows you to choose whether the Direct sound will be added or not.

- Cut: The direct sound will not be output.
Mix: The direct sound will be mixed in with the sound output.

● TOTAL LEVEL

Adjusts the overall volume.

TEMPO DELAY

This allows you to set a Delay Time that matches the Tempo/Note of the music.

● TEMPO

This setting represents the Tempo; set to match the music.

● INTERVAL

Allows you to set the interval between delayed sounds; the interval being expressed as note values.

● FEEDBACK

Controls the amount of feedback for the Delayed sound.

● HF DAMP < FREQUENCY >

Provides adjustment for the Base Frequency of the HF Damp (attenuation of the higher frequency portions of the reverberant sound). Sounds above the base frequency will be attenuated.

● HF DAMP < LEVEL >

Adjusts the degree of attenuation obtained with HF Damp. When at THRU, there is no high frequency damping.

● FEEDBACK FILTER (HPF)

Controls the cut-off frequency of the High-pass Filter that affects only the Feedback signals. When at THRU, the High-pass Filter is inactive.

● SEPARATION

Adjusts the breadth of the Delayed sound.

● MIX LEVEL

Adjusts the volume of the Delayed sound.

● DIRECT LEVEL

Adjusts the volume of the Direct sound.

VIBRATO

This effect adds Tremolo/Panning to Vibrato, which is composed of sound created through minute alterations in the pitch of the Direct sound.

● RATE

Adjusts the Vibrato Rate.

● DEPTH

Adjusts the Vibrato Depth.

● RISE TIME

This setting specifies the time it will take for the Vibrato to reach its maximum effect (after it has been turned ON using the Control Assign function).

● FALL TIME

This setting specifies the time it will take for the Vibrato effect to become inaudible (after it has been turned OFF using the Control Assign function).

● TREMOLO / PANNING MODE

This feature allows you to choose between Tremolo and the Panning function.

● TREMOLO / PANNING LFO WAVEFORM

Allows you to select the LFO Waveform that is to be used when the Tremolo/Panning effect is produced.

Tri (triangle wave): The transition (changes) in sound occurs smoothly.

Sin (sine wave): The transition (changes) in sound occurs abruptly.

● TREMOLO / PANNING DEPTH

When using Tremolo, this setting determines the extent to which changes in the output level will be made.

When using the Panning function, it determines the amount by which the sound will pan from left to right.

** When at "0%", no effect will be obtained from the Tremolo/Panning function.*

□ VOCODER

The Vocoder first takes the sound produced by a keyboard or other instrument and divides it into 8 frequency portions by means of its BPFs (Band Pass Filters). These frequency portions are then altered by control signals, which have been produced as the result of spectral analysis of the voice being input through the microphone. This all results in the production of an effect that allows a voice to sound using the tones of an instrument.

● GATE THRESHOLD

The voice input through the microphone is turned on or off (muted) based on the input level set by means of the Gate Threshold. Should be adjusted when wishing to cut out unwanted noise if it becomes noticeable when the voice is at the lowest levels.

● MIC MIX LEVEL

Adjusts the proportion of sound from the microphone that is to be added to the sound output from the Vocoder.

● HISS MIX LEVEL

Adjusts the proportion of higher frequency sound portions from the sound of the microphone that are to be added to the sound output from the Vocoder. By altering this level relative to that of the Mic Mix Level, the "human-voice-like" quality of the effect is emphasized or lessened.

● VOICE CHARACTER

Adjusts the relative proportion of the frequency content from each BPF. The timbre obtained with the Vocoder is altered as result of this setting.

● TOTAL LEVEL

Adjusts the overall volume.

ALGORITHM LIST

Program No.	Algorithm Name	Effect Name
161	Hall 1	Reverb + Gate + Equalizer
162	Hall 2	Reverb + Equalizer
163	Hall 3	Reverb + Equalizer
164	Room 1	Reverb + Gate + Equalizer
165	Room 2	Reverb + Equalizer
166	Plate 1	Reverb + Gate + Equalizer
167	Plate 2	Reverb + Equalizer
168	Gate Reverb	Gate Reverb + Equalizer
169	Reverse Gate	Reverse Gate + Equalizer
170	Ambience	Equalizer + Edge Expander + Ambience
171	Modulation Reverb	Reverb + Modulation + Equalizer
172	8 Tap Delay	Delay × 8 + Equalizer
173	4 Tap Delay	Delay × 4 + Feedback + Equalizer
174	Stereo Delay	Delay + Modulation + Equalizer
175	Tempo Delay	Tempo Delay + Modulation + Equalizer
176	Simple Delay	Delay
177	Penta Chorus	Chorus
178	Space Chorus	Space Chorus
179	Stereo Chorus	Chorus + Equalizer
180	4 Band Chorus	Chorus × 4
181	2 Band Chorus	Chorus × 2
182	Ensemble	Ensemble
183	Stereo Pitch Shifter	Pitch Shifter × 2
184	Quad Pitch Shifter	Pitch Shifter × 4
185	2 Band Pitch Shifter	Pitch Shifter × 2
186	Multi Phaser	Phaser
187	Dynamic Phaser	Phaser
188	Stereo Flanger	Flanger
189	Enhancer	Enhancer × 2
190	Rotary 1	Rotary + Overdrive
191	Rotary 2	Rotary + Overdrive
192	Vocoder	Vocoder
193	Multi 1	Equalizer + Chorus + Delay + Reverb
194	Multi 2	Equalizer + Pitch Shifter + Delay + Reverb
195	Multi 3	Equalizer + Flanger + Delay + Reverb
196	Multi 4	Phaser + Delay + Chorus + Panning + Reverb
197	Multi 5	Vibrato + Delay + Reverb
198	Modulation Delay/Reverb	Modulation Delay / Reverb
199	Reverb/Reverb/Delay	Reverb / Reverb / Delay

