EXPONENTIAL AUDIO

AN iZOTOPE COMPANY

Excalibur
V5.0.0 and later

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Excalibur is the Swiss Army Knife that turned into a sword. And some sword it is! It's a multi-effects plugin that features delays, flangers, resonators, distorters, pitch shifters and all sorts of other sounds.

Excalibur comes out of the gate with presets that can be used for guitars, singers, drums and voices. It can model all sorts of effects, from radios to telephones to old 78 RPM records. But it really shines as a playpen for sound designers and preset developers looking for that special spice to make a recording into something special. There are millions of possible combinations just waiting for you.

1. System Requirements

1.1.Mac
Excalibur requires an Intel-based Mac running OSX 10.8 (Mountain Lion) or later. It does not run and will not be supported on older version of OSX. It has not been tested on non-Apple hardware (hackintoshes). While some users may have success on other system variants, those systems will not be tested or supported by Izotope.

1.2.Windows
These plugins may be operated on Windows 7,8 or 10. Windows Vista and XP are not supported by iZotope.

1.3.CPU Requirements
It is recommended that you use a multicore CPU with a clock speed in excess of 2 GHz. For processing of higher sample rates (especially 192K-384K), something closer to 3GHz is a good idea.
It is recommended that you have *at least* 4GB of RAM in your system. The more RAM, the better.
It is recommended that your monitor have greater than 1024 x 768 pixels.

1.4.iLok or CPU licensing
You may move your license directly to your CPU or you may move your license to an iLok2 or iLok3[1]. We strongly recommend the iLok, since it's portable and will allow you to run the plugin on any CPU (with the iLok inserted). iLok is a product of Pace and may be purchased directly from www.ilok.com or from any music retailer. In any case, you must install iLok License Manager to operate this plugin. License Manager is also available from www.ilok.com and is free. iLok also offers reasonably-priced insurance to protect you from loss or theft of your iLok.

1.4.1.Restrictions on CPU licensing
If this plugin is bundled with any plugin that does not support CPU licensing, then it cannot be licensed to the CPU. An iLok must be used.

1.4.2.Maintenance Suggestions for CPU licensing
If you are doing work on your system, such as installing a new hard drive, reformatting an existing drive, or updating your operating system, we strongly recommend temporarily moving the license off your CPU. This is easily done with License Manager. When your maintenance is complete, you can move the license back to your CPU.

2. Supported Plugin Formats

2.1.Mac
- Audio Units 64-bit
- VST 64-bit
- VST3 64-bit
- AAX 64-bit

2.2.Windows
- VST 64-bit
- VST3 64-bit
- AAX - 64-bit

The core features of the plugins are available in every format. Some extended features (such as ProTools GUI automation) may only be available in certain formats.

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[1] iLok 1 is not supported in iZotope plugins and will not be in the future.

3.   Installation and Removal

3.1.Install the iLok License Manager

The iLok License Manager may be downloaded from www.ilok.com. Even if you already use the iLok, it's always a good idea to verify that your driver is up-to-date. Some systems may have an older iLok driver. This must be updated to the License Manager in order to use these plugins. Please be sure to install or update your driver before installing *Excalibur*. But before doing so, please check any *read me* files in your installer package.

3.2.Make sure you have your license authorization

When you purchased these plugins (or decided to test a demo version) you will have received a license key (a long sequence of digits). That key must be entered into the License Manager and dragged to the appropriate iLok. Alternatively you may have received a message that your authorization is already waiting for you in your iLok account. In that case, simply drag the license to the appropriate iLok using the License Manager.

3.3.Run the Installer

You'll need administrator privileges to install, but no reboot is needed.

Windows users will need to set their DAWs to scan the plugin folders so the plugins can be loaded. Those locations are shown in the Where things go on Windows section.

3.4.To Uninstall

On Windows, *Excalibur* can be removed just like any other program. Launch the control panel for uninstalling programs, find the plugin, and remove it. On Mac, find the uninstaller script on the original installer disk image and run it. Your user presets will not be removed (just in case). See the following section to learn how to find those files if you wish to remove them.

3.5. Where things go on the Mac

Apple provides a very formalized set of locations for plugins and support files. You can find factory presets and other support files in:

/Library/Application Support/ExponentialAudio

The plugins go in specific areas for each plugin format:
- AU are in /Library/Audio/Plug-Ins/Components
- VST are in /Library/Audio/Plugin-Ins/VST
- VST3 are in /Library/Audio/Plugin-Ins/VST3
- AAX are in /Library/Application Support/Avid/Audio/Plug-Ins/ExponentialAudio

Your user presets and favorites are stored in ~/Library/Application Support/ExponentialAudio/

3.6. Where things go on Windows

VST plugins are stored in a common default folder, but that can be changed at installation.

Shared components of 64-bit plugins are stored in C:\ProgramData\ExponentialAudio\
- VST (64-bit) is stored in C:\ProgramData\Vstplugins\
- VST3 (64-bit) is stored in C:\ProgramFiles\CommonFiles\VST3\
- AAX (64-bit) is stored in C:\ProgramData\Common Files\Avid\Audio\Plug-Ins\ExponentialAudio

Your user presets and favorites are stored in YourName\AppData\Roaming\ExponentialAudio\

3.7. Other Installation notes

There is also a logfile which may be helpful in diagnosing problems. Its location is shown in the plugin's info page.
Do not install or uninstall by hand! Use the installers provided by iZotope.

4.   Walkthrough

   This walkthrough will show you how to begin using your plugins.

4.1.   Tooltips

The first thing you're likely to notice is that Excalibur has tooltips to provide help for every control. Simply hover the cursor over a control and you'll see an explanation of what it does:

When you install the plugin, tooltips are turned on. But you can easily turn them off.   Notice the button at the top right of the plugin window. Simply click the tooltips button to change the visibility of tooltips. Your choice is global for all copies of the plugin and it will be remembered by the system.

4.2.Load Time

You may notice that launching Excalibur takes noticeably longer that some other plugins. Excalibur has quite a lot to do in order to be ready for use. But the wait will be worth it. Not only can Excalibur give you a world of sounds, but it will also do it with barely a dent in your processor use.

4.3.The Plugin Window

Note: The plugin window will be embedded in a window provided by your workstation program (not shown).
In the following pages, we'll take a look at the various parts of the main window.

4.3.1.The Knob

The knob works largely the way you'd expect. But there are a few tricks that are good to know.

Type the value you want here. The knob will give you the closest fit.

Mouse drag up and down here to change the value. Don't try circular moves.

Option-click (alt-click on Windows) to reset the parameter to its default value

Control-drag or Command-drag for fine control of parameters with large ranges. The cursor may disappear while you're adjusting
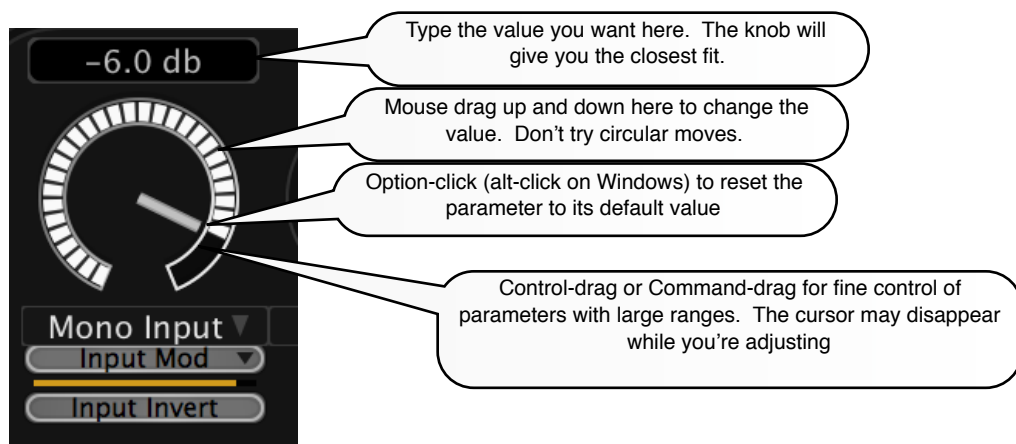
4.3.2.<u>Level Meters</u>
There are two types of level meters in Excalibur:

Main input/output meters (left side of window) show stereo input and output levels
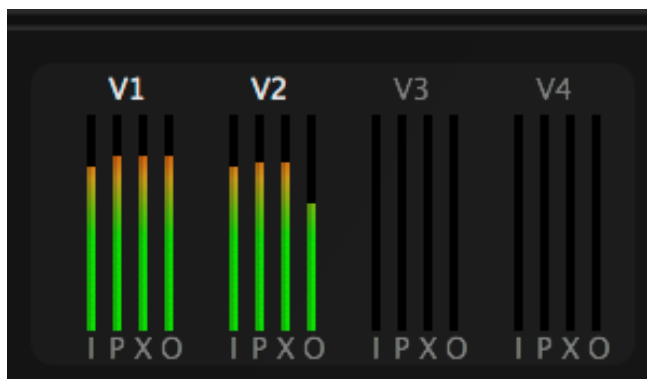
Voice level meters (bottom center of window) show levels at several points in the signal flow of an individual voice. The labels at the bottom of each meter show:

> I - Voice input level
> P - PreFX level
> X - PostFX level
> O - Output level

In addition, the voice label above each meter group shows whether the voice is active or not. The label is bright when the voice is active and dim when it is not. In the graphic above, you can see Voices 1 and 2 are active and Voices 3 and 4 are not.

4.3.3.<u>Modulation Meters</u>
Many parameters in Excalibur may be modulated by internal controllers (read the extensive section on modulation). Each of those parameters has a small meter—a horizontal bar—directly under the modulation selector. This meter provides a quick display of the state of the parameter—the combination of dialed-in and modulated value.
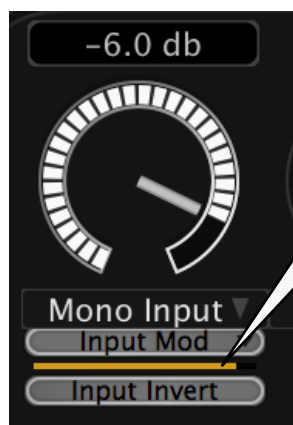
This is the modulation meter for input level. The shape of the meter may provide additional clues about the actual state of the parameter.
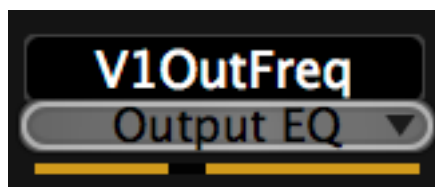
The shape of the meter may provide additional information about the parameter. For example, for a panner the meter is a narrow dot that provides quicker indication of the pan location. For EQ, the meter also reflects the type of EQ—highpass grows downward from the right. Lowpass grows upward from the left. Bandpass has a narrow point marking the passband. Notch has a notch in the solid bar.

This shows a notch filter, with the gap in the meter showing the position of the notch.

4.3.4. Keyword/Preset/Favorite
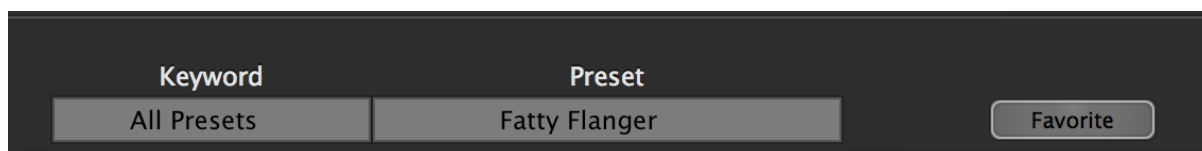
These selectors (top center-right of window) allow presets to be selected and optionally set as personal favorites. See the section on loading presets to learn more.

4.3.5. Soft Knob/Soft Switch
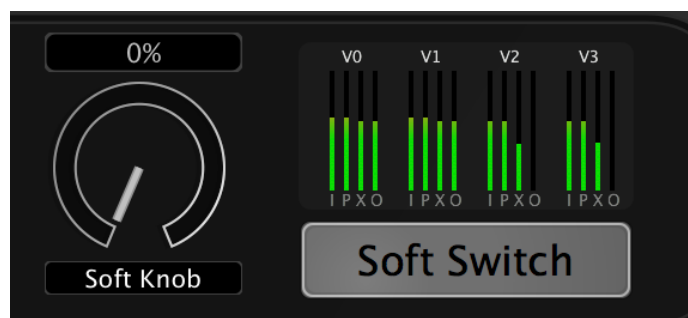
The knob and switch (bottom center of window) are "magic" controls that may be hooked up to control many things in a preset. They're different for every preset, so be sure to try them in every factory preset. They may make small changes or huge changes—and they're automatable. The switch will be highlighted when it's on.

You'll find many uses for these controls when you're making your own presets.

4.3.6. Store/Reload/Compare

These buttons (lower left) allow you to save your edits as new presets. The reload/compare buttons only appear when the preset has been changed. They allow you to see how the preset has been changed or to restore original settings.

When a preset has not been changed, only the Store button appears. This will take you to the user preset area where you can manage the user store.

If you change settings, these Reload and Compare buttons will appear.

Reload cancels all of your changes and takes the plugin back to the settings of the loaded preset.

Compare temporarily takes the plugin back to the original preset (and freezes control as well) and allows you to compare the preset to the changes you've made. Press once to go into Compare and press again to resume editing.

4.3.7. <u>Voice Selectors and Solo</u>
     <u>Buttons</u>

These buttons (center of window) allow any one of the four voices to be chosen for editing. The solo buttons function as traditional solos, allowing you to audition changes made to a single voice.

Voice Selector

Solo
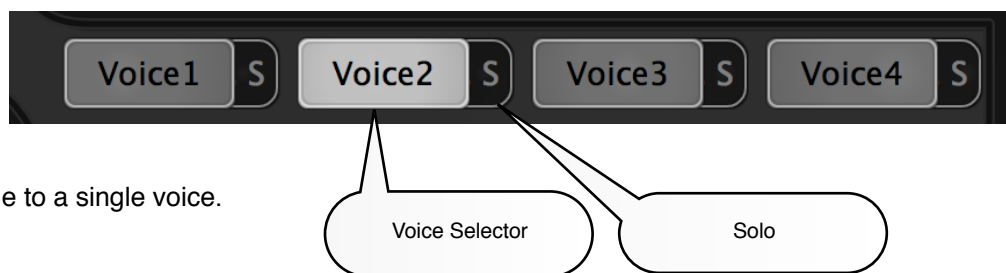
4.3.8. <u>Mix and Master Controls</u>
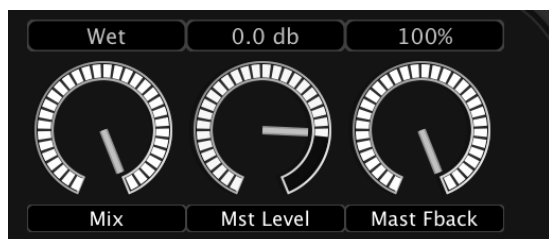
These controls (lower left) allow last-minute adjustment to let a preset fit into your mix. The Mix control should be used when the plugin is inlined. It controls the ratio between wet and dry signal. The Mst Level control overall level, if you need to cut or boost, depending on your material. Mast Fback controls overall feedback of the voices (if feedback levels for any individual values is non-zero).

4.3.9. <u>Gen Controls</u>

Gens are the frequency generators for all LFOs in   Excalibur.
These controls (Left center) allow the gens to be edited.

This Gen is operating in Tempo Mode. You'll learn more about this later on.

The other Gens are operating in frequency mode.
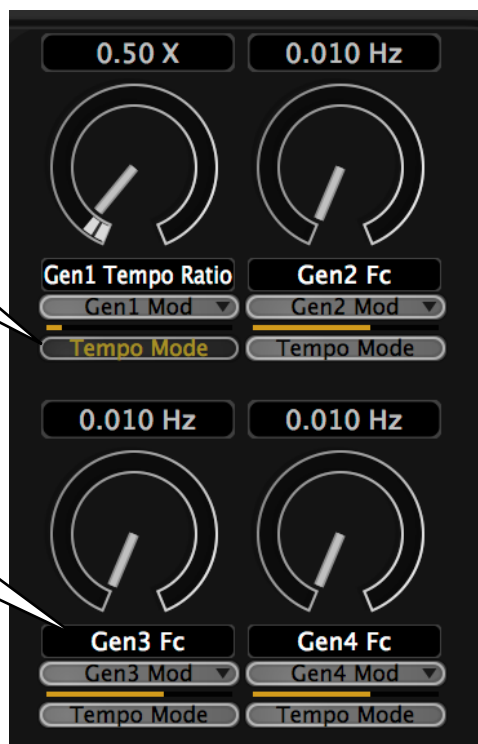
4.3.10. Primary Voice Controls

The primary voice controls (center) are always present for each voice. They allow you to control EQ, gain, routing, delay, panning and feedback.

4.3.11. Voice Effect Selector

The voice effect selector (bottom right) allows an effect (or no effect) to be chosen for each voice. There is a large list of available effects. You can think of a voice effect as a little plugin for the voice.
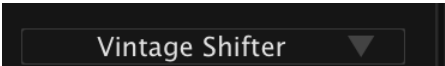
4.3.12. Voice Effect Controls
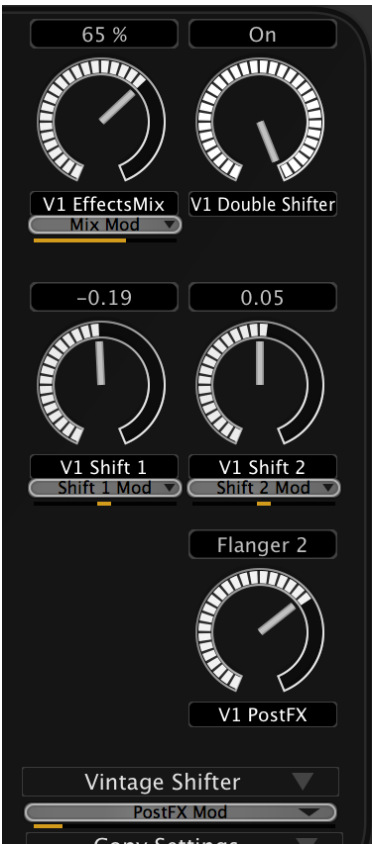
The voice effect controls (right side) will appear and disappear based on the effect that is chosen for each voice. These allow the effect to be edited.

4.3.13. Tempo Contro

The tempo controls (bottom left) allow the user to select a tempo and beat unit for any tempo-related presets. Tempo may be typed into the text field or may be tapped in by tapping twice on the button.   The beat unit is normally a quarter note (4), but another value may be chosen. The user may choose to derive tempo from the session by making a choice on the preference page.   In that case, these controls will not appear.

The first click on the tap button will illuminate the button to show that it's armed. If the second tap does not come in a reasonable time, the button will disarm itself and turn off.

