



# HIVE 2



## USER GUIDE

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HECKMANN AUDIO GMBH – BERLIN

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# Introduction

## Installation

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Go to the [Hive](http://www.u-he.com) page at [www.u-he.com](http://www.u-he.com), download the appropriate installer for your system and unzip the compressed file. Open the “Hive” folder and start the installer application. The only demo restriction is a mild crackling sound at irregular intervals after about two minutes of use, which will disappear after you have entered a serial number.

By default, recent versions of Hive use the following directories:

<b>Win</b>	presets (local)	<code>C:\Users\*YOU*\Documents\u-he\Hive.data\Presets\Hive\</code>
	presets (user)	<code>C:\Users\*YOU*\Documents\u-he\Hive.data\UserPresets\Hive\</code>
	preferences	<code>C:\Users\*YOU*\Documents\u-he\Hive.data\Support\ (*.txt files)</code>
	microtuning	<code>C:\Users\*YOU*\Documents\u-he\Hive.data\Tunefiles\</code>
<b>Mac</b>	presets (local)	<code>Macintosh HD/Library/Audio/Presets/u-he/Hive/</code>
	presets (user)	<code>~/Library/Audio/Presets/u-he/Hive/</code>
	preferences	<code>~/Library/Application Support/u-he/com.u-he.Hive... (*. * files)</code>
	microtuning	<code>Macintosh HD/Library/Application Support/u-he/Tunefiles/</code>
	other resources	<code>Macintosh HD/Library/Application Support/u-he/Hive/</code>

## About the VST3 version

To fully comply with the official VST3 standard we had to remove MIDI Learn functions from the VST3 version. Although the MIDI Learn page is still visible there, nothing actually works because VST3 doesn't recognize raw MIDI. However, MIDI remote control assigned in another format will be adopted, which means that you can set up your controllers once using the VST2, AU or AAX plugin, then replace that with the VST3 version.

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## Online resources

For downloads, news articles and support, go to the [u-he website](http://www.u-he.com)

For lively discussions about u-he products, go to the [u-he forum](http://www.kvr.nl) at KVR

For friendship and informal news updates, go to the [u-he facebook page](https://www.facebook.com/uhe)

For u-he presets (commercial and free), go to the [u-he preset library](http://www.u-he.com/preset-library)

For u-he video tutorials and more, go to the [u-he youtube channel](https://www.youtube.com/channel/UC...)

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## The u-he team 2019

Urs Heckmann (code, vision); Sascha Eversmeier (code, bad puns); Howard Scarr (presets, manuals, necessary grump); Rob Clifton-Harvey (interwebz, support); Sebastian Greger (GUI design, 3D stuff); Jan Storm (framework, more code); William Rodewald (student life-support code); Viktor Weimer (support, presets, the voice); Thomas Binek (QA, bug-hunting, presets); Jayney Klimek (office management); Alf Klimek (tagging, repairs); Henna Gramentz (worldly supervision); Dario Lupo (marketing, web design); Frank Hoffmann (more framework, browser); Alexandre Bique (Linux ports); Oddvar Manlig (everything else!)

Special thanks to Brian Rzycki for maintaining [PatchLib](https://github.com/brianrzycki/patchlib).

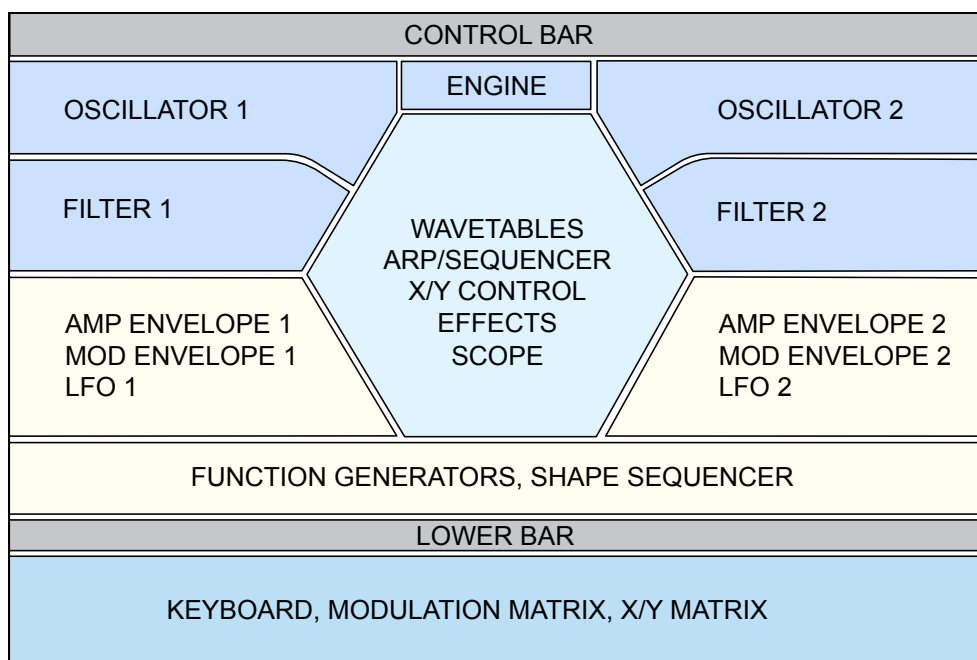
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For our terms of use and more, please refer to the **ReadMe** text that came with the installer.



## User Interface

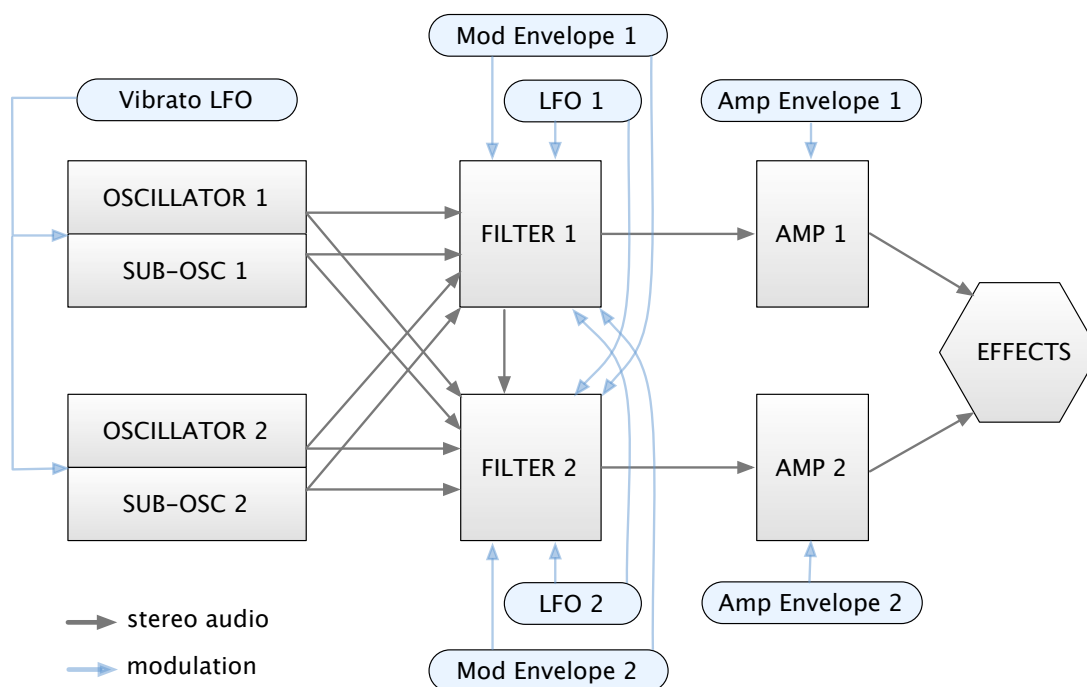
Here's an overview of the panels, followed by some important details about Hive's controls.



The symmetrical arrangement wasn't purely an aesthetic decision as it also encourages users to layer two relatively simple voices: A powerful approach to synthesizer sound design with a grand tradition (see e.g. Yamaha CS80, Korg 800 DV).

## Basic Elements

Dark grey arrows in this diagram represent stereo signals, while the blue arrows are modulation paths which are immediately available without requiring the modulation matrix.



## Knobs / Sliders

All controls react consistently to left-click & drag up/down, while a right-click will open a context menu. To reset a parameter to its default, either double-click or hold down **alt** (Mac) or **Ctrl** (PC) then single-click. You can **FINE TUNE** the value of any continuous parameter by holding down SHIFT on your computer keyboard before clicking on the control or rolling your mouse wheel!

## Parameter Locking

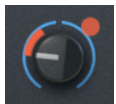


To guarantee that a parameter value doesn't change when you switch presets, you can lock most of the controls in Hive. Right-click on any control and select the last entry (usually the only entry) in the context menu. Remember that locked parameters can still be adjusted manually.

## Drag & Drop Modulation

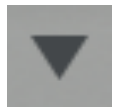


You can populate the [modulation matrix](#) remotely by dragging a crosshair icon from an LFO, MOD, AMP, SHAPE or FUNCTION panel, or from a source in the lower bar (wheels, pressure, velocity etc.) onto a modulation target. You might be surprised at how many valid target there are: For instance, try dropping the LFO1 crosshair onto the OSC 1 Waveform graphic when *Pulse* or *Wavetable* is selected there. Look in the matrix!



Depth controls (orange dots) and range indicators (orange arcs or lines) will appear at most targets. Click and drag on the dot to adjust the modulation depth (the same as adjusting the corresponding knob in the mod matrix), and double-click to reset.

## Panel Presets



Next to each panel's label is a downward-pointing triangle you can click to copy, save or load panel presets. Note: The Panel Preset selectors for ARP/SEQ and FX appear as fields containing the name of the currently loaded preset. To locate panel presets on your hard disk, select *reveal in Finder* (Mac) / *open in Explorer* (Win).

## Solo Buttons



To the right of each title in the oscillator and filter panels is a button labelled 'S', which stands for Solo. Just like on an audio mixer, activating Solo isolates a module so that you can check its contribution to the overall sound.

## GUI Size

Hive can be instantly resized in 10% steps between 70% and 200%: Right-click anywhere in the background and choose a different size from the context menu. Note that you can set a more permanent **Default Size** in the [Preferences](#) panel.

## Control Link



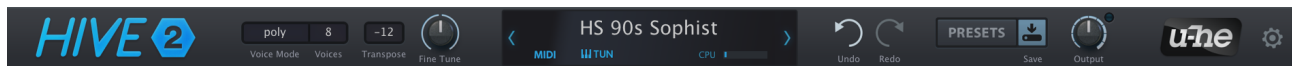
The button between Filter 1 and the hexagon links certain controls on the right of the hexagon to those on the left. Linked controls are marked with a blue (L). Note that all movement is relative: the knob on the right will not necessarily adopt the same absolute value as its 'master' on the left.

# Performance

Hive recognizes pitch bending, modulation wheel and pressure (including polyphonic aftertouch). Several of the factory presets also respond to **Control A** and **Control B** messages, general purpose MIDI controls set to *Breath* and *Expression* by default. See [MIDI Specialities](#). And remember: the XY pads are fun!

## Control Bar

Hive's top panel hosts a number of global parameters plus a few utility functions:



### Voice Mode

The *poly* option is polyphonic, *mono* is monophonic with retrigger, *legato* is monophonic without retrigger. In *duo* mode, oscillator 1 only responds to the lowest played note while oscillator 2 only responds to the highest played note.

### Voices

This sets the maximum number (2-16) of voices that can be played simultaneously.

### Transpose

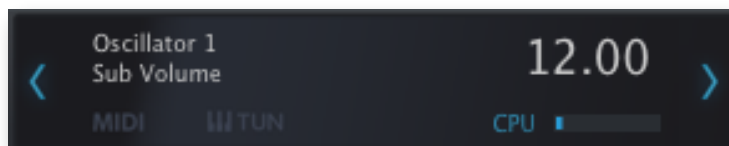
Semitone (+/- 24) pitch offset for the preset.

### Fine Tune

Cents (+/-100) pitch offset for the preset. 100 cents = 1 semitone.

### Data Display

The central text display has several duties, most of which have to do with presets...

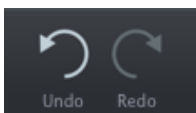


**Preset selection:** The data display normally shows the name of the current preset: Click on the arrows on either side to step through them. Clicking in the middle lets you select any preset in the current directory. While a parameter is being adjusted the display shows its name and value, as in the above image. After a few seconds of inactivity, the name of the preset reappears.

**Initialize preset:** Whenever you want to program a new sound from scratch, simply right-click on the data display and select *init*.

**Status Indicators:** At the bottom of the data display you will see a row of indicators. The MIDI activity indicator flashes whenever MIDI data is being received. The TUN symbol turns blue if microtuning is active. The horizontal bar on the right indicates the approximate CPU usage.

### Undo / Redo



Click on the curved arrows to UNDO or REDO an action. You can even undo a change of preset so that you don't lose edits made to the previous one. If an UNDO or REDO step is available, the arrow will be highlighted white.

### Presets



Opens and closes Hive's browser. See the Preset Browser chapter.

### Save

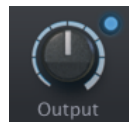


Stores the loaded preset in either the **User** folder or the currently open folder, depending on the status of the **Save Presets To** [preference](#). If you loaded the VST2 version you will also see the option *.nks* in the list. See the NKS chapter.

Right-clicking on the [SAVE] button lets you select the preset format you will be using. Standard is **.h2p**, which has the great advantage of being cross-platform compatible. The **.h2p extended** format is similar but also allows per-line comments (the preset files are therefore a bit larger).

Clicking on the final *Tag this patch* entry opens a window where you can specify one or more Categories, Features and Characters for the currently loaded preset. See [Preset Tagging](#).

## Output



This is Hive's main volume control, accompanied by a signal level indicator.

Most of the factory presets have Output set to 100. Higher values can be used to boost very quiet signals up to 'normal' levels.

## u-he Badge



Click on the badge to open a popup menu containing links to this guide, to our website, to our support forum at KVR as well as our address in various social networks.

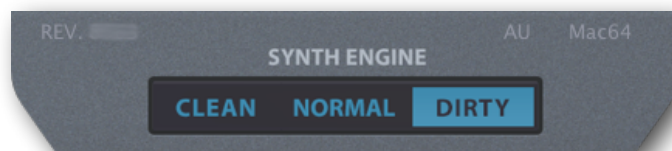
## Configuration cogwheel



Clicking on the cogwheel symbol top-right opens the configuration pages where you can set up remote control (via MIDI CC) as well as various global preferences. For details, read the [Configuration](#) chapter.

# Synth Engine

The selector above the hexagon lets you choose one of 3 fundamentally different synth characters. Your choice here simultaneously affects various parts of Hive.

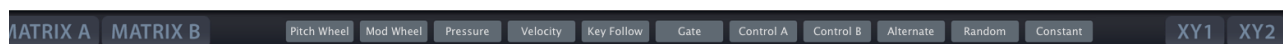


**CLEAN**.....Wide oscillator detune, linear envelope attack, exponential decay and release, linear (i.e. non-distorting) state-variable filter.

**NORMAL**.....Exponential oscillator detune, s-curve envelope attack, short decay, over-sampled self-oscillating ladder filter with non-linear resonance.

**DIRTY**.....Evenly-spaced oscillator detune, exponential envelope stages, oversampled self-oscillating diode ring filter. Very "non-linear" and unpredictable.

## Lower Bar



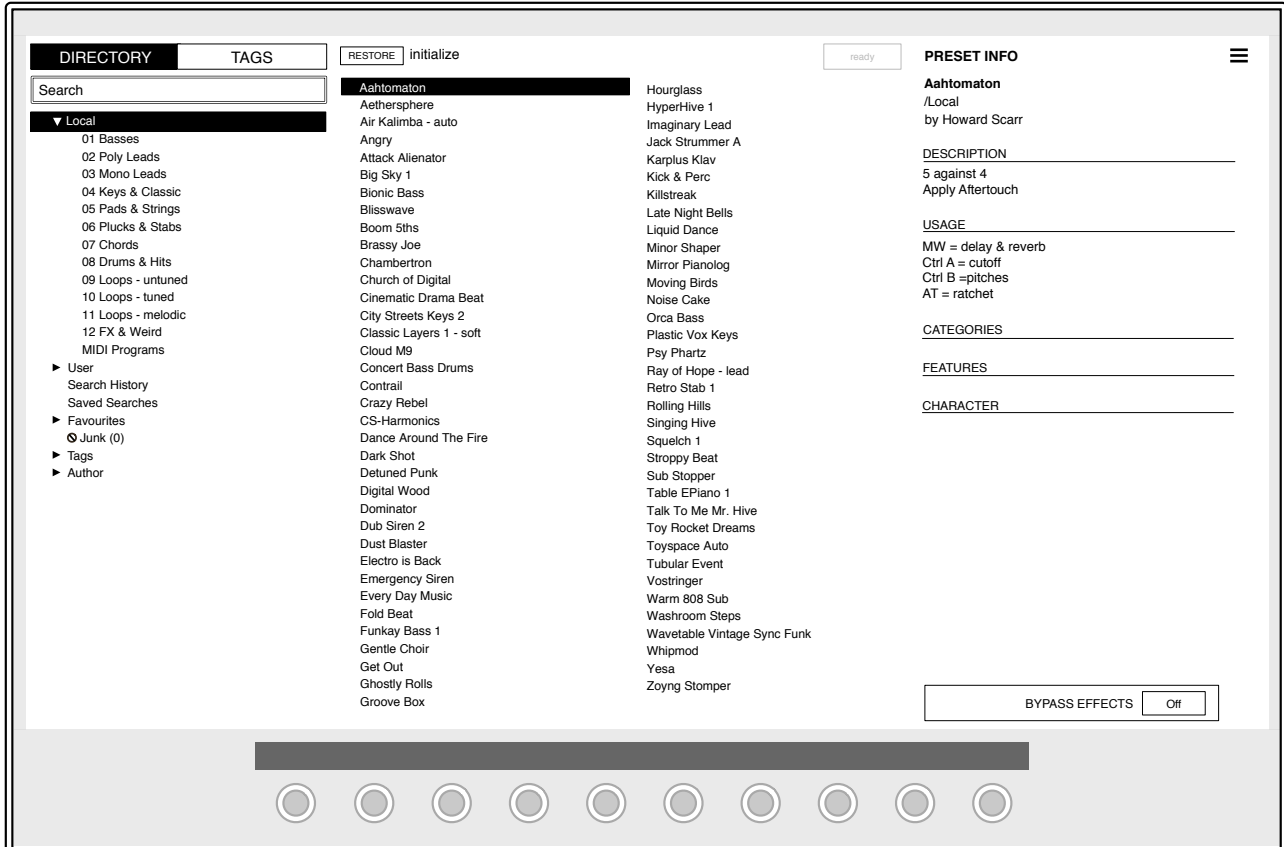
Below the main panels, on the far left and right of the narrow bar are **view selectors** for the bottom panel. You can choose between [KEYS](#), [MATRIX A](#), [MATRIX B](#) or [XY](#) pad custom assignment.

In the centre is a row of sources for drag & drop modulation assignment: *Pitch Wheel*, *Mod Wheel*, *Pressure*, *Velocity*, *Key Follow*, *Gate*, *Control A*, *Control B*, *Alternate*, *Random*, *Constant*.

# Preset Browser

## Overview

To open Hive's preset browser, click on the **PRESETS** button in the upper bar.



