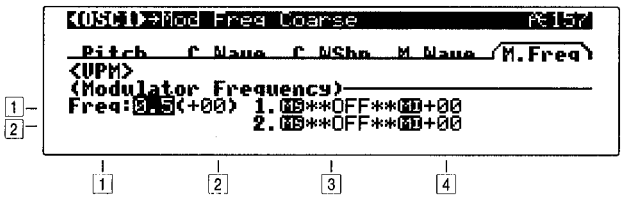
3-3 Level Mod.2 Source ..... (Mod.Source List 1)

3-4 Level Mod.2 Intensity ..... [-99...+99]

Refer to the above "Level Mod.1 Source" and "Level Mod.1 Intensity."



Modulator Frequency tab

1-1 Mod. Frequency Coarse ..... [0.5, 1...16]

Specify the ratio of the modulation pitch to the carrier.

1-2 Mod.Frequency Fine ..... [-50...+50]

Make fine adjustments to the pitch of the modulator.

1-3 Frequency Mod.1 Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control the pitch of the modulator.

1-4 Frequency Mod.1 Intensity ..... [-99...+99]

Specify the depth and direction of the effect of "Frequency Mod.1 Source."

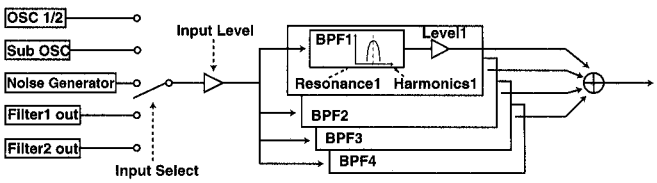
2-3 Frequency Mod.2 Source ..... (Mod.Source List 1)

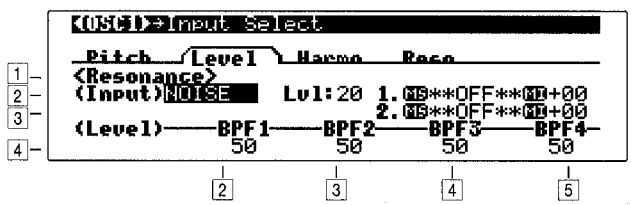
2-4 Frequency Mod.2 Intensity ..... [-99...+99]

Refer to the above "Frequency Mod.1 Source" and "Frequency Mod.1 Intensity."

Resonance OSC

This oscillator produces a wide range of tonal change by allowing you to specify the cutoff frequency and resonance of four band pass filters (BPF). You can select one of the following sources to be the input for the filters: the output of the other oscillator, the sub-oscillator, the output of the noise generator, or the output of filter 1 or filter 2.





Level tab

1-2 Input Select ..... [OSC2(1), Sub OSC, Noise, Filter 1, Filter 2]

Select the signal that will be input to the four band bass filters.

If you assign the Resonance OSC to oscillators 1 and 2 and select the output of each oscillator as the input for the other oscillator, there will be no sound.

1-3 Input Level ..... [0...99]

Specify the level of the signal that is input to the four band pass filters.

1-4 Input Level Mod.1 Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control "Input Level."

1-5 Input Level Mod.1 Intensity ..... [-99...+99]

Specify the depth and direction of the effect of "Input Level Mod.1 Source."

2-4 Input Level Mod.2 Source ..... (Mod.Source List 1)

2-5 Input Level Mod.2 Intensity ..... [-99...+99]

Refer to "Input Level Mod.1 Source" and "Input Level Mod.1 Intensity" above.

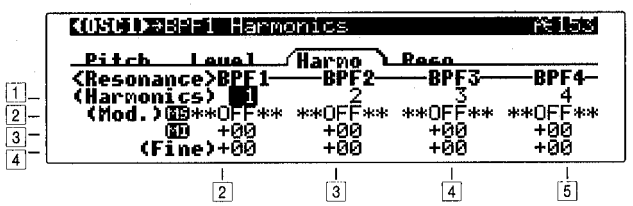
3-2 BPF1 level ..... [0...99]

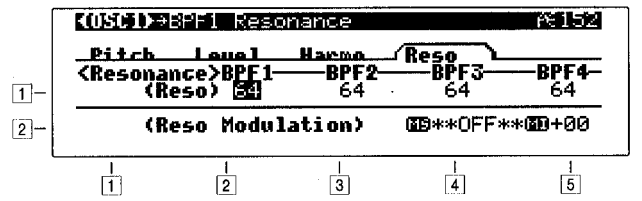
3-3 BPF2 level ..... [0...99]

3-4 BPF3 level ..... [0...99]

3-5 BPF4 level ..... [0...99]

Specify the output levels of band pass filters 1 to 4.





Harmonics tab

BPF1

1-2 BPF1 Harmonics ..... [1...16]

Specify the center frequency of band pass filter 1 in steps of overtones (harmonics) relative to the pitch of the oscillator. The range is from the first harmonic to the 16th harmonic.

2-2 BPF1 Harmonics Mod.Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control "BPF1 Harmonics."

3-2 BFP1 Harmonics Mod.Intensity ..... [-15...+15]

Specify the depth and direction of the effect of "BPF1 Harmonics Mod.Source." With positive (+) settings, the "BPF1 Harmonics" value will be increased. With negative (–) settings, its value will be decreased. Since in this case the center frequency of the band pass filter will change in units of overtones, the pitch will change in stepwise fashion.

4-2 BPF1 Frequency Fine ..... [-1.0 ...+1.0]

Make fine adjustments to the center frequency of band pass filter 1 that was specified by "BPF1 Harmonics."

BPF2, BPF3, BPF4

1-2 BPF2 Harmonics ..... [1...16]

2-2 BPF2 Harmonics Mod.Source ..... (Mod.Source List 1)

3-2 BPF2 Harmonics Mod.Intensity ..... [-15...+15]

4-2 BPF2 Frequency Fine ..... [-1.0 ...+1.0]

1-2 BPF3 Harmonics ..... [1...16]

2-2 BPF3 Harmonics Mod.Source ..... (Mod.Source List 1)

3-2 BPF3 Harmonics Mod.Intensity ..... [-15...+15]

4-2 BPF3 Frequency Fine ..... [-1.0 ...+1.0]

1-2 BPF4 Harmonics ..... [1...16]

2-2 BPF4 Harmonics Mod.Source ..... (Mod.Source List 1)

3-2 BPF4 Harmonics Mod.Intensity ..... [-15...+15]

4-2 BPF4 Frequency Fine ..... [-1.0 ...+1.0]

Refer to "BPF1" above.

Resonance tab

1-2 BPF1 Resonance ..... [0...99]

1-3 BPF2 Resonance ..... [0...99]

1-4 BPF3 Resonance ..... [0...99]

1-5 BPF4 Resonance ..... [0...99]

Specify the resonance of band pass filters 1 to 4. Higher values will produce a stronger effect.

2-4 Resonance Mod.Source ..... (Mod.Source List 1)

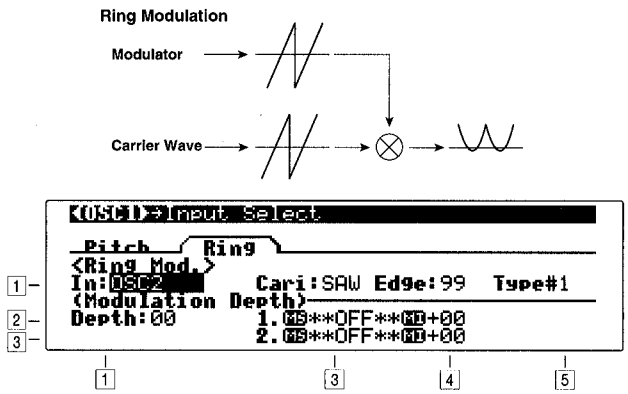
Select a modulation source (see p.104) that will control the resonance that was specified for each band pass filter.

2-5 Resonance Mod.Intensity ..... [-99...+99]

Specify the depth and direction of the effect of "Resonance Mod.Source."

Ring Modulation OSC

This multiplies the modulator and carrier and outputs the signal produced. One of four types of waveform can be selected as the carrier. Since the result will be a metallic sound with little sense of pitch, this is suitable for producing sound effects. The Ring Modulation oscillator contains an internal carrier oscillator. The output of the other oscillator etc. can be selected as the modulator.



1-1 Input Select..... [OSC2(1), SubOSC, Noise, Filter 1, Filter 2]
Specify the modulator.

If you assign both oscillators 1 and 2 to Ring Modulation OSC and select the output of each as the input for the other, there may be no sound for some parameter settings.

1-3 Carrier Wave ..... [SAW, SQU, TRI, SIN]
Specify the carrier waveform.

1-4 Modulator Wave Edge ..... [0...99]
Specify the amount of high frequency harmonics for the carrier waveform. As this value is decreased, the sound will have less high-frequency harmonics, and as it approaches **0** the volume will also decrease.

1-5 Type ..... [1, 2]
Select the modulation type. The two types differ in the tone of the high range. Type **2** will produce a brighter sound than type **1**.

2-1 Modulation Depth ..... [0...99]
Specify the depth of modulation. At a setting of **0**, the carrier waveform will be output without change.

2-3 Modulation Depth Mod.1 Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Modulation Depth."

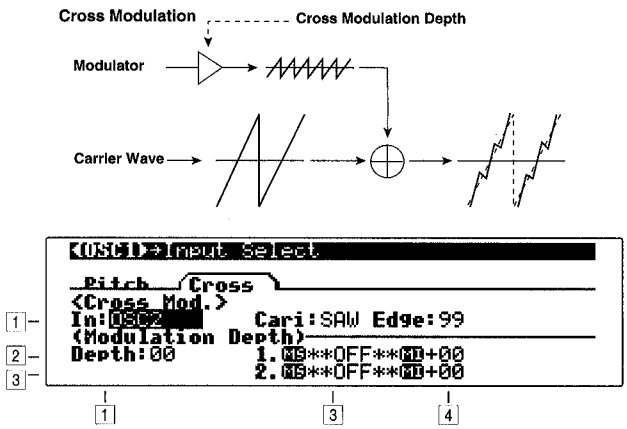
2-4 Modulation Depth Mod.1 Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Modulation Depth Mod.1 Source."

3-3 Modulation Depth Mod.2 Source ..... (Mod.Source List 1)

3-4 Modulation Depth Mod.2 Intensity ..... [-99...+99]
Refer to "Modulation Depth Mod.1 Source" and "Modulation Depth Mod.1 Intensity" above.

Cross Modulation OSC

This uses a modulator to frequency-modulate a carrier. You can select one of four waveforms as the carrier. In general, a pitch envelope is applied to the modulator. A carrier oscillator is built-in to the Cross Modulation OSC. You can select the output of the other oscillator etc. as the modulator.



1-1 Input Select..... [OSC2(1), SubOSC, Noise, Filter 1, Filter 2]
Specify the modulator.

1-3 Carrier Wave ..... [SAW, SQU, TRI, SIN]
Specify the carrier waveform.

1-4 Modulator Wave Edge ..... [0...99]
Specify the amount of high frequency harmonics for the carrier waveform. As this value is decreased, the sound will have less high-frequency harmonics, and as it approaches **0** the volume will also decrease.

2-1 Modulation Depth ..... [0...99]
Specify the depth of modulation. At a setting of **0**, the carrier waveform will be output without change.

2-3 Modulation Depth Mod.1 Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Modulation Depth."

2-4 Modulation Depth Mod.1 Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Modulation Depth Mod.1 Source."

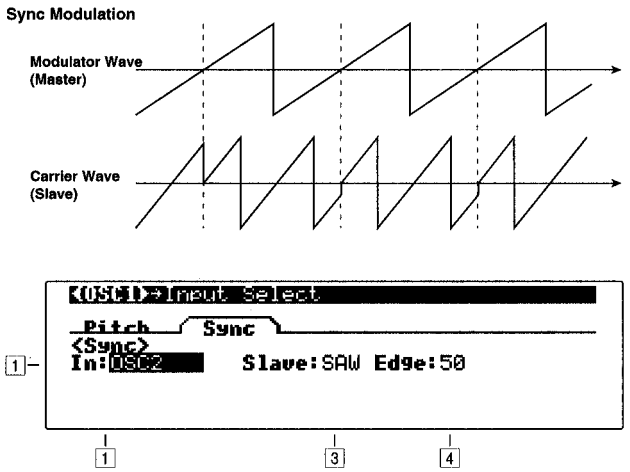
3-3 Modulation Depth Mod.2 Source ..... (Mod.Source List 1)

3-4 Modulation Depth Mod.2 Intensity ..... [-99...+99]
Refer to "Modulation Depth Mod.1 Source" and "Modulation Depth Mod.1 Intensity" above.

Sync Modulation OSC

This uses the modulator as the master waveform and the carrier as the slave waveform (which will be synchronized to the master).

When the master waveform begins a new cycle (i.e., the instant that it passes the zero point going from negative to positive), the phase of the slave waveform is reset to 0, causing it to begin a new cycle.



1-1 Input Select..... [OSC2(1), SubOSC, Noise, Filter 1, Filter 2]
Specify the master waveform (modulator).

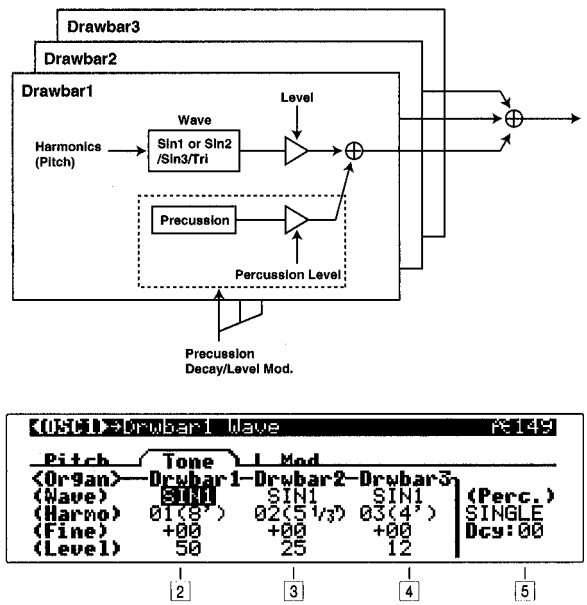
1-3 Slave Wave ..... [SAW, SQU, TRI, SIN]
Specify the slave waveform.

1-4 Modulator Wave Edge ..... [0...99]
Specify the amount of high frequency harmonics for the slave waveform. As this value is decreased, the sound will have less high-frequency harmonics, and as it approaches **0** the volume will also decrease.

Organ Model

This is an oscillator used to produce organ-type sounds. The oscillator simulates three drawbars similar to electric organs of the past.

You can specify the footage [Harmo] and waveform setting for each drawbar, allowing a wide range of sounds to be created.



Drawbar1

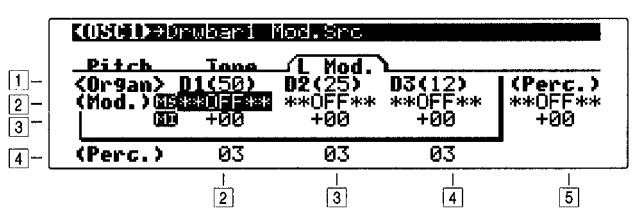
Tone tab

1-2 Drawbar 1 Wave..... [SIN1, SIN2, SIN3, TRI]
Specify the waveform for drawbar 1. **SIN1** contains only the fundamental (i.e., a pure sine wave). **SIN2** and **SIN3** are waveforms which contain the first two and the first three harmonics respectively.

2-2 Drawbar 1 Harmonics ..... [1...16]
Specify the pitch of drawbar 1, relative to one octave below the oscillator pitch.

3-2 Drawbar 1 Fine Tune ..... [–50...+50]
Make fine adjustments to the pitch of drawbar 1.

4-2 Drawbar 1 Level ..... [0...99]
Specify the volume level of drawbar 1.



Level Mod. tab

1-2 Drawbar 1 Level ..... [0...99]
This is the same parameter as "Drawbar 1 Level" in the Tone tab.

2-2 Level Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the "Level" of drawbar 1.

3-2 Level Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Level Mod.Source."

Drawbar2, Drawbar3

Refer to "Drawbar 1" above.

Percussion

Tone tab

2-5 Percussion Trigger Mode ..... [SINGLE, MULTI]
Specify how the percussion effect will be triggered. With a setting of MULTI, the percussion effect will apply to each note that is played. With a setting of SINGLE, the percussion effect will be applied to the first note that is played from a state of silence.

3-5 Percussion Decay ..... [0...99]
Specify the decay length of the percussion. As this value is increased the decay time will become longer.

Level Mod. tab

4-2 Drawbar 1 Percussion Level ..... [0...99]

4-3 Drawbar 2 Percussion Level ..... [0...99]

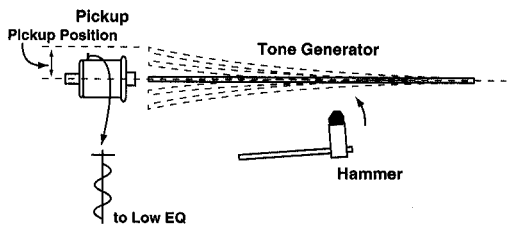
4-4 Drawbar 3 Percussion Level ..... [0...99]
Specify the volume level of the percussion effect for each drawbar.

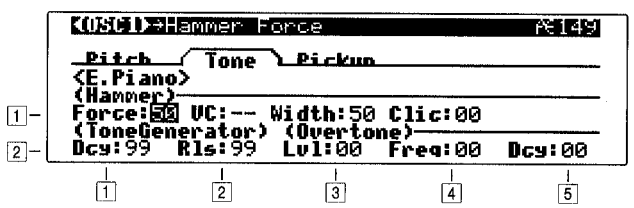
2-5 Percussion Level Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the percussion level of each drawbar.

3-5 Percussion Level Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Percussion Level Mod.Source" on the percussion level.

Electric Piano Model

This oscillator simulates the sound of an electric piano. There are four groups of parameters: **Hammer** (which specifies how the shape and motion of the hammer will affect tonal change and attack noise), **Tone Generator** (which vibrates in response to being struck by the hammer), **Pickup** (which specifies the tonal change that occurs when the vibration of the tone generator is converted into an electrical signal), and **Low EQ** (which is a shelving-type low EQ to adjust the low range).





Tone tab

Hammer

1-1 Hammer Force ..... [0...99]
Specify the "strength" with which the hammer strikes the tone generator. Higher settings will produce a brighter sound.

1-2 Hammer Force Velocity Curve ..... [– –, 0...99]
Specify how changes in velocity will affect "Hammer Force." As this value is increased, velocity will have a greater effect on "Hammer Force," allowing more dynamic tonal change to be produced. With a setting of – –, the "Hammer Force" will be constant.

1-3 Hammer Width ..... [0...99]
This simulates the shape of the hammer. As this value is increased, the width of the hammer will become narrower, and the sound of the tone generator and hammer noise will become sharper.

1-4 Hammer Click Level ..... [0...99]
This specifies the volume of the hammer noise that occurs at the attack.

Tone Generator

2-1 TG Decay ..... [0...99]
Specify the decay time of the tone generator.

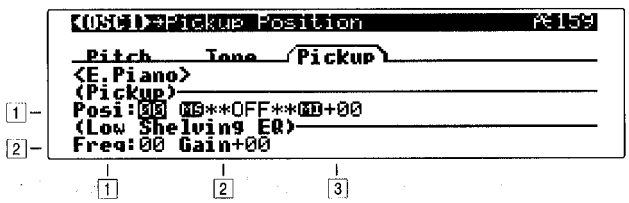
2-2 TG Release ..... [0...99]
Specify the release time of the tone generator.

The "TG Decay" and "TG Release" that you specify here will control the output level of the oscillator. In order to hear the results of these settings, be sure to set the EG decay and release of the "Amplitude Modulation Source" to longer settings.

2-3 Overtone Level ..... [0...99]
Specify the volume of the higher overtones that are produced when the tone generator vibrates.

2-4 Overtone Frequency ..... [0...99]
Specify the frequency of the overtones.

2-5 Overtone Decay ..... [0...99]
Specify the decay time of the overtone volume.



Pickup tab

Pickup

1-1 Pickup Position ..... [0...99]
Specify the location of the pickup in relation to the tone generator. With low settings, the pickup will be placed in the center of the vertical vibration of the tone generator, causing the second partial to be emphasized and the fundamental to be less audible.

1-2 Pickup Position Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Pickup Position."

1-3 Pickup Position Mod.Int ..... [-99...+99]
Specify the depth and direction of the effect of "Pickup Position Mod.Source."

Low EQ

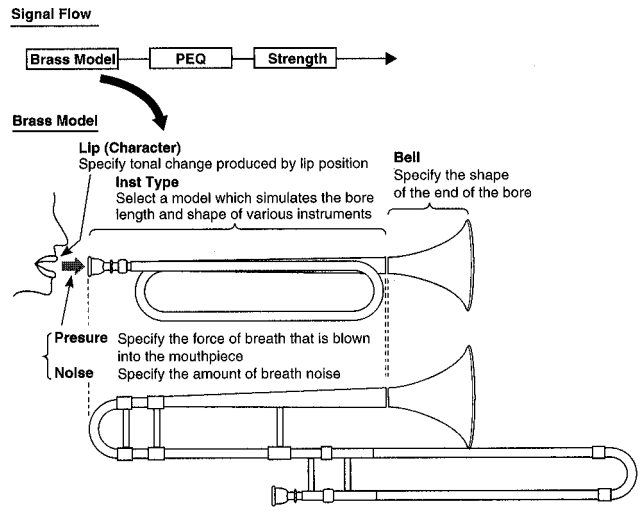
Make settings for a Low EQ (shelving type) that will adjust the output signal.

2-1 Low EQ Frequency ..... [0...49]
Specify the cutoff frequency of the Low EQ (shelving type) that will be applied to the output signal.

2-2 Low EQ Gain ..... [-18...+18 dB]
Specify the gain of the Low EQ.

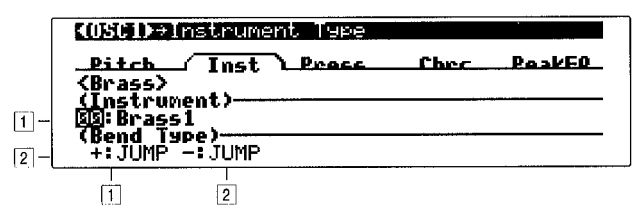
Brass Model

This oscillator is a physical model simulation of lip-reed instruments such as a trumpet. By using key velocity or the modulation wheel etc. to modulate the **Pressure** (the force of breath that is blown into the mouthpiece), you can produce performance expressions that are very similar to those of an actual lip-reed instrument.
There are four groups of parameters: **Inst** (which selects a model to specify the length and shape of the instrument bore), **Pressure** (which specifies the force of the breath that is blown into the mouthpiece), **Lip** (which produces the tonal change caused by the shape and tension of the mouth), and **Bell** (which controls the tonal change caused by the shape of the end of the bore, and a final adjustment regulated by the Peaking EQ).



This oscillator allows you to choose from two types of pitch bending: jump bending using a mode jump as on a trumpet (by varying the bore length), and smooth bending produced by sliding the length of the bore as on a trombone.

For some parameter settings, the pitch may not change according to the notes that are played on the keyboard.
In some cases, high-pitched notes may have a lower volume, or may not sound at all.



Instrument Type tab

1-1 Instrument Type ..... [Brass...ReedBrass]
Select the instrument type whose bore length and shape will be simulated.

Brass 1, Brass 2, Brass 3, Horn 1, Horn 2, ReedBrass

2-1 Pitch Bend + ... [Smooth, Jump]

Specify how the pitch will change when pitch bending is applied in the + direction.

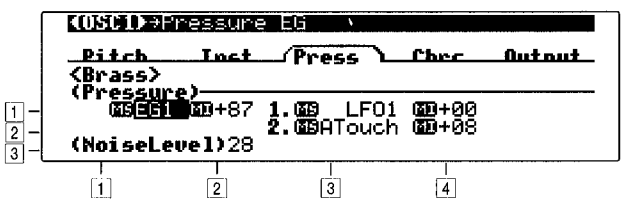
Smooth: The pitch will rise smoothly as on most synthesizers.

Jump: The pitch will rise abruptly, as when the bore length is changed on a trumpet.

2-2 Pitch Bend – ..... [Smooth, Jump]

Specify how the pitch will change when pitch bending is applied in the – direction.

Depending on the mode of resonance, there may be cases in which "Pitch Bend +" and "Pitch Bend –" do not sound.