4.3.14. Sync

In many cases, a modulator may be set up to run vibrato or another effect closely tied to tempo. Not only must the rate be correct, but the timing must also line up with a downbeat.   This is handled automatically when DAW playback is relocated. But in live performance, it may be necessary to let Excalibur know when the downbeat occurs.   The Sync button does that.   Whenever this button is pressed, any tempo-related Gen will have its phase
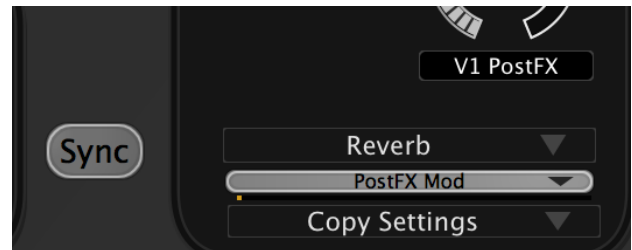
4.3.15. Quick Copy
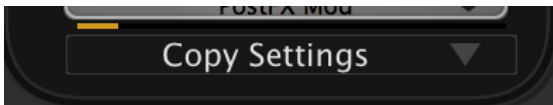
It can take a long time to edit a preset. The Copy Settings button (bottom right) brings up a selector that allows you to copy all settings from one voice to another. This can save considerable time, since all you might have to do is to change IO and panning parameters.

4.3.16. Zoom Button

Need a larger plugin window? That's what Zoom is for. Click it to increase the size of the window. The "+" will change to a "-". Then click again for normal size. If Zoom is not available, the button will not appear.

4.3.17. Preference Button (Pref)

The preference button takes you to a window that allows you to fine-tune the operations of Excalibur.

4.3.18. Logo/Help Button

Need help? Need to know your version number, sample rate or some other aspect of your environment. Simply click the iZotope logo for a new help screen.

4.4.[Loading Presets](#)

The first thing you'll want to do is to listen to the many presets that come with *Excalibur*. On the upper right corner of the plugin window, you'll see a pair of combo boxes (popup menus). The left box shows Keywords, which are something like the old idea of banks (but more powerful). The right box shows Presets (you might know them as patches) which are the actual sounds you can load. There's also a button that can mark any preset you like as a favorite, making it even easier to find.

Presets are grouped by keywords. Select the keyword that most matches what you're looking for.

After you select the keyword, then select any of the presets that appear here.

Any preset you use a lot can be made a favorite. Simply click this button and the preset will appear under a special favorites list. It will be much easier to find.

Keyword	Preset	
All Presets	Fatty Flanger	Favorite

Tip: In just a few more pages there are some tricks about changing keywords and presets rapidly.

4.5. Keywords

Most mix engineers search for a preset that fits a specific need. Perhaps it's a fattener for the singer. Perhaps it's a rotary speaker for a keyboard or a distorter for guitar. Search for a keyword that describes the application. Remember that a preset might appear under several different keywords if the preset might be used in that application. When you create your own preset, you can use as many keywords as you like. You can even create your own keywords to match your needs.

Favorites
Chorus
Combo
Delay
Distortion
Flanger
Futz
Guitar
Keyboard
Panner
Pitch
Resonator
Res Filter
Ring Mod
Rotary
Sound Design
Spaces
Tempo
Tools
Tremelo
Vibrato
Vocals
User
All Presets

Cancel

The 'Favorites' keyword will show all the presets you marked as favorite.

The 'User' keyword will show all the presets you've created.

Select a keyword that describes the category of preset you're looking for.

Note: Keyword list may differ slightly as newer versions of Excalibur become available

The 'All Presets' keyword will show every single one of your presets.

4.5.1.<u>Presets</u>

Once a keyword has been selected, several presets will appear when you click the preset popup. Audition them until you find the right one. Don't be surprised to see the same preset showing up under several keywords--most presets have more than one application. This is the power of keyword organization. You can add keywords to any preset and save it for later use. If you don't like the choice of keywords, we'll show you how to create your own.
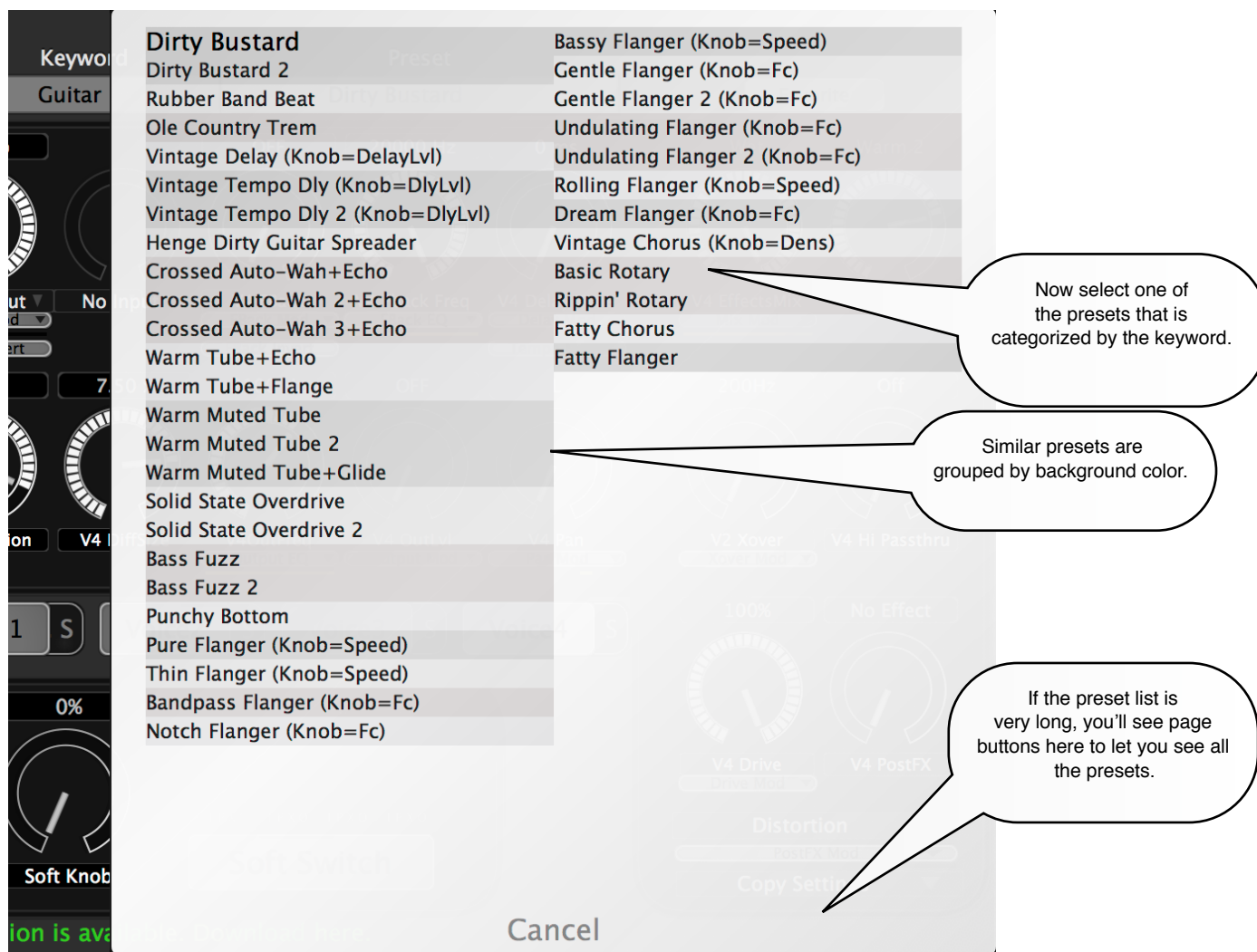
4.5.2.<u>Tip for quick auditioning:</u>

You actually don't even have to click on the Keyword or Preset menu to make changes. On most workstations, a simple up-arrow or down-arrow will advance the keyword. A left-arrow or right-arrow will select the next or previous preset. If that doesn't work on your DAW, try a combination like Command-arrow or Alt-arrow. This will let you focus on listening instead of operating the GUI.

You should also notice that presets are grouped by variations in the background color. In the example on the graphic you'll see there are several variants of "Warm Muted Tube".   This is just a visual cue to help you find your way through presets. If you'd like an even quicker audition to see of the preset group is appropriate, use the "Page Up" and "Page Down" buttons on your keyboard. That will move from group to group instead of preset to preset.

4.6.Search

A powerful new capability has been added with the Version 2.1 build of Excalibur—the ability to search for presets by names or characteristics. This is accomplished by clicking on the magnifying glass option at the upper right corner of the plugin.
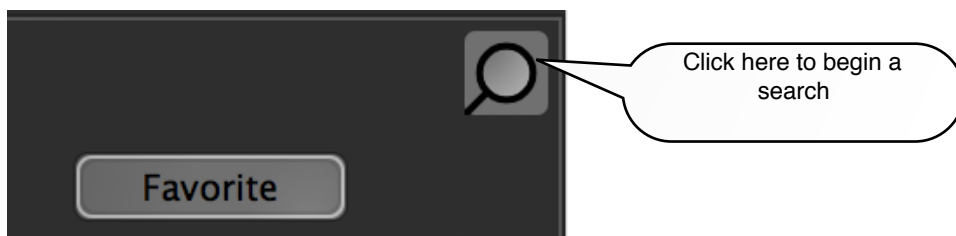
An area then appears to the left of the magnifying glass. You can enter your search terms in this area.
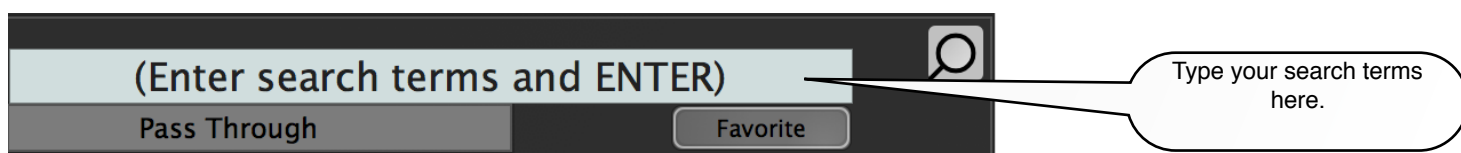
Let's start with something simple. We'll Type the word "chorus" into the area. This is not case-sensitive—use upper or lower case as you wish. Press the return key when you're ready to begin searching.

When the search is complete (it's very fast) a message will flash briefly to show if your search was successful. If something has been found, you'll see a new keyword called Search Results.
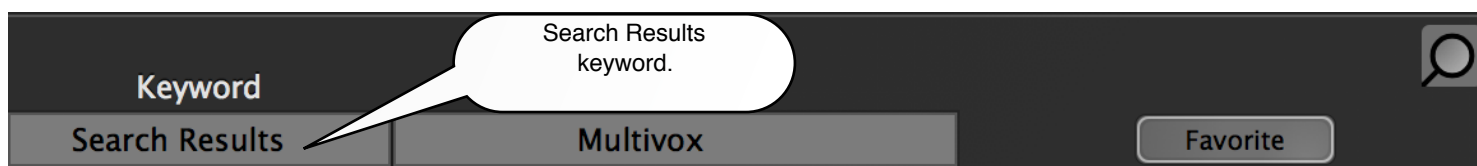
The Search Results keyword acts like any other keyword—the preset list will show all of the presets that were found in the search. Search Results will remain available until you perform another search or until you exit the session.

4.6.1.Refining your search
The previous search will give us a lot of presets—the word Chorus appears in a *lot* of them:

Multivox	JC Lead 2
Fatty Chorus	Got Trails?
ChorusVerb	BPM Got Tempo Trails?
ChorusVerb 2	Ole Country Trem
Hi-Lo Chorus (Knob=Speed)	Stereo Detune DDL 02
Fretless Chorus (Knob=Speed)	Stereo Chorus DDL 01
Inside-Out Chorus 1	Stereo Detune DDL 01
Inside-Out Chorus 2	Stereo Chorus DDL 02
Inside-Out Chorus 3	Henge Chorused Tempo PingPong
Fretless Chorus 2 (Knob=Speed)	Henge LVox Thickener
Stereo Choral Room (loud=long)	Piano Windchimes
Stereo Choral Room (Var=long)	Swedish Kill
Stereo Choral Room (Var=short)	Drum Fireworks
Stereo Choral Room (loud=short)	DreamE Piano Echo
Crossed Auto-Wah 3+Echo	Chorus Bouncery
Shimmer Chorus 01	Mod DDL Chorus 01
Shimmer Chorus 02	Mod DDL Chorus 02
Leslie's Big Fat Tempo Slap	Mod DDL Chorus 03
Filtered Phasing Madness 01	Mod DDL Chorus 04
JC Lead 5	Mod DDL Chorus 05
Mono Choral Room (loud=long)	Chorustaps
Mono Choral Room (loud=short)	Chorustaps 2
Face Full o' Fuzz 3	Microshift & Chorustaps
Fatso Chorus (Knob=Speed)	Cloud Ekos
BASS Chorus wave1 (Knob=Speed)	Stereo Chorus Dist DDL 01
General Chorus (Knob=Speed)	Stereo Detune Dist DDL 01
Vintage Chorus (Knob=Dens)	Stereo Chorus Dist DDL 02
JC Lead 3	Stereo Detune Dist DDL 02
JC Lead 4	
JC Lead 1	

Cancel

What can we do to refine the search? We can add some terms:

Add *verb* to the search.
Note the + sign.

chorus+verb

Leslie's Big Fat Tempo Slap   Favorite
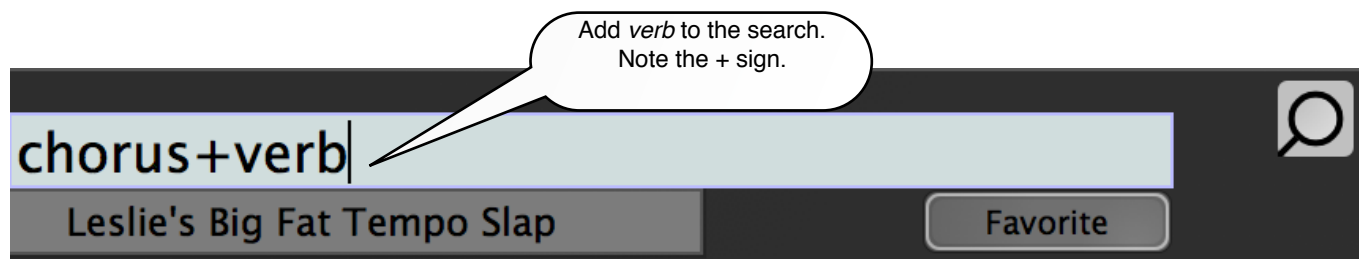
We've added the word **verb**. The leading **+**sign means that the word must appear in the results.

Granular Verb	Vintage Reverb Amp 3
Granular Verb 2	Vintage Reverb Amp 5+Trem
Fuzz–o–Verb 2	Vintage Reverb Amp 4+Trem
Fuzz–o–Verb	Vintage Reverb Amp 2+Trem
Stutter Verb Tempo 2	Vintage Reverb Amp 3+Trem
Stutter Verb Tempo	Broken Glass Verb
FlangyVerb 2	Filtered Detune Verbifier 02
FlangerVerb	Filtered Detune Verbifier 01
ChorusVerb	SG Unfolding Synth Pad Delay (Knob = Verb)
FlangyVerb 3	Wandering Reverb Tail 2
FlangyVerb	Wandering Reverb Tail
ChorusVerb 2	Vintage Gated Reverb (Mono)
FlangerVerb 2	Vintage Gated Reverb 2 (Mono)
Fattieverb 2	
Fattieverb	
Sharpverb	
Flatverb	
High Pulse Verb (Tempo)	
Broken Glass Verb 2	
High Pulse Verb	
Swirly Tempo Verb	
Vintage Gated Reverb (Stereo)	
Vintage Gated Reverb 2 (Stereo)	
Thin Drive Verb 1	
Thin Drive Verb 2	
Vintage Reverb Amp	
Vintage Reverb Amp+Trem	
Vintage Reverb Amp 5	
Vintage Reverb Amp 4	
Vintage Reverb Amp 2	

Cancel

We can see that the results list has been reduced. What we have now is presets that satisfy the terms Chorus, and Verb.

We can refine our search even more. Let's add the word amp, with a minus (-)mark ahead of it.

Add the word amp with a minus mark.

chorus+verb-amp

Granular Verb

Favorite

Now our preset list has been reduced even more. Presets with the word amp have been removed. What we have now is presets that satisfy the terms C*horus* and *Verb*, but without the word *Amp*.

Granular Verb	Wandering Reverb Tail
Granular Verb 2	Vintage Gated Reverb (Mono)
Fuzz–o–Verb 2	Vintage Gated Reverb 2 (Mono)
Fuzz–o–Verb	
Stutter Verb Tempo 2	
Stutter Verb Tempo	
FlangyVerb 2	
FlangerVerb	
ChorusVerb	
FlangyVerb 3	
FlangyVerb	
ChorusVerb 2	
FlangerVerb 2	
Fattieverb 2	
Fattieverb	
Sharpverb	
Flatverb	
High Pulse Verb (Tempo)	
Broken Glass Verb 2	
High Pulse Verb	
Swirly Tempo Verb	
Vintage Gated Reverb (Stereo)	
Vintage Gated Reverb 2 (Stereo)	
Thin Drive Verb 1	
Thin Drive Verb 2	
Broken Glass Verb	
Filtered Detune Verbifier 02	
Filtered Detune Verbifier 01	
SG Unfolding Synth Pad Delay (Knob = Verb)	
Wandering Reverb Tail 2	

Cancel

4.6.2.Search rules

The rules are like many other search engines. Adding a word to the list (with no plus or minus) is an **OR** search. So if you 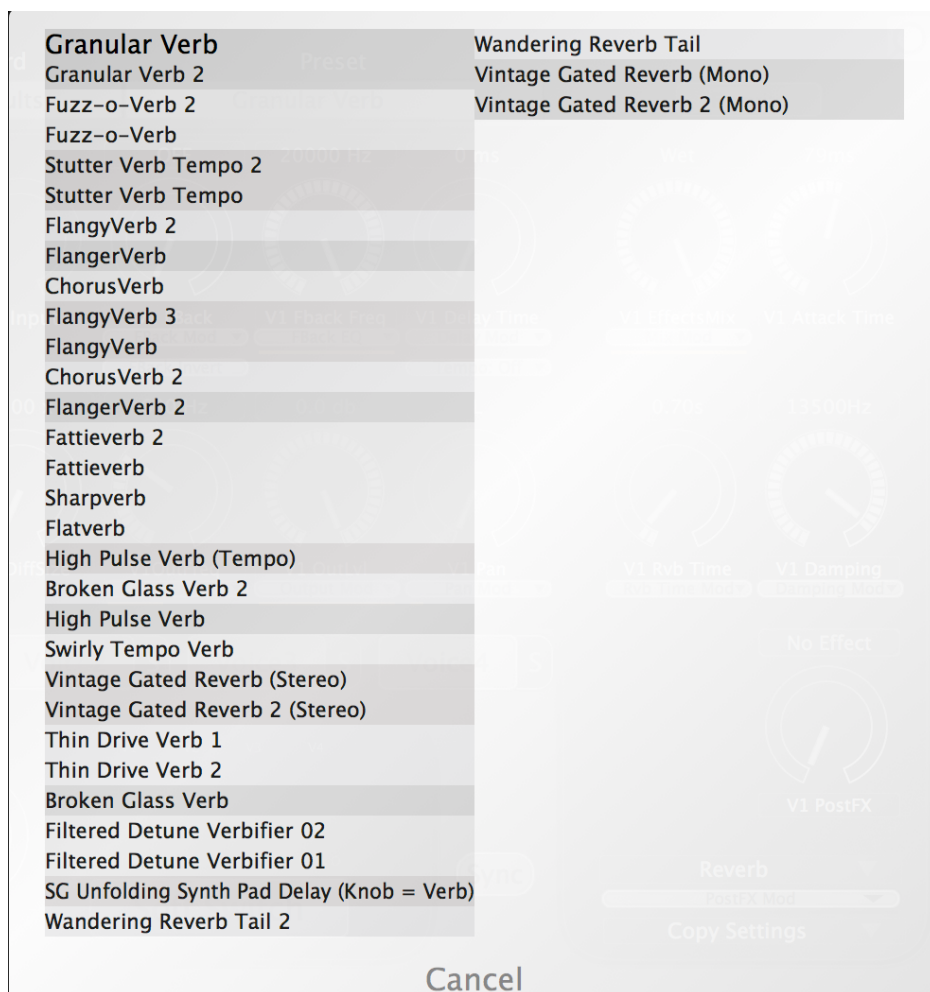enter the words *Chamber* and *Plate*, you'll get everything in the *Chamber* and *Plate* keywords, along with anything having those words in the preset name. Adding a word to the list with a leading plus sign (+) is an **AND** search. The results *must* include those words. Adding a leading minus (-) to any word is a **NOT** search, meaning the result may not have that word.