Folders appear on the left, presets appear in the centre and information about the currently active preset appear on the right. If you can't see any presets at all, click on *Local*. If you can't see the PRESET INFO panel, click on the button in the top right and select *Show Preset Info*.

The *Local* root directory contains a representative selection of presets copied from the subfolders. After selecting a preset here you can step through the others using your computer's cursor keys.

Bottom right is an effects bypass switch so you can compare presets with and without effects. The lower panel mirrors the XY pad controls so you can also test those while browsing.

If you want the preset browser to open automatically every time you load a new instance of Hive, right-click on the [PRESETS] button while the browser is active and select *set current as default*. To revert to showing the synth panels by default, do the same after closing the browser.

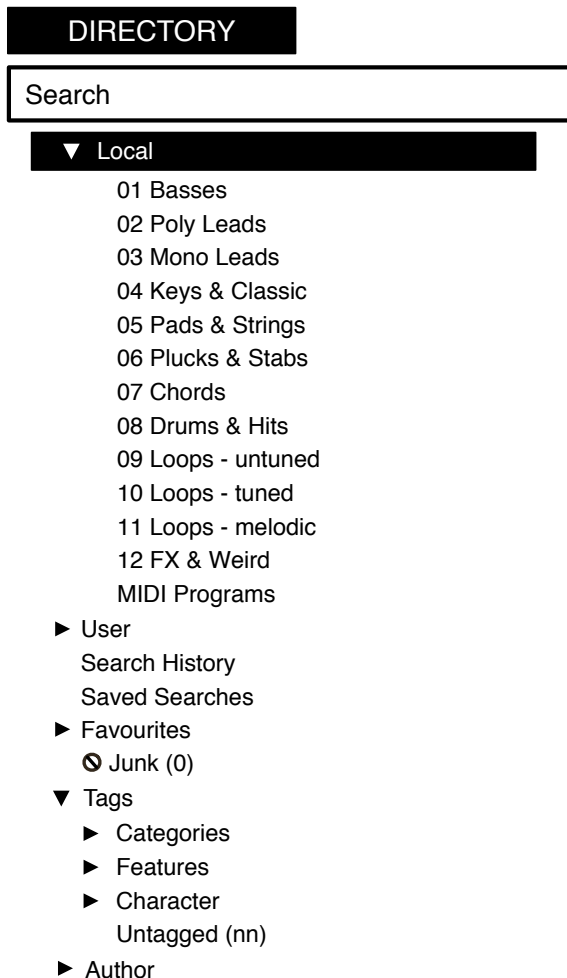
## Default preset

Whenever Hive is started it checks whether the Local root contains a preset called *default*. If this file exists, it is loaded instead of the demo preset. Note that *default* will not appear in the browser.

If you want Hive to start with a simple template instead of the default preset, right-click on the data display and select *init* (initialize). Check that the 'Local' root directory is currently open then [SAVE] your preset under the name *default*. If a fresh instance of Hive doesn't automatically load your new preset it probably landed in 'User' instead of 'Local'. If so, go into the [Preferences](#) and change the [Save Presets To](#) option to *selected folder* instead of *user folder*, then repeat the above.

# Directory Panel

If you don't see this panel on the left of Hive's Presets browser, click on the DIRECTORY tab.



## Local

Hive's factory presets are sorted into folders 1 through 12. We recommend that you do not add or remove presets here, but save all your creations and other soundsets in 'User' (see below).

### MIDI Programs

'Local' also contains a special folder called 'MIDI Programs' which is normally empty. When the first instance of Hive starts, up to 128 presets from that folder are loaded into memory, to be selected via *MIDI Program Change* messages. For more details, see [MIDI Specialities](#) towards the end of this document.

Note: Hive version 1.x included an extra folder called TREASURE TROVE containing presets kindly submitted by Hive fans shortly before the official release. Several of these have now been polished in-house and included in the version 2 factory presets, while the others are available as a separate download from [Patchlib](https://u-he.com/community/patchlib/) (u-he.com/community/patchlib/).

## User

The best address for your own creations as well as soundsets from other sources. You can either select *User* immediately before saving the preset, or set a global preference which ensures that it will always be saved to this folder – see the *Save Presets To* preference.

Tip: It's worth finding out where the *User* folder actually resides on your computer. Right-click on *User* and select *reveal in Finder* (Mac) or *open in Explorer* (Win).

## Smart Folders

The other folders do not contain files, but display the results of querying a database of presets. The content is therefore dynamic i.e. it will change whenever the underlying data changes.

### Search History

Click on this folder to display the results of past searches (maximum 10). Whenever you need to make the results of a search more permanent, right-click and select *save Search...* The entry will be moved to the *Saved Searches* folder – see below. To remove all searches from the list, right-click on the *Search History* folder and select *clear*.

### Saved Searches

This folder contains searches that have been saved via right click from *Search History*. To remove individual saved searches, right-click on the search and select *delete*.

Tip: Entries dragged from *Saved Searches* and dropped onto real folders within *Local* or *User* will create a folder containing copies of all found presets!

### Favourites

8 smart folders, one for each *Favourite* colour. See *Presets context menu* on the next page. Presets dropped onto one of the *Favourites* folders will be marked as such.

### Junk

A smart folder pointing to all *junked* presets. See *Presets context menu* on the next page. Presets dropped onto this folder will be junked, and will therefore disappear from the rest of the browser unless made visible (see *show junk* in the *Presets context menu*).

### Tags

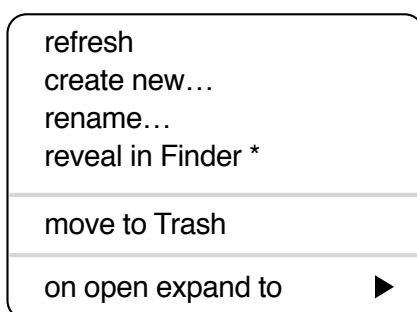
Smart folders for each Category/Subcategory, Features and Character tag. Presets dropped onto these folders will adopt the corresponding tag. Presets dropped onto the *Untagged* folder will have all Category/Subcategory, Features and Character tags removed.

### Author

Smart folders for each Author. Tip: Instead of signing each of your creations, you could sign just one of them, then select them all and drag them onto *Author/(You)/*. As the process cannot be undone, please use this feature with caution!

## Directory context menu

Right-clicking on any folder within *Local* or *User* will open this menu:



**refresh:** Update the contents of the browser. This is necessary after you have moved, added, removed or renamed any folders or presets using Explorer / Finder.

**create new:** Insert an empty subdirectory.

**rename:** Edit the folder name.

**reveal in Finder / open in Explorer:** Opens a system window for the clicked folder. After adding, removing or renaming preset files or folders outside of Hive's own browser, remember to refresh the directory (see *refresh* above).

**move to Trash / Recycle Bin:** Moves the selected folder to the system trash.

**on open expand to:** These options determine how deeply the browser will open subdirectories whenever the GUI is (re)opened or the refresh function is called. The first *none* option collapses all folders, while the final *all levels* option reveals all nested folders.



## Presets Panel

The central, unlabelled area of the browser is where you click to load presets...

### Presets context menu

Right-click to open a menu containing functions that can be applied to individual presets.



**mark as favourite:** Choose one of eight 'favourite' marks. The selected entry in the menu will be replaced with *unmark as favourite*.

**mark as junk:** Instead of deleting any unloved presets, you can mark them as 'junk' so that they disappear from the browser...

**show junk:** Activate this option to display junked files (see above) instead, but mark them with a STOP symbol.

**select all, deselect:** See *Multiple Selection* below.

**rename:** You can change the names of presets using this function. Note that only the most recently selected preset can be renamed i.e. you can't rename multiple files at once.

**copy to User folder / duplicate:** The entry here depends on the status of the *Save Presets To* [preference](#) as well as on the location of the source preset(s) i.e. whether they are in the Local or the User folder. Selected presets are copied with a number appended to the name, which increments (just like the 'Auto Versioning' option) so that no preset can be overwritten by mistake.

**reveal in Finder / open in Explorer:** Opens a system window for the selected preset. After adding, removing or renaming preset files outside of Hive's own browser, remember to *refresh* the directory.

**convert to native / h2p / h2p extended / nks:** Converts selected preset(s) into the format previously specified via right-click on the [SAVE] button.

**move to Trash / Recycle Bin:** Moves selected presets to the system trash.

### Restore

You can audition as many presets as you like in the browser without losing track of the one that was loaded immediately before you opened the browser: Clicking on [RESTORE] navigates to that preset and loads it again.

### Scan / ready

In the top right of the presets panel is a dark rectangle normally labelled 'ready'. Whenever you use the *refresh* function (see the *Directory context menu* on the previous page), this turns into a progress indicator showing the preset database being refreshed. The process should only take a few seconds, even for a large preset library.

### Multiple selection, drag & drop

A block of adjacent presets can be selected via shift+click, and individual presets can be added to the selection via command-click (Mac) / alt+click (Win). Presets can be moved to a different folder via drag & drop. Use SHIFT etc. on your computer keyboard to highlight the files you want to move, click and drag them from the files area and drop them onto a target folder. To deselect, either click on an unselected preset or choose deselect from the context menu.

Note: *unmark as favourite* (see *mark as favourite* above) will not appear in the presets context menu for multiple files unless you right-click on an existing favourite.

## Preset Tagging

**Tags** are elements of metadata, information added to presets so that they can be found easily.

### IMPORTANT

The tags are updated automatically – clicking on the [SAVE] button isn't required. The main advantage is that presets don't have to be saved every time you edit a tag. The disadvantage is that **you should only edit tags after saving your preset**.

For instance, if you decide to edit tags while creating a second version of an existing preset, please remember that you are actually changing the tags in the original preset!

### The Tagging Window

Right-click on the [SAVE] button and select *Tag this preset*:

Category		Features		Character	
Bass	Acoustic	Mono	Bright	Dark	
Pads	Analogue	Poly	Constant	Moving	
Leads	Digital	Duo	Clean	Dirty	
Keys	Dist+LoFi	Chord	Soft	Aggressive	
FX	E-Bass	BPM	Phat	Thin	
Drums	FX Bass	Modulated	Natural	Synthetic	
Seq+Arp	Plucks	Dry			
Other	Rhythmic	Percussive			
	Sub	Soft Attack			
	Sync	Slow Release			
	Synth	Glide			
	Vocal	Wavetable			

*Category* describes a preset by analogy to instrument types or typical usage, and each one has an appropriate set of subcategories. *Features* are technical classifications, and *Character* tags are pairs of opposites from which you can choose only one.

### Tagging via PRESET INFO

In the PRESET INFO panel, right-click on the *Category*, *Features* or *Character* and select or unselect tags from the menu...

Note: This method only works for individual presets. If you right-click on an existing tag, the first option in the menu becomes *remove tag*.

The function *create Search from Tags* finds all presets with exactly the same set of *Category*, *Features* and *Character* tags.

### Tagging via smart folder

You can tag presets by dropping ("drag & drop") any number of presets onto one of the *Tags* smart folders. To remove all tags, drag them onto the *Tags/Untagged* smart folder.

# Search Functions

## Search by Tags

Click on the TAGS tab to open this view. The buttons here let you set up search criteria according to existing tags with just a few mouse clicks:

TAGS

Search

CATEGORIES ^  

Bass Pads Leads Keys FX Drums Seq & Arp Other

FEATURES ^  

Mono Poly Duo Chord BPM Modulated Dry Percussive

Soft Attack Slow Release Glide Wavetable

CHARACTER ^  

Bright Dark Constant Moving Clean Dirty Soft Aggressive

Phat Thin Natural Synthetic

FAVOURITES ^  

1 2 3 4 5 6 7 8

Below the Search field are four sets of buttons (CATEGORIES, FEATURES, CHARACTER and FAVOURITES). The first three correspond to the tags in the tagging window (see the previous page), while the bottom row lets you find any presets you have tagged as *Favourites*.

Clicking on the [^] icon to the right of each heading hides the options for that set of tags.

## Categories and Subcategories

Especially for *Category* tags, following a step-by-step tutorial (see the next page) is much easier than studying a full technical description, so here are just a few pointers:

Each Category has its own set of subcategories which appear below the main categories. Click on [Leads] and see them appear. Not selecting a subcategory here means “show me presets tagged with **any** subcategory”. Selecting the top-left subcategory (which has the **same name** as the category) means “show me presets tagged **without any** subcategory”. You should not find any of these in the factory presets!

You can select multiple categories without specifying subcategories if you hold **command** (Mac) or **alt** (Windows) while clicking on the category button. Try that with the [Keys] button.

Completed category+subcategory tags appear below the subcategories as buttons with ‘off’ switches [X] so that you can add other main categories by simply clicking on them.

So far we have actually been *expanding* the search, which is not very useful...

## Search by Tags Tutorial

- Click on the DIRECTORY tab and open the *Local* root folder if it is closed. Double-click on the *Local/06 Plucks & Stabs* folder to limit the scope of the search to that particular folder. The selected path appears immediately below the *Search* field instead of preset folders.
- Click on the TAGS tab. In the Categories, select [Bass]. Subcategory buttons appear and the preset window is updated to list all presets in *06 Plucks & Stabs* that are tagged as [Bass]. In Hive 1.x there was only one, namely *XS Bubblegum*. In Hive 2 there are 3.
- Now click on [Keys]. The [Bass] category is switched off, and the preset window is updated to list all presets in *06 Plucks & Stabs* that are tagged as [Keys]. There are quite a lot of those! Note that you haven't specified a subcategory yet...
- Hold down the command (Mac) or alt (Win) key and click on the [Bass] category again. The [Keys] category remains highlighted and the list shows all presets in the *06 Plucks & Stabs* folder that have either of those tags, disregarding any subcategories.
- Click on the DIRECTORY tab again: The text "#Bass:\* #Keys:\*" appears in the editable field as well as in the *Search History* smart folder, followed by the number of found presets. The colon symbol ':' functions as a separator between Category and Subcategory, while the star (\*) means "any Subcategory, even none".
- Click on the TAGS tab. Select the [Leads] category without holding down *command/alt* this time. The [Bass] and the [Keys] tags are removed from the search. Select the [Digital] subcategory. The result is a list of all presets in the *06 Plucks & Stabs* folder that have the *Leads:Digital* tag. Below the subcategories you will see the complete tag in the form [Category:Subcategory|X].
- Let's get some more hits by including another subcategory: Click on the [Synth] subcategory. The tag [Digital] remains selected, and the list of hits is updated to include presets which have either of those tags. Click on [Digital] again and the tag search will find fewer presets – only those that are tagged as [Leads:Synth] in the *06 Plucks & Stabs* folder.
- Click the [Drums] category. Below the subcategories, the [Leads:Synth|X] tag remains in place because it is complete (Category with Subcategory). Check the tags in the PRESET INFO by clicking on presets in the central list: Each preset will include a *Leads:Synth* tag or a *Drums* tag (with any or no subcategory), or both.
- Click on the DIRECTORY tab. The text *#Drums:\* #Leads:Synth* appears in the Search field as well as the Search History smart folder. If you are feeling adventurous, you can try editing the characters in the Search field – after hitting Return, the results will be updated accordingly.
- To the left of the grey search path is an 'up' [^] symbol. Click on this to exit the current folder, which in this case changes the search path from *Local/06 Plucks & Stabs* to the *Local* root. The list now includes many more presets because the range of the search spans all of *Local*.
- Another click on [^] expands the scope to the entire preset library i.e. */Local* plus */User*. Note that clicking on the [X] symbol to the right of the search path will immediately exit any subfolder.
- Repeat the above a few times if necessary – you'll soon get the hang of it!

## Features, Character and Favourites

Unlike multiple Category tags which expand the search, these types **restrict** the search. As a practical example let's find all "thin" and "moving" presets with a slow release...

Click on the TAGS tab. If any Categories are highlighted, click on them. Select [Slow Release] feature, then the [Thin] and [Moving] characters. You should now see about 10 hits in the pre-sets panel – which is generally a good number to aim for while searching!

## Summary

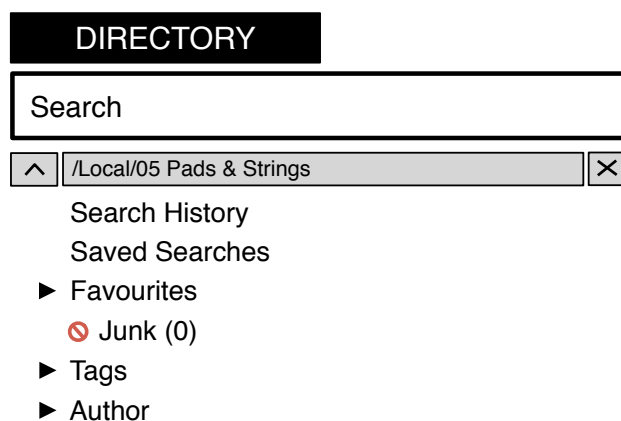
In the DIRECTORY panel, specify a search path via double-click. In the TAGS panel, select category tags. Add others if required to extend the search, but remember to hold down **command** (Mac) or **alt** (Windows) if you want to retain category tags that don't specify a subcategory. Select Features, Character and/or Favourites tags to refine the search. Remember to exit the search path (if there is one) afterwards!

## Search by Text

The **Search** field lets you find presets according to a string of characters i.e. text. Here's an easy example: If you remember that the preset you're looking for has the word "clock" in either its name or its description, simply enter *clock* into the Search field and hit Return...

The search normally looks into the preset name, author, the DESCRIPTION and USAGE (see the PRESET INFO panel). Searches are not case-sensitive, and quotes are not required unless you need to include spaces.

To restrict the search to a particular path, for instance *Local/05 Pads & Strings*, double click the *05 Pads & Strings* folder. This path will appear beneath the Search field instead of the preset folders, and you will only see smart folders plus any folders within the specified path:



The [^] button to the left moves the Search path up one level, in this case to */Local/*. The [X] button to the right expands the search path to include all Hive presets (i.e. 'Local' and 'User'), and all the regular preset folders will reappear.

Try a text search: Enter three or four letters then hit Return. For instance, *star* would find all files containing the text string *star* (e.g. *mustard* or *starters*). Entering "*star wars*" – with the quotes! – would find e.g. *Battlestar Warsaw* (if such a text string existed anywhere in the presets).

## Syntax

You can limit the scope of the search to just the preset name or specific parts of PRESET INFO by using **name** (preset name), **author**, **desc** (description) or **use** (usage) followed by a colon. For instance, *author:the* finds all presets by sound designers whose author names contain 'the'. Similarly, *desc:space* will find all presets with the word *space* in the description.

### Logical Operators

The following logical operators can only be used between text elements.

**AND** requires that presets contain both words. It can be written explicitly if you prefer, but is not necessary. For example, *star AND wars* (or simply *star wars*) will find presets that contain both *star* and *wars*.

**OR** means that presets can contain just one of the words or both. For example, *star OR ship* will find presets that contain *star* as well as presets that contain *ship*.

**NOT** excludes presets containing the word. To find all presets that contain *star* but don't contain *ship*, enter *star NOT ship*.

### Including Tags

Tags must appear after any text items.

Regular tags can also be entered into the search field if preceded with a '#'. For example, *name:"hs " #bass:\** will find all presets with "hs " in the name that are tagged as *Bass* with any or no subcategory. The colon separates Category and Subcategory, and the star (\*) means "any subcategory, even none".