Pressure tab

1-1 Pressure EG ..... [EG1...EG4, A.EG]

Select the EG that will control pressure. For the settings of each EG, refer to p.57 for EG1 to 4 or to p.55 for the A.EG.

1-2 Pressure EG Intensity ..... [–99...+99]

Specify the depth and direction of the effect that the "Pressure EG" will have on the pressure.

1-3 Pressure Mod.1 Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control pressure. If you select "After Touch," pressing down on the keyboard will produce the effect of the instrument being blown strongly. If you select "Modulation Wheel," rotating the [MOD WHEEL] in the + direction will produce this effect. In this case, setting "Pressure EG Intensity" to **0** will allow you to completely control the breath pressure by operating the specified controller.

1-4 Pressure Mod.1 Intensity ..... [–99...+99]

Specify the depth and direction of the change in pressure controlled by "Pressure Mod.1 Source."

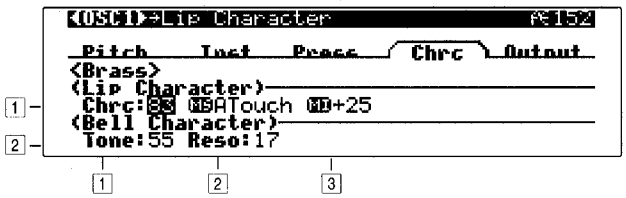
2-3 Pressure Mod.2 Source ..... (Mod.Source List 1)

2-4 Pressure Mod.2 Intensity ..... [–99...+99]

Refer to "Pressure Mod.1 Source" and "Pressure Mod.1 Intensity" above.

3-2 Noise Level ..... [0...99]

Specify the volume level of the breath noise. Since this uses the signal from the noise generator, the filter of the noise generator can be used to modify the tone of the noise.



Character tab

1-1 Lip Character ..... [0...99]

Specify the tonal change that is produced by lip position and tension. Higher settings of this value will produce a harder (more firmly blown) sound. Lower settings will produce a softer tone.

1-2 Lip Character Mod.Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control "Lip Character."

1-3 Lip Character Mod.Intensity ..... [–99...+99]

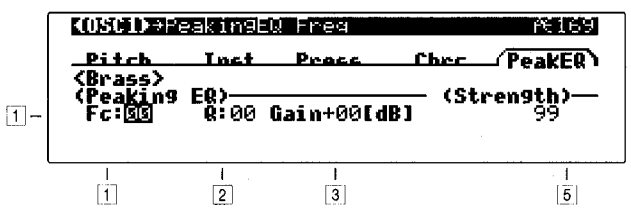
Specify the depth and direction of the effect of "Lip Character Modulation Source."

2-1 Bell Tone ..... [0...99]

Specify the tone of the bell. As this value is increased, the low frequency portion will disappear, producing a less solid tone.

2-2 Bell Resonance ..... [0...99]

Specify the level at which the frequency region in the area of the "Bell Tone" will be boosted. As this value is increased, the resonance effect will become stronger.



Peaking EQ tab

1-1 Peaking EQ Frequency ..... [0...49]

Specify the center frequency of the frequency range that will be boosted or attenuated by the Peaking EQ. Increasing this value will raise the center frequency.

1-2 Peaking EQ Q ..... [0...29]

Specify the width of the Peaking EQ frequency band. Increasing this value will narrow the frequency band that is boosted or attenuated.

1-3 Peaking EQ Gain ..... [–18...+18 dB]

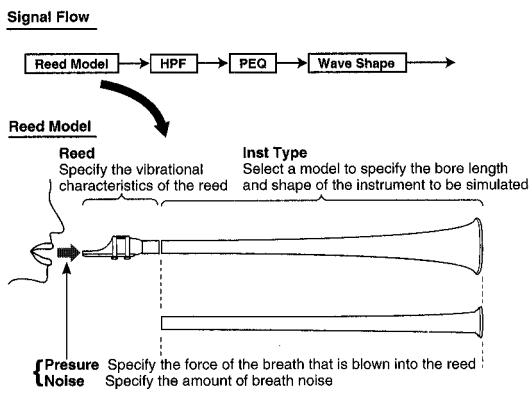
Specify the amount by which the area specified by "Peaking EQ Frequency" and "Peaking EQ Q" will be boosted or attenuated.

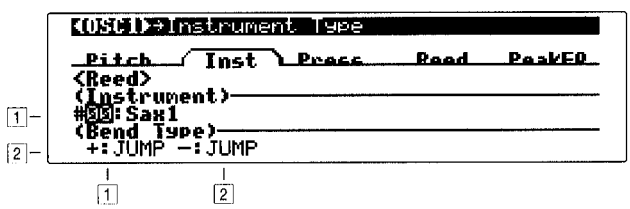
1-5 Strength ..... [0...99]

Adjust the tone. Higher settings of this value will produce a overdriven sound.

Reed Model

This oscillator is a physical model which simulates a woodwind reed instrument such as a saxophone or oboe.
By using key velocity or the modulation wheel to control **Pressure** (the strength with which the reed is blown), you can use performance expressions that are very close to those of an actual woodwind instrument.
Also, by modulating the characteristics of the reed, you can produce tonal changes that correspond with the way in which a reed is blown.





Instrument Type tab

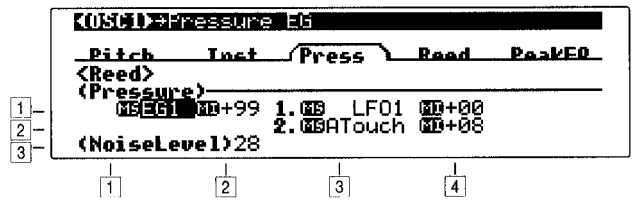
1-1 Inst Type ..... [HardSax 1 ... Reed Synth]
Select the type of instrument whose bore shape and reed characteristics will be simulated.

HardSax 1, HardSax 2, HardSax 3, SoftSax 1, SoftSax 2, DoubleReed 1, DoubleReed 2, Bassoon, Clarinet, Flute 1, Flute 2, PanFlute, Ocarina, Shakuhachi, Harmonica 1, Harmonica 2, Reed Synth

2-1 Pitch Bend + ... [Smooth, Jump]
Specify how the pitch will change when pitch bend is applied in the + direction.
Smooth: The pitch will rise smoothly as on most synthesizers.
Jump: The pitch will jump up in steps, by varying the resonance of the bore.

2-2 Pitch Bend – ..... [Smooth, Jump]
Specify how the pitch will change when pitch bend is applied in the – direction.

Depending on the resonant characteristics, "Pitch Bend +" and "Pitch Bend –" may not sound in some cases.



Pressure tab

1-1 Pressure EG ..... [EG1...EG4, A.EG]
Select the EG that will control pressure. For the settings of each EG, refer to p.57 for EG1 to 4, or to p.55 for the A.EG.

1-2 Pressure EG Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Pressure EG" on the pressure.

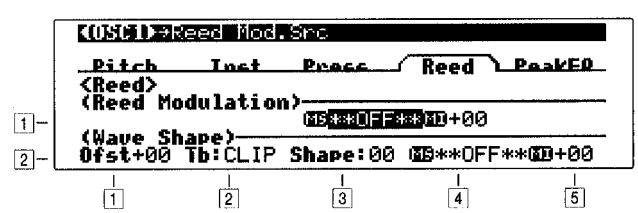
1-3 Pressure Mod.1 Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control pressure. If you select "After Touch," pressing down on the keyboard will produce the effect of the instrument being blown strongly. If you select "Modulation Wheel," rotating the [MOD WHEEL] in the + direction will produce this effect. In this case, setting "Pressure EG Intensity" to **0** will allow you to completely control the breath pressure by operating the specified controller.

1-4 Pressure Mod.1 Intensity ..... [–99...+99]
Specify the depth and direction of the change in pressure controlled by "Pressure Mod.1 Source."

2-3 Pressure Mod.2 Source ..... (Mod.Source List 1)

2-4 Pressure Mod.2 Intensity ..... [–99...+99]
Refer to "Pressure Mod.1 Source" and "Pressure Mod.1 Intensity" above.

3-1 Noise Level ..... [0...99]
Specify the volume level of the breath noise. Since the signal from the noise generator is used here, you can use the filter of the noise generator to modify the tone of the noise.



Reed Modulation tab

1-3 Reed Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will modulate the characteristics of the reed.

1-4 Reed Mod.Intensity ..... [-99...+99]
Specify the depth of the modulation effect that "Reed Mod.Source" will have on the reed.

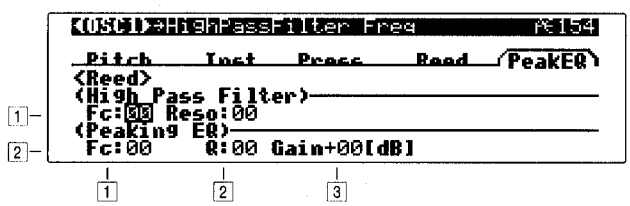
2-1 Wave Shape Offset ..... [-99...+99]
Specify the offset value that will be added to the Reed OSC signal that is input to wave shaping.

2-2 Wave Shape Table ..... [CLIP, RESO]
Select the wave shaping table that will be used to shape the input waveform. For details on the effect that these tables will have on the waveform, refer to the "Wave Shape" diagram (p.34) for the Standard OSC.

2-3 Wave Shape ..... [0...99]
Specify the character of the table that will shape the input waveform. For details on how the waveform will change, refer to the "Wave Shape" diagram (p.34) for the Standard OSC.

2-4 Wave Shape Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Wave Shape."

2-5 Wave Shape Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Wave Shape Mod.Source."



Peaking EQ tab

1-1 High Pass Filter Frequency ..... [0...99]
Specify the cutoff frequency of the high pass filter. Raising this value will raise the cutoff frequency, causing the low range to be cut and producing a lighter-feeling sound.

1-2 High Pass Filter Resonance ..... [0...99]
Raising this value will cause the overtones in the region of the cutoff frequency to be emphasized, adding a unique character to the sound.

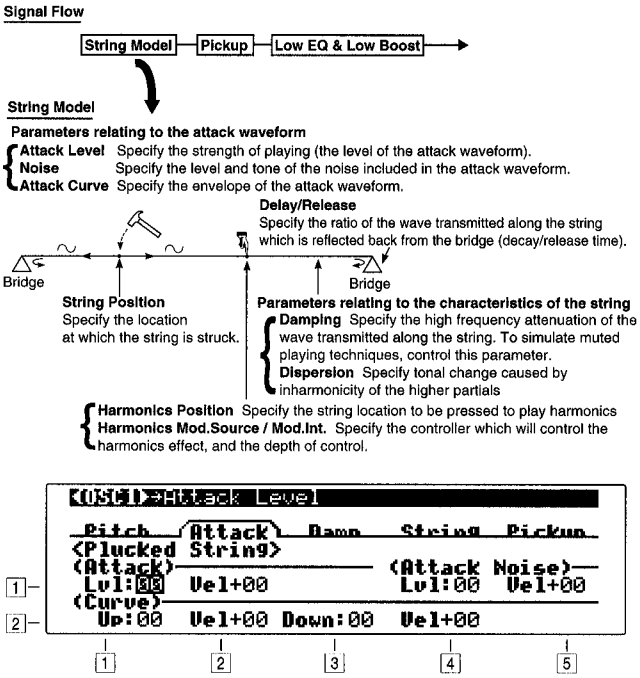
2-1 Peaking EQ Frequency ..... [0...49]
Specify the center frequency of the range that will be boosted or attenuated by the Peaking EQ. Increasing this value will raise the center frequency.

2-2 Peaking EQ Q ..... [0...29]
Specify the width of the Peaking EQ frequency band. Increasing this value will narrow the frequency band that is boosted or attenuated.

2-3 Peaking EQ Gain ..... [-18...+18 dB]
Specify the amount by which the range specified by "Peaking EQ Frequency" and "Peaking EQ Q" will be boosted or attenuated.

Plucked String Model

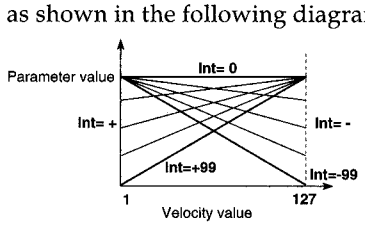
This oscillator is a physical model which simulates a plucked string instrument such as a guitar or bass guitar. You can specify aspects of the model such as the attack waveform that is produced when the string is plucked by a pick or finger, the characteristics of the string, and the location of the pickup etc.



Attack tab

1-1 Attack Level ..... [0...99]
Specify the force with which the string is plucked.

1-2 Attack Level Velocity Control ..... [-99...+99]
Specify the depth and direction of the effect that velocity will have on "Attack Level." The effect will be as shown in the following diagram.

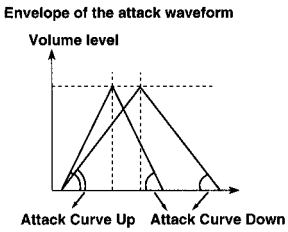


1-4 Attack Noise Level ..... [0...99]
Specify the level of the noise component that is included in the attack waveform. As this value is increased, a greater portion of noise will be included in the attack, and the sound will be brighter with more overtones. The noise signal used here is taken from the output of the noise generator.

1-5 Attack Noise Level Velocity Control ..... [-99...+99]
Specify the depth and direction of the effect that velocity will have on "Attack Noise Level." For the way in which the effect occurs, refer to "Attack Level Velocity Control."

2-1 Attack Curve Up ..... [0...99]

Specify the steepness of the rising edge of the attack waveform.



When the rising or falling edge is steep, the tone will be harder.

2-2 Attack Curve Up Velocity Control ..... [-99...+99]

Specify the depth and direction of the effect that velocity will have on "Attack Curve Up." For details of the effect, refer to "Attack Level Velocity Control."

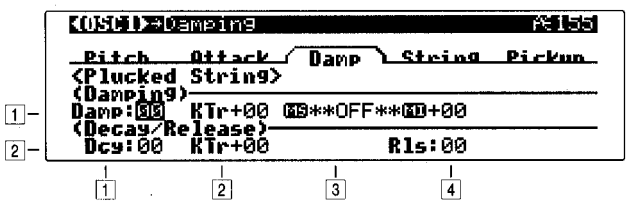
2-3 Attack Curve Down ..... [0...99]

Specify the steepness of the falling edge of the attack waveform.

2-4 Attack Curve Down Velocity Control ..... [-99...+99]

Specify the depth

and direction of the effect that velocity will have on "Attack Curve Down." For details of the effect, refer to "Attack Level Velocity Control."



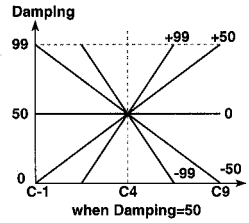
Damping tab

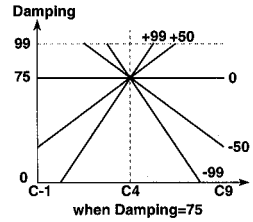
1-1 Damping ..... [0...99]

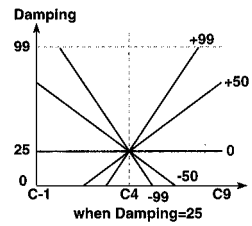
Specify the amount of high frequency attenuation that will occur as a result of string quality or the way in which the string is being depressed by a finger. As this value is increased, the high frequency components of the wave that travels over the string will be dampened more greatly, producing a darker tone. In general, instruments with soft strings or which have no frets can be simulated by higher settings of "Damping," and instruments with harder strings or which have frets can be simulated by lower settings of "Damping."

1-2 Damping Keyboard Track ..... [-99...+99]

Specify the keyboard location at which "Damping" will change. Centered at the C4 key, positive (+) settings will cause "Damping" to increase as you play higher on the keyboard, and negative (–) settings will cause "Damping" to decrease as you play higher on the keyboard.







1-3 Damping Mod.Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control "Damping."

1-4 Damping Mod.Intensity ..... [-99...+99]

Specify the depth and direction of the effect that "Damping Mod.Source" will have.

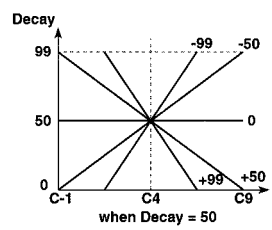
2-1 Decay ..... [0...99]

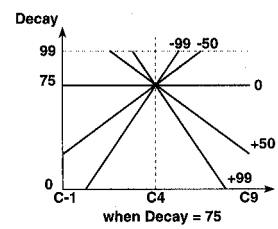
Specify the decay time over which the sound will decay if you continue pressing a note. Higher settings of this value will produce a longer decay time.

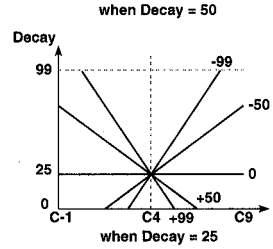
Depending on the settings of "Amplitude Modulation EG" (p55), the setting you make here may not have audible results. If you raise the EG break level and sustain level, it will be easier to hear the result of this setting.

2-2 Decay Keyboard Track ..... [-99...+99]

Specify how keyboard position will affect "Decay." Centered on the C4 key, positive (+) settings will cause the decay to become faster as you play higher notes, and negative (–) settings will cause the decay to become slower as you play higher notes.

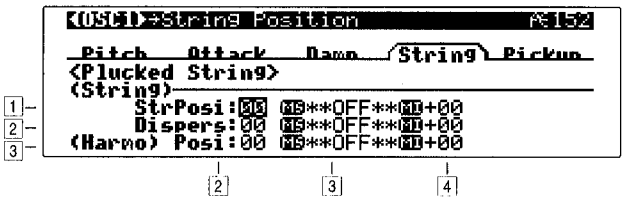






2-4 Release ..... [0...99]
Specify the length of time over which the sound will decay after you release the note. Higher settings of this value will produce a longer release time.

Depending on the settings of "Amplitude Modulation EG" (p.55), the setting you make here may not have audible results. If you raise the EG release level, it will be easier to hear the result of this setting.



String tab

1-2 String Position ..... [0...99]
Specify the location at which the string will be plucked. A setting of **0** is the end of the string, **50** is the middle of the string, and **99** is the other end of the string.

1-3 String Position Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "String Position."

1-4 String Position Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "String Position Mod.Source."

2-2 Dispersion ..... [0...99]
Specify the inharmonicity of the higher partials relative to the fundamental. With a value of **0**, the partials will be located at integer (whole number) multiples of the fundamental. As this value is increased, the partials will move further away from integer multiple locations. In general, thin and flexible strings can be simulated by a low "Dispersion" value, and thick and stiff strings can be simulated by a high "Dispersion" value.

If this value is raised excessively, the pitch may become unstable.

2-3 Dispersion Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Dispersion."

2-4 Dispersion Mod. Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Dispersion Mod. Source."

3-2 Harmonics Position ..... [0...99]
Specify the location at which the string will be pressed to play harmonics.

3-3 Harmonics Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the harmonics effect.

3-4 Harmonics Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the control that "Harmonics Mod. Source" will have on the harmonics effect.

In order to make "Harmonics Position" settings, you must assign "Harmonics Mod.Source" to a controller other than OFF, and raise the "Harmonics Mod.Intensity" value.
Even if the "Harmonics Position" setting is identical, the effect will differ depending on the note that you play.

Pickup tab

1-1 Pickup Switch ..... [OFF, ON]
With a setting of **ON**, the sound that passes through a pickup will be simulated. With a setting of **OFF**, the sound will not pass through the pickup.

1-2 Pickup Position ..... [0...99]
Adjust the change in tone that results from differences in pickup location.

1-3 Pickup Position Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p104) that will control "Pickup Character."

1-4 Pickup Position Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Pickup Character Mod.Source."

The parameters "Pickup Position," "Pickup Position Mod.Source" and "Pickup Position Mod.Intensity" are valid only when the "Pickup Switch" is ON.

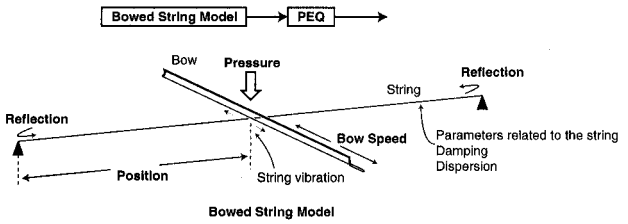
2-1 Low EQ Freq ..... [0...49]
Specify the cutoff frequency of the Low EQ.

2-2 Low EQ Gain ..... [-18...+18 dB]
Specify the gain of the Low EQ.

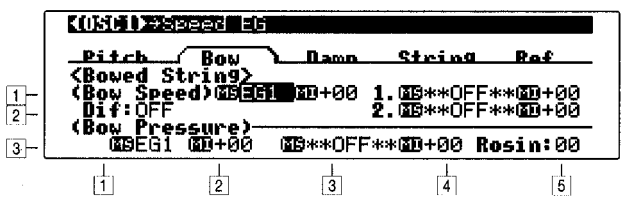
2-4 Low Boost ..... [0...99]
Specify how the low frequency range will be emphasized. Raising this value will cause the low frequency range to be emphasized more strongly.

Bowed String Model

This oscillator is a physical model which simulates the sound of a bowed string instrument such as a violin or cello. By controlling the bowing speed and the bowing pressure, you can create performance expressions that are very close to those of an actual bowed string instrument.



Bowed String Model



Bow tab

1-2 Bow Speed EG ..... [EG1...EG4, A.EG]
Select the EG which will control bowing speed (the speed at which the bow moves across the string).

1-3 Bow Speed EG Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Bow Speed EG." With negative (–) settings, the direction of the bow speed will be inverted.

1-4 Bow Speed Mod.1 Source ..... (Mod.Source List 1)
Select a modulation source (see p.104 that will control bowing speed.
Instead of using an EG to modify the bowing speed, you can use the [X-Y PAD] or [MOD WHEEL] to simulate bowing without using an EG.

1-5 Bow Speed Mod.1 Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Bow Speed Mod.1 Source."

2-4 Bow Speed Mod.2 Source ..... (Mod.Source List 1)

2-5 Bow Speed Mod.2 Intensity ..... [–99...+99]
Refer to "Bow Speed Mod.1 Source" and "Bow Speed Mod.1 Intensity" above.

2-1 Speed Differential ..... [OFF, ON]
With a setting of **OFF**, the values of "Bow Speed EG," "Bow Speed Mod.1 Source" and "Bow Speed Mod.2 Source" will by themselves determine the speed of bowing. Normally, if you are using an EG to control bowing, you will turn this OFF.
With a setting of **ON**, the values of "Bow Speed EG," "Bow Speed Mod.1 Source" and "Bow Speed Mod.2 Source" will be differentiated, and the amount of change in value will be used as the bowing speed.

Using the [X-Y PAD] to control bowing speed

Here we will discuss the example of when "Bow Speed Mod.1 Source" is set to **X[+/–]**. So that the [X-Y PAD] alone will control bowing speed, raise the "Bow Speed Mod.1 Intensity" value, and set "Bow Speed EG Intensity" and "Bow Speed Mod.2 Intensity" to **0**.
Turn "Speed Differential" **ON**. When your finger is resting on [X-Y PAD], the bowing speed will be **0** and there will be no sound. When you slide your finger on the [X-Y PAD] in the +X direction (the differential value will be positive), the bowing speed will correspond to the speed at which you slide your finger, and sound will be produced. As you slide your finger back and forth between +X and –X, the bowing speed will change between positive → 0 → negative → 0 → positive, allowing you to produce performance expressions similar to when an actual bow is used.

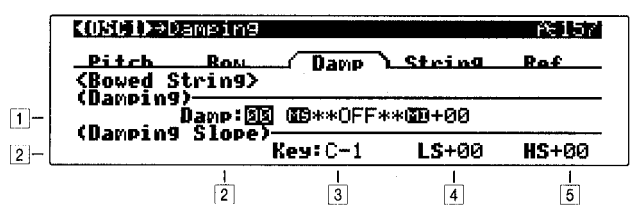
3-1 Pressure EG ..... [EG1...EG4, A.EG]
Select the EG which will control the pressure of the bow on the string (bow pressure).

3-2 Pressure EG intensity ..... [–99...+99]
Specify the depth and direction of the effect that the "Pressure EG" will have on bow pressure. If this value is low, the bow will rest lightly on the string.

3-3 Pressure Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control bow pressure.

3-4 Pressure Mod.Intensity ..... [–99...+99]
Specify the depth of the effect produced by "Pressure Mod.Source."

3-5 Rosin Amount ..... [0...99]
Specify the coefficient of static friction between the bow and the string. (This corresponds to the amount of rosin on the bow.)
Higher values will increase the friction between the bow and string. When this value is in the region of **0**, it will be difficult for playing strength to be transmitted to the string.



