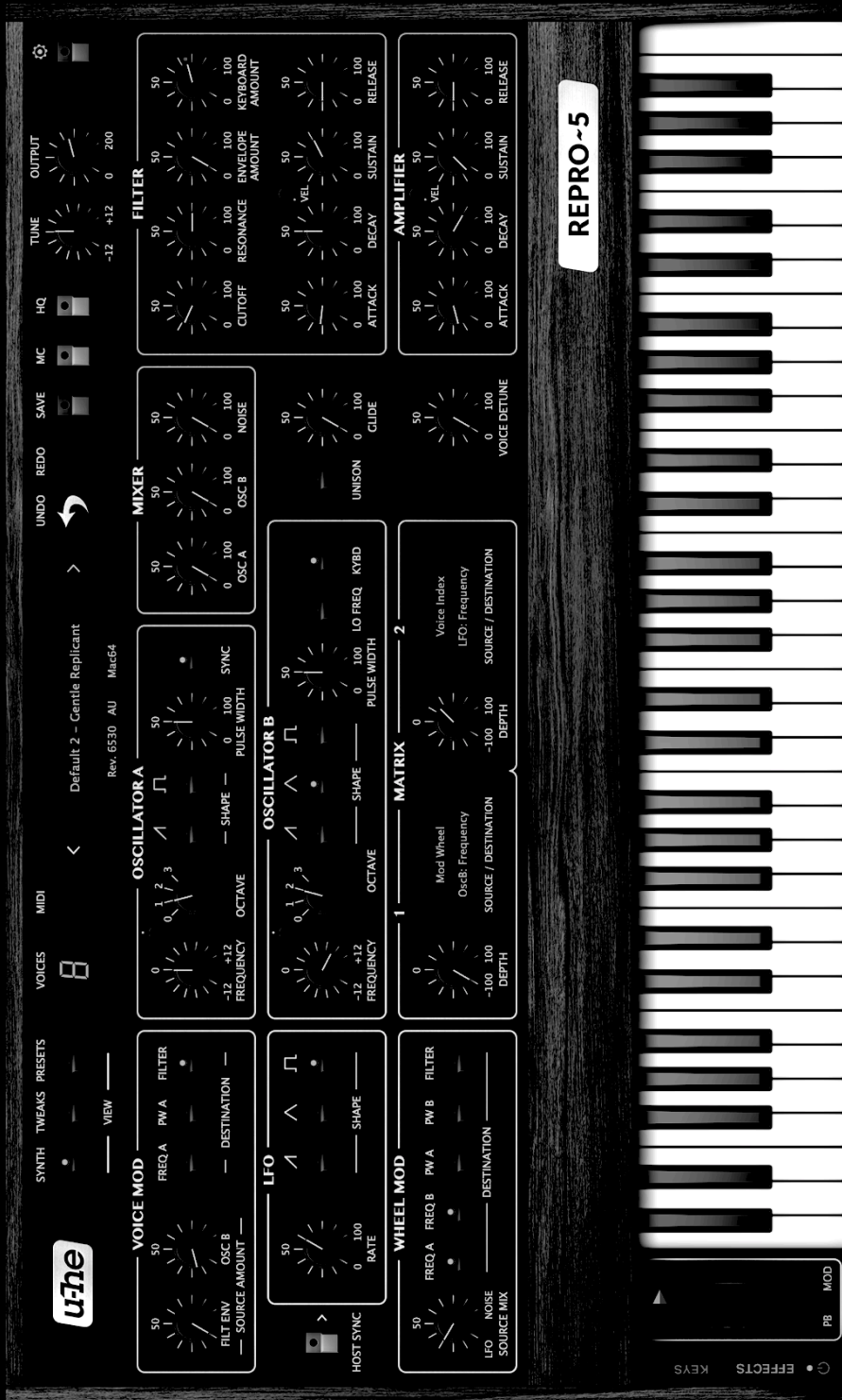


REPRO-5 USER GUIDE



REPRO-5

ההמחאה
יצירה טובה

REPRO-5 SYNTHESIZER USER GUIDE

by u-he / Heckmann Audio

Revision 1.1.1

S/N 1000 up

User Guide No. HA1000D

Date: December 11, 2017

About Repro-5

First we released Repro-1, a faithful component-level model of what was perhaps the most powerful-sounding monophonic keyboard ever built. Repro-1 proved to be a very successful product! It seemed that people liked Repro-1 so much, they wanted more... would we please consider making it polyphonic?

After umming and ahhing about the idea, we decided to give it our best. A few cuts were inevitable (for instance in Repro-1 oscillator B can modulate its own pulse width, which we gladly dropped from Repro-5).

We soon realized what was happening to our new baby: It was looking more and more like its true father, a famous **5-voice polyphonic** synthesizer from the same company born in 1978. We were aware that a polyphonic Repro-1 would never grow up to be a 100% clone of that synth, but with basically the same sound plus a few tweaks, 99% will do nicely thank you!

So here it is: All the lovable quirks of that classic polyphonic synthesizer, plus several additions including more voices (max. 8) and a row of very cute stomp-boxes. We hope that Repro-5 will quickly become your favourite “classic analogue polysynth”.

Product Names

The polyphonic version was dubbed *Repro-5* for obvious reasons, but we were presented us with another conundrum: Repro-5 had to reside within the file layout we had already set up for Repro-1, and we couldn't rename everything *Repro* internally without breaking stuff for our existing Repro-1 customers. So Repro-5 uses resources within Repro-1 folders. Ignore!

The product bundle called **Repro** contains two plug-ins: a monosynth called **Repro-1** plus a polysynth called **Repro-5**. The installer for both is still called **Repro-1**. Alles klar?

- Urs and the team, 2017

Table of Contents

About Repro-5	ii
1 INTRODUCTION	2
1-1 INSTALLATION	2
1-2 RESOURCES	3
1-3 KNOBS AND SWITCHES	3
1-4 THE CONTROL BAR	4
1-5 KEYBOARD and WHEELS	5
2 PRESET BROWSER	6
2-1 DIRECTORY PANEL.....	7
2-2 PRESETS PANEL	9
2-5 SEARCH BY TAGS	11
2-6 SEARCH BY TEXT	13
2-7 SMART FOLDERS	15
3 SYNTH	16
3-1 OSCILLATOR A	16
3-2 OSCILLATOR B	17
3-3 MIXER.....	18
3-4 UNISON, GLIDE & VOICE DETUNE	18
3-5 FILTER	19
3-6 AMPLIFIER.....	20
3-7 VOICE MOD	21
3-8 LFO	22
3-9 WHEEL MOD	22
3-10 MATRIX.....	23
4 TWEAKS	25
4-1 JUMPERS	26
4-2 SELECTORS	27
4-3 VOICE PANNING	28
5 EFFECTS	29
5-1 DISTORTION	29
5-2 FX CHAIN	30
5-3 VELVET tape saturation	31
5-4 LYREBIRD delay	32
5-5 RESQ resonator / equalizer	33
5-6 DRENCH reverb	34
5-7 SONIC CONDITIONER.....	35
6 CONFIGURATION	36
6-1 ABOUT MIDI CC	36
6-2 MIDI LEARN	37
6-3 MIDI TABLE	37
6-4 PREFERENCES.....	38
7 NKS	40

1 INTRODUCTION

1-1 INSTALLATION

The following procedure installs both **Repro-1** and **Repro-5** on your hard disk

Go to the [Repro-1](#) web page and download the latest installer for Mac or PC. Unzip the file, open the **Repro-1** folder, start the installer application and follow instructions.

The only demo restriction is a mild crackling at irregular intervals after about two minutes use. The crackles disappear after you have purchased a license and entered the serial number. For more information, please refer to the *ReadMe* file included with the installer.

By default, **Repro-5** uses the following directories on your hard disk:

Windows

Presets (Local)	... \VstPlugins\u-he\Repro-1.data\Presets\Repro-5\
Presets (User)	... \VstPlugins\u-he\Repro-1.data\UserPresets\Repro-5\
Preferences	... \VstPlugins\u-he\Repro-1.data\Support\ (*.txt files)
Alternative skins	... \VstPlugins\u-he\Repro-1.data\Support\Themes\ (skin folder)

macOS

Presets (Local)	<i>MacHD/Library/Audio/Presets/u-he/Repro-5/</i>
Presets (User)	<i>~/Library/Audio/Presets/u-he/Repro-5/</i>
Preferences	<i>~/Library/Application Support/u-he/com.u-he.Repro-5... (*.*) files)</i>
Alternative skins	<i>MacHD/Library/Application Support/u-he/Themes/ (skin folder)</i>
Other Resources	<i>MacHD/Library/Application Support/u-he/Repro-1/</i>

“Repro-1” in the above paths is not a copy/paste error. See [Product Names](#) above.

To uninstall **Repro**, delete the plugin files and these folders.

Important: Realtime malware scanners (e.g. Windows Defender) allowed to scan **u-he** plugin resources will slow down the browser considerably, depending on the number of presets. Please add the **Repro-1.data** folder to the scanner's exceptions list (you can rest assured that we haven't put any executable files in there). Mac owners using a malware scanner should add the above */u-he/* resource directories to the exceptions list.

1-2 RESOURCES

u-he online

For downloads, news and support, go to the [u-he website](#)

For heated debates about u-he products, go to the [u-he forum](#)

For friendship and informal news updates, go to our [facebook page](#)

For u-he presets (paid or free), go to u-he preset library [PatchLib](#)

For video tutorials and more, go to our [youtube channel](#)

For personal pics and a few videos, go to our [instagram page](#)

For audio demos of soundsets, go to our [soundcloud](#)

u-he team

Urs Heckmann (boss code, vision)

Sascha Eversmeier (code, puns)

Jan Storm (framework, more code)

Sebastian Greger (GUI design, 3D stuff)

Rob Clifton-Harvey (interwebz & support)

William Rodewald (student-life-support code)

Howard Scarr (presets, manuals, necessary grump)

Michael Pettit (videos, marketing, web development)

Viktor Weimer (support, presets, the voice)

Thomas Binek (QA / bug-hunting, presets)

Alexandre Bique (all things Linux)

Frank Hoffmann (more framework, new browser)

Henna Gramentz (worldly supervision)

Oddvar Manlig (everything else)

...with special thanks to John Bowen for some history-making presets!

JUMP BETWEEN CHAPTERS USING THE HYPERLINKS AT THE BOTTOM OF EACH PAGE

1-3 KNOBS AND SWITCHES

The knobs respond to vertical click & drag as well as to mouse wheel movement (no clicks required!). You can **fine tune** most parameters, often at a resolution of 0.01, by holding down SHIFT before clicking on the knob. How switches react depends on a global preference called *Switch Behaviour* – see the [Configuration](#) chapter.

The name and value of the control currently being edited appears in the **data display**, which you will find in the middle of the control bar (see below).

Parameter Locking: To prevent a value from changing when you switch presets, use the *Lock* function – right-click on any control and select the last entry in the menu. Don't forget to unlock afterwards, otherwise presets will sound "wrong".

Entering values: The value of the most recently used control can be set by entering numbers on your computer keyboard. Switches take integer indices e.g. you can set *Clock* to 1/16 by entering '19'. Please note that hosts respond differently to keyboard strokes while a plug-in has the focus – you might have to set an option to allow this feature. If in doubt, please refer to the documentation of your host app.

1-4 THE CONTROL BAR



u-he Badge: Clicking on **u-he** opens a popup menu containing links to this user guide, to our homepage, to our support forum, and to various social networks.

SYNTH, TWEAKS, PRESETS: These buttons switch between Repro-5's three basic views. To ensure that each new instance will open in the current view, right-click anywhere within the row of buttons and select *set current as default*.

MIDI activity: An indicator which flashes whenever MIDI data is being received.

Data Display: Normally shows the name of the preset. Clicking in the middle of the display lets you select any preset from the current folder. While editing, the name and value of the parameter is displayed, and the preset name reappears after a few seconds.

UNDO / REDO buttons: Use these to fix any mistakes. Although the number of steps in the undo-buffer is limited, you can even undo a change of preset.

PRESET buttons: These step backwards and forwards through all Repro-5 presets.