Note: Between multiple tags of the same type is an implicit **OR**, while between different types is an implicit **AND**.

### Example searches

You could copy/paste these into Hive's search field and see what they find. Note that tags are automatically removed from the search field and appear as active tag buttons instead.

*desc:classic* = presets with the word "classic" in the description

*author:ark* = presets by Arksun

*use:"at =" author:how* = aftertouch-controlled presets by howard

*tuc OR xs #pads:strings* = strings by either The Unshushable Coktor or Xenos

*tuc OR NOT xs #pads:strings* = strings by The Unshushable Coktor or anyone except Xenos



# Panel Reference

This chapter describes all of Hive's main synthesis panels i.e. everything except the hexagon.

## Oscillator (OSC)

Hive's oscillators feature Unison ('hyperwave'), stereo panning and a freely tuneable sub-oscillator:



### Waveform

To change the waveform, click on the field above the graphic and choose from the menu:

The **Sine**, **Sawtooth**, **Triangle** and **Square** options are classic waveforms that shouldn't require further explanation. **Half** and **Narrow** are pulse waves with differing widths.

**Pulse** sounds like Square by default, but you can control *Pulse Width* (as indicated by the PWM label) in the matrix by dragging & dropping a modulation source onto the graphic. See [Hidden Parameters](#). **White** and **Pink** are two standard variants of noise: White is bright, Pink is darker.

**Wavetable** is Hive's most powerful oscillator mode. You can load special .wav samples or .uhm script files containing up to 256 *frames* i.e. waveforms.

Some basic parameters are available in the oscillator panel. The three **triangles** are for quickly selecting a wavetable file: The downward-pointing triangle opens the full menu while the others select the previous and next wavetable file in the directory. To adjust the frame **Position** within the current wavetable, click and drag vertically on the graphic display. The POSITION label also indicates that the graphic is the drag & drop target for Position modulation. For other wavetable parameters, click on the WAVETABLE buttons in the hexagon and read the [Wavetables](#) chapter.

If you are interested in creating some of your own wavetables, check out *Hive Wavetables.pdf*, which you will find in the same folder as this user guide.

### Unison

Stacking multiple waves results in a richer sound, especially when detuned, at the cost of a higher CPU load. Note that Unison only works for the SUB waveform if it is set to *like Osc*.

### Octave / Semitone

Semitone tuning within a range of +/- 3 octaves. These settings apply to the entire oscillator i.e. the sub-oscillator's 'Tune' value is an offset relative to the Octave and Semitone settings.

Either Octave or Semitone is the drag & drop target for oscillator **Tune** (a [hidden parameter](#)).



## Phase

“Phase” is basically the horizontal position of a waveform. The switch here gives you a choice of three modes which govern oscillator phase at the start of each note:

*Reset* ..... For consistent / robotic attack. The phase in Reset mode is normally 0°, but this can be modulated (see *Real-time phase control* below).

*Random* ..... Phase is set to a random value whenever a note is played. Very organic.

*Flow* ..... The phase of a new note picks up where the previous one left off, so any beating between oscillators is continuous.

Although the difference between Random and Flow can be rather subtle, *Flow* is closest to how oscillators in a classic analogue polyphonic synth behave. For technical reasons, *Flow* works as described for the main oscillators only, not for the sub-oscillators (see the next page).

**Real-time phase control** is a [hidden parameter](#). If you drag & drop any modulation source onto the Phase selector, a Phase control assignment will appear in the modulation matrix.

## Detune

If ‘Unison’ is set to 1 this knob is a simple fine tune control: Oscillator 1 is tuned up and oscillator 2 tuned down within a range of one semitone.

If Unison is set to 2 or more, the multiple waves are detuned in opposite directions. In this case the sub-oscillator isn't affected unless its Waveform is set to *like Osc*.

It might not be obvious, but you can still fine tune the overall pitch of unison oscillators: In the modulation matrix, set the source to *Constant* and the target to *Tune*, then adjust the modulation amount while holding a SHIFT key.

## Width

If Unison (see above) is set to 2 or more, this controls the stereo width of the signal around the current pan position. If Unison is set to 1, the Width control has no effect.

## Pan

Controls the pan position of the oscillator, including sub-oscillator.

## Volume

The amount of main oscillator signal sent to the filters. The sub-oscillator has its own volume control. See also [Setting Volumes](#) in the Tips & Tricks chapter.

## Vibrato

The amount of cyclic pitch modulation from the [Vibrato LFO](#). Also applied to the sub-oscillator.

Tip: For typical vibrato via modulation wheel go into the modulation matrix, click on a panel pre-set button (downward-pointing triangle) and select *01 Vibrato via MW*.

## Sub-Oscillator (SUB)

### Waveform

The sub-oscillator's Waveform selector contains the same options as the main oscillator but without Wavetable. The extra option at the top of the list, **like Osc**, means that the sub-oscillator will inherit the Waveform and Unison settings from the main oscillator.

### Tune

Sub-oscillator tuning relative to that of the main oscillator. Hold down a SHIFT key to fine tune. The default is -12, an octave below the main oscillator.

### Volume

The sub-oscillator's own volume control. See also [Setting Volumes](#).

## Filter



### Filter Type

To swap out the filter type, click on the field above the graphic and select from the menu:

**Bypass**.....Disables the filter circuit. The oscillator input switches as well as the Input (dB) and output Volume controls remain functional while the Cutoff, Resonance, Mod and LFO controls have no effect.

**Lowpass**.....Removes high frequencies. Hive offers two lowpass 'strengths': **24** dB/octave and **12** dB/octave.

**Bandpass**.....Removes low and high frequencies, allowing a narrow band to pass.

**Highpass**.....Removes low frequencies.

**Bandreject**.....Removes a narrow band while allowing lower and higher frequencies to pass.

**Peaking**.....Like Bypass but with active resonance. Use this mode to accentuate a certain frequency e.g. for bass boost or mid-range 'honk'.

### Input Selectors

The [OSC1], [SUB1], [OSC2] and [SUB2] buttons select input signals for each filter. Filter 2 has an extra [F1] button, which is the filter 1 signal at full volume. If you want to use the filters 100% in series, turn filter 1 Volume down to zero and select the [F1] button only for filter 2.

## Cutoff

Everybody's favourite synthesizer control, 'Cutoff' is the knob most likely to show signs of wear and tear on old hardware synths! There's something very satisfying about manually sweeping the cutoff, especially with at least a bit of resonance...

## Resonance

Resonance is a filter-internal feedback loop that emphasizes the cutoff frequency. In the Synth Engine modes **Normal** and (especially) **Dirty**, the amount of resonance you will hear depends on the signal input – see Input Gain above.

## Input

In **Normal** or **Dirty** [synth engine](#) mode the filter's input gain not only controls the input volume (in decibels), but also the amount of non-linear distortion – an important characteristic of real analogue filters. In **Clean** mode it simply attenuates or boosts the level. See [Setting Volumes](#).

## Mod Env and LFO



The Mod Env knob adjusts cutoff modulation from the selected envelope (MOD1 or MOD2).

Tip: Turn Cutoff way up and try negative Mod Env values. This can take some getting used to. Experiment with the MOD settings until you are familiar with the 'upside-downishness' of it all!

Similarly, the LFO knob adjusts cutoff modulation depth from either LFO1 or LFO2. The knob is also bipolar so you can make the filters move in opposite directions without using up a slot in the modulation matrix. Tip: Set the LFO mode to *Gate* and experiment with LFO Phase.

## Key Follow

Cutoff modulation from **MIDI note** number. At 100% the cutoff point will track semitones played on your keyboard quite well.

Key Follow pivots around MIDI note 64, the E above middle C. All other notes are modulated up or down by Key Follow while the pivot note remains fixed.

## Volume

Filter output level. Does not affect the level of [F1] for filter 2. See also [Setting volumes](#).

## Envelopes (AMP / MOD)

Hive's envelopes are arranged in pairs, symmetrically either side of the hexagon. The outer panels (AMP) control amplifier envelopes while the inner ones (MOD) control the filter / general purpose modulation (MOD) envelopes:



### Trigger

The **Gate** option is for normal triggering via MIDI Note On.

**One-shot** triggering ignores gate length: The envelope always completes the Decay. Great for percussion sounds, fly-by effects, certain pads e.g. 'HS Bloom Pad'. It usually makes sense to set Sustain and Release to minimum in this mode, but you can use higher values to create an interesting 'Hold' effect: Try setting Sustain to about 50, then test extreme Decay values.

The **LFO1** and **LFO2** options retrigger the envelope from one of the LFOs. Unless you want a chaotically delayed trigger, don't set that LFO's Restart parameter to **random**.

### A D S R

The 4 sliders control **A**ttack time, **D**ecay time, **S**ustain level and **R**elease time. Note that each of the envelope stages can be modulated in realtime – see [Envelope Tricks](#).

### Velocity

How strongly the envelope's output is affected by MIDI velocity (e.g. how fast a key is struck). Note that modulating an envelope's Velocity in the matrix does not add to but **scales** the value you set here, so if the Velocity knob is set to zero no amount of modulation will affect the output.

## Low Frequency Oscillators (LFO)

Hive has two regular LFOs (low frequency oscillators):



### Waveform

Click on the field above the graphic and choose a shape from the menu: The options are **sine**, **triangle**, **saw up**, **saw down**, **sqr hi-lo** (square wave starting high), **sqr lo-hi** (square wave starting low), **rand hold** (stepped random wave) and **rand glide** (smooth random wave).

### Polarity [+]

Shifts the LFO wave 'upwards' so that it outputs positive values only. The absolute output level is halved so that the maximum value cannot be exceeded.

### Phase

Where (in the waveform) the LFO will start whenever a note is played. This setting is irrelevant if 'Restart' (see below) is set to **random**. Tip: To restart a Sine wave at the highest point set the Phase to 25.00, and for the Triangle set it to 50.00.

### Rate

Shifts the LFO speed relative to the selected Time Base (see below). The range is from -5 to +5: integer steps halve or double the speed.

### Restart

Selects rules for how LFO phase is reset.

**Sync**.....LFOs of all voices are synchronized to the host, so they all adopt the same phase. Unlike Single mode (see below), the phases can still be modulated apart by a 'polyphonic' source such as Velocity, KeyFollow or Random.

**Single**.....All voices share the same LFO, which is restarted at the next MIDI note after all previous notes have been released.

**Gate**.....Notes restart the LFO for each voice independently at the specified Phase.

**Random**.....Notes restart the LFO for each voice independently at a random phase, ignoring the value of Phase.

### Time Base

The basic 'speed mode'. Time Base offers non-synchronized times measured in seconds (**0.1**, **1s** or **10s**) as well as a long list of values that are synchronized to song tempo, including dotted times (50% longer) and triplets (3 in the space of 2).

## Function Generators

Inspired by our foray into the world of Eurorack modular synthesis, Hive 2 is equipped with a pair of **Function Generators** (FG):



Hive's FGs combine simple envelope functionality with LFO, slew limiter (a.k.a. envelope follower) and gate control. Each of the three outputs has its own 'crosshair' you can drag & drop onto any valid modulation target, onto the Scope or even the modulation matrix source fields.

Triggered and/or modulated by the LFOs, the [Shape Sequencer](#) and each other, Hive's Function Generators can create some truly *mind-bending* motion effects!

### A / D

**Attack** and **Decay** times. Maximum times are 4 seconds each (8 seconds in total), and the minimum times are short enough that a cycled FG can attain low audio rates.

### Slope

The curvature of both Attack and Decay, from exponential (low) through linear (centre) to logarithmic (high). Tip: View the *Env* output in the [Scope](#).

### Input

A modulation source used to trigger the FG every time the signal crosses zero (actually +2 for unipolar sources and PitchWheel) in the positive direction. Playing a note will also trigger the FG, regardless of the selected Input or Mode...

### Mode

#### Envelope

Attack-Decay envelope. A trigger during decay will start the attack from the current value. For a simple note-triggered envelope, set the Input to *none* and the Mode to *Envelope* or *One Shot*.

#### One Shot

Like *Envelope* except that the Input will not retrigger the FG until the previous decay is finished. *One Shot* can create a slower rhythm from a faster LFO – see [Function Generator Tricks](#).

#### Cycle (Trig)

Looping envelope. A trigger during decay will start the attack from the current value.

#### Cycle (OnOff)

Looping envelope. The loop only continues while the input signal is above zero, otherwise the output remains constant – with certain settings you will notice interesting steps in the decay.

## Follow

Practically a lag generator a.k.a. slew limiter. The Attack and Decay knobs give you independent response rates for rising and falling components of the input signal. Typical applications are rounding off square LFOs or smoothing aftertouch (see Tips & Tricks). The modulation matrix's own [slew limiter](#) does a similar job, but the Function Generators offer more control.

## Follow (Gate)

The *Gate* variant takes the idea further: It only follows the Input while a note is being held i.e. while the MIDI Gate is open. As soon as you release a note i.e. close the Gate, the FG's output will freeze at the current value. The release time of the amp envelope therefore plays a role here: with too short a Release you won't hear the effect.

## Gate Outputs

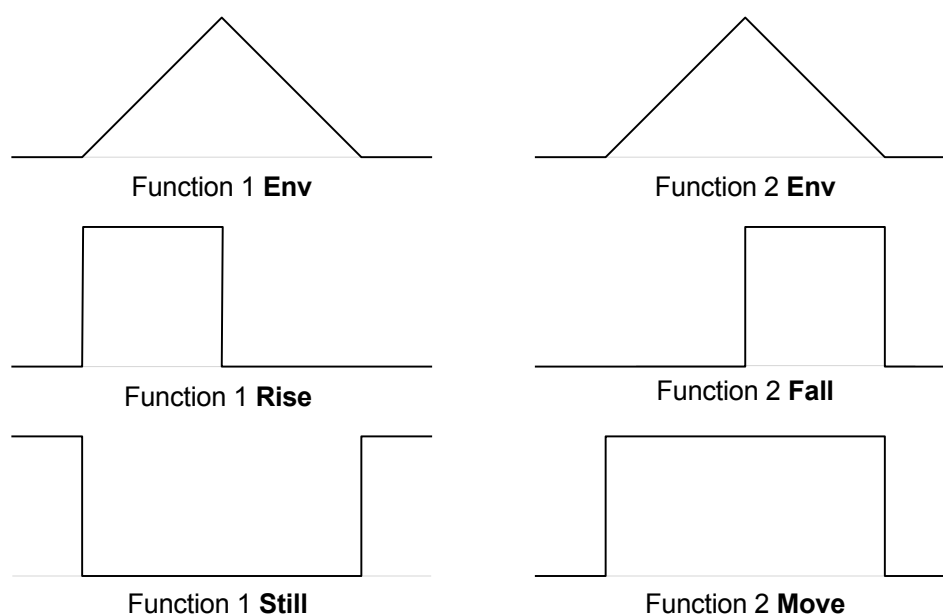
Apart from the normal *Env* (envelope) output, each function generator has two gate outputs:

*Rise* ..... 1 while the function generator's envelope signal is rising, otherwise 0

*Still* ..... 1 while the signal is static, otherwise 0

*Fall* ..... 1 while the envelope signal is falling, otherwise 0

*Move* ..... 1 while the signal is moving in either direction, otherwise 0



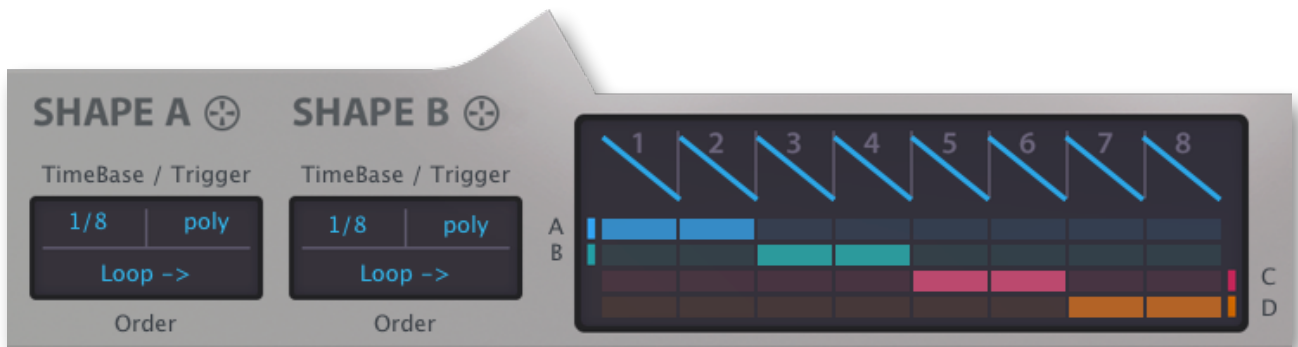
This above image shows all four gate outputs with the function generators in *Envelope* mode, no Input. Practically, the gate outputs can be seen as extra pulse wave LFOs with variable pulse widths. For instance you can use them to trigger the other function generator or an [SH](#) (sample & hold) in the modulation matrix. See [Function Generator Tricks](#).

With LFO-triggered *One Shot* envelopes, the gate outputs can function as clock dividers. See the example in the [Tips & Tricks](#) chapter.



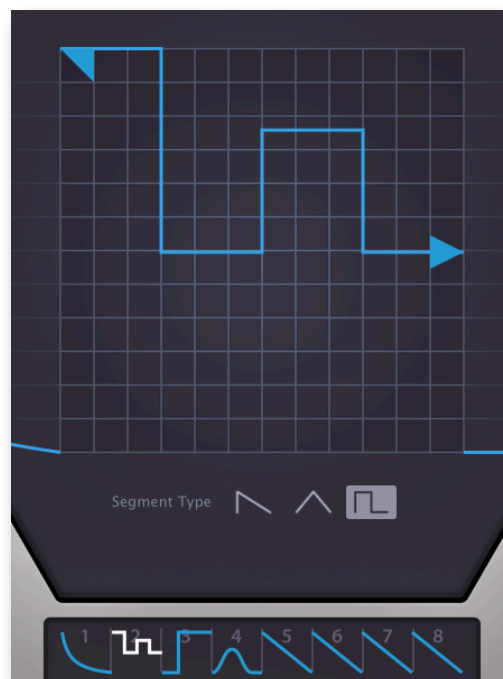
## Shape Sequencer

The Shape Sequencer is where you can create complex modulations and/or rhythmic patterns. It offers a comfortable way to 'gamify' rhythm creation. While it may look like a baby version of what other synths have to offer, Hive's shape sequencer can do a lot more than first meets the eye...



### Segment Editor

Click one of the numbered (1-8) segment selectors to opens its editor. A single click to the left or right of the expanded view selects the previous or next segment:



### Segment Type



To choose a basic waveform for the current segment, use the buttons at the bottom or right-click anywhere in the editor and select from the context menu. The options are *Saw*, *Triangle* or *Pulse*.

### Left Value, Right Value

Blue triangular handles appear to the left and right while your mouse pointer is in the editor area. Click and drag them up or down to adjust levels. Double-click in the segment selector to invert the waveform (the levels are simply swapped).

## Curvature

Clicking and dragging within the editor has a different meaning for each segment type. For the Saw it adjusts **concavity / convexity**, for the Pulse the **pulse width** and for Triangle it morphs between **sine** and **sharp spike**. A double-click in the editor resets the curvature to the default.

## Ratchet

Roll your mouse wheel to smoothly 'ratchet' the segment 2, 3 or 4 times to generate triplets etc.. Remember that you can hold down a SHIFT key to 'fine tune' it!