Damping tab

1-2 Damping ..... [0...99]
Specify the amount of high frequency attenuation that is produced by the characteristics of the string or by the way in which the finger is pressing the string. As this value is increased, the high frequency components of the wave traveling on the string will be attenuated more heavily, making the sound darker. In general,

higher "Damping" values will simulate an instrument with flexible strings or an instrument without frets, and lower "Damping" values will simulate an instrument with stiff strings or an instrument with frets.

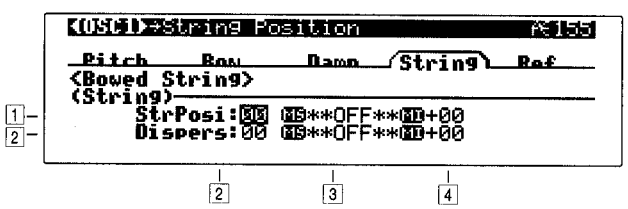
1-3 Damping Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Damping."

1-4 Damping Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Damping Mod.Source."

2-3 Damping KTr Key ..... [C-1...G9]
Specify the key above and below which keyboard tracking will begin to apply to the "Damping" effect.

2-4 Damping KTr Low Intensity ..... [-99...+99]
Specify the depth and direction in which the "Damping" amount will change for notes below the "Damping KTr Key." Positive (+) settings will cause "Damping" to increase for notes below the "Damping KTr Key." Negative (-) settings will cause "Damping" to decrease for notes below the "Damping KTr Key."

2-5 Damping KTr High Intensity ..... [-99...+99]
Specify the depth and direction in which the "Damping" amount will change for notes above the "Damping KTr Key." Positive (+) settings will cause "Damping" to increase for notes above the "Damping KTr Key." Negative (-) settings will cause "Damping" to decrease for notes above the "Damping KTr Key."



String tab

1-2 String Position ..... [0...99]
Specify the location at which the bow contacts the string. A setting of **0** is the end of the string, **50** is near the middle, and **99** is at the other end.

1-3 String Position Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "String Position."
Changing the location at which the string is bowed will also change the overtone structure.

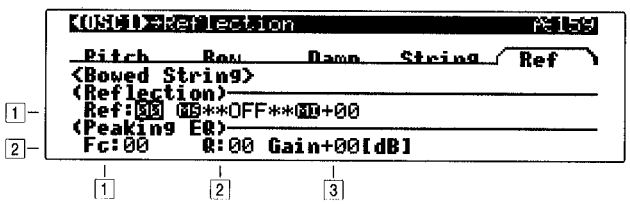
1-4 String Position Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "String Position Mod.Source."

2-2 Dispersion ..... [0...99]
Specify the inharmonicity of the higher partials relative to the fundamental. With a value of **0**, the partials will be located at integer (whole number)x multiples of the fundamental. As this value is increased, the partials will move further away from integer multiple locations. In general, thin and flexible strings can be simulated by a low "Dispersion" value, and thick and stiff strings can be simulated by a high "Dispersion" value.

If this value is raised excessively, the pitch may become unstable.

2-3 Dispersion Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Dispersion."

2-4 Dispersion Mod. Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Dispersion Mod. Source."



Reflection tab

1-2 Reflection ..... [0...99]
Specify the amount of the wave that will be reflected at the end of the string. Higher values will make the notes sound more easily. With a setting of **0** there will be no reflection at all.

1-3 Reflection Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control "Reflection."

1-4 Reflection Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Reflection Mod.Source."

2-1 PEQ Freq ..... [0...49]
Specify the center frequency at which the peaking EQ will boost (attenuate) the sound.

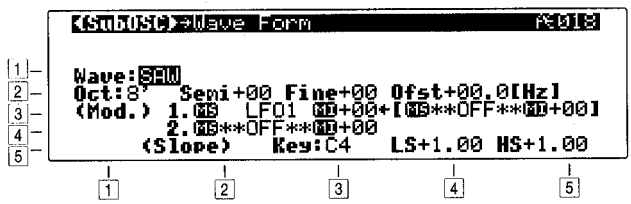
2-2 PEQ Q ..... [0...29]
Specify the width of the region that will be boosted (attenuated) by the peaking EQ. With a setting of **0**, a wide region will be affected. With a setting of **29**, only a narrow region close to the center frequency will be boosted (attenuated).

2-3 PEQ Gain ..... [-18...+18 dB]
Specify the gain by which the peaking EQ will boost or attenuate.

Sub Oscillator page

Sub Oscillator

The sub oscillator allows you to select one of four basic waveforms. In the mixer section, the signal of the sub oscillator is mixed with the signals of oscillators 1 and 2.



❑ Specifying the waveform of the sub oscillator

1-1 Wave Form ..... [SAW, SQU, TRI, SIN]

Select the waveform of the sub oscillator.

❑ Specifying the basic pitch of the sub oscillator

2-1 Octave ..... [32'...4']

Specify the basic pitch of the sub oscillator in octave units. A setting of **32'** is two octaves down, **16'** is one octave down, **8'** is the basic pitch, and **4'** is an octave above.

2-2 Semi Tone ..... [–12...+12]

Specify an adjustment in semitone steps to the basic pitch specified by "Octave."

2-3 Fine Tune ..... [–50...+50 cents]

Make fine adjustments in 1-cent steps to the basic pitch.

2-4 Frequency Offset ..... [–10.0...+10.0 Hz]

Make fine adjustments in 0.1 Hz steps to the basic pitch.

❑ Modifying the pitch of the sub oscillator (Pitch Modulation)

Pitch modulation of the sub oscillator can be controlled in the same way as pitch modulation of oscillator 1 (see p.31).

3-1 Pitch Mod.1 Source ..... (Mod.Source List 1)

3-2 Pitch Mod.1 Intensity ..... [–99...+99]

3-3 Pitch Mod.1 Int.Controller ..... (Mod.Source List 1)

3-4 Pitch Mod.1 Int.Control Intensity ..... [–99...+99]

4-1 Pitch Mod.2 Source ..... (Mod.Source List 1)

4-2 Pitch Mod.2 Intensity ..... [–99...+99]

❑ Specifying how the pitch of the sub oscillator will correspond to the note of the keyboard (Pitch Slope)

The pitch slope of the sub oscillator can be controlled in the same way as the pitch slope of oscillator 1. (Refer to p.32.)

5-3 Center Key ..... [C–1...G9]

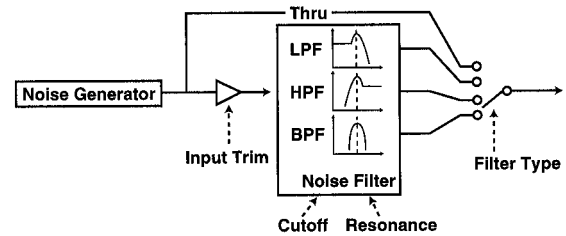
5-4 Lower Slope ..... [–1.00...+2.00]

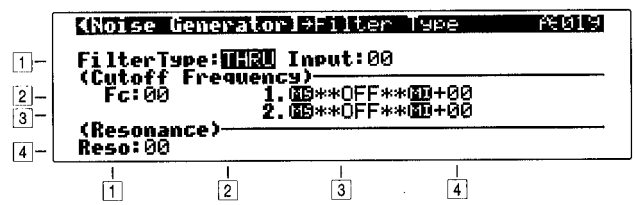
5-5 Higher Slope ..... [–1.00...+2.00]

Noise Generator page

Noise Generator

The noise generator produces white noise. The noise signal that is generated passes through a dedicated filter, and is mixed by the mixer section with the signals from the sub oscillator and oscillators 1 and 2.





❑ Noise generator settings

1-2 Noise Filter Type ..... [THRU, LPF, HPF, BPF]

Specify the type of filter that will be applied to the output from the noise generator.

1-3 Noise Filter Input Trim ..... [0...99]

Specify the input level to the dedicated noise filter. If the "Noise Filter Type" is **THRU**, this parameter will have no effect.

2-1 Noise Filter Cutoff ..... [0...99]

Specify the cutoff frequency of the noise signal filter. For the characteristics of each filter type, refer to the Filter section (p.53).

2-3 Noise Filter Cutoff Mod.1 Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control the "Noise Filter Cutoff."

2-4 Noise Filter Cutoff Mod.1 Intensity ..... [–99...+99]

Specify the depth and direction of the effect of "Noise Filter Cutoff Mod.1 Source."

3-3 Noise Filter Cutoff Mod.2 Source ..... (Mod.Source List 1)

3-4 Noise Filter Cutoff Mod.2 Intensity ..... [–99...+99]

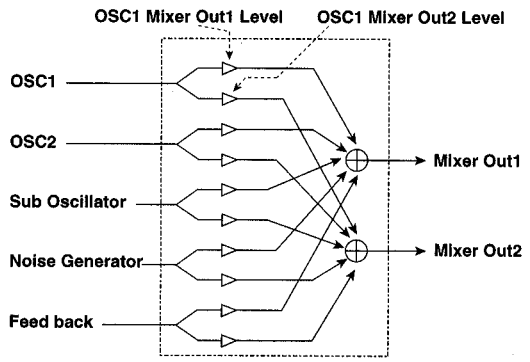
Refer to "Noise Filter Cutoff Mod.1 Source" and "Noise Filter Cutoff Mod.1 Intensity" above.

4-1 Noise Filter Resonance ..... [0...99]

This boosts the frequency region specified by the "Noise Filter Cutoff" to add character to the sound. Since the filter characteristics differ from the filter type of the "Filter section (p.53), the resulting effect will be different even if "Filter Type," "Filter Cutoff" and "Resonance" settings are identical.

2. Prog Mixer section

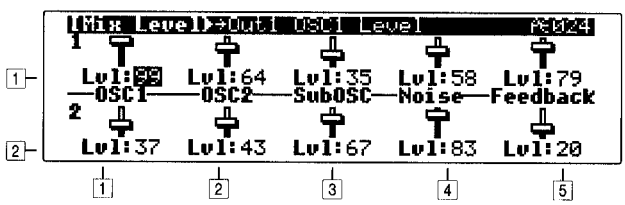
In the Prog Mixer section, the signal levels from oscillators 1 and 2, the sub oscillator, the noise generator, and feedback are adjusted, and output to the Filter section.



Mix Level page

❑ Adjusting the levels that are sent to Mixer Outputs 1/2

In this page you can adjust the levels at which oscillator 1 (**OSC1**), oscillator 2 (**OSC2**), the sub-oscillator (**SubOSC**), noise generator (**Noise**), and feedback (**Feedback**) will be sent to mixer outputs **1** and **2**.



1-1 OSC1 Output 1 Level ..... **[0...99]**
Specify the signal level of oscillator 1 that will be output to mixer output 1.

2-1 OSC1 Output 2 Level ..... **[0...99]**
Specify the signal level of oscillator 1 that will be output to mixer output 2.

1-2 OSC2 Output 1 Level ..... **[0...99]**

2-2 OSC2 Output 2 Level ..... **[0...99]**
Specify the signal levels of oscillator 2 that will be output to mixer outputs 1 and 2.

1-3 SubOSC Output 1 Level ..... **[0...99]**

2-3 SubOSC Output 2 Level ..... **[0...99]**
Specify the signal levels of the sub-oscillator that will be output to mixer outputs 1 and 2.

1-4 Noise Output 1 Level ..... **[0...99]**

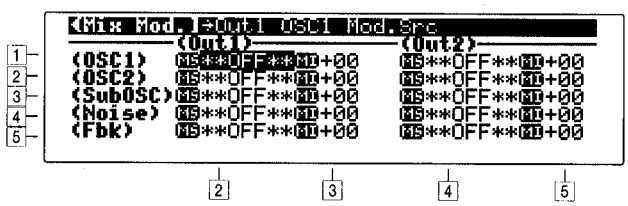
2-4 Noise Output 2 Level ..... **[0...99]**
Specify the signal levels of the noise generator that will be output to mixer outputs 1 and 2.

1-5 Feedback Output 1 Level ..... **[0...99]**

2-5 Feedback Output 2 Level ..... **[0...99]**
Specify the signal levels of the feedback from the AMP section that will be output to mixer outputs 1 and 2.

If the Filter section "Filter Routing" setting is **SERIAL2**, Mixer Output 2 will not be available (see p.52).

Mix Mod. page



❑ Specify the modulation source and intensity that will control each output level

1-2 OSC1 Output 1 Mod.Source ..... **(Mod.Source List 1)**
Select a modulation source (see p.104) that will control "OSC1 Output 1 Level"

1-3 OSC1 Output 1 Mod.Intensity ..... **[-99...+99]**
Specify the depth and direction of the effect of "OSC1 Output 1 Mod.Source."

1-4 OSC1 Output 2 Mod.Source ..... **(Mod.Source List 1)**

1-4 OSC1 Output 2 Mod.Intensity ..... **[-99...+99]**
Select a modulation source that will control "OSC1 Output 2 Level" and specify the intensity.

2-2 OSC2 Output 1 Mod.Source ..... **(Mod.Source List 1)**

2-3 OSC2 Output 1 Mod.Intensity ..... **[-99...+99]**
Select a modulation source that will control "OSC2 Output 1 Level" and specify the intensity.

2-4 OSC2 Output 2 Mod.Source ..... **(Mod.Source List 1)**

2-5 OSC2 Output 2 Mod.Intensity ..... **[-99...+99]**
Select a modulation source that will control "OSC2 Output 2 Level" and specify the intensity.

3-2 Sub Output 1 Mod.Source ..... **(Mod.Source List 1)**

3-3 Sub Output 1 Mod.Intensity ..... **[-99...+99]**
Select a modulation source that will control "SubOSC Output 1 Level" and specify the intensity.

3-4 Sub Output 2 Mod.Source ..... (Mod.Source List 1)

3-5 Sub Output 2 Mod.Intensity ..... [-99...+99]

Select a modulation source that will control "SubOSC Output 2 Level" and specify the intensity.

4-2 Noise Output 1 Mod.Source ..... (Mod.Source List 1)

4-3 Noise Output 1 Mod.Intensity ..... [-99...+99]

Select a modulation source that will control "Noise Output 1 Level" and specify the intensity.

4-4 Noise Output 2 Mod.Source ..... (Mod.Source List 1)

4-5 Noise Output 2 Mod.Intensity ..... [-99...+99]

Select a modulation source that will control "Noise Output 2 Level" and specify the intensity.

4-2 Feedback Output 1 Mod.Source ..... (Mod.Source List 1)

4-3 Feedback Output 1 Mod.Intensity..... [-99...+99]

Select a modulation source that will control "Feedback Output 1 Level" and specify the intensity.

4-4 Feedback Output 2 Mod.Source ..... (Mod.Source List 1)

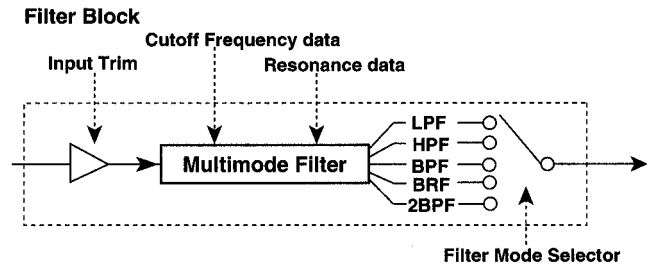
4-5 Feedback Output 2 Mod.Intensity..... [-99...+99]

Select a modulation source that will control "Feedback Output 2 Level" and specify the intensity.

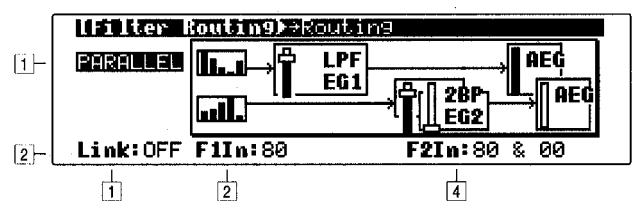
Raising the feedback level excessively may cause the sound to distort.

3. Filter section

This section contains two multi-mode filters. For each filter, you can select one of five filter types.



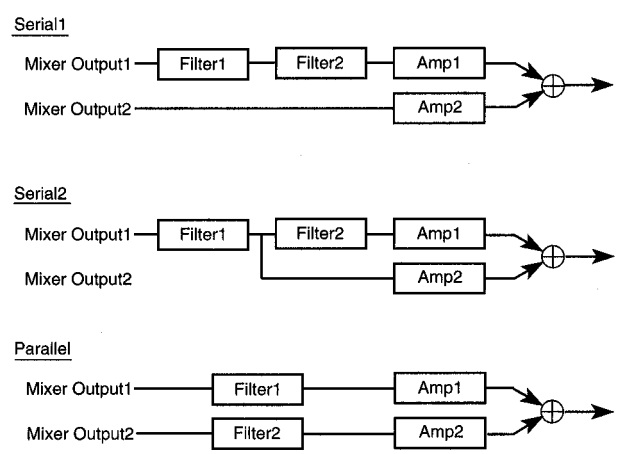
Filter Routing page



❑ Specify the filter routing

1-1 Filter Routing ..... [SERIAL1, SERIAL2, PARALLEL]

Specify how filters 1 and 2 will be connected.
One of the following three types of routing connections from mixer output → filter → amp can be selected.



2-1 Filter 1 & 2 Link Switch ..... [OFF, ON]

With a setting of ON, filter 2 will be linked to filter 1, and the settings of filter 2 will be the same as for filter 1.

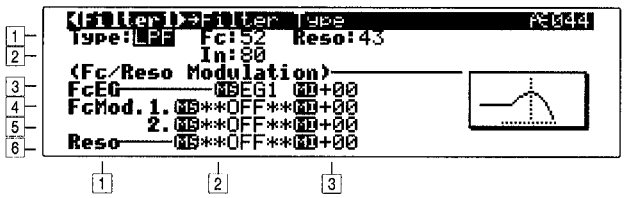
When this is ON, filter 2 settings cannot be made.

2-2 Filter 1 Input Trim ..... [0...99]

2-4 Filter 2 Input Trim ..... [0...99]

Refer to p.53.

Filter 1 page



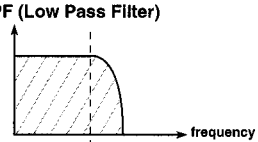
❑ Specify the type and cutoff frequency of filter 1 (Filter 1)

1-1 Filter Type ..... [LPF, HPF, BPF, BRF, 2BPF]

Select the filter type that will be used by filter 1. Select the filter type, and then press the [ENTER] key.

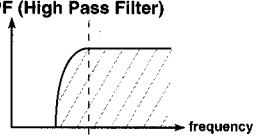
Filter Types and Cutoff Frequency

LPF (Low Pass Filter)



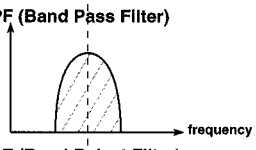
A low pass filter is the most commonly-used type of filter, and passes the range of frequencies that lie below the cutoff frequency, and cuts the high range. Cutting the higher partials will cause a bright sound to become darker (more mellow).

HPF (High Pass Filter)



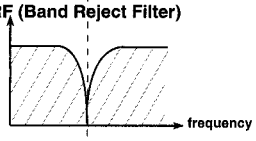
A high pass filter passes the range of frequencies that lie above the cutoff frequency, and cuts the low range. This type of filter is used when you wish to make the sound thinner. However, raising the cutoff frequency excessively will drastically reduce the volume.

BPF (Band Pass Filter)



A band pass filter passes the range of frequencies in the vicinity of the cutoff frequency, and cuts the ranges above and below. This type of filter is used when you wish to emphasize a particular portion of the sound.

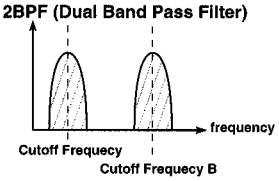
BRF (Band Reject Filter)



A band reject filter cuts only the range in the vicinity of the cutoff frequency, and passes the rest of the sound. This type of filter gives a unique character to the sound.

Cutoff Frequecy

2BPF (Dual Band Pass Filter)



The dual band pass filter places two band pass filters in parallel. It allows you to simulate sounds such as human voice and the body resonances of a violin or guitar.

If **2BPF** is selected, the parameters explained in "Filter B settings when 2BPF is selected" (p.54) will be displayed.

2-1 Input Trim ..... [0...99]

Specify the level of the input to filter 1.

If this value is raised, the sound may become distorted if the resonance setting is high, etc.

1-2 Cutoff Frequency ..... [0...99]

Specify the cutoff frequency of filter 1. As this value is increased, the cutoff frequency will rise.

Since the BPF and 2BPF filter types use filters with differing characteristics, their actual cutoff frequency may differ even if their settings are identical.

3-2 Cutoff Frequency Mod.EG ..... [EG1...EG4, A.EG]

Select the EG that will create time-varying change in the cutoff frequency of filter 1.

3-3 Cutoff Frequency Mod.EG Intensity ..... [-99...+99]

Specify the depth and direction of the control that "Cutoff Frequency Mod.EG" will have on the cutoff frequency. With positive (+) settings of this parameter, the tone will become brighter when the various EG levels rise into the + area (the setting of the "Cutoff Frequency" will be reached when the EG levels are at 0), and darker when the EG levels fall into the - area. With negative (–) settings of this parameter, the tonal change will take place in the opposite direction.

4-2 Cutoff Frequency Mod.1 Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control the cutoff frequency.

4-3 Cutoff Frequency Mod.1 Intensity ..... [-99...+99]

Specify the depth and direction of the effect that "Cutoff Frequency Mod.1 Source" will have on the cutoff frequency.

5-2 Cutoff Frequency Mod.2 Source ..... (Mod.Source List 1)

5-3 Cutoff Frequency Mod.2 Intensity ..... [-99...+99]

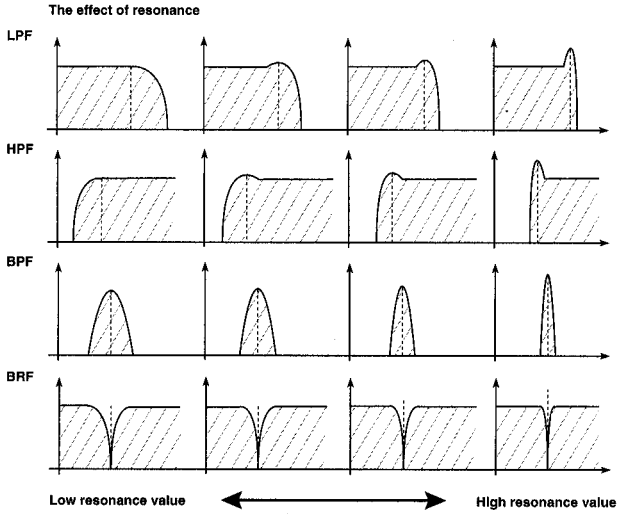
Refer to "Cutoff Frequency Mod.1 Source" and "Cutoff Frequency Mod.1 Intensity."

❑ Using Resonance to add character to the sound

1-3 Resonance ..... [0...99]

This setting emphasizes the overtones in the region of the "Cutoff Frequency" to add character to the sound. Higher values will produce a stronger effect. With high settings of resonance, the output signal of the filter may distort. If this occurs, reduce the "Input Trim" setting.

The effect of resonance

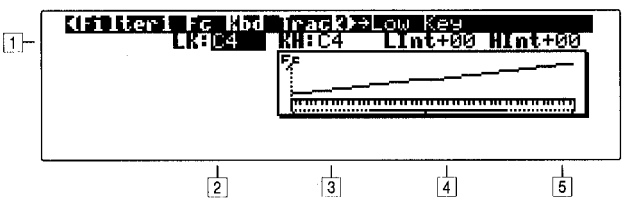


With the 2BPF filter type, the overtones in the vicinity of each cutoff frequency will be affected in the same way as by a BPF.

6-2 Resonance Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the amount of resonance.

6-3 Resonance Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect that "Resonance Mod.Source" will have on the amount of resonance.

Filter 1 Fc Kbd page



❑ Specify how the brightness will be affected by keyboard position (Cutoff Keyboard Track)

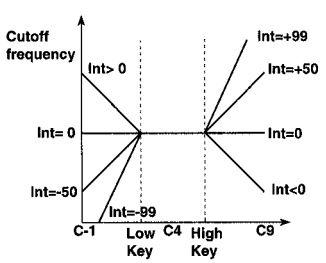
Keyboard tracking settings specify how the cutoff frequency of filter 1 will be varied according to keyboard position.

1-2 Low Key ..... [C–1...G9]
Specify the key at which Lower keyboard tracking will begin.

