

# EXPONENTIAL AUDIO



AN iZOTOPE COMPANY

## R4

Welcome to R4 from iZotope. R4 is an easy-to-use stereo reverb with the flexibility to fit into many sorts of mixes--music of all sorts, foley, FX, dialog--and it comes with a large assortment of built-in presets to get you right to work. R4 is a 'character reverb' with a fat sound that's just the thing to make a track stand out.. But add the new warp and dynamic features—along with expanded EQ and early reflections—and you're suddenly in a whole new world. R4 can work in any of the following formats:

- Mono
- Stereo
- Mono to Stereo

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## 1. [System Requirements](#)

### 1.1. [Mac](#)

These plugins require 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.

## 2. [General 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 192-384K), 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 strongly recommended that your monitor have greater than 1024 x 768 pixels.

### 2.1. [iLok](#)

A second-generation or third-generation iLok (iLok2 or iLok3) is required to operate these plugins. iLok is a product of Pace and may be purchased directly from [www.ilok.com](http://www.ilok.com) or from any music retailer. No form of non-iLok licensing is available or under consideration. That includes host-based licensing.

## 3. [Supported Plugin Formats](#)

### 3.1. [Mac](#)

- Audio Units 64-bit
- VST 64-bit
- VST3 64-bit
- AAX 64-bit

### 3.2. [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.

## 4. [Installation and Removal](#)

### 4.1. [Install the iLok License Manager](#)

The iLok License Manager may be downloaded from [www.ilok.com](http://www.ilok.com). Even if you already use the iLok, it's always a good idea to verify that License Manager is up-to-date. Please be sure to install or update License Manager before installing R4. But before doing so, please check any read me files in your installer package.

### 4.2. [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 at iLok. In that case, simply drag the license to the appropriate iLok using the License Manager.

### 4.3. [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.

### 4.4. [To Uninstall](#)

On Windows, R4 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.

### 4.5. [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/](#)

### 4.6. [Where things go on Windows](#)

VST and VST3 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\](#)

### 4.7. [Logfiles](#)

R4 keep a logfile with diagnostic information that may be of use in the event of a problem. The location of that logfile may be seen on the info window.

5. [Walkthrough](#)

The following walkthrough will show you how to begin using your plugins. The Plugin Windows

Note: The plugin window will be embedded in a window provided by your workstation program (not shown).



5.1. [Tooltips](#)

The first thing you're likely to notice is that R4 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:



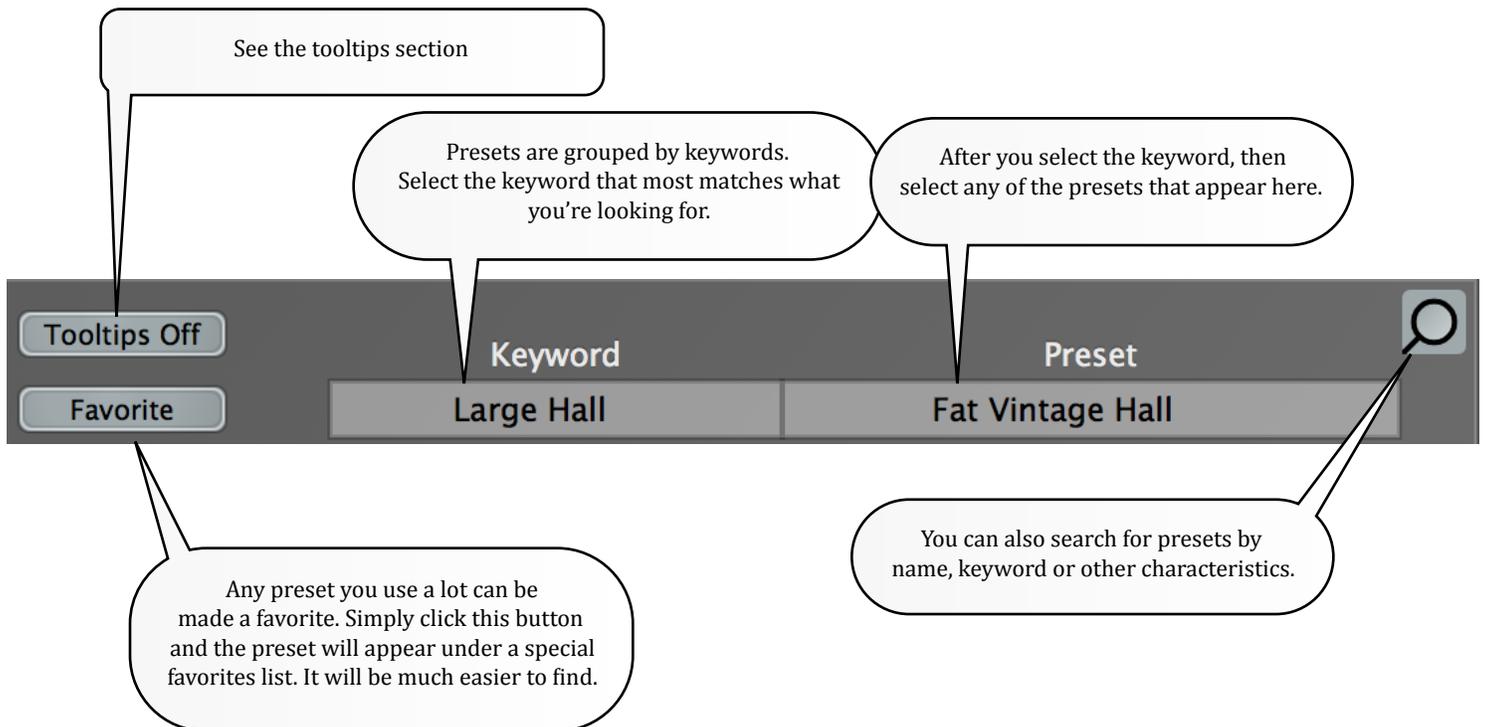
When you install the plugin, tooltips are turned on. But you can easily turn them off. Notice the button at the top center of the plugin window. Simply click the tooltips button to change the visibility of tooltips. Your choice is global for all copies of the plugin and it will be remembered by the system.



## 5.2. [Loading Presets](#)

The first thing you'll want to do is to listen to the many presets that come with R4. 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.

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



Most mix engineers search for a preset that fits a specific need. Perhaps it's a small room for dialog. Perhaps it's a drum plate. Perhaps it's something for a wide exterior shot. 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! You'll see something like this list when you click on the Keyword button:

The screenshot shows a software interface with a search results list on the left and a control panel on the right. The search results list includes:

- Search Results
- Favorites
- Small
- Medium
- Large
- Room
- Small Plate
- Medium Plate
- Large Plate
- Small Chamber
- Medium Chamber
- Large Chamber
- Small Hall
- Medium Hall
- Large Hall
- Classical
- Guitar
- Dynamic
- Instrumental
- Percussion
- Tempo
- Vocal
- ADR and Post
- Effect
- Gated
- Chorused
- Live Recording
- Freeze
- R2

The control panel on the right has a 'User' section with 'All Presets' selected. Callouts explain the keywords:

- The 'User' keyword will show all the presets you've created.
- The 'All Presets' keyword will show every single one of your presets.
- If you've done a search, your result list will appear as a keyword.
- The 'Favorites' keyword will show all the presets you marked as favorite.

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.

Now select one of the presets that is categorized by the keyword.

