



## Grain Cooler



**Grain Cooler** generates polyphonic streams of short grains. Each stream contains a frozen or stretched granulation of the input sound.

**Grain Cooler** runs on **Ableton Live 9.6** (or newer) with **Max for Live (Max 7.2)**. Please note that you need both Ableton Live and Max for Live to use this device. It is compatible with both Mac and Windows platforms.

### PARAMETERS

The Grain Cooler interface is divided in 4 panels from left to right.

#### FIRST PANEL

**PanWidth:** sets the stereo spread of the grains.

**Env Smooth:** this parameter sets the attack and decay phases of the envelope of each stream (see below, second panel). When it is 0 they are very fast (10 milliseconds), when it is 1 each phase lasts for half the stream duration: f.i. if the stream duration is 3 seconds and the Env Smooth parameter is 1, the attack and decay duration is 1.5 seconds each, and the envelope is actually triangular.

**Dry/Wet:** sets the Dry-Wet balance.

#### SECOND PANEL

**Granul.:** Duration of the grains inside the stream. The **Var** parameter on the right specifies a random variation of the Granulation parameter for each stream.

**Duration:** duration of a stream. The **Var** parameter on the right specifies a random variation of the Duration parameter.

**Scan:** this parameter sets a stretching factor for the granulation of each stream. When it is 0 the sound is frozen (i.e. a small fixed portion of the input sound is repeatedly granulated), when it is 1 the granulated sound can advance in time at the same rate of the input sound. For parameter values > 0 the Scan value for each stream is randomly chosen between 0 and the actual parameter.

**Probab.:** the probability a stream is generated.

**Density:** sets the density of simultaneous streams produced.

### THIRD PANEL

**Wob Freq:** the amplitude of each stream can be modulated by a “wobbler” (a sinusoidal LFO). This parameter sets the wobbler frequency. The **Var** parameter on the right specifies a random variation of the wobbler frequency.

**Wob Depth:** when this parameter is 0 the wobbler has no effect. For values > 0 the effect increases and at 1 a full amplitude modulation is applied. For values > 1 the stream is periodically interrupted by the wobbler. The **Var** parameter on the right specifies a random variation of the wobbler depth.

**Feedback:** this is a multiplier for the amplitude of the stream which is sent back to the granulator.

**Fb Damp:** this is a damp factor for the feedback when there is no input signal.

### FOURTH PANEL

**Filter Freq:** cutoff frequency of the filter. The **Var** parameter on the right specifies a random variation of the cutoff parameter.

**LP, HP, BP switches:** select a low pass, high pass or band pass filter. When two or three switches are on, a different filter is randomly used for each grain.

**Filter Dry/Wet:** Dry-Wet balance for the filter section.

## **Grain Cooler**

### **Requirements**

**Platform: Mac / Windows**

**Software: Ableton Live 9.6 with Max for Live (Max 7.2)**



## Grain Crusher 2



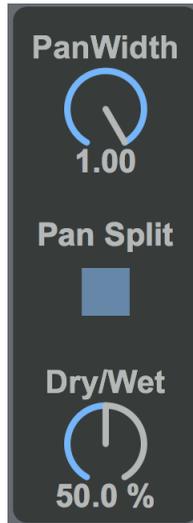
**Grain Crusher 2** is a Max for Live device which performs "Extreme Grain Manipulation". It is a noise and glitch FSU audio effect: you can get a lot of strange and unique sounds from its 3 processing modules: the Delay Modulator, the Grain Mangler and the External Feedback Loop.

**Grain Crusher 2** runs on **Ableton Live 9.6** (or newer) with **Max for Live (Max 7.2)**. Please note that you need both Ableton Live and Max for Live to use this device. It is compatible with both Mac and Windows platforms.

## Grain Crusher 2 parameters:

The device interface is divided in 5 sections: Input/Output, Grain Generation, Grain Mangler, Delay Modulator and External Feedback Loop.