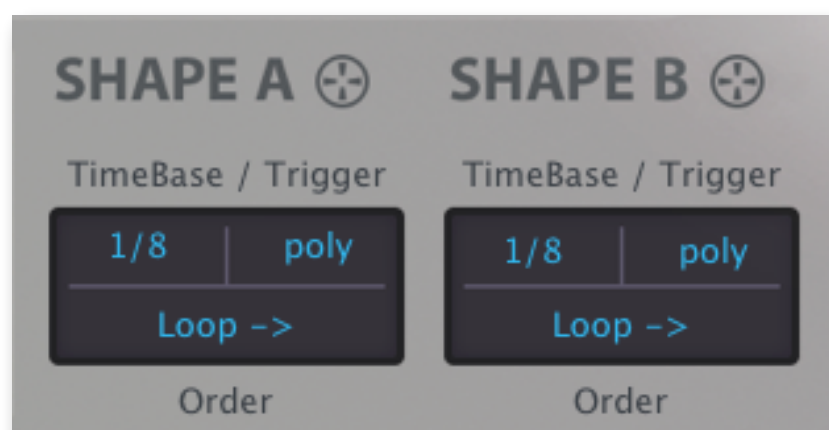
## The Grid

Below the segment selector is an 8 x 4 grid containing an on/off button for each step. The Grid lets you set up 4 different sequences from the pool of 8 segments. While the Shape Sequencer is running, any gaps between active steps (for instance in lane B here) are simply skipped.



## Shape Modulators

The four **lanes** A, B, C and D have associated control panels which determine how the active cells are sequenced. With independent *Time Base*, *Trigger* and *Order* settings, the shape modulators can be triggered differently and run at a different speeds.



## Time Base

The basic 'speed mode'. Unlike its namesake in the LFOs, the Shape Sequencer's *Time Base* offers exclusively straight host-synchronized options between 1/32 and 4/1.

## Trigger

The default *poly* trigger option gives you a separate Shape modulator for each voice. The *single* trigger option is essentially ‘monophonic’ and ensures that the sequence remains synchronized between voices for as long as you play legato.

## Order

Let’s have a look at the Order options of each of those modulators:

*Loop* → ..... Repeat all selected shapes from left to right  
 ← *pool* ..... Repeat all selected shapes from right to left  
*Random* ..... Repeat all selected shapes, randomly chosen  
*One Shot* ..... Play all selected shapes once only, from left to right

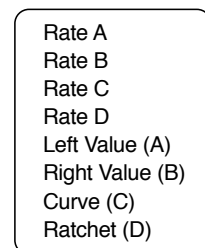
As they only play a single shape, the last two modes are fundamentally different:

*One By One* ..... Each note plays the next selected segment. With *single* Trigger it starts from the leftmost one and only increments during **legato** play. This behaviour is ideal for Hive’s sequencer, as it restarts per played note and remains in sync.

*One Random* ..... Each note plays a random segment. Unlike One by One, *single* triggering from Hive’s sequencer only plays one segment until you play another note. If you want random selection at each step, use *Random* order instead.

## Modulation

The Shape Sequencer offers several modulation targets. Here’s an image of the sub-menu:



### Rate modulation (hidden parameters)

Dragging any modulation source onto a Shape’s *Time Base* selector will create the connection in the modulation matrix and you can continuously control the speed. Just like in the standard LFOs this parameter goes from -5 to +5, and integer steps will double or halve the rate: If you set *integer quantization* in the mod matrix and set that matrix slot’s **SH** option to *Gate*, you can get velocity to play the sequence 2, 4, 8, 16 or 32 times as fast.

## Segment modulation

The other targets let you dynamically modulate all segment parameters:

*Left Value (A)* ..... vertical position of the left handle  
*Right Value (B)* ..... vertical position of the right handle  
*Curve (C)* ..... concavity / convexity, pulse width or sinusoid / spike  
*Ratchet (D)* ..... multiplication factor, from 1 to 4

Modulating these targets separately per lane and switching the modulation on/off per cell would normally require 16 target parameters and 32 switches. We decided to simplify matters with two fundamental compromises...

- 1) **Modulation is applied to all 4 lanes at once**, cutting the 16 targets down to only 4.
- 2) **Active cells also function as switches** for each step, with each lane being responsible for one type of modulation as per the letters in the above list. This cuts our 32 switch requirement down to a grand total of zero...

An example of segment modulation:

	step			
lane	1	2	3	4
A	A + C	A + D	A	
B				B + D
C	A + C			
D		A + D		B + D

Cells A1 and C1 will respond to *Left Value (A)* and *Curve (C)* modulation

Cells A2 and D2 will respond to *Left Value (A)* and *Ratchet (D)* modulation

Cell A3 will respond to *Left Value (A)* modulation only

Cells B4 and D4 will respond to *Right Value (B)* and *Ratchet (D)* modulation

## Keyboard (KEYS)

The button on the left of the lower bar selects Hive's keyboard and extra pitch settings:



## Performance

The panel on the left contains some pitch-related parameters:

### Glide

Glide (a.k.a. 'portamento') slurs the pitch between consecutive notes. There are two different glide modes: in **Rate** mode ('constant rate') the glide takes longer for larger intervals, while in **Time** mode ('constant time') it is independent of the interval.

The **Amount** knob sets the glide time/rate for all oscillators and filters – and anything that uses key tracking.

### Microtuning

Click in the lower half of the field to select a **microtuning table**. The *Activate* button switches microtuning on or off so you can compare the effect.

Hive supports standard **TUN** format microtuning tables, and you will find several in the list already. Many more microtuning tables are available online, most of them free.

To close the microtuning browser again, click on the [CLOSE] button at the upper right.

The .tun files belong in the following folder on your hard drive:

**Win**.....C:\Users\\*YOU\*\Documents\U-he\Hive.data\Tunefiles\

**Mac**.....~/Library/Application Support/u-he/Tunefiles/

...or equivalent locations in accordance with your VST and Hive installation paths.

To go directly to that location from within the microtuning browser, right-click on any .tun file and select *Reveal in Finder* (Mac) / *Open in Explorer* (Win).

## Vibrato LFO

A third LFO, hardwired to the oscillators. The **Rate** knob controls the speed and the **Delay** knob controls how slowly it fades in. See also [Vibrato](#) in the oscillator panel.

## Pitch (Pitch Wheel)

Most MIDI keyboards have a 'pitch bender' control, often a centre-sprung wheel or stick that bends the overall pitch up and down. You can specify up (**PB+**) and down (**PB-**) ranges independently from 0 to 24 in semitone steps, and 36 (3 octaves) or 48 (4 octaves).

## Mod (Modulation Wheel)

On-screen modulation wheel, reacts to MIDI CC#01. Note that the value you set here, either by pushing your real modulation wheel or moving this virtual version, is not saved with the preset.

## Virtual Keyboard

You can play notes with different velocities on Hive's virtual keyboard: Click close to the top for low velocities and further down for high velocities.

Double-clicking on a note will sustain it. This feature is handy for sound design if you don't have a real keyboard at hand, or even for holding a drone while playing live. To release the latched note, single-click the same note again (or click on any other note).

## Scale Quantizer

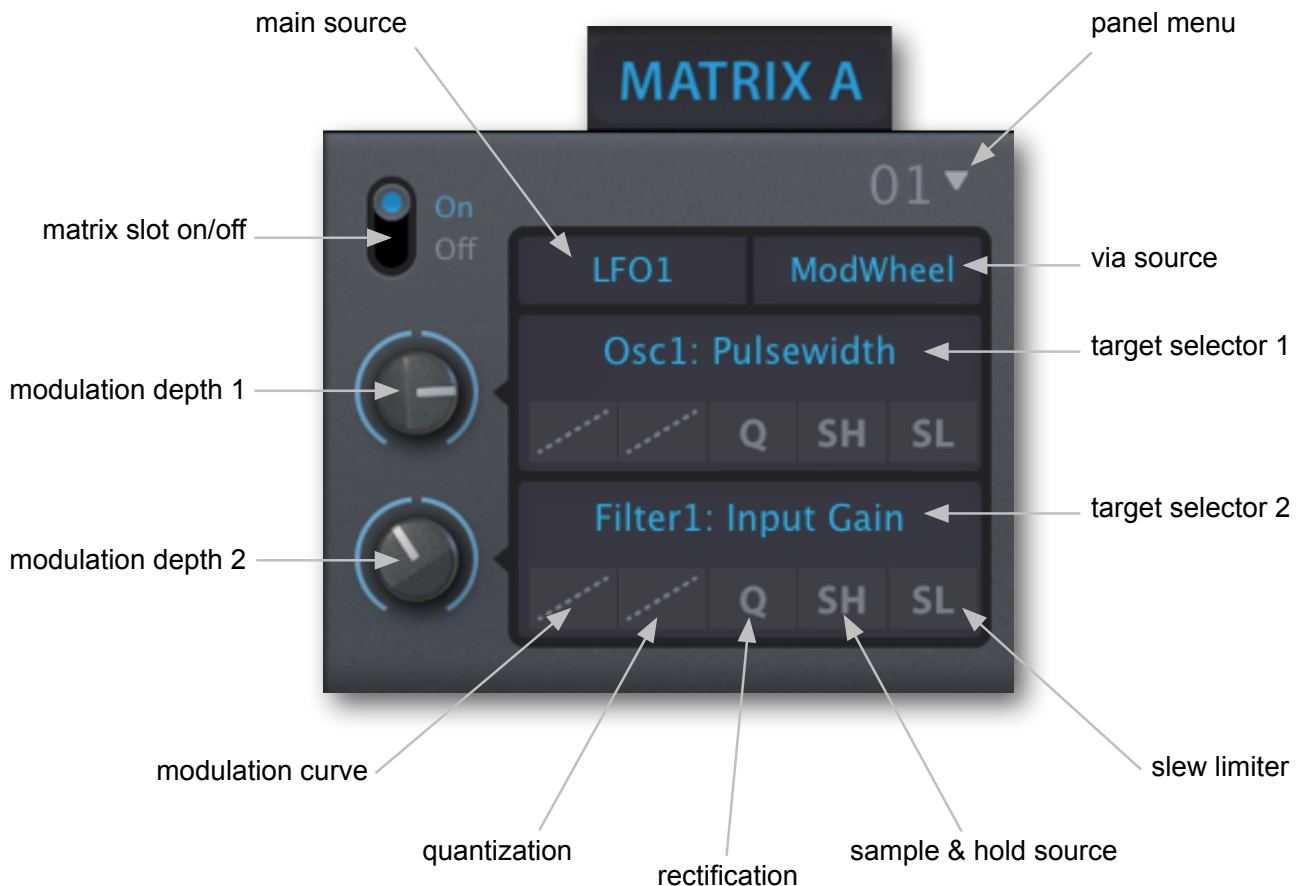
Although the bottom octave can be played just like the rest of the keyboard, it can also be used to quantize incoming MIDI notes to a user-defined scale. Simply click on the little dots to include or exclude notes. For instance, here's a C minor 9th chord (C, D, Eb, G, Bb):



Note: The oscillators also have a modulation target called *In Scale Transpose* which applies the Scale Quantizer setting. Try modulating that target with a very slow LFO!

## Modulation Matrix

The 12-slot modulation matrix is for connecting modulation **sources** (MIDI controls, envelopes, LFOs etc.) to one or two modulation **targets** (more than 80 options). Two pages of six units each can be selected using the MATRIX A and MATRIX B buttons in the lower bar:



All matrix units have the same structure, with one main source and two targets.

In this example, oscillator 1 *Pulse Width* and Filter 1 *Input Gain* are being modulated by LFO1, the depth of which is controlled by the modulation wheel (or vice versa – see *Via* below).

### Source (unlabelled)

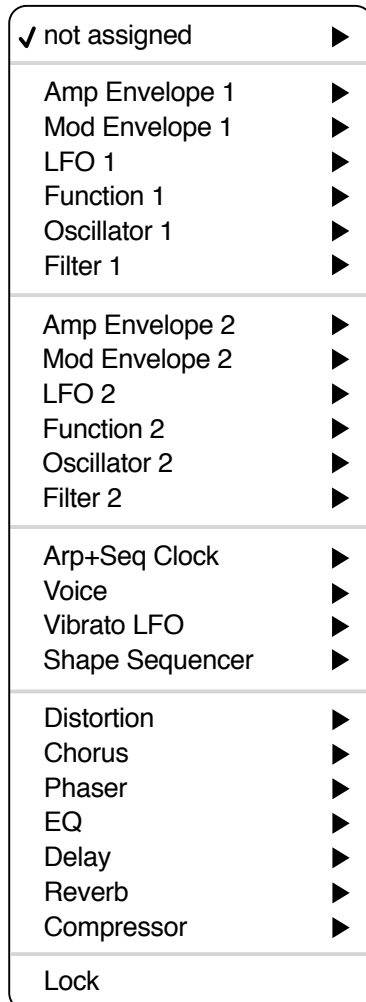
The upper left selector specifies a primary modulation source.

### Via (unlabelled)

An optional secondary modulation source, *Via* determines the amount of 'Source' passed on to the two targets. Or vice-versa: Source and *Via* are 100% interchangeable. For instance, swapping *LFO1* with *ModWheel* in the example on the previous page will make no difference. The effect will be exactly the same.

## Targets (unlabelled)

The simplest way to select a target is usually via drag & drop - see below. Alternatively you can right-click on a target selector, which opens a menu containing all possible target parameters. Note that inactive effect parameters will not appear in the modulation target menu – the image here shows how the menu will appear if all effects are active.



Each synthesis panel except the matrix itself has its own sub-menu – hover over an entry to see the individual targets. Note: FX parameters will only appear if the effect is currently active.

The *assign recent* submenu contains a short list of the most recently edited parameters so you can quickly assign several sources to the same target, for instance.

Immediately above the list of modulation targets is the option to remove (“unassign”) the current assignment if there is one, otherwise it will say “not assigned” like in the image above.

## Drag & Drop from a Target Selector

Hive has so many possible [modulation targets](#) that we added an easier way to get to them...

In the modulation matrix, click and hold on one of the target selectors, drag the crosshair onto a valid target then release the mouse button. You can check whether any object is a valid target by dragging the crosshair over it: You might be surprised at some of the possibilities, especially in the FX panel or even in the matrix itself...

Not only the majority of the knobs but also some of the selectors are valid modulation targets. Drop the crosshair onto an oscillator's *Octave* or *Semi* selector to assign pitch modulation, onto *Phase* for phase modulation, onto the waveform for pulse width modulation if the Pulse waveform is selected or for wavetable Position if the Wavetable waveform is selected. To modulate Delay time, drop the crosshair onto either the *Left* or *Right* selector in the Delay panel.



Remember that you can populate the mod matrix remotely via drag & drop from any modulator panel or from the row of sources in the [lower bar](#).



## Slot Modifiers

Below each target selector is a row of buttons which can be used to modify the shape of the modulation signal, individually for each slot. They are processed in order from left to right: *Curve*, *Quantize*, *Rectify*, *Sample & Hold*, *Slew*.

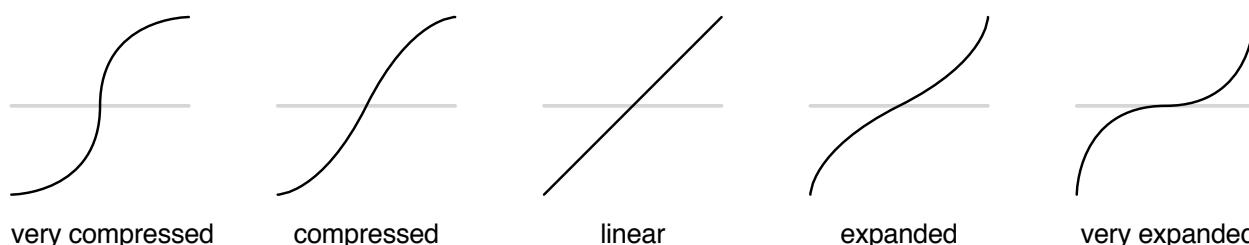


This is how they might appear when all of the modifiers are active:



### Curve

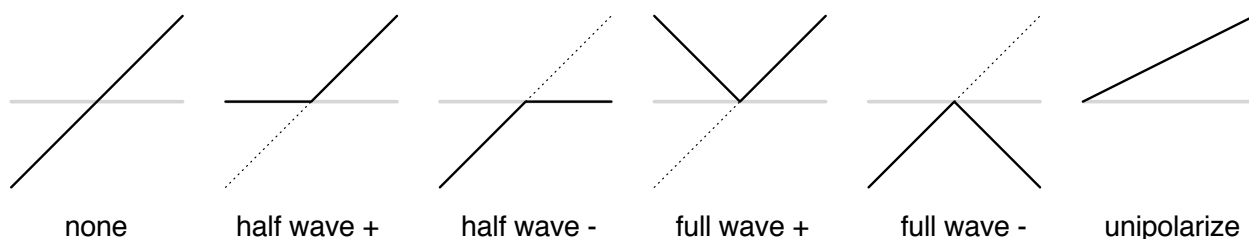
These options let you map the source onto an s-curve – it's like a waveshaper for modulation signals. A bipolar ramp, for instance from a rising sawtooth LFO or from the pitch bend control, would be transformed into one of these curves:



Unipolar modulation sources (envelopes, modulation wheel etc.) only use the upper half of the curve. For instance, if you want the modulation wheel to have a very subtle effect when only pushed a little, but still deliver the full effect when pushed all the way, choose *very expanded* (the first part of the curve above zero is particularly shallow).

### Rectify

Half-wave or full-wave rectification (in positive as well as negative versions), or make unipolar. The symbols depict how a bipolar ramp wave would appear after rectification.



*none*.....no rectification

*half wave +*.....removes negative values

*half wave -*.....removes positive values

*full wave +*.....folds negative values up

*full wave -*.....folds positive values down

*unipolarize*.....shifts the signal to positive-only (necessarily halves the amplitude!)

To transform the pitch wheel so that pulling also results in positive values, choose *full wave +*.

## Quantize (Q)

After applying a curve, the modulation signal can be forced to adopt certain discrete values. The *integer* setting makes the modulation typically “steppy”, while the *steps of 12* setting transforms bipolar sources into maximum 5 values (unipolar = maximum 3) including zero.

All other options quantize the output to certain scales:

*overtone series*.....harmonic overtones  
*minor / major scale*.....natural minor, regular major  
*minor / major chord* .....chord tones (root, third fifth)  
*minor / major series*.....third intervals (repeats after two octaves)  
*fifths and octaves* .....well, it's fifths and octaves only!

Note: The quantization is applied after modulation depth, so lower depth means **fewer steps**, not narrower steps! For instance if you quantize an LFO to *steps of 12*, there will be no modulation at all unless you turn the depth up to at least 25.

## Sample & Hold (SH)

✓ none
LFO1 LFO2 Vibrato LFO
ShapeSeq A ShapeSeq B ShapeSeq C ShapeSeq D Func1 Env Func1 Rise Func1 Still Func2 Env Func2 Fall Func2 Moves
Control A Control B Gate ModWheel PitchWheel Pressure
Random
Lock

Whenever the signal you select here crosses zero in the positive direction, the main modulation source will be sampled and held i.e. stepped.

There are fewer sources in this list than in the primary and secondary modulation sources: Those that make little sense (the envelopes, Velocity, Alternate, Constant) were removed.