Fat Vintage Hall	Lrg Front Hall (Wide)	Eric's Long Haul (Narr)	Rich Guitar Hall 3 (Lite)	Ocean Hall (Wide)
Fat Vintage Hall (Drk)	Lrg Mid Hall	Eric's Long Haul (Wide)	Rich Guitar Hall 3 (Narr)	Deep Ocean Hall
Fat Vintage Hall (Lite)	Lrg Mid Hall (Drk)	Lge Soft Vocal Hall	Rich Guitar Hall 3 (Wide)	Deep Ocean Hall (Drk)
Fat Vintage Hall (Narr)	Lrg Mid Hall (Lite)	Lge Soft Vocal Hall (Drk)	Rich Vocal Hall	Deep Ocean Hall (Lite)
Fat Vintage Hall (Wide)	Lrg Mid Hall (Narr)	Lge Soft Vocal Hall (Lite)	Rich Vocal Hall (Drk)	Deep Ocean Hall (Narr)
Fat Vintage Hall 2	Lrg Mid Hall (Wide)	Lge Soft Vocal Hall (Narr)	Rich Vocal Hall (Lite)	Deep Ocean Hall (Wide)
Fat Vintage Hall 2 (Drk)	Lrg Mid Hall 2	Lge Soft Vocal Hall (Wide)	Rich Vocal Hall (Narr)	Henge Large Hall
Fat Vintage Hall 2 (Lite)	Lrg Mid Hall 2 (Drk)	Rich Gated Guit Hall	Rich Vocal Hall (Wide)	Henge Large Hall (Drk)
Fat Vintage Hall 2 (Narr)	Lrg Mid Hall 2 (Lite)	Rich Gated Guit Hall (Drk)	Timpani Hall	Henge Large Hall (Lite)
Fat Vintage Hall 2 (Wide)	Lrg Mid Hall 2 (Narr)	Rich Gated Guit Hall (Lite)	Timpani Hall (Drk)	Henge Large Hall (Narr)
Famous Large Hall	Lrg Mid Hall 2 (Wide)	Rich Gated Guit Hall (Narr)	Timpani Hall (Lite)	Henge Large Hall (Wide)
Famous Large Hall (Drk)	Lrg Back Hall	Rich Gated Guit Hall (Wide)	Timpani Hall (Narr)	Dark Liquid
Famous Large Hall (Lite)	Lrg Back Hall (Drk)	Guitar Wash 2	Timpani Hall (Wide)	Dark Liquid (Narr)
Famous Large Hall (Narr)	Lrg Back Hall (Lite)	Guitar Wash 2 (Drk)	Complex Large Hall	Dark Liquid (Wide)
Famous Large Hall (Wide)	Lrg Back Hall (Narr)	Guitar Wash 2 (Lite)	Complex Large Hall (Drk)	Light Liquid
Rich Classic Hall	Lrg Back Hall (Wide)	Guitar Wash 2 (Narr)	Complex Large Hall (Lite)	Light Liquid (Wide)
Rich Classic Hall (Drk)	Dynamic Classic Hall	Guitar Wash 2 (Wide)	Complex Large Hall (Narr)	Liquid Back
Rich Classic Hall (Lite)	Dynamic Classic Hall (Drk)	Rich Guitar Hall	Complex Large Hall (Wide)	Liquid Back (Drk)
Rich Classic Hall (Narr)	Dynamic Classic Hall (Lite)	Rich Guitar Hall (Drk)	Complex Large Hall 2	Liquid Back (Lite)
Rich Classic Hall (Wide)	Dynamic Classic Hall (Narr)	Rich Guitar Hall (Lite)	Complex Large Hall 2 (Drk)	Liquid Back (Narr)
Rich Classic Hall 2	Dynamic Classic Hall (Wide)	Rich Guitar Hall (Narr)	Complex Large Hall 2 (Lite)	Liquid Back (Wide)
Rich Classic Hall 2 (Drk)	Dynamic Classic Hall 2	Rich Guitar Hall (Wide)	Complex Large Hall 2 (Narr)	Liquid Back 2
Rich Classic Hall 2 (Lite)	Dynamic Classic Hall 2 (Drk)	Rich Guitar Hall 2	Complex Large Hall 2 (Wide)	Liquid Back 2 (Drk)
Rich Classic Hall 2 (Narr)	Dynamic Classic Hall 2 (Lite)	Rich Guitar Hall 2 (Drk)	Complex Liquid Lge Hall	Liquid Back 2 (Lite)
Rich Classic Hall 2 (Wide)	Dynamic Classic Hall 2 (Narr)	Rich Guitar Hall 2 (Lite)	Complex Liquid Lge Hall (Drk)	Liquid Back 2 (Narr)
Lrg Front Hall	Dynamic Classic Hall 2 (Wide)	Rich Guitar Hall 2 (Narr)	Complex Liquid Lge Hall (Lite)	Liquid Back 2 (Wide)
Lrg Front Hall (Drk)	Eric's Long Haul	Rich Guitar Hall 2 (Wide)	Complex Liquid Lge Hall (Narr)	
Lrg Front Hall (Lite)	Eric's Long Haul (Drk)	Rich Guitar Hall 3	Complex Liquid Lge Hall (Wide)	
Lrg Front Hall (Narr)	Eric's Long Haul (Lite)	Rich Guitar Hall 3 (Drk)	Ocean Hall	

Cancel      >>

If there are multiple pages of presets, these arrows will allow you to move between pages.

#### 5.2.2.1. [More about the presets](#)

R4 has over 1200 presets, targeted from music to post to live sound. It contains all of the presets from R2<sup>1</sup> and well as hundreds of new unique presets. Some presets will be saved with warp turned on and others will have it off. Changing the state of warp can have a huge effect on the sound, so be sure to try clicking the Warp button.

If you're looking for R2 presets, try using the search facility. Be sure to add +R2 as a search term. And if you're looking for presets that aren't in R2, then perform your search with -R2 instead. You can learn more about searching in the next section.

#### 5.2.3. [Tip for quick auditioning](#)

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.

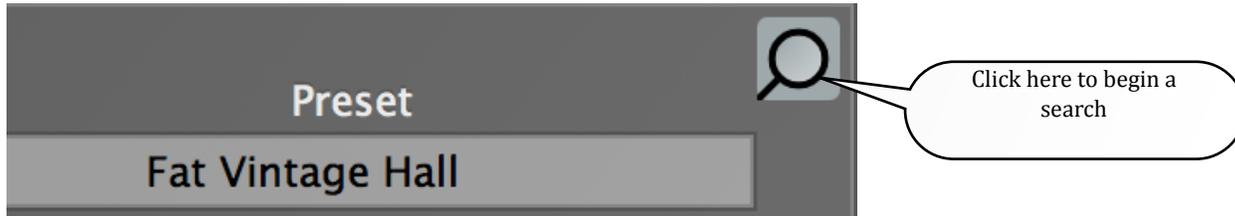
You should also notice that presets are grouped. In the example on the previous page you'll see there are several variants of "Med Front Plate" for example—dark, light, narrow, wide. If you'd like an even quicker audition to see of the preset group is appropriate, use the "Page Up" and "Page Down" buttons on your keyboard. That will move from group to group instead of preset to preset.

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<sup>1</sup> These presets get very close to the R2 sound, but do not match exactly. If you have an R2, you should keep it.

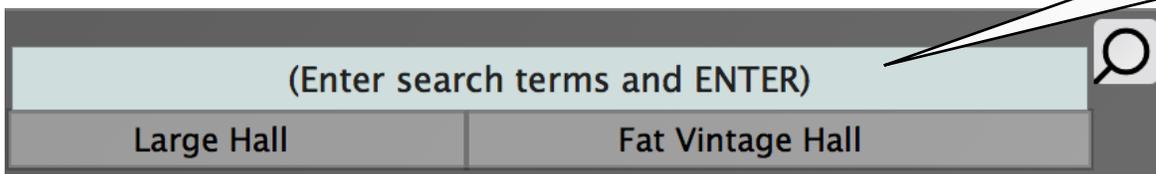
5.3. [Search](#)

There's a powerful search capability in R4—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.

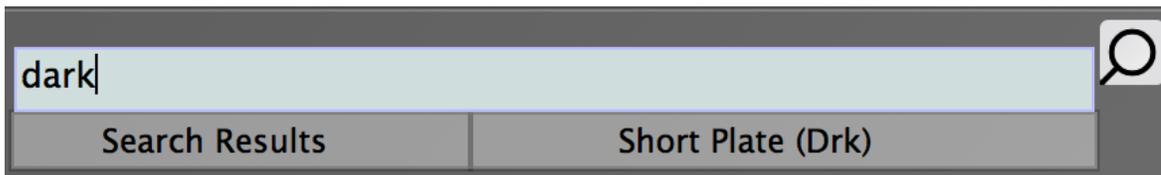


An area then appears to the left of the magnifying glass. You can enter your search terms in this area.

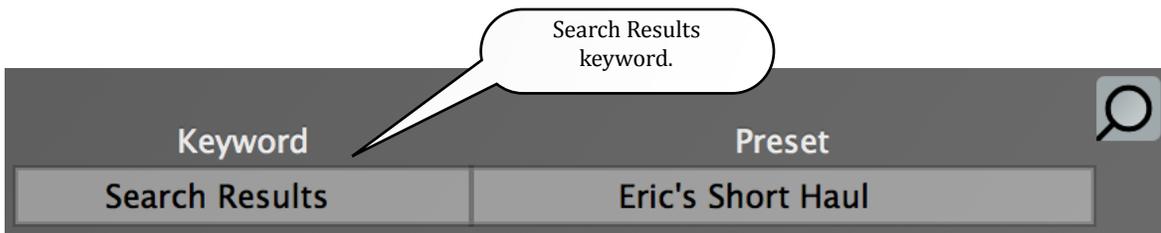
Type your search terms here.



Let's start with something simple. We'll type the word "dark" 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.

5.3.1. [Refining your search](#)

The previous search will give us a lot of presets—the word Dark appears in a lot of them:

