Oenkenstein Audio

RUMBLE GRANULAR SYNTHESIZER

Operation Manual

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Content

1 Introduction

1.1 What is Rumble?

Rumble is an additive wavetable granular synthesizer.

It is an emulation of an additive wavetable Kawai K1 digital synthesizer from 1985, but has granular synthesis added and 3 extra oscillators. 1985 and 2017 combined.
This device mimics the operation system and the naming conventions on a Kawai K1.
However, the sounds of the basic short cycled wave loops used as oscillators are totally different.

A Rumble sample contains 4 wave loop oscillators and you can scroll through each wave loop oscillator. Each wave loop is divided in 100 very short sample parts or grains. One grain holds information about the characteristics of a sampled instrument, like a bass, piano and organ. It also can be a part of a very long recording like a cassette-tape rewinding.

While playing the keyboard, you can scroll, in real time, through 40 Rumble samples containing 4 scrollable wave loop oscillators, each with 100 grains, producing 16000 different perfect pitched sound sources to start building your patches.

The hardware version contains an operation system build in such a way, most of the 39 sonic functions on the 4 short cycled wave loop oscillators can be controlled by a MIDI keyboard. The modulation matrix in Rumble is built to achieve the same goal as in the hardware version: Playability.

Rumble derives its name from legendary guitar 101 hero and inventor of the power chord Link Wray, who used to poke a pencil in an amplifier speaker to get a gritty, distorted sound.

1.2 About additive wavetable and granular synthesis

1.2.1 Additive wavetable synthesis

Rumble uses additive wavetable synthesis to generate sounds. Additive synthesis is based on four oscillators that can be introduced in the sound - at various times, levels and durations.

The big difference, compared to subtractive synthesis, is that overtones are added to a basic sine wave signal to form complex signals - instead of subtracted by filters from complex signals. In practice this means that you can alter the frequency content in your sounds a lot more precisely with additive synthesis than with subtractive synthesis.
The sonic results of additive synthesis can vary dramatically; from standard analog type of synthesizer sounds, via emulations of existing instruments, to extremely complex and animated timbres.

1.2.2 Granular synthesis

Granular synthesis is a basic sound synthesis method that operates on the micro sound time scale.

It is based on the same principle as sampling. However, the samples are not played back conventionally, but are instead split into small pieces of 337 samples. These small pieces are called grains. 4 grains can be layered.

2 Front of the device
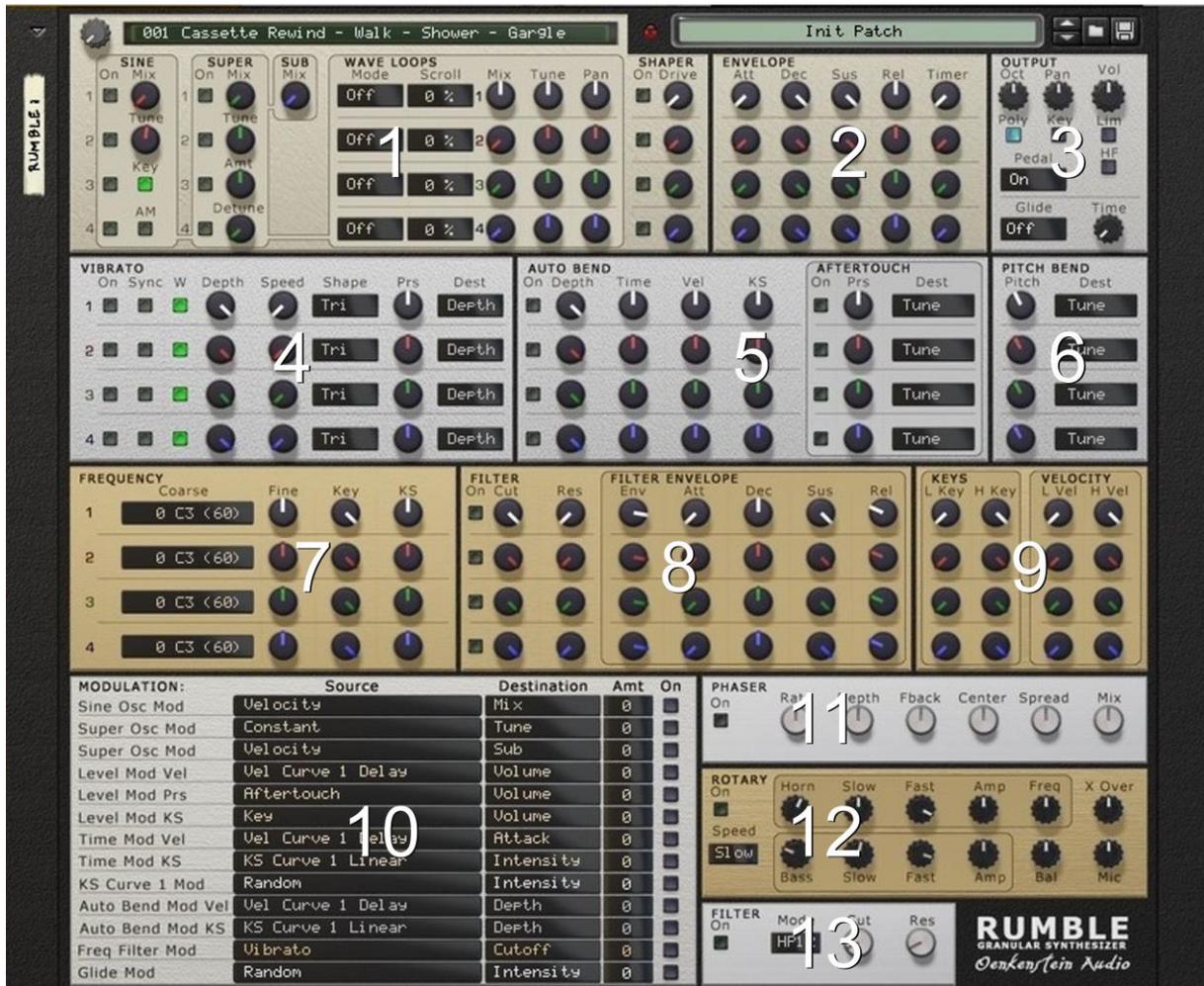
2.1 Panels overview

- **Osc** Panel (1) with:
  - Sample Select display.
  - 7 oscillator synthesizer section:
    - 4 additive Wave Loop oscillators
    - 1 Sub oscillator
    - 1 Super oscillator
    - 1 Sine oscillator with Amplitude (AM) or Ring Modulation.
  - Shaper to change the waveforms of the 4 Wave Loop oscillators. Capable of producing distortion and adding harmonics.

The output of each oscillator is then going into panels 2,4,5,6,7,8 and 9:

- **Envelope** panel (2) with:
  - ADSR
  - Release Timer to trigger events on release.
- **Vibrato** or LFO panel (4), default controlled by the Modulation Wheel with:
  - Synchronisation.
  - Depth.
  - Speed.
  - Shape.
  - Aftertouch controls.
- **Auto Bend** panel (5) with:

- o Depth.
- o Time.
- o Velocity and Keyboard Scaling sensitivity.
- o Aftertouch or Pressure (Prs).
- o The Prs Destination on the Auto Bend panel has 4 destinations, including Sample Start.
- **Pitch Bend** panel (6) to change items about the behaviour of the Pitch Bend Wheel.
- **Frequency** panel (7) with:
  - o Coarse.
  - o Fine Tuning.
  - o and Keyboard Scaling to edit the pitch of the oscillators.
- **Frequency Filter** panel (8) with:
  - o Frequency Filter section to set the Cutoff, Resonance or Q.
  - o Envelope with ADSR controls.
- **Keys** panel (9) with:
  - o Low and High Key to define the keyboard layout.
  - o Low and High Velocity.

The output of the oscillators will then pass the Effects panels.

There are 3 **Effects** Panels with:
- **Phaser** panel (11).
- **Rotary** panel (12).
- **Filter** panel (13).

The output of the oscillators, modifiers and the effects will then pass the Output panel.

- **Output** panel (3) with:
  - o Octave.
  - o Panning.
  - o Key Panning.
  - o Limiter.
  - o High Frequency Correction.
  - o Poly Mode.
  - o Sustain Pedal Mode.
  - o Glide (Portamento).
  - o Glide Time.
  - o And finally the Master Volume.

- **Modulation Matrix** Panel (10) with:
  - o 13 modulation busses each with 24 sources.

- **MIDI Note indicator**.

- **Patch Browser**.

3   Panels

Rumble is divided in panels, each with one or more sections. A column of buttons, displays or knobs in panels 1,2,4,5,6,7,8 and 9, corresponds with the Wave Loop oscillator's numbering 1 to 4.

For example: If you want to change the tuning of Wave Loop Oscillator number 3, turn the knob as shown in the picture below.

3.1   Panel 1: Osc panel

3.1.1   Section 1: Sine Oscillator

The Sine Wave Oscillator can be used to reinforce the fundamental or sub-octave of a voice.

- **On /Off**: Determines whether the sine oscillator is added to the signal chain (Scale: On / Off. Default: Off).
- **Mix**: Determines the sine oscillator's volume (Scale: 0 - 100. Default: 0).
- **Tune**: Determines the sine oscillator's tuning or pitch (Scale: 0 - 100. Default: 53).
  The tuning of the sine oscillator is not exactly pitched to middle C. It is out of tune with + 10 cents. Use the Sine Wave oscillator as a source for Amplitude or Ring Modulation.
- **Key**: Determines whether the sine oscillator's tuning should follow the keyboard (Scale: On / Off. Default: On).
- **AM**: Determines whether the sine oscillator will perform Amplitude Modulation (or Ring Modulation) with the corresponding Wave Loop Oscillator (Scale: On / Off. Default: Off).