1-3 High Key ..... [C–1...G9]
Specify the key at which Higher keyboard tracking will begin.

1-4 Lower Intensity ..... [–99...+99]
Specify the depth and direction of cutoff frequency change that will occur below the "Low Key." With a setting of –50, the change will match the change in pitch.

1-5 Higher Intensity ..... [–99...+99]
Specify the depth and direction of cutoff frequency change that will occur above the "High Key." With a setting of +50, the change will match the change in pitch.



❑ Filter B settings when 2BPF is selected

When 2BPF is selected as the "Filter Type," the following group of parameters will also be available. You can specify the cutoff frequency and resonance of filter B, and make settings for modulation sources and keyboard tracking.

1-4 Cutoff Frequency ..... [0...99]
2-4 Input Trim ..... [0...99]
(Cutoff-B Modulation)
3-4 Cutoff Frequency Mod.EG Int ..... [–99...+99]
4-4 Cutoff Frequency Mod.1 Int ..... [–99...+99]
5-4 Cutoff Frequency Mod.2 Int ..... [–99...+99]
(Resonance-B)
1-5 Resonance ..... [0...99]
6-4 Resonance Mod.Intensity ..... [–99...+99]
(Cutoff-B Keyboard Track)
2-2 Low Key ..... [C–1...G9]
2-3 High Key ..... [C–1...G9]
2-4 Lower Intensity ..... [–99...+99]
2-5 Higher Intensity ..... [–99...+99]

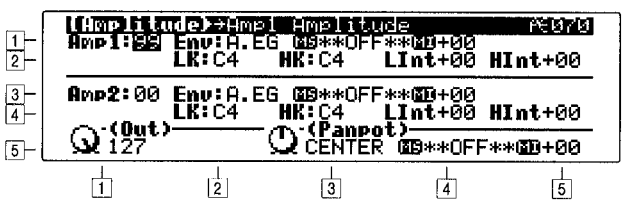
Filter 2 / Filter 2 Fc Kbd pages

Here you can make settings for filter 2. Refer to "Filter 1 page" and "Filter 1 Fc Kbd page."

4. AMP (Amplifier) section

In the AMP (Amplifier) section you can make volume-related settings. There are two independent amps, and the signal that enters the AMP section is determined by the "Filter Routing" setting of the Filter section (see p.52).

Amplitude page



❑ Specify the volume level of amp 1 (Amp 1)

1-1 Amplitude ..... [0...99]

Specify the volume level of amp 1. The input signal to amp 1 is determined by the "Filter Routing" setting of the Filter section (see p.52).

❑ Control the volume level of amp 1 (Amplitude Modulation)

1-2 Amplitude Mod.EG ..... [EG1...EG4, A.EG]

Select the EG that will create time-variant change in the volume level of amp 1. For the settings of each EG, refer to p.55 and 56.

1-3 Amplitude Mod.Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control the volume level of amp 1.

1-4 Amplitude Mod.Intensity ..... [-99...+99]

Specify the depth and direction of the effect of "Amplitude Modulation Source" on the volume level.

❑ Specify how volume will be affected by keyboard position (Amp Keyboard Track)

2-2 Low Key ..... [C-1...G9]

Specify the key at which Lower keyboard tracking will begin.

2-3 High Key ..... [C-1...G9]

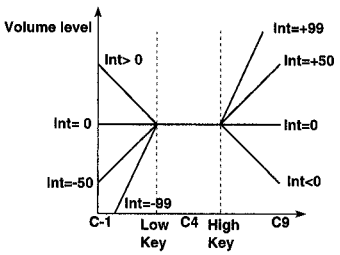
Specify the key at which Higher keyboard tracking will begin.

2-4 Lower Intensity ..... [-99...+99]

Specify the way in which keyboard tracking will affect the volume of notes below the Low Key.

2-5 Higher Intensity ..... [-99...+99]

Specify the way in which keyboard tracking will affect the volume of notes below the High Key.



❑ Settings for amp 2 (Amp 2)

Here you can make settings for amp 2. Amp 2 has the same parameters as amp 1.

❑ Specify the output level (Output)

5-1 Output Level ..... [0...127]

Specify the output level following the AMP section.

❑ Specify the stereo location (Panpot)

5-3 Panpot ..... [0...127]

Specify the panning of the sound following the AMP section.

5-4 Panpot Mod.Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control "Panpot."

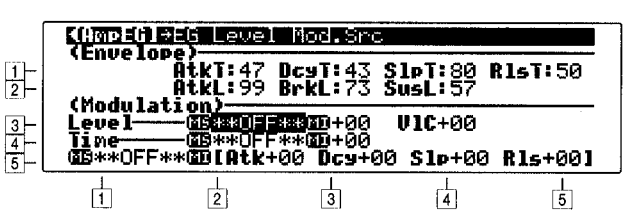
5-5 Panpot Mod.Intensity ..... [-99...+99]

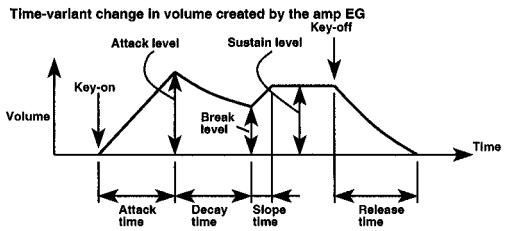
Specify the depth and direction in which "Panpot Mod.Source" will affect the panning.

Amp EG page

❑ Amp EG settings (Amp EG)

Here you can make settings for the amp EG. The amp EG lets you specify how the sound will change over time. Since the amp EG can also be used as a general-purpose controller, it can create time-variant change in parameters other than volume.





1-2 Attack Time ..... [0...99]
Specify the time from key-on (when a note is played) until the volume reaches the attack level. With a value of **0**, the volume will change instantly. With a value of **99**, the volume will change slowly.

2-2 Attack Level ..... [0...99]
Specify the volume that will be reached after the Attack Time has elapsed.

1-3 Decay Time ..... [0...99]
Specify the time from when the attack time ends until the break level is reached.

2-3 Break Level ..... [0...99]
Specify the volume level that will be reached after the Decay Time has elapsed.

1-4 Slope Time ..... [0...99]
Specify the time from when the decay time ends until the sustain level is reached.

2-4 Sustain Level ..... [0...99]
Specify the volume level that will be reached after the Slope Time has elapsed.

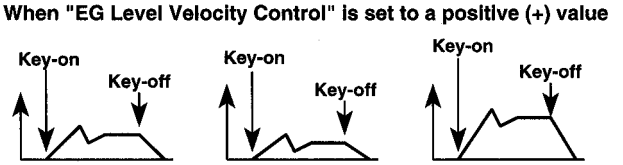
1-5 Release Time ..... [0...99]
Specify the time from key-off (when a note is released) until the volume falls to zero.

3-2 EG Level Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the level of the amp EG.

3-3 EG Level Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "EG Level Mod.Source" will have on the level of the amp EG.

3-4 EG Level Velocity Control ..... [-99...+99]
Specify the depth and direction of the effect that velocity will have on the level of the amp EG.

When "EG Level Velocity Control" is set to a positive (+) value



Settings of the Amp EG | Softly played notes | Strongly played notes

4-2 EG Time Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the amp EG times.

4-3 EG Time Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "EG Time Mod.Source" will have on the amp EG times.

5-1 Node Time Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the amp EG times.

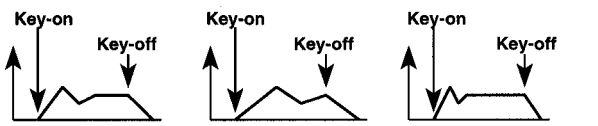
5-2 Attack Time Mod. Intensity ..... [-99...+99]

5-3 Decay Time Mod. Intensity ..... [-99...+99]

5-4 Slope Time Mod. Intensity ..... [-99...+99]

5-5 Release Time Mod. Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "Node Time Mod.Source" will have on each EG time.

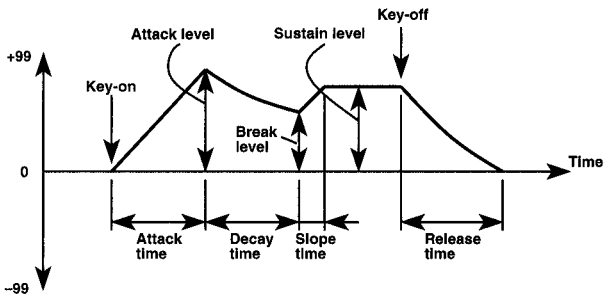
When the various EG times are set to negative (-) values



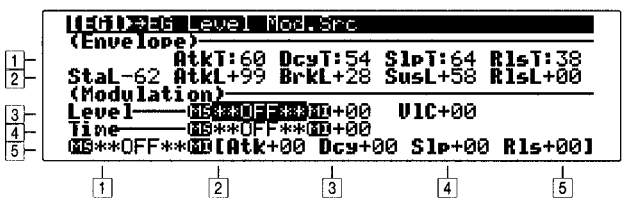
Settings of the Amp EG | Softly played notes | Strongly played notes

5. EG section

This section provides four general purpose EGs (envelope generators). The four EGs can be used as modulation sources for the parameters of other sections to create time-variant change in the sound.



EG1 page



❑ Settings for the general-purpose EGs

2-1 Start Level ..... [-99...+99]
Specify the value at the time of key-on.

1-2 Attack Time ..... [0...99]
Specify the time from key-on (when a note is played) until the value reaches the attack level. With a value of **0**, the value will change instantly. With a value of **99**, the value will change slowly.

2-2 Attack Level ..... [-99...+99]
Specify the value that will be reached after the Attack Time has elapsed.

1-3 Decay Time ..... [0...99]
Specify the time from when the attack time ends until the Break Level is reached.

2-3 Break Level ..... [-99...+99]
Specify the value that will be reached after the Decay Time has elapsed.

1-4 Slope Time ..... [0...99]
Specify the time from when the decay time ends until the Sustain Level is reached.

2-4 Sustain Level ..... [-99...+99]
Specify the value that will be reached after the Slope Time has elapsed.

1-5 Release Time ..... [0...99]
Specify the time from key-off (when a note is released) until the Release Level is reached.

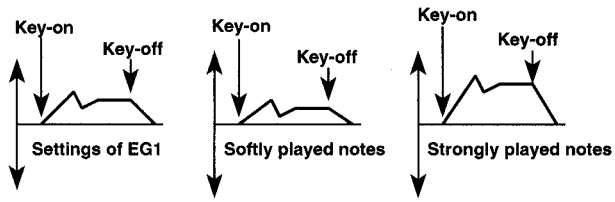
2-5 Release Level ..... [-99...+99]
Specify the value that will be reached after the Release Time has elapsed.

3-2 EG Level Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the level of EG1.

3-3 EG Level Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "EG Level Mod.Source" will have on the EG levels.

3-4 EG Level Velocity Control ..... [-99...+99]
Specify the depth and direction of the effect that velocity will have on the EG levels.

When "EG Level Velocity Control" is set to a positive (+) value



4-2 EG Time Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the EG1 times.

4-3 EG Time Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "EG Time Mod.Source" will have on the EG times.

5-1 Node Time Mod.Source ..... (Mod.Source List 1)
Select a modulation source (see p.104) that will control the EG1 times.

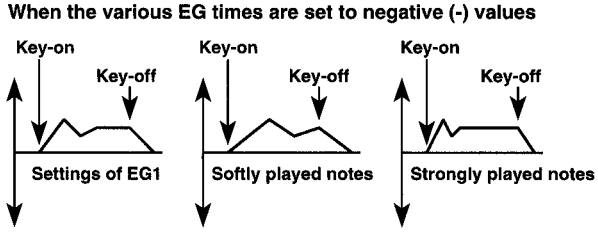
5-2 Attack Time Mod. Intensity ..... [-99...+99]

5-3 Decay Time Mod. Intensity ..... [-99...+99]

5-4 Slope Time Mod. Intensity ..... [-99...+99]

5-5 Release Time Mod. Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "Node Time Mod.Source" will have on each EG time.

When the various EG times are set to negative (-) values



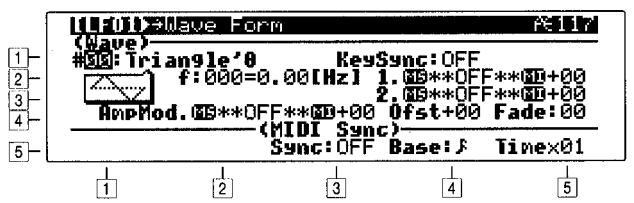
EG2 / EG3 / EG4 pages

EG2, EG3 and EG4 have the same parameters as EG1. Refer to "EG1 page."

6. LFO section

This section provides four LFOs (Low Frequency Oscillators). These LFOs can be used as modulation sources for parameters of other sections, to create cyclic changes in the sound.

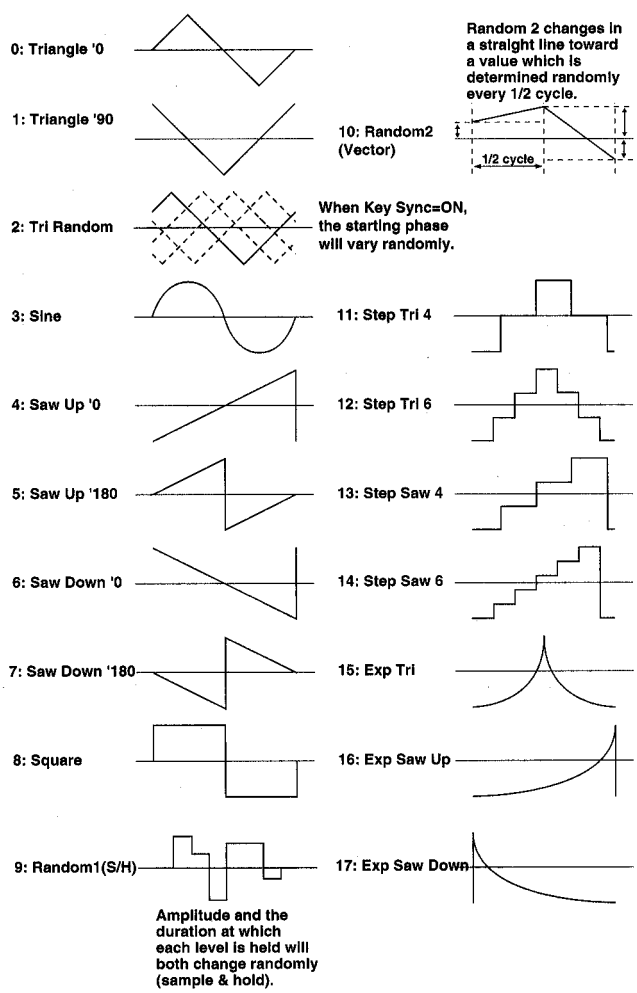
LFO1 page



❑ Settings for the general-purpose LFOs

1-1 Wave Form ..... [Triangle '0...ExpSawDown]

Select the LFO waveform.



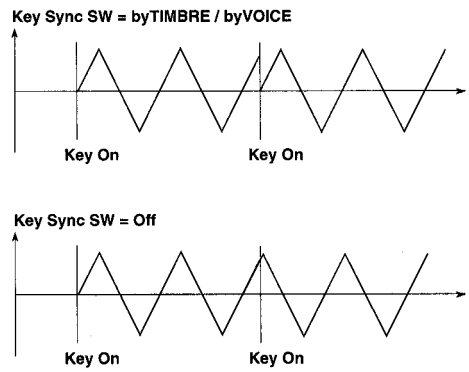
1-4 Key Sync SW ..... [OFF, byTIMBRE, byVOICE]

Specify how key sync (initializing the phase of the LFO waveform by key-on) will occur.

OFF: The LFO will operate (cycle) regardless of key-on.

byTIMBRE: Key sync will occur for the LFOs of all voices at the time of the first key-on that occurs in a state when no keys are on.

byVOICE: Key sync will occur independently for the individual LFO of the voice for which key-on occurred.



2-2 Frequency ..... [0 (0 Hz)...199 (60 Hz)]

Specify the frequency of the LFO.

2-4 Frequency Mod.1 Source ..... (Mod.Source List 1)

Select a modulation source (see p.104) that will control the LFO frequency.

2-5 Frequency Mod.1 Intensity ..... [–99...+99]

Specify the depth and direction of the effect that "Frequency Mod.1 Source" will have on the "Frequency" value.

3-4 Frequency Mod.2 Source ..... (Mod.Source List 1)

3-5 Frequency Mod.2 Intensity ..... [–99...+99]

Refer to "Frequency Mod.1 Source" and "Frequency Mod.1 Intensity."

4-5 Fade In ..... [0...99]

Specify the time over which the amplitude of the LFO will increase from 0 until it reaches the maximum value.

4-2 Amplitude Mod.Source ..... (Mod.Source List 1)

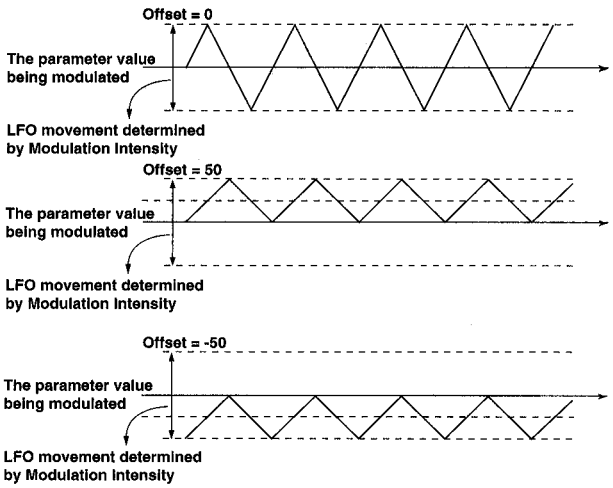
Select a modulation source (see p.104) that will control the amplitude of the LFO waveform.

4-3 Amplitude Mod.Intensity ..... [–99...+99]

Specify the depth and direction of the effect that "Amplitude Mod.1 Source" will have on the amplitude of the LFO waveform.

4-4 Offset ..... [–50...+50]

Specify the center value of the LFO waveform.



5-3 MIDI Sync ..... [OFF, ON]

When this is **ON**, the frequency of the LFO will synchronize to MIDI Clock messages. In this case, "LFO Frequency," "Frequency Mod.1 Source," "Frequency Mod.2 Source," "Frequency Mod.1 Intensity," and "Frequency Mod.2 Intensity" settings will have no effect.

If the MIDI mode setting "Clock Source" is **INT**, the LFO will synchronize to the speed that is specified by the [SPEED] knob on the Z1's front panel. If the "Clock Source" setting is **EXT**, the LFO will synchronize to MIDI Clock messages that are received from an external MIDI device.

5-4 MIDI Sync Base ..... [♪, ♪3, ♪., ♪.3, ♩, ♩3, ♩., 𝅗𝅥]

5-5 MIDI Sync Time ..... [1...16]

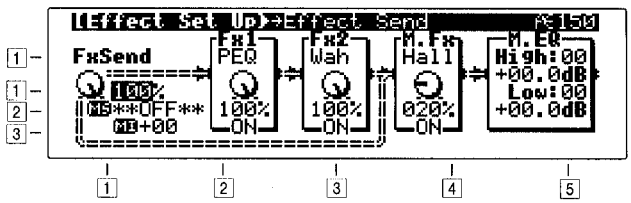
Relative to the tempo determined by the MIDI clock, these settings specify the note length (Base) and its multiple (Time) that will set the period of the synchronized LFO. For example if "MIDI Sync Base" is ♩ (quarter note) and "MIDI Sync Time" is **4**, the LFO period will be four beats.

LFO 2/LFO 3/LFO 4 pages

LFO 2, LFO 3, and LFO 4 have the same parameter as LFO 1. Refer to "LFO 1 page"

7. Prog Fx section

Effect Set Up page



❑ Specify the output level to the effects

1-1 Effect Send .....[0...100%]

Specify the output level to effects 1 and 2. As this value is increased, a greater proportion of the signal will be output to effects 1 and 2.

2-1 Effect Send Mod.Source ..... (Mod.Source List 1)

Select a modulation source that will control "Effect Send."

3-1 Effect Send Mod.Intensity ..... [-99...+99]

Specify the depth and direction of the control that "Effect Send Mod.Source" will have on the depth of the effect.

❑ Select the effect type for Fx1

1-2 Fx1 Select..... [OD...RSpL]

Select the type for effect 1. For an explanation of each type, refer to "Effect types" (p.64).

OverDrive, Compressor, ParaEQ, Wah, Exciter, Decimater, Chorus, Flanger, Phaser, RotarySp(S), Delay(Mono), TalkingMod., M.TapDelay, Ensemble, RotarySp(L)

2-2 Fx1 Balance .....[0...100%]

Specify the balance between the effect sound (Wet) and the direct sound (Dry). This is the same parameter as the Fx1 page "Effect Balance."

3-2 Fx1 SW ..... [OFF, ON]

This turns effect 1 on/off.

This provides a way of temporarily auditioning the effect sound and direct sound, or of checking the on/off status when you are using an assignable switch to control the effects.

This setting cannot be saved.

❑ Select the effect type for Fx2

1-3 Fx2 Select ..... [OD...dly]

Select the type for effect 2. For an explanation of each type, refer to "Effect types".

OverDrive, Compressor, ParaEQ, Wah, Exciter, Decimater, Chorus, Flanger, Phaser, RotarySp(S), Delay(Mono)

If TalkingMod, M.TapDelay, Ensemble or RotarySp(L) is selected for effect 1, these types cannot be used by effect 2.

2-3 Fx2 Balance ..... [0...100%]

3-3 Fx2 SW ..... [OFF, ON]

Refer to "Fx1 Balance" "Fx1 SW".

❑ Select the effect type for M.Fx

1-4 Master Fx Select ..... [Dly...Room]

Select the master effect type. For each type, refer to the explanations that are given later.

StereoDelay, Reverb(Hall), Reverb(Room)

If the Global mode GLB Ctrl SetUp page parameter "Master Effect Bypass" is set to BYPASS, a symbol will be displayed, and the master effect will be bypassed.

2-4 MasterFx Balance ..... [0...100%]

3-4 MasterFx SW ..... [OFF, ON]

Refer to "Fx1 Balance Fx1 SW" .

❑ Adjusting the gain of the M.EQ

Make settings for the two-band EQ that is applied to the output signal.

1-5 High EQ Frequency ..... [0 (1.00 kHz)...49 (29.9 kHz)]

Specify the cutoff frequency of the high EQ.

2-5 High EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the high EQ.

3-5 Low EQ Frequency ..... [0 (20.0 Hz)...49 (1.4 kHz)]

Specify the cutoff frequency of the low EQ.

4-5 Low EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the low EQ.

8. Prog Common section

In the Prog Common section you can make settings for the keyboard and controllers (knobs [1] to [5], the [X-Y PAD] etc.) and assign a name to the program, etc.

CMN Voice page

❑ Specifying how the notes played will be sounded

1-2 Voice Assign Mode ..... [MONO_MULTI, MONO_SINGLE, POLYPHONIC]

Specify whether the program will be played monophonically or polyphonically.

MONO_MULTI : Multi-triggered monophonic
MONO_SINGLE : Single-triggered monophonic
POLYPHONIC : The program can be played polyphonically

Refer to "Retrigger Controller" and "Retrigger Control Threshold."

1-4 Key Priority ..... [LAST, LOW, HIGH]

Specify the priority order which determines how notes will sound when more keys are played than can be sounded.

LAST : The last-played notes will be given priority
LOW : The lowest notes will be given priority
HIGH : The highest notes will be given priority

1-5 Hold ..... [OFF, ON]

With a setting of ON, the notes will continue to sound even after the keys are released. However if the AMP section "Amplitude Mod.EG" is being controlled by an EG whose Sustain Level is 0, the sound will decay naturally.

2-2 Retrigger Controller ..... (Mod.Source List 2)

2-4 Retrigger Control Threshold ..... [1...127]

Specify how the EG and LFO will operate when key-on occurs.

The action of resetting the EG and LFO (so that the EG returns to its Start Level, and the LFO returns to the beginning of its waveform) is called "retriggering." On the Z1, you can use the state of the controller specified by "Retrigger Controller" (i.e., whether the controller is above or below the specified threshold) to specify whether or not retriggering will occur when key-on occurs.

The setting of this function changes the way in which "Voice Assign Mode" will work.