Note that the SH is reset whenever a new voice is allocated. This means that (in the current version at least) a sample of the modulation source will not be “memorized” for successive notes.

Tip: *Gate* is a particularly useful SH source, as it converts the signal from the main modulation source (for instance mod wheel or slow triangle wave LFO) into discrete steps at the start of each note.

## Slew Limiter (SL)

Similar to the dedicated [Glide](#) processor for pitches, the *Slew Limiter* in the matrix can be used to soften transients in the modulation source. There is no continuous control here, only *off*, *fast*, *smooth* and *slow*. To get a feel for these options, try modulating oscillator pitch from a square wave LFO with the *Slew Limiter* set to *slow* first. Note: For technical reasons, the mod sources Alternate and Random will not be slewed.

Tip: If you need more flexibility, try using a [Function Generator](#) instead.

# Wavetables

The [WAVETABLE 1] and [WAVETABLE 2] buttons at the top of the hexagon open the Wavetable control pages. If you haven't selected a wavetable in the oscillator panel, you will be asked to do just that. With an active wavetable the hexagon should look something like this...



Hive wavetables can contain up to 256 single-cycle waves. Find a particular waveform by adjusting *Position*, then modulate *Position* to create tonal movement.

## Two Kinds of Wavetable

Hive can load wavetables in either of two formats, **.uhm** or **.wav**. The former is a powerful script format which creates wavetables on-the-fly by interpreting a list of text commands and formulae.

For wavetables to be recognized they must be in the same directory as the referencing preset, or here (see *File Selectors / Reveal...* below), where the factory wavetables also reside:

**Win** C:\Users\\*YOU\*\Documents\u-he\Hive.data\Wavetables\

**Mac** MacHD/Library/Application Support/u-he/Hive/Wavetables/

Wavetable files in subdirectories of these paths will also be recognized and loaded.

For details of the **.uhm** script language and a few notes about **.wav** requirements, please refer to the extra document *Hive Wavetables.pdf* included in the Hive installer. To locate this file, click on the u-he badge and select *user guide* – you will find this extra document in the same folder.

**IMPORTANT:** If you ever see the message “File wasn’t loaded: [wavetable name]” immediately below the selectors, the wavetable’s path (as stored in the preset) is invalid. Be careful not to move, rename or delete wavetables or their enclosing folders if they are already in use. If you ever lose factory wavetables you can always restore them by re-installing Hive.

In either format (.wav or .uhm), Hive’s wavetables can hold up to 256 individual waveforms.

## File Selectors (unlabelled)

To load a specific wavetable, click on either of the two selectors near the top of the hexagon. The difference between them is that the arrows of the upper selector step through folders while those of the lower selector step through files. The menu also includes the following functions:

**refresh wavetables** updates the list, just like *refresh* does for the browser content.

**reveal in Finder / open in Explorer** opens a system window for the currently selected folder. Important: After adding, removing or renaming wavetable files or folders outside of Hive’s own browser, please remember to *refresh wavetables*.

**unload current** replaces the selected wavetable with the default sine wave, minimizing preset load times as well as memory and CPU usage...

NOTE: *Once specified, wavetables will be loaded and processed even if you replaced them with regular waveforms before saving the preset. To minimize load times and save CPU, make a habit of unloading any unused wavetables before saving your preset!*

## Info Text

Some wavetables include explanatory text while others only display the number of frames used. Try opening an .uhm file in your favourite text editor and see how they are defined!

## Position

The Position knob scans through the wavetable. Alternatively, click and drag (vertically) on the wavetable graphic in the oscillator panel.

## Auto Mode (unlabeled)

You can modulate wavetable Position without requiring an LFO or envelope etc.. The *One Shot* option scans through the wavetable just once, *Loop >* is a looped scan in one direction only, and *Loop ><* is a looped scan in both directions.

## Tempo

This knob adjusts the speed of *one shot* or *loop* modulation from “quite slow” to “very fast”. Automatic scanning normally starts at the set *Position* and ends at the final wave, but this actually depends on the status of the *Reverse* and *Cyclic* buttons...

## Reverse

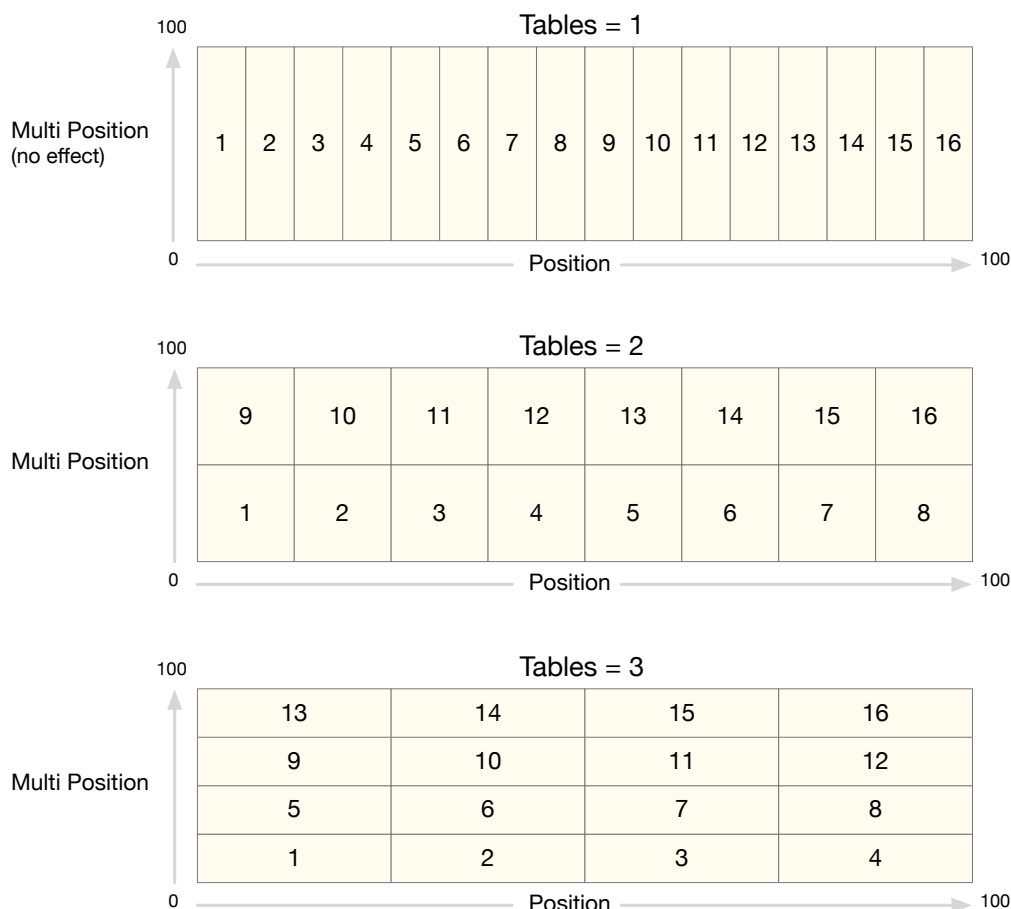
Reverses the order of frames, which is particularly useful with *one shot* Auto Mode. Try this: Load *init* (right-click on the data display), select *Wavetable* as OSC1 Wave, load *DX Piano.uhm*, from the FM folder and select *One Shot*. Play. Now activate Reverse...

## Cyclic

Used in combination with Auto Mode, this option adds a copy of the first frame to the end of the table. Particularly useful for smoothing Auto Mode *loop* —>, Cyclic mode also lets loops cross wavetable boundaries. To test it, set a medium Position then switch Cyclic on and off.

## Tables < Position

Hive's wavetables become two-dimensional – some would even say three-dimensional – if the **Tables** parameter (which specifies the number of frames in the y-axis) is set to 2 or more. The lower Position knob then crossfades between frames in the y-axis. Here's an example:



Things can get rather interesting if you set Tables to a value that doesn't divide the number of frames in the wavetable so evenly. Tip: Experiment with the Interpolator set to *switch*...

## Interpolator

A choice of 4 different algorithms for interpolating between frames. This option only applies to the main Position parameter – the interpolation through Multi Position is always *crossfade*.

*switch* .....no interpolation at all, sudden jumps between frames

*crossfade* .....smoothly interpolates waveform magnitudes i.e. a simple crossfade

*spectral* .....like *crossfade*, but also interpolates the phases of each partial

*zero phase* .....like *spectral*, but also forces the phase of each partial to zero first

Note: The appearance of waveforms can differ significantly, depending on the interpolation. The *spectral* and *zero phase* modes shift the relative phases of partials differently. The *switch* option only shows non-interpolated waveforms. So how about a quick test? Load *Spike Series.uhm*, set Position to 5.00 and watch the waveform change as you select different interpolation modes.

As blending different phases requires extra arithmetic, *spectral* is actually the highest quality mode, and therefore the most CPU-intensive. Tip: The CPU-friendly *crossfade* is usually fine.

# Arpeggiator & Sequencer

The **ARP/SEQ** button at the top left of the hexagon opens a window containing everything you need to set up complex arpeggios and sequences...



## Clock

The arpeggiator and sequencer share a host-synchronized clock:



### Time Base

Basic note division (**1/32**, **1/16**, **1/8** or **1/4**) for the arp and sequencer. As the clock is always synchronized to host tempo, no absolute times (in seconds) are available here.

### Sync

'Strict Host Synchronization' causes arpeggios and sequences to align with beats in the host so they are not restarted with each note.

### Multiply

Speed (50% to 200%). For triplets, set 75% or 150%, for dotted times set 66.67% or 133.33%.

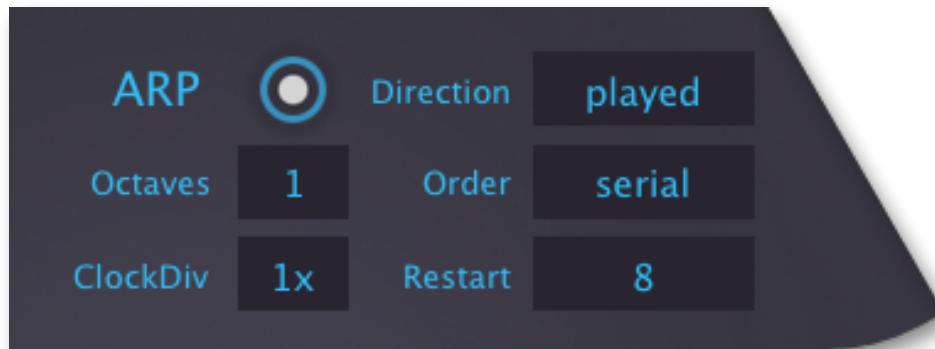
### Swing

Swing factor. 50% = 2:1 (triplet swing), 100% = 3:1 (dotted swing).



# Arpeggiator

Hive's arpeggiator has the usual **octaves** and **direction** parameters, but also a few extras that make it surprisingly powerful, e.g. the ability to drive the sequencer.



## On/Off (round button)

Activate / deactivate the arpeggiator.

## Octaves

(1 to 4) transposes the arpeggio in octaves according to the Order (see *Order* below).

## ClockDiv (clock division)

Driving the sequencer from the arpeggiator by activating both at the same time lets you transpose sequences via MIDI notes / chords. This is especially interesting if you run the arpeggiator slower than the sequencer: *ClockDiv* specifies how many times slower, from 2x to 8x.

Note: If you are using the arpeggiator on its own i.e. without the sequencer, setting ClockDiv to anything other than 1x will effectively remove any Swing (see the previous page).

## Direction

Arpeggio playback mode:

*played*.....as the notes were played

*up*.....from lowest to highest note

*down*.....from highest to lowest note

*up+dn 1* .....from lowest to highest, then back down again

*up+dn 2* .....same as up+dn 1, but the highest and lowest notes are repeated

*random*.....chaotic, unpredictable

## Order

Specifies when the arpeggio will jump to the next octave:

*serial*.....plays all notes first, then jumps octaves up

*round*.....like serial, but also jumps down again if Octaves (see above) is set to 3 or 4

*leap*.....jumps octaves at each successive note

*repeat*.....repeats the note in all octaves before playing the next note

Depending on the number of notes as well as the Octave and Restart settings (see below), some of the Direction and Order options will sound identical.

## Restart

The number of notes the arpeggiator will play before jumping back to the start. The idea behind *Restart* is to ensure that arpeggios stay in time (e.g. 4/4) however many notes are played.

Available values are **none**, **4** to **10**, **12**, **14**, **16**, **24**, **32**. Experiment with '8' or '16' first. Be aware that if you choose a very low value here, the arpeggio is likely to restart before all held notes have been played, in which case some of the notes will simply go missing.

The results of arpeggiation also depend on the selected [voice mode](#), with overlapping release phases (poly), retrigger (mono), or single trigger (legato and duo).

## Sequencer

Below the Clock and Arpeggiator panels is Hive's 16-step sequencer / modulator / gater. Here's a screenshot of the sequence used in the preset *Heavy Gravy*:



### OFF | MOD | ► | REC

In **MOD** (Modulator) mode the Gate, Transpose and Velocity data (see below) are ignored. The envelopes are not triggered. However, the Mod values and *SeqGate* (see *Attack*, *Decay*, *Gate %* below) can still be used.

Select the ► (Run) button if you want the sequencer to trigger envelopes. Like the arpeggiator, the sequence will run whenever notes are played and will stop when all notes are released.

**REC** (step record) mode lets you fill the data area with transposition, velocity and CC values, including whatever the arpeggiator is delivering.

Important: The first note you record defines zero transposition. To prevent notes from overshooting the limits (+/-24), play a fairly central 'root' first, then the **complete** sequence (which will also overwrite that first note). Finally, shift the entire sequence one step to the left – see *Shift* below.

## Mod CC

Specifies a MIDI controller (Control A or B, ModWheel, PitchWheel or Pressure) for recording and/or playing back Mod data (see *Mod* below).

## Dynamic Vel

When activate, the sequencer's "Vel" values are multiplied with incoming MIDI note velocities.

## Steps

The number of notes (**2 to 16**) the sequencer will play before it restarts. Tip: MIDI-learn a knob or slider on your hardware controller and try performing with this parameter!

## Shift

In hindsight, a heavily edited sequence often starts on the wrong beat, an effect which is easily fixed here... this pair of buttons rotates the active part of the sequence to the left or right. Note: The Shift buttons are only visible if the sequencer is in either MOD or Run mode.

## Gate

Click on the dots to cycle between **Note**, **Tie** and **Rest**. Click and swipe to the left or right to change multiple steps.



*Note* .....plays a note with the length defined by the *Gate %* value (see below).



*Tie* .....like *Note* but with the length set to 100%.



*Rest* .....the step is not played.

## Trsp (transpose)

Per-step transposition within a 4-octave range (**-24 to +24**).

## Vel (velocity)

Per-step velocity values which will override normal MIDI note velocity unless the *Dyn Vel* switch (see above) is activated.

## Mod

Use this row to modulate anything you like in sync with the sequence. These values are sent to two parallel sources: the modulation source *SeqMod* and the chosen Mod CC (see above). We recommend using *SeqMod* if you want to avoid the smoothing which may or may not be applied to all the Mod CC options – this depends on the [MIDI Control Slew](#) preference! You can always slew *SeqMod* in the matrix.

## Attack \*

How slowly the modulation source *SeqGate* fades in for each step.

## Decay \*

How slowly the modulation source *SeqGate* fades out for each step.

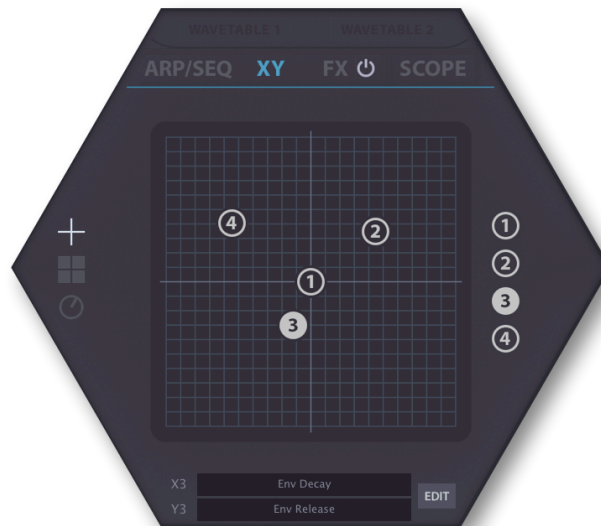
## Gate % \*

Sequencer gate time i.e. how long the notes are held relative to the clock's [TimeBase](#).

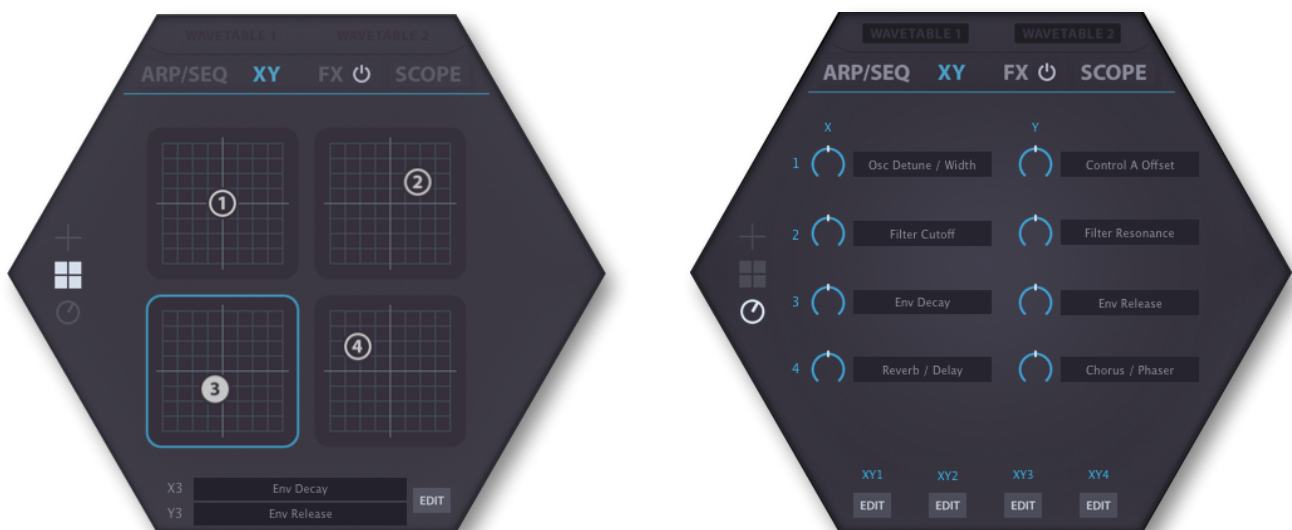
\* Although Attack, Decay and Gate % can be modulated, they do not appear in the matrix target menu. In the current version you can only assign them via drag & drop.

# X/Y Pads

Clicking on the [XY] button at the top of the hexagon opens a panel containing four 2-dimensional performance controls. You can set the focus to a particular control by clicking on it, by rolling your mouse wheel within the square, or by selecting from the vertical row on the right.



The buttons on the left offer 3 views: All in a single pad, as 4 separate pads or as 8 knobs.