3.1.2   Section 2: Super Oscillator

The Super Oscillator module adds up to 7 detuned sawtooth waves with square wave sub-oscillators to the wave loop sample playback.

- **On /Off**: Determines whether the super oscillator is added to the signal chain (Scale: On / Off. Default: Off).
- **Mix**: Determines the super oscillator's volume (Scale: 0 - 100. Default: 0).
- **Tune**: Determines the super oscillator's tuning or pitch (Scale: 0 - 100. Default: 50).
- **Amt**: Determines the number of the oscillators. (Scale: 1 - 7. Default: 4).
- **Detune**: Determines the amount of detuning between the oscillators. (Scale: 0 - 100. Default: 0).

3.1.3   Section 3: Sub Oscillator

The Sub Oscillator module adds up to 7 detuned square wave sub-oscillators in combination with the Super Oscillator to the wave loop sample playback.

- **Mix**: Determines the sub oscillator's volume (Scale: 0 - 100. Default: 0).

* Use a short silent sample if you only want to use the sound of the Super and / or Sub oscillators. If you set the Scroll Mode to Off and the Wave Loop Scroll to 100 in the Wave Loops section of the Osc. panel, you will find a short piece of silence. Most samples fade out at the end of their loop. You can also use item 013 from the Sample Select, where the first Wave Loop oscillator is filled with a 'Silence' sample.

3.1.4   Section 4: Wave Loops

The sample select bank consists of 40 sample presets. A preset is divided into 4 Wave Loops. Each Wave Loop holds 100 grains. There are 4 Wave Loop oscillators. Wave Loop 1 is loaded in Wave Loop Oscillator 1, Wave Loop 2 is loaded in Wave Loop Oscillator 2 etc. The Scroll knob changes the start position of the Wave Loop, making Rumble a granular synthesizer.

- **Mode**: Determines whether the Wave Loop Oscillator is added to the signal chain (Scale: Off / On / Quant. Default: Off). If set to "Quantized" the loop position is rounded to the nearest multiple of the loop length, which is set to 337 samples and takes care that the grain remains in pitch. The length of the 4 Wave Loops cannot be changed.
- **Scroll**: Wave Loop Sample Start Scroll steps through different sections of the sample for wavetable-style playback (Scale: 0 – 100. Default: 0).
- **Mix**: Determines the Wave Loop Sample oscillator's volume (Scale: ∞ / – 12 dB. Default: -6 dB, for Wave Loop 1 and ∞ for Wave Loop 2, 3, 4).
- **Tune**: Determines the Wave Loop Sample oscillator's tuning or pitch in semitones (Scale: -36 / +36. Default: 0).

- **Pan**: Determines the amount of panning the Wave Loop Sample oscillators. (Scale: 0 - 100. Default: 50).

3.1.5 Section 5: Shaper section

This is a very powerful sound shaping tool, providing fully customizable wave shaping, capable of producing distortion and harmonics. The Shaper in Rumble has a sine curve, as shown on the back panel of the device:

The Shaper has a heavy output, if you turn it on or off. It needs auto levelling for the output, but no automatic gain reduction is applied. You have to set or decrease the Wave Loop Volume by hand, when the Shaper Drive is increased. To avoid a sudden increase in volume when the Shaper is turned on, the Shaper Drive is set to 0 as default.

- **On /Off**: Determines whether the shaper is added to the signal chain (Scale: On / Off. Default: Off).
- **Drive**: Determines the shaper's volume (Scale: 0 - 100. Default: 0).

3.2 Panel 2: Envelope panel

3.2.1 Section: Envelope

- **Att** (Attack). Determines the time that a sound takes to peak (Scale: 0 - 100. Default: 0).
- **Dec** (Decay). Determines the time that the sound takes to fall from the peak to the sustain level (Scale: 0 - 100. Default: 100).
- **Sus** (Sustain). Determines relative to the peak, the volume when the key is held down (Scale: ∞ / – 12 dB. Default: 12 dB).
- **Rel** (Release). Determines the time the sound takes to die out after the key is released (Scale: 0 - 100. Default: 49,9).
- **Timer** (Release Timer). Used as a mod source for attenuation of release-triggered voices depending on how long the note was held (Scale: 0 - 100. Default: 0).

    Example of the Release Timer as a source in the Modulation Bus:

    The result is that all the active Sine Oscillators will be played as a note is released.

3.3   Panel 3: Output panel

3.3.1   Section 1: Output

- **Oct** (Octave). Determines the amount of tuning in octaves (Scale: -3 / +3. Default: 0).
- **Pan** (Panning). Determines the panning of the output. (Scale: 0 / 100. Default: 50).
- **Vol** (Volume). Determines the master volume. (Scale: ∞ / + 12,0 dB. Default: - 6,1 dB).
- **Poly** (Poly Mode On Off)**.** Select On if you want to play Rumble polyphonically. The maximum number of voices is 32. Select Off, if you want to play Rumble in monophonic mode and always retrigger the envelopes as soon as you play a new note (Scale: On / Off. Default: On).
- **Key** (Key Pan On Off). Determines whether the panning should follow the keyboard scaling. When On, notes played in the lower range will output to the Left. Notes in the higher range will output to the right (Scale: On / Off. Default: Off). In the Output section, enabling the "Key" setting yields a perfect L/R balance on Bb2 (A#2 instead of C3, or D#3 (which is middle note of the MIDI range). It is possible to correct the amount of semitones to get a more balanced panning across the keyboard in the Modulation Matrix: Set Key as source, set Pan as destination and a correction value as Amount, for when Key Panning is set to On.
- **Lim** (Limiter On Off). Turns the limiter in soft mode On or Off. The release time of the soft limiter is set to 10 seconds (Scale: On / Off. Default: Off).
- **Pedal** (Sustain Pedal Mode) Switches the sustain pedal mode: Off, On, Latch (sustain notes until the next note is played) or Damper. In Damper mode, sustained voices are not released while either the sustain pedal or the key that triggered the voice are held. In the normal "On" mode, sustained voices are released when the sustain pedal is lifted regardless of whether the key that triggered the voice has been held again (Scale: Off / On / Latch / Damper. Default: On).
- **HF** (High Frequency Correction). This corrects for high frequency loss due to sample playback interpolation (Scale: On / Off. Default: Off).

3.3.2   Section 2: Glide

- **Glide** (Glide Mode). Switches pitch glide Off, On or Auto (only glide if a key is already held). Glide or Portamento makes note pitch glide from previous notes to new ones, at the time set with the Time knob. Default is Off. Glide can be used in both Poly Modes:
  - When Off there will be no glide.
  - When On or Auto the pitch will glide between consecutive notes.
    * Set the Glide Mode by clicking on the Glide display in the Output panel and selecting an item from the pop up menu.
- **Time** (Glide Time). The time it takes to glide from one note to the next (Scale: 0 / 100. Default: 0). When Glide Time is set to 0 the glide is turned off and thus modulation in the Matrix has no effect. Modulation will occur when the Glide Time value is set to 1 or higher (Zero = No glide, 1 = Start point of the Glide Time).

3.4   Panel 4: Vibrato panel

Vibrato or Low Frequency Oscillator (LFO).

3.4.1   Section: Vibrato

- **On /Off**: Determines whether the vibrato is added to the signal chain (Scale: On / Off. Default: Off).
- **Sync:** Set Rate units to Hz (cycles per second) or beats (quarter notes per cycle) (Scale: On / Off. Default: Off). The direction of the Speed knob in the Vibrato section is reversed when Sync is enabled. This is intended, although the behaviour is not common compared to other synthesizers.
- **W** (Wheel). Determines whether the Mod(ulation) Wheel affects the vibrato (Scale: On / Off. Default: On). When you toggle the Vibrato Wheel On and Off, you will notice, that it enables or disables the Modulation Wheel. When turned Off, changing the Mod Wheel has no effect to the pitch or speed.
- **Depth**. Determines the amount by which the vibrato effect alters the pitch above and below the note pitch (Scale: -50 / +50. Default: 50). The Depth affects the pitch, even though Depth is at 0 and no other modulation is applied to the pitch (or the vibrato). In fact, when W (Vibrato Wheel On Off) is Off, Depth has no effect and the vibrato is always on. You would expect a setting of 0 to modulate the pitch by 0 cents (so no modulation).

  The Vibrato Depth knob acts as a switch to swap the function of the Modulation Wheel. The Vibrato Depth knob is bipolar (-50 to + 50). When Vibrato is set to On: Vibrato Depth with value of +50 will increase the amount of vibrato when the Modulation Wheel is turned upward or increased (Mod Wheel set to 0 = no Vibrato, Mod Wheel set to max = full vibrato). However, a Vibrato Depth with value of -50 will decrease the amount of vibrato when the Modulation Wheel is turned upward or increased (Mod Wheel set to 0 = full Vibrato, Mod Wheel set to max = no vibrato). Changing the amount of Vibrato Depth scales the swap function of the Modulation Wheel. A value of 0 disables the swap and the result is an 'always on Vibrato'.
- **Speed**. Determines the vibrato rate (Scale: 0 - 100. Default: 0).
- **Shape**. Determines the waveform for the vibrato effect (Scale: Sine / Tri / Sqr / Saw / Rnd / Drift. Default: Tri).
- **Prs** (Vibrato Prs to Depth). Pressure or Aftertouch to vibrato depth, links the amount of vibrato to Aftertouch, the amount of pressure on the key (Scale: -50 / +50. Default: 0).
- **Dest** (Prs Destination). Determines whether the Aftertouch (or the pressure on the key) controls the vibrato depth or vibrato speed (Scale: Depth / Speed. Default: Depth).