There are many ways to find the presets you're looking for. The original keyword organization is a good first step. The Favorites list is the best go-to place for your most-used presets. The new search capabilities now give you a quick and powerful way to find what you might need.

4.6.3.Synonyms

You'll find many variants of some words in preset names. You might see Chor or Chorus. You might see Flange or Flanger or Flnge. The iZotope search engine keeps a list of synonyms that is aware of many alternate spellings, and will often find what you're looking for under any of the common abbreviations.
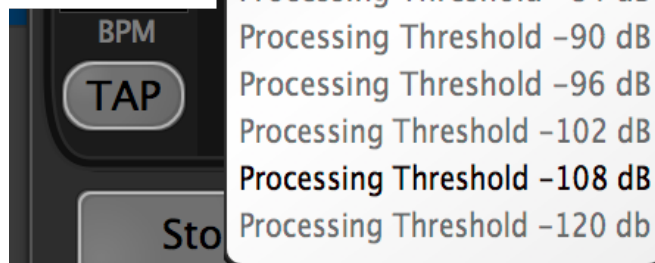
4.7.<u>Processor Threshold</u>

Conserving processor power is always important, especially in cases where the mix is made of small segments of audio. There's no reason for an effect to run if there's not something in it. The threshold button allows you to determine just where Excalibur stops and starts processing. When the signal inside the voice falls below the threshold, processing stops for that voice. When it passes above the threshold, it begins to run again. Response is instantaneous: you won't drop a single sample of new input. The default is set at -108 dB which is a good value for almost every application. If you're working on a complicated mix, you might improve your performance if you set the threshold to a lower value—say -96 or -102. If you're on a high-end classical[2] mix, then why not try -120. When you can hear the effect shut off you've probably gone too far.

Tip: —54 dB sounds bad. -48 dB sounds *really* bad.

Click the "T" button to open the threshold selector.

Processing Threshold −48 dB
Processing Threshold −54 dB
Processing Threshold −60 dB
Processing Threshold −66 dB
Processing Threshold −72 dB
Processing Threshold −78 dB
Processing Threshold −84 dB
Processing Threshold −90 dB
Processing Threshold −96 dB
Processing Threshold −102 dB
Processing Threshold −108 dB
Processing Threshold −120 db

BPM

TAP

Sto

Another Tip: Processor usage is calculated on a per-voice basis. If a voice isn't doing anything, it will shut off. If you're creating a preset and don't use any of the voices, be sure to deselect inputs for the voice.

---

[2] Of course the question would be "why are you using Excalibur on a classical mix).

4.8.Global Parameters

In some cases, you may wish to change the behavior of all copies of the plugin, wherever they are. For this, you can control global parameters through the Preferences Page. To launch the page, simply click the "Pref" button in the extreme upper-left corner of the plugin.

Exponential AUDIO EXCALIBUR   Global Preferences

Tail Flush	Don't flush tails
Load on Keyword	Load preset on keyword change
Display preset (AudioUnits)	Don't show preset loads under automation
Restore missing presets	Restore missing presets from session
Tuning	A = 440
Tempo Control	Tempo set by User
Mix Follows Preset	Mix doesn't follow preset

Done

When you relocate (by rollback or jump) the delays and effects may be cleared or allowed to ring. Clearing the tails requires a little extra processing power, and you might notice it in a very busy mix. If you're doing loop-based applications (let's say an art installation), you may wish the tails to continue ringing. The choice is yours.

This controls whether or not the current preset changes when you change the keyword. Selecting "Don't Load" can be helpful in situations where you're trying to time a load. Selecting "Load" means that a preset from the new keyword will be immediately loaded.

If you're running under automation, this will allow you to see preset changes. There is a separate control for ProTools, Audio Units and VST (you'll only see the format you're currently running). There are some things to know if you choose this option. See the section right after this graphic.

Select the tuning reference you'll be using. The global standard is A=440, but certain applications may choose to change that.

Many presets in Excalibur are sensitive to tempo. Tempo can be derived from the session itself or by directly specifying a value on the GUI. This parameter allows you to choose the method.

In normal use, the wet/dry mix stays wherever you place it while you're auditioning presets. But for live-rack usage, you may wish it to follow the mix that you've saved in user presets. This parameter enables that capability.

4.8.1.Important Note Regarding the Display Preset Parameter (Show Preset Loads under Automation)

This feature does not work particularly well on Excalibur, due to the enormous number of parameters in the plugin (433). Although most DAWs can support automating all parameters, they all act very differently in the way the parameters are sent to the plugin during automation. The *Display Prese*t feature works by comparing the current parameter state to the library of factory and user presets. When a match is found, the preset name is displayed. It appears that many workstations economize and avoid sending parameters to the plugin at certain times (if there's been no change from the stored state in the session). While audibly good, the *Display Preset* feature doesn't have critical information that it needs. Considerable time has been expended in an attempt to understand this. While we remain optimistic, there is currently no acceptable solution.

4.8.2.More about Global Parameters

The *Display Preset* option is a little complicated. It works by comparing all of the plugin's current parameters to the values stored for Factory and User presets. If there's a match, the matched preset name will appear in the preset field of the GUI. If there's no match, the preset name will not change. There are two basic rules to keep in mind:

• You must automate all of the preset parameters (you can exclude bypass if you wish). Refer to the user guide of your workstation if you're not sure how to do this.
• Your workstation program (DAW) must not glide parameters.

Two DAWs work pretty well with this option: ProTools and Cubase. There are probably others. Some DAWs can't seem to turn off gliding (even with an option). Those include Logic and Digital Performer, but there are surely others.

So if you'd like to try this out, turn on the option, make sure all your parameters are automated and give it a try. If it doesn't work, turn it off.

The *Mix Follows Preset* option is designed for people using live-rack types of workstations (on-stage guitar effects and such). When this option is off (the default value), Mix is not affected by loading a preset from the GUI. This simplifies preset auditioning—set the value you want and it will stay there as you load new presets. But in live-rack applications, the user may create variants of presets with mix values that are set for specific cases. By turning on the *Mix Follows Preset* option, the stored wet/dry value is loaded whenever the preset is loaded. Please note that all factory presets are created with the mix at 100% wet. This option applies only to user presets.

4.9. Getting Version Information and help

If you need version information for a support or upgrade issue, simply click on the iZotope logo in the upper left corner of the plugin. You'll see a page with version information as well as links for this user guide and online help.

5.   Saving Sessions

5.1.<u>Settings stored with session.</u>

When you save a job, preset names are stored for each plugin, along with any adjustments you've made after loading the preset. Reloading that job will restore your *Excalibur* plugins back to the exact state they were when you saved the job. This is true even if the presets no longer exist on a system. Let's say you copy a job from one computer to another. The second computer does not have the user presets that exist on the first computer. The preset names will still appear in the plugin, except they will be dimmed and in parentheses. You can still adjust and save settings, but this is your cue that the source preset is not on your system (perhaps you cleaned up your user preset area sometime later). You may wish to save those settings locally as a user preset. The preset will then be available to any other instantiations of the plugin.

Tip: Even though the preset values are in the session file, why not use the *Export* function (on the Store page) to save your user presets to an external folder. You can zip that folder and share it with anyone else who might be working on the session (they can use the *Import* function). This can be especially useful if you're working on a large project, such as a film.

5.2.<u>Missing User Presets in a Session</u>

You may restore a session—let's say from an old mix—that uses presets you've created. If you still have those user presets, then the session will restore in the normal way. The preset selector might look something like this:

Keyword	Preset
Fave	The Best Preset Ever

But what happens if you've deleted those user presets? The session will restore normally, but the preset selector will look a little different:

Keyword	Preset
(Missing Preset)	The Best Preset Ever

The preset name is still in the preset area, but the keyword says "(Missing Preset)". Depending on how you've set the "Restore Missing Presets" in the preference page, the preset may have been automatically recreated in your user preset area. If you've elected not to restore presets, then all of the preset values have still been restored to the session—even though the preset doesn't exist. If you wish, you can always click the "Store" button and save the values under the old name or as a new preset.

6.   Editing, Saving, Importing and Exporting

6.1.Editing

There are many ways to edit parameters. Here's a quick look.

6.1.1.Editing by Knobs

Most parameters are edited by knobs. Simply click on the knob (you'll know you have it when the color changes) and drag the mouse up or down.

6.1.2.Editing by Typing Values

Parameters with knobs also have display areas. Sometimes it's easier to type the value you want directly into the display field. *Excalibur* will do its best to make sense of what you've typed.

6.1.3.Editing by Buttons

Some parameters--EQ types--use graphic buttons. Just click the button.

6.1.4. Editing by External Controller

Please see the section about Eucon elsewhere in this document.

6.1.5.Special treatment of Mix parameter

Nearly all parameters are saved with presets (built-in or user-created), but this is one place where this rule is not followed. Although the mix parameter is saved when a project is saved, you may notice that it's not changed when you load new presets into the plugin. This is to help you in auditioning presets. Any wet/dry balance will be preserved as you try out different presets.

6.2.A word about preset format: Don't use the workstation's preset manager

You may notice that there are two ways to save presets. Your workstation program (Logic, ProTools, etc) will probably provide a way to store and recall user presets. That will appear at the top of your plugin window, in the wrapper area. iZotope also provides a method that appears in the main body of the plugin window, and is accessed by the **Store** button. Why are there two methods and which should you use?

Most modern-day mix engineers use more than one workstation program. This often means that presets you created in one program are not available to another. This is especially true if the workstation program uses different plugin formats (AU, VST, etc). The workstation-specific method does not create portable presets. For this reason, iZotope does not support the workstation-specific method. It might work and it might not. Instead, iZotope creates truly portable presets. Any preset you create in one DAW is easily available in any other.

6.3.The Store Page

The Store Page is the way that you manage all user presets. In this page, you can save and delete presets. You can also export presets so that you can share them with others. You can also import presets that have been sent to you or shared by others in your facility.

6.3.1.Storing a preset you've created

If you've edited the plugin in such a way that you'd like to use those settings again, it's time to create a preset. First press the Store button at the lower left corner of the main plugin window. You'll now see this window:
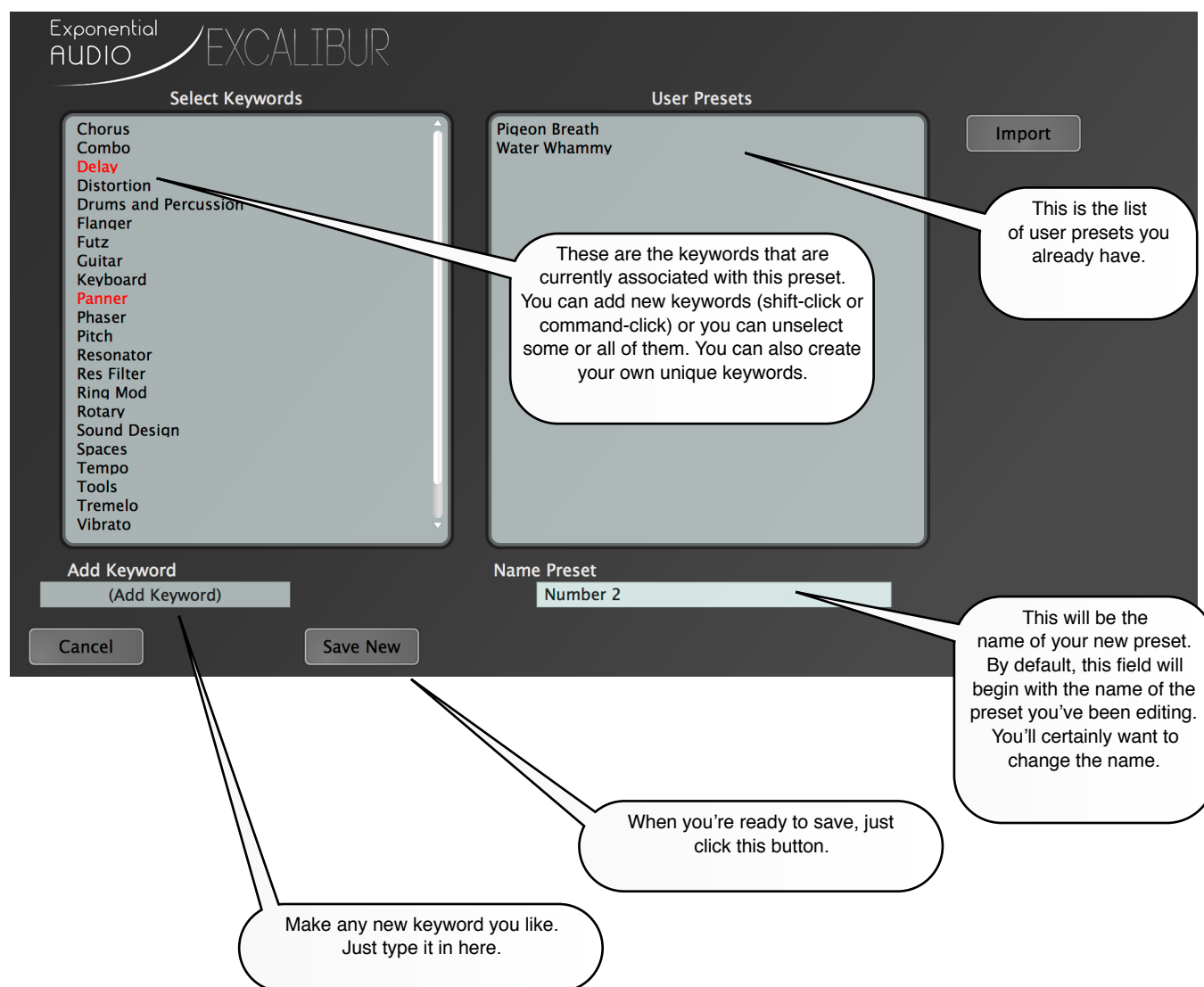
Simply select your keywords, name the preset and save it.

6.3.2.<u>Making changes to an existing user preset</u>
There are always a few changes you'd like to make after you save a preset. To make those changes, load the preset and
edit. When you're ready, click the Store button. You'll notice a very small difference in the store page:
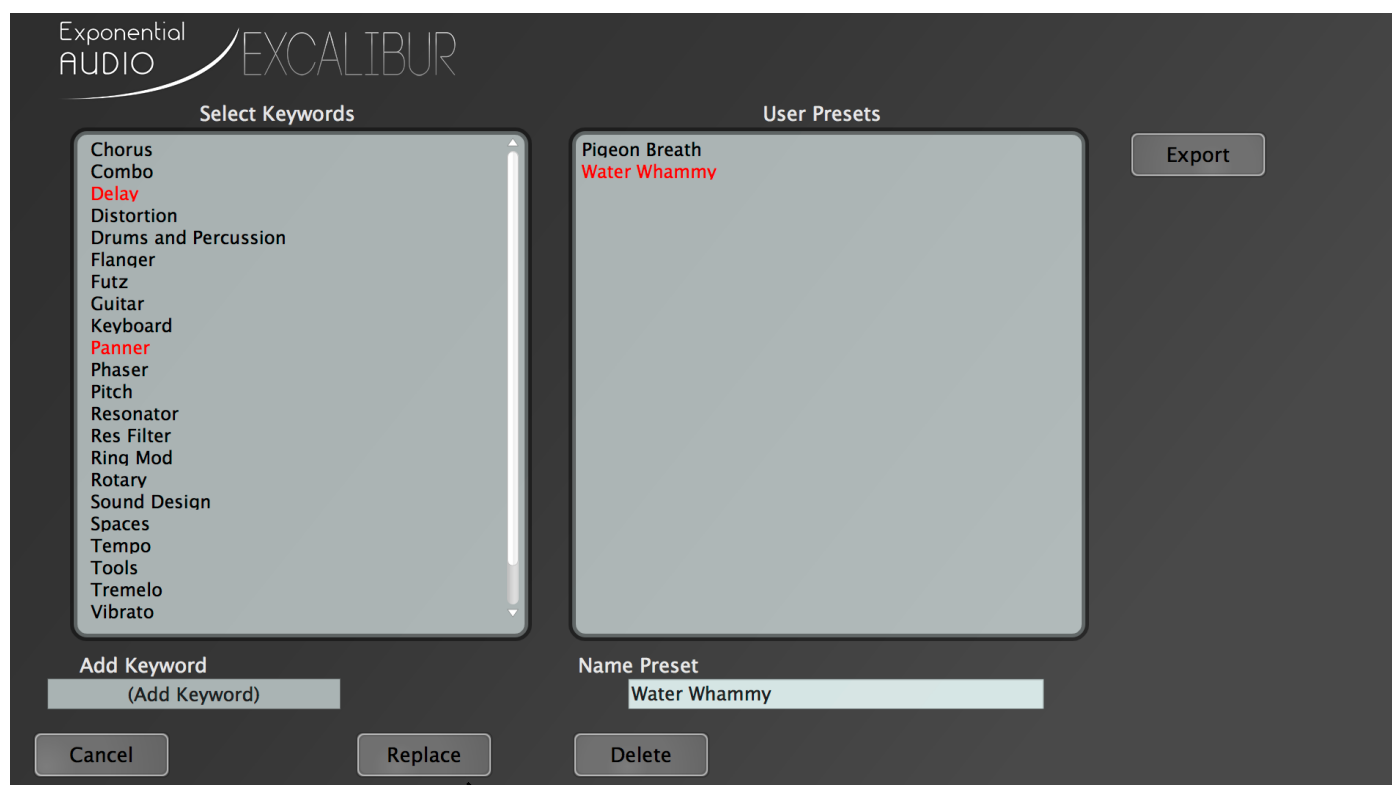
Because the preset name is the
same as a preset in your user area, this
button now says Replace

You can still change and add new keywords. As soon as you press the Replace button, your preset is updated. If you
change the preset name, the button will revert to "Save New".
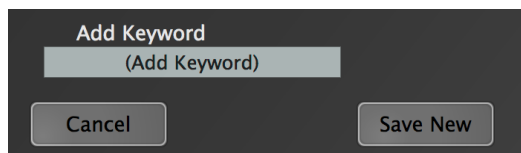
6.3.3. Deleting a preset