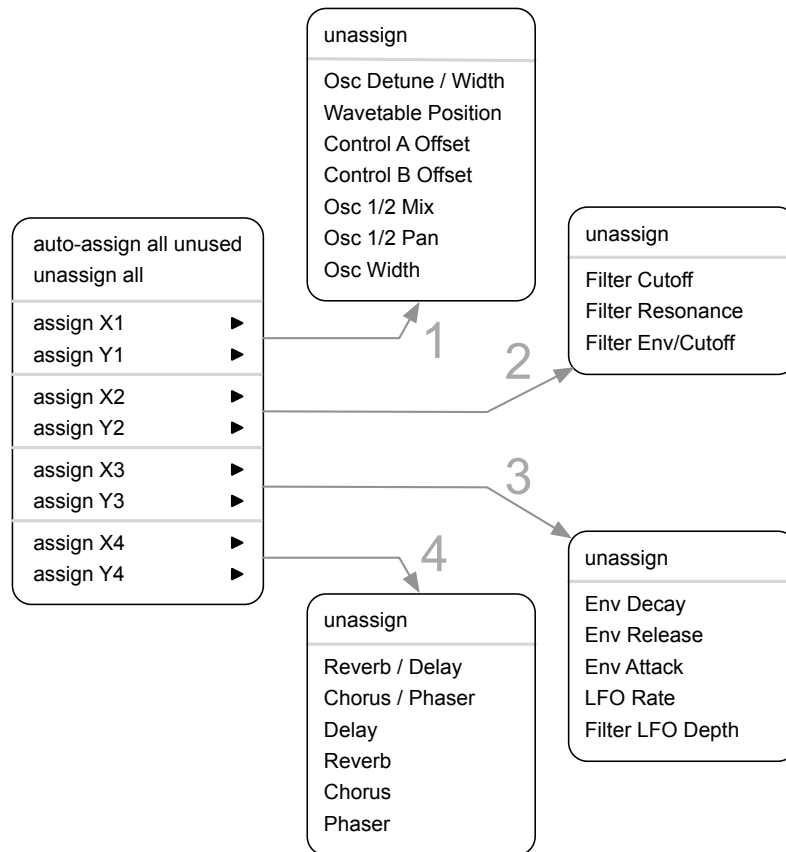


At the bottom of the hexagon in the pad views are labels for each individual X and Y control, while in the 8-knob view they appear next to each knob. Double-click on a label to edit the text (maximum 20 characters). The macro itself will not be affected – that’s what the [EDIT] buttons are for!

## Macro Assignment

Whenever a preset is loaded that doesn’t include XY control, Hive will automatically create it for you. These “macros” affect up to 4 parameters simultaneously, and each pad offers a different set: Oscillators or Control A/B values (XY1), filters (XY2), envelopes or LFOs (XY3) and effects (XY4).

Right-click anywhere on the pad to open the macro menu:



Select *auto-assign all unused* to assign any unassigned X and Y controls. Caution: The *unassign all* function removes all XY assignments from the preset, and this cannot be undone.

Each X and Y control has a sub-menu containing preset macros. These are the same for X and Y but different for each pad (1-4). Select *unassign* to remove the existing assignment.

The *Control A/B Offset* options (available for XY pad 1 only) let you send [CC data](#) from the pad via the [modulation matrix](#) to multiple Hive parameters. Being an offset, this is **added** to any Control A or B data received from elsewhere e.g. from Hive's sequencer or from an external CC source.

## Custom Assignment

For more flexibility, each X/Y pair has its own modulation matrix panel where you can specify up to 4 target parameters and modulation depths. These panels are opened either by clicking on an [XY] button in the lower bar or on an [EDIT] button below the XY pad:



On the left is a small XY pad so you can immediately use your settings. As mentioned above, each X and Y dimension has its own label – double-click and enter some text (maximum 20 characters).

Like the general purpose modulation matrix, the XY matrix also has [slot modifiers](#) *Curve*, *Quantize*, *Rectify*, *Sample & Hold* and *Slew*. For details, see the section about the [modulation matrix](#).

# Effects (FX)

The **FX** button at the top of the hexagon opens a window containing everything you need to set up a complex chain of audio effects:



**Important:** The symbol to the right of the [FX] label is a global on/off switch for all active effects. Disable it and you won't hear any effects at all, even after changing presets!

## Enable / Rearrange

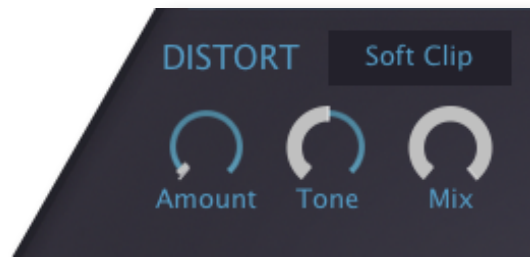
The central column contains 7 buttons, one for each effect. Click to switch the effect on or off. Click and drag up or down to change the order of effects.

Tip: Experiment with unusual orders, for instance reverb then phaser followed by distortion.



## Distortion

Hive's distortion unit is powerful but relatively simple, requiring only a mode selector and 3 knobs...



### Mode (unlabeled)

*Soft Clip* ..... Smoothly compresses peaks in the signal.

*Hard Clip* ..... Simply chops off the top and bottom of the waveform.

*Foldback* ..... Similar to soft clip except that increasing the gain doesn't slam more of the signal peaks against the limits, but reflects (folds) them back.

*Corrode* ..... A combined sample rate and sample resolution control (a.k.a. bit crusher). The *Amount* and *Tone* controls (see below) are replaced by *Rate* and *Crush*.

### Amount

Input gain control. This effectively sets a threshold above which distortion occurs (and therefore the perceived amount of distortion). In *Corrode* mode (see above), this knob sets the amount of sample rate reduction (the label changes to **Rate**).

### Tone

Bipolar frequency tilt for more bass or treble distortion. In *Corrode* mode (see above), this knob reduces the sample resolution (the label changes to **Crush**).

### Mix

Dry/Wet balance control. Turning Mix down from the usual maximum preserves more of the original character without affecting the distortion characteristics.

### Rate (in Corrode mode)

Replaces the Amount knob. Reducing / decimating the sample rate degrades audio quality: Low values introduce high-pitched grit. At high Rate values, aliasing takes over i.e. you will hear more rough metallic tones than the original signal.

### Crush (in Corrode mode)

Replaces the Tone knob. Bit crush / resolution reduction. Waves become increasingly steppy until they become clicks or even silence, depending on the input signal.

## Reverb

Hive's plate reverb unit is surprisingly flexible. It is capable of anything from small resonators (e.g. guitar body or metal tubes) to huge cathedrals...



### Pre

A single delay before the reverb starts. Especially useful for retaining the presence of the original signal while using lots of reverb. Or as a slap-back delay!

### Size

Room dimensions, from sardine can to infinity and beyond. Balance this with Decay...

### Decay

Controls reflectivity of the room, essentially the opposite of Damp (see below). Affects how long it takes for the reverb tail to fade out.

### Damp

Causes higher frequencies to fade out more quickly than low frequencies, imitating the 'warming' effect of carpets, curtains etc. in a room, or the audience in a concert hall.

### Tone

Strong 'tilt' equalizer. Use in combination with Damp to colour the reverb.

### Width

Stereo spread of the reverb signal.

### Mix

Balance between the original (dry) and reverb signals. At maximum, the dry part of the signal is faded out completely, which lets you use Hive's reverb for strong 'guitar body' type resonances: Set Pre to minimum, and fine tune the Size around 5.00.

## Equalizer

Insert the EQ effect wherever you want to cut or boost parts of the spectrum.



### Bass | Mid | High

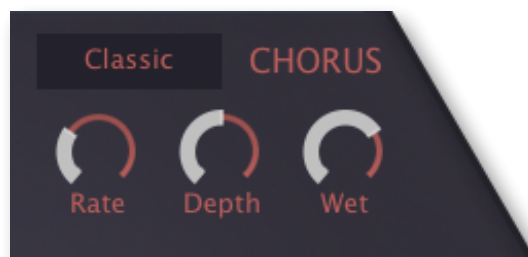
Hive's 3-band EQ effect comprises low and high shelving filters surrounding a fixed-width mid frequency band. Each band has a cutoff frequency (Freq.) control, and the corresponding Gain controls let you set anything between -15dB and +15dB.

Tip: Where you place the EQ in the effects chain can be decisive. For instance, position the EQ after the Distortion unless the plan is to control distortion characteristics with it.

## Chorus

Chorus has a long tradition as synthesizer effect – after spring reverb, it was the second effect to be built into a commercial synth.

Hive's Chorus unit offers three different models that share a common set of controls:



### Type (unlabelled)

*Classic*, *Dramatic* and *Ensemble* are all based on well-known hardware effects of yesteryear. The latter is especially rich: it can turn a raw oscillator into a classic 'string machine' sound.

### Rate

The modulation speed. Use low values for slow stereo effects.

### Depth

The modulation amount. Set to zero (with Classic or Dramatic) for static coloration.

### Wet

Balance between the original and treated signal. Lower values here can be used to add warmth without making the sound too 'washy'.

## Wow (hidden parameter)

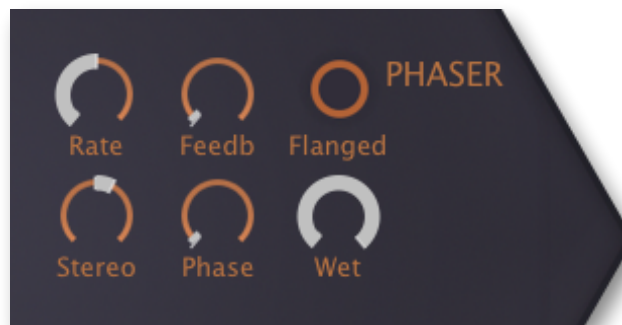
'Wow' emulates the low frequency wavering of old magnetic tape delay units. To adjust the amount of Wow, use Constant as source in the modulation matrix (and of course select Delay / Wow as your target).

Tip: In the Matrix is a [panel preset](#) called '09 UnWow the Delay'. This sets Wow to zero and lets you straighten the delay time, which was set slightly longer to avoid overly robotic delays. As this depends on the delay length, you may have to adjust the upper modulation amount.

## Phaser

---

Traditional sweeping effect, stereo, with adjustable resonance (feedback)...



### Rate

Modulation speed of the Phaser's own LFO.

### Feedback

The amount of resonance. Note: high resonance can create strong bass humps.

### Flanged

This button switches from the default *Stoned* mode to the alternative *Flanged*. As it uses more delays, *Flanged* is more resonant and is particularly suitable for bright sounds. *Stoned* mode is arguably much more 'psychedelic'. Both models are based on classic hardware stomp-boxes.

### Stereo

A bipolar stereo width control. Note that with the 'Stoned' type, maximum stereo width is at +/- 25.00 (this is especially obvious if you turn Feedback way up).

### Phase

LFO phase offset, from 0 to 360°.

### Wet

Amount of phase-shifted signal, from 0% (completely dry) to 50% Wet.

### Depth (hidden parameter)

The amount of modulation from the Phaser's own LFO. Normally maximum.

### Center (hidden parameter)

Phase offset. For static colouration effects, load the matrix [panel preset](#) 11 *Phaser Flattener*.

## Compressor

Although dynamic processing is useful in any audio system, compressors are not often found built into synthesizers. The number of controls in Hive's compressor has been reduced to a minimum...



### Amount

An inverted **threshold** and compression **ratio** control in one. At higher values, it can get loud...

### Out

Turn this down to compensate for the boost in volume caused by strong compression, or turn it up to boost very quiet signals (set the Amount to zero).

### A

Attack: How fast the compressor reacts to peaks in the signal. Experiment with Attack and Amount for maximum 'punch' in percussion sounds, or for the smoothest pads.

### R

Release: Compression 'relaxation' time. This setting isn't quite as important as attack because the actual release time is semi-automatic.

### GR (Gain Reduction)

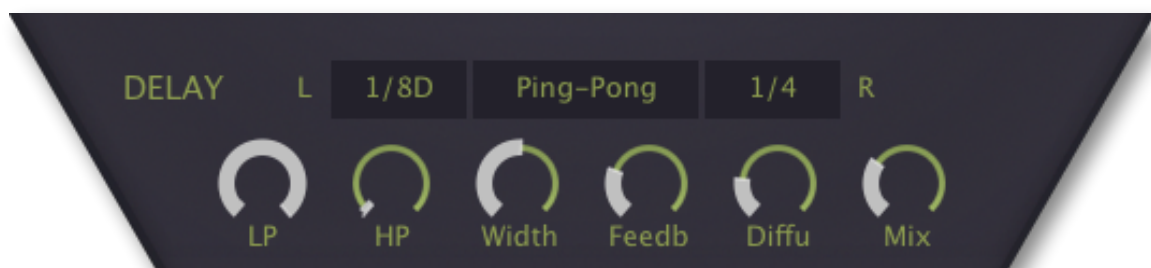
How much the signal level is being reduced whenever the compressor kicks in. For maximum effect, make sure there is plenty of movement here.

### Mix (hidden parameter)

Dry/Wet mix control for parallel (a.k.a. New York) compression. See [hidden parameters](#).

## Delay

Hive's delay unit looks simple enough, but is very 'musical'...



## L and R

Independent delay times for the left and right channels, always synchronized to host tempo. 'T' in the menu means triplet time (3 in in the space of 2) and 'D' means dotted (half as long again).

Tip1: For typical extreme stereo, set the right channel to twice as long as the left e.g. 1/4 and 1/2. Generally set Ping-Pong mode if the left channel's delay is shorter, otherwise Pong-Ping.

Tip2: For a fuzzy slap-back effect, set the delay times to 1/32 and 1/16T, turn *Feedb* down to zero and *Diffu* up to maximum. You can make the delay times even shorter by negatively modulating the hidden parameter *Delay / Time Scale*. See [hidden parameters](#).

## Mode (unlabeled)

*Stereo* .....independent delays without any cross-feed from one channel to the other

*Ping-Pong* .....feeds the left channel into the right, then vice versa

*Pong-Ping* .....feeds the right channel into the left, then vice versa

## LP and HP

Cutoff controls for lowpass and highpass filters within the feedback path. Lower the value of LP for typical damping, increase HP to reduce bass and mid frequencies.

## Width

Stereo width of the delay signal.

## Feedb

Feedback / regeneration amount. The output signals are fed back into the input for repeating echoes. 100.00 will give you an almost infinite loop if LP is set to maximum and HP is set to minimum... so try that!

## Diffu (diffusion)

The diffusion parameter makes the delay more 'fuzzy'. When Diffu is set to maximum, individual echoes sound almost as if they had been treated with a short reverb.

## Mix

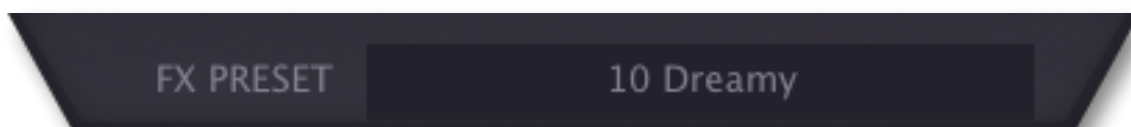
Balance between dry signal and treated signal.

## TimeScale (hidden parameter)

Modulate this parameter to shift all delay times away from strict synchronization. Simply drag & drop a modulator onto the **L** or the **R** selector, then adjust the amount in the modulation matrix.

## FX Preset

At the bottom of the hexagon is a [panel preset](#) button in the form of a selector which you can use to copy/paste, save or load all FX settings at once. Unlike the small panel preset buttons in other Hive panels, this one displays the panel preset's file name.





# Scope

Animated graphics in software synthesizers not only look cool, but can also help you program your sounds by showing you what's happening in real time. Hive's Scope is especially useful for displaying how the parts of complex modulation interact (e.g. the [Function Generators](#) with an LFO).



As audio output is common to all presets, this is the default view. To zoom horizontally, adjust the blue handles and the connecting line. As usual, hold SHIFT to adjust with a finer resolution. If it is maximized, the audio view will “scan” just like a heart rate monitor and “breathe” (smoothly adjust the automatic normalization) whenever there is a significant change in volume.

You can drag & drop a modulation source anywhere in the central area to view it in realtime. The audio view will switch to a mono sum to make room for the new source, and will disappear if you want to view 2 or more modulation signals at the same time. The maximum is 4 signals.



If you drag & drop any modulation source onto one of the 4 fields at the bottom of the hexagon, or right-click there and select from the menu, you can specify the vertical order. To remove a signal from the Scope, click on its box and select *none*.



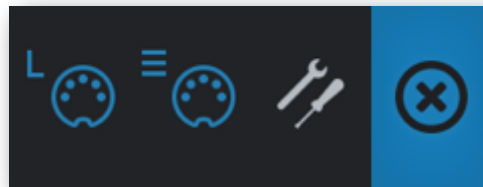
The **Freeze** button at the bottom right of the hexagon displays a snapshot of the current data. Click again to “thaw”.

Right-click anywhere in the display area to set *eco* (CPU-friendly), *fast* or *glow* view mode.

# Configuration



The cogwheel button at the top right opens the **global configuration** pages where you can adjust the window size and brightness or connect Hive parameters to MIDI continuous controllers.



The 4 buttons are MIDI Learn [L], MIDI Table [≡], Preferences [tools] and Close [X]:

## About MIDI CC

Before connecting knobs and sliders on your master keyboard to Hive parameters (see the next page), it's best to know what a **MIDI CC** is...

**CC**, which officially stands for **Control Change** and no longer Continuous Controller, is a multi-purpose message format used for editing as well as performing presets. However, CC isn't the only kind of MIDI performance data available; there are also messages for **note on/off** (including velocity), **pitch bend** and two kinds of **aftertouch**.