MONO_MULTI:
Retriggering will occur below the threshold. If "Retrigger Controller" is **OFF**, retriggering will always occur.
MONO_SINGLE:
Retriggering will occur above the threshold. If "Retrigger Controller" is **OFF**, retriggering will not occur.
POLYPHONIC:
Retriggering will occur above the threshold. Below the threshold retriggering will not occur and notes will be sounded monophonically. If "Retrigger Controller" is **OFF**, retriggering will always occur.

If key-on occurs from a state of all keys being off, retriggering will always occur.
LFOs whose "Key Sync" is **OFF** will not be reset even if they are retriggered.

3-2 Unison SW ..... [OFF, ON]
This turns unison on/off. By setting either "SW1 Function," "SW2 Function" or "Assignable SW Function" to **UNISON**, you can control this from the various Play modes (refer to p.62).

3-3 Unison Type ..... [OFF, 2, 3, 6 voices]
Specify the number of notes for unison playing. With a setting of **OFF**, notes will sound singly.

3-4 Unison Assign Mode ..... [FIXED, DYNAMIC]
Specify how the number of notes specified by "Unison Type" will be maintained.
With a setting of **FIXED**, the number of notes specified for "Unison Type" will always be sounded. With a setting of **DYNAMIC**, the number of notes that sound will be determined by the currently-sounding state.

3-5 Unison Detune ..... [0...99]
Detune the notes that are sounded simultaneously by the Unison function.

❑ Select the scale type

4-2 Scale Type ..... [EQUAL_TEMP ... USER_SCALE2]
Specify the scale type for each program.

EQUAL_TEMP (equal temperament): The most widely-used tuning, in which each semitone is spaced at the same pitch interval.

PURE_MAJOR (pure major temperament): Major chords for the principle triads of the specified "Scale Key" will be completely in tune.

PURE_MINOR (pure minor temperament): Minor chords for the principle triads of the specified "Scale Key" will be completely in tune.

ARABIC (Arabic temperament): This is a quarter-tone scale used in Arabic music. Set "Scale Key" to C for rast do/bayati re, to D for rast re/bayati mi, to F for rast fa/bayati sol, to G for rast sol/bayati la, or to A# for rast si flat/bayati do.

PYTHAGOREAN: A scale based on ancient Greek musical theory, particularly effective for melodies.

WERCKMEISTER: An equal temperament used in the later Baroque period.

KIRNBERGER: A harpsichord scale created in the 18th century.

SLENDRO: A gamelan scale of Indonesia in which an octave consists of five notes. Use the C, D, F, G, and A keys (when the Scale Key is C).

PELOG: A gamelan scale of Indonesia in which an octave consists of seven notes. Use the C, D, E, F, G, A and B keys (when the Scale Key is C).

USER_SCALE1 :
USER_SCALE2 :
Settings for USER_SCALE 1 and 2 are made in the Global mode UserScale page.

4-3 Scale Key ..... [C...B]
Specify the key (tonic) on which the specified "Scale Type" will be based.

4-5 Random Pitch Intensity ..... [0...99]
Specify the depth at which the pitch will be varied randomly. Higher settings of this value will cause a correspondingly greater random deviation to be applied to the pitch when each note is sounded. Normally you will leave this parameter set at **0**. It provides a way to simulate instruments whose pitch has a natural instability, such as analog synthesizers and acoustic instruments.

❑ Specify the category and user group

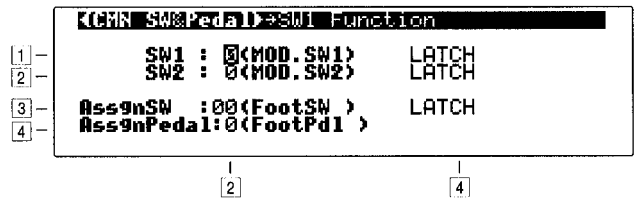
5-2 Program Category ..... [1...18]
Specify the category for each program. Normally you will use this to indicate the type of sound.
An icon is shown at the right of the program name in the Program Play mode display, and you can search for and select other programs of the same category by pressing the CATEGORY [▼] and [▲] keys.

01 (Synth-Hard)	**10 (Strings)**
02 (Synth-Soft)	**11 (Choir)**
03 (Synth-Lead)	**12 (Brass)**
04 (Synth-Motion)	**13 (Reed/Wind)**
05 (Synth-Bass)	**14 (Guitar/Pluck)**
06 (E.Piano)	**15 (Bass)**
07 (Organ)	**16 (Percussion)**
08 (Keyboard)	**17 (Arpeggio)**
09 (Bell)	**18 (SE/Other)**

6-2 User Group ..... [1...16]
Specify the user group for each program. This provides a convenient way to classify programs by category or music-type.
In the Program Play mode display, the user group is shown at the lower left of the program name, and you can use the USER GROUP [◀][▶] keys to find and select programs in the same user group.

The names of each group number can be registered in the Global mode UserGroupName page.

CMN SW & Pedal page



❑ Specifying the function of [SW1] and [SW2]

1-2 SW1 Function ..... [0...7]

Specify the function of the [SW1] switch located in the left side of the front panel.

- **0 (MOD.SW1):** Function as controller Mod. SW1
- **1 (M.Fx_SW):** Turn the master effect on/off
- **2 (Fx1_SW):** Turn effect 1 on/off.
- **3 (Fx2_SW):** Turn effect 2 on/off.
- **4 (Oct_Up):** Raise the note numbers assigned to the keyboard by one octave.
- **5 (OctDown):** Lower the note numbers assigned to the keyboard by one octave.
- **6 (MONO_SW):** When the "Voice Assign Mode" is **POLYPHONIC**, switch to monophonic play (same as **MONO SINGLE**).
- **7 (UNISON):** Turn "Union SW" on/off.

In the case of settings **1**, **2** or **3**, the effect will automatically be ON immediately after the setting is made or immediately after a program change. In the case of **4** or **5**, Octave Up/Down will be OFF immediately after the setting is made or immediately after a program change. In the case of **7**, the ON/OFF status will be saved to the program (MultiSet) when it is written.

1-4 SW1 Mode ..... [LATCH, UNLAT]

LATCH: The function will be switched on/off each time the switch is pressed.

UNLAT: The function will be on only while you continue pressing the switch.

2-2 SW2 Function ..... [0...7]

The same as for "SW1 Function."
However, **0 (Mod.SW2)** will function as controller Mod.SW2.

2-4 SW2 Mode ..... [LATCH, UNLAT]

The same as for "SW1 Mode."

❑ Specify the function of each pedal

3-2 Assignable SW Function ..... [0...12]

Specify the function of an pedal (sold separately) connected to the rear panel Assignable SW jack.

- **0 (FootSW):** Function as a FootSW controller.
- **1 (Damper):** Function as a damper pedal.
- **2 (PrtmSW):** Function as a portamento switch.
- **3 (Sostnut):** Function as a sostenuto pedal.
- **4 (M.Fx_SW):** Turn the master effect on/off.
- **5 (Fx1_SW):** Turn effect 1 on/off.
- **6 (Fx2_SW):** Turn effect 2 on/off.
- **7 (Oct_Up):** Raise the note numbers assigned to the keyboard by one octave.
- **8 (OctDown):** Lower the note numbers assigned to the keyboard by one octave.
- **9 (MONO_SW):** When the "Voice Assign Mode" is **POLYPHONIC**, switch to monophonic play (same as **MONO SINGLE**).
- **10 (UNISON):** Turn the unison function on/off.
- **11 (Arpeg SW):** Turn the arpeggiator on/off.
- **12 (Pad Hold):** Turn the X-Y HOLD function on/off.

In the case of **2**, **10** and **12**, the ON/OFF status will be saved to the program (MultiSet) when it is written.

3-4 Assignable SW Mode ..... [LATCH, UNLAT]

The same as "SW1 Mode."
However, if "Assignable SW Function" is set to **11 (Arpeg SW)** or **12 (Pad Hold)**, this cannot be set. (The switch will automatically be in **LATCH** mode.)

4-2 Assignable Pedal Function ..... [0...5]

Specify the function of a pedal (sold separately) connected to the rear panel Assignable Pedal jack.

- **0 (FootPdl):** Function as a Foot Pedal controller.
- **1 (MIDI_BC):** Function as a MIDI_BC controller.
- **2 (MIDI_PrT):** Function as a MIDI_PrT controller.
- **3 (MIDI_Vol):** Function as a MIDI_Vol controller.
- **4 (MIDI_Pan):** Function as a MIDI_Pan controller.
- **5 (MIDI_Exp):** Function as a MIDI_Exp controller.

CMN Mod. Src List page

❑ View and edit all modulation sources simultaneously

Here you can view and edit a list of all modulation sources that are used in a program. In particular, this provides a convenient way to check and assign the assigned sources when you wish to control a specific parameter using a controller.

① Rotate knob [1], or use the CURSOR [▼] or [▲] keys to select the modulation source parameter.

② Use knob [5] or the [+] or [–] keys to select the source.

It is not possible to make parameter settings for an oscillator type or effect type which is not being used.

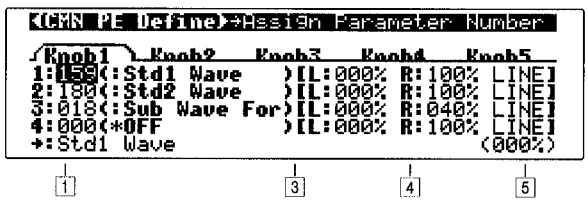
After making changes, you can sort the list or make global changes or exchanges as follows:

① Press the [UTY] key to access the UTILITY menu.

② Press knob [3] (Refrsh) to sort the list by the setting values.

③ You can use knob [4] (Change) and knob [5] (Exchng) to perform global conversions or replacements of setting values.

CMN PE Define page



❑ Specify the operation of the Performance Editor

Here you can specify the operation of the Performance Editor (PE) that allows you to modify the sound in Play mode by operating knobs [1] to [5]. Up to 4 parameters can be assigned to each knob.

① Either press the [◄] or [►] key, or press the [TAB] key (the LED will light) to access the tab menu in the lower part of the LCD, and then select the knob that will control the parameters.

② Press the [▼] or [▲] key to select a set (1 to 4).

③ Set the following parameters, either by pressing or by rotating the appropriate knob.

***-1 Assign Parameter Number ..... [0...230]**

Select the PE number of the parameter that you wish to control using the knob (see p.107). The parameter name will appear in the bottom line of the display. The numerical value at the lower right of the display shows the proportion of the current value of the selected parameter in relation to the variable range of the parameter.

***-3 Knob Left Ratio .....[0...100%]**

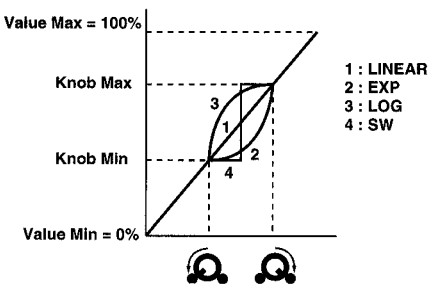
Specify the edit value that will be in effect when the knob is rotated fully left, as a proportion to the variable range of the parameter. For example if the parameter selected by "Assign Parameter Number" has a range of –99 to +99 and if the setting here is 50%, rotating the knob fully left will produce a parameter value of 0. If this setting is 0%, the parameter value will be –99. When the cursor is located at this parameter, the result of the setting value will be temporarily reflected in the sound.

***-4 Knob Right Ratio .....[0...100%]**

Specify the edit value that will be in effect when the knob is rotated fully right, as a proportion to the variable range of the parameter. For details, refer to the explanation above. When the cursor is located at this parameter, the result of the setting value will be temporarily reflected in the sound.

***-5 Curve ..... [LINE, EXPO, LOG, SW]**

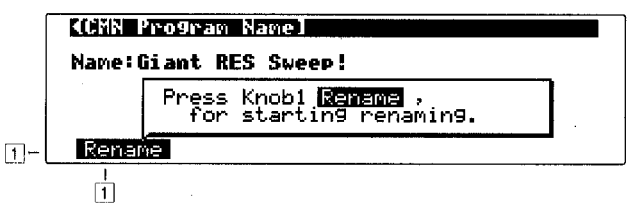
Select one of four curves to specify how the sound will change when the knob is rotated.



If the same parameter is assigned more than once to a single knob, the lowest-numbered set number will take priority.

In addition to the settings here, you can also use a Utility function to make settings (see p.20 and 106).

CMN Program Name page view



❑ Modifying the name of a program

1-1 Name Edit .....

Specify the name of the program.

For the procedure, refer to "Modifying a name (Rename)" (p.25).

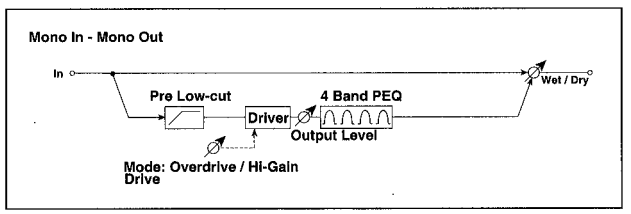
Effect types

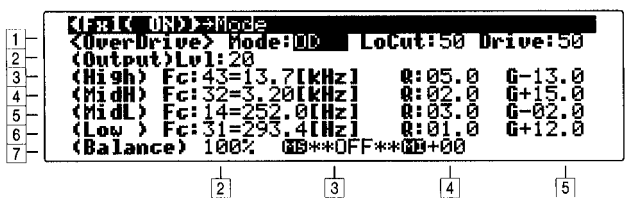
Fx1 page

❑ Specify the effect which Fx1 will use

Overdrive

This is a distortion with two modes: overdrive and high gain. By controlling the four-band equalizer you can create a variety of distortion sounds.





1-3 Mode ..... [OD, DIST]
Select either **OD** (overdrive) or **DIST** (distortion).

1-4 Pre Low Cut ..... [0...99]
Specify the amount of low cut that will be applied at the input of the distortion. By cutting the low range before distortion is applied, you can create sharper distortion.

1-5 Drive ..... [0...99]
Specify the degree of distortion. The degree of distortion will be determined by the level of the input signal itself and by the "Drive" setting. Raising "Drive" will increase the overall volume, so use "Output Level" to adjust the volume. "Output Level" is also the input level to the 4-band EQ. If the 4-band EQ clips, adjust the "Output Level."

2-2 Output Level ..... [0...99]
Specify the output level. Refer to "Drive."

3-2 High EQ Cutoff ..... [00 (500.0 Hz)...49 (21.8 kHz)]
Specify the center frequency of the high EQ.

3-4 Q ..... [00.5 ... 10.0]
Specify the bandwidth of the high EQ filter. Increasing this value will make the band narrower and sharper.

3-5 Gain ..... [-18.0...+18.0 dB]
Specify the gain of the high EQ.

4-2 MidH EQ Cutoff ..... [00 (200.0 Hz)...49 (14.0 kHz)]
Specify the center frequency of the mid-high EQ.

4-4 Q ..... [00.5 ... 10.0]
Specify the bandwidth of the mid-high EQ filter. Refer to "3-4 Q."

4-5 Gain ..... [-18.0...+18.0 dB]
Specify the gain of the mid-high EQ.

5-2 MidL EQ Cutoff ..... [00 (50 Hz)...49 (14.4 kHz)]
Specify the center frequency of the mid-low EQ.

5-4 Q ..... [00.5 ... 10.0]
Specify the bandwidth of the mid-low EQ filter. Refer to "3-4 Q."

5-5 Gain ..... [-18.0...+18.0 dB]
Specify the gain of the mid-low EQ.

6-2 Low EQ Cutoff ..... [00 (20 Hz)...49 (1.40 kHz)]
Specify the center frequency of the low EQ.

6-4 Q ..... [00.5 ... 10.0]
Specify the bandwidth of the low EQ filter. Refer to "3-4 Q."

6-5 Gain ..... [-18.0...+18.0 dB]
Specify the gain of the low EQ.

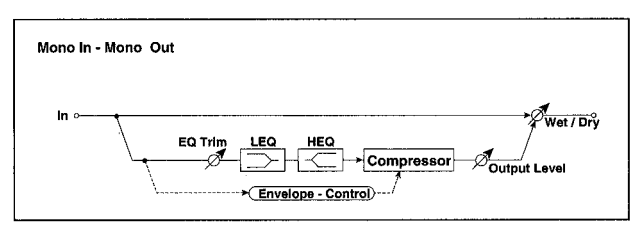
7-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

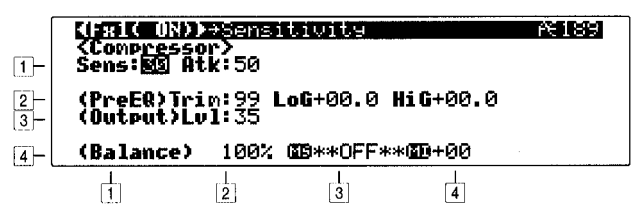
7-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

7-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Compressor

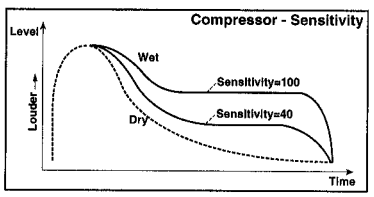
This effect compresses the input signal, to smooth out irregularities in volume and give the sound more punch. It is effective on guitar, piano and drums as well.





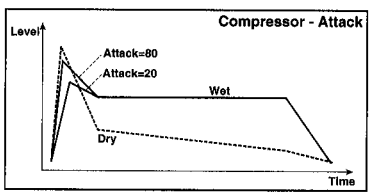
1-1 Sensitivity ..... [01...99]

Specify the sensitivity of the compressor. As this value is increased, lower level sounds will be boosted in volume. Since raising this value will increase the overall volume, you can use the "Output Level" to make a final volume adjustment.



1-2 Attack ..... [01...99]

This parameter controls the strength of the feeling of attack that is unique to a compressor.



2-2 Pre EQ Input Trim ..... [00...99]

Specify the input level to the equalizer.

2-3 Pre Low EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the low range equalizer.

2-4 Pre High EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the high range equalizer.

3-2 Output Level ..... [00...99]

Specify the output level of the compressor. Refer to "Sensitivity."

4-2 Effect Balance .....[0...100%]

Specify the balance between the effect sound and the direct sound.

4-3 Balance Mod.Source ..... (Mod.Source List 2)

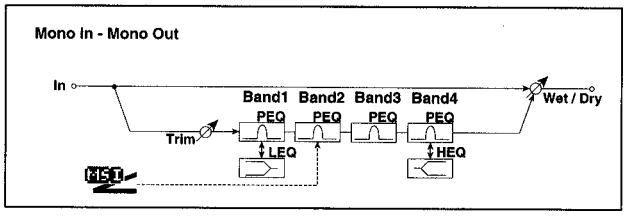
Select a modulation source (see p.104) that will control "Effect Balance."

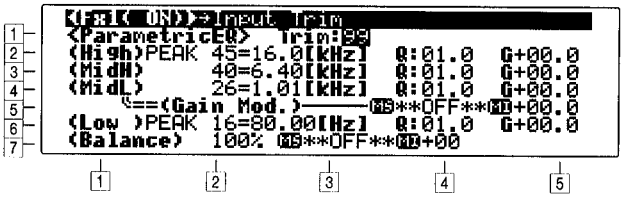
4-4 Balance Mod.Intensity ..... [-99...+99]

Specify the depth and direction of the effect that "Balance Mod.Source" will have.

Parametric EQ

This is a four-band parametric equalizer. For the high EQ and low EQ you can select either peaking or shelving type. For the mid-low EQ, a modulation source can control the gain.



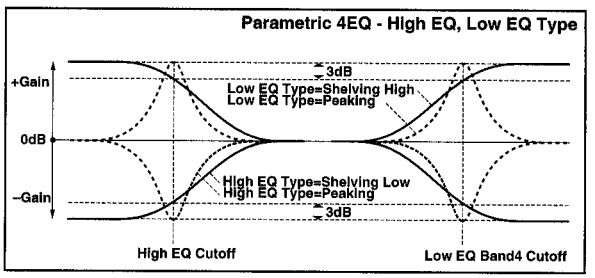


1-3 Input Trim ..... [0...99]

Specify the input level.

2-1 High EQ Type ..... [PEQ (Peaking), SHLV (Shelving-Low)]

Select the filter type for the high EQ.



6-1 Low EQ Type ..... [PEQ (Peaking), SHLV (Shelving-Low)]

Select the filter type for the low EQ.

2-2 High EQ Cutoff ..... [00 (500.0 Hz)...49 (21.8 kHz)]

Specify the center frequency of the high EQ.

2-4 High EQ Q ..... [00.5 ... 10.0]

Specify the bandwidth of the high EQ filter. Increasing this value will make the band narrower and sharper.

2-5 High EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the high EQ.

3-2 MidH EQ Cutoff .....[00 (200 Hz)...49 (14.0 kHz)]

Specify the center frequency of the mid-high EQ.

3-4 MidH EQ Q ..... [00.5 ... 10.0]

Specify the bandwidth of the mid-high EQ filter.

3-5 MidH EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the mid-high EQ.

4-2 MidL EQ Cutoff ..... [00 (50.00 Hz)...49 (14.4 kHz)]

Specify the center frequency of the mid-low EQ.

4-4 MidL EQ Q ..... [00.5 ... 10.0]

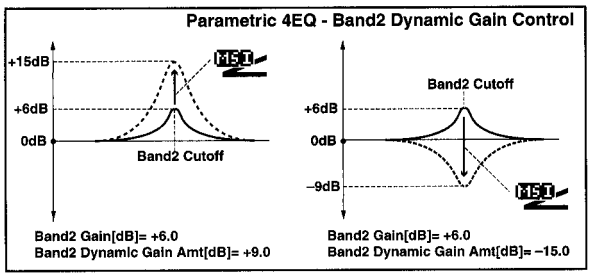
Specify the bandwidth of the mid-low EQ filter.

4-5 MidL EQ Gain ..... [-18.0...+18.0 dB]

Specify the gain of the mid-low EQ.

5-4 MidL EQ Gain Mod.Source ..... (Mod.Source List 2)

Select a modulation source (see p.104) that will control "MidL EQ Gain."



5-5 MidL EQ Gain Mod.Intensity ..... [-18.0...+18.0 dB]
Specify the depth and direction of the effect of "MidL EQ Gain Mod.Source."

6-2 Low EQ Cutoff ..... [00 (20.00 Hz)...49 (1.40 kHz)]
Specify the center frequency of the low EQ.

6-4 Low EQ Q ..... [0.5 ... 10.0]
Specify the bandwidth of the low EQ filter.

6-5 Gain ..... [-18.0...+18.0 dB]
Specify the gain of the low EQ.

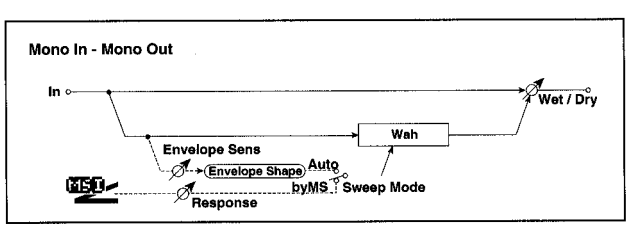
7-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

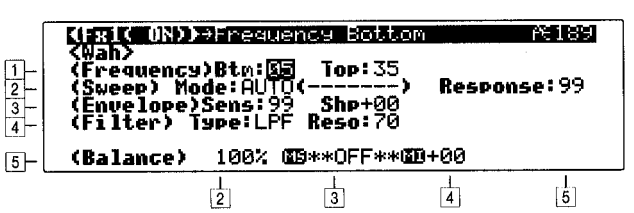
7-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

7-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Wah

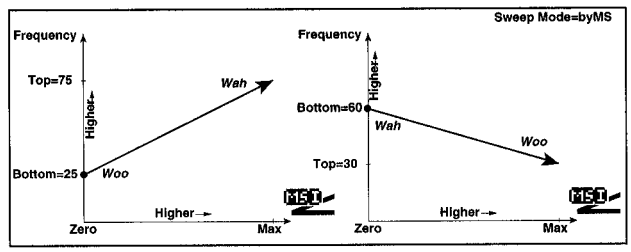
This wah effect allows simulation of vintage wah pedals, auto wah units, and an even wider range of settings. Either a band pass filter or a low pass filter can be selected as the wah filter.