SAVE button: Stores the preset into either the currently selected folder or the 'User' folder, depending on the *Save Presets To* preference (see chapter 6). To select a different folder, click on PRESETS and navigate in the directory. Then click on [SAVE], give your preset a suitable name and enter any details you would like to appear in the PRESET INFO area of the browser. Note: Please avoid using these characters while naming folders/presets: (\ / ? % * : " > < =).

Right-clicking on [SAVE] opens a menu with a choice of file formats. The recommended *h2p* option is our cross-platform format (editable text), while *h2p extended* includes extra readable information. The *native* option is the standard format of your system (.fxp for VST and AAX, .aupreset for Audio Units). An *nksf* option also appears in the VST2 version (see [chapter 7](#)).

MCORE (multicore) button: All played voices are distributed between multiple CPU threads so that more can be played simultaneously. This works well on recent processors (e.g. i5 and i7) but please note that performance can actually be reduced if your CPU is older. Some hosts offer their own multicore support, and this can also lead to poorer performance for Repro-5. In such cases, please switch one of them off. See [Multicore Threads](#) in the Preferences section.

HQ button: The global *High Quality* option should only be necessary for extreme FM sounds or extreme pitches. Circuit-level modeling requires plenty of CPU anyway, and there's no point in doubling that requirement for little or no difference in the sound. Consider carefully!

VOICES: The maximum number of voices played before note-stealing occurs. Also the number of stacked voices when UNISON is switched on.

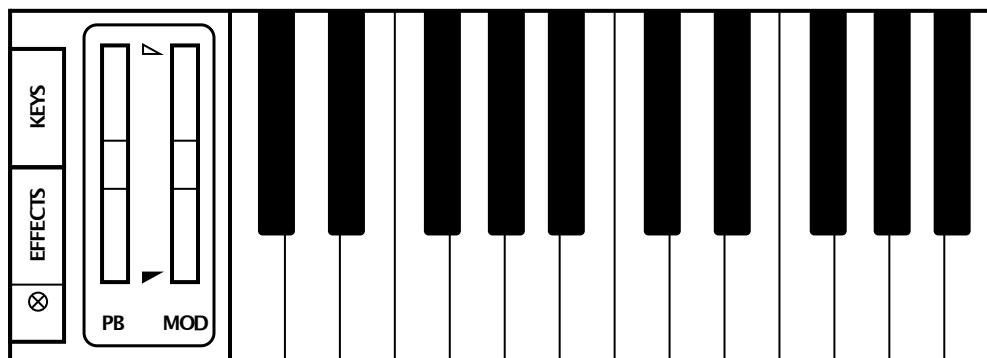
TUNE: Tunes the preset within a range of +/- 12 semitones. For fine tuning, hold down a SHIFT key on your computer keyboard while adjusting.

OUTPUT: A final volume control, after all amplifiers and effects. Normally set to 12 o'clock i.e. 100%, the volume can be boosted up to 200% if necessary.

Configuration button: A click on the button below the cogwheel icon opens the configuration pages, which contain MIDI control options and various global settings. See [chapter 6](#).

1-5 KEYBOARD and WHEELS

The FX button at the bottom left toggles between the effects and the keyboard view:



Keyboard: Most of this panel is taken up by a 5-octave keyboard — the same range as the original synth. You can click the keys to fire off notes. Double-clicking on a key will sustain the note until you click on another.

Immediately to the left of the keyboard are two ‘left-hand controls’...

PITCH BENDER (PB): Centre-sprung control of overall pitch. The ranges (down and up, from 0 to 48 semitones) can be set in the TWEAKS page. Repro-5’s pitch wheel mirrors incoming MIDI pitchbend data, but can also be moved with the mouse.

MODULATION WHEEL (MOD): Mirrors incoming MIDI CC#01 (modulation wheel) but can also be moved with the mouse. Not centre-sprung but positive-only, 0.00 to 100.00.

WHEEL MOD LIMITS: The small **triangles** between the two wheels are used to set upper and lower limits of wheel modulation (see WHEEL MOD). For instance, if you want a certain minimum amount of LFO/noise modulation when the wheel is all the way down, move the red triangle up a little. Similarly, to restrict the vibrato range i.e. limit the maximum amount, pull the white triangle down. To move both of them together, roll the mouse wheel.

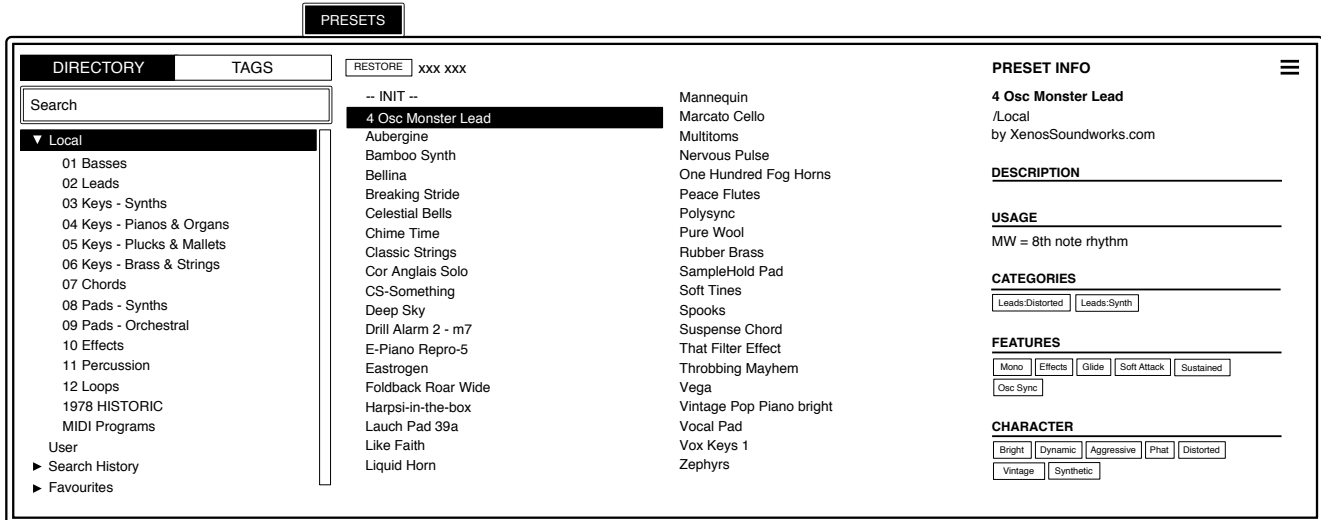
Note: These limits do not affect the depth of wheel modulation defined in the MATRIX.

Vibrato via modulation wheel

- In the WHEEL MOD panel, activate the FREQ buttons for both oscillators
- Set the WHEEL MOD LIMITS to 0.00 and about 10.00
- If you need a certain minimum vibrato when the wheel is at its lowest position, bring the lower (red) triangle up very slightly.

2 PRESET BROWSER

In the control bar, click on the PRESETS tab. You should see something like this:



Folders appear on the left (drag the scrollbar to see more), presets appear in the centre and information about the currently active preset appears on the right. If you can't see any presets, click on *Local* then on *01 Basses* (for instance). If you don't see a PRESET INFO panel, click on the [≡] button in the top right corner and activate *Show Preset Info*.

Note: The Local root directory contains a representative selection of presets.

To load a preset, click on its name. Immediately after selecting a preset you can step through all the others using your computer's cursor keys.

That's actually all you need to know for now! *Repro-5's* browser has many more features for users who want to dig deeper: The file functions include drag&drop, a powerful search engine etc.. For details, read the rest of this chapter.

Default, initialize

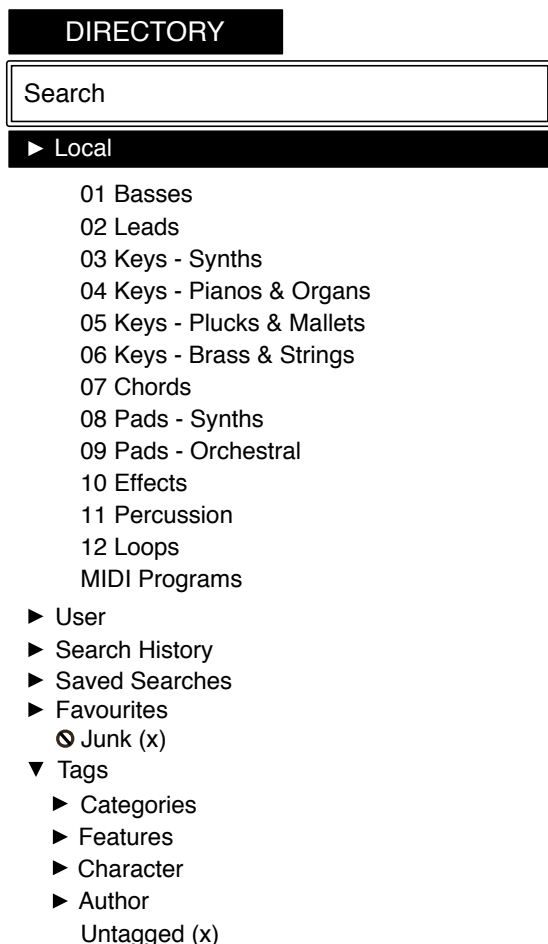
Whenever *Repro-5* is started it checks whether the 'Local' root contains a preset called *default*. If this file exists, it is loaded instead of the demo sound.

If you want a simple template preset to be loaded every time, do this: Either load *--INIT--* from *Local*, or click on the data display and select *init* (initialize) from the bottom of the list. Make sure that the *Local* folder is selected and [SAVE] this preset under the name *default*.

Note that *default* will not appear in the browser. If a fresh instance of *Repro-5* is not loading your new *default*, it probably landed in 'User' instead, in which case you should change the *Save Presets To* setting (in Configuration/Preferences) and repeat the above..

2-1 DIRECTORY PANEL

If you don't see this panel in Repro-5's PRESETS browser, click on DIRECTORY.



The 'Local' folder

Repro-5's factory presets are sorted into folders 01 to 10. We recommend that you do not add or remove any presets there, but save all your creations to 'User' (see below).

Named after the year Repro-5's hardware ancestor first appeared, the **1978 Historic** folder contains the original 40 presets, meticulously recreated using several different sources.

'Local' also contains a special folder called '**MIDI Programs**' which is normally empty. When the first instance of Repro-5 starts, up to 128 presets from that folder are loaded into memory so they can be selected via *MIDI Program Change* message. It is a good idea to call those presets e.g. '000 rest-of-name' to '127 rest-of-name', as they are accessed in alphabetical order.

But that's not all: the 'MIDI Programs' folder can contain up to 127 sub-folders, switched via *MIDI Bank Select* messages (CC#0). Send *Bank Select* first, then *Program Change*. 'MIDI Programs' is bank 0, sub-folders are addressed in alphabetical order starting with bank 1.

Important

'MIDI Programs' cannot be added, removed or renamed on the fly – any changes to that directory will only be updated after the host application is restarted.

The ‘User’ folder

The best address for all your creations! 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 (chapter 6).

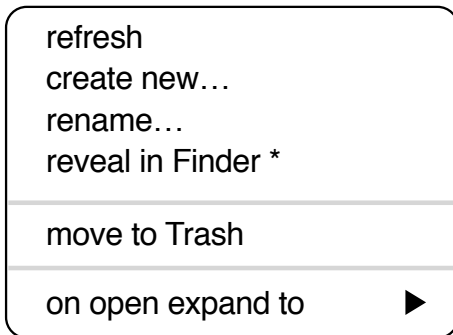
Tip: It’s worth finding out where the *User* folder actually resides on your computer. In *Repro-5*, right-click on *User* and select *reveal in Finder* (Mac) / *open in Explorer* (Win).

Search History, Saved Searches, Favourites, Junk, Tags

These aren’t regular folders, but *smart folders*. See section [2-7](#).

Directory context menu

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



refresh: Updates 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 subfolder.

rename... Edit the folder name.

reveal in Finder / open in Explorer: Opens a system window for the clicked folder. Please remember that if you add, remove or rename any preset files or folders there (i.e. outside of *Repro-5*’s browser), you should always *refresh* the directory afterwards.