The MIDI Manufacturers Association (MMA) was kind enough to leave most of the CC numbers undefined, but two of them have specific meanings which are also recognized by Hive:

CC#01 = modulation wheel

CC#64 = sustain pedal

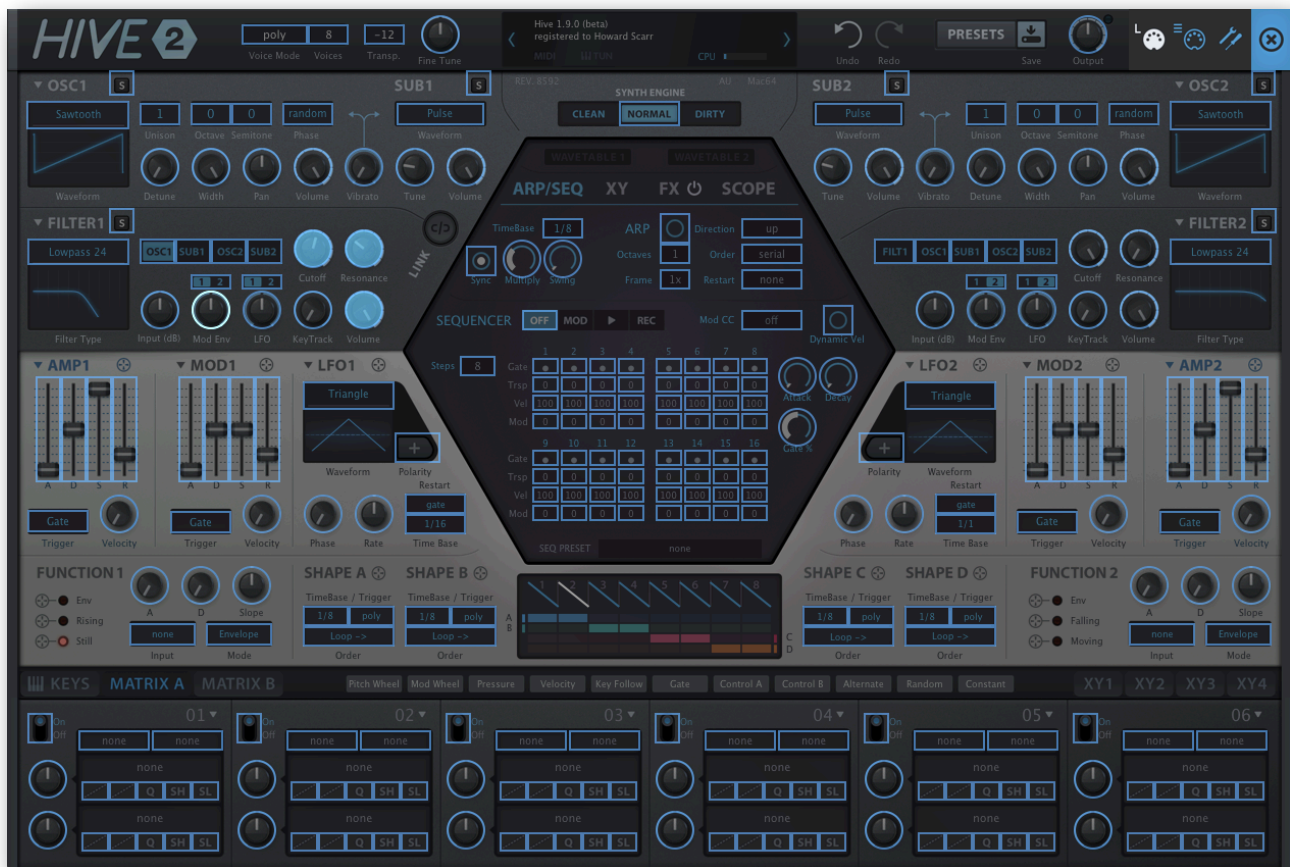
Hive version 1.0 also offered modulation sources called *Breath* (CC#02) and *Expression* (CC#11). These have been replaced by the user-definable *Control A* and *Control B*. See the [Preferences](#).

You don't need e.g. breath controller hardware or an expression pedal to make use of CC messages. Most of the MMA-specified names are purely convention: You can use anything that can send CC, for instance a knob on your MIDI keyboard or a controller lane in your MIDI sequencer.

Later revisions to the MIDI spec even included a bunch of overly specialized CC definitions such as *Celeste Detune Depth* (presumably at the bidding of a home organ manufacturer or two). We can safely ignore all those names!

## MIDI Learn

The MIDI Learn page is where you can connect MIDI CC (see above) to Hive parameters. CC data can be generated by e.g. knobs on your hardware controller, or by a track in your host sequencer. Click on the configuration button and select the 'L' MIDI icon (looks like a 5-pin DIN socket):



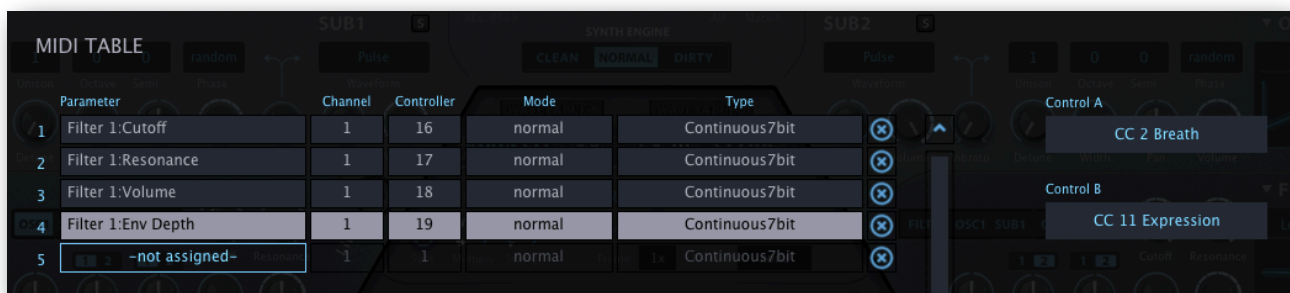
The window is a translucent overlay, with all MIDI-learnable elements appearing as selectable out-lines. Already connected controls are filled (like three of the filter knobs in this image), and the out-line of the currently active control is highlighted (like FILTER 1 *Mod Env* in this image).

Try it: Click on the FILTER 1 Cutoff knob and send it some MIDI CC data (wiggle a knob or slider on your MIDI controller). To remove the new CC connection, double-click on the same knob.

Note: Some of Hive's controls won't be immediately available. For instance you might have to toggle between the ARP/SEQ and FX panels, or between the KEYS and MATRIX pages. You don't have to exit – you can still switch them over from within the MIDI Learn page.

## MIDI Table

Click on the configuration button (the cogwheel) and select the '≡' MIDI icon...



## Parameter

The field on the left selects one of Hive's many parameters, which are sorted into sub-menus. Click on the 'ADD' button at the bottom left and experiment with this field, then delete the assignment again by clicking on the small [X] to the right of the line you just created.

Here's an experimental feature...

At the bottom of the Parameter menu are two quite special options you should definitely check out: Select *Last Clicked Control*, enter a controller number and exit the configuration pages. Any MIDI controllable knob or switch in Hive will now respond to that controller – you just have to click on it first. *Last Clicked Control Fine* is similar but with a significantly reduced range.

## Channel / Controller

The next two fields are for MIDI channel and CC number. Hive is channel-sensitive so you can map up to 16 channels for a total of about 2000 control assignments. Should be enough!

## Mode

Specifies the range and/or resolution of values.

*normal* .....full range, continuous

*integer* .....full range, whole numbers only

*fine* .....0.01 steps between the two integers closest to the current value

The next two options are mainly for adjusting oscillator pitch:

*octaves* .....max. 5 discrete values

*semitone* .....+/- 6 semitones, continuous

## Type

Specifies the type of hardware (Note: by far the most common is *Continuous 7-bit*).

*Encoder 127* .....unipolar encoder

*Encoder 64* .....bipolar encoder

*Continuous 7-bit* .....7-bit MIDI CC (normal resolution, common)

*Continuous 14-bit* .....14-bit MIDI CC (high resolution, rare)

## Remove

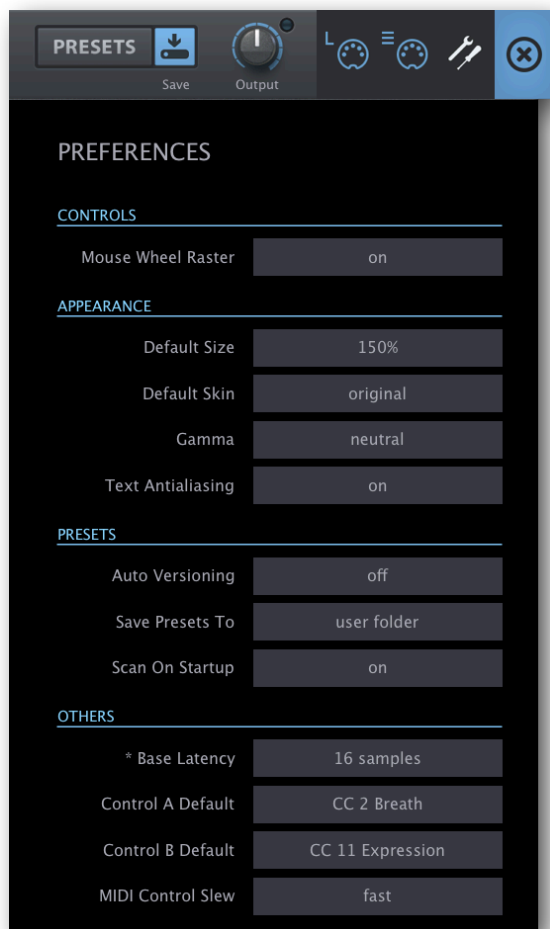
To remove individual assignments, click on the [x] to the right of each line. To remove all assignments, click on the [Delete All] button at the bottom of the window.

## Control A / Control B

Local (per instance) versions of the [Control A/B Default](#) settings. See 2 pages down...

# Preferences Page

Click on the 'tools' icon to open this page...



## CONTROLS

### Mouse Wheel Raster

If your mouse wheel is rastered (you can feel it clicking slightly as you roll the wheel), set this option to 'on' so that each little click increments the value in sensible steps.

## APPEARANCE

### Default Size

The GUI size for each new instance. You can temporarily change the GUI size without opening the Preferences page by right-clicking anywhere in the background.

### Default Skin

Sets one of the skins as global default.

### Gamma

How bright Hive appears. It can take a few moments for the UI to update to the new setting.

### Text Antialiasing

Switches the smoothing of labels and values on or off. Normally left on, only in certain cases will switching it off improve readability.

## PRESETS

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### Auto Versioning

If switched on, an index is appended to the preset name and automatically incremented each time you save it. For instance, saving 'Space' three times in a row would give you three files: 'Space', 'Space 2' and 'Space 3'.

### Save Presets To

The *user folder* option prevents Hive from saving presets into the Local folder. Instead, they will land in the User folder (or a subfolder if selected).

### Scan On Startup

Whether the preset library should be scanned and the database recreated when the first instance of Hive is started, e.g. when you reopen a project.

## OTHERS

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### Base Latency

If you are certain that your audio system – hardware as well as software – uses buffers that are a multiple of 16 samples in size (please refer to the appropriate documentation), you can safely disable Hive's base latency. Otherwise leave it set to the default *16 samples* to prevent crackles.

A new *Base Latency* setting will only take effect when the host allows e.g. on playback or after switching the sample rate. Reloading Hive also works. See MORE ABOUT BUFFERS below.

### Control A/B Default

Apart from the modulation wheel, the list of modulation sources in the previous version included two extra fixed MIDI controls: *Breath* (CC#02) and *Xpress* (CC#11). While retaining backwards compatibility, we have replaced those with the user-definable *Control A* and *Control B* sources.

### MIDI Control Slew

Determines the strength of parameter smoothing for the following performance controls: pitch bend, modulation wheel, Control A, Control B and Pressure. With *MIDI Control Slew* set to 'off', Hive is more responsive to modulation wheel data (for instance), but can sound rather grainy. The default setting ('Fast') is a good compromise between speed and smoothness.

The 'Slow' option is adaptive: Whenever the incoming control data jumps suddenly between values that are further apart, the slew is not applied.

### MORE ABOUT BUFFERS

Internally, Hive processes audio in chunks of  $n \times 16$  samples. This 'block processing' method significantly reduces the CPU load and memory usage of all our plug-ins.

If the number of samples to be processed is say 41, Hive processes the first 32 and keeps the remaining 9 in a small buffer (16 samples is enough). Those 9 samples are then processed at the start of the next call... and so on.

The extra buffer is only necessary if the host or audio driver processes 'unusual' buffer sizes. In the many host applications that process buffers of e.g. 64, 128, 256 or 512 samples (all multiples of 16), try switching it off so that Hive can process latency-free.



# Inside the Hive

## Mod Matrix Lists

### Modulation Sources

Here is a list of all modulation sources available in the [modulation matrix](#). Note that it does not include the [X/Y pad](#) controls, as these have their own dedicated matrix.

Internal sources	
Amp 1/2	amplifier envelopes
LFO 1/2	low frequency oscillators
Mod 1/2	modulation envelopes
Seq Gate	sequencer gate (adjust sequencer Attack and Decay)
Seq Mod	sequencer <i>Mod</i> data
Vibrato LFO	global low frequency oscillator (not only for vibrato!)
ShapeSeq A-D	the four parts of the shape sequencer
Func1 Env	function 1 envelope signal
Func1 Rise	function 1 gate opens during the attack phase(s)
Func1 Still	function 1 gate opens while motionless
Func2 Env	function 2 gate opens during the attack phase(s)
Func2 Fall	function 2 gate opens during the decay phase(s)
Func2 Moves	function 2 gate opens during attack and decay phases

MIDI sources	
Control A	user-definable CC - default is Breath (CC#02)
Control B	user-definable CC - default is Expression (CC#11)
Gate	+100 while a note is played, otherwise zero (see numeric sources)
KeyFollow	value derived from MIDI note number, pivots around 'E3' (note 64)
ModWheel	modulation wheel (CC#01)
PitchWheel	pitch bender
Pressure	aftertouch (channel pressure or poly pressure)
Velocity	MIDI note-on velocity

Numeric sources (%)	
Alternate	alternating extreme (+100, -100, +100, -100 etc.) per note
Random	random value anywhere between -100 and +100 per note
Constant	+100

## Modulation Targets

Here is a list of all modulation destinations available in the [modulation matrix](#). To the left is what you see in the target selector's context menu, to the right is what you see in each sub-menu.

Targets in bold typeface are [hidden parameters](#) (see the next page). These are only available in the modulation matrix and do not have controls in the panels.

Synthesis targets	
Amp Envelope 1/2	Attack, Decay, Sustain, Release, Velocity
Mod Envelope 1/2	Attack, Decay, Sustain, Release, Velocity
LFO 1/2	Phase, Rate
Function 1/2	Attack, Decay, Slope
Oscillator 1/2	Detune, <b>Tune</b> (continuous), Vibrato, <b>Phase</b> (angle), <b>PulseWidth</b> (pulse only), Volume (main oscillator), Pan, Width, Sub Tune, Sub Volume, WT Position, WT Tempo, WT Multi Pos, In Scale Transpose
Filter 1/2	Input Gain, Cutoff, Resonance, KeyTrack, Mod Env Depth, Mod LFO Depth, Volume
Mod Matrix	Depths. Drag&drop only i.e. not visible in the menu

Global targets	
Arp+Seq Clock	Multiply, Swing, Attack *, Decay * and Gate % *
Voice	Glide, FineTuneCents
Vibrato LFO	Delay, Rate
Shape Sequencer	<b>Rate A-D</b> , Left Value (A), Right Value (B), Curve (C), Ratchet (D)

\* For various reasons the targets *Attack*, *Decay* and *Gate %* are only available via drag & drop. They do not appear in the menu.

Effect targets	
Distortion	Amount, Tone, Mix, Rate, Crush
Chorus	Rate, Depth, Wet
Phaser	Rate, Feedback, Stereo, Phase, Wet, <b>Depth, Center</b>
EQ	Bass Gain, Bass Freq, Mid Gain, Mid Freq, High Gain, High Freq
Delay	<b>Time Scale</b> , Width, Dry/Wet Mix, Feedback, HighPass, LowPass, <b>Wow</b> , Diffuse
Reverb	Pre-Delay, Damp, Decay, Size, Tone, Width, DryWetMix
Compressor	Amount, Attack, Release, <b>Mix</b> , Output

## Hidden Parameters

To avoid cluttering Hive's UI with too many controls we decided to make certain parameters only available from the modulation matrix. To adjust static values, modulate with *Constant* as source.

*Oscillator Tune* (continuous)

*Oscillator Phase*

*Oscillator Pulse Width*

*Shape Sequencer Rates*

*Delay Time Scale*

*Delay Wow*

*Phaser Depth*

*Phaser Center*

*Compressor Mix*

One useful side-effect of hidden parameters is that we can add as many modulation targets for the experts as we like without making Hive any harder to use for beginners.

## MIDI Specialities

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### MIDI Programs

All presets (up to 128) present in this folder will be loaded into memory when the first instance of Hive starts. 'MIDI Programs' can then be switched via 'Program Change' messages. As MIDI Programs are accessed in alphabetical order it makes sense to prefix each name with an index '000 rest-of-name' to '127 rest-of-name'.

IMPORTANT: Unlike regular presets, MIDI Programs can't be added, removed or renamed on the fly. Changes will only take effect after the host software is restarted!

The MIDI Programs folder can contain up to 127 sub-folders of 128 presets, switched via MIDI 'Bank Select' messages (CC#0) preceding the Program Change message. The MIDI Programs folder itself is bank 0, sub-folders are addressed in alphabetical order starting with bank 1.

When Hive receives a program change, it will display the bank and program numbers to the left of the preset name e.g. "0:0" for the first preset in the first bank. In certain hosts, however, the first bank / preset is designated "1" instead of the correct "0".

To avoid another possible source of confusion, make sure that there are no junked presets in the MIDI Programs folder. All files there are addressed, even if they are hidden.

### Poly Pressure (polyphonic aftertouch)

Hive recognizes polyphonic aftertouch data – each voice is modulated independently.

### Multi-Channel MIDI

All u-he synthesizers support a growing class of highly expressive, sensor-based instruments (e.g. Haken Continuum, Eigenharp, Roli Seaboard, Linnstrument) that are capable of sending each note over its own MIDI channel. For Hive to respond correctly, your host must be capable of routing multiple MIDI channels to a single plug-in instance: This is not yet standard.

While Hive is receiving multi-channel MIDI data, each voice will respond independently to the following control messages: Pitch bend, Pressure (aftertouch), Modulation (CC #01) as well as Control A and Control B as defined in the global Preferences or the MIDI Table page.

The [voice modes](#) **Poly**, **Mono** and **Legato** become practically identical. In each case, Hive behaves like several (up to 16) mono synths set to the same sound. Note that the **duo** voice mode isn't channel-aware i.e. all MIDI channels are merged.

# NKS

As of version 2, Hive supports Native Instruments **NKS** format so that it can be integrated into the Complete Kontrol software or Maschine environments. Hive's factory presets are optionally also installed as tagged .nks files. Note: The XY pad settings are automatically transferred to the first NKS *Parameter Page* in the *Control Area*.

## Saving as .nks is only possible in the VST2 version

Mac owners can use – temporarily if necessary – any host application that supports VST2

## Saving in NKS format

While the *native*, *h2p* and *h2p extended* options cause Hive to save presets into the currently selected preset directory, .nks files go directly into the preset location used for Complete Kontrol or Maschine, so they do not appear in Hive's preset browser. To make them visible in Complete Kontrol, open its preferences and rescan the preset locations.

## Batch conversion

First, right-click the [save] button and set the target format to nks. Via command-click (Mac) or alt-click (Win), select all presets in the current folder you want to convert, then right-click any of the selected presets and choose convert to nks. Note: The original files are not affected.

## What to do if Hive doesn't show up in Complete Kontrol / Maschine.

First of all, make sure your NKS software is up to date: Complete Kontrol V1.5+ or Maschine V2.4 are the minimum requirements for u-he. In Windows, Complete Kontrol must know the Vstplugins folder containing Hive: Open Complete Kontrol preferences, go to Locations and add your Vstplugins directory if necessary, hit Rescan and check whether Hive appears. Maybe the NKS preset folder is empty? If so, please reinstall Hive with the correct VST path and the NKS-option checked. Here are the preset folder locations:

**Mac:** *Macintosh HD/Library/Application Support/u-he/Hive/NKS/Hive/*

**Win:** *...\Vstplugins\Hive.data\NKS\Hive\*

Perhaps the XML-File is missing from this location:

**Mac:** *Macintosh HD/Library/Application Support/Native Instruments/Service Center/u-he-Hive.xml*

**Win:** *C:\Program Files\Common Files\Native Instruments\Service Center\u-he-Hive.xml*

A re-install with the NKS-option checked should also remedy this issue.