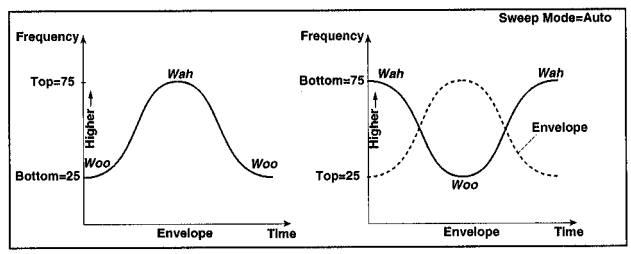




1-2 Frequency Bottom ..... [0...99]
Specify the lower limit of the wah center frequency. The sweep width and direction of the wah filter will be determined by the "Frequency Top" and "Frequency Bottom" settings.

1-3 Frequency Top ..... [0...99]
Specify the upper limit of the wah center frequency.





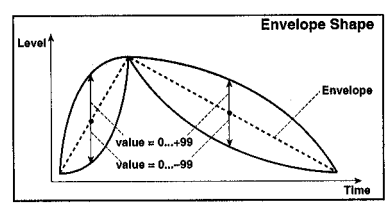
2-2 Sweep Mode ..... [AUTO, byMS]
Select the wah control mode. When **AUTO** is selected, changes in the level of the input signal (i.e., the envelope of the input signal) will control the sweep, producing an auto-wah effect. This is a popular effect to apply to muted guitar chords or to clavinet-type sounds. When **byMS** is selected, a modulation source can be used to directly control the filter, as on a wah pedal.

2-3 Sweep Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control the wah filter when "Sweep Mode" is set **by the byMS** setting.

2-5 Sweep Response ..... [0...99]
Specify the speed of response of the wah to the **byMS** setting.

3-2 Envelope Sens ..... [0...99]
Specify the sensitivity of the auto-wah. If the input signal is too soft to produce a sufficient sweep, raise this value. If the input signal is too loud, causing the filter operation to halt temporarily, lower this value.

3-3 Envelope Shape ..... [-99...+99]
Specify the sweep curve of the auto-wah.



4-2 Filter Type ..... [BPF (Band Pass), LPF (Low Pass)]
Select the type of wah filter.

4-3 Resonance ..... [0...99]
Specify the amount of resonance.

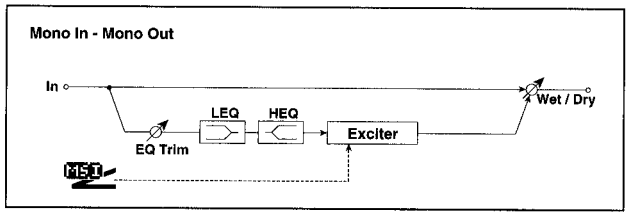
5-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

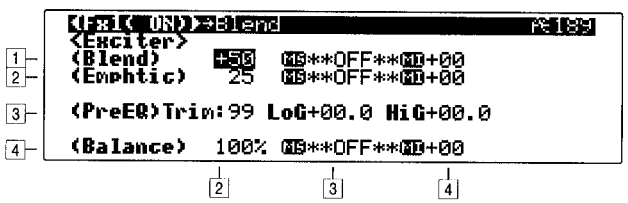
5-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

5-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Exciter

This effect gives sparkle and greater definition to the sound. The depth of the effect can be controlled by a modulation source.





1-2 Blend ..... [-99...+99]
Specify the depth of the exciter effect. Positive (+) settings and negative (–) settings will emphasize different frequency patterns.

1-3 Blend Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Blend."

1-4 Blend Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Blend Mod.Source."

2-2 Emphatic Point ..... [0...99]
Specify the range of frequencies that will be emphasized. As this setting is increased, more of the low frequency range will be included in the emphasized region.

2-3 Emphatic Point Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Emphatic Point."

2-4 Emphatic Point Mod.Int ..... [-99...+99]
Specify the depth and direction of the effect of "Emphatic Point Mod.Source."

3-2 Pre EQ Input Trim ..... [0...99]
Specify the input level of the 2-band equalizer.

3-3 Pre Low EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the low range equalizer.

3-4 Pre High EQ Gain [dB] ..... [-18.0...+18.0 dB]
Specify the gain of the high range equalizer.

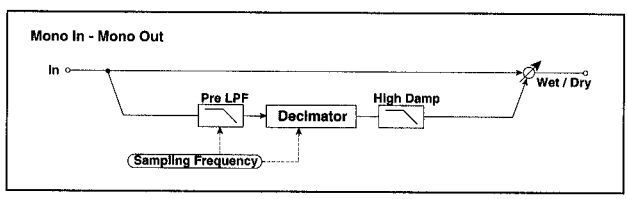
4-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the dry sound (Dry).

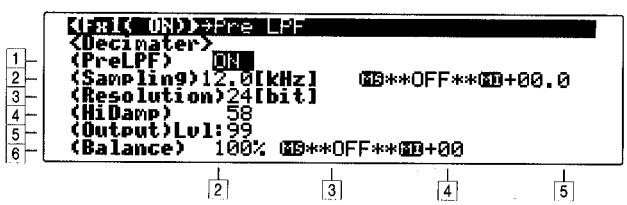
4-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

4-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Decimator

This effect lowers the sampling frequency to create the type of rough sound characterized by a cheap sampler. The noise unique to a sampler is also reproduced.





1-2 Pre LPF ..... [OFF, ON]
Specify whether or not the lowering of the sampling frequency will produce aliasing noise. On samplers which have a low sampling frequency, inputting a sound which is higher-pitched than the sampler can playback will produce noise at a pitch that is un-related to the original sound. If "Pre LPF" is turned **ON**, this noise will be suppressed. If you set "Sampling Frequency" to about 3 kHz and turn "Pre LPF" **OFF**, you will get an effect similar to a ring modulator.

2-2 Sampling Frequency [Hz] ..... [1.0 k ... 24.0 kHz]
Specify the sampling frequency.

2-4 Fs Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Sampling Frequency."

2-5 Fs Mod.Int ..... [-24.0 k ... +24.0 kHz]
Specify the depth and direction of the effect of "Fs Mod.Source."

3-2 Resolution ..... [4...24 bit]
By lowering the bit length of the input waveform you can modify the waveform to change the sound. This lets you simulate the "lo-fi" sound of a sampler which uses a short bit length (i.e., fewer bits per sample). With a setting of **24 bits**, the sound will be normal (no effect). As this value is decreased, the effect will be-

come stronger. Since for some settings the volume will also be affected, you can use "Output Level" to make adjustments.

4-2 High Damp [%] .....[0...100%]
Specify the amount of the high range that will be cut.

5-2 Output Level ..... [00...99]
Specify the output level of the decimator.

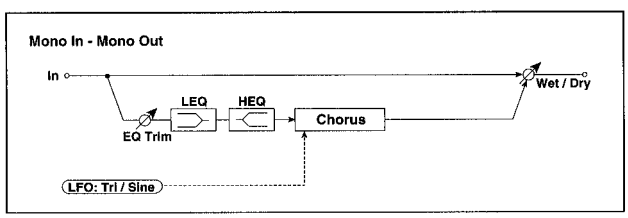
6-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

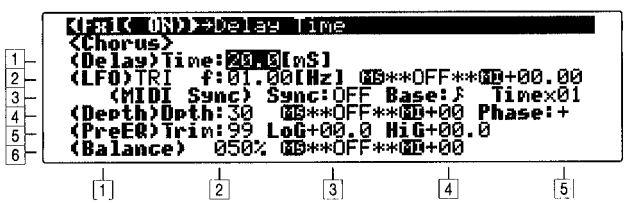
6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Chorus

This effect modulates the delay time of the input signal to add depth and warmth to the sound. A two-band equalizer lets you adjust the tone of the effect sound to your taste.





1-2 Delay Time ..... [0.0...50.0 mS]
Specify the delay time from the original sound.

2-1 LFO Wave Form ..... [TRI (Triangle), SIN (Sine)]
Select the LFO waveform.

2-2 LFO Frequency ..... [0.04...20.00 Hz]
Specify the LFO speed.

2-4 LFO Frequency Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "LFO Frequency."

2-5 LFO Frequency Mod.Int. ..... [–20.00...+20.00 Hz]
Specify the depth and direction of the effect of "LFO Frequency Mod.Source."

3-3 MIDI Sync ..... [OFF, ON]

3-4 MIDI Sync Base ..... [♪, ♪3, ♪., ♪3, ♩, ♩3, ♩., 𝅗𝅥]

3-5 MIDI Sync Time ..... [1...16]
For details on "MIDI Sync," "MIDI Sync Base" and "MIDI Sync Time," refer to the LFO section (p.59).

4-2 Depth ..... [0...99]
Specify the depth of LFO modulation.

4-3 Depth Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Depth."

4-4 Depth Mod.Int ..... [–99...+99]
Specify the depth and direction of the effect of "Depth Mod.Source."

4-5 Output Phase .... [+, – , +/– for wider stereo imaging]
Set the phase of the effect sound (Wet).

If only the L/MONO OUTPUT jack is connected, a setting of +/– will cause the effect sound to disappear. In this case, set the Global mode "Output Mode" parameter to **MONO**.

5-2 Pre EQ Input Trim ..... [0...99]
Specify the input level to the equalizer.

5-3 Pre Low EQ Gain [dB] ..... [–18.0...+18.0 dB]
Specify the gain of the low-range equalizer.

5-4 Pre High EQ Gain [dB] ..... [–18.0...+18.0 dB]
Specify the gain of the high-range equalizer.

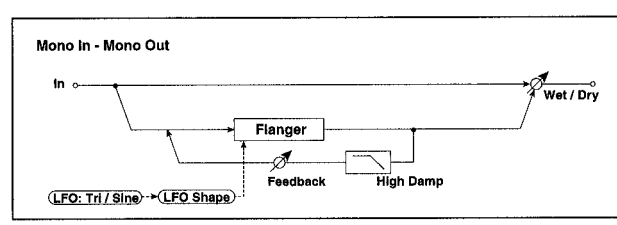
6-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

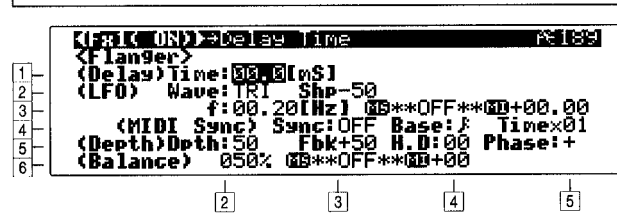
6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Flanger

This creates a strong "swishing" effect and a sense of cycling pitch. It is effective when applied to sounds that contain plenty of overtones, such as lead sounds.

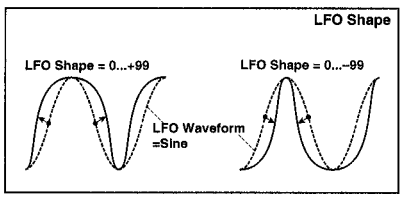




1-2 Delay Time ..... [0.0...50.0 mS]
Specify the delay time from the original sound.

2-2 LFO Wave Form ..... [TRI (Triangle), SIN (Sine)]
Select the LFO waveform.

2-3 LFO Shape ..... [–99...+99]
Specify the degree to which the LFO waveform will be modified. By modifying the LFO waveform you can control the sense of sweep that occurs at the flanging peaks.



3-2 LFO Frequency ..... [0.04...20.00 Hz]
Specify the LFO speed.

3-4 LFO Frequency Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "LFO Frequency."

3-5 LFO Frequency Mod.Int. ..... [–20.00...+20.00 Hz]
Specify the depth and direction of the effect of "LFO Frequency Mod.Source."

4-3 MIDI Sync ..... [OFF, ON]

4-4 MIDI Sync Base ..... [♪, ♪3, ♪., ♪3, ♩, ♩3, ♩., 𝅗𝅥]

4-5 MIDI Sync Time ..... [1...16]
For details on "MIDI Sync," "MIDI Sync Base" and "MIDI Sync Time," refer to the LFO section (p.59).

5-2 Depth ..... [00...99]
Specify the depth of LFO modulation.

5-3 Feedback ..... [–99...+99]
Specify the amount of feedback. Positive (+) values and negative (–) values will affect the peaks in different ways. If this parameter is set to a positive (+) value and "Output Phase" is also set to a positive value, or if this parameter is set to a negative (–) value and "Output Phase" is also set to a negative value, the overtones will be emphasized when the flanged sound is mixed with the direct sound.

5-4 High Damp [%] ..... [0...99%]
Specify the amount of the high range that will be cut from the feedback. As this value is increased, more of the high-range overtones will be suppressed.

5-5 Output Phase ..... [+, –, +/– for wider stereo imaging]
Invert the phase of the effect sound (Wet).
Refer to the "Feedback."

If only the L/MONO OUTPUT jack is connected, a setting of +/– will cause the effect sound to disappear. In this case, set the Global mode "Output Mode" parameter to **MONO**.

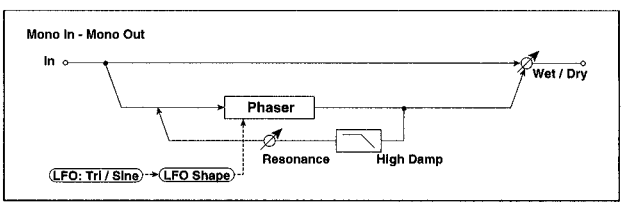
6-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

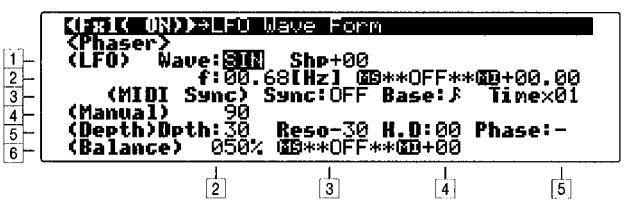
6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Phaser

This effect modulates the phase of the sound to create a twisting sensation. It is effective when applied to an electric piano etc.





1-2 LFO Waveform ..... [TRI (Triangle), SIN (Sine)]
Select the LFO waveform.

1-3 LFO Shape ..... [–99...+99]
Specify the degree to which the LFO waveform will be modified. Refer to Flanger 3-2 "LFO Frequency."

2-2 LFO Frequency ..... [00.04...20.00 Hz]
Specify the LFO speed.

2-4 LFO Frequency Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "LFO Frequency."

2-5 LFO Frequency Mod.Int. ..... [–20.00...+20.00 Hz]
Specify the depth and direction of the effect of "LFO Frequency Mod.Source."

3-2 Manual ..... [0...99]
Specify the frequency at which the effect will be applied.

5-2 Depth ..... [0...99]
Specify the depth of LFO modulation.

5-3 Resonance ..... [–99...+99]
Specify the amount of resonance. The effect on the peaks will be different for positive (+) settings and negative (–) settings. If both this parameter and "Effect Balance (Wet/Dry)" are set to positive values, or both

set to negative values, the overtones will be emphasized when the direct sound and effect sound are mixed.

5-4 High Damp [%] .....[0...99%]
Specify the amount of the high range that will be cut from the resonance. As this value is increased, more of the high-range overtones will be suppressed.

5-5 Output Phase..... [+, –, +/– for wider stereo imaging]
Invert the phase of the effect sound (Wet).

If only the L/MONO OUTPUT jack is connected, a setting of +/– will cause the effect sound to disappear. In this case, set the Global mode "Output Mode" parameter to **MONO**.

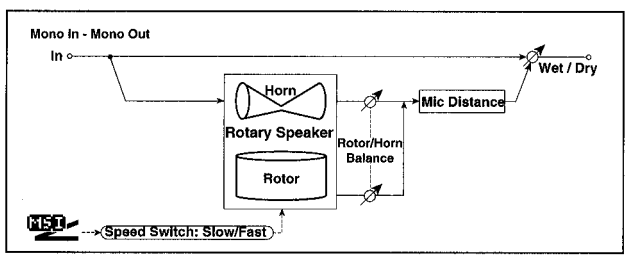
6-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

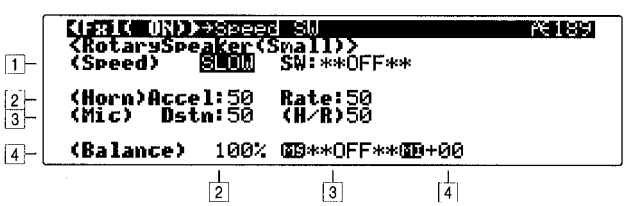
6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Rotary Speaker (Small)

This effect simulates the rotary speaker that is indispensable to electric organ sounds. This simulates the sound that is produced when the drive belt for the low-frequency rotor is removed to fix it in place. You can use a modulation source to switch the rotational speed of the speaker. Microphone placement is also simulated.





1-2 Speed Switch .....[SLOW, FAST]
Switch the rotation speed (slow/fast) of the speaker.

1-3 Speed Switching Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control the "Speed Switch." When "Speed Switch" is **SLOW**, the rotation will normally be **SLOW**, and will accelerate to **FAST** only when you operate the modulation source (by pressing the pedal, etc.). The speed will switch to **FAST** when the value of the modulation source rises to **64** or higher. For values of **63** or lower, the speed will be **SLOW**.

2-2 Horn Acceleration ..... [00...99]
Specify the rapidity with which the rotational speed of the high frequency horn will change. On an actual rotary speaker, the speed does not switch immediately between fast/slow, but accelerates or decelerates over an interval of time.

2-3 Horn Ratio ..... [00...99]
Adjust the rotational speed of the high frequency horn. **50** is normal, and **0** is stopped.

3-2 Mic Distance ..... [00...99]
This simulates the distance at which the mic is placed. Specify the separation between the microphone and the rotary speaker.

3-3 Horn/Rotor Balance ..... [0...99]
Specify the volume balance between the low frequency rotor and the high frequency horn. Raising this value will increase the volume of the high frequency horn.

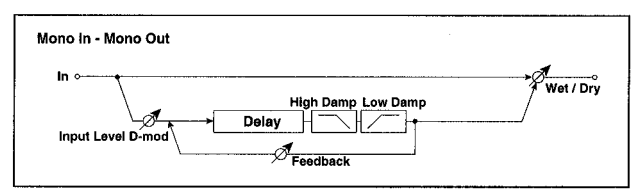
4-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

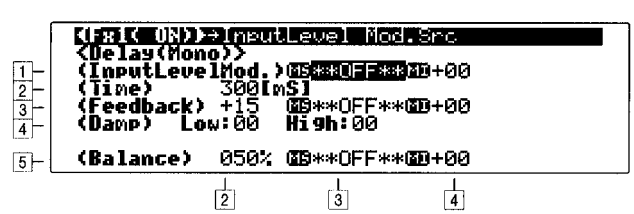
4-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

4-4 Balance Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Delay (Mono)

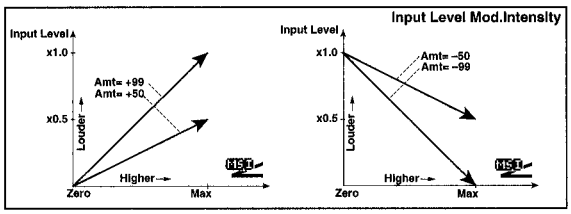
This effect delays the input signal. Since the feedback attenuation of the low-frequency and high-frequency ranges can be set independently, you can vary the delay sound substantially.





1-3 Input Level Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control the input level.

1-4 Input Level Mod.Intensity ..... [–99...+99]
Specify the depth and direction of the effect of "Input Level Mod.Source."



2-2 Delay Time ..... [0...680 mS]
Specify the delay time.

3-2 Feedback ..... [-99...+99]
Specify the amount of feedback.

3-3 Feedback Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Feedback."

3-4 Feedback Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Feedback Mod.Source."

4-2 Low Damp ..... [0...99%]
Specify the attenuation of the low frequency range. This will cause the delay sound to become successively lighter in tone each time it is fed back.

4-3 High Damp ..... [0...99%]
Specify the attenuation of the high frequency range. This will cause the delay sound to become successively darker in tone each time it is fed back.

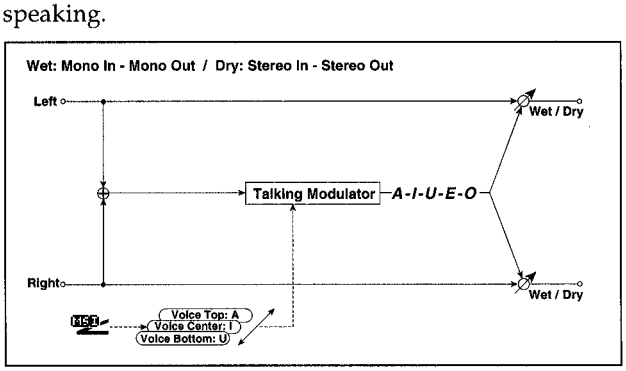
5-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

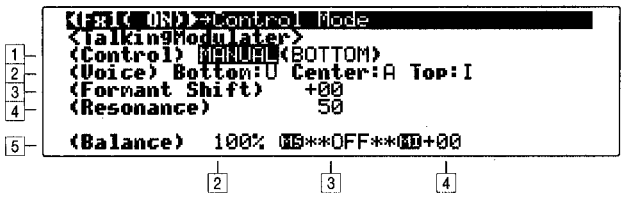
5-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

5-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Talking Modulator

This effect gives the input signal a resemblance to a human voice. A modulation source can be used to vary the tone, creating a sound as though a guitar or synthesizer is speaking.





1-2 Control Mode ..... [MANUAL, byMS]
Specify how the voice pattern will be controlled. With **MANUAL**, the value of "Manual Control" will determine the voice pattern. With **byMS**, the value of the controller selected for "Control Source" will determine the voice pattern

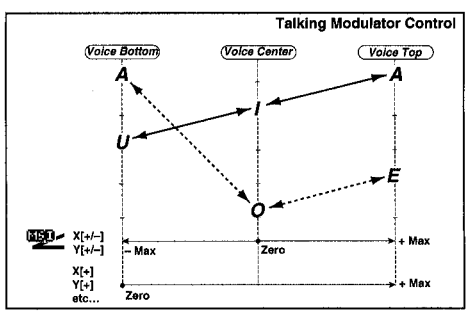
1-3 Manual Control ..... [BOTTOM...CENTER...TOP]
This parameter will appear when "Control Mode" is set to **MANUAL**. Use this when you wish to fix the voice pattern without using a controller (for example if you want the sound to be fixed between "aah" and "iih").

1-3 Control Source ..... (Mod.Source List 2)
This parameter will appear when "Control Mode" is set to **byMS**. Select a modulation source that will control the voice pattern.

2-2 Voice Bottom ..... [A, I, U, E, O]

2-3 Voice Center ..... [A, I, U, E, O]

2-4 Voice Top ..... [A, I, U, E, O]
Assign vowels to the bottom, center and top ranges of the controller. For example if X[+/-] is selected as the modulation source and you set "Voice Top" to **A**, "Voice Center" to **I** and "Voice Bottom" to **U**, sliding your finger from the right edge to the left edge of the [X-Y PAD] will cause the voice to change from "aah" to "iih" to "uuh."



3-3 Formant Shift ..... [-99...+99]
Adjust the frequency at which the effect will apply. Specify higher values if you want the effect to apply to higher sounds, or lower values if you want it to apply to lower sounds.

4-3 Resonance ..... [0...99]
Specify the strength of resonance for the voice pattern. Increasing this value will produce a more distinctive sound.

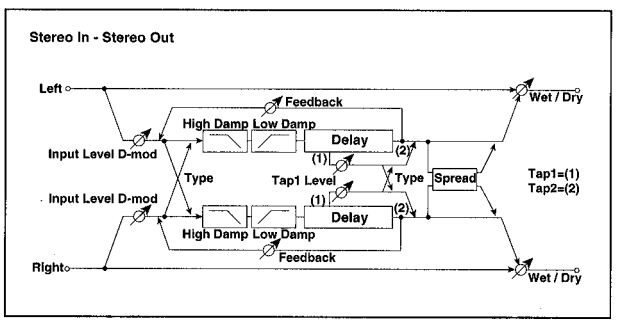
5-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

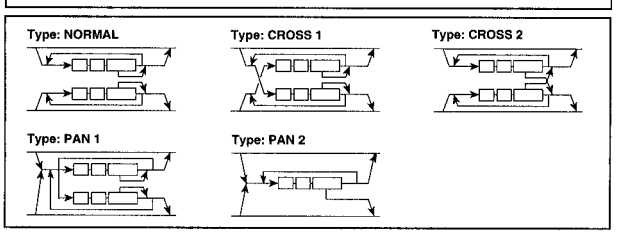
5-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

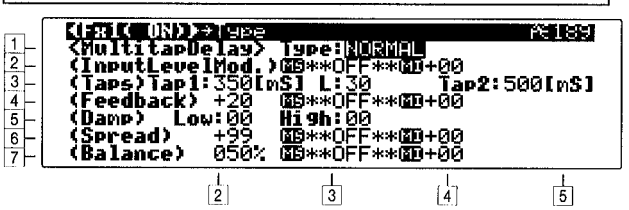
5-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Multitap Delay

This is a stereo multi-tap delay with two delay taps each for left and right. Since you can specify how the feedback and tap outputs will be connected, a variety of complex spatial patterns can be created.