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

2-2 PRESETS PANEL

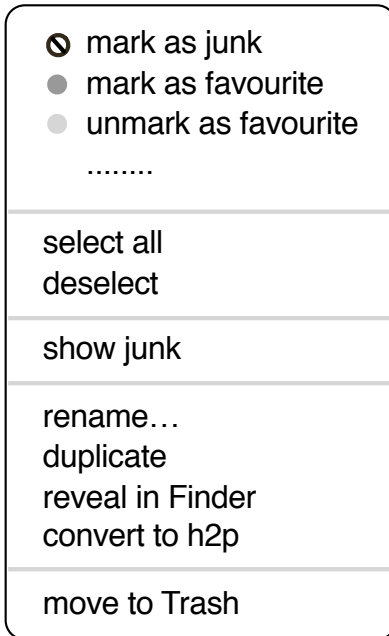
The central, unlabelled area of the browser is where you click to load presets...

[RESTORE] button

You can try as many presets as you like in any folders without losing the one that was previously loaded: Clicking [RESTORE] will get you back to where you started.

Presets context menu

Right-click to open a menu containing functions you can apply to individual presets.



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

mark as favourite: Choose one of eight differently coloured dots. To remove the dot again, right-click on the preset(s) and select *unmark as favourite*.

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

show junk: Activate this option to display junked files (marked with a STOP symbol), which would otherwise disappear.

rename...: Preset names aren't set in stone – you can change them at any time using this function. Note that only the most recently selected preset can be renamed i.e. you can't rename multiple files at once.

duplicate: A copy of the selected files are saved into the same directory, with an incremental number appended to the original name (like the 'Auto Versioning' option).

reveal in Finder / open in Explorer: Opens a system window for the selected preset. If you change anything there, refresh the directory (see the the previous page).

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

move to Trash / Recycle Bin: Moves the selected preset(s) to the system trash.

Multiple selection, drag & drop

A block of adjacent presets can be selected via shift+click, and individual presets can be added to an existing selection via cmd-click (Mac) / ctrl+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.

2-4 TAGGING

“Tags” are elements of metadata (information) you can add to presets so that they can be found according to certain attributes. See the image below.

IMPORTANT: Clicking on [SAVE] isn’t required, as tags are updated automatically. This makes editing tags much easier overall, but also means that you should only add tags **after saving your preset**. Why? Because if you change the tags while creating a new version of something, you would also be changing the tags in the original preset.

To set tags, you have a choice of three different methods:

Standard method: Using the tagging window

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

CATEGORIES		FEATURES		CHARACTER	
Bass	Acoustic	Mono	Percussive	Bright	Dark
Pads	Atonal	Poly	Sustained	Dynamic	Static
Leads	Breathy	Chord	Modulated	Constant	Evolving
Keys	Chords	HostSync	CrossMod	Soft	Aggressive
FX	Distorted	Dry	Osc Sync	Harmonic	Inharmonic
Drums	Drones	Effects	Unison	Phat	Thin
Seq & Arp	Evolving	Glide		Clean	Distorted
Stabs	PWM	Soft Attack		Wide	Narrow
Other	Rhythmic	Slow Release		Modern	Vintage
	Soundscape			Acoustic	Electric
	Strings			Natural	Synthetic
	Vocal				
	Lo-Fi				

CLOSE

CATEGORIES describe a preset by analogy to instrument types or classic synth genres. Each one has its own set of subcategories. FEATURES are technical classifications, and CHARACTER tags are pairs of opposites from which you can choose only one.

Alternative 1: Using the PRESET INFO

In the PRESET INFO panel, right-click on CATEGORIES, 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 'xx'*.

The function *create Search from Tags* searches for presets with ALL the same tags.

Alternative 2: Using the Tags subfolders

You can drag & drop presets onto *Tags* smart folders e.g. *Tags/Categories/Keys/Bells/*. This method can also be used to change the Author: Instead of signing each of your creations, you could sign just one of them, then select them all and drag them onto *Tags/Author/(You)/*. But be careful – this can’t be undone. You won’t want to credit all your presets to someone else!

To remove all tags, drag presets onto *Tags/Untagged/*.

2-5 SEARCH BY TAGS

Click on the large TAGS tab to open this view. The buttons in this panel let you set up search criteria according to tags with just a few mouseclicks:

TAGS

Search

CATEGORIES ^

Bass Pads Leads Keys FX Drums Seq & Arp Stabs

Other

Leads Bowed Brass Chords Distorted Guitar

Plucked PWM Reeds Rhythmic Sync Lead Synth

Vocal Winds Lo-Fi

FEATURES ^

Mono Poly Chord HostSync Dry Effects Glide

Soft Attack Slow Release Percussive Sustained

Modulated CrossMod Osc Sync Unison

CHARACTER ^

Bright Dark Dynamic Static Constant Evolving

Soft Aggressive Harmonic Inharmonic Phat Thin

Clean Distorted Wide Narrow Modern Vintage

Acoustic Electric Natural Synthetic

FAVOURITES ^

1 2 3 4 5 6 7 8

There are four sets of buttons. The first three correspond to the tags in the tagging window (see the previous page), and the bottom row lets you search any 'Favourites'. Click the [^] button on the right to collapse any of these tag types.

CATEGORIES and SUBCATEGORIES

Here are just a few bullet points to get you started. For this type of tag in particular, following a step-by-step tutorial is much easier than studying a full technical description. Try these:

- Each of the CATEGORIES has its own set of subcategories. Not selecting any subcategory here means “show me presets tagged **with any subcategory**”. Click on [Leads]...
- You can select multiple categories without specifying any subcategory if you hold **Cmd** (Mac) or **Ctrl** (Windows) while clicking on the category. Try that, click on [Keys].
- Selecting the subcategory with the same name as the category means “show me presets tagged **without a subcategory**”. You will not find any of these in the factory presets.
- Completed category+subcategory tags appear below the subcategories as buttons with 'off' switches [X] so you can add other main categories by simply clicking on them.

Practical tutorial

- Click on the **DIRECTORY** tab, right-click on the *Search History* smart folder and select *clear*. Double-click on *Local/02 Leads* to restrict the scope of the search to that particular folder. The selected path */Local/02 Leads* appears 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 *02 Leads* that are also tagged as [Bass].
- Now click on [Pads]. The [Bass] category is switched off, and the preset window is updated to list all presets in *02 Leads* that are also tagged as any kind of [Pads]. As it happens, there is only one. Note that you still haven't specified a subcategory yet...
- Hold **Cmd** (Mac) or **Ctrl** (Win) and select the [Bass] category again. Although no longer outlined, the previously selected [Pads] remains highlighted and the list shows all presets in *02 Leads* that have either of those tags, disregarding any subcategories.
- Click on **DIRECTORY**: The text **#Bass:* #Pads:*** appears in the editable field as well as in the *Search History* smart folder (see section 2-7), which also shows the number of found presets. The semicolon separates category and subcategory, and the star (*) means "any subcategory, even none".
- Click on the **TAGS** tab again. Select the [Leads] category **without** holding down Cmd/Ctrl this time... the [Bass] and [Pads] tags are removed from the search. Select [Sync Lead] as subcategory. The result is a list of all 15 presets in *02 Leads* that have the Leads:Sync Leads tag. Immediately below the subcategory options you will see the complete tag in the form **[Category:Subcategory|X]**.
- Let's get more hits by including another subcategory: Click on the [Distorted] subcategory. [Sync] remains selected, and the list of hits is updated to include presets which have **either** of those tags i.e. 40 in total. Click on [Sync Lead] again and the tag search will find only 30 presets – all those that are tagged as [Leads:Distorted].
- Click the [Bass] category. Below the subcategories, the [Leads:Distorted|X] switch remains in place because that tag is complete. Check out the category tags in PRESET INFO by clicking on several presets in turn: Each one will have either a Leads:Distorted tag or a Bass tag (disregarding subcategory) or both.
- Click on the **DIRECTORY** tab. The text **#Bass:* #Leads:Distorted** appears in the search field as well as the *Search History* smart folder. If you are feeling adventurous, you can edit this and 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 i.e. change the search path from */Local/02 Leads* to the */Local* root. The list of hits is immediately updated to 188 presets because the search now includes all of */Local*.
- Another click on [^] exits to the whole preset library i.e. */Local and /User*. Clicking on the [X] symbol to the right of the search path will exit immediately. Try that.

Repeat the above a few times if necessary – you'll soon get the hang of it!

FEATURES, CHARACTER and FAVOURITES

These types of tags are much easier to explain. Unlike multiple Category tags, which **expand** the search, selecting these Tag types always **restrict** the search. Let's find all thin sounding presets with a slow release:

- If any CATEGORIES are still highlighted, click on them.
- Select FEATURES = [Slow Release] and CHARACTER = [Thin]. That's it.

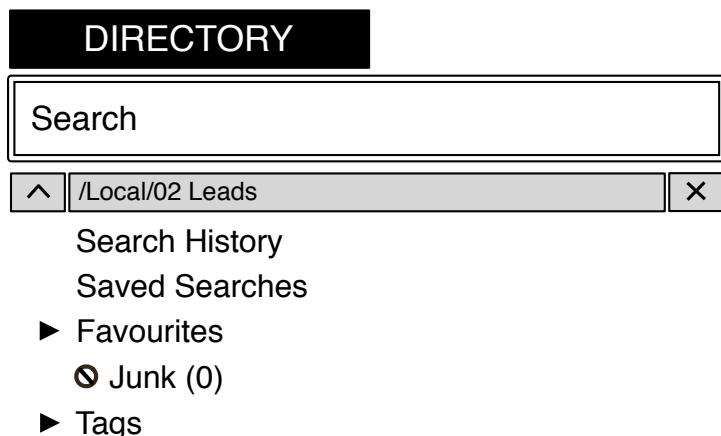
Summary:

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 **Cmd** (Mac) or **Ctrl** (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. Exit any search path by clicking on the [X] to the right.

2-6 SEARCH BY TEXT

The editable field immediately below the DIRECTORY and TAGS tabs lets you search for presets according to a string of characters i.e. text. The search normally looks into the preset name, the author, the DESCRIPTION and USAGE (see the PRESET INFO panel). It is not case-sensitive. Quotes are not required unless you need to include spaces.

If you want to restrict the search to a particular path e.g. *Local/02 Leads*, double click on the *02 Leads* folder. This path will appear below the Search field instead of the preset folders, and you will only see smart folders:



The [^] button to the left moves the search path up one level, in this case to */Local*. The [X] button to the right sets the search path to the default *Local* and *User* (i.e. all *Repro-5* presets), and the preset folders become visible again.

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

Syntax

Scope

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.

Logic

Important: 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 wars* will find presets that contain *star* as well as presets that contain *wars*.

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

Tags

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 semicolon separates category and subcategory, and the star (*) means "any subcategory, even none". Between multiple tags of the same type is an implicit OR, while between different types is an implicit AND.

Note: In the current version of the browser, tags must appear after any text items!

A few Example Searches

You could copy/paste these into Repro-5's search field and see what they find!

desc:classic

author:ark

use:"at =" author:how

usage:"bc ="

*"hs " OR xen #leads:**

<i>tuc OR xs #pads:strings</i>	= all TUC and XS strings
<i>tuc OR NOT xs #pads:strings</i>	= all TUC and non-XS strings
<i>how OR NOT tuc #pads:strings</i>	= all HS and non-TUC strings

2-7 SMART FOLDERS

Smart folders do not contain files, they display the results of querying a database of all 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*. Note: Individual entries cannot be removed here, unlike 'Saved Searches'...

Saved Searches

This folder contains searches that have been saved via right click from 'Search History'. Entries dragged from 'Saved Searches' and dropped onto real folders within 'Local' or 'User' will create a folder containing copies of all found presets. To remove individual saved searches, right-click on the search and select *delete*.

Favourites

8 smart folders, one for each Favourite colour. See [Presets context menu](#). Presets dropped onto one of the Favourites folders will be marked as such.