FACTORY PRESETS

No.	NAME/Algorithm	No.	No.	NAME/Algorithm	No.	No.	NAME/Algorithm	No.	No.	NAME/Algorithm	No.
1	Large Hall 1	161	51	Analog Chorus	177	101	Large Hall 1 *	161	151	Analog Chorus *	177
2	Large Hall 2	163	52	Ensemble Chorus	177	102	Large Hall 2 *	163	152	Detuned Chorus *	183
3	Medium Hall 1	161	53	Detuned Chorus	183	103	Medium Hall 1 *	161	153	Light Flanger *	188
4	Medium Hall 2	162	54	Light Flanger	188	104	Medium Hall 2 *	162	154	Tapping Delay *	175
5	Large Room	164	55	Deep Swell	188	105	Large Room *	164	155	Shimmer *	174
6	Medium Room	164	56	Tapping Delay	175	106	Medium Room *	164	156	Analog Delay *	174
7	Small Room	165	57	Tapping Dot 8th	175	107	Small Room *	165	157	fountain *	172
8	Warm Plate	167	58	Shimmer	174	108	Warm Plate *	167	158	Auto Pan Delay *	173
9	Bright Plate	166	59	Crazy Echo	174	109	Bright Plate *	166	159	Chorus / Reverb *	198
10	Vocal Plate 1	166	60	Analog Delay	174	110	Vocal Plate 1 *	166	160	Hall / Room *	199
11	Vocal Plate 2	167	61	fountain	172	111	Vocal Plate 2 *	167	161	Hall 1	
12	Cathedral	161	62	Auto Pan Delay	173	112	Cathedral *	161	162	Hall 2	
13	Arena	161	63	Wave	172	113	Arena *	161	163	Hall 3	
14	Classical Hall	162	64	Running Horse	172	114	Classical Hall *	162	164	Room 1	
15	Baroque Hall	161	65	Four Waves	173	115	Baroque Hall *	161	165	Room 2	
16	Opera House	163	66	Double Pan Dly	173	116	Opera House *	163	166	Plate 1	
17	String Hall	162	67	Doubling Echo	176	117	String Hall *	162	167	Plate 2	
18	Wide Space	161	68	Exciting Male	189	118	Wide Space *	161	168	Gate Reverb	
19	Midnight Street	161	69	Exciting Female	189	119	Midnight Street *	161	169	Reverse Gate	
20	Garage	166	70	Light Phaser	186	120	Garage *	166	170	Ambience	
21	Industrial	167	71	Round Phaser	186	121	Industrial *	167	171	Modulation Reverb	
22	Reflection	163	72	Jungle Phaser	186	122	Reflection *	163	172	8 Tap Delay	
23	Church	164	73	Accent Phaser	187	123	Church *	164	173	4 Tap Delay	
24	Metallic Room	165	74	Jet Phasing	186	124	Metallic Room *	165	174	Stereo Delay	
25	Club Stage	164	75	Jet Flanging	188	125	Club Stage *	164	175	Tempo Delay	
26	Wood Floor	164	76	Rhodes Phaser	196	126	Wood Floor *	164	176	Simple Delay	
27	Bright Chamber	161	77	Rhodes Chorus	193	127	Bright Chamber *	161	177	Penta Chorus	
28	String Chamber	165	78	Rhodes Vibrato	196	128	String Chamber *	165	178	Space Chorus	
29	Tiled Room	164	79	Wide Guitar	193	129	Tiled Room *	164	179	Stereo Chorus	
30	Bright Room	164	80	Octave Brass	194	130	Bright Room *	164	180	4 Band Chorus	
31	Warm Room	165	81	String Phaser	196	131	Warm Room *	165	181	2 Band Chorus	
32	Corridor	161	82	Wide Piano	194	132	Corridor *	161	182	Ensemble Chorus	
33	Heaven	171	83	Bright Piano	163	133	Heaven *	171	183	Stereo Pitch Shifter	
34	Hell	171	84	Flanging Piano	195	134	Hell *	171	184	4 Note Pitch Shifter	
35	Drum Ambience	170	85	Vibrating Vibe	197	135	Drum Ambience *	170	185	2 Band Pitch Shifter	
36	Jazz Club	170	86	Round Rotary	191	136	Jazz Club *	170	186	Multi Phaser	
37	Live Sound	170	87	Soft Rotary	190	137	Live Sound *	170	187	Dynamic Phaser	
38	Hall + Gate	161	88	Hardrock Organ	190	138	Hall + Gate *	161	188	Stereo Flanger	
39	Plate + Gate	166	89	String Ensemble	182	139	Plate + Gate *	166	189	2ch Enhancer	
40	150msec Gate	168	90	Vibrato Lead	197	140	150msec Gate *	168	190	Rotary Effect	
41	450msec Gate	168	91	Mod. Delay Lead	198	141	450msec Gate *	168	191	Rotary Effect 2	
42	Left =>=> Right	168	92	Flanging Lead	195	142	Left <=<=< Right *	168	192	Vocoder	
43	Reverse + Accent	169	93	Hitting Saw	174	143	Reverse + Accent *	169	193	EQ-Cho-Delay-Rev	
44	Strange Gate	169	94	MIDI NOTE-> Chord	184	144	Strange Gate *	169	194	EQ-P.S-Delay-Rev	
45	SDD-320 Mode 3	178	95	Skip !	183	145	SDD-320 Mode 4 *	178	195	EQ-FI-Delay-Rev	
46	Vocal Chorus	180	96	Diminish Up & Down	183	146	Vocal Chorus *	180	196	Ph-Dly-Ch-Pan-Rv	
47	Guitar Chorus	181	97	12 String Guitar	185	147	Guitar Chorus *	181	197	Vibrato-Dly-Rev	
48	Bass Chorus	180	98	1 Note Arpeggio	184	148	Bass Chorus *	180	198	Modulation Delay/Reverb	
49	Piano Chorus	180	99	Funny BarberPole	184	149	Piano Chorus *	180	199	Reverb1/Reverb2/Delay	
50	Wide Chorus	179	100	Vocoder S.Tooth	192	150	Wide Chorus *	179			