1-3 Type ..... [NORMAL, CROSS1, CROSS2, PAN1, PAN2]
Specify how the left/right delays will be connected. By changing the connections between the left and right delays as shown in the diagram above, you can specify how the delays will be panned left/right.

2-3 Input Level Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control the input level.

2-4 Input Level Mod.Int ..... [-99...+99]
Specify the depth and direction of the effect of "Input Level Mod.Source."

3-2 Tap 1 Time ..... [0...680 mS]
Specify the delay time of tap 1.

3-3 Tap 1 Level ..... [0...99]
Specify the output level of tap 1. By creating volume differences relative to tap 2, you can give a sense of "groove" to the delay and feedback that might otherwise become monotonous.

3-5 Tap 2 Time ..... [0...680 mS]
Specify the delay time of tap 2.

4-2 Feedback ..... [-99...+99]
Specify the amount of feedback for tap 2.

4-3 Feedback Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Feedback."

4-4 Feedback Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "Feedback Mod.Source" will have.

5-2 Low Damp ..... [0...99]
Specify the attenuation of the low frequency range. This will cause the delay sound to become successively lighter in tone each time it is fed back.

5-3 High Damp ..... [0...99]
Specify the attenuation of the high frequency range. This will cause the delay sound to become successively darker in tone each time it is fed back.

6-2 Spread ..... [-99...+99]
Specify the stereo spread (width) of the effect sound. A setting of **+99** will produce the maximum spread, and with a setting of **0** the effect sound of both channels will be output from the center. With negative (-) settings the effect sound will be inverted left/right.

6-3 Spread Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Spread."

6-4 Spread Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect that "Spread Mod.Source" will have.

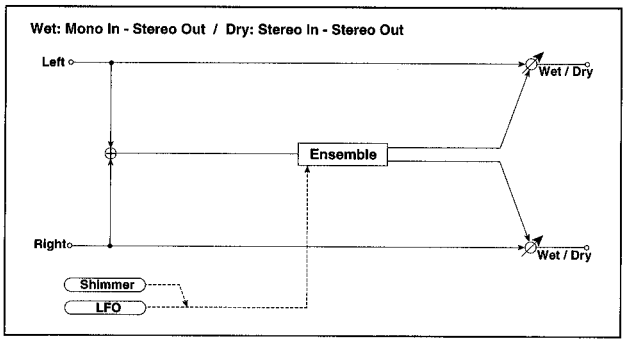
7-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

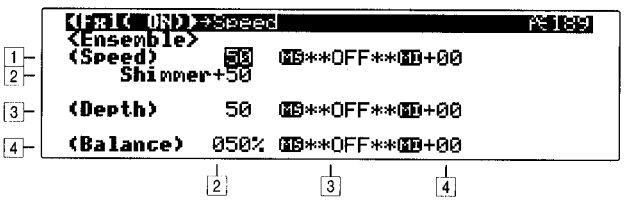
7-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

7-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Ensemble

This is an ensemble effect with three chorus blocks. The blocks are output to left, right and center respectively, creating an ensemble effect with spatial depth and breath.



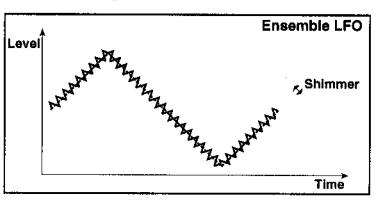


1-2 Speed ..... **[0...99]**
Specify the LFO speed.

1-3 Speed Mod.Source ..... **(Mod.Source List 2)**
Select a modulation source (see p.104) that will control "Speed."

1-4 Speed Mod.Intensity ..... **[–99...+99]**
Specify the depth and direction of the effect of "Speed Mod.Source."

2-2 Shimmer ..... **[–99...+99]**
Specify the amount by which the LFO waveform will be modulated. As this value is raised, the LFO waveform will be modulated more greatly, producing a more complex and richer chorus effect.



3-2 Depth ..... **[0...99]**
Specify the depth of LFO modulation.

3-3 Depth Mod.Source ..... **(Mod.Source List 2)**
Select a modulation source (see p.104) that will control "Depth."

3-4 Balance Mod.Intensity ..... **[–99...+99]**
Specify the depth and direction of the effect of "Depth Mod.Source."

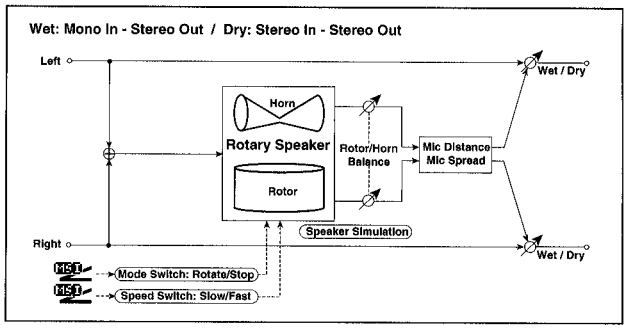
4-2 Effect Balance ..... **[0...100%]**
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

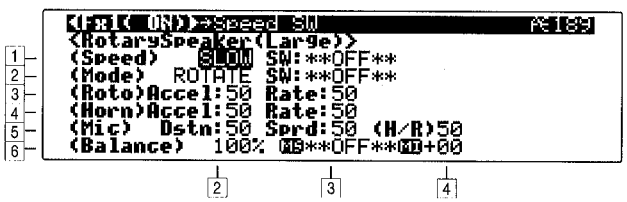
4-3 Balance Mod.Source ..... **(Mod.Source List 2)**
Select a modulation source (see p.104) that will control "Effect Balance."

4-4 Balance Mod.Intensity ..... **[–99...+99]**
Specify the depth and direction of the effect of "Balance Mod.Source."

Rotary Speaker (Large)

This effect simulates a rotary speaker. Since the low frequency rotor and the high frequency horn are simulated separately, a highly realistic sound is produced. The mic position is also simulated.





1-2 Speed Switch ..... **[SLOW, FAST]**
Switch the rotation speed (slow/fast) of the speaker.

1-3 Speed Switching Source ..... **(Mod.Source List 2)**
Select a modulation source (see p.104) that will control the "Speed Switch." When "Speed Switch" is **SLOW**, the rotation will normally be **SLOW**, and will accelerate to **FAST** only when you operate the modulation source (by pressing the pedal, etc.). The speed will switch to **FAST** when the value of the modulation source rises to **64** or higher. For values of **63** or lower, the speed will be **SLOW**.

2-2 Mode Switch ..... **[ROTATE, STOP]**
Switch the speaker between rotating/stopped.

2-3 Mode Switching Source ..... **(Mod.Source List 2)**
Select a modulation source (see p.104) that will control the "Mode Switch." If "Mode Switch" is set to **ROTATE**, the speaker will be rotating, and will stop only when the modulation source is operated (e.g., when a pedal is pressed). Rotation will **STOP** when the modulation source value reaches **64** or higher, and will **ROTATE** when the value is **63** or less.

3-2 Rotor Acceleration ..... **[0...99]**
Specify the rapidity with which the rotational speed of the low frequency rotor will change. On an actual rotary speaker, the speed does not switch immediately between fast/slow, but accelerates or decelerates over an interval of time. Here you can specify the rapidity at which this change will take place.

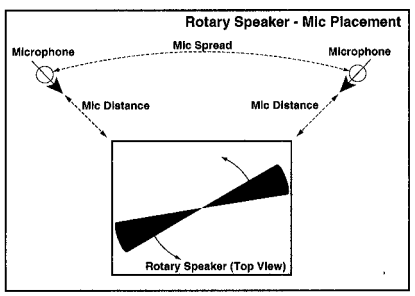
3-3 Rotor Ratio ..... **[00...99]**
Adjust the rotational speed of the low frequency rotor. **50** is normal, and **0** is stopped.

4-2 Horn Acceleration ..... [0...100]
Specify the rapidity with which the rotational speed of the high frequency horn will change.

4-3 Horn Ratio ..... [Stop, 0.50...2.00]
Adjust the rotational speed of the low frequency rotor. 50 is normal, and 0 is stopped.

5-2 Mic Distance ..... [00...50]
This simulates the distance at which the mics are placed. This setting simulates a stereo mic placement.

5-3 Mic Spread ..... [0...50]
Specify the left/right angle of the microphones.



5-4 Rotor/Horn Balance .....[Rotor, 1...99, Horn]
Specify the volume balance between the low frequency rotor and the high frequency horn.

6-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Fx2 page

❑ Specify the effect that Fx2 will use

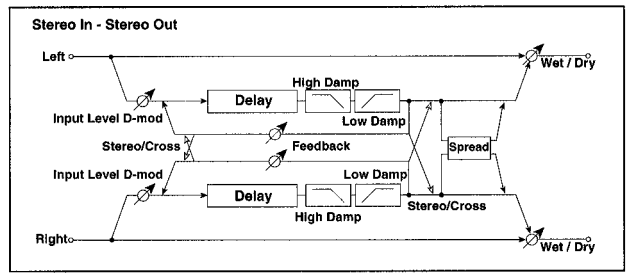
Fx2 can use Overdrive to Delay (Mono) effects (see p.64 to 71).

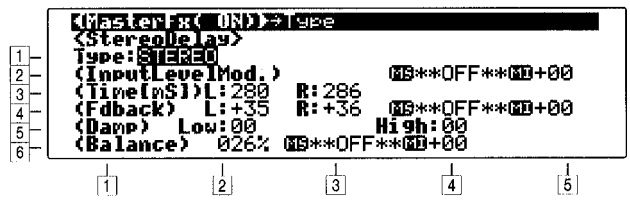
Mst.Fx page

❑ Specify the effect that Mst.Fx will use

Stereo Delay

This is a stereo-type delay. You can change the feedback connections and use it as a cross-feedback delay in which the delayed sound will alternate between left and right.





1-1 Type ..... [STEREO, CROSS]
Switch the delay type between stereo delay or cross-feedback delay.

2-4 Input Level Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control the input level. Refer to Delay (Mono).

2-5 Input Level Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Input Level Mod.Source."

3-2 Left Time .....[0...680 mS]
Specify the delay time of the left channel.

3-4 Right Time .....[0...680 mS]
Specify the delay time of the right channel.

4-2 Left Feedback ..... [-99...+99]
Specify the amount of feedback for the left channel.

4-3 Right Feedback ..... [-99...+99]
Specify the amount of the feedback for the right hand.

4-4 Feedback Mod.Source..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Feedback."

4-5 Feedback Mod.Intensity ..... [-100...+100]
Specify the depth and direction of the effect that "Feedback Mod.Source" will have.

5-2 Low Damp ..... [0...99]
Specify the attenuation of the low frequency range. This will cause the delay sound to become successively lighter in tone each time it is fed back.

5-4 High Damp ..... [0...99]
Specify the attenuation of the high frequency range. This will cause the delay sound to become successively darker in tone each time it is fed back.

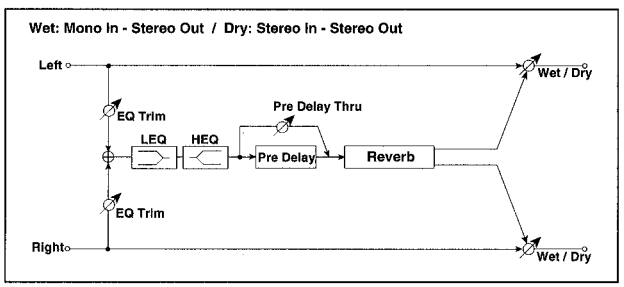
6-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

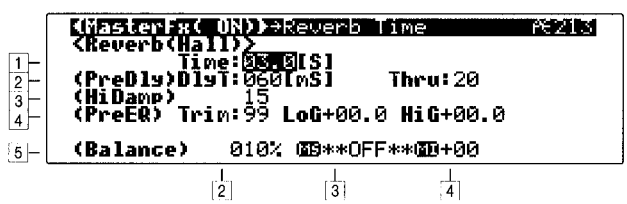
6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Reverb-Hall

This effect simulates the reverberation and ambiance of a mid-sized concert hall or ensemble hall.

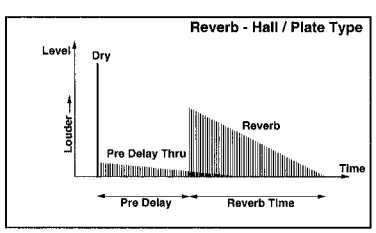




1-2 Reverb Time ..... [0.1...10.0 S]
Specify the reverb time.

2-2 Pre Delay Time ..... [0...200 mS]
Specify the delay time for the input to the reverb. This will control the spaciousness of the simulated room.

2-4 Pre Delay Thru Level ..... [0...99]
Specify the proportion at which the undelayed sound will be mixed. By mixing in some of the undelayed sound you can emphasize the sense of attack.



3-2 High Damp ..... [0...99]
Specify the amount of high frequency attenuation.

4-2 Pre EQ Input Trim ..... [0...99]
Specify the input level to the equalizer.

4-3 Pre Low EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the low range equalizer.

4-4 Pre High EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the high range equalizer.

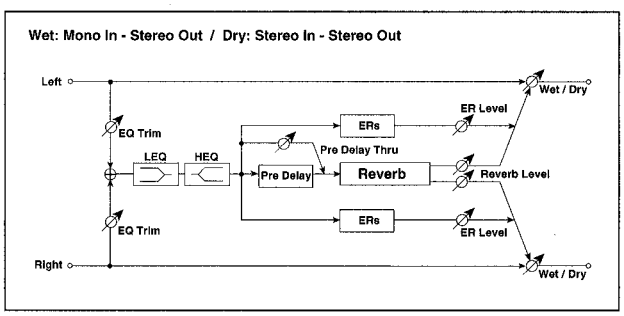
5-2 Effect Balance ..... [0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

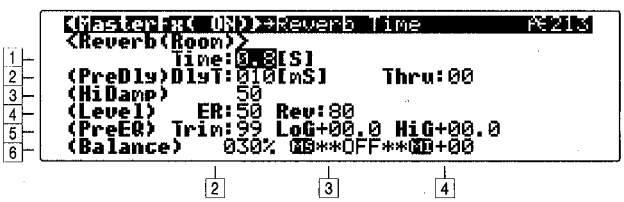
5-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

5-4 Balance Mod.Intensity ..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Reverb-Room

This reverb effect emphasizes the early reflections, simulating a tight feeling room. By adjusting the balance of the early reflections and the reverberation, you can control the quality of the walls of the simulated room.



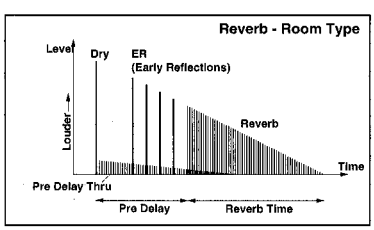


1-2 Reverb Time ..... [0.1...3.0 S]
Specify the reverb time.

2-2 Pre Delay Time ..... [0...200 mSec]
Specify the delay time for the input to the reverb. This will control the spaciousness of the simulated room.

2-4 Pre Delay Thru Level ..... [0...99]
Specify the proportion at which the undelayed sound will be mixed. By mixing in some of the undelayed sound you can emphasize the sense of attack.

3-2 High Damp ..... [0...99]
Specify the amount of high frequency attenuation.



4-2 Early Reflection Level ..... [0...99]
Specify the level of the early reflections. By changing

the proportion of the "Early Reflection Level" and the "Reverb Level," you can control the quality of the walls in the simulated room. Increasing "Early Reflection Level" will produce a harder feel, and increasing "Reverb Level" will produce a softer feel.

4-3 Reverb Level ..... [0...99]
Specify the reverb level.

5-2 Pre EQ Input Trim ..... [0...99]
Specify the input level to the equalizer.

5-3 Pre Low EQ Gain ..... [-18.0...+18.0dB]
Specify the gain of the low range equalizer.

5-4 Pre High EQ Gain ..... [-18.0...+18.0dB]
Specify the gain of the high range equalizer.

6-2 Effect Balance .....[0...100%]
Specify the balance between the effect sound (Wet) and the direct sound (Dry).

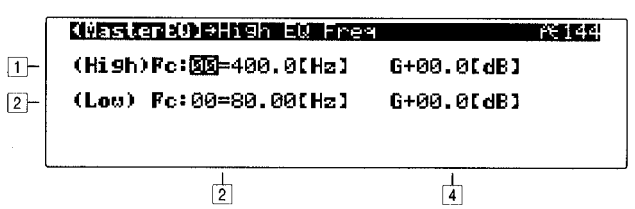
6-3 Balance Mod.Source ..... (Mod.Source List 2)
Select a modulation source (see p.104) that will control "Effect Balance."

6-4 Balance Mod.Intensity..... [-99...+99]
Specify the depth and direction of the effect of "Balance Mod.Source."

Mst.EQ page

❑ Make settings for the Mst.EQ

Master EQ



1-2 High EQ Freq ..... [0...49 (1.0 kHz...29.9 kHz)]
Specify the center frequency of the high EQ.

1-4 High EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the high EQ.

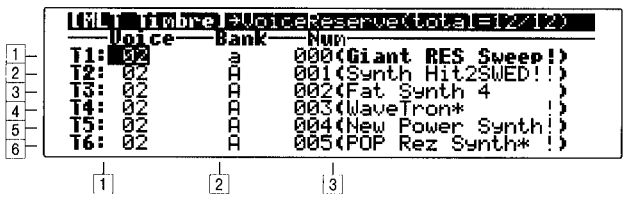
2-2 Low EQ Freq ..... [0...49 (20.0 Hz...1.4 kHz)]
Specify the center frequency of the low EQ.

2-4 Low EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the high EQ.

Editing a MultiSet (MultiSet Edit mode)

1. Multi Timbre section

Here you can specify a program and the maximum polyphony for each timbre 1 to 6.



❑ Specify the maximum polyphony for each timbre

***-1 Voice Reserve (total= **/12) ..... [OFF, 1...12]**

Specify the maximum polyphony for each timbre. The total of all settings for T1 to 6 cannot exceed the total polyphony of the Z1. The current total is indicated in "**."

To finalize the setting that you made, press the [ENTER] key. If you enter 0, that timbre will be **OFF**.

If an optional <DSPB-Z1 option board> is installed, six voices will be added, and the display will indicate "Voice Reserve (total=**/18)" (see p.109).

❑ Specify the program for each timbre

***-2 Program Bank ..... [A, B]**

***-3 Program Number ..... [0...127]**

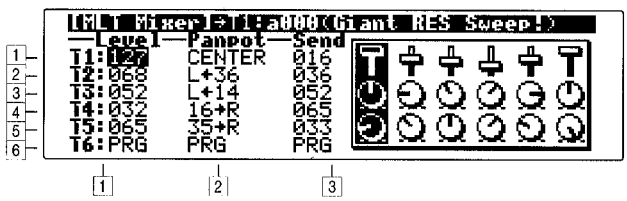
Specify the program that will be assigned to each timbre. Specify the program bank in "Program Bank," and the program number in "Program Number."

Press the [ENTER] key to finalize the setting.

Only internal programs can be selected for an internal MultiSet. Only card programs can be selected for a card MultiSet.

2. Multi Mixer section

Here you can specify the volume, panpot, and effect balance for each timbre. You can either specify these settings independently for each timbre of the MultiSet, or use the settings that are already specified for each program.



❑ Specify the volume of each timbre

***-1 Level ..... [0...127, PRG]**

Specify the volume of each timbre. With a setting of **PRG**, the "Output Level" (AMP section) setting of the program assigned to the timbre will be used.

❑ Specify the panpot of each timbre

***-2 Panpot ..... [LEFT...CENTER...RIGHT, PRG]**

Specify the panpot of each timbre. With a setting of **PRG**, the "Panpot" (AMP section) setting of the program assigned to the timbre will be used.

❑ Specify the output level of each timbre to the effects

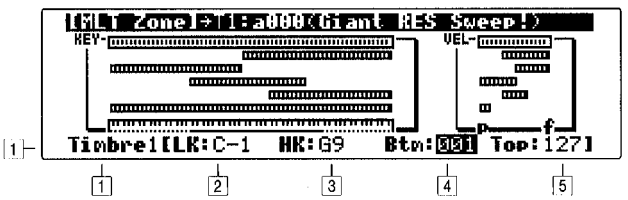
***-3 Send ..... [0...100%, PRG]**

Specify the output level of each timbre to effects 1 and 2, and to the master effect. As this value is increased, the proportion of the signal that is output to effects 1 and 2 will increase.

With a setting of **PRG**, the "Effect Send" (Prog FX section) settings of the program assigned to the timbre will be used.

3. Multi Zone section

Here you can specify the note range and velocity range for which each timbre will sound. These settings allow you to create split, layered and velocity switched MultiSets. Values for these parameters can be input using the keyboard (see p.14 and p.22).



❑ Selecting the timbre for which you wish to make note range or velocity range settings

1-1 Timbre ..... **[1...6]**

Rotate knob [1] to select the timbre for which you wish to make settings.

❑ Specify the range of notes for which the timbre will sound

1-2 Low Key (LK) ..... **[C-1...G9]**

Specify the lowest key for which the selected timbre will sound.

1-3 High Key (HK) ..... **[C-1...G9]**

Specify the highest key for which the selected timbre will sound.

❑ Specify the range of velocities for which the timbre will sound

1-4 Velocity Bottom (Btm) ..... **[1...127]**

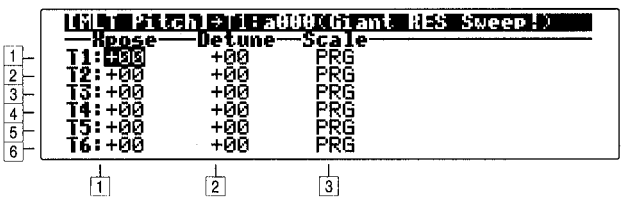
Specify the minimum velocity value for which the selected timbre will sound.

1-5 Velocity Top (Top) ..... **[1...127]**

Specify the maximum velocity value for which the selected timbre will sound.

4. Multi Pitch section

Here you can specify the pitch and scale for each timbre. You can either make these settings independently for each timbre of the MultiSet, or you can use the settings of each program.



❑ Transpose each timbre

***-1 Xpose** ..... **[-24...+24]**

Adjust the pitch of each timbre in semitone (100 cent) steps. 12 steps equal one octave.

❑ Make fine adjustments to the pitch of each timbre

***-2 Detune** ..... **[-50...+50]**

Make fine adjustments to the pitch of each timbre in 1 cent steps. A setting of 0 is the normal pitch.

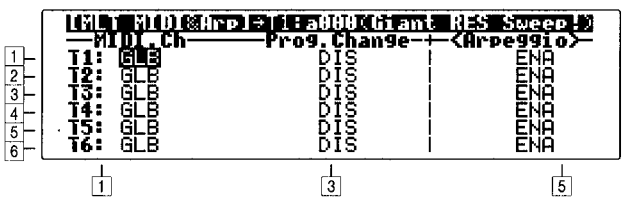
❑ Specify the scale for each timbre

***-3 Scale** ..... **[CMN, PRG]**

With a setting of CMN, the "Scale Type" and "Scale Key" (Multi Common section) settings will be used. With a setting of PRG, the scale specified by the program of each timbre will be used.

5. Multi MIDI & Arpeggio section

For each timbre, you can specify the MIDI transmit and receive channel, and specify whether or not program change messages from an external MIDI device will switch timbre programs. Here you can also specify timbres that will be played by the arpeggiator.



❑ Specify the MIDI channel of each timbre

***-1 MIDI. Ch ..... [1...16, GLB]**

Specify the MIDI transmit and receive channel (**1** to **16**) for each timbre. With a setting of **GLB**, the MIDI channel of that timbre will always match the Global MIDI channel setting (MIDI mode "Global Channel"). In order to play a MultiSet from the keyboard or the arpeggiator, the MIDI channel ("MIDI. Ch" setting) of the program you wish to play must match the "Global Channel." If you set a timbre to **GLB**, you will always be able to play it from the keyboard even if you change the "Global Channel."

When using an external MIDI sequencer, you can set the MIDI channel of each timbre to match the MIDI channels for each track of the sequencer, so that up to 6 tracks of the sequence can be played by the Z1 functioning as a multi-timbral tone generator.