Short Plate (Drk)	Lge Aurochs Plate (Drk)	Guitar Texture (Drk)	Recital 1 (Drk)	Dark Liquid (Narr)
Shrt Far Plate (Drk)	Lge Cow Plate (Drk)	Guitar Wash (Drk)	Recital 2 (Drk)	Dark Liquid (Wide)
Shrt Far Plate 2 (Drk)	Lge FatPlate (Dark)	Lge Chamb (Drk)	Recital 3 (Drk)	Deep Ocean Hall (Drk)
Shrt Open Plate (Drk)	Lge Plate (Drk)	Lge Chamb (Drk/Narr)	Small Guitar Hall (Drk)	Henge Large Hall (Drk)
Shrt Open Plate 2 (Drk)	Lge Random Plate (Drk)	Lge Chamb (Drk/Wide)	Med Guitar Hall (Drk)	Ocean Hall (Drk)
Shrt Tight Plate (Drk)	Lge Random Plate 2 (Drk)	Lge Chamb 2 (Drk)	Med Guitar Hall 2 (Drk)	Bright Percussion Gate (Drk)
81 Plate (Drk)	Lge Random Plate 3 (Drk)	Lge Far Chamb (Drk)	Med Guitar Hall 3 (Drk)	Main Pair: Drawing Room (Dark)
81 Plate 2 (Drk)	Lge Tight Plate (Drk)	Lge Far Chamb 2 (Drk)	Eric's Med Haul (Drk)	Main Pair: Recital Gallery (Dark)
Henge Med Drum Plate (Drk)	Med Mid Plate (Drk)	Lge Fat Chamb (Drk)	Med Vocal Hall (Drk)	Main Pair: Small Hall (Dark)
Henge Tight Plate (Drk)	Med Mid Plate 2 (Drk)	Lge Gated Chamb (Drk)	Soft Vocal Hall (Drk)	Main Pair: Small String Hall (Drk)
Henge Tiny Drum Plate (Drk)	32nd 81 Plate (Drk)	Lge Gated Chamb 2 (Drk)	Lrg Front Hall (Drk)	Main Pair: Large Hall (Dark)
Henge Tiny Plate (Drk)	16th 81 Plate (Drk)	Lge Tight Chamb (Drk)	Lrg Mid Hall (Drk)	Main Pair: Rich Hall (Dark)
Light Voc Touch (Drk)	64th Short Plate (Drk)	Med Chamb(Drk)	Lrg Mid Hall 2 (Drk)	Spot Mic: Drawing Room (Dark)
Light Voc Touch 2 (Drk)	32nd Short Plate (Drk)	Med Chamb(Drk/Narr)	Lrg Back Hall (Drk)	Spot Mic: Recital Gallery (Dark)
Med Far Plate (Drk)	Swirling 81 Plate (Drk)	Med Chamb(Drk/Wide)	Guitar Wash 2 (Drk)	Spot Mic: Viola Gallery (Drk)
Med FatPlate (Dark)	Swirling Emty Special (Drk)	Med Chamb 2 (Drk)	Guitar Wash 3 (Drk)	Spot Mic: Viola Room (Drk)
Med FatPlate 2 (Drk)	Henge Tiny Drum Chamb (Drk)	Med Fat Chamb (Drk)	Fat Vintage Hall (Drk)	Spot Mic: Small Viola Hall (Drk)
Med Plate (Drk)	Sml Chamb (Drk)	Med Gated Chamb (Drk)	Fat Vintage Hall 2 (Drk)	Spot Mic: Small Hall (Dark)
Med Plate 2 (Drk)	Sml Chamb (Drk/Narr)	Med Tight Chamb (Drk)	Lge Soft Vocal Hall (Drk)	Spot Mic: Large Hall (Dark)
Med Tight Plate (Drk)	Sml Chamb (Drk/Wide)	Thick Chamber (Drk)	Rich Guitar Hall (Drk)	Spot Mic: Large Viola Hall (Drk)
Shrt Fat Plate (Drk)	Sml Chamb 2 (Drk)	Thick Chamber 2 (Drk)	Rich Guitar Hall 2 (Drk)	Spot Mic: Rich Hall (Dark)
Shrt Fat Plate 2 (Drk)	Sml Fat Chamb (Drk)	Orange Baboon (Drk)	Rich Guitar Hall 3 (Drk)	Complex Large Hall (Drk)
Emty Special (Drk)	Sml Fat Chamb 2 (Drk)	Tempo Orange Baboon (Drk)	Eric's Long Haul (Drk)	Complex Large Hall 2 (Drk)
Far Plate (Drk)	Sml Fat Chamb 3 (Drk)	Eric's Short Haul (Drk)	Rich Gated Guit Hall (Drk)	Complex Liquid Lge Hall (Drk)
Fatso Plate (Drk)	Sml Tight Chamb(Drk)	Henge Tiny Drum Hall (Drk)	Rich Vocal Hall (Drk)	Famous Large Hall (Drk)
Fatso Plate 2 (Drk)	Sml Tight Chamb(Drk/Narr)	Henge Tiny Hall (Drk)	Timpani Hall (Drk)	Dark Swirling Liquid
Henge Lrg Drum Plate (Drk)	Sml Tight Chamb(Drk/Wide)	Med Front Hall (Drk)	Liquid Back (Drk)	Dark Swirling Liquid (Narr)
Lge 81 Plate (Drk)	Sml Tight Chamb 2 (Drk)	Med Mid Hall (Drk)	Liquid Back 2 (Drk)	Dark Swirling Liquid (Wide)
Lge 81 Plate 2 (Drk)	Tiny Chamber (Drk)	Med Back Hall (Drk)	Dark Liquid	Liquid Back 3 (Drk)

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

We've added the word hall. The leading +sign means that this word must appear in the results.

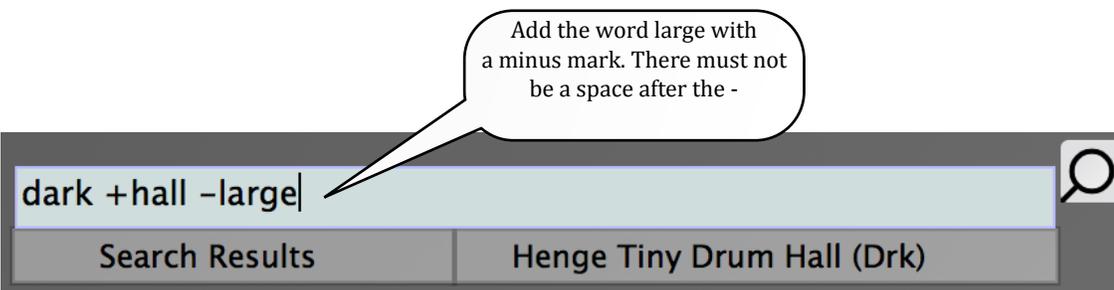
Add Hall to the search.  
Note the + sign. There must not be a space after the +



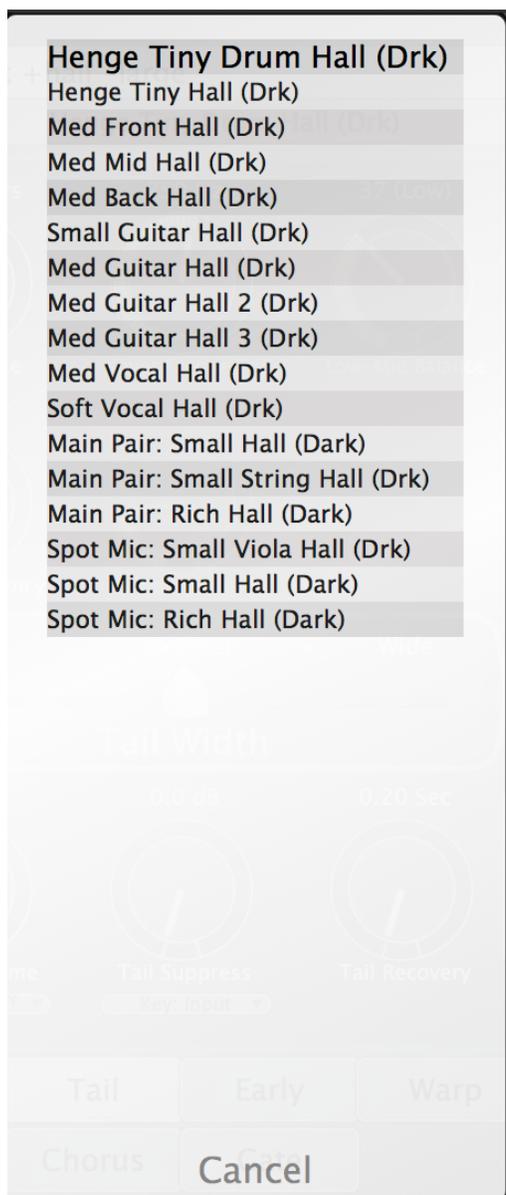
We can see that the results list has been reduced. What we have now is presets that satisfy the terms Dark and Hall.



At this point, we've reduced the list as much as we need to. But let's refine our search even more. Let's add the word large, with a minus (-)mark ahead of it.



Now our preset list has been reduced even more. Presets with the word large have been removed. What we have now is presets that satisfy the terms Dark and Hall , but without the word Large.



### 5.3.2. [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.

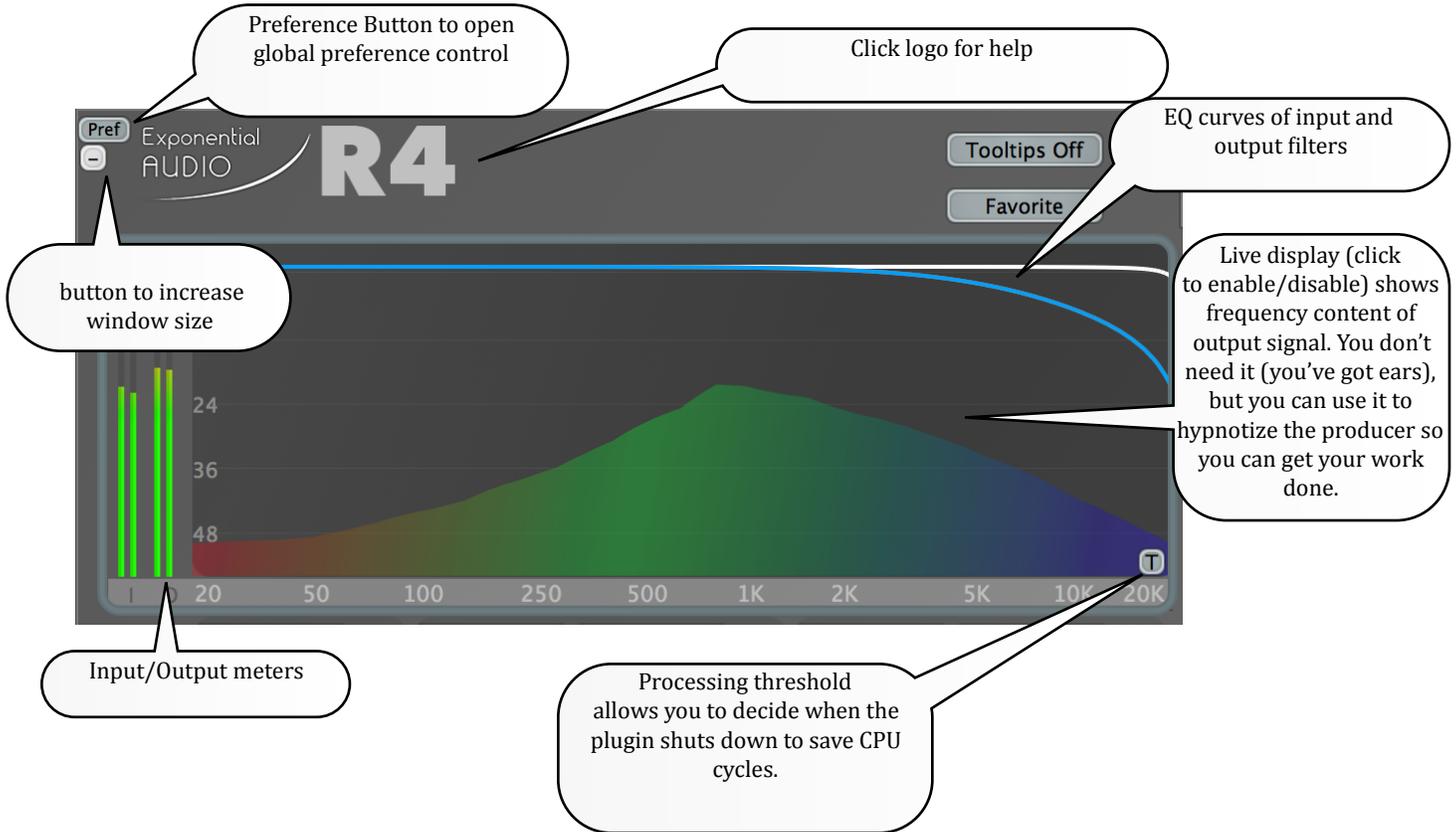
There are many ways to find the presets you're looking for. The original keyword organization is a good first step. The Favorites list is the best go-to place for your most-used presets. The search capabilities now give you a quick and powerful way to find what you might need.