3.5 Panel 5: Auto Bend panel

3.5.1 Section 1: Auto Bend

Auto Bend bends notes in pitch.

- **On / Off**. Determines whether the auto(matic) bend is added to the signal chain (Scale: On / Off. Default: Off).
- **Depth**. Determines how the pitch alters as each key is struck (Scale: -50 / +50. Default: +50).
- **Time**. Determines the time for the auto bend (Scale: 0 - 100. Default: 50).
- **Vel**. Uses the chosen Vel(ocity) Curve in the Modulation Matrix to link the depth of the auto bend effect to key velocity (Scale: -50 / +50. Default: 0).
- **KS**. Uses the Keyboard Scaling (KS) to link the auto bend time to key position (Scale: -50 / +50. Default: 0).

3.5.2 Section 2: Aftertouch

- **On / Off**. Determines whether the Aftertouch or pressure is added to the signal chain (Scale: On / Off. Default: Off).
- **Prs**. Pressure links the note pitch to Aftertouch, the amount of pressure on the key (Scale: -50 / +50. Default: 0).
- **Dest**. Links the amount of Prs or Aftertouch to the chosen destination (Scale: Volume / Pan / Tune / Sample Start, Default: Tune).

3.6 Panel 6: Pitch Bend panel

3.6.1 Section: Pitch Bend

- **Pitch**. The Pitch Bend wheel can be used for bending note pitches up and down. Rumble also responds to Pitch Bend MIDI data from a connected MIDI master keyboard. Range: +/- 24 semitones (+/- 2 octaves) in steps of 100 (41 is default or 2 semitones, 0 = no pitch change, 100 = 2 octaves).
- **Pitch Wheel Destination.** The Pitch Wheel can be used to control other items besides the tuning. Items: Volume, Pan, Tune (default) and last, but not least, the Sample Start (or Wave Loop Scroll position) of an oscillator.

3.7   Panel 7: Frequency panel

3.7.1   Section: Frequency

- **Coarse**. Determines the relative pitch of the source in semitones when Key Track is on (Scale: C-2 / G8. Default: C3).
- **Fine** (Fine Tune). Provides precise pitch adjustment (Scale: -82 / +82, one semitone. Default: 0).
- **Key** (Key Track). Determines the keyboard scaling. When set to a value of 10, each key produces a note of a different pitch. When set to a value of 0 all keys produce the same note. Use a value of -10 to 'flip' the keyboard scaling (Scale: -10 / +10. Default: +10).
- **KS** (KS to Frequency). Uses Keyboard Scaling (KS) to link the Frequency or pitch to key position (Scale: -50 / +50. Default: 0). In the Modulation Matrix there are 5 KS curves you can choose as a source in the Modulation Matrix for the first 6 slots (Sine Osc Mod / Level Mod KS) where you can set Tune as destination. The Level Modulation slots offers the possibility to 'mix' two or three curves to the tuning of the Wave Loop oscillators:

3.8   Panel 8: Frequency Filter Panel

3.8.1   Section 1: Filter

- **On / Off**. Determines whether the frequency filter is added to the signal chain (Scale: On / Off. Default: Off).
- **Cut** (Cutoff). Determines the amount of cutoff (Scale: 0 - 100. Default: 100).
- **Res** (Resonance). Determines the amount of resonance (Scale: 0 - 100. Default: 0).

3.8.2 Section 2: Filter Envelope

- **Env** (Envelope). Determines the amount of envelope applied to the filter (Scale: -100 / 100. Default: 75).
- **Att** (Attack). Determines the time the cutoff or resonance takes to peak (Scale: 0 - 100. Default: 0).
- **Dec** (Decay). Determines the time the cutoff or resonance takes to fall from the peak to the sustain level (Scale: 0 - 100. Default: 50).
- **Sus** (Sustain). Determines relative to the peak, the cutoff or resonance, when the key is held down (Scale: ∞ / 0,0 dB. Default: 0,0 dB).
- **Rel** (Release). Determines the time the cutoff or resonance to die out after the key is released (Scale: 0 - 100. Default: 25).

3.9 Panel 9: Keys Panel

3.9.1 Section 1: Keys

- **L Key** (Low Key). Determines the start point of the key range (Scale: C-2 (0) / G8 (127). Default: C2 (0)).
- **H Key** (High Key). Determines the end point of the key range (Scale: C-2 (0) / G8 (127). Default: G8 (127)).

3.9.2 Section 2: Velocity

- **Low Vel** (Low Velocity). Determines the start point of the velocity range (Scale 1 – 127. Default: 1)
- **Hi Vel** (High Velocity). Determines the end point of the velocity range (Scale 1 – 127. Default: 127).

3.10 Panel 10: Matrix Panel

3.10.1 Section 1: Modulation Matrix

Modulation: describes the items to modulate. There are 13 items you can modulate.

- **Source**: Sets the source of the item to modulate. There are 24 different sources.
- **Destination**: Sets the destination of the item to modulate.
- **Amt** (Amount: Determines the amount of modulation (Scale: - 100 / +100. Default: 0). Time Mod Vel and Time Mod KS have a minimum value of 0 and a maximum of 100.

- **On / Off**: Determines whether modulation matrix is added to the signal chain (Scale: On / Off. Default: Off).

Mod(ulation) Wheel
The Mod Wheel can be used for controlling almost any parameter in Rumble. Use the Mod Wheel as a Source parameter in the Modulation Bus panel and then route to the desired Destination parameter(s) with a certain amount.
* Set the Mod(ulation) Wheel as Source for a Destination in the Modulation Matrix by clicking on the Source display in the Modulation Matrix panel and then select Mod Wheel from the pop up menu.

3.11 Panel 11: Phaser Panel

3.11.1 Section: Phaser

- **On / Off**. Determines whether phaser is added to the signal chain (Scale: On / Off. Default: Off).
- **Rate** (Phaser Rate). Determines the modulation rate of the phaser (Scale: 0 / 100. Default: 50).
- **Depth** (Phaser Depth). Determines the filter frequency modulation of the phaser (Scale: 0 / 100. Default: 50).
- **FBack** (Phaser Feedback). Determines the amount of feedback (Scale: 0 / 100. Default: 50).
- **Center** (Phaser Center). Determines the center filter frequency of the phaser (Scale: 0 / 100. Default: 50).
- **Spread** (Phaser Spread). Determines the offset between left and right center frequencies (Scale: 0 / 100. Default: 50).
- **Mix** (Phaser Mix). Determines amount of phaser added to the signal chain (Scale: 0 / 100. Default: 50).

3.12 Panel 12: Rotary Panel

The Rotary is an emulation of a Leslie rotary speaker cabinet.

3.12.1 Section 1: Control

- **On / Off**. Determines whether rotary is added to the signal chain (Scale: On / Off. Default: Off).
- **Speed** (Rotary Speed). Determines rotary speed amount (Scale: Stop, Slow, Fast. Default: Slow).

3.12.2 Section 2: Horn

- **Horn** (Rotary Horn Acceleration). Determines the rotary acceleration and deceleration time of the horn (Scale: 0 / 100. Default: 60).
- **Slow** (Rotary Horn Slow). Determines the rotation speed of the horn at "Slow" speed (Scale: 0 / 100. Default: 50).
- **Fast** (Rotary Horn Fast). Determines the rotation speed of the horn at "Fast" speed (Scale: 0 / 100. Default: 94).
- **Amp** (Rotary Horn Amp Mod). Determines the amplitude modulation of the horn signal (Scale: 0 / 100. Default: 50).

- **Freq** (Rotary Horn Freq Mod). Determines the frequency modulation of the horn signa (Scale: 0 / 100. Default: 50).

3.12.3 Section 3: Bass

- **Bas** (Rotary Bass Acceleration). Determines the rotary bass drum acceleration and deceleration time (Scale: 0 / 100. Default: 25).
- **Slow** (Rotary Bass Slow). Determines the rotation speed of the bass drum at "Slow" speed (Scale: 0 / 100. Default: 55).
- **Fast** (Rotary Bass Fast). Determines the rotation speed of the bass drum at "Fast" speed (Scale: 0 / 100. Default: 91).
- **Amp** (Rotary Bass Amp Mod). Determines the amplitude modulation of the bass signal (Scale: 0 / 100. Default: 50).

3.12.4 Section 4: Overall

- **X - Over** (Rotary Crossover). Determines the crossover frequency between bass and horn (Scale: 0 / 100. Default: 50).
- **Bal** (Rotary Balance). Determines the volume balance between bass and horn (Scale: 0 / 100. Default: 50).
- **Mic** (Rotary Mic Angle). Determines the simulated microphone angle towards the simulated rotary speaker cabinet (Scale: 0 / 100. Default: 50).

3.13 Panel 13: Effects filter panel

3.13.1 Section: Filter

- **On / Off** (High Low Pass Filter On Off). Determines whether effects filter is added to the signal chain (Scale: On / Off. Default: Off).
- **Mode** (High Low Pass Filter Mode). Determines the effects filter mode. You can choose between a 12 dB/oct and 24 dB/oct lowpass filter as well as the LP+ filter, which is a "brickwall" lowpass filter with very steep roll-off. There is also a 6 dB/oct bandpass filter, a 12 dB/oct highpass filter and the "brickwall" HP+ filter. Note that the LP+ and HP+ filter types do not feature Resonance control (Scale: LP / LP 24 / LP+ / BP6 / HP12 / HP+. Default: HP12).
- **Cut** (High Low Pass Filter Cutoff). Determines the amount of the effects filter cutoff (Scale: 0 / 100. Default: 0).
- **Res** ((High Low Pass Filter Resonance). Determines amount of the effects filter resonance (Scale: 0 / 100. Default: 0).