Once in a while, it's time to get rid of a user preset. Press the store button and select any presets you wish to eliminate:
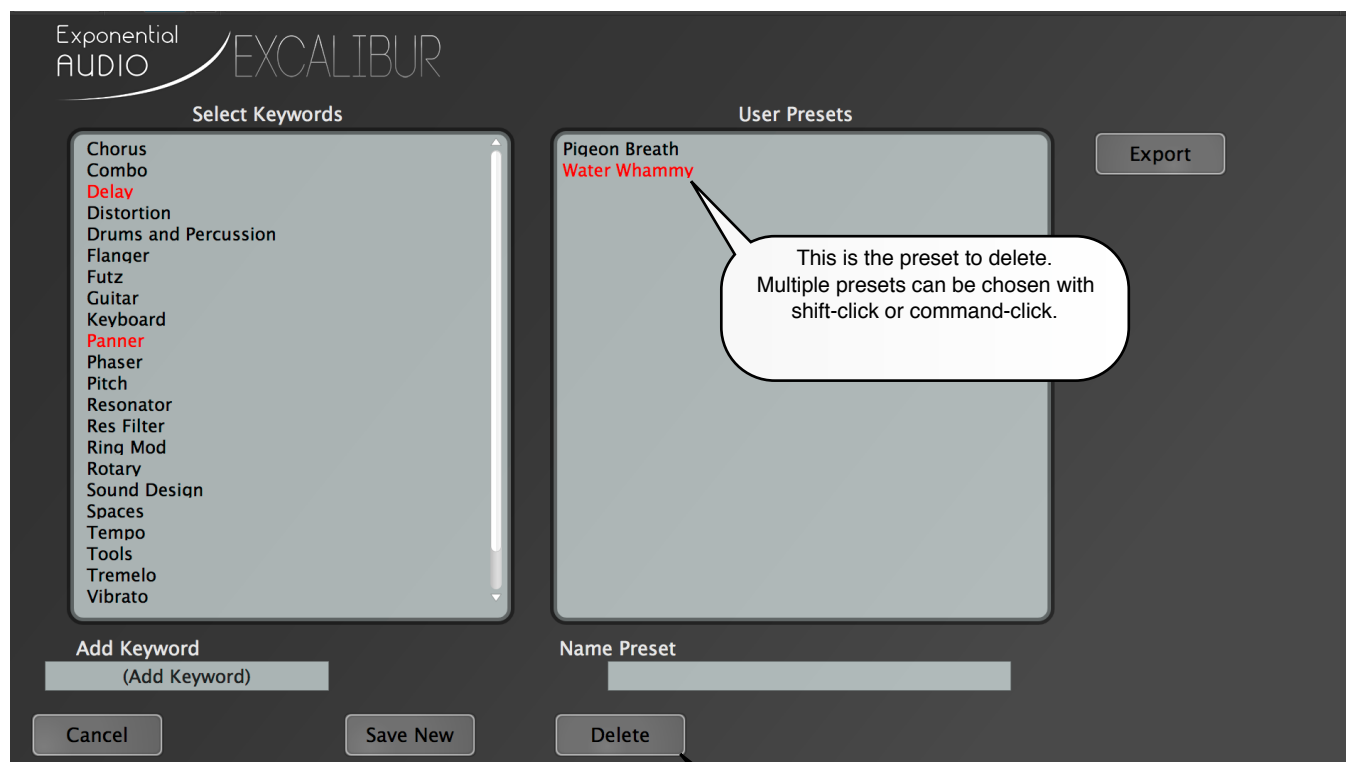
6.3.4. Exporting presets

The easiest way to share or archive presets is to export them. To export, click the store button and select any or all of the user presets:

As soon as the Export button is clicked, you'll see a new window:
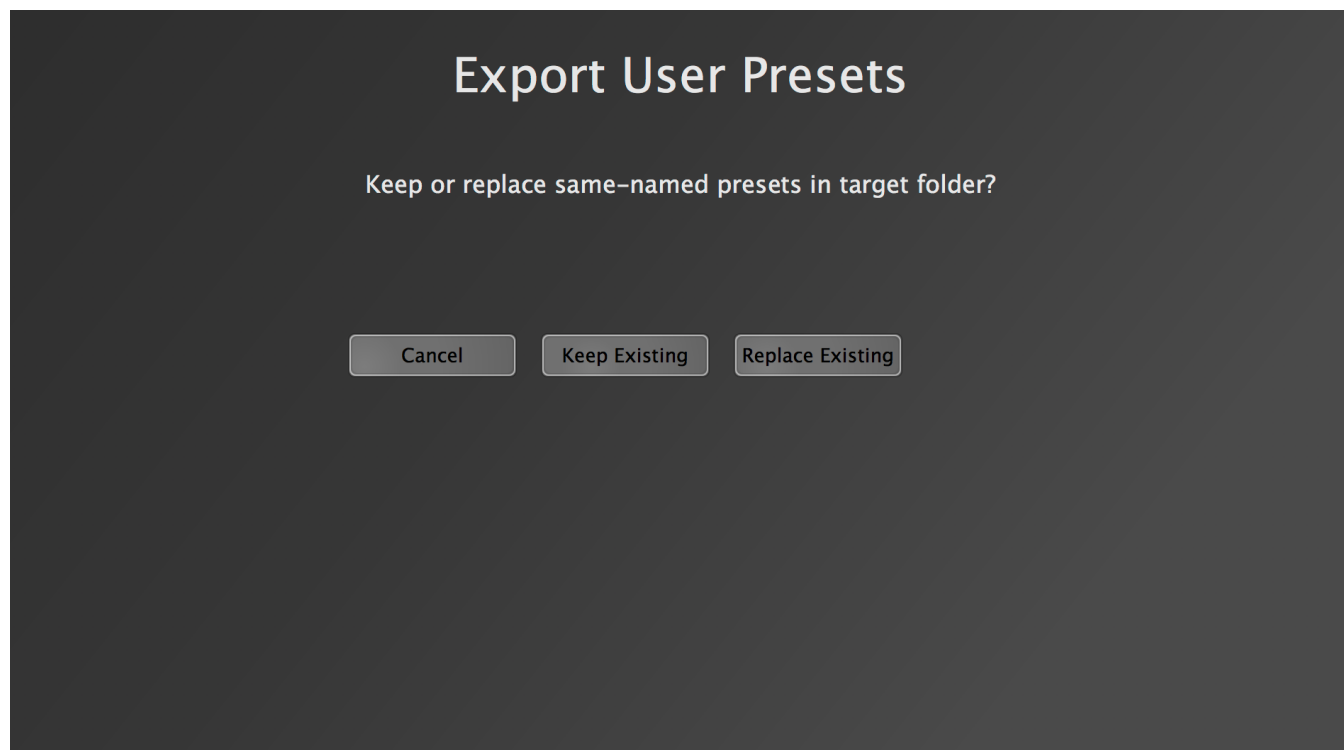
Your target folder may have presets of the same name. This gives you the choice to replace them or not. After you make your choice, you'll be taken to a standard Mac or Windows file saving window.

6.3.5.Importing presets
If someone has shared presets with you, you can easily add them to your internal preset area. Click the store button and make sure that no user presets are selected.
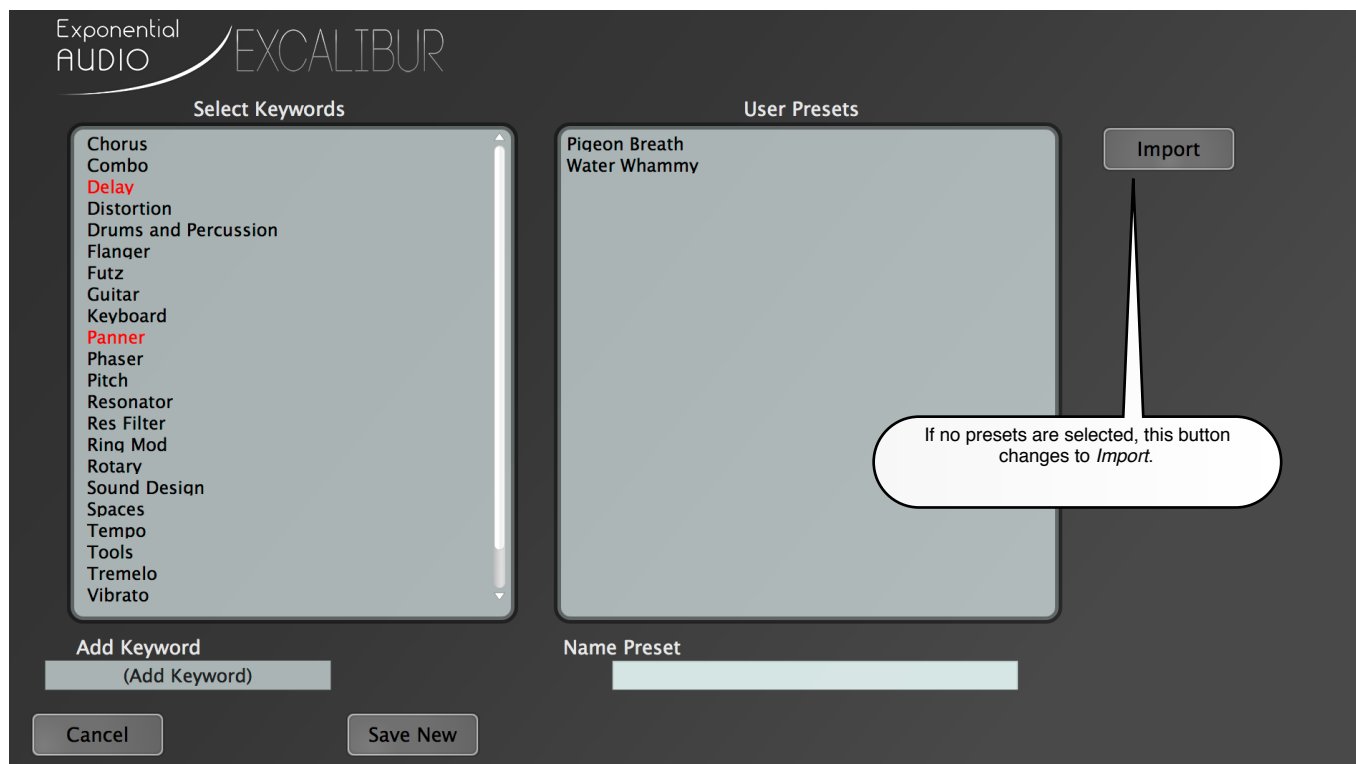
As soon as you click the Import button you'll be taken to this window:
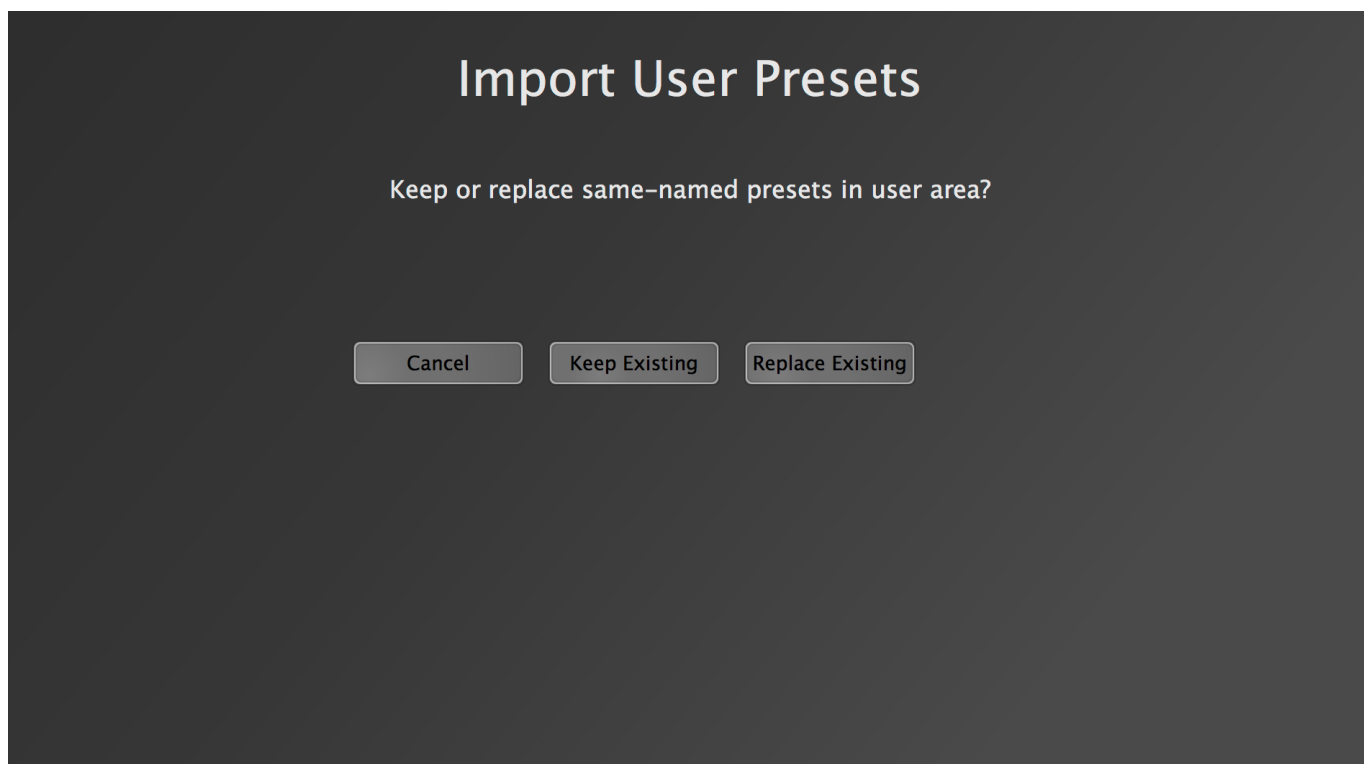
This gives you the opportunity to determine how duplicate names will be handled. After you make your choice, you'll be taken to a Mac or Windows file window that will let you find the imported presets.

7. DAW Automation

DAW Automation uses the built-in abilities of the workstation program. Every DAW is different in the way automation is set up, but they're all somewhat similar under the hood. You have the ability to record parameter changes as your project plays. You might record small changes in delay time on one pass, and then record filter changes on another. These will always play back in exactly the same way. This is how many mix engineers fine-tune a complicated mix. Those changes will play back faultlessly every time you play the project. It's important to keep two things in mind:

- While you can change a preset during automation, you may not see the actual preset name change as you play back the mix. All parameters should change and the sounds should be fine. It's simply that you may not see the name change. See the earlier section on global parameters. You might be able to see the preset changes.

- You cannot load or unload a plugin during automation. That's just not the way it works. If you think you need to do something like that, it's best to insert all the plugins you'll need on a track and then automate bypass or wet/dry mix.

8.   The Algorithm and its Parameters

8.1. Description of the Algorithm and its applications

Excalibur is built as a 4-voice framework with an I/O matrix and a unique modulation system. We'll move through each of those areas in turn.

8.2. The I/O Matrix

The I/O Matrix is a virtual patch bay that distributes audio through the algorithm. It has the following positions:

- N/C
- Left Input
- Right Input
- Mono Input (L and R combined)
- V1 PreFX
- V1 PreEQ
- V1 PostEQ
- V2 PreFX
- V2 PreEQ
- V2 PostEQ
- V3 PreFX
- V3 PreEQ
- V3 PostEQ
- V4 PreFX
- V4 PreEQ
- V4 PostEQ
- Left Wet
- Right Wet

Each of these positions holds an audio signal from some point in the signal flow. Any of these positions may be selected as an input or alternate input for a voice. This enables a voice to use audio from another voice as input. In the simplest sense, this might be used to increase a delay time, but there are really thousands upon thousands of creative possibilities.

8.3.Modulators and Gens

Excalibur has a modulation system of deep power. A modulator is an automatic controller that may be used to control a parameter. Modulators exist in many points of the plugin and may be used in a remarkable number of ways. A modulator responds to a control source and in turn controls a key plugin parameter (see the block diagram in the *Voice Architecture* section for all of the control points).

In addition, the sense of any modulation source can be inverted, so the 25% duty cycle pulse can be easily turned into a 75% pulse. Some sources have additional controls: for example the input/output levels have a decay control so that they can be used as envelope followers. All controls have an optional smoothing filter as well. And of course, you have a parameter for each modulator to determine just how much it can change a parameter. Maybe it's a little. Maybe it's a lot.

Remember that any modulator can be assigned to cover multiple parameters.   That means that it's easy to phase-lock LFOs, or using the single soft knob to control a radical change.

8.3.1.Modulation sources
Control sources for modulators are:
- N/C

8.3.2.LFO-type modulation sources
- Sine Wave
- Rectified Sine Wave
- Triangle Wave
- Square Wave
- Quarter Pulse (Pulse wave with 25% duty cycle)
- Third Pulse (Pulse wave with 33% duty cycle)
- Short Tick (Short periodic tick)
- Ramp Wave (sawtooth)
- Random value

Adding the knob means that the LFO is still the modulation source, but the amount of modulation is controlled by the soft knob
- Sine Wave + Knob
- Rectified Sine Wave + Knob
- Triangle Wave + Knob
- Square Wave + Knob
- Quarter Pulse + Knob
- Third Pulse + Knob
- Short Tick + Knob
- Ramp Wave + Knob
- Random + Knob

Adding the switch means that the LFO is still the modulation source, but the modulation is gated by the soft switch
- Sine Wave + Switch
- Rectified Sine Wave + Switch
- Triangle Wave + Switch
- Square Wave + Switch
- Quarter Pulse + Switch
- Third Pulse + Switch
- Short Tick + Switch
- Ramp Wave + Switch
- Random + Switch

8.3.3. <u>Audio-related modulation sources</u>
- Input L - Left Input Level
- Input R - Right Input Level
- Input Combined - (mono) input level
- Output L - Left Output Level
- Output R - Right Output Level
- Output Combined - mono output level
- Input Threshold L - Left Input Threshold (gate)
- Input Threshold R - Right Input Threshold
- Input Thresh Comb - Combined Input Threshold
- Out Threshold L - Left output threshold
- Out Threshold R - Right output threshold
- Out Thresh Com - mono output threshold
- Var L - left input activity level[3]
- Var R - right input activity level[4]
- Var Combined - mono input activity level[4]

Adding the knob means that the audio is still the modulation source, but the amount of modulation is controlled by the soft knob
- Input L + Knob
- Input R + Knob
- Input Combined + Knob
- Output L + Knob
- Output R + Knob
- Output Combined + Knob
- Input Threshold L + Knob
- Input Threshold R + Knob
- Input Thresh Comb + Knob
- Out Threshold L + Knob
- Out Threshold R + Knob
- Out Thresh Com + Knob
- Var L + Knob[4]
- Var R + Knob[4]
- Var Combined + Knob[4]

Adding the switch means that the audio is still the modulation source, but the modulation is gated by the soft switch
- Input L + Switch
- Input R + Switch
- Input Combined + Switch
- Output L + Switch
- Output R + Switch
- Output Combined + Switch
- Input Threshold L + Switch
- Input Threshold R + Switch
- Input Thresh Comb + Switch
- Out Threshold L + Switch
- Out Threshold R + Switch
- Out Thresh Com + Switch
- Var L + Switch[4]
- Var R + Switch[4]
- Var Combined + Switch[4]

8.3.4. <u>Soft control modulation sources</u>
- Soft Switch (button on GUI)
- Knob (knob on GUI)
- Knob Threshold (Gate based on Soft Knob)
- Knob Thresh + Switch

---

[3] Var is a tricky concept. It is very sensitive to the nature of the input and reflects transient activity or chop. It usually does not reflect input level. When a signal is active in some way, Var will generate a higher value. Speech will usually cause a higher value with legato singing providing lower values. But it's best to check this against the specific material you plan to use.