### 5.3.3. [Synonyms](#)

You'll find many variants of some words in preset names. You might see Drk or Dark. You might see Cham or Chamb or Chamber. 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.

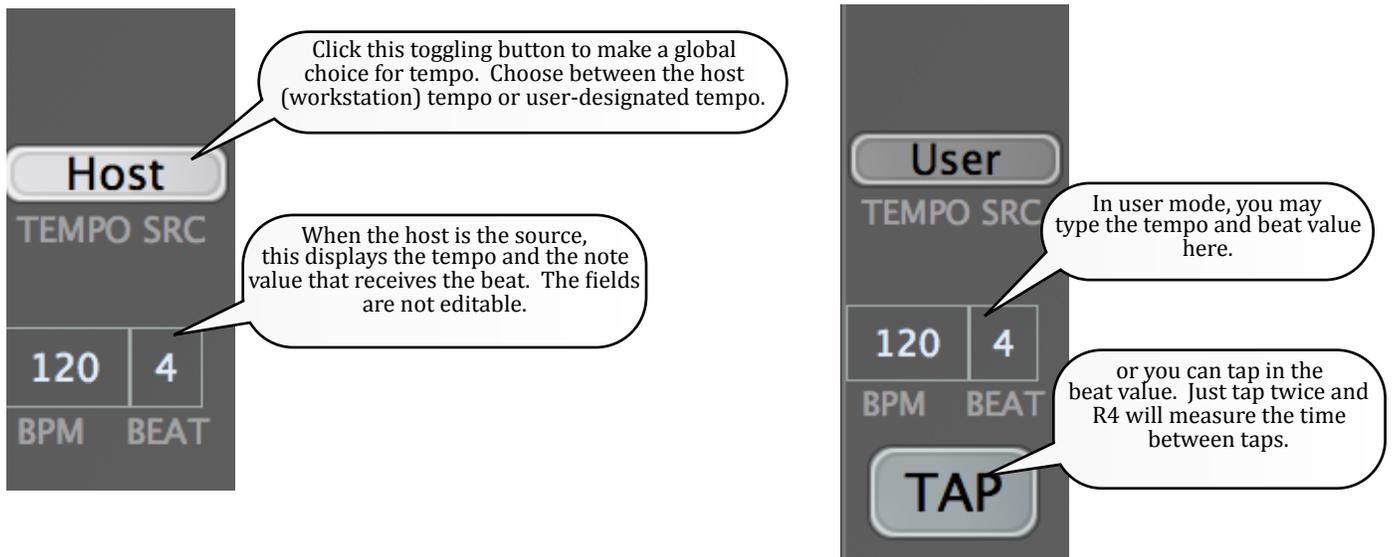
5.4. [The Meter Area](#)

The live meter area at the upper left portion of the plugin window provides feedback on the signals entering and leaving the plugin. It also provides access to many features of the plugin



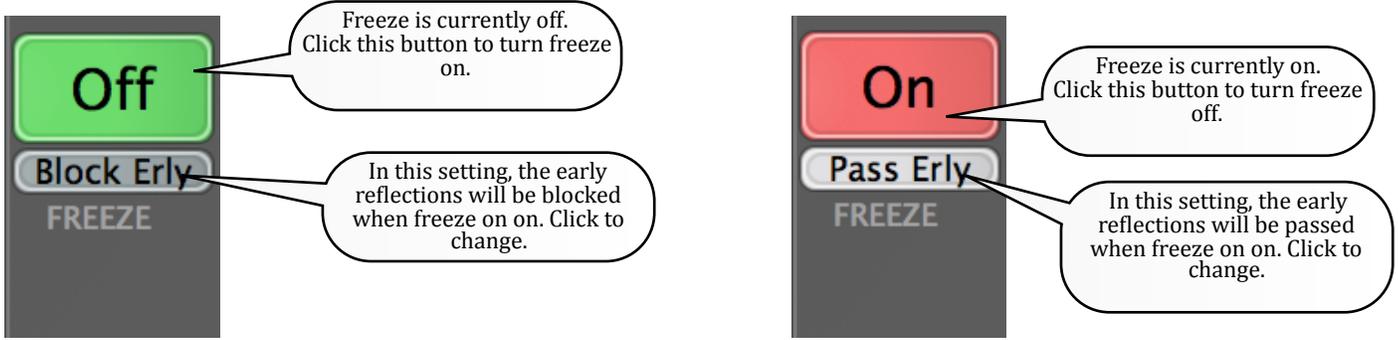
5.5. [The Tempo Area](#)

R4 predelay and reverb delay may be set to work either as absolute values (a specific time) or as related to tempo (eighth-note, etc). Those parameters are settable for any preset. The source of tempo must be specified. This is done in the tempo area at the lower left of the plugin window. There are possible sources of tempo: the workstation itself may provide the tempo. This is a global choice and applies to all copies of the plugin that may be running.



5.6. [The Freeze Area](#)

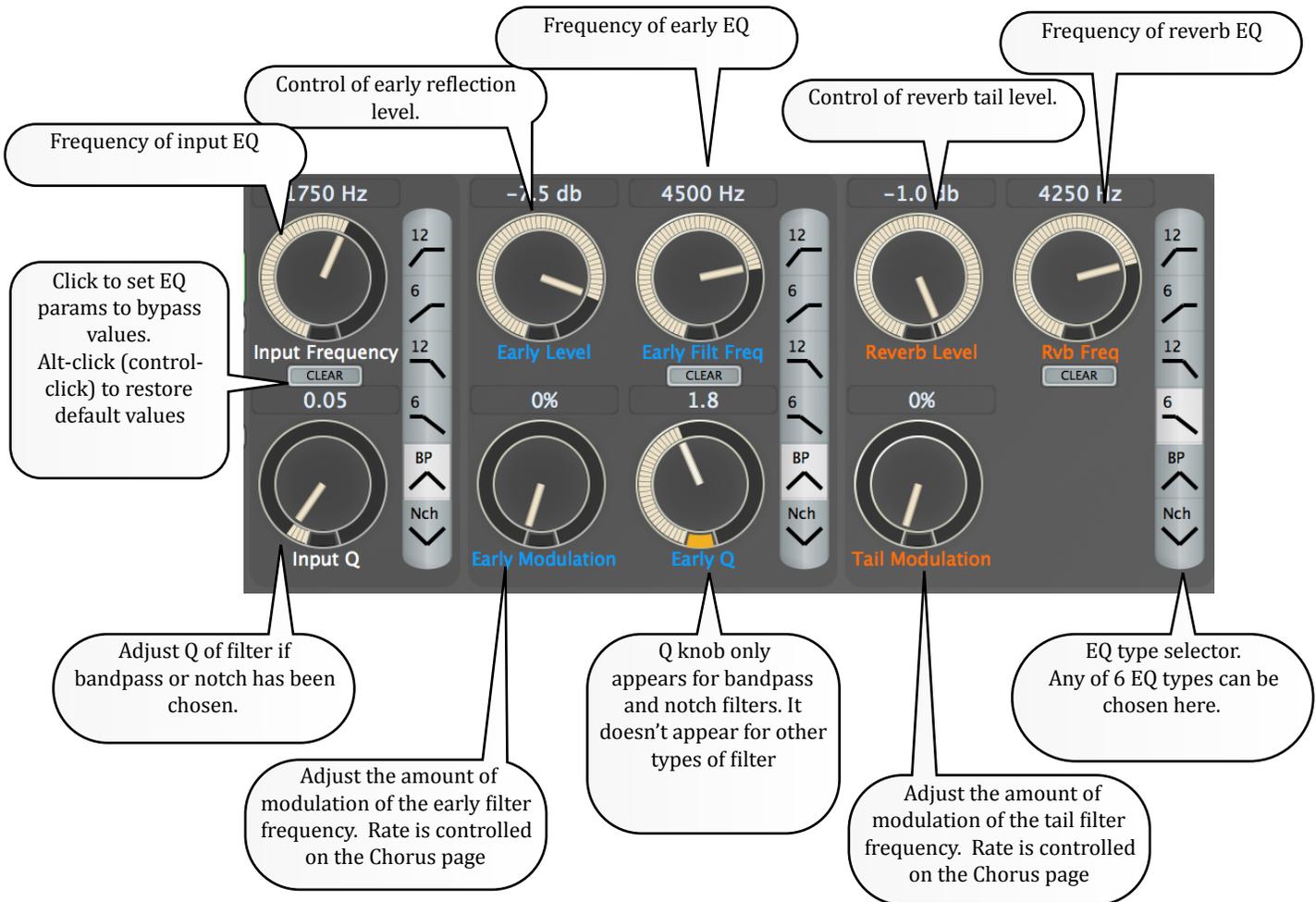
It is possible to ‘freeze’ the reverb tail using the freeze button on the left side of the GUI.