4 Back of the device

4.1 Sequencer Control inputs

The Sequencer Control CV and Gate inputs allow you to play Rumble from another CV/Gate device (typically a Matrix or an RPG-8). The signal to the CV input controls the note pitch, while the signal to the Gate input delivers note on/off along with velocity.

4.2 Audio Output

These are the main audio outputs. When you create a new Rumble device, these outputs are auto-routed to the first available channel in the Reason main mixer.

4.3 Volume Control

When routing cables the volume control can be altered.

4.4 Signal Flow Diagram (SDF)
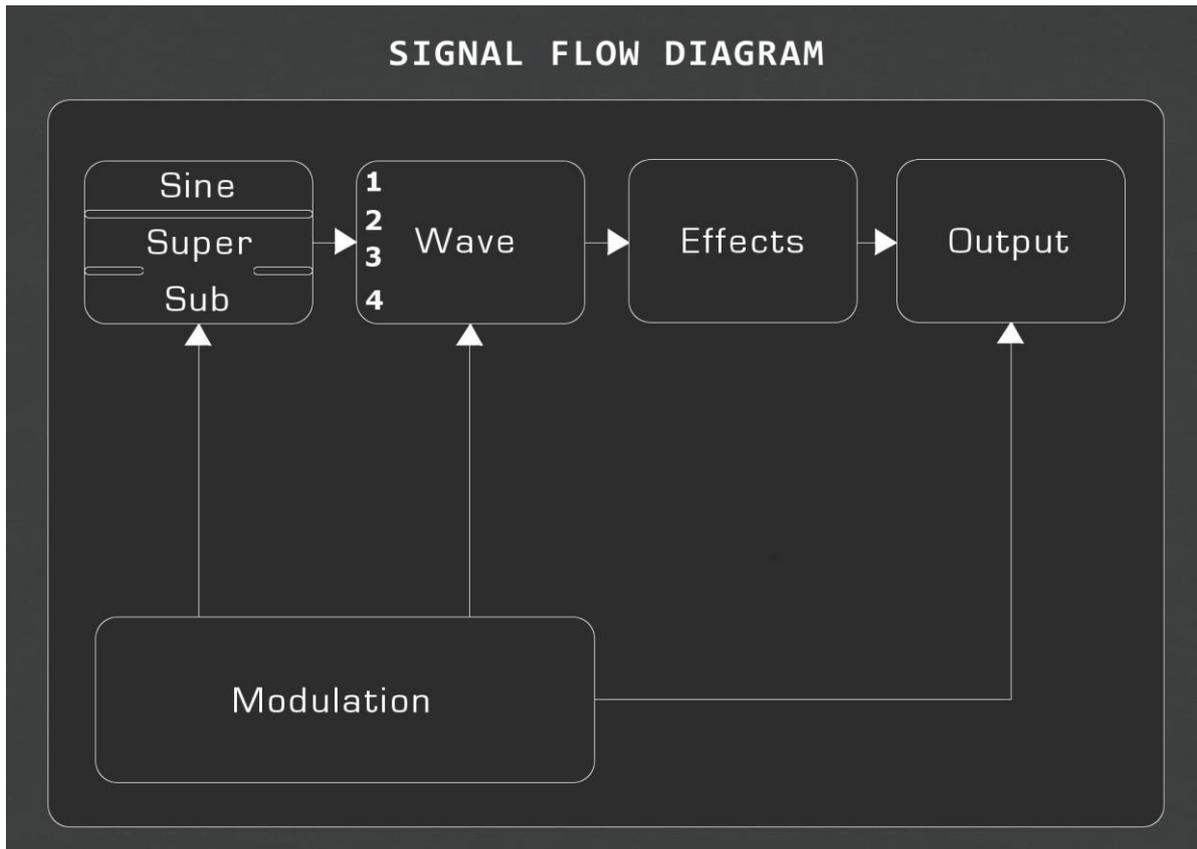
The Mix output of the Sub and Super oscillators are connected, sums independently from the Sine oscillator into the Wave Loop Mix.

The Mix output of the Sine oscillator goes into the Wave Loop Mix.
* If you change the Mix knob on one of the four Wave Loop oscillators, the overall volume of Sine-, Super- and Sub oscillators will change as well.

The Sine, Super and Sub oscillators are also affected by the Shapers Drive

The sum of Osc panel will pass through the Envelope, Vibrato, Auto Bend, Pitch Bend, Frequency, Frequency Filter and Keys panels.

The audio signal will then go through the 3 effects panels, the Phaser panel, the Rotary panel and the Filter panel before it goes into the final stage, the Output panel.

The Modulation Bus signal output only affects the destination chosen on the panel. There are no sources and destinations for the Effects panels.

Almost every function in Rumble works in real time. When you press a key on the keyboard or feed Rumble with a sequencer gate and note from for example a Matrix, changing a knob or button will affect the audio immediately or at the next note input.

4.5 Modulation Curves

These curves are used as sources to alter destinations in the modulation matrix. The KS and Vel curves are almost similar to those on a Kawai K1. One curve can be shaped in the Modulation matrix: The KS 1 Linear Curve has four points. A point holds information about level and time.

5   Using Rumble

5.1   Selecting Samples

You can choose a sample preset with the Sample Select knob or by clicking on the Sample Select display and choose one of the 40 sample presets. A sample preset can hold one or four pre-defined samples or Wave Loops. When sample preset name is divided in four Wave Loop names separated with a -, the first sample name is assigned to Wave Loop 1, the second sample name is assigned to Wave Loop 2 etc.
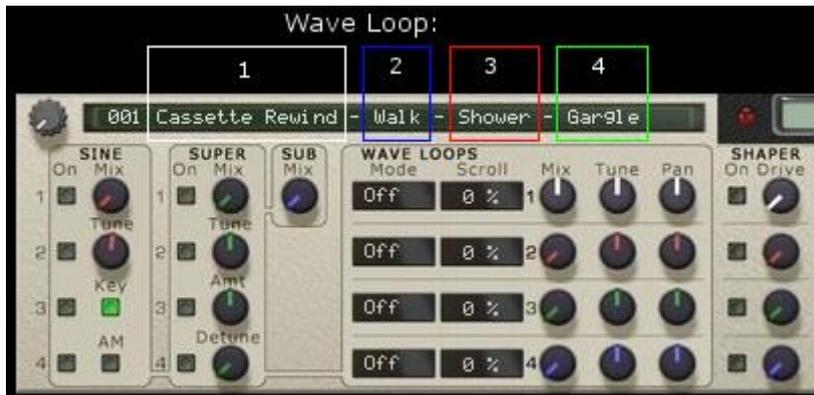
When a sample preset consists of just one sample name, the sample is assigned to all 4 Wave Loop oscillators.

5.2   Wave Loop Oscillator control

There are 3 scroll modes:
- Off.
- On.
- Quant(ize).

In each mode you can set the Wave Loop Scroll percentage (Scrolling). Scrolling changes the start position of the Wave Loop sample.

Examples:
- **Off**: Plays the Wave Loop sample without looping:

When you set the Scroll amount to 0, the Wave Loop sample will play from the start until the end. Set the Scroll amount to 50 and the Wave Loop sample starts halfway and plays until the end. With the Scroll amount set to 100, the last part or grain of the Wave Loop sample is played, but is always silent and produces no sound. This setting enables you only to hear the Sine, Super and / or Sub Oscillators:

- **On**: Plays a short part or grain of the Wave Loop sample looped, ideal for defining instruments. In this example the Wave Loop sample number 2 named 'Walk', will produce a sustained looped sound with grain number 84. It sounds like an organ.

- **Quant(ize)**, does the same as in On mode, but If set to "Quantized" the loop position is rounded to the nearest multiple of the loop length, which is set to 337 samples.

The length of the 4 Wave Loop samples can't be changed.

Scrolling methods:
In examples above you manually scroll through the Wave Loop samples. However, it is also possible to scroll with keyboard controls like the Pitch Wheel, the Modulation Wheel, Aftertouch, Velocity etc. You can scroll through the Wave Loop samples with help of the Modulation Matrix.

Examples:

- Setting the Pitch Wheel to control the Wave Loop Scroll:
In this case the second Wave Loop oscillator, called 'Walk' will be scrolled by the Pitch Bend Wheel.

First turn down the Mix of Wave Loop oscillators 1, 3, and 4 to 0 in the Osc panel and set the Mix of Wave Loop Oscillator 2 to desire: Only Wave Loop Oscillator 2 will be heard.
Set the Scroll Mode to Quant and Scroll to 100.
Then turn down the Pitch about 20 in the Pitch Bend panel and set the Pitch Wheel Destination to Sample (Start). To scroll through the sample: play notes and move the Pitch Bend Wheel.

- Setting the Modulation Wheel to control the Wave Loop Scroll:

- Setting the Vibrato (LFO), the Aftertouch and the Pitch Bend to independently control the Wave Loop Scroll:

- Sometimes the changing the Envelope produces sound as there is still the sample start mixed in. When Loop Mode is Off in this for example, sample (012), several very short samples are heard: Sine (0-24), saw (25-49) and two square waves (50-100). Playing a note causes the glitch effect. It plays 4 very short samples and then sustains the last bit, a square wave. When Loop Mode is set to On or Quant, only the first sine wave is played. This behavior is intended and there is nothing wrong with the workings of the ADSR envelope. The glitch effect is caused by very short samples 'glued' together into one sample stored in the Sample Bank. If you change the Sample Select from 012 to 001, while playing some notes, the ADSR settings work properly. The jumpy effect you might hear is caused a Decay set to 0.
- When changing an item in the Sample Select, all the current settings of Rumble are copied to the selected item.