Junk

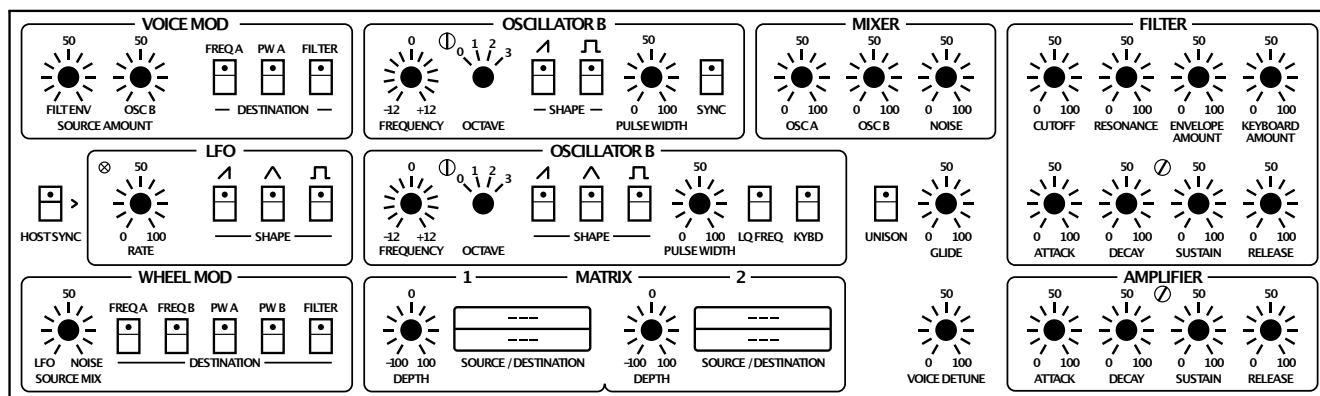
A smart folder pointing to all junked presets. See [Presets context menu](#). Presets dropped onto this folder will be junked, and will therefore disappear from the rest of the browser unless made visible (see *show junk* in the [Presets context menu](#)).

Tags

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

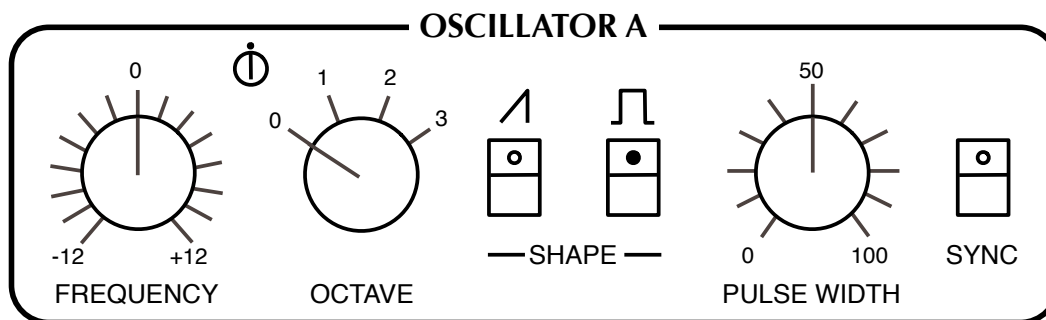
3 SYNTH

This section explains the various modules available in the SYNTH panel, starting with the oscillators. Click on the SYNTH button at the top left to see this panel:



The layout is fairly simple, with modulation parameters on the left, oscillators in the centre and filter / amplifier settings on the right. Let's start with the oscillators...

3-1 OSCILLATOR A



FREQUENCY knob: Adjusts pitch within a two-octave range (+/- 12 semitones).

FINE TUNING trimmer (between FREQUENCY and OCTAVE): Adjusts pitch within a range of +/- 20 cents. Its main purpose is to adjust the rate of beating between the two oscillators when they are tuned almost in unison.

OCTAVE rotary switch: Transposes oscillator pitch over a four-octave range.

SAWTOOTH SHAPE button: Activates the standard brassy waveform containing all harmonics (odd as well as even).

PULSE SHAPE button: Enables a waveform with a harmonic content that depends on the PULSE WIDTH setting, but sounds generally more hollow than the sawtooth.

Note: If neither **SHAPE** is switched on, OSCILLATOR A is silent.

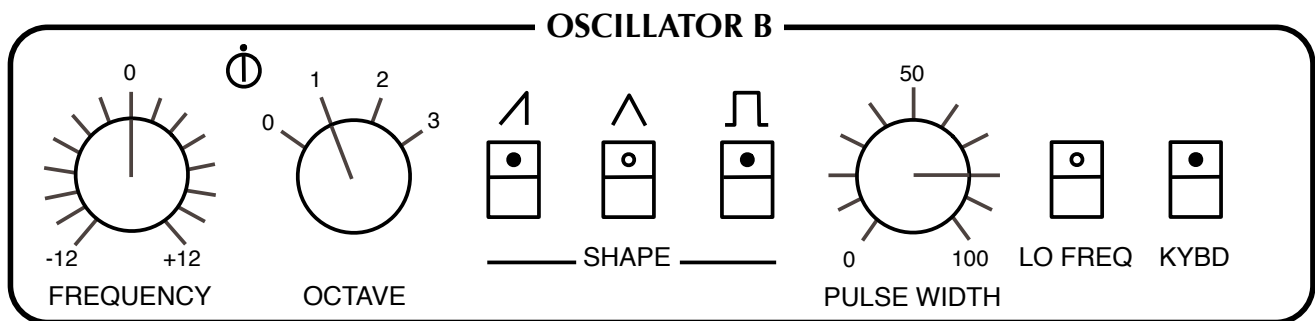
PULSE WIDTH knob: Adjusts the harmonic content of the pulse wave by setting its “duty cycle”. The range is from 0% to 100%. Double-click on the knob for a 50% pulse (a clean square wave containing odd-integer harmonics only).

Note 1: At extreme values, the signal gets so thin that it becomes silent (DC, direct current).

Note 2: The PULSE WIDTH knob has no effect on the shape of the sawtooth wave.

SYNC button: Hard synchronization forces the waveform of OSC A to reset whenever OSC B hits zero. The frequency of OSC A generally needs to be higher than OSC B for this to work properly. Experiment: Intermediate FREQUENCY values can produce unusual timbres at the next lower harmonic of OSC B.

3-2 OSCILLATOR B



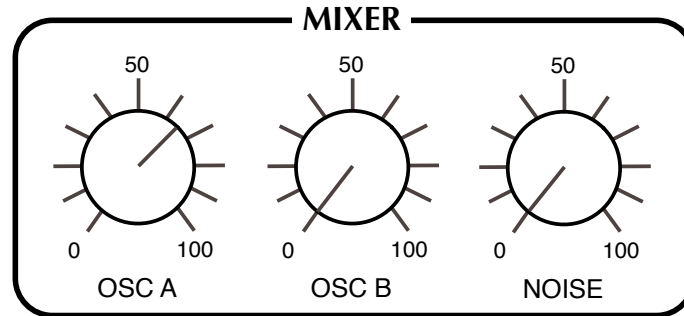
The same as oscillator A, minus the SYNC button but with the following extras:

TRIANGLE SHAPE button: The triangular waveform is bipolar, so it doesn’t add any DC to the modulation when used as an LFO. As an audio signal, the triangle has very little “bite”, but can be used to boost the fundamental frequency.

LO FREQ button: Extends the range of oscillator B down to the sub-audio frequencies suitable for use as an LFO.

KYBD button: Switching this off disables keyboard follow, resulting in a constant pitch which is independent of the played note.

3-3 MIXER



OSC A and **OSC B** knobs: The output levels of each oscillator.

NOISE / FEEDBACK knob: When labelled NOISE, this knob sets the output level of the noise generator (an unpitched audio source useful for wind and percussion effects etc.). A jumper in the TWEAKS page replaces this function (and the label) with FEEDBACK. The knob then controls the amount of signal fed from behind the amplifier back into the MIXER – useful for boosting bass frequencies, for instance.

3-4 UNISON, GLIDE & VOICE DETUNE

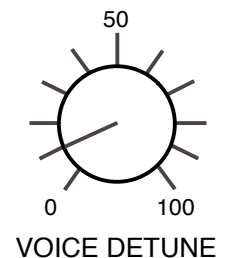
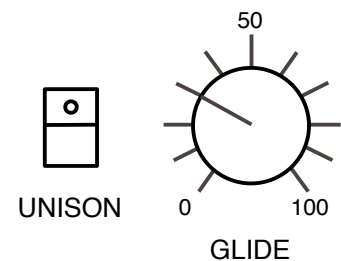
To the right of oscillator B is an open area of the panel containing the following three controls:

UNISON button: When this is activated, Repro-5 will assign all available voices to single notes. The number of VOICES is set in the control bar. Stacking all 8 voices with some extra detuning, UNISON can deliver a truly massive lead sound.

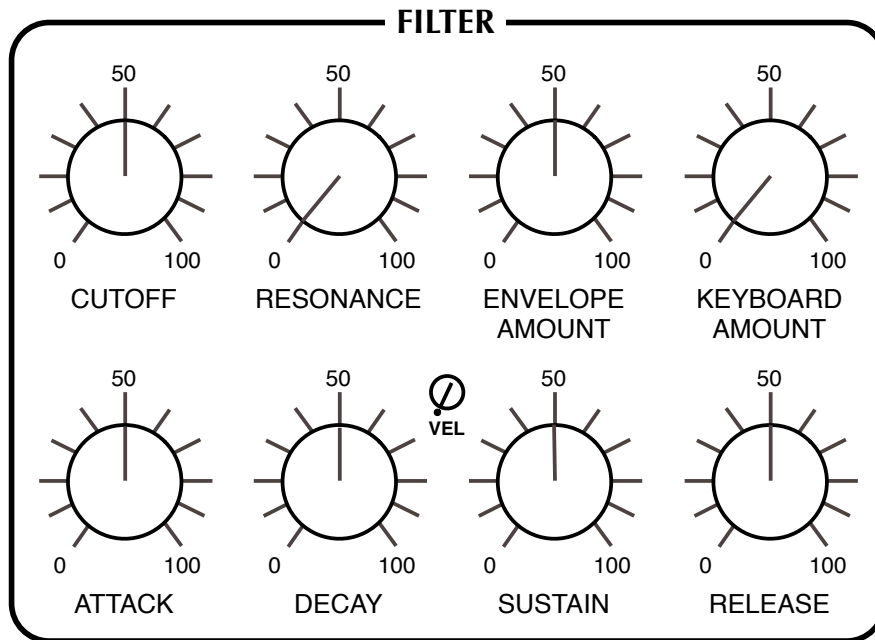
GLIDE knob: This is only effective while UNISON is switched on. Glide (also known as Portamento) slurs the transitions between consecutive notes. At zero, the pitch jumps instantaneous, while values above 50 cause it to glide very slowly.

VOICE DETUNE knob: Effective at all times, independent of UNISON status. Per-voice subtle to serious detuning, as well as various other offsets.

Tip: To ensure that repeating the same note doesn't apply exactly the very same detuning every time, go into the TWEAKS view and set the REALLOCATE jumper to OFF.



3-5 FILTER



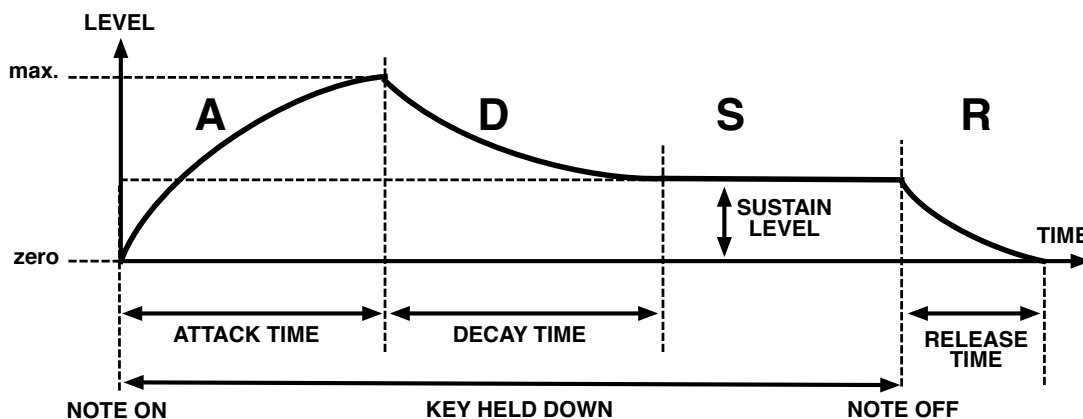
CUTOFF knob: Adjusts the cutoff frequency for the 24 db/octave lowpass filter, which works a bit like a tone control. Lowpass “cutoff” is the frequency below which all components of the signal are allowed to pass, while most of the higher frequency components are suppressed.