With a setting of **1** to **16**, an indication of "G" will appear beside the numerical value if the setting is the same as the current "Global Channel."

❑ Specify whether or not MIDI program change messages will be received by each timbre

***-3 Prog. Change ..... [DIS, ENA]**

When timbres with a setting of **ENA** (Enable) receive a MIDI program change message, they will switch programs. With a setting of **DIS** (Disable), MIDI program change messages will be ignored, and the program will not change.

However, this setting is affected by the MIDI mode setting "Program Change Receive." You can choose whether program changes will be completely ignored, whether the MultiSet will change, or whether the program of a timbre will change (see p.87 and p.98).

Be aware that timbres which are set to the same MIDI channel will switch to the same program if they receive a MIDI program change message.

Be aware than the sound will be interrupted if a program change occurs for a timbre while you are playing.

❑ Specify the timbres that will be played by the arpeggiator

***-5 Arpeggio ..... [DIS, ENA]**

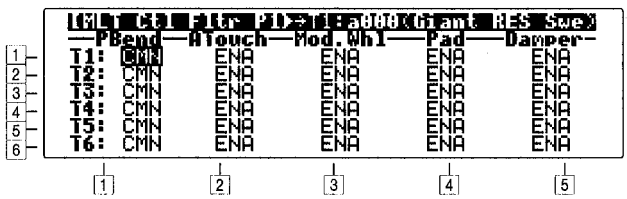
When the arpeggio function is on, playing the keyboard will cause arpeggios to play on each timbre which is set to **ENA** (Enable). Timbres which are set to **DIS** (Disable) will not play arpeggios, but can be played normally from the keyboard.

This setting will be ignored by timbres which are set to other than the Global MIDI channel.

6. Multi Control Filter section

Here you can specify how each timbre will react to controlers and various MIDI messages.

MLT Ctl Fltr P1 page



❑ Specify how each timbre will respond to MIDI messages

***-1 PBend ..... [DIS, CMN, PRG]**

With a setting of **DIS**, movements of the [PITCH BENDER] and MIDI pitch bend messages will be ignored.

With a setting of **CMN**, the settings of the Multi Common section (Pitch Bend) will be used.

With a setting of **PRG**, the settings of the OSC section (Pitch Bend) of the program assigned to each timbre will be used.

***-2 ATouch ..... [DIS, ENA]**

Aftertouch will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**.

***-3 Mod. Whl ..... [DIS, ENA]**

The [MOD WHEEL] and MIDI control change #1 will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**.

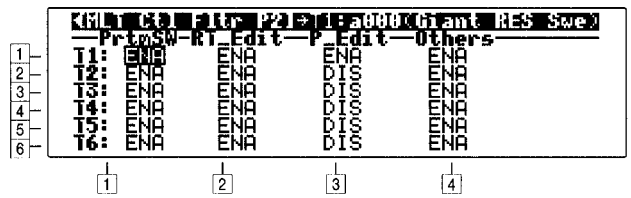
***-4 Pad ..... [DIS, ENA]**

The [X-Y PAD] and MIDI control changes #16 and #17 will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**.

***-5 Damper ..... [DIS, ENA]**

[DAMPER], the [ASSIGNABLE SW] to which the **Damper** function has been assigned, and MIDI control change #64 will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**.

MLT Ctl Fltr P2 page



***-1 PrtmSW ..... [DIS, ENA]**

The [Portamento] key and MIDI control change #65 will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**.

***-2 RT_Edit ..... [DIS, ENA]**

The realtime editor and MIDI control changes #24 to #31, #76 to #79, #83, and #85 to #90 will be ignored with a setting of DIS, and enabled with a setting of ENA.

***-3 P_Edit ..... [DIS, ENA]**

The performance editor and MIDI control changes #19 to #23 will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**. Only one of the six timbres can be set to **ENA**.

***-4 Others ..... [DIS, ENA]**

Other controllers and other MIDI control changes # will be ignored with a setting of **DIS**, and enabled with a setting of **ENA**.

The MIDI control change # numbers given above are the factory setting values, or the values that result when you use the MIDI mode page "MIDI CChg Filter" UTILITY: knob [5] [Reset] function to reset MIDI control change translation (or when you make the identical settings).

Controller operations will have an effect if the MIDI channel of the timbre is the "Global Channel." If a timbre is set to other than the "Global Channel," the control changes corresponding to each controller will have an effect.

Each of the functions assigned to Assignable SW, SW1 and SW2 will be enabled/disabled by the filters shown below.

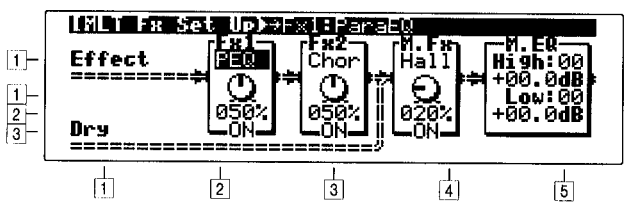
(------: In the case of these parameters, no filter applies.)

SW	Ctl Fltr	SW	Ctl Fltr
MOD.SW1	Others	Fx2_SW	------
MOD.SW2	Others	Oct_Up	------
FootSW	Others	OctDown	------
Damper	Damper	MONO_SW	Others
PrtmSW	PrtmSW	UNISON	Others
Sostnut	Others	ArpegSW	------
M.Fx_SW	------	PadHold	------
Fx1_SW	------		

7. Multi Fx section

Here you can make effect settings for the MultiSet. The structure is basically the same as the Prog Fx section. The "Effect Send" function of the Prog Fx section corresponds to the "Send" setting of the Multi Mixer section. A MultiSet does not have a setting that corresponds to the "Effect Send Mod.Src" and "Effect Send Mod.Int" settings of the Prog Fx section.

MLT Effect Set Up page (Multi Fx)



❑ Select the effect type for Fx1

1-2 Fx1 Select ..... [OD...RSpL]
Select the effect type for effect 1. The available types are the same as for a program.
For details on each type, refer to the explanation in "Effect types" (p.64).

2-2 Fx1 Balance ..... [0...100%]

3-2 Fx1 SW ..... [OFF, ON]
Refer to "7. Prog Fx section" "Fx1 Balance" and "Fx1 SW" (p.59).

❑ Select the effect type for Fx2

1-3 Fx2 Select ..... [OD...dly]
Select the effect type for effect 2. The available types are the same as for a program.
For details on each type, refer to the corresponding explanation.

2-3 Fx2 Balance ..... [0...100%]

3-3 Fx2 SW ..... [OFF, ON]
Refer to "7. Prog Fx section" "Fx1 Balance" and "Fx1 SW" (p.59).

❑ Select the effect type for Mst.Fx

1-4 Master FX Select ..... [Dly...Room]
Select the effect type for the master effect. The available types are the same as for a program.
For details on each type, refer to the corresponding explanation.

2-4 Master Fx ..... [0...100%]

3-4 Master Fx SW ..... [OFF, ON]
Refer to "7. Prog Fx section" "Fx1 Balance" and "Fx1 SW" (p.59).

❑ Specify the gain of the Mst.EQ

Specify the settings of the 2-band EQ that is applied to the output signal.

1-5 High EQ Frequency ..... [0 (1.00 kHz)...49 (29.9 kHz)]
Specify the cutoff frequency of the high EQ.

2-5 Low EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the high EQ.

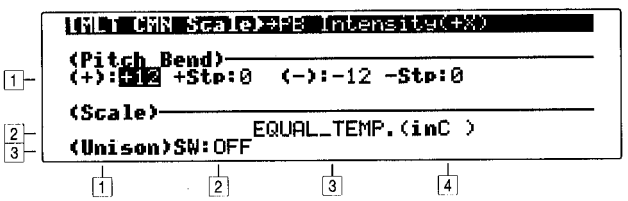
3-5 Low EQ Frequency ..... [0 (20.0 Hz)...49 (1.4 kHz)]
Specify the cutoff frequency of the low EQ.

4-5 Low EQ Gain ..... [-18.0...+18.0 dB]
Specify the gain of the low EQ.

8. Multi Common section

Here you can assign a name to the MultiSet, and make settings for pitch bend, scale, and the functions of the [SW1] key, [SW2] key, [Assignable SW] and [Assignable Pedal].

MLT CMN Scale page



❑ Specify the pitch bend width for the MultiSet

1-1 PB Intensity (+X) ..... **[-60...+24]**

1-2 PB Step (+X) ..... **[0, /8, /4, /2, 1...12]**

1-3 PB Intensity (-X) ..... **[-60...+24]**

1-4 PB Step (-X) ..... **[0, /8, /4, /2, 1...12]**

Specify the pitch bend width for the MultiSet. Timbres whose MLT Ctl Fltr P1 page "PBend" parameter is set to **CMN** will use these settings.

For details refer to "Specifying the pitch bend width" (p.31).

❑ Specify the scale for the MultiSet

2-3 Scale Type ..... **[EQUAL_TEMP...USER_SCALE2]**

2-4 Scale Key ..... **[C...B]**

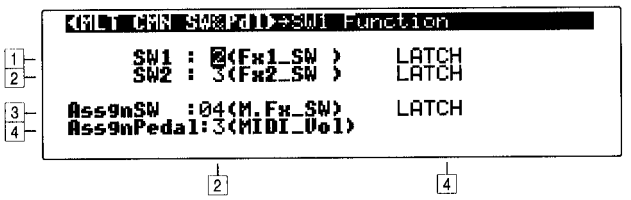
Specify the scale for the MultiSet. Timbres whose MLT Pitch page "Scale" parameter is set to **CMN** will use these settings.

For details refer to "Selecting the scale type" (p.61).

3-2 Unison SW ..... **[OFF, ON]**

This turns unison on/off. By setting either "SW1 Function," "SW2 Function" or "AssignableSW Function" to **UNISON**, you can control this from the various Play modes (refer to p.62).

MLT CMN SW & Pdl page



❑ Specify the function of [SW1] and [SW2] for the MultiSet

1-2 SW1 Function ..... **[0...7]**

1-4 SW1 Mode ..... **[LATCH, UNLAT]**

2-2 SW2 Function ..... **[0...7]**

2-4 SW2 Mode ..... **[LATCH, UNLAT]**

For details refer to "Specify the function of [SW1] and [SW2]" (p.62).

❑ Specify the function of each pedal for the MultiSet

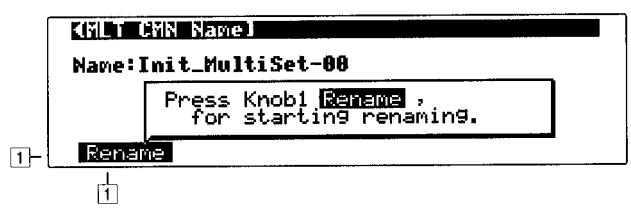
3-2 Assignable SW Function ..... **[0...12]**

3-4 Assignable SW Mode ..... **[LATCH, UNLAT]**

4-2 Assignable Pedal Function ..... **[0...4]**

For details refer to "Specify the function of each pedal" (p.62).

MLT CMN Name page



❑ Modify the name of the MultiSet

1-1 Name Edit .....

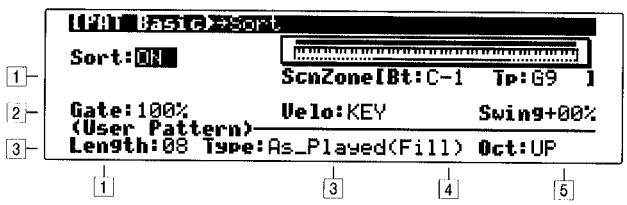
Specify the name of the MultiSet.

For details and the procedure, refer to "Modifying a name (Rename)" (p.25) .

Editing an arpeggio pattern (Arpeggio mode)

In this mode you can make various settings related to the arpeggiator. For each pattern, you can specify basic items such as the length and loudness of each note. In addition, user patterns (U1-1 to U1-5, U2-1 to U2-5, U3-1 to U3-5) are freely programable, allowing you to specify parameter parameters for up to 36 steps. The arpeggio pattern that is currently selected in Program Play mode or MultiSet Play mode will be the pattern to which your editing will apply. After modifying the pattern, you will need to exit Arpeggio mode and re-select the pattern.

PAT Basic page



❑ Specify the basic operation of the pattern

Here you can specify basic data such as the length, loudness, and timing of each note in the arpeggio.

1-1 Sort ..... [OFF, ON]

When two or more keys pressed simultaneously are sounded as an arpeggio, a setting of **ON** for this parameter will cause the notes to always be sounded as a broken chord in the order of the note pitches (regardless of the order in which the notes were played). With a setting of **OFF**, the notes of the arpeggio will follow the order in which the keys were pressed.

1-4 Kbd ScanZone Bottom ..... [C-1...G9]

1-5 Kbd ScanZone Top ..... [C-1...G9]

These settings allow you to limit the range of the keyboard which will control the arpeggiator. Notes between the "Kbd ScanZone Bottom" and the "Kbd ScanZone Top" will be used to produce arpeggios. These parameters can be input from the keyboard.

2-1 Gate ..... [000...100%, (STEP)]

This controls the length (Gate) of the arpeggio notes. When a user pattern (U1-1 to U3-5) is selected, a setting of **STEP** for this parameter will cause the step parameter "Gate" settings (PAT Step Param page) to be used.

You can also control the length of the arpeggio notes by rotating the [GATE] knob. Rotating the knob toward the left will shorten the notes, and rotating it toward the right will lengthen them. When the knob is in the 12 o'clock position, the notes will have the gate length that is specified by this parameter.

2-3 Velocity ..... [1...127, KEY, (STEP)]

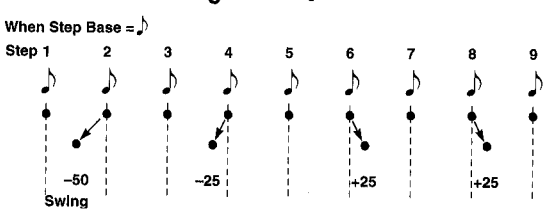
Specify the velocity of the arpeggio notes. With a setting of **1** to **127**, the arpeggiated notes will always be sounded with the specified velocity value. With a setting of **KEY**, the velocity with which each key was played will be used. If a user pattern (U1-1 to U3-5) is selected, a setting of **STEP** will cause the settings of the step parameter "Velocity" (PAT Step Param page) to be used.

You can also control the velocity of the arpeggio notes by rotating the [VELOCITY] knob. Rotating the knob toward the left will give the notes a lower velocity, and rotating it toward the right will give them a higher velocity. When the knob is in the 12 o'clock position, the notes will have the velocity value that is specified by this parameter.

2-5 Swing ..... [-50...+50%]

This parameter slides the timing of the even-numbered (as counted from the beginning) notes of the arpeggio in the specified direction. The result is a musically pleasing triplet feel.

[When RESOLUTION= eighth note]



PAT User Type

These parameters will be available if a user pattern has been selected.

3-1 Pattern Length ..... [01...36]

Specify the length of the pattern. After the note value specified by the [RESOLUTION] knob has been played for the number of times specified by this parameter, the pattern will return to the beginning.

3-3 Arpeggio Type ..... [As_Played...UP&DOWN]

Specify the correspondence between the arpeggio notes that were specified by the keyboard and the "Tone" for each step (the "●" displayed in the PAT Step Param page).

As_Played:
If the "Tone" settings for a step exceed the number of arpeggio notes that are specified (i.e., played on the keyboard), that step will not sound.

As_Played (FILL):
If the "Tone" settings for a step exceed the number of arpeggio notes that are specified (i.e., played on the

keyboard), the last arpeggio note (the last pressed note if "Sort" is **OFF**, or the highest note if "Sort" is ON) will be sounded.

Running_UP:
If the "Tone" settings for a step exceed the number of arpeggio notes that are specified (i.e., played on the keyboard), the arpeggio will return to the first note (the first-pressed note if "Sort" is **OFF**, or the lowest-note if "Sort" is **ON**) and sound it.

UP&DOWN:
If the "Tone" settings for a step exceed the number of arpeggio notes that are specified (i.e., played on the keyboard), the arpeggio will reverse direction from the last arpeggio note and continue sounding.

Example: When "Tone" **0** to **3** are played repeatedly with a "Length" of **4**

Three keys pressed with a setting of **As_Played**:
0 → 1 → 2 → rest → 0 → 1 → 2 → rest → 0 ...
Three keys pressed with a setting of **As_Played (FILL)**:
0 → 1 → 2 → 2 → 0 → 1 → 2 → 2 → 0 ...
Three keys pressed with a setting of **Running_UP**:
0 → 1 → 2 → 0 → 0 → 1 → 2 → 0 → 0 ...
Three keys pressed with a setting of **UP&DOWN**:
0 → 1 → 2 → 1 → 0 → 1 → 2 → 1 → 0 ...

3-5 Octave Motion ..... [UP, DOWN, BOTH, PARA]
Specify the operation when the [OCTAVES] key is set to **2** to **4** octaves.

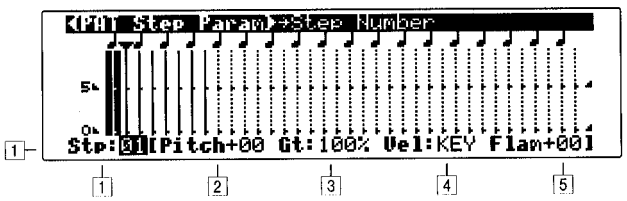
UP: Ascend repeatedly for the specified number of octaves.

DOWN: Descend repeatedly for the specified number of octaves.

BOTH: Ascend and descend repeatedly for the specified number of octaves.

PARA: Sound notes in parallel for the specified number of octaves.

PAT Step Param page



❑ Specify the Step Tone

For each of a maximum of 36 steps, you can specify Tones 0 to 9 to distinguish the pitches of up to 10 keys that are pressed simultaneously. If the PAT Basic page "Sort" setting is **ON**, Tones **0** to **9** will correspond respectively to the lowest through the highest keys that were pressed. If the PAT Basic page "Sort" setting is **OFF**, Tones **0** to **9** will correspond respectively to the first through the last keys that were pressed.

To input "Tone" settings, move the cursor to "StepNumber" and use the numeric keys.

1-1 StepNumber ..... [1...36]

① Either rotate knob [1] or press the [+] or [–] key or the [▼] or [▲] key to select the step that you wish to edit. Even if the cursor is located at another parameter, you can use the [▼] or [▲] key to move it.

② Press numeric keys [0] to [9] to input the "Tone." Tone **0** to **9** correspond to numeric keys [0] to [9] respectively. Pressing a key will set/reset the corresponding Tone.

③ To erase all "Tone" settings in a step, you can use UTILITY:[Delete] (knob [4]). To insert a blank step, you can use UTILITY:[Insert] (knob [5]) (see p.106).

❑ Specify parameters for each Step

1-2 Pitch Offset ..... [–48...+48]
Raise or lower the pitch of the tone for each step, in semitone units. You can specify the same tone for each step and play a melody, or specify multiple tones for each step and play parallel chords.

1-3 Velocity ..... [1...127, KEY]
With a setting of **KEY**, the velocity with which the note was played will be used. This setting of this parameter is used only if "Velocity" (PAT Basic page) is set to **STEP**.

1-4 Gate ..... [OFF, 1...100%, LGAT]
With a setting of **OFF**, that step will not sound even if a "Tone" is specified.
With a setting of **LGAT** (Legato), the note will continue to sound until either the same "Tone" is played again or the pattern returns to the beginning.
The setting of this parameter is used only if "Gate" (PAT Basic page) is set to **STEP**.

1-5 Flam ..... [–99...+99]

Specify how note timing will be skewed when multiple tones are specified for the same step.

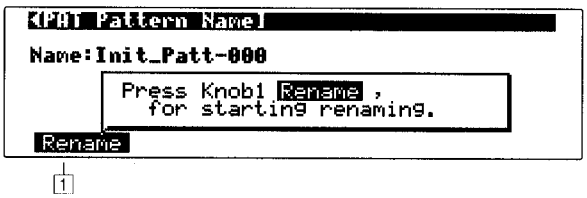
With a setting of **00**, all "Tones" will sound simultaneously.

With a setting of **+01** to **+99**, "Tones" will sound separately in numerical order (from the lowest note if "Sort" is **ON**, or in the order played if "Sort" is **OFF**).

With a setting of **–01** to **–99**, "Tones" will sound separately in the opposite order from "+".

When simulating chords strummed on a guitar, it is effective to set odd numbered steps to a positive (+) value and even-numbered steps to a negative (–) value.

PAT Pattern Name page



❑ Modifying the name of an arpeggio pattern

1-1 Name Edit .....

The name of argeggio patern can be assigned.

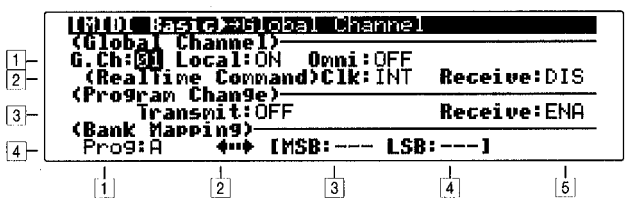
For details and the procedure, refer to "Modifying a name (Rename)" (p.25).

MIDI-related settings (MIDI mode)

In MIDI mode you can make various settings that affect how the Z1 will transmit and receive MIDI messages.

Settings which you make in this mode are remembered without your having to execute the Write operation.

MIDI Basic page



❑ Specify the Global MIDI channel

1-1 Global channel ..... [1...16]

Specify the Global MIDI channel.

The following data can be exchanged with an external MIDI device on the Global MIDI channel.

All musical data in Program Play mode, MultiSet number selections and keyboard and controller operations in MultiSet Play mode, and transmission and reception of system exclusive messages.

In order to exchange these types of MIDI messages, the MIDI channel of the other MIDI device must match the Global MIDI channel of the Z1.

❑ Local on/off setting

1-2 Local Control ..... [OFF, ON]

With a setting of **OFF**, the keyboard and controllers will be disconnected from the tone generator. However performance data will still be transmitted from MIDI OUT.

Normally you will leave this parameter **ON**, but when a sequencer etc. is connected to the Z1, turn this setting OFF to prevent each note from being triggered twice (once when played from the Z1's own keyboard and again when the note-on message is passed on by the sequencer).

❑ Omni on/off setting

1-3 Omni ..... [OFF, ON]

With a setting of **OFF**, MIDI messages will be transmitted and received on the specified "Global MIDI channel."

With a setting of **ON**, MIDI messages will be transmitted on the "Global MIDI channel," and received on all channels (1 to 16).

❑ Synchronizing the Z1 and an external MIDI device

2-3 Clock Source ..... [INT, EXT]

Select the **INT** (Internal) setting if you are using the Z1 by itself, or if you wish to use the Z1 as the master device (the device that will specify the timing for all other devices). This will allow an external MIDI device (sequencer, drum machine etc.) to be synchronized to the arpeggiator of the Z1, and for the frequency of the LFO to be synchronized to the internal MIDI clock. In this case, MIDI Clock messages will be transmitted from the Z1 at the tempo specified by the arpeggiator [SPEED] knob.

Select the **EXT** (External) setting when you wish to use the Z1 as a slave device (a device that will be controlled by another device). This will allow the MIDI Clock messages from an external MIDI device to control the Z1's arpeggiator and LFO frequency.

When synchronizing the Z1 and an external MIDI device, please refer to the owner's manual for the other device as well.

Synchronizing an external MIDI device to the Z1's arpeggiator

① If you wish to synchronize an external MIDI device (sequencer or rhythm machine etc.) to the Z1's arpeggiator, use a MIDI cable to connect the Z1's MIDI OUT to the external MIDI device's MIDI IN (see p.97).

② Set the Z1's "Clock Source" to **INT**.

③ Make settings on the external MIDI device so that it will receive MIDI clock messages (i.e., set it to be the slave device).

④ When you start the external MIDI device, it will operate in synchronization to the tempo that is set by the Z1's [SPEED] knob.

⑤ Turn on the ARPEGGIATOR [ON/OFF] key to start the arpeggiator.

Synchronizing the Z1's arpeggiator to an external MIDI device

① Use a MIDI cable to connect the Z1's MIDI IN to the external MIDI device's MIDI OUT.

② Set "Clock Source" to **EXT**.

③ Make settings on the external MIDI device so that it will transmit MIDI clock messages (i.e., set it to be the master device).

④ Turn on the ARPEGGIATOR [ON/OFF] key, and play a note. If "RealTimeCommand Receive" is **DIS**, the arpeggio will play in synchronization with the tempo of the external MIDI device. If it is **ENA**, the arpeggiator will play when the external MIDI device is started.