6   Patches

6.1   Loading and saving patches

Loading and saving patches is done in the same way as with any other internal Reason device. See the "Sounds and Patches" chapter in the Reason Operation Manual.pdf for details.

6.1.1   Patch list

- Accordion.repatch
- Bagpipe.repatch
- Breaking Glass.repatch
- Double Bass.repatch
- Init Patch.Repatch
- Jaymar Piano.repatch
- Rumble.repatch
- Sine Tape.repatch
- Sitar.repatch
- Solina.repatch
- Unison Counting.repatch
- Vox.repatch
- Wahlina.repatch
- Water Bass.repatch

   o   Combinator

- Acoustic Guitar Strummer.cmb
- All Sounds 001-012.cmb
- All Sounds 013-024.cmb
- All Sounds 025-036.cmb
- All Sounds 037-040.cmb
- Fender Strat Strummer.cmb
- Fender Strat.cmb
- FM Lead.cmb
- Hammond Church.cmb
- Hells Kitchen.cmb
- Ibach Grand Piano 1904.cmb
- International Counting.cmb
- Rhodes.cmb
- Simple Sine Lead.cmb
- Uno Due Tre Quattro.cmb

   o   Drums

- Drum Kit.cmb
- Drum Machine.cmb
- Finger Kit.repatch
- Giles Reaves Suspended Cymbals.repatch
- H Kit.repatch
- Kit One.repatch

   o   Instruments

- Acoustic Guitar First 4 strings Open G Tuning.repatch
- Acoustic Guitar Last 2 strings Open G Tuning.repatch

- Ah Voices.repatch
- At The Beach.repatch
- Bagpipe Synth.repatch
- Breaking Glass Synth.repatch
- Casettedion.repatch
- Double Bass Synth.repatch
- Electro Bass.repatch
- Elektrosluch.repatch
- Fender Bass 1951 Synth.repatch
- Fender Bass 1951.repatch
- FM Lead.repatch
- Glockenspiel.repatch
- Gritty Pluck Bass.repatch
- Hammond.repatch
- Ibach Piano 1904 High Notes.repatch
- Ibach Piano 1904 Low Notes.repatch
- Paddo.repatch
- Sine Saw Square.repatch
- Tape Machine.repatch
- The Grinder.repatch
- Wah Vox.repatch
- Walking With Maup.repatch

o Italian Counting

Contains spoken numbers by lady Loddo in Italian from 1 to 1000.

o Signature Patches

The signature patches have the following format: Category (BS) – Patch name (Gritty Bass) – Creator / Sound designer (Wts). When [RUN] is in the patch name, it means the combinator's Run button should be activated.

Abbreviations used in patches:
BS = Bass
DR = Drums and Percussion
FX = Effects
KY = Keys
LD = Lead
PD = Pad
SQ = Sequencer
SY = Synthesizer

Sound designers:
BK is short for Bart Krutwagen.
Challism is ChallisM.
Loque is Loque.
NR is Navi Retlav.
PB is Carly/PoohBear.
WtS is short for WongoTheSane.

The patches:
- BS - Angry Bass - Challism.repatch
- BS - Garden - Loque.cmb
- BS - Grit Bass - NR.repatch
- BS - Gritty Bass - WtS.repatch
- BS - Moggster Bass - NR.repatch
- BS - Mouth Acid - Loque.cmb
- BS - Multi Culti Wah - Loque.cmb

- BS - Oreola - Challism.repatch
- BS - Voxel - Loque.cmb
- BS - Wah Bass Slow - Challism.repatch
- DR - Clap'n'Snap'n'Slap - Loque.cmb
- DR - Kick - Loque.cmb
- DR - Perc Kit - WtS.repatch
- DR - Snare Hit - Loque.cmb
- DR - Steel drums - WtS.cmb
- FX - Banding - Loque.cmb
- FX - Bubble Knee - Challism.repatch
- FX - Chatter Duck - BK.repatch
- FX - Crab Walk - Challism.repatch
- FX - DarkStars - PB.cmb
- FX - DeDeDetuned - Challism.repatch
- FX - Deep Dunk - BK.repatch
- FX - Depressed Metal - BK.repatch
- FX - Dont Tase Me - Challism.repatch
- FX - Driver License - Loque.cmb
- FX - Dying Generatoor - Challism.repatch
- FX - Electrix Train - PB.repatch
- FX - Flux - Challism.repatch
- FX - Get It On - Loque.cmb
- FX - Mallet Ring - Challism.repatch
- FX - Mark Tree - WtS.cmb
- FX - Mombo Milano - Challism.repatch
- FX - Piano Down the Stairs - Challism.repatch
- FX - Rumble's psychedelic breakfast [Run] - WtS.cmb
- FX - Sad Cat - Loque.cmb
- FX - Scary 16th repeater [Run] - WtS.cmb
- FX - Siren - Challism.repatch
- FX - Storm Window - Challism.repatch
- FX - Thunder Bees - BK.repatch
- FX - UFO - PB.repatch
- FX - UFO Landing - BK.repatch
- KY - Bells - BK.repatch
- KY - Electro Organ - PB.cmb
- KY - Eltan Johan - NR.repatch
- KY - Forgotten - Challism.repatch
- KY - Glox - PB.cmb
- KY - HarpisO - PB.cmb
- KY - Harpiso - PB.repatch
- KY - Jamming - PB.cmb
- KY - Little Sludge - Challism.repatch
- KY - Lysergic piano - WtS.cmb
- KY - Mid Void - NR.repatch
- KY - Mynx Bar - Challism.repatch
- KY - Organish Split - PB.repatch
- KY - Phase - PB.repatch
- KY - Rat Dien - Challism.repatch
- KY - Sine Vibe - NR.repatch
- KY - Stereo Bells - BK.repatch
- KY - Street Harmonium - NR.repatch
- KY - Sweeping Bells - BK.repatch
- KY - Vovel Organ - NR.repatch
- LD - Distant El Guitar - WtS.cmb
- LD - Elec G on Stage - PB.cmb
- LD - Flappy Harmonica - WtS.repatch

- LD - Rumbipes - WtS.repatch
- PD - Airy Choir - WtS.cmb
- PD - Croaking organ - WtS.cmb
- PD - Dark Matter - Loque.cmb
- PD - Deep Pipes - PB.cmb
- PD - Drunken Pilot - Challism.repatch
- PD - Harmonium - WtS.cmb
- PD - Long Rising Pad - WtS.repatch
- PD - Resonating Pipe - Loque.cmb
- PD - Reverb Me - NR.repatch
- PD - Saly Pad - NR.repatch
- PD - Winter Strings - PB.cmb
- SQ - Lalaland - Loque.cmb
- SY - Bugger - Challism.repatch
- SY - Chime Reed - Challism.repatch
- SY - Chiptronic - NR.repatch
- SY - Crab Legs - Challism.repatch
- SY - Honda Accordion - Challism.repatch
- SY - Lead - PB.repatch
- SY - Lololipop - Challism.repatch
- SY - Mono Time - PB.repatch
- SY - Rhythmic Suspence - PB.cmb
- SY - Runaway - PB.cmb
- SY - Solar - PB.cmb
- SY - String Glitches - Challism.repatch
- SY - Stutter - PB.cmb
- SY - SuperSaw - PB.repatch
- SY - The Cassette - PB.cmb

o Techniques

The "Techniques" folder contains patches demonstrating various techniques you might find useful like the "Filter Envelope Vibrato Wobble", which shows how to apply the Vibrato to the Filter Envelope with the Mod Wheel, through the Modulation Matrix.

- Each Wave Loop On C1 C2 C3 C4.repatch
- Each Wave Loop On C2 C3 C4 C5.repatch
- Filter Envelope Vibrato Wobble.repatch
- Mod Wheel Madness.repatch
- Release Timer.repatch
- Scroll with Aftertouch.repatch
- Scroll with Filter Envelope Attack.repatch

o Vowels

Contains the vowels A, E, I, O, U, Y sung by Hans.

6.2 Working with samples

A sample in the Sample select can either hold:

- Just one sample.
- Multiple samples, which are arranged one after another. Imagine 2 or 5 samples 'glued' together. **Multi samples are marked with an asterix (*) in front of the name in the Sample Select**, for example: 008 * Italian Counting X 4.
  Section 6.3.2 below (Multiple Samples Index) gives an overview of all the multiple samples in the Sample bank. You need to set the Loop Mode to Off and set the Scroll amount according to the values mentioned in the overview. For one of the multi samples, 012 * Sine, Saw, Square and AA Square X 3 - White Noise, you need to set the Loop Mode to On and then set the Scroll amount according to the values mentioned in the overview.