* : Effect sound only.

BLANK CHARTS

No.	NAME/Algorithm	No.	No.	NAME/Algorithm	No.	No.	NAME/Algorithm	No.	No.	NAME/Algorithm	No.
1			51			101			151		
2			52			102			152		
3			53			103			153		
4			54			104			154		
5			55			105			155		
6			56			106			156		
7			57			107			157		
8			58			108			158		
9			59			109			159		
10			60			110			160		
11			61			111			161	Hall 1	
12			62			112			162	Hall 2	
13			63			113			163	Hall 3	
14			64			114			164	Room 1	
15			65			115			165	Room 2	
16			66			116			166	Plate 1	
17			67			117			167	Plate 2	
18			68			118			168	Gate Reverb	
19			69			119			169	Reverse Gate	
20			70			120			170	Ambience	
21			71			121			171	Modulation Reverb	
22			72			122			172	8 Tap Delay	
23			73			123			173	4 Tap Delay	
24			74			124			174	Stereo Delay	
25			75			125			175	Tempo Delay	
26			76			126			176	Simple Delay	
27			77			127			177	Penta Chorus	
28			78			128			178	Space Chorus	
29			79			129			179	Stereo Chorus	
30			80			130			180	4 Band Chorus	
31			81			131			181	2 Band Chorus	
32			82			132			182	Ensemble	
33			83			133			183	Stereo Pitch Shifter	
34			84			134			184	Quad Pitch Shifter	
35			85			135			185	2 Band Pitch Shifter	
36			86			136			186	Multi Phaser	
37			87			137			187	Dynamic Phaser	
38			88			138			188	Stereo Flanger	
39			89			139			189	Enhancer	
40			90			140			190	Rotary 1	
41			91			141			191	Rotary 2	
42			92			142			192	Vocoder	
43			93			143			193	Multi 1	
44			94			144			194	Multi 2	
45			95			145			195	Multi 3	
46			96			146			196	Multi 4	
47			97			147			197	Multi 5	
48			98			148			198	Modulation Delay/Reverb	
49			99			149			199	Reverb/Reverb/Delay	
50			100			150					

MIDI Program Change Map

PC No.	Program No./Name	PC No.	Program No./Name	PC No.	Program No./Name
1		46		92	
2		47		93	
3		48		94	
4		49		95	
5		50		96	
6		51		97	
7		52		98	
8		53		99	
9		54		100	
10		55		101	
11		56		102	
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13		58		104	
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15		60		106	
16		61		107	
17		62		108	
18		63		109	
19		64		110	
20		65		111	
21		66		112	
22		67		113	
3		68		114	
24		69		115	
25		70		116	
26		71		117	
27		72		118	
28		73		119	
29		74		120	
30		75		121	
31		76		122	
32		77		123	
33		78		124	
34		79		125	
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