RESONANCE knob: Determines the amount of feedback within the filter circuit. The higher the resonance, the more the cutoff frequency will be accentuated. Above 60.00 the filter starts to self-oscillate – it becomes a sine-wave oscillator with pitch determined by Cutoff. Note that adding resonance tends to lower the volume, like in the original hardware.

ENVELOPE AMOUNT knob: The amount of cutoff modulation from the filter envelope.

KEYBOARD AMOUNT knob: The amount of cutoff modulation from the keyboard – the higher the note, the higher the cutoff. Set to 75.00, cutoff follows notes precisely so that it can be played “in tune” when the resonance is high.

The **filter envelope** (ATTACK/DECAY/SUSTAIN/RELEASE) applies a contour to the cutoff:



The filter envelope is started whenever a note is played. As long as the key is held down, the envelope proceeds through its ATTACK and DECAY stages, remains at the SUSTAIN level until the key is released, then drops to zero at a rate set by the RELEASE knob.

ATTACK knob: Varies the time for the envelope to rise from zero to maximum, within a range of about 2 milliseconds to more than 15 seconds.

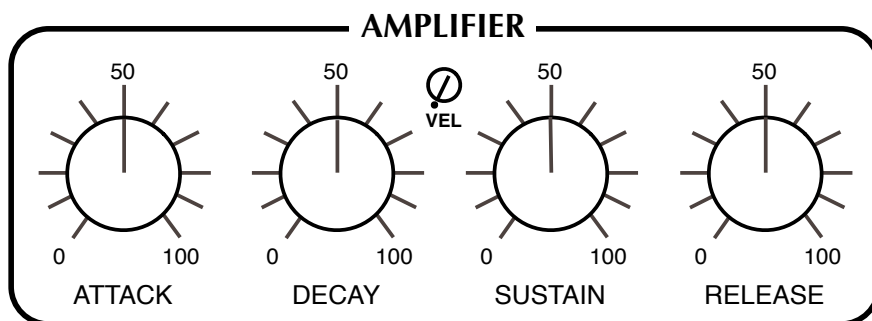
DECAY knob: Varies the time for the envelope to fall from maximum to the SUSTAIN level, also within a range of about 2 milliseconds to more than 15 seconds.

VEL trimmer: Adjusts the amount of velocity modulation for the filter envelope. When set to maximum, minimum velocity will reduce the envelope level to zero.

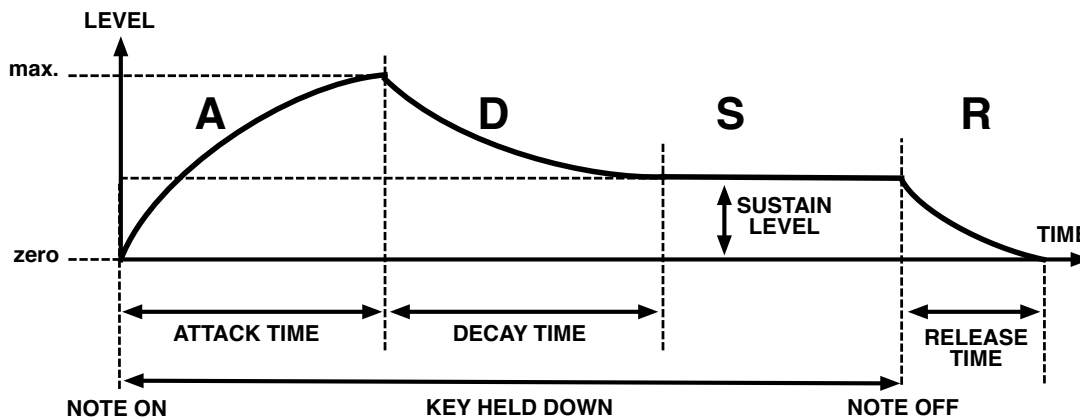
SUSTAIN knob: The “hold” level, from zero to maximum. An interesting detail: while being adjusted, SUSTAIN always *decays* to the new level – the longer the DECAY, the longer it takes to reach the new SUSTAIN setting.

RELEASE knob: The time it takes for the filter envelope to fall from the current level (usually SUSTAIN) down to zero after the key is released. The range is 2 ms to about 55 seconds.

3-6 AMPLIFIER



These controls shape the envelope applied to volume, pre-effects. The amplifier envelope is started whenever a note is played. As long as the key is held down, the envelope proceeds through the ATTACK and DECAY stages, remains at the SUSTAIN level until the key is released, then drops to zero at a rate set by the RELEASE knob.



ATTACK knob: Varies the time for the envelope to rise from zero to maximum, within a range of about 2 milliseconds to more than 15 seconds.

DECAY knob: Varies the time for the envelope to fall from maximum to the SUSTAIN level, also within a range of about 2 milliseconds to more than 15 seconds.

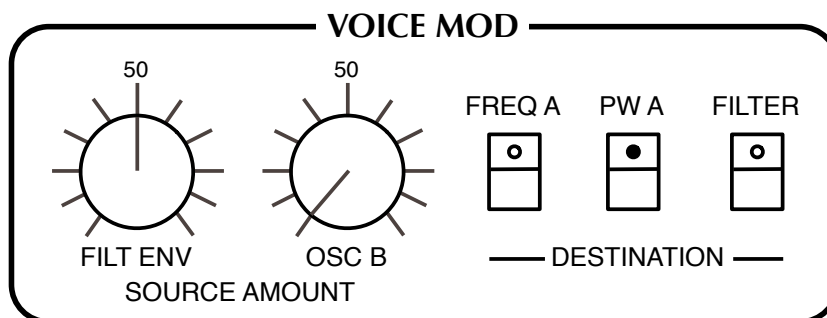
VEL trimmer: Adjusts the amount of velocity modulation for the amplifier envelope. When this is set to maximum, **minimum** velocity will reduce the envelope level to zero i.e. silence.

SUSTAIN knob: The “hold” level, from zero to maximum. An interesting detail: while being adjusted, SUSTAIN always *decays* to the new level – the longer the DECAY, the longer it takes to reach the new SUSTAIN setting.

RELEASE knob: The time it takes for the amp envelope to fall from the current level (usually SUSTAIN) down to zero after the key is released. The range is 2 ms to about 55 seconds.

3-7 VOICE MOD

A synthesizer’s expressiveness depends largely on its modulation capabilities. In Repro-5, modulation is assigned in 3 different panels (VOICE MOD, WHEEL MOD and the MATRIX). VOICE MOD **routes the filter envelope and/or oscillator B to three destinations:**



Both modulation sources here are “polyphonic”: Minuscule differences between the individual voices create effects that differ from note to note in subtle but interesting ways. This is unlike WHEEL MOD (see below), where just one signal modulates all voices in the same way.

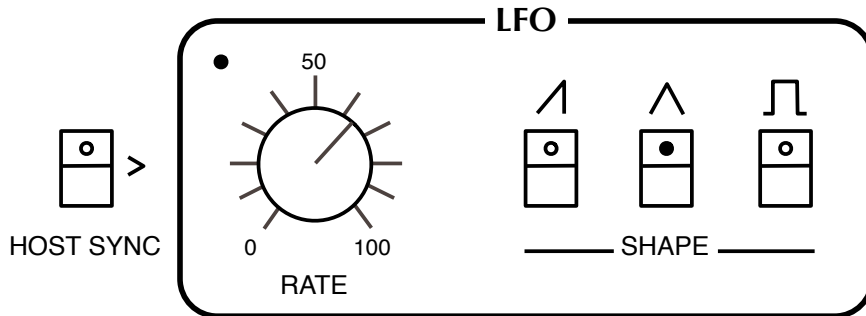
FILT ENV knob: The amount of filter envelope sent to all selected destinations.

OSC B knob: The amount of oscillator B sent to all selected destinations.

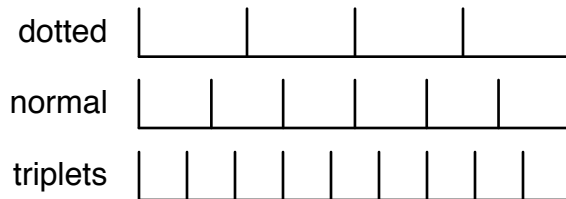
DESTINATION buttons: These specify where the mixture of filter envelope and OSC B is to be sent: oscillator A frequency, oscillator A pulse width and filter cutoff.

3-8 LFO

Two of the basic modulation sources (filter envelope and oscillator B) were already mentioned in section 3-6. The third is the **Low Frequency Oscillator** (LFO):



HOST SYNC switch: When this is activated, the LFO RATE switches between fixed divisions relative to the host tempo. Values are expressed as 4/4 bar divisions from 8/1 (slowest) to 1/64 (fastest). The *trip* options are **triplets** (3 in the space of 2) and the *dot* options are **dotted** (2 in the space of 3 i.e. 50% longer than normal):



The order of values may appear strange at first (e.g. 1/4 then 1/8 dot then 1/4 trip), but you can rest assured that they are correctly sorted according to length.

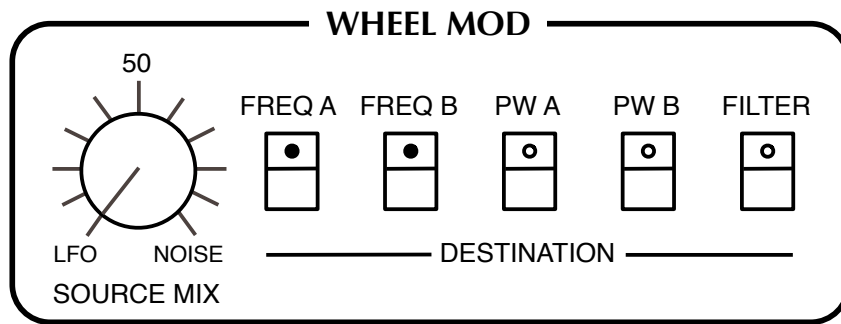
If HOST SYNC is off, the rate can be freely adjusted between about 0.03 Hz and 27.5 Hz.

SHAPE switches: The same options as in OSC B except that the LFO's pulse width is fixed at 50%. Remember that you can add the shapes here e.g. SAW + SQUARE.

3-9 WHEEL MOD

Global modulation (as opposed to voice modulation) settings. A mixture of two sources, LFO and pink noise, is routed to five destinations: the frequency and pulse width of each oscillator, and filter cutoff.

The depth of modulation is normally set by the position of the **modulation wheel** to the left of the keyboard. Unlike the original hardware, however, in Repro-5 you don't actually have to push the mod wheel to get any modulation at all – the **lower limit** (see [WHEEL MOD LIMITS](#) on page 5) can be used to set a permanent minimum amount.



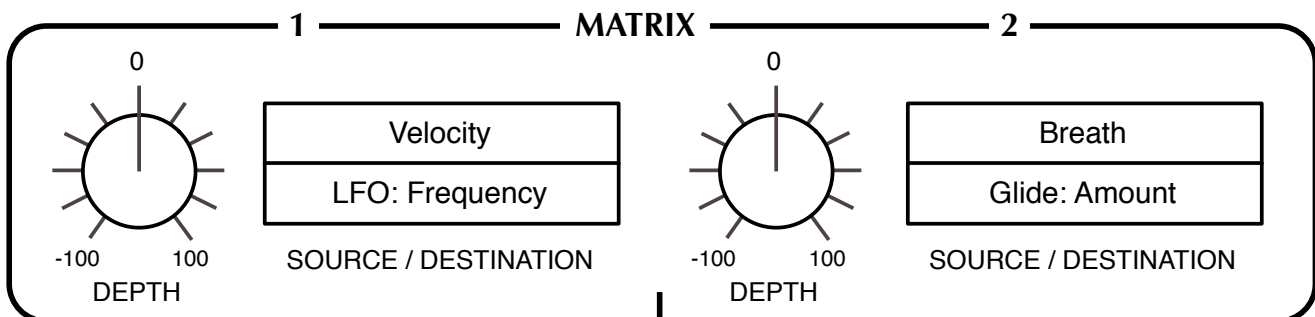
SOURCE MIX knob: From 100% LFO signal, through 50% LFO / 50% noise to 100% noise. The original idea was probably to facilitate more organic-sounding cyclic modulation, but **SOURCE MIX** can help while emulating the sounds of heavy industrial machinery!