About the naming convention of the samples in the Sample bank:

- When a Sample Select item has four different names separated by a '-', for example 001 Cassette Rewind - Walk - Shower – Gargle, 4 different samples are assigned to each Wave Loop oscillator.
- When the name of an item in the Sample Select has no separator, for example 004 Fender Precision Bass 1951 E A D G Strings, 4 different samples of the same instrument (Bass) are assigned to each Wave Loop oscillator in a sequential order.
- When the name of an item contains a multiplier, for example 008 * Italian Counting X 4, 4 equal samples of the same instrument (Italian Counting) are assigned to each Wave Loop oscillator. Another example is 009 Solina X 4, the samples are the same. This is done because now you can detune the samples one or more Octaves and set the Low and High Key to spread the samples evenly across the keyboard to diminish artifacts due to pitch and time stretching.
- When the name of an item in the Sample Select has a separator, the first name is repeated and has a sort description in the first name, for example: 010 * Vowels (A, E, I, O, U and Y) X 3 - Majestic, equal samples of the same instrument (Vowels) are assigned to each Wave Loop oscillator. In this case, the first sample is a Multi sample. Another example is 012 * Sine, Saw, Square and AA Square X 3 - White Noise, where the first three samples (Sine etc.) are Multi samples.

There are two methods to use samples from the sample bank and you can mix both methods: Wavetable synthesis and Granular synthesis.

6.2.1 Sample Select items

- 001 Cassette Rewind - Walk - Shower – Gargle
- 002 Spraycan - Radiator - Hotelbell – Tang
- 003 Voice - Constipation - Beer Glass – Tung
- 004 Fender Precision Bass 1951 E A D G Strings
- 005 Fender Precision Bass 1963 E A D G Strings
- 006 Fender Bass Plectrum - Rattle - Move - Move
- 007 Finger Snap - Snaps - Cooking Pan - Colander
- 008 * Italian Counting X 4
- 009 Solina X 4
- 010 * Vowels (A, E, I, O, U and Y - Majestic
- 011 Jaymar A2 - C2 - C3 - C4
- 012 * Sine, Saw, Square and AA Square X 3 - White Noise
- 013 Silence - Pink Noise - Brown Noise - Square No Alias
- 014 Piano C0 - Piano C1 - Piano C2 - Piano C3
- 015 Glockenspiel C - Glockenspiel G - Glockenspiel F - Glockenspiel C2
- 016 Double Bass String E - A - D - G

- 017 * Accordion C1 - Accordion C2 - Accordion C3 - Acc. C, C Min, C7, C Min7
- 018 Crack - Lighter Lid - Lighter Close - Staples
- 019 Rasp - Grrritz - Ting - Tack
- 020 Majestic Drum - Claps - Finger Snaps - Shake
- 021 Colander Long - Centrifuge - Centrifuge Long - In The Centrifuge
- 022 Breaking Glass 1 - Breaking Glass 2 - Breaking Glass 1 - Breaking Glass 2
- 023 Water Pump - Pumping Water - Traffic - At The Sea
- 024 * Kit - Two Kicks - Four Snares - Five Hihat Cymbals
- 025 Piano C4 - Piano C5 - Piano C6 - Piano C7
- 026 Outdoors With Keys - Outdoors - Move Down - Move Up
- 027 Cassette Take Two X 4
- 028 Irish Bagpipe G1 - G2 - G3 - G4
- 029 * Italian Counting F- French Counting F - French Counting M - Dutch Counting M
- 030 Cymbal Hit - Cymbal Slow - Cymbal Faster - Cymbal Fastest
- 031 Sitar C1 - Sitar C2 - Sitar C3 - Sitar E3 Bend
- 032 Acoustic Guitar Open G Tuning D G D G Strings
- 033 Acoustic Guitar Open G Tuning B D Strings - Slide D 1 - Slide G 3
- 034 Fender Stratocaster Guitar E A D G Strings
- 035 Fender Stratocaster Guitar B E Strings - Plectrum – Rattle
- 036 Acoustic Guitar Open G Tuning Slide D 2 - Slide D 3 - Slide D 4 - Slide D 5
- 037 Acoustic Guitar Open G Tuning Slide D 6 - Slide G 1 - Slide G 2 - Slide Chord
- 038 Elektrosluch Hard Drive - Hum and Cracle - Hum Pop Buzz - Whistle Screech
- 039 Elektrosluch Tick Tick - Hum Rumble - Low then High - HD and Modem
- 040 Rain and Thunder - Rain and Thunder - Microwave - Coffee Grinder

6.2.2 Multiple samples index

Sample Select	Nr	Sample Name (I)	Description	Scroll	Att	Dec
008 Italian Counting X 4	1	Uno	OO-noh	0	0	58
	2	Due	DOO-eh	2	0	55
	3	Tre	TREH	4	0	53
	4	Quattro	KWAHT-troh	5	50	48
	5	Cinque	CHEEN-kweh	7	59	0
	6	Sei	SEH-ee	10	0	58
	7	Sette	SET-teh	12	0	58
	8	Otto	OHT-toh	15	0	55
	9	Nove	NOH-veh	17	0	55
	10	Dieci	dee-EH-chee	19	0	55
	11	Undici	OON-dee-chee	21	30	61
	12	Dodici	DOH-dee-chee	24	0	61
	13	Tredici	TREH-dee-chee	27	0	56
	14	Quattordici	kwaht-TOR-dee-chee	29	50	58
	15	Quindici	KWEEN-dee-chee	32	58	47
	16	Sedici	SEH-dee-chee	35	38	58
	17	Diciassette	dee-chahs-SET-teh	38	0	64
	18	Diciotto	dee-CHOHT-toh	41	63	0
	19	Diciannove	dee-chahn-NOH-veh	44	44	58
	20	Venti	VEN-tee	47	50	48
	21	Ventuno	ven-TOO-noh	49	61	0
	30	Trenta	TREN-tah	52	0	59
	31	Trentuno	TREN-too-noh	54	61	44
	40	Quaranta	kwah-RAHN-tah	57	59	38
	41	Quarantuno	kwah-RAHN-too-noh	60	0	63
	50	Cinquanta	cheen-KWAHN-tah	63	20	63
	51	Cinquantuno	cheen-KWAHN-too-noh	66	53	53
	60	Sessanta	ses-SAHN-tah	70	0	61
	61	Sessantuno	ses-SAHN-too-noh	73	0	64
	70	Settanta	set-TAHN-ta	77	0	61
	71	Settantuno	set-TAHN-too-noh	80	0	66
	80	Ottanta	oht-TAHN-ta	84	0	61
	81	Ottantuno	oht-TAHN-too-noh	87	0	64
	90	Novanta	noh-VAHN-tah	90	52	53
	91	Novantuno	noh-VAHN-too-noh	93	0	62
	100	Cento	CHEN-toh	96	0	57
	1000	Mille	MILL-eh	98	0	57
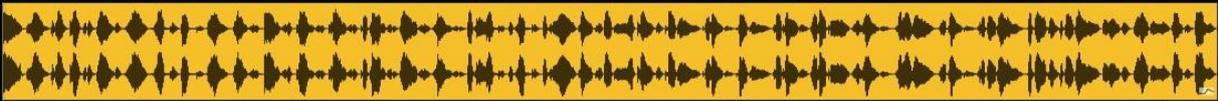
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Sample Select	Nr	Sample Name	Description	Scroll	Att	Dec
010 Vowels (A, E, I, O, U and Y) X 3	1	A		0	0	86
	2	E		15	0	86
	3	I		29	0	86
	4	O		42	0	86
	5	U		61	0	86
	6	Y		82	0	86
012 Sine, Saw, Square and AA Square	1	Sine	Set Mode to On	0	0	100
	2	Saw	Set Mode to On	25	0	100
	3	Square	Set Mode to On	50	0	100
	4	Square Anti Alias	Set Mode to On	75	0	100
017 Accordion C1 - Accordion C2 - Accordion C3	1	C1	Pull	0	0	89
	2	C1	Push	54	0	89
	3	C2	Pull	0	0	89
	4	C2	Push	57	50	100
	5	C3	Pull	0	0	89
	6	C3	Push	53	30	100
017 Accordion C, C Min, C7, C Min7	7	C	Pull	0	0	63
	8	C	Push	14	34	63
	9	C Min	Pull	25	0	63
	10	C Min	Push	38	0	63
	11	C Maj 7	Pull	50	0	63
	12	C Maj 7	Push	64	0	63
	13	C Min 7	Pull	75	0	63
	14	C Min 7	Push	86	0	63
024 Kit	1	Low Tom		0	0	75
	2	Snare		28	0	50
	3	Snare		27	0	48
	4	Snare		41	0	50
	5	Snare		45	0	50
	6	Kick		48	0	50
	7	Kick Elektonik		55	0	50
	8	Majestic		64	0	100

Sample Select	Nr	Sample Name	Description	Scroll	Att	Dec
024 Two Kicks	10	Kick		0	0	44
	11	Kick		42	0	100
024 Four Snares	12	Snare		0	0	50
	13	Snare		28	0	50
	14	Snare		56	0	50
	15	Snare		80	0	100
024 Five Hihat Cymbals	16	Hihat Closed		0	0	42
	17	Crash		3	0	78
	18	Hihat Closed		45	0	50
	19	Ride Crash		49	0	83
	20	Hihat Closed		97	0	100
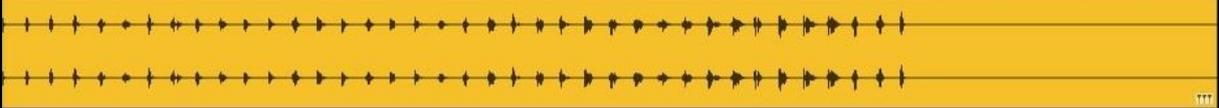
Sample Select	Nr	Sample Name (F)	Sample Name (D)	Scroll	Att	Dec
031 Italian Counting F, French Counting F, French Counting M, Dutch Counting M	1	Un	Een	2		
	2	Deux	twee	4		
	3	Trois	drie	6		
	4	Quatre	vier	8		
	5	Cinq	vijf	10		
	6	Six	zes	12		
	7	Sept	zeven	14		
	8	Huit	acht	16		
	9	Neuf	negen	18		
	10	Dix	tien	20		
	11	Onze	elf	22		
	12	Douze	twaalf	24		
	13	Treize	dertien	26		
	14	Quatorze	viertien	28		
	15	Quinze	vijftien	30		
	16	Seize	zestien	32		
	17	dix-sept	zeventien	34		
	18	dix-huit	achttien	36		
	19	dix-neuf	negentien	38		
	20	Vingt	twintig	40		
	21	vingt et un	eenentwintig	42		
	30	Trente	ertig	44		