8.3.5.The Modulator Window

Anything that can be modulated has a small button beneath it that can be used to bring up the modulator window:

Click to bring up the modulation window (click on the text or the triangle).
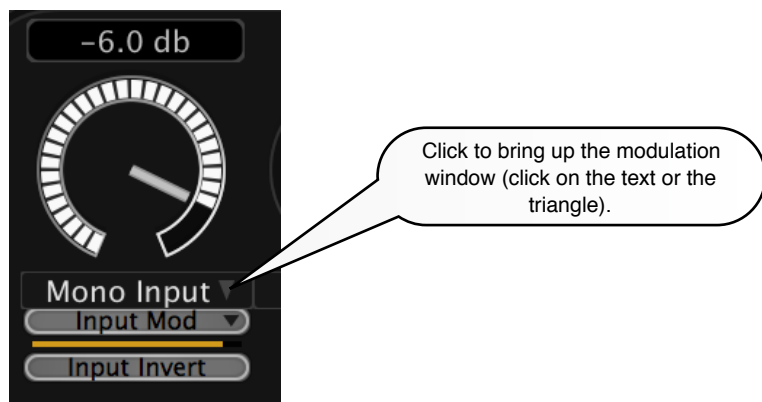
When the modulator window appears, it will look something like this:

Selector: choose a modulation source.

Label: what's being modulated.

View screen. Shows modulator action in real time.
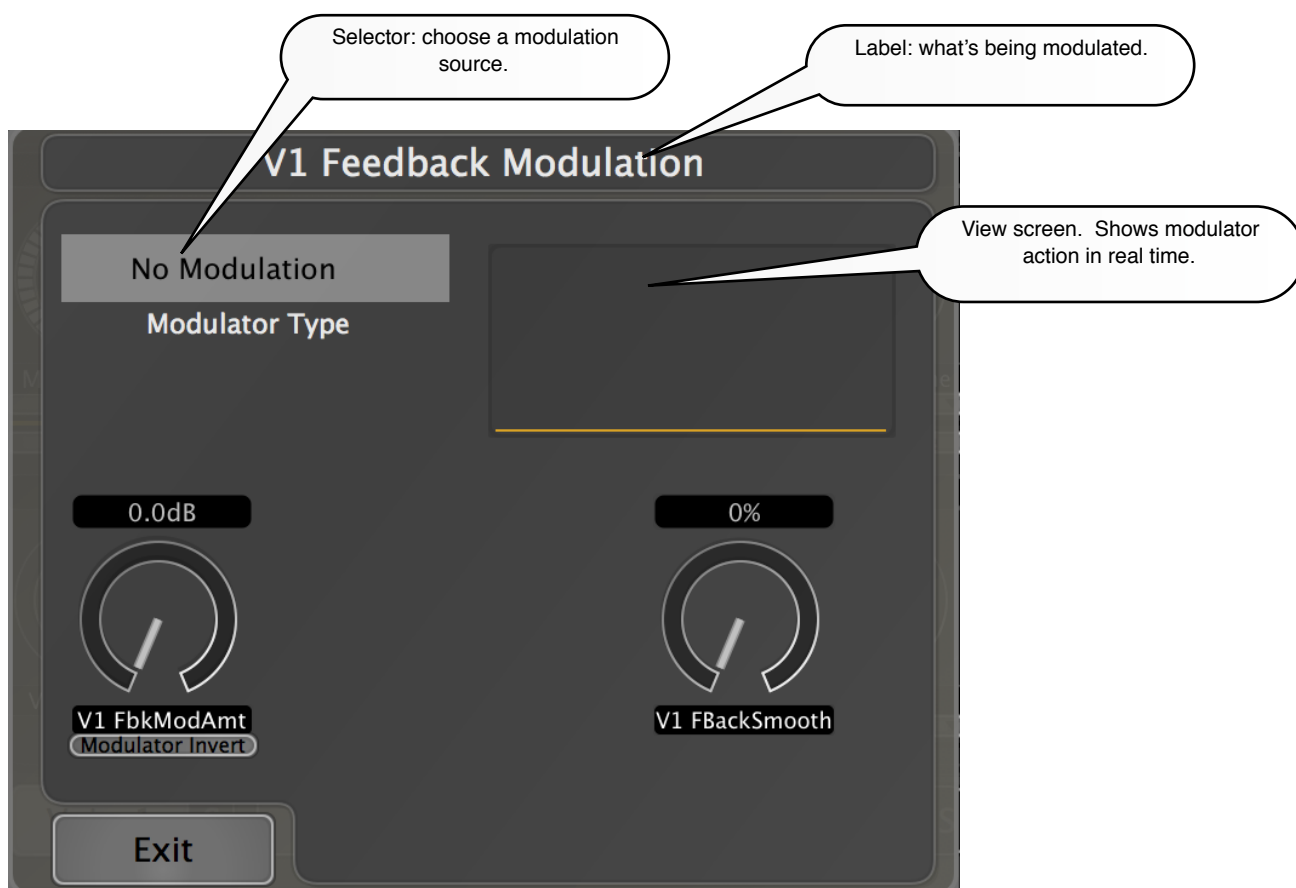
Click on the modulation selector (upper left) and a popup will give a list of all modulators. Choose one.

Now that you've chosen a modulator, the window will change, depending on what you've chosen.

We've chosen a sine wave

And here's the sine wave we've selected.

V1 Feedback Modulation

Sine Wave
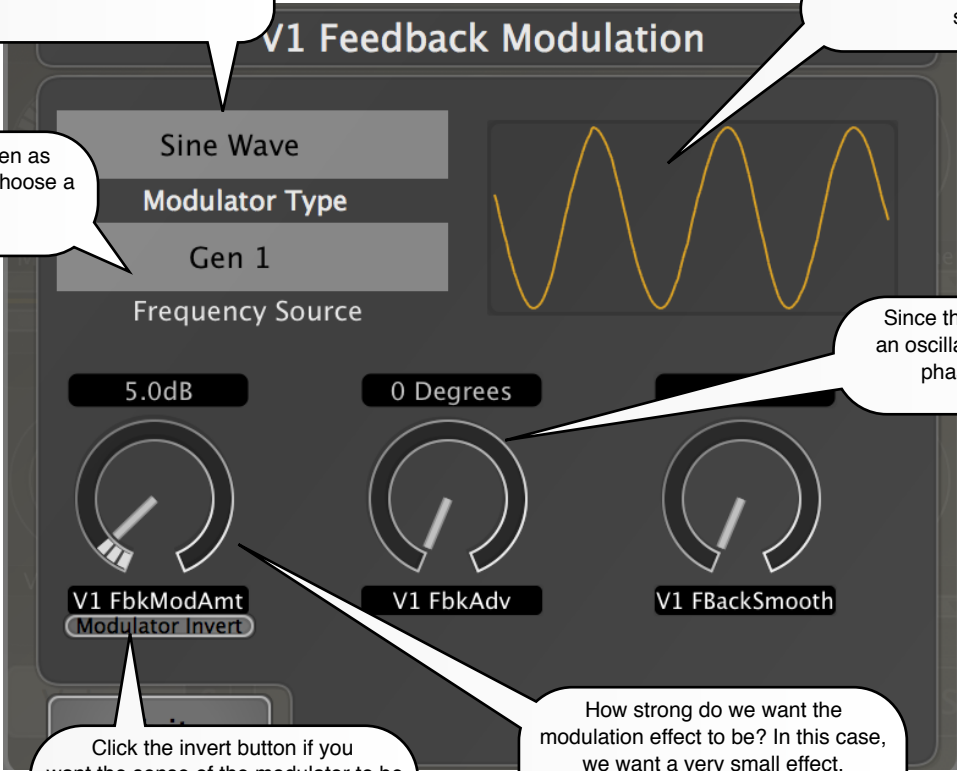
Modulator Type

Any LFO needs a gen as a frequency source. Choose a gen here.

Gen 1

Frequency Source

Since the modulation source is an oscillator, we can change the phase of the oscillator.
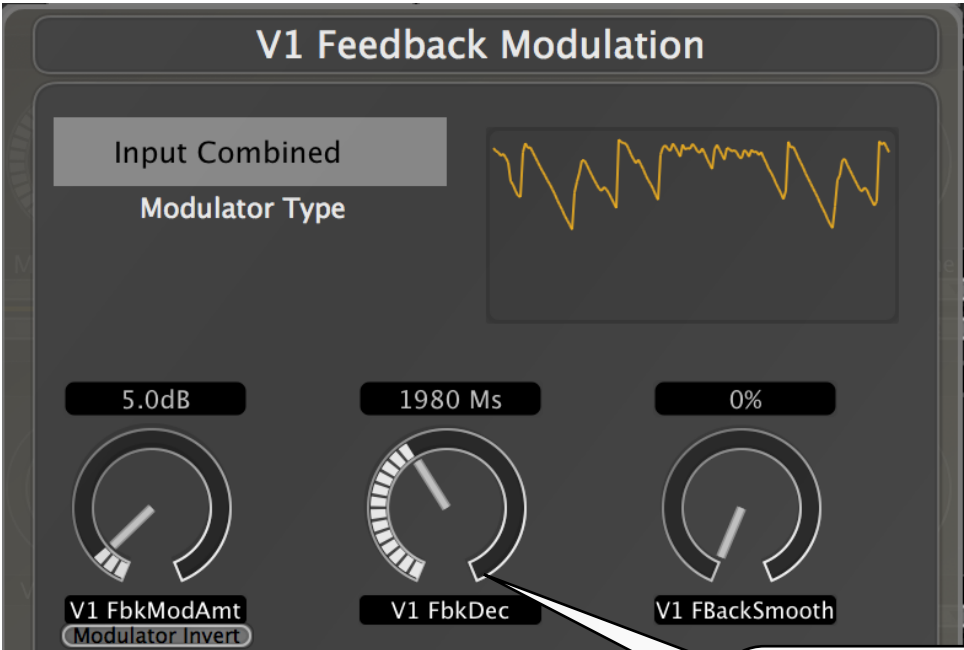
5.0dB

0 Degrees

V1 FbkModAmt
Modulator Invert

V1 FbkAdv

V1 FBackSmooth

Click the invert button if you want the sense of the modulator to be inverted.

How strong do we want the modulation effect to be? In this case, we want a very small effect.

V1 Feedback Modulation

Input Combined

Modulator Type

5.0dB

1980 Ms

0%

V1 FbkModAmt
Modulator Invert

V1 FbkDec

V1 FBackSmooth

Exit

Because an input level has been selected, there is no gen selector or phase knob. In this case, we see a decay time, allowing us to create an envelope follower.

What about the smoothing parameter? That's easiest to see if we choose a modulation source with sudden changes. Let's look at the output of the random oscillator. First, before smoothing:
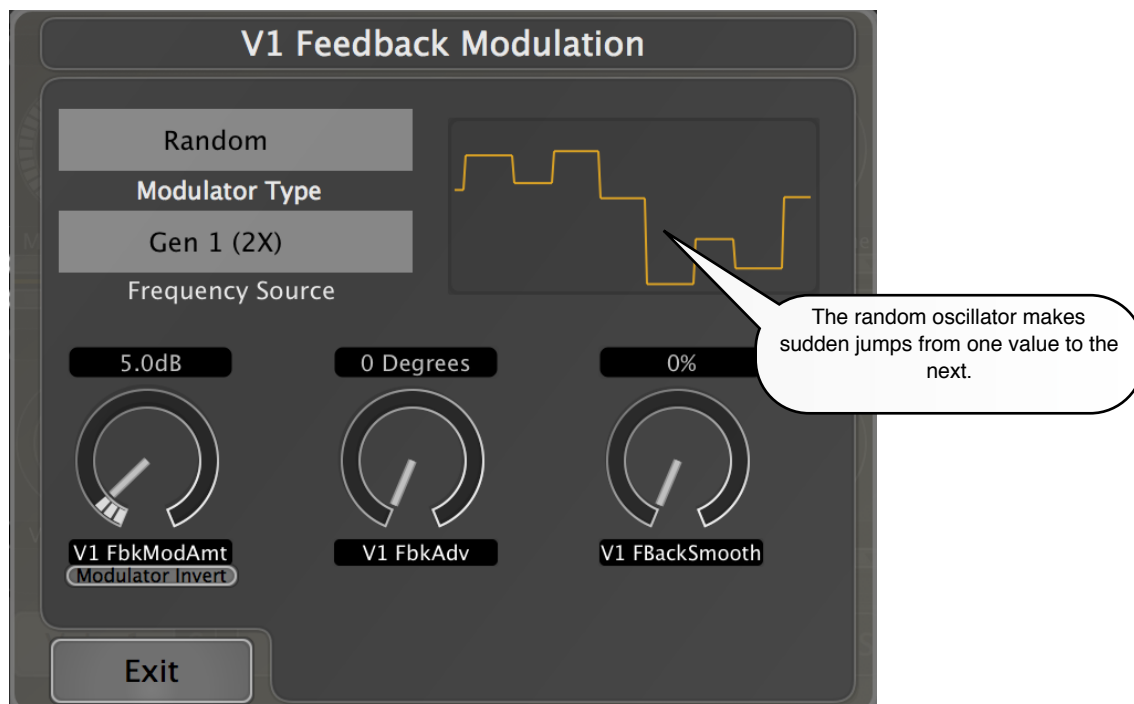
Then after:
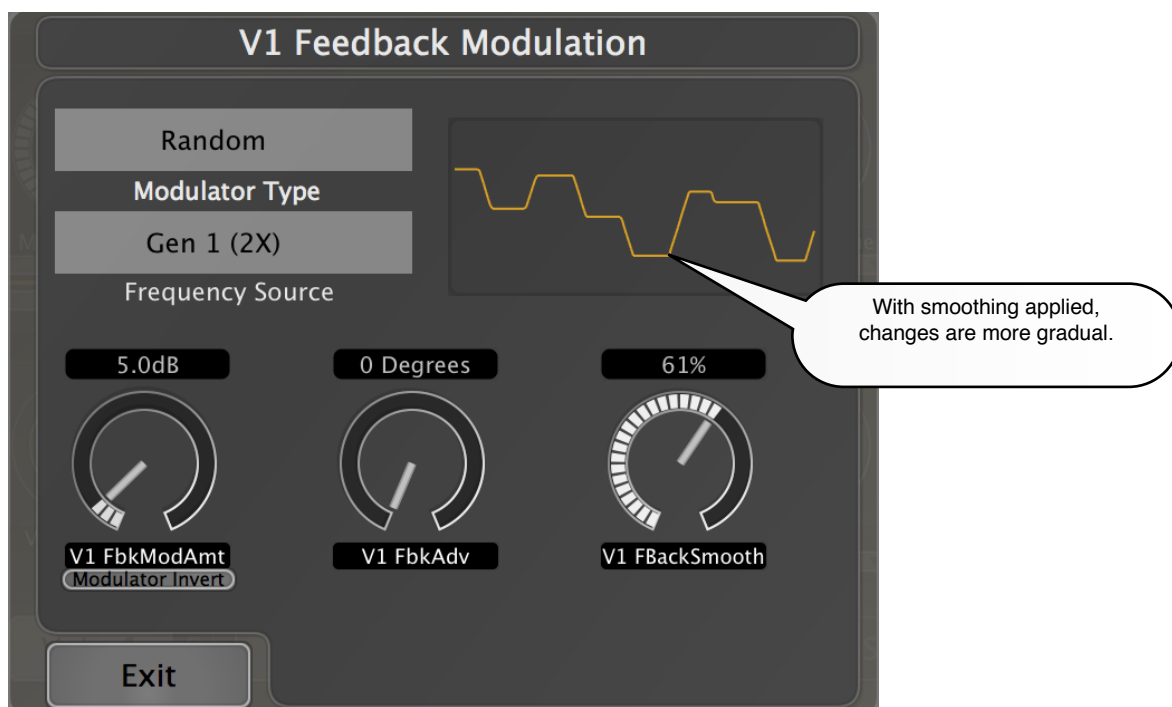
8.3.6. The EQ Window

The EQ Window is an expanded version of the modulation window. You can open this window by clicking the EQ button underneath the Output or Feedback level knobs.
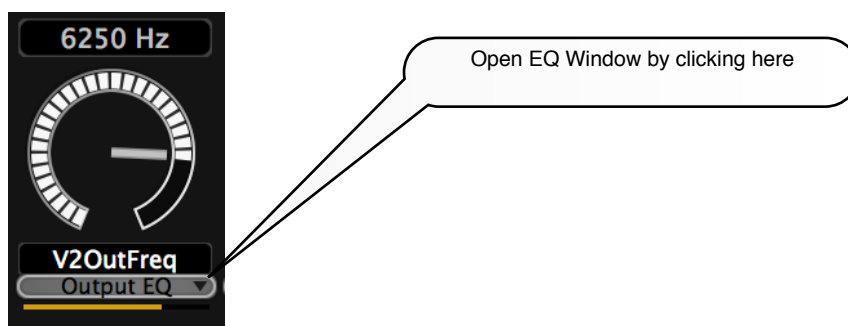
At the top of the window you will find control for the EQ. Any of 6 EQ types may be selected—2 lowpass, 2 highpass, bandpass and notch. The bandpass and notch also have variable bandwidth using the 'Q' control. There is also an active display that shows both the EQ curve and the audio passing through this part of the signal flow.
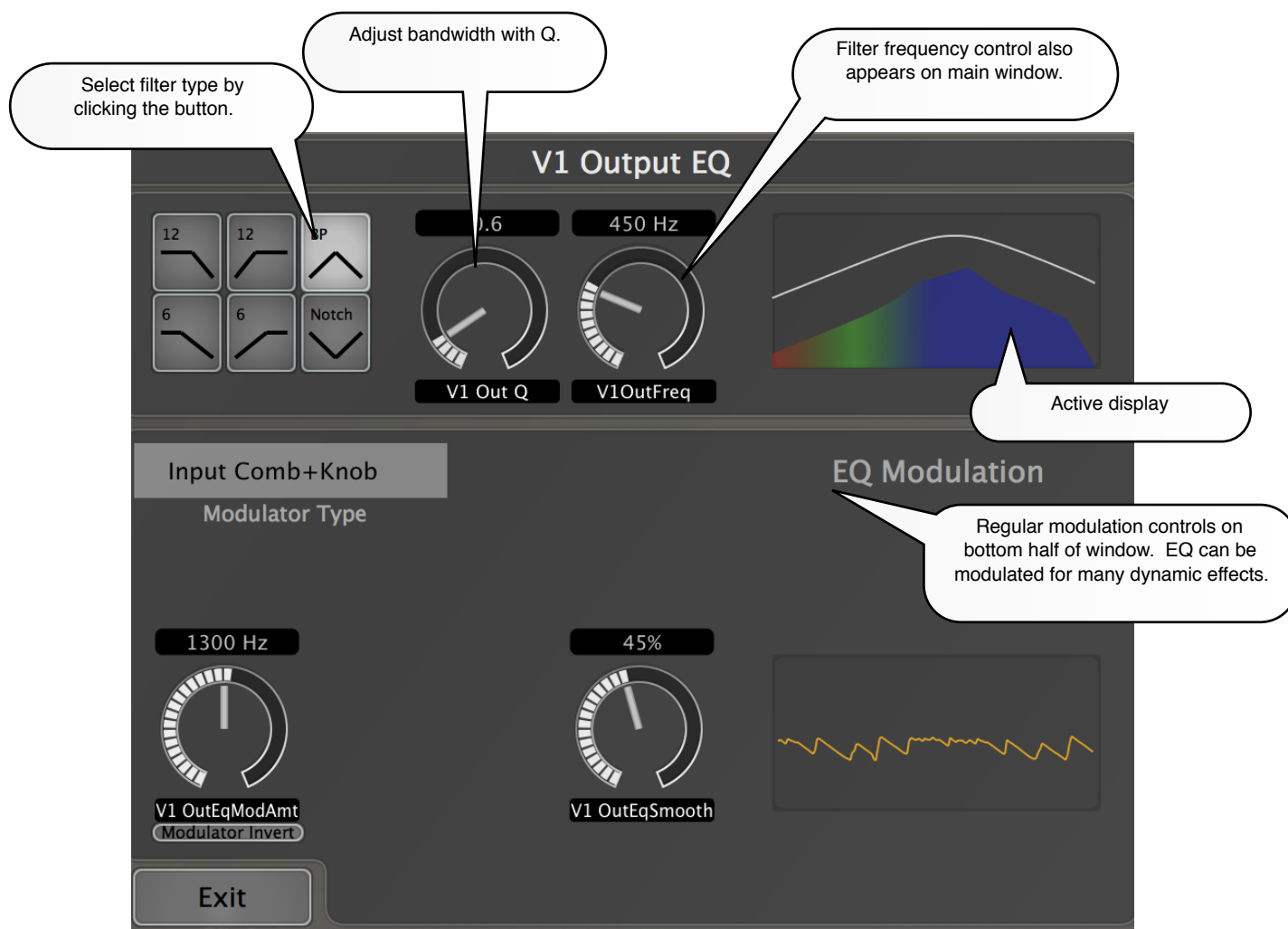
8.3.7.Gens

Of course any LFO must have something that controls its frequency. That is a frequency generator, or *Gen*. There are four gens in Excalibur, and any of those gens may be selected to control the LFO in a modulator. At first it might seem that the number is too few, but that's not the case. One modulator may be driven as a Sine Wave by a gen, and other modulator may generate a Square Wave from the same gen. More importantly, a phase shift can be added to any LFO. So you might have two Triangle Waves driven by the same gen, but with a 180-degree phase shift on one. This means that one modulator goes up while the other goes down—all perfectly locked!