### INPUT/OUTPUT



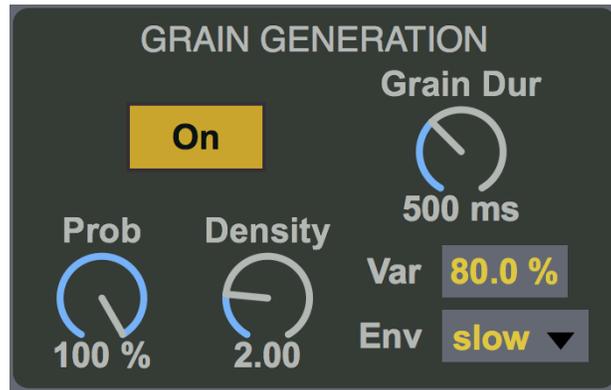
### I/O PARAMETERS

**PanWidth:** sets the stereo spread of the grains.

**Pan Split:** when this switch is on the grains are panned only to the extreme right and left positions. How "extreme" they are depends on the PanWidth parameter.

**Dry/Wet:** sets the Dry-Wet balance.

## GRAIN GENERATION



In this section you can activate and deactivate the grain generation, and set the grain density, duration and envelope.

### PARAMETERS

**On/Off switch:** Start and stop grain generation.

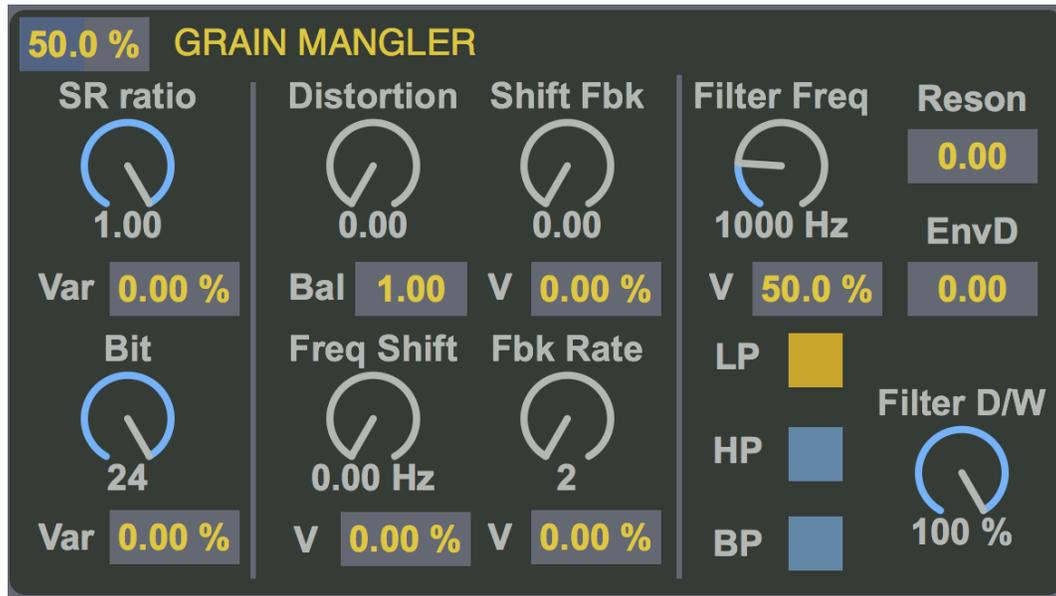
**Grain Dur:** the duration of a single grain. The **Var** parameter below specifies a random variation of the duration (in this case each grain can be 0.5 seconds long  $\pm$  80%, i.e. any value from 0.1 to 0.9 seconds).

**Prob:** the probability a grain is generated.

**Density:** sets the average number of simultaneous grains produced.

**Env:** the shape of the grain envelope: *perc* is a percussive envelope with exponential decay, *slow* is a sinusoidal envelope, and *rev* is the percussive envelope reversed.

### GRAIN MANGLER



This section's parameters are divided into three subsections: a) Bit Crusher, b) Frequency Shift/Distortion, c) Filter.

The upper left numeric parameter sets the percentage of processing applied (it is a sort of local dry-wet).