Sample Select	Nr	Sample Name (F)	Sample Name (D)	Scroll	Att	Dec
	31	trente et un	eenendertig	46		
	40	Quarante	veertig	48		
	41	quarante et un	eenenveertig	50		
	50	Cinquante	vijftig	52		
	51	Cinquante et un	eenenvijftig	54		
	60	Soixante	zestig	56		
	61	Soixante et un	eenenzestig	58		
	70	soixante-dix	zeventig	60		
	71	soixante-onze	eenenzeventig	62		
	80	quatre-vingts	tachtig	64		
	81	quatre-vingt-un	eenentachtig	66		
	90	quatre-vingt-dix	negentig	68		
	91	quatre-vingt-onze	eenennegentig	70		
	100	Cent	honderd	72		
	1000	Mille	duizend	74		

7 Credits

- Marietta Loddo, Italian counting.
- Anne van Dalen, website and manual.
- Josë Kouwenhoven, coaching.
- Chris Willem, support.
- Peter Wassenaar, studio and instruments.
- Robert Kwakkelstein, recordings of piano and accordion, demo song.
- Hans Ruitenberg, vocals.
- Bart Krutwagen, graphics support and sound design.
- Edward Tan, catering.
- Marco Raaphorst, inspirator.
- Maurits Burgers, business plan and walks.
- Noel Gonzalez, promotion.
- Sabastian Weaver, interview.
- Kenni, Reasontalk forum beta test hosting.
- Wongo the Sane, sound design and together with his wife recorded the French counting.
- Loque, sound design and suggestions.
- Navi Retlav, sound design.
- Carly Poohbear, sound design and Remote mapping.
- Challism, sound design and suggestions about instruments.
- Giles Reaves, suspended cymbals.
- Platzangst, Elektrosluch recordings.
- Propellerhead Software AB for their support.
- All the beta testers.

8 Appendixes

- Some notes about connecting external devices, like the RPG 8 Arp, Matrix or other sequencers:
  - When RPG-8 is connected to the back it works fine until the around 60Hz or 1/128 notes rate. Above the 75Hz notes rate the synth goes silent. In this case set the Gate Length on the RPG – 8 above a value of 47 and the sound 'comes back again'.

8.1 MIDI Implementation Chart

MIDI CC

[12] = Sine_Osc_1_On_Off
[13] = Sine_Osc_2_On_Off
[14] = Sine_Osc_3_On_Off
[15] = Sine_Osc_4_On_Off
[16] = Sine_Osc_Mix
[17] = Sine_Osc_Tune
[18] = Sine_Osc_Key_Track_On_Off
[19] = Sine_Osc_Ring_Mod_On_Off
[20] = Sine_Osc_Mod_Source
[21] = Sine_Osc_Mod_Destination
[22] = Sine_Osc_Mod_Amount
[23] = Super_Osc_1_On_Off
[24] = Super_Osc_2_On_Off
[25] = Super_Osc_3_On_Off
[26] = Super_Osc_4_On_Off
[27] = Super_Osc_Mix
[28] = Super_Osc_Tune
[29] = Super_Osc_Amount
[30] = Super_Osc_Detune
[31] = Super_Osc_Sub
[33] = Super_Osc_Mod_Source_1
[34] = Super_Osc_Mod_Destination_1
[35] = Super_Osc_Mod_Amount_1
[36] = Super_Osc_Mod_Source_2
[37] = Super_Osc_Mod_Destination_2
[39] = Super_Osc_Mod_Amount_2
[40] = Sample_Select
[41] = Wave_Loop_1_Mode
[42] = Wave_Loop_2_Mode
[43] = Wave_Loop_3_Mode
[44] = Wave_Loop_4_Mode
[45] = Wave_Loop_1_Scroll
[46] = Wave_Loop_2_Scroll
[47] = Wave_Loop_3_Scroll
[48] = Wave_Loop_4_Scroll
[49] = Wave_Loop_1_Volume
[50] = Wave_Loop_2_Volume
[51] = Wave_Loop_3_Volume
[52] = Wave_Loop_4_Volume
[53] = Wave_Loop_1_Tune
[54] = Wave_Loop_2_Tune
[55] = Wave_Loop_3_Tune
[56] = Wave_Loop_4_Tune
[57] = Wave_Loop_1_Pan

[58] = Wave_Loop_2_Pan
[59] = Wave_Loop_3_Pan
[60] = Wave_Loop_4_Pan
[61] = Osc_1_Shaper_On_Off
[62] = Osc_2_Shaper_On_Off
[63] = Osc_3_Shaper_On_Off
[65] = Osc_4_Shaper_On_Off
[66] = Osc_1_Shaper_Drive
[67] = Osc_2_Shaper_Drive
[68] = Osc_3_Shaper_Drive
[69] = Osc_4_Shaper_Drive
[70] = Osc_1_Envelope_Attack
[71] = Osc_2_Envelope_Attack
[72] = Osc_3_Envelope_Attack
[73] = Osc_4_Envelope_Attack
[74] = Osc_1_Envelope_Decay
[75] = Osc_2_Envelope_Decay
[76] = Osc_3_Envelope_Decay
[77] = Osc_4_Envelope_Decay
[78] = Osc_1_Envelope_Sustain
[79] = Osc_2_Envelope_Sustain
[80] = Osc_3_Envelope_Sustain
[81] = Osc_4_Envelope_Sustain
[82] = Osc_1_Envelope_Release
[83] = Osc_2_Envelope_Release
[84] = Osc_3_Envelope_Release
[85] = Osc_4_Envelope_Release
[86] = Osc_1_Release_Timer
[87] = Osc_2_Release_Timer
[88] = Osc_3_Release_Timer
[89] = Osc_4_Release_Timer
[90] = Level_Mod_Vel_Source
[91] = Level_Mod_Vel_Destination
[92] = Level_Mod_Vel_Amount
[93] = Level_Mod_Prs_Source
[94] = Level_Mod_Prs_Destination
[95] = Level_Mod_Prs_Amount
[102] = Level_Mod_KS_Source
[103] = Level_Mod_KS_Destination
[104] = Level_Mod_KS_Amount
[105] = Time_Mod_Vel_Attack_Source
[106] = Time_Mod_Vel_Attack_Destination
[107] = Time_Mod_Vel_Attack_Amount
[108] = Time_Mod_KS_Source
[109] = Time_Mod_KS_Destination
[110] = Time_Mod_KS_Amount
[111] = KS_Curve_1_Mod_Source
[112] = KS_Curve_1_Mod_Destination
[113] = KS_Curve_1_Mod_Amount
[114] = Osc_1_Vibrato_On_Off
[115] = Osc_2_Vibrato_On_Off
[116] = Osc_3_Vibrato_On_Off
[117] = Osc_4_Vibrato_On_Off
[118] = Osc_1_Vibrato_Speed_Sync

[119] = Osc_2_Vibrato_Speed_Sync
[128] = Osc_3_Vibrato_Speed_Sync
[129] = Osc_4_Vibrato_Speed_Sync
[130] = Osc_1_Vibrato_Wheel_On_Off
[131] = Osc_2_Vibrato_Wheel_On_Off
[132] = Osc_3_Vibrato_Wheel_On_Off
[133] = Osc_4_Vibrato_Wheel_On_Off
[134] = Osc_1_Vibrato_Depth
[135] = Osc_2_Vibrato_Depth
[136] = Osc_3_Vibrato_Depth
[137] = Osc_4_Vibrato_Depth
[138] = Osc_1_Vibrato_Speed
[139] = Osc_2_Vibrato_Speed
[140] = Osc_3_Vibrato_Speed
[141] = Osc_4_Vibrato_Speed
[142] = Osc_1_Vibrato_Shape
[143] = Osc_2_Vibrato_Shape
[144] = Osc_3_Vibrato_Shape
[145] = Osc_4_Vibrato_Shape
[146] = Osc_1_Vibrato_Prs_To_Depth
[147] = Osc_2_Vibrato_Prs_To_Depth
[148] = Osc_3_Vibrato_Prs_To_Depth
[149] = Osc_4_Vibrato_Prs_To_Depth
[150] = Osc_1_Vibrato_Wheel_Destination
[151] = Osc_2_Vibrato_Wheel_Destination
[152] = Osc_3_Vibrato_Wheel_Destination
[153] = Osc_4_Vibrato_Wheel_Destination
[154] = Auto_Bend_Mod_Vel_Source
[155] = Auto_Bend_Mod_Vel_Destination
[156] = Auto_Bend_Mod_Vel_Amount
[157] = Auto_Bend_Mod_KS_Source
[158] = Auto_Bend_Mod_KS_Destination
[159] = Auto_Bend_Mod_KS_Amount
[160] = Osc_1_Coarse
[161] = Osc_2_Coarse
[162] = Osc_3_Coarse
[163] = Osc_4_Coarse
[164] = Osc_1_Fine_Tune
[165] = Osc_2_Fine_Tune
[166] = Osc_3_Fine_Tune
[167] = Osc_4_Fine_Tune
[168] = Osc_1_Key_Track
[169] = Osc_2_Key_Track
[170] = Osc_3_Key_Track
[171] = Osc_4_Key_Track
[172] = Osc_1_KS_to_Freq
[173] = Osc_2_KS_to_Freq
[174] = Osc_3_KS_to_Freq
[175] = Osc_4_KS_to_Freq
[176] = Osc_1_Filter_On_Off
[177] = Osc_2_Filter_On_Off
[178] = Osc_3_Filter_On_Off
[179] = Osc_4_Filter_On_Off
[180] = Osc_1_Filter_Cutoff