Freeze works best with larger room sizes. If you don't select "Pass Early" then be aware that you may hear a drop in level as soon as you press freeze. That's because early reflections are shut off during freeze. If the early level is high, then the disappearance of that energy will cause the level to drop. For that reason it's usually best to freeze presets with low early level.

5.7. [Output and EQ Controls](#)

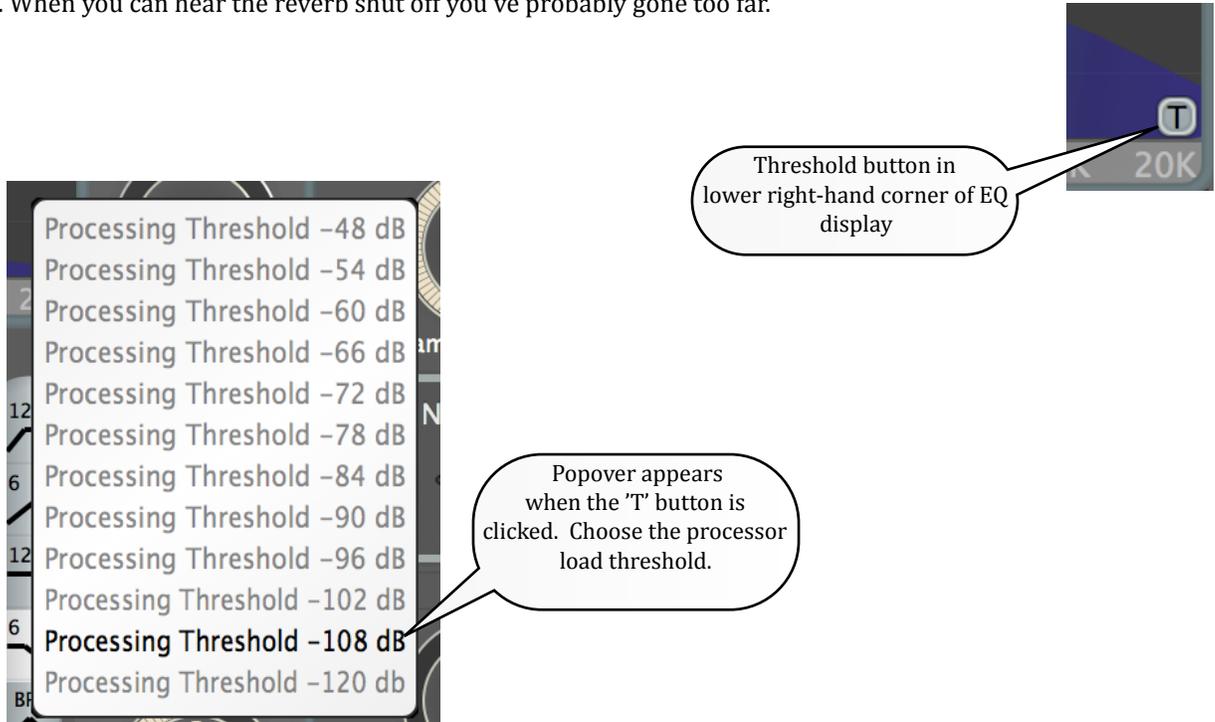
The output controls at the lower-left area allow the early reflections and late reverb levels to be balanced and equalized.



Changes in the filter are shown above in the main meter display. Input EQ is shown by a white line. Reverb EQ is shown by a red line and Early EQ by a blue line.

5.8. [Processor Threshold](#)

Conserving processor power is always important, especially in cases where the mix is made of small segments of audio. There's no reason for a reverb to run if there's not something in it. The threshold button allows you to determine just where the reverb stops and starts processing. When the signal falls below the threshold, reverb stops and CPU usage is greatly reduced. 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 mix, then why not try -120. When you can hear the reverb shut off you've probably gone too far.



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

Important note: Some DAWs attempt to lessen CPU load by turning off a plugin when the DAW thinks the plugin is idle. This may be called Dynamic Plugin Processing or something like that. This doesn't actually work very well. R4's built-in threshold is quicker and won't accidentally turn off the plugin for large delays. You should turn off Dynamic Plugin Processing when running R4.

### 5.9. [Scaleable Display](#)

R4 will analyze your display size at startup and will give you options for window size. These options are shown as a Zoom button in the upper left corner of the plugin window. Pressing this button will double the size of the plugin window<sup>2</sup> (the button will then change to “-”). If you save plugins with your project, window size and position will be recalled. When loading a new plugin instantiation, R4 will default to the smallest window size. If zoom cannot be supported, the zoom button will not appear.



<sup>2</sup> GUI size may not double on smaller monitors. In that case, it will grow as much as possible

5.10. [Basic Controls](#)

In addition to the output EQ, mix engineers like to have a few more controls front and center. Those are controls for Wet/Dry Mix, Predelay, Trim, Reverb Time and Warp on/off. In R4, those controls are always available.

The image shows a vertical control panel for a reverb plugin. It features several knobs and buttons with callout boxes explaining their functions:

- Wet:** A knob at the top for the Wet/Dry Mix, with a callout: "Mix control (only used when plugin is inline)".
- Mix:** A display showing "13 ms".
- Predelay Time:** A knob for Predelay Time, with a callout: "Predelay helps separate reverb from the source, improving intelligibility." and another callout: "You can also flip predelay into tempo mode so that you can relate predelay to note values." Below it is a dropdown menu set to "Tempo: Off".
- Reverb Time:** A display showing "2.73 seconds".
- Trim:** A knob for Trim, with a callout: "Too long? Too short? A quick fix is right here." and another callout: "Is the overall level too high or low? You can make a quick adjustment right here."
- 0.0 db:** A display showing the current trim level.
- Warp:** A button at the bottom labeled "Warp: Off", with a callout: "Turn Warp on or off. Each preset has its own unique values for Warp. You may find a whole new sound just by clicking the button."

### 5.11. [Edit Subpages](#)

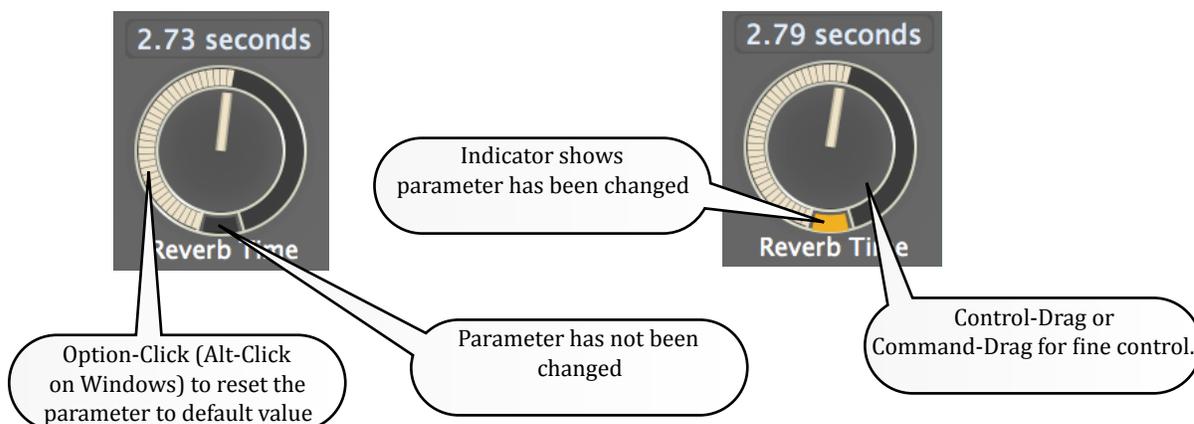
While R4 are designed for ease of use, a curious mix engineer may wish to get deeper into the plugin. The buttons at the lower right-hand portion of the window allow any of the remaining groups of parameters to be accessed.



The following sections will describe each subpage.

#### 5.11.1. [Note about Knobs](#)

The position of a knob can show you about the value of a parameter. An indicator at the base of the knob can also show you if the parameter value has been changed from the preset value. The knob also has some additional tricks.



5.11.2. [Reverb Attack](#)

This page controls the way that audio energy enters the reverb tail.

The image shows a control panel for 'Reverb Attack' with several parameters and callouts:

- Reverb Type:** A slider at the top with labels 'Plate', 'Chamber', 'Hall 1', and 'Hall 2'. A callout points to the 'Hall 2' position, stating: "Controls the internal structure of the reverb."
- Diffuser Size:** A knob with a 'Linked' button and a '48%' value. A callout states: "Controls detail size of surface material."
- Diffusion:** A knob. A callout states: "Controls the amount of effect of surface material."
- Signal Distribution:** A bar graph showing the distribution of signal into the reverb tail. A callout states: "Displays approximate distribution of signal into reverb tail". The bars are white, with the rightmost ones transitioning to red.
- Envelope Attack:** A knob with a value of '37'. A callout states: "Controls early/late distribution of reverb attack."
- Envelope Time:** A knob with a value of '104 ms'. A callout points to the 'Tail' button below it, stating: "Controls duration of reverb attack."
- Envelope Slope:** A knob with a value of '2000 Hz'. A callout states: "Controls filter on later parts of attack. Hint: Notice the red color on the graphic above. The redder it is, the more high frequencies have been removed."
- Buttons:** 'Attack', 'Tail', 'Early', and 'Warp' are located at the bottom of the panel.