#### PARAMETERS

##### a) Bit Crusher subsection

**SR Ratio:** this is an undersample parameter. When it is 1 the sample frequency is not changed, when it is 0.5 it is halved (i.e. if the actual sample frequency is 44100 hz, it is downsampled to 22050 hz), and so on. The **Var** parameter below specifies a random variation of the SR Ratio parameter.

**Bit:** sets the bit depth, from 1 to 24. The **Var** parameter below specifies a random variation of the Bit depth parameter.

##### b) Frequency Shift/Distortion subsection

**Distortion:** sets the amount of non-linear distortion for the grains.

**Shift Fbk:** a feedback factor for this module. The **V** (Var) parameter below specifies a random variation of the feedback.

**Freq Shift:** sets the frequency shifting for the grains. The **Bal** (Balance) parameter above sets the mixing between positive and negative shifting. When it is 1 it is 100% positive, 0 is 50% positive and 50% negative (i.e. it is similar to a ring modulation) and -1 is 100% negative. The **Var** parameter below specifies a random variation of the Freq Shift parameter.

**Fbk Rate:** how many times the audio is feed back during the grain generation. F. i. if the grain length is 1 second and this parameter is 10, the audio is feed back 10 times in 1 second, once every 1/10 of second. The **Var** parameter to the right specifies a random variation of the feedback-rate parameter.

### c) Filter subsection

**Filter Freq:** cutoff frequency of the filter. The **V** (Var) parameter below specifies a random variation of the cutoff parameter.

**Reson:** resonance (Q) factor for the filter (from 0 to 1).

**EnvD:** the actual cutoff frequency can be modulated by an envelope follower. With positive values (up to 1) the frequency **increases** when the amplitude rises, with negative values (down to -1) the frequency **decreases** when the amplitude rises.

**LP, HP, BP switches:** select a low pass, high pass or band pass filter. When two or three switches are on, a different filter is randomly used for each grain.

**Filter D/W:** Dry-Wet balance for the filter section.

## DELAY MODULATOR



This section shows the parameter for the Delay Modulator effect. The audio input is routed in an LFO controlled variable delay.

The upper left numeric parameter sets the percentage of processing applied (it is a sort of local dry-wet).

### PARAMETERS

**LFO:** the frequency of the random LFO, which controls the delay time of the grain. The **Var** parameter on the right specifies a random variation of both the LFO frequency and the Delay Depth (see below).

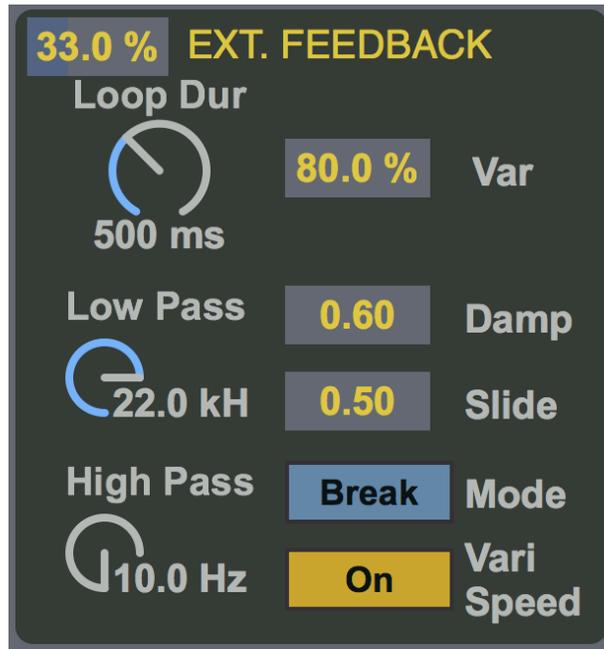
**Linear/Cubic switch:** when *Linear* is selected, the random LFO generates a linear interpolated waveform; this gives a fixed variation of the grain pitch. When *Cubic* is selected, the random LFO generates a cubic interpolated waveform; this gives a continuous glissando of the grain pitch.