DESTINATION buttons: Select frequency and pulse width of each oscillator, and/or cutoff.

Note: The LFO isn't strictly global, as its Rate can be forced to differ between voices, for instance by modulating Rate with Key Follow in the **MATRIX**.

3-10 MATRIX

In the lower centre of the panel is a 2-slot modulation matrix you can use to extend Repro-5's modulation capabilities.



To select a **SOURCE**, click on one of the upper selectors. Right-clicking on the lower selector opens a menu where you can choose a **DESTINATION**. Note: Effect parameters will only appear in the destination menu if the corresponding effect is currently active.

Drag & Drop is a very comfortable alternative method of assigning the destination. Left-click on the lower selector, drag the crosshair onto any valid control (it will be highlighted), then release the mouse button.

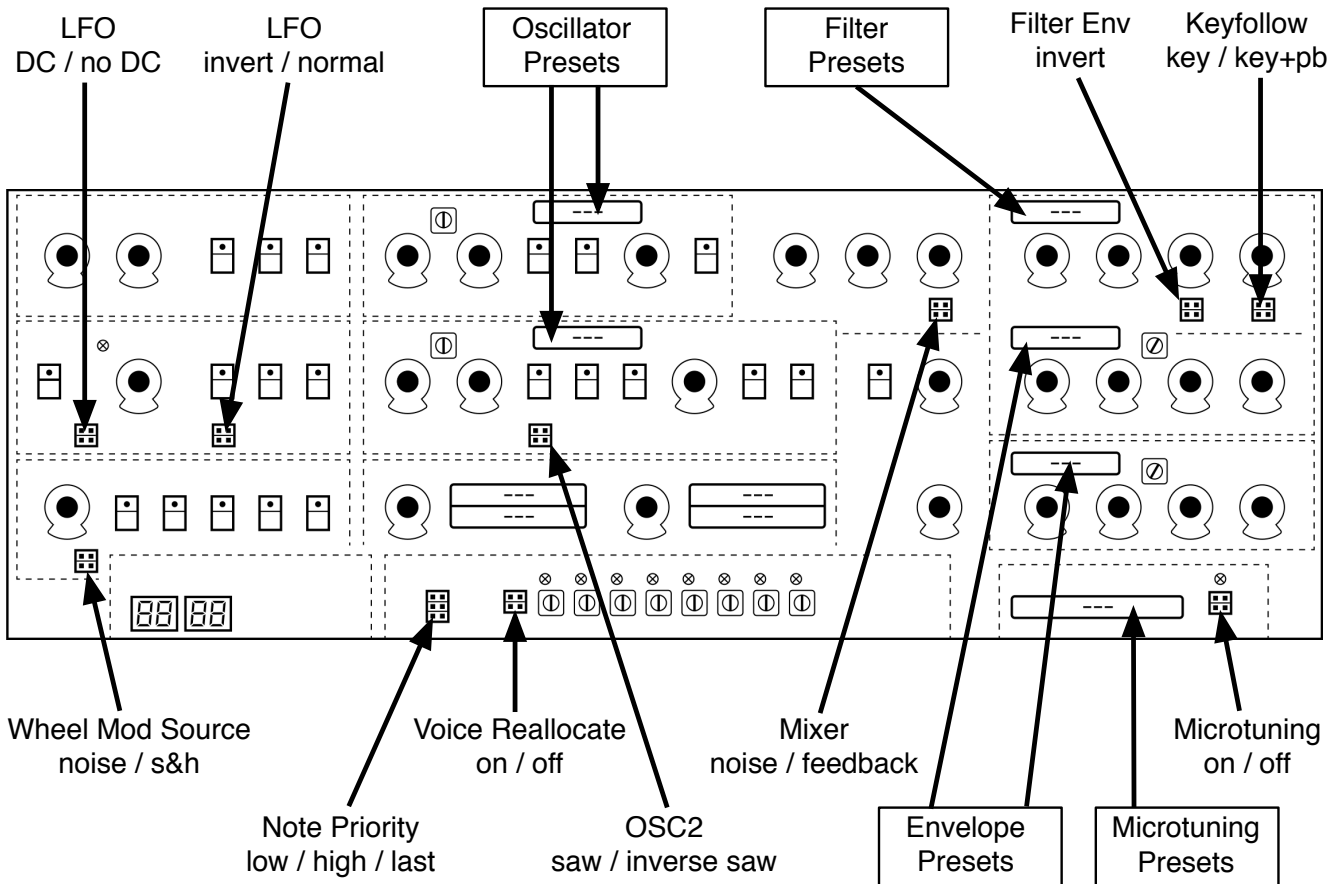
On the next page is a list of **all modulation sources and destinations** in Repro-5...

Modulation Sources			
Mod Wheel (MIDI CC 01) Pitch Wheel Breath (MIDI CC 02) Expression (MIDI CC 11) LFO <hr/> Trigger Gate Key Follow Key Follow +PB Velocity Aftertouch Filter Envelope Amp Envelope Voice Index		Voice Modulation	Osc B Amount Filter Env Amount
		Voice Detune	Amount
		Mixer	Osc A Osc B Noise/Feedback
		Filter	Cutoff Resonance Keyboard Amount Envelope Amount
		Distortion	Amount Tone Mix Rate Crush
Modulation Destinations			
LFO	Frequency (only while HOST SYNC is disabled)	Stereo Pan	Pan 1 Pan 2 ... Pan 7 Pan 8
Global Modulation	LFO/Noise Mix Lower Limit Upper Limit		
Glide	Amount	Velvet	Input Gain
Pitch	Master Tune	Lyrebird	Delay Time Regeneration Mix
Filter Envelope	Attack Decay Sustain Release	Drench	Pre-Delay Decay Tone Dry/Wet Mix
Amp Envelope	Attack Decay Sustain Release		
Oscillator A	Frequency * Fine Tune Pulse Width	Sonic Conditioner	Gain Stereo Width Transient
Oscillator B	Frequency * Fine Tune Pulse Width		

* Restricted to the FREQUENCY range, for technical reasons

4 TWEAKS

Apart from being unashamed eye-candy, the TWEAKS page is there to let you change the fundamental behaviour of individual modules. In the current version there are 10 **jumpers** (circuit connectors) and 6 module option **selectors** (not including the 4 MATRIX source and destination selectors, which don't really count as "tweak" elements):



Although the knobs and switches actually work, the labeling has been kept simple and cryptic on purpose, in keeping with the 'circuit board' theme.

The TWEAKS page is meant to be eye-candy!

4-1 JUMPERS

LFO DC|NO DC: With the jumper in the DC position, both the square and saw waves are positive-only (unipolar). The NO DC option makes them both bipolar. Note that the LFO triangle wave is always bipolar, whatever the position of the jumper.

LFO INV|N: Inverts the sawtooth. In the normal (N) position it is a rising sawtooth, in the INV position it is a falling sawtooth.

WHEEL MOD S&H|Noise: Setting this jumper to the S&H position replaces the pink noise signal with random steps (noise sampled at the LFO rate).

OSC B INV|N: Inverts the sawtooth. In the normal (N) position it is a rising sawtooth, in the INV position it is a falling sawtooth.

UNISON / NOTE PRIO (note priority) on the lower board: This jumper sets how Repro-5 reacts when you play more than one note at a time when unison is switched on. LOW plays the lowest note (like the original hardware as well as other USA-designs), HIGH plays the highest note (EMS and most Japanese synths), LAST plays the most recent note (modern, typical of digitally controlled synths).

POLY VOICE / REALLOCATE: Determines whether the same note will trigger the same voice (reallocate ON), or distribute voices *round-robin* (reallocate OFF). Turn the VOICE DETUNE knob up a little, repeat the same note and watch the voice activity indicators!

MIXER FB|NOISE: Switching this jumper over to “FB” replaces the usual NOISE with audio FEEDBACK. The knob then controls the amount of signal fed from behind the amplifier back into the MIXER – useful for boosting bass frequencies, for instance.

FILTER –|+: Setting this to “–” inverts the filter envelope signal (ENV AMOUNT).

FILTER KEY|KEY+PB: In the KEY position, the pitchbender doesn’t affect cutoff, while in the KEY+PB position it does.

MICROTUNING ON|OFF for the selection: See *Microtuning* on the next page.

4-2 SELECTORS

All red fields are selectors – either click and select one of the options or simply hover over them and roll your mouse wheel (no click required).

PITCH RANGE

The pair of selectors on the extra circuit board at the bottom left are for adjusting the range of the pitch bender. The options are 0 through 24 i.e. two octaves in semitone steps, then either three or four octaves (36 / 48 semitones).

Oscillator tweaks

The two selectors above the oscillator SHAPE buttons. The standard setting for Repro-5 is *P5*, while *P1* was adopted from Repro-1. The *ideal* option has a crisper, more precise sound. The most obvious difference between *P5* and *P1* is that the *P5* pulse wave is inverted (that's why *P1* is much quieter when Saw and Pulse are both switched on). A less obvious difference is that OSC A in *P5* mode retains very little of the fundamental frequency when SYNC is on.

P5 Old is a highly detuned version of the regular *P5*.

Only available in OSC B: *Bottom* emphasizes the TRIANGLE shape.

Filter tweaks

Crispy, Rounded, Driven or Poly: The first two accurately model the filters in the two synths we bought especially for Repro-1 analysis. Most obviously, cutoff in *Rounded* is a few semitones lower than it is in *Crispy*, and there are also significant differences in the resonance behaviour. *Driven* is the result of balancing internal filter parameters in search of a novel 3320 flavour – we like it! Finally, *Poly* is an approximation of the filters in Repro-5's grandad. The cutoff is significantly lower – doesn't reach max. unless modulated upwards e.g. by the filter envelope.

Envelope tweaks

Ideal: Non-linear but consistently clean ADSR.

Analog: Includes more imperfections typical of real analogue circuitry.

High Sustain: Emulates an interesting fault (“quirk”) in some versions of the hardware synth we used to create Repro-1: The end of the Attack stage doesn't quite reach Sustain levels above about 85 – it simply jumps up the last 15%.

One Shot: The gate is ignored, the Decay stage continues until it reaches the sustain level, which is immediately followed by Release. This type of envelope is particularly suitable for percussion sounds, fly-by effects etc..

Piano 1/2: These two modes were implemented according to a rather geeky article in the magazine *Electronics and Music Maker* (affectionately known as *E&MM*) all about the CEM 3310 envelope chip. In both *Piano* modes the Attack and Decay stages are the same as in *One Shot* mode. However, if the key is lifted during the Release stage there is an extra (true) release, which is longer in *Piano 1* than in *Piano 2* mode.

Tip: As the Attack and Decay stages are always completed, you can make an envelope appear to hold for a while before it releases!

Microtuning

At the bottom right of the TWEAKS view is a beige-coloured circuit board with a selector and a jumper switch. Click on the selector to open an overlay window...

Repro-5 supports standard .TUN microtuning tables, and you will find several in the list already. Many more tuning tables are available online, most of them free. The .tun files belong in the following folder on your hard drive:

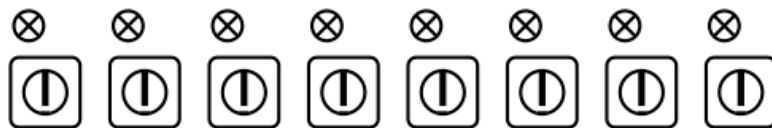
Win: *C:\Program Files\vst plugins\u-he\Repro-1.data\Tunefiles*

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

...or equivalent locations in accordance with your VST and Repro-1 installation paths. To go directly to that location from within the microtuning browser, right-click on any .tun file then select *Reveal in Finder* (Mac) / *Open in Explorer* (Win). To close the microtuning browser again, click on the [CLOSE] button at the top right.