[181] = Osc_2_Filter_Cutoff
[182] = Osc_3_Filter_Cutoff
[183] = Osc_4_Filter_Cutoff
[184] = Osc_1_Filter_Resonance
[185] = Osc_2_Filter_Resonance
[186] = Osc_3_Filter_Resonance
[187] = Osc_4_Filter_Resonance
[188] = Frequency_Filter_Mod_Source
[189] = Frequency_Filter_Mod_Destination
[190] = Frequency_Filter_Mod_Amount
[191] = Osc_1_Low_Key
[192] = Osc_2_Low_Key
[193] = Osc_3_Low_Key
[194] = Osc_4_Low_Key
[195] = Osc_1_High_Key
[196] = Osc_2_High_Key
[197] = Osc_3_High_Key
[198] = Osc_4_High_Key
[199] = Phaser_On_Off
[200] = Phaser_Rate
[201] = Phaser_Depth
[202] = Phaser_Feedback
[203] = Phaser_Center
[204] = Phaser_Spread
[205] = Phaser_Mix
[206] = Rotary_On_Off
[207] = Rotary_Speed
[208] = Rotary_Horn_Acceleration
[209] = Rotary_Horn_Slow
[210] = Rotary_Horn_Fast
[211] = Rotary_Horn_Amp_Mod
[212] = Rotary_Horn_Freq_Mod
[213] = Rotary_Crossover
[214] = Rotary_Bass_Acceleration
[215] = Rotary_Bass_Slow
[216] = Rotary_Bass_Fast
[217] = Rotary_Bass_Amp_Mod
[218] = Rotary_Balance
[219] = Rotary_Mic_Angle
[220] = High_Low_Pass_Filter_On_Off
[221] = High_Low_Pass_Filter_Mode
[222] = High_Low_Pass_Filter_Cutoff
[223] = High_Low_Pass_Filter_Resonance
[224] = Octave
[225] = Pan
[226] = Volume
[227] = Poly_Mode_On_Off
[228] = Key_Pan_On_Off
[229] = Limiter_On_Off
[230] = HF_Correction_On_Off
[231] = Sustain_Pedal_Mode
[232] = Glide_Mode
[233] = Glide_Time
[234] = Glide_Mod_Source

[235] = Glide_Mod_Destination
[236] = Glide_Mod_Amount

8.2   Remote items list

Scope   Oenkenstein Audio   com.wordpress.oenkenstein.RK1

Property Name
Sine Osc 1 On Off
Sine Osc 2 On Off
Sine Osc 3 On Off
Sine Osc 4 On Off
Sine Osc Mix
Sine Osc Tune
Sine Osc Key Track On Off
Sine Osc Ring Mod On Off
Sine Osc Mod Source
Sine Osc Mod Destination
Sine Osc Mod Amount
Super Osc 1 On Off
Super Osc 2 On Off
Super Osc 3 On Off
Super Osc 4 On Off
Super Osc Mix
Super Osc Tune
Super Osc Amount
Super Osc Detune
Super Osc Sub
Super Osc Mod Source 1
Super Osc Mod Destination 1
Super Osc Mod Amount 1
Super Osc Mod Source 2
Super Osc Mod Destination 2
Super Osc Mod Amount 2
Sample Select
Wave Loop 1 Mode
Wave Loop 2 Mode
Wave Loop 3 Mode
Wave Loop 4 Mode
Wave Loop 1 Scroll
Wave Loop 2 Scroll
Wave Loop 3 Scroll
Wave Loop 4 Scroll
Wave Loop 1 Volume
Wave Loop 2 Volume
Wave Loop 3 Volume
Wave Loop 4 Volume
Wave Loop 1 Tune
Wave Loop 2 Tune
Wave Loop 3 Tune
Wave Loop 4 Tune
Wave Loop 1 Pan
Wave Loop 2 Pan
Wave Loop 3 Pan
Wave Loop 4 Pan

Osc 1 Shaper On Off
Osc 2 Shaper On Off
Osc 3 Shaper On Off
Osc 4 Shaper On Off
Osc 1 Shaper Drive
Osc 2 Shaper Drive
Osc 3 Shaper Drive
Osc 4 Shaper Drive
Osc 1 Envelope Attack
Osc 2 Envelope Attack
Osc 3 Envelope Attack
Osc 4 Envelope Attack
Osc 1 Envelope Decay
Osc 2 Envelope Decay
Osc 3 Envelope Decay
Osc 4 Envelope Decay
Osc 1 Envelope Sustain
Osc 2 Envelope Sustain
Osc 3 Envelope Sustain
Osc 4 Envelope Sustain
Osc 1 Envelope Release
Osc 2 Envelope Release
Osc 3 Envelope Release
Osc 4 Envelope Release
Osc 1 Release Timer
Osc 2 Release Timer
Osc 3 Release Timer
Osc 4 Release Timer
Level Mod Vel Source
Level Mod Vel Destination
Level Mod Vel Amount
Level Mod Prs Source
Level Mod Prs Destination
Level Mod Prs Amount
Level Mod KS Source
Level Mod KS Destination
Level Mod KS Amount
Time Mod Vel Attack Source
Time Mod Vel Attack Destination
Time Mod Vel Attack Amount
Time Mod KS Source
Time Mod KS Destination
Time Mod KS Amount
KS Curve 1 Mod Source
KS Curve 1 Mod Destination
KS Curve 1 Mod Amount
Osc 1 Vibrato On Off
Osc 2 Vibrato On Off
Osc 3 Vibrato On Off
Osc 4 Vibrato On Off
Osc 1 Vibrato Speed Sync
Osc 2 Vibrato Speed Sync
Osc 3 Vibrato Speed Sync
Osc 4 Vibrato Speed Sync

Osc 1 Vibrato Wheel On Off
Osc 2 Vibrato Wheel On Off
Osc 3 Vibrato Wheel On Off
Osc 4 Vibrato Wheel On Off
Osc 1 Vibrato Depth
Osc 2 Vibrato Depth
Osc 3 Vibrato Depth
Osc 4 Vibrato Depth
Osc 1 Vibrato Speed
Osc 2 Vibrato Speed
Osc 3 Vibrato Speed
Osc 4 Vibrato Speed
Osc 1 Vibrato Shape
Osc 2 Vibrato Shape
Osc 3 Vibrato Shape
Osc 4 Vibrato Shape
Osc 1 Vibrato Prs To Depth
Osc 2 Vibrato Prs To Depth
Osc 3 Vibrato Prs To Depth
Osc 4 Vibrato Prs To Depth
Osc 1 Vibrato Wheel Destination
Osc 2 Vibrato Wheel Destination
Osc 3 Vibrato Wheel Destination
Osc 4 Vibrato Wheel Destination
Auto Bend Mod Vel Source
Auto Bend Mod Vel Destination
Auto Bend Mod Vel Amount
Auto Bend Mod KS Source
Auto Bend Mod KS Destination
Auto Bend Mod KS Amount
Osc 1 Coarse
Osc 2 Coarse
Osc 3 Coarse
Osc 4 Coarse
Osc 1 Fine Tune
Osc 2 Fine Tune
Osc 3 Fine Tune
Osc 4 Fine Tune
Osc 1 Key Track
Osc 2 Key Track
Osc 3 Key Track
Osc 4 Key Track
Osc 1 KS to Freq
Osc 2 KS to Freq
Osc 3 KS to Freq
Osc 4 KS to Freq
Osc 1 Filter On Off
Osc 2 Filter On Off
Osc 3 Filter On Off
Osc 4 Filter On Off
Osc 1 Filter Cutoff
Osc 2 Filter Cutoff
Osc 3 Filter Cutoff
Osc 4 Filter Cutoff

Osc 1 Filter Resonance
Osc 2 Filter Resonance
Osc 3 Filter Resonance
Osc 4 Filter Resonance
Frequency Filter Mod Source
Frequency Filter Mod Destination
Frequency Filter Mod Amount
Osc 1 Low Key
Osc 2 Low Key
Osc 3 Low Key
Osc 4 Low Key
Osc 1 High Key
Osc 2 High Key
Osc 3 High Key
Osc 4 High Key
Phaser On Off
Phaser Rate
Phaser Depth
Phaser Feedback
Phaser Center
Phaser Spread
Phaser Mix
Rotary On Off
Rotary Speed
Rotary Horn Acceleration
Rotary Horn Slow
Rotary Horn Fast
Rotary Horn Amp Mod
Rotary Horn Freq Mod
Rotary Crossover
Rotary Bass Acceleration
Rotary Bass Slow
Rotary Bass Fast
Rotary Bass Amp Mod
Rotary Balance
Rotary Mic Angle
High Low Pass Filter On Off
High Low Pass Filter Mode
High Low Pass Filter Cutoff
High Low Pass Filter Resonance
Octave
Pan
Volume
Poly Mode On Off
Key Pan On Off
Limiter On Off
HF Correction On Off
Sustain Pedal Mode
Glide Mode
Glide Time
Glide Mod Source
Glide Mod Destination
Glide Mod Amount