## What to do if Complete Kontrol / Maschine is unable to load Hive

Either Hive wasn't installed as VST2, or it wasn't installed with the correct path. The default VST path is fixed in MacOSX, but in Windows it can be freely assigned during installation:

**Mac:** *Macintosh HD/Library/Audio/Plug-Ins/VST/u-he/*

**Win:** *<User VST Folder> / (path for the VST plug-in set during installation)*

If Hive's VST plug-in cannot be found in one of these locations, run the installer again making sure that you set the correct path and have activated 'VST' as installation option.

# Tips & Tricks

This chapter lists a few less obvious tricks you can apply to your own creations - enjoy!

## Setting Volumes

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- There are several points within the signal path where levels are affected: Oscillator volume, filter input and output volumes, amp envelope velocity, compressor amount, compressor output, main output. Which of these you choose to adjust the overall level can and will affect the sound!

For more information on this subject, search for “gain staging” in the Internet.

## 432 Hz Tuning

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- Instead of the standard 440Hz, tuning A4 to 432Hz has become inexplicably popular recently, especially in the PsyTrance scene. To retune Hive to 432Hz, set FINE TUNE to precisely **-31.76** (using SHIFT), then right-click on that knob and lock it. Of course this assumes that you haven't already used *Fine Tune* in your presets.

## Using Constant

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- To fine tune an oscillator while Unison is set to 2 or more, grab Constant from the lower bar and drop it onto the oscillator's Octave or Semi selector. As you don't get an orange dot to adjust the modulation depth directly, go into the modulation matrix and adjust it there.
- With lots of positive modulation, the cutoff can be too high even if the knob is turned down to minimum (30.00). All is not lost, however – you can take it much further down in the modulation matrix. With 'Constant' as source and Cutoff as target, set a negative amount. For an example see matrix slot 02 in *09 Loops - untuned / HS Analogue Noise Hits*.
- Does the delay sound too wobbly or not wobbly enough? Go into the matrix, select the panel preset *09 UnWow the Delay* and adjust the lower of the two modulation amount knobs. The upper knob lets you adjust the overall delay time ('Time Scale') – another hidden parameter itching to be used for more experimental sounds.
- For waveform variations, you can use Constant to adjust the pulse width of a pulse wave. Or even set a Phase offset between the main oscillator and its sub-oscillator. Try this:
  1. Load *init* by right-clicking on the data display.
  2. Set the SUB1 waveform to Sawtooth and Tune to 0.00, then switch SUB1 on for filter 1. The result is a pair of saws with a 90° phase offset – have a look at the waveform in the Scope (Tip: switch to the Clean engine, turn Input (dB) up to maximum, turn the global Volume down and zoom into the wave).
  3. In the matrix, select the **10 Phase Control** panel preset and adjust the upper modulation amount while listening carefully. At around -25 or +75 you should hear a perfect octave, with various timbres between those values.
  4. Moving the amount knob sounds like PWM (see the next page) – so try modulating oscillator Phase with a slow LFO instead of or in addition to the Constant.
- Constant can also unison-detune oscillators well beyond the maximum range of the Detune knob. Applying multiple times adds more detuning. See **07 Chords / HS Klustah 1 - pure**, which uses 14 slots just for the detuning. Note: There's a mod matrix panel preset for detuning oscillator 1 called **06 More Detune**.



## Pulse Width Modulation

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- A chorus-like effect at the oscillator level, PWM is ideal for ‘string ensemble’ sounds as well as for simple but rich-sounding leads and basses. The first method is regular PWM using a Pulse oscillator and an LFO:
  1. Load *init* by right-clicking on the data display.
  2. Set OSC1 Wave to Pulse (the PWM-capable version of Square).
  3. In the first Matrix slot (01), select LFO1 as the Source.
  4. Click and drag the crosshair from one of the Target selectors in matrix slot 01 and drop it onto oscillator 1’s Wave selector: the Target selector should now read ‘Osc1:PulseWidth’.
  5. Turn the modulation amount up to about 50, play a low note and listen. Adjust LFO1 Rate.
  6. Does the PWM effect “seesaw”, i.e. is it not round enough? Change the LFO wave to Sine and listen again. Try various LFO Rates.
  7. Start again, but instead of step 3 load the *04 PWM via LFO1* matrix panel preset.
- Here’s an alternative method that uses a pair of saw waves with one of them inverted:
  1. Load *init* by right-clicking on the data display and set SUB1 Wave to *like Osc*.
  2. Tune the SUB’s Tune knob to about 0.20, but leave its Volume at minimum.
  3. In the Matrix, select Constant as the source then drag from a Target up to the SUB1 Volume knob. Set the amount to -100 (negative 100) for an inverted sawtooth at maximum volume.

## Wavetable Tricks

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- Experiment with the 2D capabilities, not only with the wavetable preset *3 Overtones.uhm*. For instance *FM Fold Rhythm.uhm*, which normally includes several gaps of silence, changes its overall character if you set *Tables* to e.g. 4.
- Would you like an instant sitar-ish synth or a typical FM e-piano? Then try this: Load *init* (right-click on the data display), select *Wavetable* as OSC1 Wave, load *DX Piano.uhm*, select Auto Mode *one shot*. Play that sound, then activate Reverse and play the e-piano.
- As the most important wavetable parameter is *Position*, you should always try adjusting it while auditioning wavetables. You don’t even have to open wavetable panels in the hexagon, as the *Position* is also available in each oscillator panel – drag the waveform display up and down.
- Some factory wavetables contain sudden “jumps” from one frame to the next, either tonally or in level. You can make good use of these by setting *Position* close to a jump and modulating it within a very narrow range: Great for odd rhythms or special-sounding attacks... sometimes the smaller modulation amounts deliver the more dramatic results.

## Filter Tricks

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- Only one lowpass filter is necessary for a classic “analogue” sound, so you can use filter 1 to boost the bass of the oscillator signal before it reaches Filter 2: Set Filter 1 type to *Peaking*, add resonance (about 30 should be enough), leave KeyTrack at minimum and adjust the Cutoff until you hear the right kind of bass bump on low notes. Finally, turn Filter1 volume down to zero and select FILT1 as the **only** input for filter2.
- With parallel filter routing you can emulate the “leakage” effect typical of certain multimode filter designs: Add a tiny amount (1.00 should be plenty) of the unfiltered oscillator signal.

## Envelope Tricks

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- For a more snappy decay, negatively modulate the Decay from the same envelope. Positive modulation has the opposite effect, a convex curve. Modulate the attack negatively (-100%) and set the Attack to around 22 for a short “pre-attack”.
- Experiment more often with the MOD envelope in ‘One Shot’ trigger mode instead of the standard ‘Gate’. Higher ‘Sustain’ levels can lead to surprising results!
- For access to some extra LFO shapes in sync with the regular LFOs, set the trigger modes of any otherwise unused envelopes to ‘LFO 1’ or ‘LFO 2’.
- A fairly well-known technique is, in addition to positive “Mod Env” depth, to modulate cutoff directly from velocity. Try modulating the Sustain level of that same envelope instead.
- Try modulating the vibrato amount with an envelope. You can easily create an initial ‘growl’ using very fast vibrato modulated by a rapidly decaying envelope.
- Try using two envelopes instead of one (although this can get a bit complicated). For a 2-stage decay, modulate the Sustain of one envelope from the other with a much slower Attack or Decay. For a typical ‘cinematic swell’, modulate the filter Input Gain or Volume from the other (also with a much slower Attack or Decay).
- Countless variations are begging to be investigated. Listen to what happens if you modulate each stage of the main envelope, or when a pair of envelopes modulate each other.
- Clicks: At minimum, the attack, decay and release phases are very fast, so notes played with Hive can click as much as (or even a little more than) any real analogue synthesizer. Mild clicking can give notes more “thwack”, but if you want to remove it completely, set the amp envelope Attack to at least 1 and the Release to at least 8.

Tip: If you set the oscillator Phase mode to ‘Reset’, all clicks will sound exactly the same unless oscillator phase is modulated. You have complete control!

## LFO Tricks

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- Try modulating a single target from both LFOs, with various Sync ratios and phases. For instance two square waves modulating oscillator 1 pitch. Or you can use two sawtooth LFOs with opposite polarity to create staircase patterns.
- The LFO waveforms can be skewed via recursive modulation of the Phase or Rate. E.g. set the source to LFO and the target to LFO1 Phase. You can even change the pulse width of a square wave using this method!

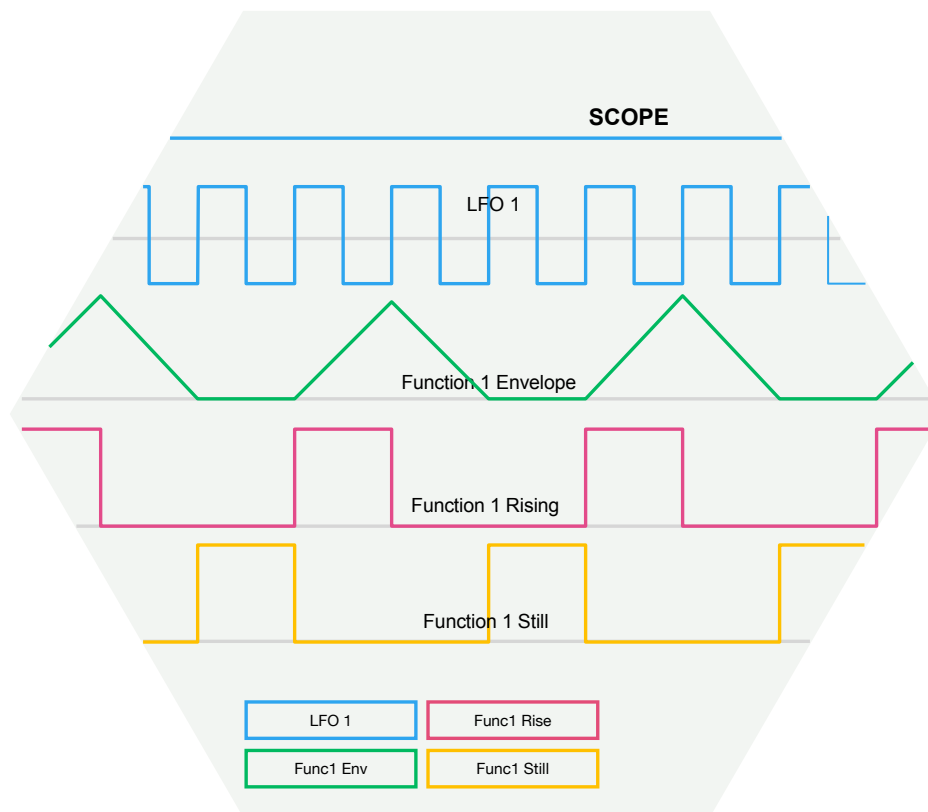
## Shape Sequencer Tricks

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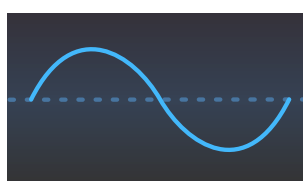
- Activating “prime numbers” of cells in each lane will ensure that sequences don’t repeat for a long time, even if all the shape modulators have the same *TimeBase*: For instance, try looping 3, 4, 5 and 7 cells together. This will only repeat after 420 beats, and if for instance you double the *TimeBase* of that ‘7’ shape modulator, only after 840 beats! A little math goes a long way...
- If you are using the shape sequencer together with Hive’s arpeggiator / sequencer, try setting the clock slower than the shape modulators (or the shape modulators faster than the clock) so that more than one segment can be triggered per note.
- Try making a long envelope using all 8 segments, then choose the best segments for other tasks (using the other 3 lanes) afterwards.

## Function Generator Tricks

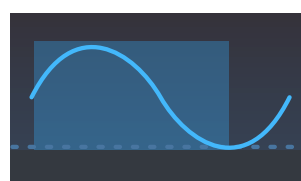
- With LFO-triggered One Shot envelopes, the gate outputs can function as clock dividers. Here's an example (Input = square LFO, the slower gates are created by adjusting A and D):



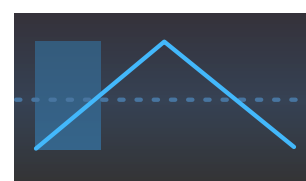
- Func1 Still* or *Func2 Fall* can be used to delay something e.g. when an oscillator will become audible (modulate its Volume). Use Attack/Decay to adjust the time before the gate opens.
- The various LFO waveforms cross zero (in the positive direction) at different phases, which can cause the FG to trigger after you have played the note. To ensure that the FG trigger and MIDI Note On coincide, adjust LFO Phase as follows.



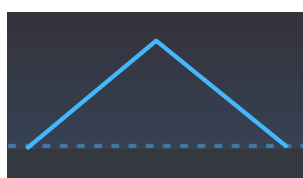
Bipolar Sine, Phase = 0



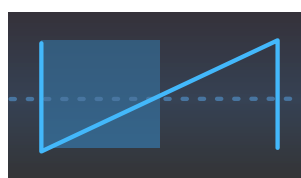
Unipolar Sine, Phase = 75



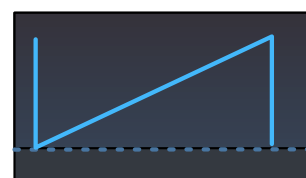
Bipolar Triangle, Phase = 25



Unipolar Triangle, Phase = 0



Bipolar Saw Up, Phase = 50



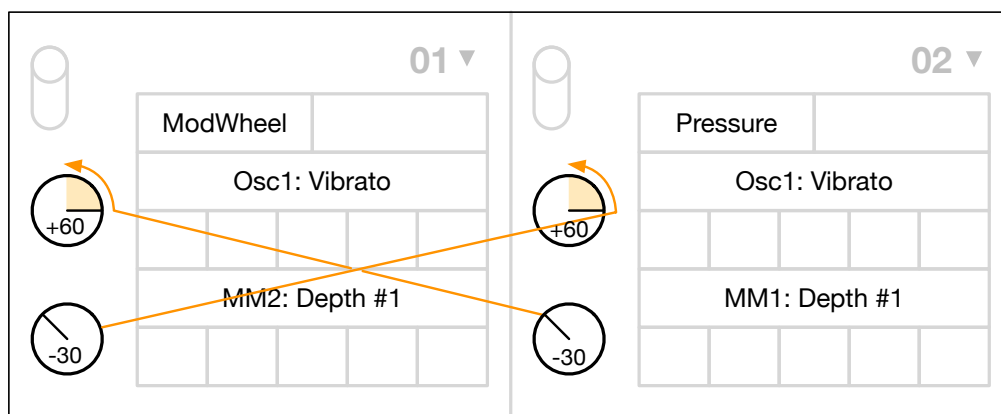
Unipolar Saw Up, Phase = 0

- To avoid wrist strain while adding vibrato or opening the filter via aftertouch, try routing Pressure through an FG set to one of the "Follow" modes. Turn the FG Decay up to maximum and the Attack to taste. A short "stab" of pressure is enough to keep the vibrato or cutoff up for a while.

## Modulation Matrix Tricks

- Quantize an LFO so that its speed can only be halved or doubled by the modulation source. Or in this example, doubled or quadrupled: Starting with *init*, select the LFO1 waveform *saw down*, set its Restart mode to *sync* and Time Base to *1/4*. Drag Velocity from the lower bar and drop it onto the Rate knob. In mod matrix unit 01, choose the *expanded* curve (ensures that fairly low velocities don't already double the LFO rate) and *integer* quantization. Turn the modulation depth knob up to 50.00. In Filter 1 reduce the Cutoff and turn LFO1 cutoff modulation up. Now try playing notes with very different velocities.
- You can double the rate of a triangle wave LFO by setting the rectification to *full wave +*.
- To transpose a random selection of your played notes up an octave, try this experiment: Starting from *init*, set a source in the mod matrix to Random, the target to Oscillator 1 Tune (drag & drop to its Octave or Semitone selector) and the depth to about 30 for now. Next, right-click on the target selector, choose the Quantize mode *steps of 12* and the Rectify mode *half wave +*. Play the same note repeatedly to test how often the higher octave appears. Turn the depth up to 75 for more, or even higher for the occasional note 2 octaves up.
- Try setting the same target parameter in both slots, but with a different set of slot modifiers. The matrix preset *12 Funny Release* is a good example: The amounts are equal but in opposite directions, which would normally cancel each other out, but the Slew Limiter of the upper slot is set to *slow* so that the pitch bounces upwards on release.
- The depth knobs in the matrix are also valid modulation targets, which practically gives you an extra "Via" modifier per slot. As this feature has only been implemented since version 1.2, few of the factory presets use it. Mostly uncharted territory waiting to be explored!

Here's an example for all you gold-caped keyboard wizards out there. This trick applies vibrato using any mixture of modulation wheel or aftertouch, perfectly balanced:



How it works: Applying maximum pressure reduces the amount of modulation from the wheel to zero and vice versa: The sum of both modulation depths for the vibrato is always 60% here. Note that you only need -30 negative modulation to remove +60. Just one of several quirks!

- For stronger pitch modulation with quite a different curve, try *overtone series* quantization with *smooth* slew limiting (SL). If you are using an LFO as mod source, make that unipolar.
- A different-sounding glide, which will only work when the [Voice Mode](#) is set to *legato*: Modulate oscillator Tune by KeyFollow **twice** with modulation depths set to -100 and +100, then choose *slow* SL (slew) for the slot with the positive modulation.

## XY Pad Tricks

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- Unipolar parameters set to zero will only respond to movement in the “positive” areas of the XY pad. Try this: Turn that parameter up and move the assigned XY control equally far into the negative before saving your preset. That way you can use the full width/height of the pad.
- Although the automatic XY assignment is usually good enough, you can get a better “feel” if you tweak the ranges to perfection.

## Arp & Sequencer Tricks

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- Try recording a sequence with the arpeggiator switched on – a very quick method of turning a simple 3-note chord into a ‘rolling’ sequence with consistent velocities.
- Vary the sequence length: MIDI-learn the ‘Steps’ selector, then with a 16-step sequence running, quickly change the number of steps from 16 down to 2 or 3. Watch how the sequence runs backwards (!) until it can comply with the new setting. Keep performing...
- If you would like an extra melody running in parallel, and you don’t want it to glide, you should try modulating the pitch of one of the oscillators with the sequencer’s velocity data. As the velocities are pitch **offsets** it can be difficult to set up.
- Alternatively, switch MIDI Control Slew off (see [Preferences](#)) and use either Breath or Expression as your pitch ‘CC’. See **Modulating Pitch** a few pages back.

## Reverb Tricks

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- Try setting a very small reverb size e.g. 4.0 with very little damping, a long decay and high mix value – you should start to hear comb filter type resonant effects. With practice you can achieve typical wind-instrument formants or small resonators (banjo, acoustic guitar, metal canister etc.)!
- In addition to the above, pre-delay will give you a coloured slap-back delay effect.
- Extreme values are a useful source of inspiration. For ‘infinite space’, set the Size and Decay both to maximum, Damp and Tone to the default values (double-click).

## Delay Tricks

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- For early reflection effects set the Left and Right delays to 1/32 and 1/16T and turn diffusion up to maximum. Starting from zero, slowly adjust the feedback until it sounds like a cheap reverb effect. Then adjust the LP and HP values to thin out the reverb tail until you reach the desired ambient effect. If the current song tempo is very slow, you might have to speed up the delay by negatively modulating its Time Scale with the source ‘Constant’...
- Adjusting the delay’s Time Scale can also add swing to rhythmic presets – see e.g. matrix slot 03 in the ‘HS Rotation Shuffle’ presets, and compare the sound with and without FX.