5.11.3. [Reverb Tail](#)

This page controls characteristics of the tail--the most noticeable part of a reverb.

The image shows a digital control interface for the 'Reverb Tail' section. It features several knobs, sliders, and buttons. Callouts provide detailed explanations for each control:

- Reverb Size:** A knob set to 37.0 Meters. Callout: "The size of the reverberant space".
- Xover Frequency:** A knob set to 650 Hz. Callout: "Dividing line between low/mid frequencies".
- Low-Mid Balance:** A knob set to 49 (Low). Callout: "Reverb time balance between low/mid bands".
- Damp Frequency:** A knob set to 2400 Hz. Callout: "Dividing line between mid/high frequencies".
- Damping Factor:** A knob set to 6. Callout: "Strength of high-frequency rolloff (air absorbcency)".
- Tail Width:** A slider between 'Narrow' and 'Wide', currently at 'Normal'. Callout: "How wide is the tail (careful with this one). Width of early reflections is controlled on the 'early' page".
- RvbDelay Time:** A knob set to 0 ms. Callout: "Time to be inserted between onset of early reflections and time of reverb tail.".
- Tail Suppress:** A knob set to 0.0 dB. Callout: "Choose between absolute and tempo mode for the reverb delay".
- Tail Recovery:** A knob set to 0.20 Sec. Callout: "Tail gain reduction meter with clipping indicator".
- Attack:** A button. Callout: "Amount of compression to add to reverb tail. Serves to lower reverb level during strong attacks".
- Key:** A dropdown menu set to 'Input'. Callout: "Determine where the level is measured for tail suppression. Normally, Input is a good choice. But for long reverb delay, Output or Both might be a better choice.".
- Release:** A button. Callout: "Release time after tail falls below suppression threshold. Range of this parameter is dependent on reverb time.".

5.11.4. [Early Reflection](#)

Early reflections affect our sense of audio placement--distance and environment.

The screenshot shows a control panel for 'Early Reflection' with several parameters and a visual feedback window. Callouts provide the following information:

- Visual Feedback Window:** Shows a graphic approximation of the early reflections. The bars represent the amplitude of reflections over time, with a red color gradient indicating the filter applied to later reflections.
- Early Width:** A slider control ranging from 'Narrow' to 'Wide'. A callout notes: 'Control the apparent width of the early signal. Width of the reverb tail is controlled on the 'Tail''. Another callout explains: 'Controls filter of later reflections. The lower the value, the darker the late reflections. Hint: watch the red coloration on the graphic.'
- Early Attack:** A knob set to 45. Callout: 'Controls early/late distribution of reflections.'
- Early Time:** A knob set to 75 ms. Callout: 'Controls time over which we hear reflections.'
- Early Slope:** A knob set to 1850 Hz. Callout: 'Controls time over which we hear reflections.'
- Early Pattern:** A knob set to 'R2'. Callout: 'Choose an early reflection pattern.'

At the bottom of the panel are buttons for 'Attack', 'Tail', 'Early', 'Warp', 'Chorus', and 'Gate'.

The view window is similar to the reverb attack window and gives a very good sense of what's going on when parameters are adjusted. In these examples you can see changes in Early Attack, Early Time, Early Slope and different Early Patterns.

Three side-by-side visual feedback windows showing different reflection patterns. The first window shows a dense pattern of many vertical bars. The second window shows a pattern with fewer bars, some taller than others. The third window shows a very sparse pattern with only three vertical bars. A callout points to the third window:

This sparse pattern is the Vintage pattern. It's used to help get the sound of old hardware devices

5.11.5. [Warp](#)

Warp is something special. It's used to condition input and also to change the word size of the reverb. It can be used to emulate analog gear. It can also be used to get a sound that's very similar to older hardware devices.

Determine the threshold of the input compressor. Signals above the threshold are compressed.

Determine gain boost or cut below the compression threshold.

Determines how quickly the compressor responds to signals above threshold

Determines how quickly compressor responds as signals drop below threshold

Gain reduction meter with clipping indicator

Threshold for downward expander to eliminate noise from compressor

Choose a knee for the compressor.

Apply a hard limiter to the input compressor. Signals above 0dB are limited aggressively when the limiter is on. Without the limiter, there may be overshoots that must be managed with trim or gain adjustments in the channel.

Select an overdrive to add analog warmth or a little distortion

Overdrive applies to signal below this crossover

How much signal above overdrive crossover is passed through

How much overdrive

Change the word size of all processing in the reverb. Create a more 'vintage' sound

Gain correction for warped signal. Allows better level-matching between warped and unwarped

Copy all warp parameters so they can be pasted into another preset. On many workstations, the Command-c or Control-c combinations will also work.

Set all warp parameters to neutral values so that it has no effect. On many workstations, the DELETE key on the keypad will also work.

When warp parameters have been copied, the paste button will appear. On many workstations, the Command-v or Control-v combinations will also work.

Parameters shown in the interface include: Threshold (-20.0dB), Compression (6.0dB), Attack (2 ns), Release (30 ms), Knee: 9, Limiter: On, Cut: -72, Warm 1, Overdrive Type, Overdrive Xov (4000 Hz), Drive (100%), High Passthru (OFF), Word Size (18-bit), Warp Trim (0.0 db), and buttons for Clear, Copy, Paste, Early, Gate, and Warp.

Chorus is used to control movement of the tail. Chorus effects can go from unnoticeable to gently undulating or to wild vibratos. There is an additional form of modulation available when Hall2 is chosen on the Attack page. Density modulation causes a constant change of density in the reverb tail. This allows for life in the tail without obvious pitch modulation. Both classic chorusing and density modulation can be used at the same time.

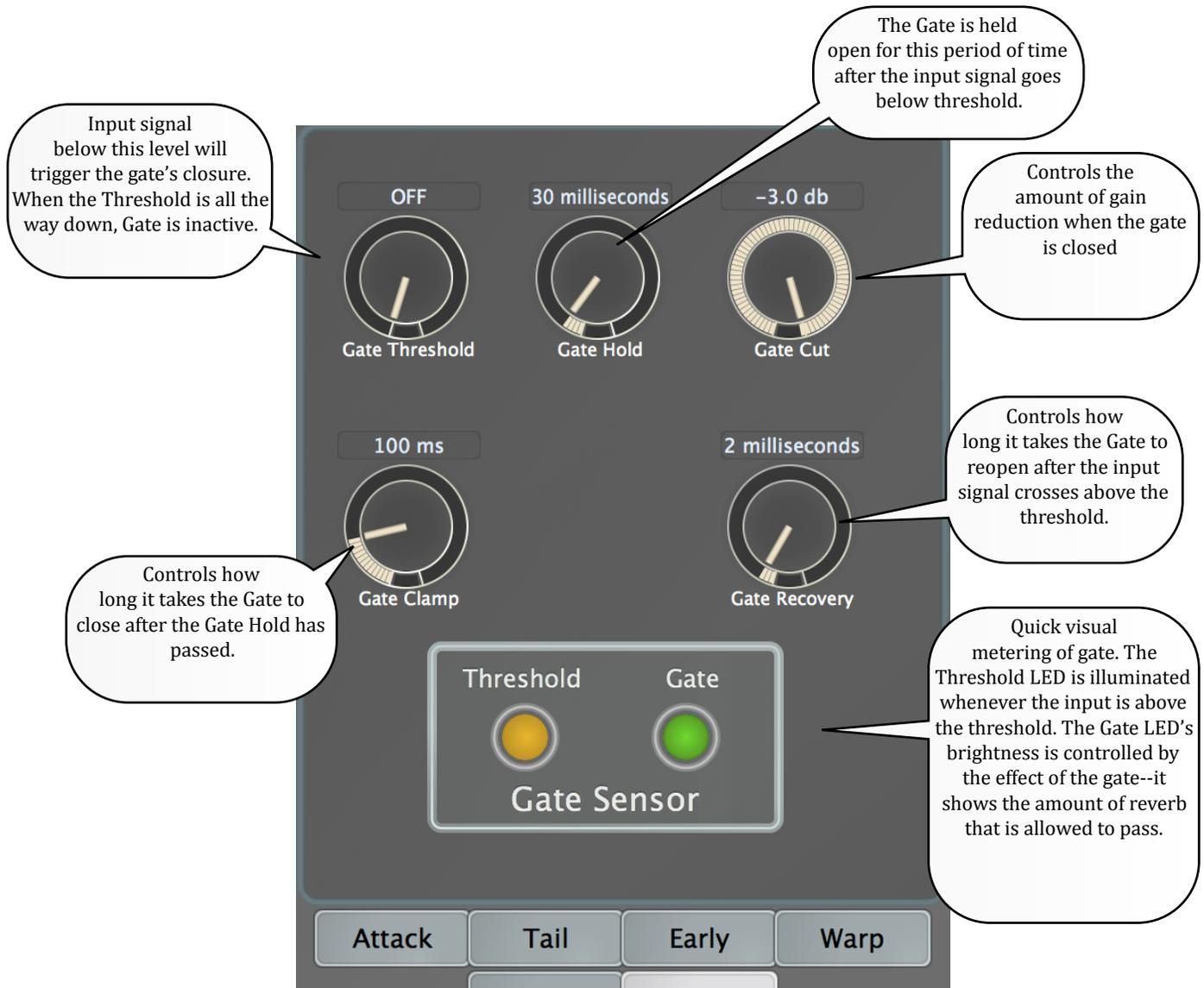
It is also possible to modulate early and tail EQ. This can be subtle or can create a sweeping effect when using a notch filter.