4-3 VOICE PANNING

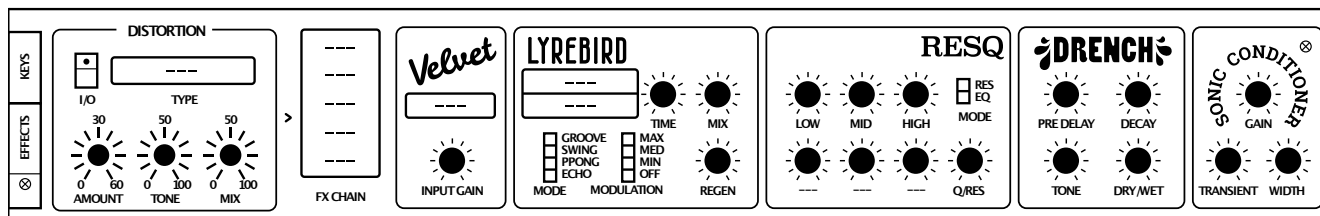
Apart from the single trimmers for oscillator fine tuning and envelope velocity, which are visible at all times, there is a row of eight identical trimmers on a separate board at the bottom of the TWEAKS view...



These are used to set a stereo pan position for each individual voice. Turn down to minimum for hard left panning, turn up to maximum for hard right panning, double-click to return to the centre. See also [Reallocate](#) a few pages back.

5 EFFECTS

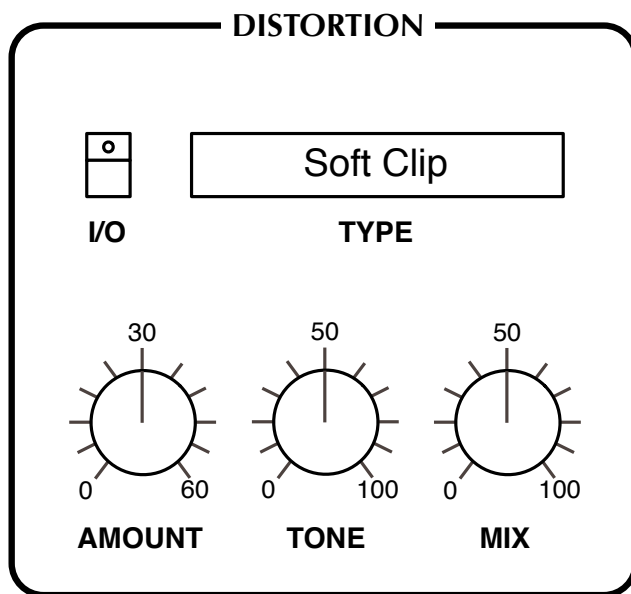
The **FX** button in the bottom lefthand corner toggles between the keyboard and FX views. The **BYP** (effects bypass) button above it is for comparing the treated and untreated sound.



Please remember that the **BYP** (effects bypass) status is global – bypass won't automatically switch off when you select another preset, but will remain on until you click on the button again. If most of your presets sound strangely dry today, you will know where to look first!

5-1 DISTORTION

Repro-5's distortion unit is polyphonic. Each voice has its own processor, so there is no interaction between notes in a chord. Although it wasn't what sparked the idea for including a per-voice distortion unit in repro-5, Edgar Froese (of Tangerine Dream) once attached an Electro-Harmonix "Big Muff" fuzzbox to each of the five outputs of his modified SC Prophet-5.



I/O (in/out) button: Switches distortion in or out of the signal path.

TYPE selector:

Soft Clip smoothly compresses peaks in the signal.

Hard Clip simply chops off the top and bottom of the waveform.

Foldback is 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 is a sample rate reducer and bit crusher in one. In this mode, the Amount and Tone controls (see below) are replaced by Rate and Crush.

AMOUNT knob: Input gain in Decibels, controls the perceived amount of distortion.

RATE knob (replaces AMOUNT when the type is 'Corrode'): Reducing the sample rate of a signal degrades its quality – medium values introduce high-pitched grit, and high values create rough metallic tones which are louder than the dry signal. Rate reduction is particularly interesting when applied to softer sounds, with low cutoff.

TONE knob: A frequency tilt control for more bass or more treble distortion.

CRUSH knob (replaces TONE when the type is 'Corrode'): The bit-crush amount – the signal becomes increasingly steppy. Try it on a pure triangle wave first!

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

5-2 FX CHAIN

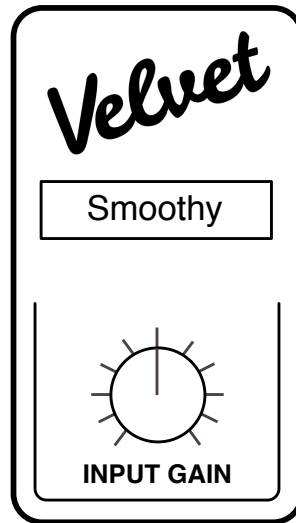
Velvet
Lyrebird
ResQ
Drench
SoniCon

The block to the right of the distortion panel is for activating and reordering the other five effects. Click on individual cells to activate/deactivate them, drag & drop to change the order (the signal flows from top to bottom of the FX chain).

5-3 VELVET tape saturation

Based on u-he's SATIN effect plug-in, this little unit adds the kind of colouration and distortion that is typical of magnetic tape recorders. It can be used at the end of the the FX chain for subtle sheen, or (for instance) before RESQ for more obvious distortion effects.

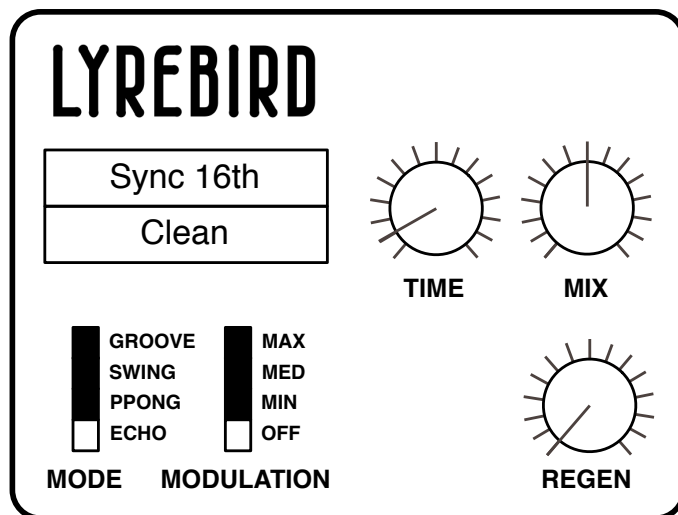
Note: Velvet's distortion is fundamentally different from the polyphonic Distortion, as notes played together will interact like in a guitar amplifier. Of course you can use a bit of both!



PRESET selector: Selects one of the factory presets.

INPUT GAIN knob: Signal cut/boost, effectively the amount of tape saturation/distortion.

5-4 LYREBIRD delay



Lyrebird models an analogue (*bucket brigade* type) delay, capable of unsynchronized effects anywhere between flanging (i.e. modulated, very short delays) and 2 seconds, or host-tempo-relative delays between 1/16 and 8/1. In either mode, the delay time can be continuously fine-tuned.

Sync (upper selector): *Chorus/Short*, *Unsync/Long*, *Sync 1/16* or *Sync 1/4*. The first two options are absolute times, not relative to host tempo. As the name implies, the *Chorus/Short* option sounds especially rich with plenty of modulation (see below). *Unsync/Long* is usually the best choice for larger spaces and non-rhythmic effects.

Flavour (lower selector): Three different tonal characteristics for the decaying effect (*Clean*, *Bright* or *Dark*). Try them all out and compare results.

MODE switch: Affects the ratio between delays in the left and right channels: *Echo* has equal delay times in both channels (so the effect is monophonic unless modulated). *Pingpong* alternates evenly between the left and right channels, *Swing* creates triplets and *Groove* does dotted times.

MODULATION switch: Time modulation LFO rate. Switching to *OFF* disables the LFO.

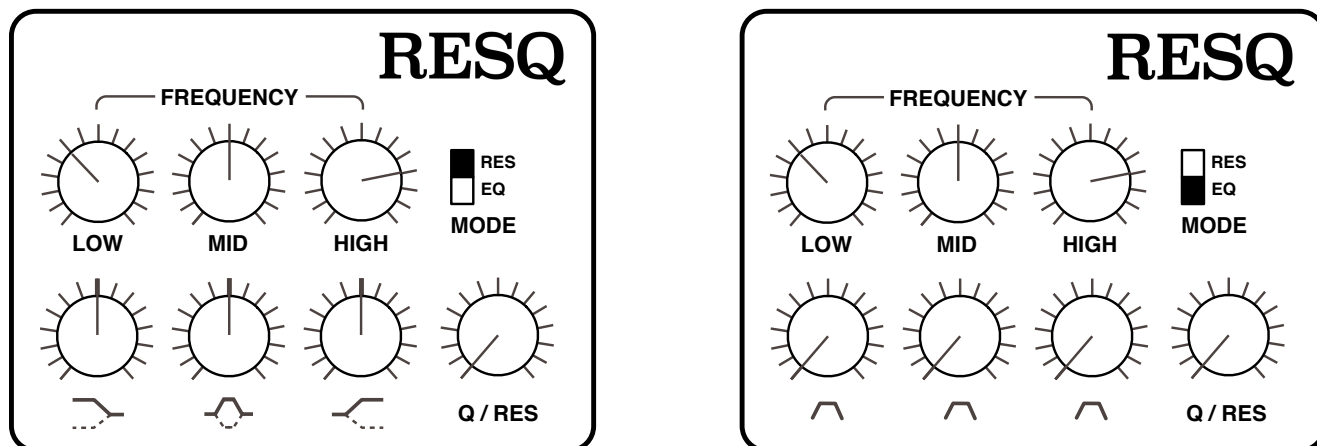
TIME knob: Scales the Delay Sync value. For the synchronized delays this is literally a 1 to 8 multiplier, while for unsynchronized delays the range is much wider. Tip: Try turning REGEN up and modulating TIME – the pitch glides very smoothly, just like a real analogue or tape delay unit.

MIX knob: The volume ratio between unprocessed and processed signal.

REGEN knob: *Regeneration* determines how much of the processed signal is fed back into Lyrebird's input. At maximum, the feedback lasts longer than you will ever need...

5-5 RESQ resonator / equalizer

Depending on the status of the MODE switch, RESQ is either a semi-parametric EQ with two shelving filters surrounding a midrange band, or a triple bandpass resonator:



The **FREQUENCY** knobs adjust the cutoff for each band. The bands can seriously overlap or swap positions, so those labels shouldn't be taken too literally. The ranges of the knobs are approximately as follows:

LOW	=	45 Hz to 3 kHz
MID	=	55 Hz to 9 kHz
HIGH	=	130 Hz to 10 kHz

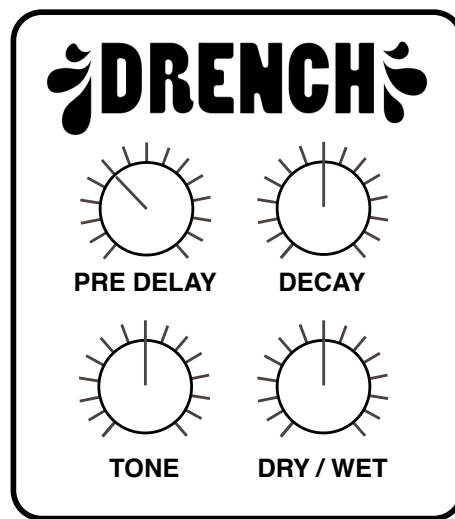
GAIN knobs (EQ mode): Centre-zero controls for cutting or boosting the level of each band by up to 18dB. In EQ mode, LOW and HIGH are shelving filters (as indicated by the labels).

VOLUME knobs (RES mode): The amplitudes of three resonant bandpass filters. The knobs are not centre-zero in RES mode, but positive only.

Q (quality) / RES (resonance) knob: The *Q-factor* of a filter band characterizes its width relative to its cutoff frequency. In EQ mode, Q only applies to the MID band.

5-6 DRENCH reverb

A typical lush plate reverb – but with an atypical pre-delay!



DRY/WET knob: The amount of reverb as a percentage of the total output.