And of course the gens themselves can be modulated. You might use input level to control the speed of some oscillators. Or you might vary the speed of a gen by using a Sine Wave that's following *another* gen.

And finally, a gen can be placed in a special mode that allows it to follow the tempo of your session. You can lock an LFO perfectly to the beat! If the tempo changes, the gen follows right along. No fiddling with your calculator!

Gens and gen multipliers.   Each gen has 3 outputs. The first output is the rate specified in the gen frequency parameter (and as modified by any possible modulator). There are two additional outputs, a 2x and 3x. These are 2 and 3 times the frequency of the gen. This allows LFO to be phase-locked at multiples of the Gen.

The modulation meter shows the current phase of the Gen

Turn the gen knob to control the frequency of all LFOs connected to the gen.

Click the modulation button to bring up a modulation window. This allows you to drive the gen frequency (and the frequency of all connected LFOs)

Click the tempo mode selector popup. to relate the Gen frequency to the current tempo. LFOs can then synchronize with the beat.

8.4.The Voice Architecture

Now you know how the I/O Matrix provides a patch bay, and how modulators work. Let's take a look at the block diagram of a single voice (remember: there are four voices. This is just one of them). If you're an old hand at effects processing, you'll probably understand most of what you see right away. But never fear. We'll explain as we go.

```
        Plugin In/Out                                    ┌──────────┐
          ⇩    ⇧                                          │ Mod (fc) │
    ┌─────────────────┐              ┌──────────────────┐ └──────────┘
    │                 │              │                  │
    │    IO Matrix    │              │       Gen        │
    │                 │              │                  │
    └─────────────────┘              └──────────────────┘
```

```
┌─────────────────────┐   ┌──────────┐
│ Select from IO Matrix│   │ Mod (dB) │
└─────────────────────┘   └──────────┘
        ↓
┌─────────────────────┐              ┌─────────────────────┐   ┌──────────┐
│     Main Input      │◄─            │ Select from IO Matrix│   │ Mod (dB) │
└─────────────────────┘              └─────────────────────┘   └──────────┘
        ↓                                    ↓                                        ┌──────────┐
┌─────────────────────┐              ┌─────────────────────┐                         │ Mod (dB) │
│      Diffusion      │              │   Alternate Input   │◄─                       └──────────┘
└─────────────────────┘              └─────────────────────┘         ┌─────────────────────┐
        │                                    ↓                        │   Feedback Input    │◄─
        │                            ┌─────────────────────┐         └─────────────────────┘
        │                            │      Diffusion      │                 ↓
        │                            └─────────────────────┘         ┌─────────────────────┐
        │                                    │                        │      Diffusion      │
        │                                    │                        └─────────────────────┘
       (+)◄──────────────────────────────── (+)
        ↓
┌────────────────┐   ┌────────────┐
│     Delay      │   │ Mod (time) │
│ (may be        │◄─ └────────────┘
│  absolute      │
│  or            │                              ┌──────┐   ┌──────────┐
│  tempo)        │      ┌──────────────────┐    │  EQ  │◄─ │ Mod (fc) │
└────────────────┘      │ PreFX to IO Matrix│──►│      │   └──────────┘
        │               └──────────────────┘    └──────┘
┌────────────────┐   ┌──────────────────┐
│      FX        │   │ Mod (FX Specific)│
│                │   └──────────────────┘
│  ┌──────────┐  │      ┌──────────────────┐
│  │ Post FX  │  │      │ Mod (FX Specific)│
│  └──────────┘  │      └──────────────────┘
│                │         ┌──────────────────┐
│                │         │ Mod (FX Specific)│
└────────────────┘         └──────────────────┘
        │        ┌──────────────┐
        │        │ Mod (fx mix) │            ┌──────────────────┐
        │        └──────────────┘            │ PostFX to IO Matrix│
       (+)◄─────────────────────────────────└──────────────────┘
        ↓
┌────────┐   ┌──────────┐
│   EQ   │   │ Mod (fc) │
└────────┘   └──────────┘
        │                               ┌──────────────────┐
        │──────────────────────────────│ PostEQ to IO Matrix│
        ↓                               └──────────────────┘
┌────────┐   ┌──────────┐
│  Pan   │   │ Mod (pan)│
└────────┘   └──────────┘
        │               ┌──────────────────┐
        └──────────────│ PostPan to IO Matrix│
                        └──────────────────┘
```

8.4.1.Limiters

Each voice has a limiter on its inputs and its outputs. Because effects of this nature work best when restricted to levels of 0dB or lower, these limiters have been placed in the signal path. The input limiter kicks in when the signal exceeds -.5 dBFS. It acts very quickly—especially when the signal passes 0dBFS. The output limiter works at the same gain points, but is somewhat more gentle. When either limiter is acting, the voice number (on the voice meter area) will become red.

Voice 1 is overloading
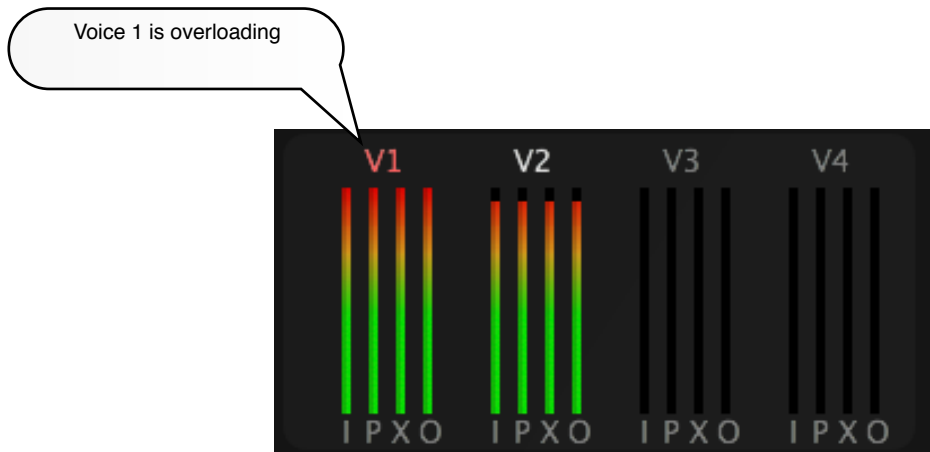
An overload may or may not be audible. Depending on the preset, strongly-transient material is more likely to cause problems. If you see (and hear) overloads, it is recommended that you lower the input levels into Excalibur.

8.5. Master Parameters

A set of Master Parameters may be found in the permanent part of the display. These parameters are available at all times and control behavior of all of the voices.

8.5.1. Mix

Mix controls the ratio between wet (processed) signal and dry (unprocessed) signal. It should only be used when the plugin acts as an insert. There are many cases when an effect is placed on a send path, shared by several channels. In that case, the mix should stay at 100% and effect level should be controlled by changing the level of the channel strip holding the effect. The reason is simple: there should only be one path of a signal to the output. If a plugin is on a send channel with a mix of less than 100%, there's the chance of dry signal reaching the output from both the effect channel strip and the original signal channel. While DAWs are very good at delay compensation, there's always the chance of cancellation. Make sure your dry signal has only one path to output.

8.5.2. Mast Level

The master level control manages the overall gain of the plugin. Any preset should be built with the goal of achieving unity gain. That is the intent of the factory preset. But with certain types of material, it may be necessary to perform a last-minute tweak. This control allows the output to be cut or boosted as needed.

8.5.3. Mast FBack

Master Feedback controls the feedback levels of any voices using feedback. It does not affect feedback paths that might appear in Voice Effects.

8.5.4. Soft Knob

The Soft Knob can be whatever parameter—or group of parameters—you wish. It is a modulator source, just like an LFO or level. The Soft Knob connections are part of each preset, so the knob may have a subtle or dramatic effect. Play with the factory presets to see how it can be used.

8.5.5. Soft Switch

Like the Soft Knob, the Soft Switch is a modulator source. It can be used in many ways and is also saved with each preset. Try the factory presets for ideas.

8.5.6. Gen Controls
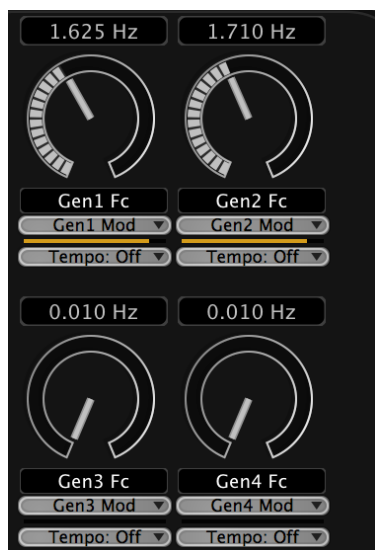
8.5.6.1.Gen Frequency
The four frequency knobs that appear at the top of this cluster control the frequencies of the Gens, which may be used in modulators throughout the plugin. This frequency may appear as an absolute value as shown here. It may also appear as a tempo-related value, described at greater detail in just a few paragraphs.

8.5.6.2.Gen Mod
The Modulator buttons, just below the Gen Frequency knobs, bring up a modulator dialog that is used to control any desired modulation of the Gen.

8.5.6.3.Gen Tempo Mode

The Tempo Mode buttons, just below the Gen Mod buttons, will launch a popup menu to switch the Gen in and out of Tempo Mode. When the Gen is in Absolute Mode (the default as shown in the graphic above), the Frequency knob controls the Frequency of the Gen directly.
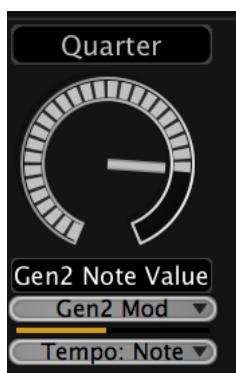
8.5.6.3.1.Tempo Note Mode
When in Tempo Note Mode, the frequency is controlled by the tempo of the session (BPM), which appears in a small field underneath the meters. The note value (quarter-note shown here) will be the time for one cycle of the Gen. Values go from 1/64th note to whole note. Triplets and quintuplets are supported.
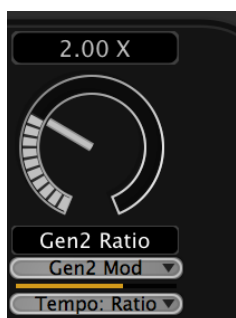
8.5.6.3.2.Tempo Ratio Mode
In Tempo Ratio Mode, the frequency knob controls the Gen frequency in relation to the tempo. You may have 1 cycle per beat, 2 cycles per beat, 1 cycle per 3 beats, or any other ratio you need. This is the same as tempo mode in V1 of Excalibur.

8.6. Permanent Voice Parameter Descriptions

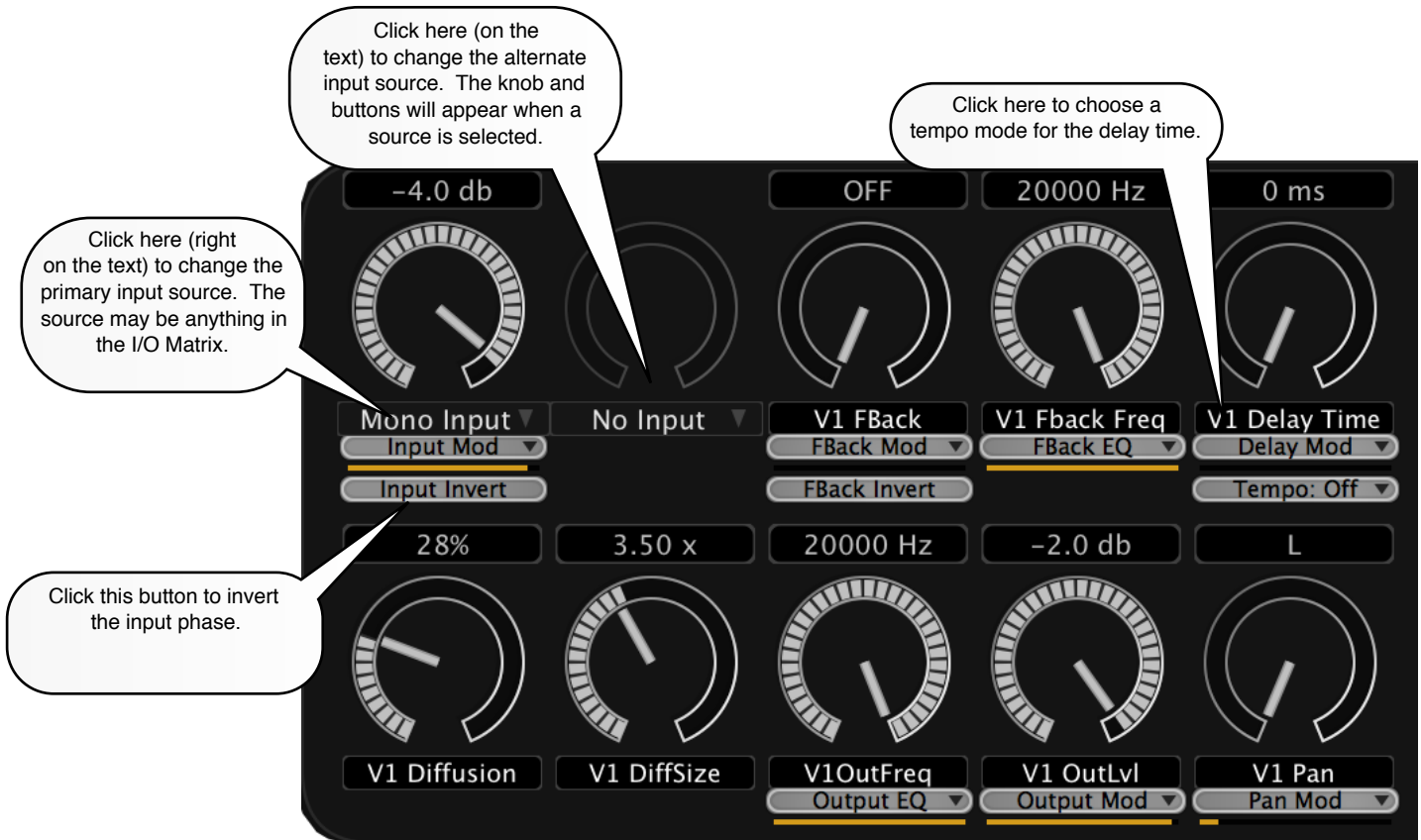Each of the four voices has a set of basic parameters. These are always available (we'll talk about Voice Effects in the next section). The voice to be edited can be chosen by clicking on the appropriate button along the lower left side of this graphic.

Click here (on the text) to change the alternate input source. The knob and buttons will appear when a source is selected.

Click here to choose a tempo mode for the delay time.

Click here (right on the text) to change the primary input source. The source may be anything in the I/O Matrix.

Click this button to invert the input phase.

8.6.1. Primary Input Source

The main input source for the voice can be selected by clicking here. In this graphic, it says Mono Input. This will bring up a selector with all of the positions in the I/O matrix. Any of those positions can be chosen as an input source. Be careful to avoid unintentional feedback paths.

8.6.2. Primary Input Level

This controls the primary input level. The knob not fully shown if no primary input has been chosen.

8.6.3. Primary Input Invert

This is a toggle switch that inverts the polarity of the primary input. It is not shown if no primary input has been chosen.

8.6.4. Primary Input Modulator

This brings up a modulator dialog that can be used to control the primary input level. It is not shown if no primary input has been chosen.

8.6.5. Alternate Input Source

The alternate input source for the voice can be selected by clicking here. In this graphic, no alternate is chosen. This will bring up a selector with all of the positions in the I/O matrix. Any of those positions can be chosen as an input source. Be careful to avoid unintentional feedback paths.

8.6.6. Alternate Input Level

This controls the alternate input level. It is not shown if no alternate input has been chosen.

8.6.7. Alternate Input Invert

This is a toggle switch that inverts the polarity of the alternate input. It is not shown if no alternate input has been chosen.

8.6.8.Alternate Input Modulator

This brings up a modulator dialog that can be used to control the primary input level. It is not shown if no alternate input has been chosen.

8.6.9.Feedback Level

This controls the feedback level. It is also subject to the Master Feedback Level. Feedback can be tricky, especially with short delays. There is a limiter in the feedback path to prevent runaway feedback and howling.. With longer delay times, feedback levels at or near 0dB can provide interesting pseudo-infinite loop effects.

8.6.10.Feedback Invert

This is a toggle switch that inverts the polarity of the feedback. It can be very helpful in avoiding DC buildup as well as to help with cancellation effects.

8.6.11.Feedback Modulator

This brings up a modulator dialog that can be used to control the feedback level.

8.6.12.Feedback Frequency

There is a filter in the feedback path. This controls the cutoff frequency of that filter.

8.6.13.Feedback EQ

This brings up an EQ dialog that can be used to control the feedback filter. There are 6 types of filter:
   • Lowpass 6dB/Octave
   • Lowpass 12 dB/Octave
   • Highpass 6dB/Octave
   • Highpass 12 dB/Octave
   • Bandpass w/variable Q
   • Notch w/variable Q
The EQ dialog also has a modulator control that allows the filter frequency to be modulated.