**Depth:** the maximum delay controlled by the LFO. The value is relative to the grain length.

**MinDel:** the minimum delay controlled by the LFO. It is a fixed value and is relative to the grain length.

**Mod Fbk:** Feedback value for the delay. The **Var** parameter on the right specifies a random variation of the feedback parameter.

### EXTERNAL FEEDBACK LOOP



This circuit is not "inside" the grains, like the other two, but "outside": the audio produced by the grains is delayed and feed back into the effect input.

The upper left numeric parameter sets the percentage of external feedback applied.

#### PARAMETERS

**Loop Dur:** this is the delay length. The **Var** parameter on the right specifies a random variation of the delay. The rate of the variation is given by the parameter itself: i.e. if the duration is 2 seconds and the variation is 50%, the actual duration varies between 1 and 3 seconds, at a random rate between 1 and 3 seconds.

**Low Pass, High Pass:** the loop signal is processed by two filters in series.

**Damp:** this is a damp factor for the feedback when there is no input signal.

**Slide:** this parameter sets a slide factor in the transition between delay durations: when the parameter is 0 the change is instantaneous, when it is 1 is continuous.

**Mode:** two different effects for the delay variation. *Break* mode occasionally stops the audio in the circuit, *Smooth* mode does not stop the audio.

**Vari Speed:** when on, the delay variation changes the audio pitch, when off the pitch is not modified.

## **Grain Crusher 2**

### **Requirements**

**Platform: Mac / Windows**

**Software: Ableton Live 9.6 with Max for Live (Max 7.2)**



## Grain Reverser 2



**Grain Reverser 2** granulates the input sound and reproduces it in reverse. It has a feedback circuit and a multi-mode filter. It can create a wide variety of effects, from psychedelic reversed sounds to ethereal resonances to massive harmonic transpositions.

**Grain Reverser 2** runs on **Ableton Live 9.6** (or newer) with **Max for Live (Max 7.2)**. Please note that you need both Ableton Live and Max for Live to use this device. It is compatible with both Mac and Windows platforms.

### PARAMETERS

The Grain Reverser 2 interface is divided in 5 panels from left to right.

#### FIRST PANEL

**PanWidth:** sets the stereo spread of the grains.

**Pan Split:** when this switch is on the grains are panned only to the extreme right and left positions. How "extreme" they are depends on the PanWidth parameter.

**Dry/Wet:** sets the Dry-Wet balance.

#### SECOND PANEL

**On/Off switch:** Start and stop grain generation.

**Prob:** the probability a grain is generated.

**Density:** sets the average number of simultaneous grains produced.

### THIRD PANEL

**Grain Dur:** the duration of a single grain. The **V** (Var) parameter below specifies a random variation of the duration (in this case each grain can be 0.5 seconds long  $\pm$  80%, i.e. any value from 0.1 to 0.9 seconds). The **R** (Ratio) parameter sets the portion of the grain which is actually playing: when it is 100% the grain is playing for the whole duration, at 50% the grain is playing for half duration (and the remaining half is silent) and so on.

### FOURTH PANEL

**Feedback:** this is a multiplier for the amplitude of the grain which is sent back to the granulator.

**Fb Damp:** this is a damp factor for the feedback when there is no input signal.

### FIFTH PANEL

**Pitchmin, Pitchmax:** tset the minimum and the maximum pitch shifting of the grain. The actual value is chosen randomly in the given Pitchmin-Pitchmax range.

**Pitch Split:** when this switch is ON the possible pitch values are only those set by the Pitchmin and Pitchmax , when it is OFF the pitch shift can be any value in the given Pitchmin-Pitchmax range.

**Filter Freq:** cutoff frequency of the filter. The **Var** parameter below specifies a random variation of the cutoff parameter.

**Lowpass, Highpass, Bandpass switches:** select a low pass, high pass or band pass filter. When two or three switches are on, a different filter is randomly used for each grain.

**Filter D/W:** Dry-Wet balance for the filter section.

## Grain Reverser 2

### Requirements

**Platform:** Mac / Windows

**Software:** Ableton Live 9.6 with Max for Live (Max 7.2)