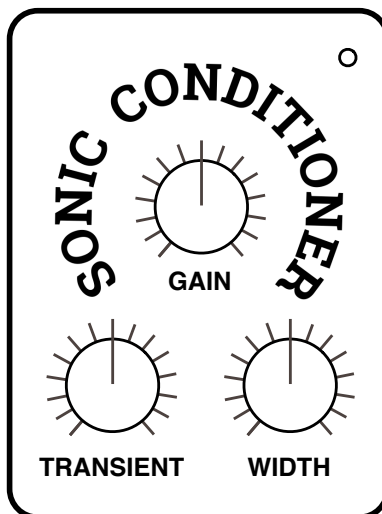
PRE DELAY knob: A simple delay before the reverberation appears. This is especially useful for retaining the presence of the dry signal while simulating larger spaces, but it can also be adjusted to support a delay from Lyrebird, for instance.

DECAY knob: The length of the reverb tail. At the maximum setting (100), it can take several minutes for the effect to reach absolute silence.

TONE knob: A tilt filter, from very dark at -100 to very bright at +100. TONE simulates the softness / hardness of surfaces. Note: At these extreme values, the wet signal almost (but not quite) disappears.

5-7 SONIC CONDITIONER

Is the signal too loud or too soft? Is the stereo too extreme? Is your bass sequence too clicky, or does it lack punch? Then you should try the SONIC CONDITIONER...



On the top right is a load indicator which gets brighter as the signal is saturated.

GAIN knob: Bipolar control for the output level. Settings above zero (the centre) will saturate the signal – a useful effect in its own right. You can compensate for high GAIN by turning Repr0-5's main OUTPUT level down.

TRANSIENT knob: Bipolar control over the percussive elements within a signal. Set negative values to reduce clicks or positive values to add punch. Caution: Negative TRANSIENT can cause crackling with bassy material and pads – in this case, try turning it up until the crackling only just disappears.

WIDTH knob: A stereo spread control. Especially useful for keeping delay or bias-modulated wavefolder effects more focussed in the centre of the stereo field.

Caution

Applying *Transient* (either positive or negative) to big polyphonic sounds can result in unpleasant distortion due to the process being triggered by complex low frequencies.

6 CONFIGURATION

A click on the **red button** at the top right of Repro-5's window opens the global configuration pages. This is where you can adjust Repro-5's appearance and performance or connect Repro-5 parameters to MIDI controls:



You can specify which particular page (e.g. PREFERENCES) will open whenever you click on the configuration button: Right-click anywhere in this row and select *set current as default*.

6-1 ABOUT MIDI CC

CC, which officially stands for *Control Change* (i.e. not *Continuous Controller*) these days, is a multi-purpose message format used for editing and performing presets.

CC isn't the only kind of MIDI performance data. For instance, there are different messages for note on/off (including velocity), pitch bend and two kinds of aftertouch.

Although the MIDI Manufacturers Association (MMA) was kind enough to leave most of the 128 CC numbers undefined, some have specific meanings that Repro-5 also recognizes:

- 01 = modulation wheel
- 02 = breath controller
- 11 = expression pedal
- 64 = sustain pedal

You don't actually need a physical breath controller or expression pedal to make use of control change messages – those names are just convention. You can use anything that can send a definable CC e.g. a couple of knobs on your MIDI keyboard, or a controller lane in your sequencer application.

Later MMA revisions even included a bunch of esoteric CC definitions such as 'Celeste Detune Depth', probably at the request of a home organ manufacturer or two. We can safely ignore all those definitions. However, although most CC are general purpose, it's best to avoid using controllers 120 through 127 as these are reserved for channel mode messages (e.g. Local Control On/Off).

For the official CC list, go to:

www.midi.org/specifications/item/table-3-control-change-messages-data-bytes-2

(Please contact us if that link no longer works)

6-2 MIDI LEARN

The MIDI LEARN page is where you can connect MIDI CC (see above) to almost any Repro-5 parameters. The MIDI data can be generated by adjusting the knobs or faders on a hardware controller, for instance, or by a track in your sequencer.

Learnable elements appear as selectable outlines. Controls that are already connected appear filled, while the outline of the control waiting to be MIDI-learned is highlighted white.

Try it: Click on the Cutoff knob (it is then highlighted) and send Repro-5 some MIDI CC data by adjusting a knob or fader on your MIDI controller. Switch to the MIDI TABLE page to check that the new connection has appeared in the list, then exit via the [X] button. To remove the new assignment, go back into the MIDI Learn page and double-click on that control.

Note: You can access all parameters without exiting MIDI LEARN. Simply switch between the SYNTH and TWEAKS pages, or between the KEYS and EFFECTS.

6-3 MIDI TABLE

To open an editable list of all current MIDI CC assignments, click on the Configuration button (cogwheel top right) and select MIDI TABLE.

Parameter: The first field selects a Repro-5 parameters from submenus sorted according to module. 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.

Channel / Controller: The next two fields are for the MIDI channel and CC number. Repro-5 is channel-sensitive – you can map up to 16 channels for a total of... well, more than enough assignments for Repro-5!

Mode: Specifies the range and/or resolution of values.

Normalfull range, continuous

Integerfull range, whole numbers only

Fine0.01 steps between the integers closest to the current value

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

Encoder 127unipolar encoder

Encoder 64bipolar encoder

Continuous 7-bit7-bit MIDI CC (normal resolution, very common)

Continuous 14-bit14-bit MIDI CC (high resolution, less common)

Removing assignments: The small [x] to the right of each line removes that assignment. The MIDI table can be cleared by clicking on the [Delete All] button at the bottom of the window.

Experimental feature: Click on **Add**. At the very bottom of the *Parameter* menu you will see two options called *Last Clicked Control* and *Last Clicked Control Fine*...

Select *Last Clicked Control*, enter a suitable controller (MIDI CC) and exit the configuration pages. The most recently clicked knob/switch will now respond to that CC. The *Fine* option is similar, but with a significantly reduced range.

6-4 PREFERENCES

Click on the cogwheel icon, then select PREFERENCES for the following options:

Mouse Wheel Raster: If your mouse wheel is rastered (it clicks as you roll the wheel), set this option 'on' so that each little click increments the value in 'sensible' steps.

Switch Behaviour: The *drag* option here requires that you drag switches up/down, while *toggle* lets you click anywhere on 2-state switches. *iterate* is like *toggle* except that it also applies to 3 and 4-way switches (downside: clicking on the target position no longer works). Tip: Switches always respond to rolling the mousewheel.

Default Size: The GUI size for each new instance of the plug-in.

Default Skin: This option will only appear if Repro-5 finds at least one alternative skin when it loads. Change this option to set the global default.

Gamma: Specifies the overall brightness of the Repro-5 window.

Text Antialiasing: Turns the smoothing of labels and values on or off. Usually left on!

Auto versioning: If this option is 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: Choosing *user folder* here causes all saved presets to land in the *User* folder.

Auto Tag Features: Setting this preference to an option other than *never* can make tagging presets less of a chore. The *on load* option causes Repro-5 to generate appropriate 'Features' tags whenever a preset is loaded, hiding any existing tags. The *if empty* option is similar but doesn't hide existing tags.

Note that auto-tagging is temporary. To make automatically generated 'Features' permanent, you can (mis)use the *convert to xxxx* function in the context menu of the PRESETS panel.

Base Latency: Only disable this if you are absolutely sure that your audio system – hardware as well as software – uses buffers that are a multiple of 16 samples. Otherwise you should leave it at the default '16 samples'. This setting only takes effect when the host allows e.g. on playback, after switching sample rates, or after reloading Repro-5. See the next page.

HQ Default: Whether *HQ* should be set to *High Quality* for each new instance. *High Quality* is seldom necessary – you can save a significant amount of CPU if you leave this off.

MIDI Control Slew: Adjusts the amount of 'smoothing' for Pitch Bend, Modulation Wheel, Breath, Expression and Aftertouch. While set to *Off*, Repro-5 responds more quickly to modulation wheel (for instance), but might become too grainy for your tastes. The *Fast* setting is a good compromise between response and smoothness.

Multicore Threads: Sets the number of threads (instruction streams) this instance of Repro-5 will use while the [MCORE] button is active (see [MCORE button](#)). The operating system is then responsible for how threads are distributed within and/or across the available CPU cores.

The optimum number for minimum CPU load depends on your computer hardware, operating system, host application and how many instances are running in parallel. While using multiple instances of Repro-5 you should generally avoid setting higher values than the default (4).

ABOUT THE REPRO-5 BUFFERS

Repro-5 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 e.g. 41, Repro-5 processes the first 32 and keeps the remaining 9 in a small buffer (16 samples is large enough). Those 9 samples are then processed at the start of the next call... and so on.

The extra buffer is only necessary if either the host or audio driver processes 'unusual' buffer sizes. If your host application processes buffers of e.g. 64, 128, 256 or 512 samples (these are all multiples of 16), try setting Base Latency to *off* so that Repro-5 can process latency-free.

7 NKS

7-1 INTRODUCTION

Repro-5 supports Native Instruments (NI) **NKS extensions** for VST2. All Windows audio plugin hosts and certain macOS hosts can load VST2.

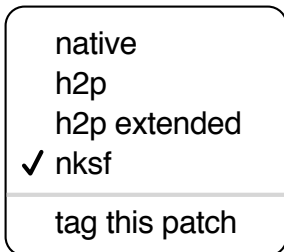
This means that Repro-5 can be integrated into the **Komplete Kontrol** software or **Maschine** environments: As well as the u-he cross-platform h2p formats, you can also install the factory presets as tagged **.nksf** files. In the VST2 version only, *nksf* also appears in the context menu of the [SAVE] button.

As we wanted to keep them synth-specific, the *Category* options (see [PRESET BROWSER](#)) differ from the Komplete Kontrol / Maschine *Type* tags. During conversion to NKS (see below) Repro-5 automatically converts *Category* tags to the closest corresponding *Type*.

In Komplete Kontrol / Maschine, any untagged presets will appear in *Synth Misc*.

Presets saved in NKS format do not appear in Repro-5's browser!

Saving as nksf



Right-clicking the [SAVE] button opens a small menu offering a choice of several preset formats.

While the *native*, *h2p* and *h2p extended* formats allow Repro-5 to save presets into the currently selected folder, choosing *nksf* causes them to land in a location specified by NI. For more detailed information, please refer to Native Instruments' own NKS documentation.

Conversion to nksf

Set the format to *nksf* by right-clicking on the [SAVE] button and choosing the *nksf* option. Open Repro-5's browser, select the presets you want to convert, right-click on one of them and choose *convert to nksf*. A text message appears telling you how many were converted and how to update the Komplete Kontrol database. During conversion, a few pages of performance controls mapped to common parameters are generated and saved with each *.nksf* preset.

7-2 NKS TROUBLESHOOTING

Repro-5 doesn't appear in Komplete Kontrol / Maschine

Firstly, make sure that you have Komplete Kontrol Software version 1.5+ or Maschine version 2.4 – the minimum requirements for our implementation of NKS.

Under Windows, Komplete Kontrol needs to register the location of Repro-5's VST2 file: Open the Komplete Kontrol preferences, go to *Locations* and add the directory that contains either Repro-5(x64).dll or Repro-5.dll (as specified during Repro installation). Hit *Rescan* and check whether Repro-5 appears.

If the NKS preset folder is empty you should reinstall Repro with the correct VST path and the NKS-option checked. Here are the preset folder locations:

Mac: *Macintosh HD/Library/Application Support/u-he/Repro-1/NKS/Repro-5/*

Win: *... \Vstplugins\Repro-1.data\NKS\Repro-5*

Perhaps the XML-File is missing from the following path:

Mac: *Macintosh HD/Library/Application Support/Native Instruments/Service Center/u-he-Repro-5.xml*

Win: *C:\Program Files\Common Files\Native Instruments\Service Center\u-he-Repro-5.xml*

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

Error message “Could not load plug-in (plug-in not found)”

Repro-5's VST file isn't in the directory specified by the Komplete Kontrol preference. Reason: Either Repro-1 wasn't installed as a VST at all, or it wasn't installed with the correct path. Note that the VST path is fixed in OSX/macOS but is user-definable in Windows:

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

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

If the VST plug-in isn't in this directory you will need to reinstall Repro-1 with the VST option checked and the correct VST path.