8.6.14.Diffusion

This controls the amount of diffusion on primary input, alternate input and feedback. It is subject to the Master Diffusion control. There are separate diffusers on each of the paths, to avoid excessive coloration. Diffusion is helpful when modeling echo units, as well as in other cases.

8.6.15.Diffuser Size

The voice's diffuser size can strongly affect the way the diffuser sounds—especially with percussive material.

8.6.16.Delay Time

Each voice has an optional delay that can be controlled here.   This may be an absolute time value or may be tempo-related.

8.6.17.Delay Mod

This button, right below the delay time, brings up a modulator window that allows the delay time to be controlled. See the section on modulators for a description of modulator control.

8.6.18.Delay Tempo Mode

The Tempo Mode buttons, just below the Delay Mod button, launches a selector so that you can choose Tempo Mode. When the Delay is in Absolute Mode (the default), the Delay Time knob controls the time of the delay directly.   When in Tempo Note Mode, the delay is is the same length as the selected note value.. In Tempo Ratio Mode, the delay knob controls the delay frequency in relation to the tempo.   You may have 1 echo per beat, 2 echoes per beat, 1 echo per 3 beats, or any other ratio you need.

8.6.19.Out Frequency

There is a filter in the output path. This controls the cutoff frequency of that filter.

8.6.20.Output EQ

This brings up an EQ dialog that can be used to control the output filter. There are 6 types of filter:
• Lowpass 6dB/Octave
• Lowpass 12 dB/Octave
• Highpass 6dB/Octave
• Highpass 12 dB/Octave
• Bandpass w/variable Q
• Notch w/variable Q
The EQ dialog also has a modulator control that allows the filter frequency to be modulated.

8.6.21.Output Level

This controls the output level of the voice.

8.6.22.Output Modulator

This brings up a modulator dialog that can be used to control the output level.

8.6.23.Output Pan

This controls the Left-Right position of the voice.

8.6.24.Pan Modulator

This brings up a modulator dialog that can be used to control the output panner.

8.7.Editing Voice Effects

8.7.1.Voice Effects Selector

Each voice may have an optional voice effect. It's sort of a little plugin that drops into the voice. The selector, near the bottom right of the graphic, brings up a selection of effects.

8.7.2.Voice Effects Mix

This control only appears when a voice effect is selected. It allows a wet/dry mix that affects the voice and its effect.

8.7.3.Mix Modulator

This brings up a modulator dialog that can be used to control the voice effects mix.

8.7.4.Voice Effects Parameters

The remaining 5 parameters on the right-hand part of this graphic are dependent on the chose voice effect.   Not all parameters are visible for all voice effects, and the meaning of the parameters will change accordingly.

8.7.5.Voice Effects Modulators

There are two modulators that can be used to control a voice effect. There is a third modulator for controlling the optional post effect. The type of modulation is dependent on the chosen voice effect.

8.7.6.Copy Settings

This isn't a parameter at all. It's a short-cut that could save you a lot of time. It allows you to choose another voice and to copy all of the voice's parameters into the voice you're currently editing.   You may still have to tweak the voice (input sources, panners, etc), but you can still make life easier with this little tool.

For information on specific Voice Effects, please see the section later in this guide.

9.   Voice Effects

Each voice may have its own effect, and many of those effects may have its *own* post effect. This chapter describes each voice effect and its parameters. The available post effects are Chorus, Flanger and Phaser.

There is one parameter that is common to all voice effects. That parameter is *Effects Mix*, and controls the mix of input signal (this is post-delay/diffusion from the voice). *Effects mix* has a modulator that can be controlled from any modulation source.

About Post FX - many of the voice effects provide a post effect (chorus, flanger, phaser). A modulator *must* be provided for those post effects, and it's control button is provided at the bottom of the GUI, just under the Voice Effects selector. Please read the sections on *Chorus, Flanger* or *Phaser* to understand how this modulator should be used.

The voice effect is not in the feedback signal. The feedback signal is the post-delay/pre-FX tap in the signal flow. If you wish to include a voice effect in the feedback path, select the Pre-EQ or Post-EQ signal as the voice's alternate input.

Many voice effects must be modulated. Chorus, flange and phase effects must have modulators in order to work. In other effects, modulation is optional. Be sure to read the section on each voice effect to learn more about the role of modulation in the effect.

9.1. Chorus
This is a familiar effect, consisting of an oscillator-driven pitch/delay voice. The pitch is driven up and down, and is accompanied by a slight change in delay. The effect can be subtle, causing a sense of voice-doubling. It can be more extreme, giving vibrato or crazed pitch effects. This effect may work best if Effects Mix is somewhere around 50%.

Parameters:
    Fat Chorus. On or off. When off, the chorus has a single voice. When on, there are two voices.

Modulators:
    Chor 1 Mod - this must always be driven with a constantly-changing source, ideally a sine or triangle wave. There is no chorus effect if it isn't modulated. It's possible to create other interesting types of chorus when modulating with input levels.
    Chor 2 Mod - this is used when Fat Chorus is on. It must also be driven in the same way as Chor 1 Mod, but ideally should use a different oscillator or a different phase of the same oscillator.

Post FX not available

9.2. Flanger
Long a popular effect for guitars, voice and organ (as well as complete mixes), this effect imitates the combination of multiple tape machines playing back signals ever-so-slightly out of sync. The resulting cancellations create an appealing sort of 'whoosh". This effect may work best if Effects Mix is somewhere around 50%. Large amounts of modulation can create strong pitch effects.

Parameters:
    Flange Type. There are five types, going from a very mild flange (Type 1) to a much more extreme flange (Type 5).
    Gap. The gap between taps. Larger gaps drive the flange effect toward lower frequencies.
    Feedback. Feeds the flange signal back on itself to increase the effect. Unlike some flangers, the Excalibur flanger will not become unstable (it's actively limited). But it will come very close.
    Feedback Filter. A lowpass filter in the feedback path. Can be used to reduce metallic effects in the flanger.
Modulators:
    Flange Mod - this must always be driven with a constantly-changing source, ideally a sine or triangle wave. There is no flange effect if it isn't modulated. It's possible to create other interesting types of flange effect when modulating with input levels.
    Feedback Mod - allows a modulator to increase the amount of feedback. This may often be controlled by the Soft Knob, but any modulator source (or no source) can be useful.

Post FX not available

9.3. <u>Phaser</u>

The Phaser is the more-subtle cousin of the flanger. It works by changing the phase of the signal (in multiple bands) but without affecting pitch or delay. Broadband signals work best, but in many cases it may not be possible to hear the effect. Faster modulation can give an effect similar to a very popular effect used on electric pianos many years ago. This must be mixed with the dry effect, so an Effects Mix of around 50% is best.

Parameters

Complexity - this controls the overall complexity of the phaser. Generally speaking, higher numbers are more audible.

Motion - when set to 'Uniform', phases change in the same way. 'Mixed' gives a more complex (but possibly less-audible) effect.

Feedback - Feeds the phaser effect back on itself. This can strengthen the effect without causing howling (such as you might get in a flanger).

Modulators

Phase Mod - this must always be driven with a constantly-changing source, ideally a sine or triangle wave. There is no phase effect if it isn't modulated.

Feedback Mod - allows a modulator to increase the amount of feedback. This may often be controlled by the Soft Knob, but any modulator source (or no source) can be useful.

Post FX not available

9.4. <u>Ring Modulator</u>

This effect is an old favorite with a bit of a twist. A ring modulator creates sidebands from the interaction of the input signal with an internal sine wave generator (or two, in Excalibur). The range of uses can be broad: an ordinary drum kit can turn into something completely different; a spoken voice turns into a robot and a guitar turns into bells. Used in small doses, a ring modular can add distortion for radio and telephone futzes.

Parameters

Ring2 Mix - how much of the second ring modulator's effect do we want to be added?

Freq1 - the carrier frequency of the first modulator. Very small changes can have a very large effect on the resulting sound. The result is very dependent on input signal.

Freq2 - the carrier frequency of the second modulator

PostFX - allows a post effect to be selected.

Modulators

Freq1 Mod - changes the carrier frequency of the first modulator

Freq2 Mod - changes the carrier frequency of the second modulator

Post FX are available

9.5. <u>Resonator (Fc)</u>

This is a sympathetic resonator that reacts to input material. It is much like a piano string that vibrates when you sing into the piano. If the input signal contains energy at the frequency of the resonator, the resonator will vibrate in response to that signal.

Parameters

Res Decay - controls how long the resonator rings after being stimulated.

Res Freq - controls the frequency of the resonator

Spread - the resonator is really a small group of resonators. Spread allows the resonators to be spaced around the designated frequency. Depending on the amount of spread, the effect can go from a chorus effect to something stranger.

PostFX - allows a post effect to be selected.

Modulators
> **Decay Mod** - allows the decay time to be adjusted.
> **Freq Mod** - allows the resonator's base frequency to be changed.

Post FX are available
9.6. <u>Resonator 2 (Fc)</u>
This sympathetic resonator is identical to Resonator (Fc) except that it contains two resonators.

Parameters
> **Res Decay** - controls how long the resonators ring after being stimulated.
> **Res Freq** - controls the frequency of the resonator
> Res Freq2 - controls the frequency of the second resonator
> **Spread** - the resonator is really a small group of resonators. Spread allows the resonators to be spaced around the designated frequency. Depending on the amount of spread, the effect can go from a chorus effect to something stranger.
> **PostFX** - allows a post effect to be selected.

Modulators
> **Decay Mod** - allows the decay time to be adjusted.
> **Freq Mod** - allows the resonators' base frequency to be changed. This affects both resonators.

9.7. <u>Resonator (Pch)</u>
This sympathetic resonator is identical to Resonator (Fc) except that it is controlled by musical pitch rather than frequency. The actual frequency is determined both by the pitch specified in the parameter and the Reference Tuning (A440, etc) chosen on the Preference page.

Parameters
> **Res Decay** - controls how long the resonator rings after being stimulated.
> **Res Pitch** - controls the pitch of the resonator
> **Spread** - the resonator is really a small group of resonators. Spread allows the resonators to be spaced around the designated frequency. Depending on the amount of spread, the effect can go from a chorus effect to something stranger.
> **PostFX** - allows a post effect to be selected.

Modulators
> **Decay Mod** - allows the decay time to be adjusted.
> **Pitch Mod** - allows the resonator's base pitch to be changed.

Post FX are available

9.8. <u>Resonator 2 (Pch)</u>
This sympathetic resonator is identical to Resonator 2 (Fc)   except that it is controlled by musical pitch rather than frequency. The actual frequencies is determined both by the pitches specified in the parameters and the Reference Tuning (A440, etc) chosen on the Preference page.

Parameters
> **Res Decay** - controls how long the resonator rings after being stimulated.
> **Res Pitch 1** - controls the pitch of the first resonator
> **Res Pitch 2** - controls the pitch of the second resonator
> **Spread** - a resonator is really a small group of resonators. Spread allows the resonators to be spaced around the designated frequency. Depending on the amount of spread, the effect can go from a chorus effect to something stranger.
> **PostFX** - allows a post effect to be selected.

Modulators
      Decay Mod - allows the decay time to be adjusted.
      Pitch Mod - allows the resonators' base pitches to be changed. Both resonators are affected.

Post FX are available

9.9. <u>Distortion</u>

This is a general-purpose distortion unit that can be applied to guitars, keyboards, harmonicas and any other instruments that typically use distortion in some manner. It can also be used in microphone models and various types of futzes. It works by adding useful partials to the incoming sound.

It is important to describe the consequences of adding partials. If the incoming sound contains high enough frequencies, partials (which are multiples of those frequencies) may exceed the nyquist frequency. This can result in unwanted partials which are not musically-related to the signal. In order to avoid this problem, a crossover is applied to the incoming signal. Audio below the crossover is distorted. Audio above the crossover is available and may optionally be added back. Because harmonics generated by the distorter may have different phase characteristics, adding the original high frequencies back may either reinforce or cancel the original high frequencies. This is complex and unpredictable, but can be extremely useful in creating new timbres.

Parameters

> **Dist Select** - allows the type of distortion to be selected. Types are:
> > • Warm 1 - a tube-like distortion, with even partial distortion
> > • Warm 2 - an extension of Warm 1, with more high partials
> > • Warm 3 - an extension of Warm 2, with even more high partials
> > • Saturation 1 - transistor-like distortion, with primarily odd partials
> > • Saturation 2 - an extension of Saturation 1 with more high partials
> > • Saturation 3 - an extension of Saturation 2 with even more high partials
> > • Complex - a mix of even and odd partials
> > • Shred - evocation of old fuzz unit, mainly odd partials
> > • Nasty Fuzz - evocation of old fuzz unit, with even more clipping.
>
> **Xover** - determines the crossover frequency. Only energy below the crossover is passed through the distorter.
> **Hi Passthru** - determines how much of the original high-frequency content is added back to the output signal
> **Drive** - determines how much the signal is distorted. Unlike many distorters, increasing drive does not affect the output level significantly (there's built-in gain compensation).
> **PostFX** - allows a post effect to be selected.

Modulators

> **Xover Mod** - allows the crossover frequency to be changed by a modulator. Input Level or Soft Knob are examples of useful modulation sources.
> **Drive Mod** - allows the drive to be changed by a modulator. Soft Knob or Soft Switch are examples of useful modulation sources.

Post FX are available

9.10. <u>Resonant Filter</u>

The resonant filter is a variant of a filter type that once appeared in many popular effects pedals (automatic wah-wah). It uses a type of filter with a stronger peak at the cutoff frequency. While it may occasionally be useful as a general-purpose filter, it's really made to be modulated. When tied to input levels, it can make a dynamic effect that can be used as part of the instrument itself. When tied to tempo-based LFOs, it can accent the beat in ways both subtle and less-so.

Parameters

> **Filt Freq** - determines the basic frequency of the filter
> **Q** - determines the tightness of the passband (most noticeable in Bandpass and Notch filters). Higher values mean a narrower passband.
> **Gain** - allows overall gain to be raised or lowered. With some filter settings (and depending on the input signal) there could be a noticeable cut or boost. This parameter allows the process signal to be moved back to unity gain.
> **Type** - selects the filter type. Types are Lowpass, Highpass, Bandpass and Notch. While the bandpass setting is the most popular use of the filters, the other types can be equally useful.
> **PostFX** - allows a post effect to be selected

Modulators

> **Freq Mod** - modulates the cutoff frequency of the filter. This is commonly tied to input level, but why not experiment?
> **Q Mod** - modulate the bandwidth of bandpass or notch filter configurations.

   Post FX are available

9.11. <u>Glide</u>

This is a complicated and flexible effect that can be used to model vintage effects and support many types of futzes. It packs a word-size adjuster, a variable delay, a brickwall filter and a simple compressor for non-linear sample-mapping. It can be used to recapture the effect of many delay units from the 1970s and 1980s, as well as microphone and doppler effects.

Unlike the main voice delays (which change delay times by crossfading), the glide delay gradually moves from one delay time to another. This causes noticeable pitch changes for the duration of the change. This delay is very short, and should ideally be used in combination with the voice delay.

Glide features a precompressor that modifies the signal before going into the word size reducer. It allows the signal to be better mapped onto limited word sizes and can noticeably reduce the amount of quantization noise in the result. Many devices from the late 1970s and 1980s used similar techniques to improve performance of their A/D/A chain. The precompressor may have some use as a general-purpose compressor, but it has only limited control.

Parameters

    Word Size - this can change a signal to be anything from 4 bits up to the native floating-point of the plugin. Settings from 4 bits to 8 bits may be useful for game emulation or sounds from personal computers of the 1980s. Settings from 10 bits to 16 bits are typical of much M.I. gear from the 1980s and 1990s. Pro gear from the 1990s and early 2000s might use word sizes in the 18 to 24-bit range.

    Threshold - sets the threshold of the precompressor.

    Gain - sets the amount of gain that is applied to the precompressor. This gain is automatically reduces as the signal rises above the threshold.

    Brickwall - This controls the cutoff frequency of a very sharp lowpass filter. Most vintage devices had much lower sample rates than the sample rates in common use today. Those lower sample rates meant that higher frequencies simply weren't reproduced. This brickwall filter allows that effect to be duplicated, even when the plugin itself is running at very high sample rates.

    PostFX - allows a post effect to be selected.

Modulators

    Glide Mod - allows the glide delay time to be adjusted (there is no direct access to the delay time). For many vintage delays, a slow sine or triangle wave is the best choice here. For doppler effects, the Soft Switch can be applied at the time a doppler effect is to begin.

    Filter Mod - allows the frequency of the brickwall filter to be modulated.

Post FX are available.

9.12. <u>Vintage Shifter</u>

This is a dual pitch-shifter that performs much like popular shifters of the late 1980s. It is most commonly used for fattening input sources or sometimes added echoes at a musical interval relative to the input source. It's also the core of a common special effect in which a signal spirals up or down in pitch. It is *not* a pitch corrector—your singer will just have to learn to sing in tune. Like the shifters it's modeled after, there are very noticeable artifacts from sizable shifts.

Note about stereo: Two voices may be used to shift stereo signals. It is well-known that shifters of this type do a very poor job of maintaining stereo imaging. You should find that Excalibur does a better job of this than most shifters, and it should be acceptable in that regard.

Parameters

    Double Shifter - in the *Off* position, there's only a single shifter. In the *On* position, both shifters are effective.

    Shift 1 - the amount of shift for shifter 1. Shift is expressed in an *xx.yy* form, with *xx* as semitones and *yy* as cents. Shift may go from -12.00 to +12.00 (octave down/octave up).

    Shift 2 - the amount of shift for shifter 2 (only in effect when the *Double Shifter* parameter is set to *On)*.

    PostFX - allows a post effect to be selected.

Modulators

    Shift 1 Mod - modulates the amount of shift for Shifter 1

    Shift 2 Mod - modulates the amount of shift for Shifter 2

Post FX are available.

9.13.<u>Reverb</u>

This is a highly simplified mono reverberator that may be used in any number of ways. Most typically, you might find a reverb going into a chorus or flange, creating an intense, swirling effect. But it can be also be used to create novel effects using delays and resonators as well. All of the reverbs (one for each voice) are decorrelated, so that they may be used in stereo effects.

Parameters

     Attack Time - spreads the injection of signal into the reverb by as much as 250ms. This can be used to soften the overall reverb.

     Rvb Time - controls how long the reverb takes to die away.

     Damping - adjusts how the high frequency dies away relative to the entire signal. A high value for damping means that most of the signal is unaffected. Lower values cause more of the high-frequency signal to be absorbed and therefore darken the reverb.

     PostFX - allows a post effect to be selected.

Modulators

     Rvb Time Mod - modulates the reverb time

     Damping Mod - modulates the damping frequency

Post FX are available.

10. Built-in Presets

Excalibur ships with a large number of presets built right in. Not only can they be used immediately on your projects, but they can also provide lots of tips on making presets of your own. Here are a few considerations.

10.1.Mono or Stereo?

It's expected that you will be using Excalibur mainly on tracks, which are almost always mono-in (mono or stereo out). For that reason, the majority of presets are built with mono input (see the input selector on the preset to be sure). Mono input works with either mono or stereo input: if the input is stereo, it's mixed to mono before being processed.

Preset outputs are almost always stereo, and you'll get the biggest effect if you route them as stereo. But if your track in mono-out, the plugin will mix down to mono.

Usually, true stereo (stereo-in/stereo-out) presets will have a *(stereo)* indication in the preset name.