The image shows a screenshot of the 'Chorus' control panel in a software interface. The panel is dark grey with white text and features several knobs and a slider. At the top, there are four labels: 'Pitch', 'Pitch(fat)', 'Rand', and 'Rand(fat)'. Below these is a horizontal slider with a white knob. The main title 'Chorus' is centered. Below the title are two columns of controls. The first column has 'Chorus Rate' (0%) and 'Density Rate' (51%). The second column has 'Chorus Depth' (0%) and 'Density Mod' (82%). Below these are 'Early Rate' (3%) and 'Tail Rate' (6%). At the bottom are four buttons: 'Attack', 'Tail', 'Early', and 'Warp'. Six callout boxes provide detailed explanations for the controls:

- Chorus Rate:** Controls the speed of the chorus effect.
- Chorus Depth:** Controls the strength of the chorus effect.
- Density Rate:** Controls the speed of the density modulation effect. This control is only available in Hall2.
- Density Mod:** Controls the strength of the density modulation effect. This control is only available in Hall2.
- Early Rate:** Controls the modulation speed of the early EQ. Amount is controlled on the main page.
- Tail Rate:** Controls the modulation speed of the reverb tail EQ. Amount is controlled on the main page.
- Rand(fat) Slider:** Controls the pattern of the chorus oscillators. In general, the 'fat' settings will have little in the way of obvious pitch change. The normal (non-fat) settings may have quite noticeable pitch shift.

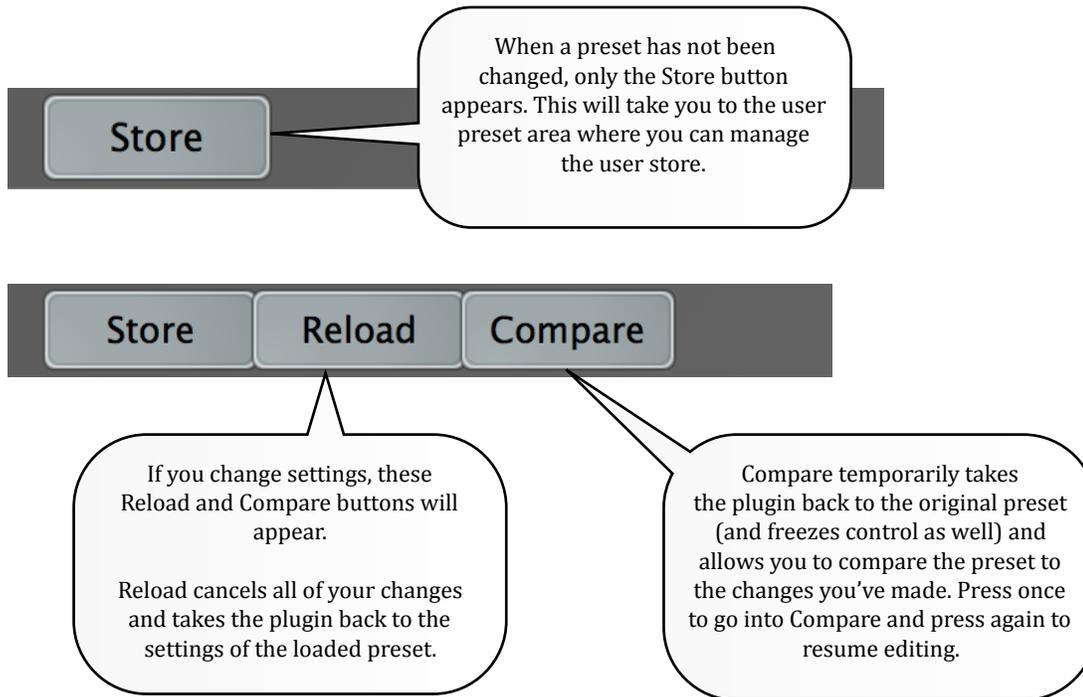
5.11.7. [Gate](#)

The Gate allows the reverb levels to be controlled by the characteristics of the input signal. This can be used for special effects (giant snare drums from the 1980s), but can also be quite helpful in matching ADR to the characteristics of location sound.



### 5.12. [Compare and Reload](#)

At the bottom left of the plugin, you'll find ways to access the library as well as ways to compare and undo changes you've made to current settings.

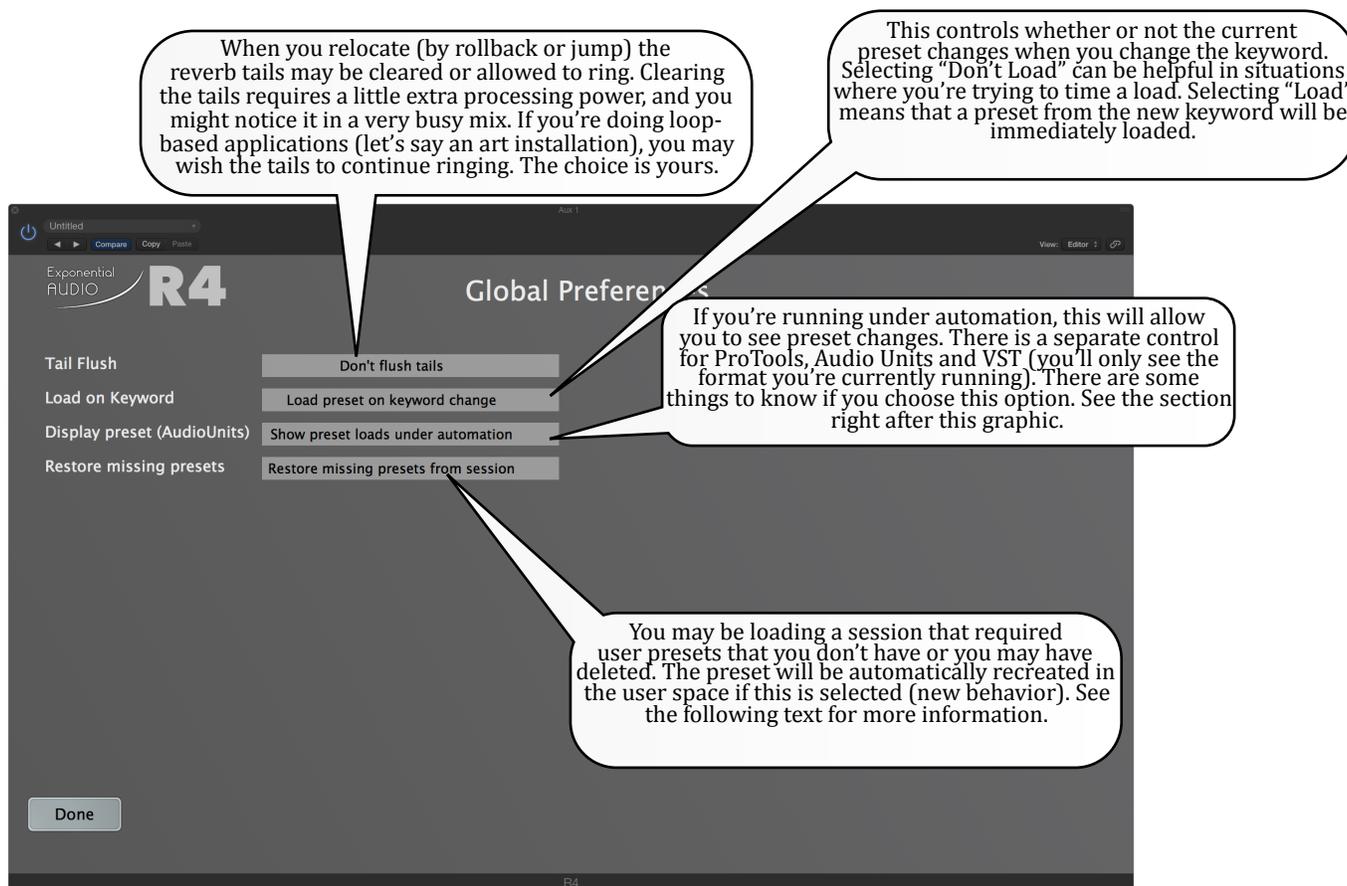


### 5.13. [Settings stored with job](#)

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 R4 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. R4 now has an option (on the Pref page) to restore those presets back into the user area.

## 5.14. 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.



### 5.14.1. 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).
- 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. It won't affect your automation—it's just a display issue.

The Restore Missing Presets option attempts to restore user presets from the session back into your user space. You may have received a job from someone else (they should have exported their user presets and sent them to you), or you may have deleted the user preset from your own folder. The restored preset may not completely match the missing original. Keyword data will be missing, and some parameters may have been edited. It's always best to export your user presets to an archive folder, but this option makes the best of an imperfect situation. You can turn the option off to restore the behavior of earlier versions of the plugin. In that case, the Keyword/Presets area will display a message that the preset is missing. In either case, the session data itself will be correct.

5.15. [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.

The screenshot shows the 'Exponential Audio R4' version information page. It features a dark grey background with white text. At the top left is the 'Exponential AUDIO R4' logo. Below the logo is the instruction 'Click on the logo to exit this page'. The main content is organized into several rows, each with a label on the left and a value on the right:

- Version:** Version 1.0.0 Release
- Data:** Feb 16 2017, 07:19:30
- Architecture:** 64-bit
- Build Type:** Protected
- Format:** AAX by Avid
- Workstation:** Avid Pro Tools
- SR:** 44100
- I/O:** 2 -> 2
- Copyright:** Copyright 2016-2017 by Exponential Audio LLC. All rights reserved.
- Logfile:** /Library/Logs/ExponentialAudio/R4Log.txt

Below the fields are three links: 'Exponential Audio Website' (yellow), 'Open User Guide' (yellow), and 'Request Help from Exponential ...' (yellow). At the bottom, a green message states 'You are running the current version'.