10.2.Loading presets while audio is passing

Excalibur takes many steps to keep preset-changes well-behaved. You may be able to go between similar presets with no audible artifacts. Going between dissimilar presets (different EQ types, changed I/O mapping) may cause very small noises if audio is passing during the change. In many contexts those noises are not event noticeable. But the user is advised to test out changes in advance.

10.3.Keyword

Every preset should associated with at least one keyword. Many of the built-in presets are associated with several, so they will turn up on multiple lists. A keyword is just a suggestion about how you might use the preset, but you should never feel restricted. If you're mixing a singer, you'll probably start with the Vocal keyword, but you might then try your luck with any of the others. You might end up with a Delay preset or a Flanger preset or even a Guitar preset. Explore! And be sure to see what the soft controls do with each preset.

10.4.What Kinds of Presets are on Each Keyword List?

You won't find a complete description of every preset here—there are just too many of them. But here are a few notes about a few of the lists.

10.4.1.The Demo Keyword

This is the default list that appears whenever you load a new instantiation of Excalibur. The first preset on the list (and the default that loads) is a simple pass-through. It does nothing, but it's the safest place to start. The rest of the presets are chosen to show what sorts of things Excalibur can do. If you audition some test material with presets on the Demo list you'll begin to get an idea of just what Excalibur can do.

10.4.2.The Chorus Keyword

The chorus effect can be subtle or strong. You can find it all here. For example:
• Fatty Chorus - both thickens vocals and moves them back. Great for background vocals
• Stereo Chorus DDL - a combination of chorus and subtly repeating delay. Add polish to a lead vocal or solo wind.
• Got Trails? - Combine chorus, delay and autopanning and you have a great effect for filling a sparse mix.
• Got Tempo Trails? - just like Got Trails? but the panning locks to tempo.

10.4.3.<u>The Combo Keyword</u>

Many of the presets simply don't fit into any category. Or they fit into every category. They're made up of combinations of effects that you might not typically put together. So they often go in here. The represent unusual combinations of voice effects that simply aren't available elsewhere. Try:

- Granular FX - a rapidly-changing series of effects. Try it on vocals. Try it in post.
- Squishy Room - a combination of delay and pitch shift. It's been described as a cat running across a piano. It's highly-variable and dependent on the material.
- Granular Fattener - in the manner of *Granular FX*, but focused on techniques used for vocal fattening. Add a tiny amount behind backing vocals.

10.4.4.<u>The Delay Keyword</u>

You can do all sorts of things with delays—everything from simple slapbacks to wild effects. Here are a few:

- BPM Quarter-beat delay - gives you a simple slap that's locked to tempo. Tap in the tempo or program it into your session. There are several BPM delays in Excalibur.
- DDL Stereo - classic delay effects. The word size is reduced to give a more 'grainy' effect to repeating echoes
- Breathy Resonances - a classic effect that's seriously twisted. The repeating delays are treated with a resonant edge. A little is better than a lot.
- Vintage Echo Flange - a repeating fattener with a very vintage character
- Echoes on L-R - this effect generates echos, but not on the center material. Keep the center free of effect and only add to material on the sides.

10.4.5.<u>The Distortion Keyword</u>

There are lots of reasons to add some grunge to material. Perhaps you want to make material sound older, perhaps you like the richness. Excalibur's powerful distorter puts a lot at your fingertips. Here are a few examples (Note: You'll find many more distortion presets under the Guitar Keyword):

- Vocal Fattener+Slap - warm up a vocal and give it a nice slapback, all in one preset
- Distorted Bass - pass only the lowest frequencies while adding distortion. Can be used on electric bass, but also as a general purpose warmer on a mainly dry signal.
- Gated Filter - it's a crazy filter, it's a slap, it's a distorter. *And* it slaves to tempo. Use just a little bit to add interest to track.
- Transistor Heaven - Let's go back to the early days of transistor amplifiers. While hardly pure, they sure did make some interesting sounds. Return to the days of yesteryear.

10.4.6.<u>The Drums & Percussion Keyword</u>

While drums can benefit from may of the presets that appear under the Delay keyword, there are a few special cases shown here:

- HH Snare Slap - a great way to add a little pop
- Clap Schmear - a strange effect that adds some slap on one one side and thin echoes on the other
- Kick in Groove Out - You can do a lot with ring modulators. Be sure you've tapped in the correct tempo with this group of presets. If you put in just a kick drum on the quarter-note, you'll get an entire groove out. If you use a percussion ensemble (light on the cymbals) you'll add another stage full of players.

10.4.7.<u>The Flanger Keyword</u>

This popular effect started out as a simple thumb on the takeup reel. It expanded through generations of foot pedals and rack units into one of the most popular effects ever. Use flangers on a track or on an entire mix. A few to try:

- Dream Flanger - a very smooth and gentle flanger without the honk of many effects. Take a mono vocal and fill the soundstage
- Aggressive Undulating Flanger - in many ways the opposite of *Dream Flanger*. A churning effect, especially responsive to lower frequencies.
- Mod DDL Flanger - combine a smooth flanger, reduced word size and a repeating delay. It's modern and vintage, all at the same time.
- EZ flanger - a slow flanger with sizzle. Perfect if you've already got too much in the midrange.

10.4.8.The Futz Keyword

These are handy presets for post-production. Microphones show up here as well as tricks for modeling telephones, walkie-talkie radios, robot voices and all sorts of tricks for helping audio fit into a scene. For example:

•   Bullhorn - A useful futz for outdoor speakers. Includes a mix of overdrive, slapback and added noise
•   Phone Futz - several variants of this popular distorted narrowband
•   Radio Breakup - There are a number of similar presets that add distortion and bandpass effects based on input level. Great for walkie-talkies, cockpit communicators and similar applications.
•   LP Crackle - add some filtering and surface noise to place your source audio on an old record player

10.4.9.The Guitar Keyword

There a few guitar tracks that don't have added effects. Those effects might be subtle or extreme. A few examples:

•   Vintage Reverb Amp - a signature sound of the 50s and 60s. Take a tube amplifier with a built-in reverb. Add ten-inch speakers. There are several flavors of vintage amp here, each with a very different character. You'll also find vintage amps with slapbacks and tremelo.
•   JC Lead - sounds for solos. Different types of distortion with following chorus/flange effects.
•   Talking Bass - We haven't forgotten the player that anchors the group. Mix some distortion and a responsive resonant filter. It's a sound that's both old and new.
•   Henge Dirty Guitar Spreader - in goes a mono guitar. Out comes a split effect as if there were two very different microphones. Great for creating space.

10.4.10.The Keyboard Keyword

There's a lot of crossover between guitar and keyboard effects. But there are few that have a long, long history:

•   Rippin' Rotary - remember the speaker that goes 'round and 'round? It was distorted and cranky. But it was essential. Use the Soft Switch to change speeds. You'll notice that the lower frequency drum accelerates more slowly.
•   Vibro-Phase - sometimes you just need to add motion to a keyboard. This may be especially true with electric piano. This combines a phaser with other widening effects to give you a very nice vibrato/tremelo effect.
•   Vibrato (Louder=Faster) - add a bit of vibrato to a static piano. The louder the input, the faster the vibrato effect.

10.4.11.The Panner Keyword

Auto panning is a great way to add space and interest to a static mix. There are a number of options here:

•   L-R Autopan+Echo. The soft knob controls the speed of the pan. The Soft Switch adds just a touch of echo.
•   Tempo Pan Vibrato - combines autopan with gentle vibrato—all locked to tempo
•   Wander Phaser - combines an ambient phaser with autopan for a gently moving room.

10.4.12.The Phaser Keyword

Because of its subtlety, the phaser is often overlooked. But it can be a great way to add both space and motion to a track. For example:

•   Mod DDL Phaser - repeating echoes with gentle phase shifts. Reduced word size adds a distinctly vintage character.
•   Warm Stereo Phaser - nice for opening up percussion or vocals

10.4.13.The Pitch Keyword

The pitch shifter in Excalibur is modeled after popular shifters of the 80s and 90s. It has a distinct 'effect-y' character that can be used to advantage in many cases. A few examples:

•   Knob to Tune - if you need to make quick (and small) adjustments to pitch, give this a try. Soft knob controls the shift.
•   Vocal Fattener - combine some up shift and some down shift to create a familiar multi-tracking effect.
•   Flatverb/Sharpverb - you don't always need reverb to be out of tune, but some special effects situations can use it. The Soft knob controls detuning
•   Voice of Thogga - doing a sword-and-sandal movie? Give the bad guy that deep voice that makes him stand out.
•   Pitch Whammy - a truly strange effect that combines pitch shift, panning and dynamic filtering to make a deep swirling effect.

10.4.14.The Post Keyword

Audio post-production is a huge category that includes many disciplines.   You'll find considerable crossover between the Post, Futz and Sound Design keywords. But each keyword provides a starting point. Here you'll find:

•   Voice of the Dragon - a deep menacing shifter/doubler
•   Communications Breakdown - the effect of a shortwave radio pushed too hard
•   Robot - the classic ring modulator effect used to turn a human into a non-human
•   Ghostly Whispers+More - converts voices into hissy repeated delays. A great effect for ghost stories.

10.4.15.The Resonator Keyword

There's really nothing quite like resonator effects.   They're groups of sympathetic resonators that amplify specific frequencies in the material. They can be beautiful or scary. Try:

•   Transport me - a beautiful chord that can add a magical effect. Tune it with the knob. Pass some filtered noise through it and get the classic 'beam me up' sound.
•   Magic Clock - gives any audio the sound of a grandfather clock
•   Where ARE we? - a strange resonant ambience that might be used in a dream sequence
•   Swedish Kill - a resonant autopan that creates a backdrop reminiscent of popular Scandinavian thrillers.

10.4.16.The Res Filter Keyword

The resonant filter are dynamic filters very much like those in old analog synthesizers. Try a solo instrument through a few of these:

•   Wah + Delay - an auto-way with a slapback
•   Catching Air - create an open space with a little motion on the filters

10.4.17.The Ring Mod Keyword

The ring modulator goes back decades and has been used for all sorts of other-worldly purposes. Try:
• Exterminator - Just shout 'exterminate! exterminate!' and you'll know where this came from
• Kit Converter - in goes a drum kit. Out comes a drum kit from Mars
• Cricket Bot + Follow - pass regular dialog through this and then play with the soft controls. You'll get a multi-alien conversation.

10.4.18.The Rotary Keyword

Inspired by popular cabinets of the past. Examples:
• Basic Rotary - The name says it all. Use the switch to vary speeds and the knob to add dirt.
• Rotary Drive Flange - Add some flange effect to the basic rotary sound to make it a bit more overdriven

10.4.19.The Sound Design Keyword

Sometimes you have to build a world from scratch. Here are a few ways to do it:
• Under the Floor - there's a party going on at the neighbors' place just underneath you
• In the Walls - there's another party next door
• Yellow Bricks - need to make the actor feel a little smaller?
• Radio Breakup - the sound of a walkie-talkie

10.4.20.The Spaces Keyword

Reverb isn't the only way to place a track into a room. Try these:
• Choral Room - there are several flavors of this preset, all dynamic. With some, the louder you get, the smaller the room. With others it's the opposite.
• Rolling Piano Room - could you make a room out of pots and pans?
• Chorus Verb - nothing like the sound of a vintage reverb through a chorus. Rich.
• Tempo Room Pop - a tempo locked delay explodes into a short live space.

10.4.21.The Tempo Keyword

This keyword lets you drive through all of the tempo-related presets. Some are very musical. Others are something else:
• Stutter Verb Tempo - Only lets signal into the reverb when there's nothing coming out.
• X-DDL Stereo - a vintage stereo delay line that ties to tempo.
• Swirly Tempo Verb - A combination of reverb and tempo-related feedback lines. Try it on a solo track.

10.4.22.The Tools Keyword

Presets on this list can be used to provide a few quick and simple solutions. There are encoders and decoders for M/S signals. There are some quick presets for increasing the width of stereo signals. There are a few simple microphone models that might put some extra luster on a track. A few examples:
• No Center Classic - A classic old method of removing center channel by passing only the L-R component (a mono result). Soft knob controls relative delay between channels to correct azimuth problems. Requires stereo input.
• Right Ducks Left - A signal on the right channel blocks any signal on left. There are several variants of duckers.
• Right Gates Left - A signal on the left channel will not pass unless there is a signal on the right.
•
10.4.23.The Tremelo Keyword

Tremelo, when not overused, can be a nice way to fill the soundstage with sparse input material or to add interest to more static material. For example:
• BPM Quarter-Beat Cross Tremelo - Vary the amplitude of left and right in opposing ways (when left gets softer, right gets louder). Lock it all to tempo.
• Ole Country Trem - harks back to the tremelo on old tube amps—with autopanning tossed in.

10.4.24.The Vibrato Keyword

You can easily add vibrato to something that doesn't have it. A few you might try:
• Simple Vibrato - simple pitch vibrato. Use the Soft Knob to vary depth
• Expressive Vibrato - add pitch and phase vibrato, all in an added space
• Tempo Vibrato - lock vibrato to tempo

11. Eucon and External Control Surfaces

Eucon protocols, created and supported by Avid, are supported by *Excalibur*. This means that Avid control surfaces, such as the *Artist Series* or the *S6* will present *Excalibur* parameters in a sensible way when used with Pro Tools and some VST workstations. Not all parameters will appear on control surfaces, only those deemed most useful in realtime situations. Excalibur has over 400 parameters, and no user wants to go through dozens of pages just to do something useful. This means that deep editing will require use of the GUI. Those controls on the work surface should be the controls most useful when actively mixing.

Eucon provides some support for HUI devices as well, although Avid makes no guarantees about how long that support will exist.

There are other workstations, Logic X for example, that do attempt to provide support on work surfaces. Unfortunately, iZotope has absolutely no control over how these controls are mapped to the work surface. Trying to control Excalibur with an external controller in this way is tedious and confusing. It is strongly recommended that you not even bother with it.

12. **Closing notes**

12.1.Automatic Update Detection

You want to know when an update is available for Excalibur. iZotope will try to contact you at those times, but Excalibur itself will tell you (if you're connected to the web). When a new version is detected, a message will appear at the bottom of the plugin, as shown here. This message is also a link. Clicking on the link will take you to the download page where you can get your update. Excalibur will not automatically update itself (that's simply bad form), but it will let you know when you can do it for yourself.
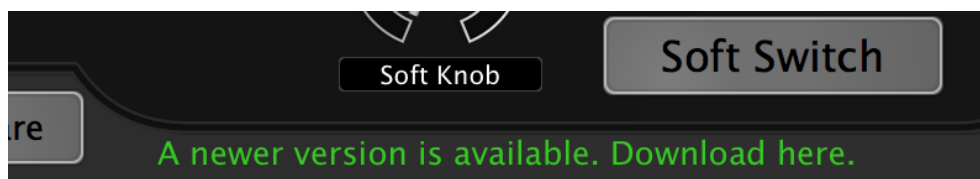
12.2.Getting Help

12.3.iZotope Website

If you're having difficulty with the plugin, the first place to look is www.iZiotope.com. If you encounter what you believe to be a bug, then please report it by going to the info page of the plugin (click on the logo in the upper left corner) then clicking the "Request Help from iZotope" link. This will prepare an email with important system information and a log that may include your problem. In the email, please describe what you were doing when you encountered the bug, and the best ways to reproduce the problem. Then send it along.

If Excalibur has difficulty connecting with your email program, it will place the log file on your desktop. Please send this file to support@izotope.com, along with a description of your problem.

12.4.iLok Website

If you're having problem with licensing or with your iLok, then be sure to visit www.ilok.com.

12.5.Updates

Be sure to check www.izotoope.com periodically for bug fix updates to *Excalibur*. If you're connected to the Internet, you should see a reminder right on the plugin when a new version is available. While you're there, be sure to check out new products that might be available.

12.6.Tech Notes

Most modern DAW programs handle plugin delay compensation automatically. But if you need to know, the delay of a dry signal through Excalibur varies depending on the sample rate:
- 44.1/48K - 32 samples
- 88.2/96K - 64 samples
- 176.4/192K 128 samples
- Anything above - 256 samples

If you are loading down your DAW (and who doesn't), be sure to put away the GUI when you no longer need it. It does take processor cycles to run the user interface, and there's no need to burn the cycles if you don't need to control the plugin.

- **Cent** - 1/100 of a semitone.
- **Duty Cycle** - A Low Frequency Oscillator can generate several waveforms that go from fully on to fully off without gradual change. These are called pulse waves and the best known example is the square wave. The duty cycle of a pulse wave is the amount of time the pulse is on, compare to the a full cycle. A square wave has a duty cycle of 50%.
- **Envelope Follower** - an envelope follower is a modulation source that is stimulated by another source. In Excalibur, this is usually an input level. The envelope follow responds immediately to rising values, but then falls gradually, depending on the decay time specified as a parameter.
- **Global Parameter** - A global parameter is a parameter that affects all copies of Excalibur. It is permanent and stays in place across system reboots and workstation relaunches. An example of a global parameter is the "Flush" parameter.
- **Help Page** - The help page can be reached by clicking on the Excalibur logo on the GUI. It lists information including version of the plugin, workstation that's currently running, sample rate and so on. If you have a problem, you should provide this information. In addition, the Help page provides a link to the User Guide (this document), a way to start a help ticket, and notifications about never available versions of Excalibur.
- **Keyword** - a keyword is descriptive word or short phrase that describes how a preset might be used. When a keyword is selected on the GUI, all of the presets using that keyword will appear in the preset field. A preset may use multiple keywords, since a preset is often useful in many different situations.
- **LFO** - Low Frequency Oscillator. This is an oscillator that operates below audio frequencies and is used as a control source for parameter modulation in Excalibur. LFOs can generate several different waveforms.
- **Modulation** - a method of automatic parameter control that works in addition to the normal means of setting values. Modulation works by connecting a modulation source (LFO, input level, etc) to a parameter. The action of of the modulator may be scaled so that the effect may be very small or very large. Many units inside of Excalibur must be modulated to have an effect. Examples are chorus, phaser and flanger.
- **Nyquist Frequency** - Half the sample rate. This is the maximum frequency that can be reproduced at that sample rate.
- **Phase-Locking** - It is often useful for different LFOs to remain in sync with one another. For example, you may wish to have an output level modulated up-and-down for one voice, and *down-and-up* on another — exactly opposite. Keeping those two LFOs synchronized is called phase-locking. This is easily done in *Excalibur* by assigning LFOs to the same Gen and then using the Advance knob (the middle knob) on the modulator popup window.
- **Post Effect** (PostFX)- a post effect is a simplified version of a voice effect that can be added to another voice effect. Not all voice effects are available as PostFX and not all voice effects can be followed by PostFX.
- **Preferences** - Preferences are the same as Global Parameters.
- **Preset** - a preset is a named group of settings which can be loaded into the plugin. Presets can completely change the sound of Excalibur, and are the principal way that most users control a plugin. In addition to parameter values, presets contain keywords and other potential data.
- **Store Page** - the Store page is reached by clicking the Store button. All operations on user presets (save, replace, delete, import, export) are performed on this page.
- **Tap** - The tap button can be used to enter current tempo value. Simply tap twice (on the beat) and the tempo will be determined from that.
- **Voice Effect** - a voice effect is an effect that can be placed in an Excalibur voice. As shown in the Voice Architecture diagram, it is placed after the effect. Each voice may have its own voice effect (or none) and most voice effects can have an optional Post Effect.