Callout boxes provide the following information:

- Version information:** Please provide this to iZotope if you have a problem.
- Format:** This will depend on the DAW you are using. Please provide this information to iZotope.
- Logfile:** You may need to find the log file and send it to iZotope. Here's where you can find it.
- Exponential Audio Website:** Takes you right to the iZotope website.
- Open User Guide:** Launch the user guide in PDF viewer.
- You are running the current version:** Update reminder. At present it shows that you are running the latest release, so you don't need to update.
- Request Help from Exponential ...:** Start a help ticket.

5.16. [Update Notification](#)

If your computer is connected to the web, you may see a notification like the one shown on this graphic:



This notice is also a link. Click to be taken directly to the download area.

This indicates that a newer version of the plugin is available. If you click on the text, you'll be taken to the download page where you can get the newest version. The plugin will never be automatically updated, so you can update when it's convenient for you.

If you're not connected to the web, be sure to visit [iZotope](#) from time to time so see if newer versions are available.

## 6. Saving Sessions

### 6.1. Settings stored with session.

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 R4 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.

### 6.2. Missing User Presets in a Session

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.

## 7. [Editing, Saving, Importing and Exporting](#)

### 7.1. [Editing](#)

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

#### 7.1.1. [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.

#### 7.1.2. [Editing by Typing Values](#)

Parameters with knobs also have display areas. Sometimes it's simpler simply to type in the value you want. R4 will do its best to make sense of what you've typed.

#### 7.1.3. [Editing by Switches](#)

A few parameters (such as Reverb Type) use a multi-position switch. Just click where you want the switch to go.

#### 7.1.4. [Editing by Buttons](#)

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

#### 7.1.5. [Editing by External Controller](#)

iZotope supports EUCON controllers as well as most recent Avid/Euphonix control surfaces. The quality of non-Avid EUCON implementations is spotty. The Cubase EUCON translator crashes pretty dependably. AudioUnits implementations display parameter values in the range of 0-1, but are often buggy.

#### 7.1.6. [Special treatment of Mix parameter](#)

Nearly all parameters are saved with presets (built-in or user-created), but 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 a plugin instance. This is to help you in auditioning presets. Any wet/dry balance will be preserved as you try out different presets.

#### 7.1.7. [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?

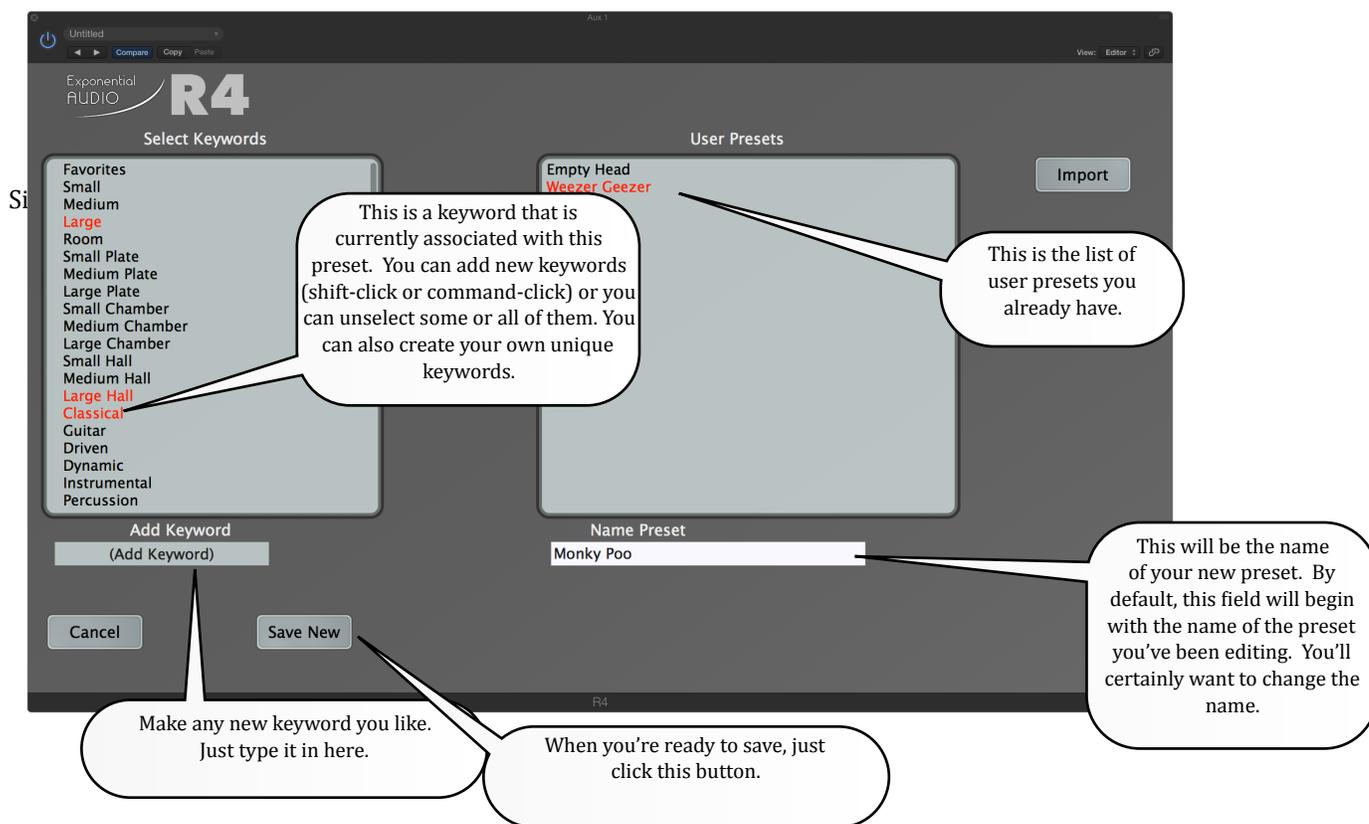
Most modern-day mix engineers use more than one workstation program. This often means that presets you created in one program are not available to another. This is especially true if the workstation program uses different plugin formats (AU, VST, etc). The workstation-specific method does not create 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.

## 7.2. 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. And you can import presets that have been sent to you or shared by others in your facility.

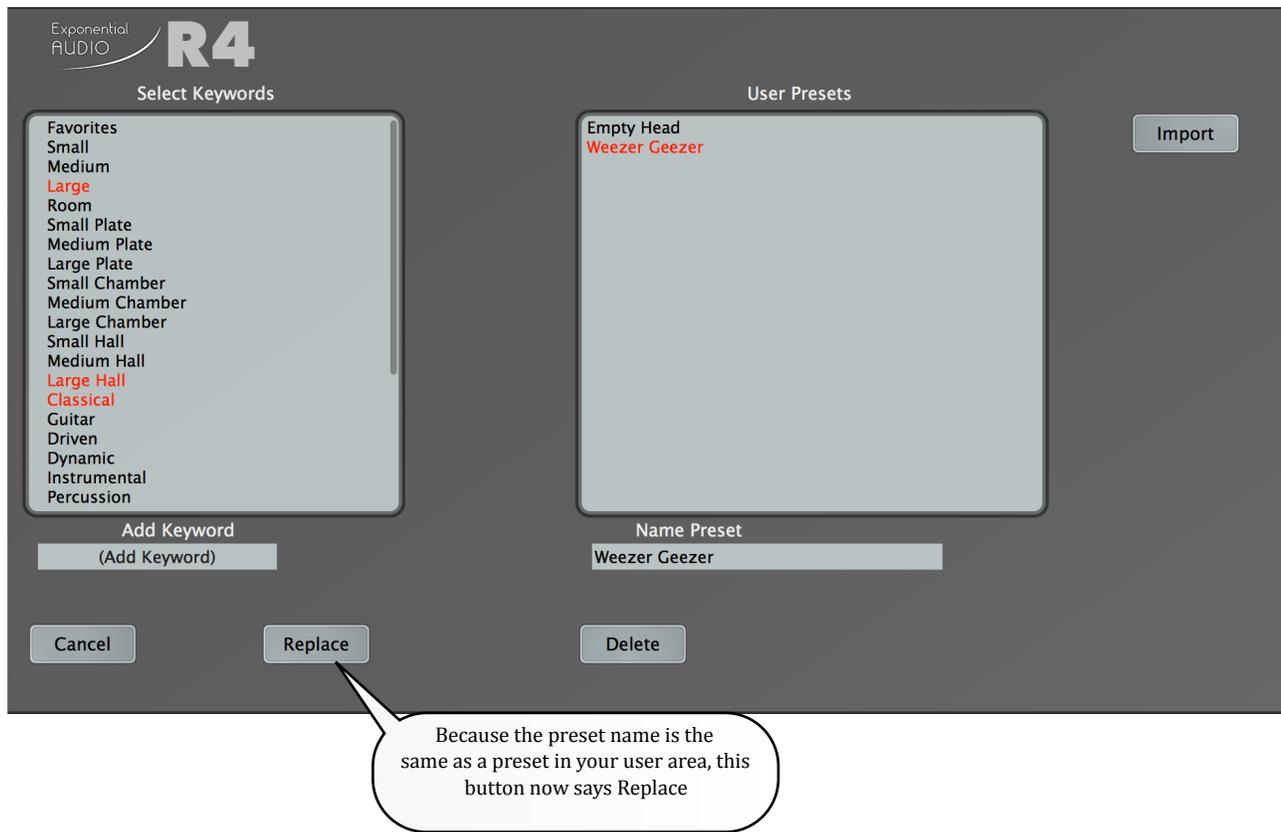
### 7.2.1. Storing a preset you've created

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:



### 7.2.2. [Making changes to an existing user preset](#)

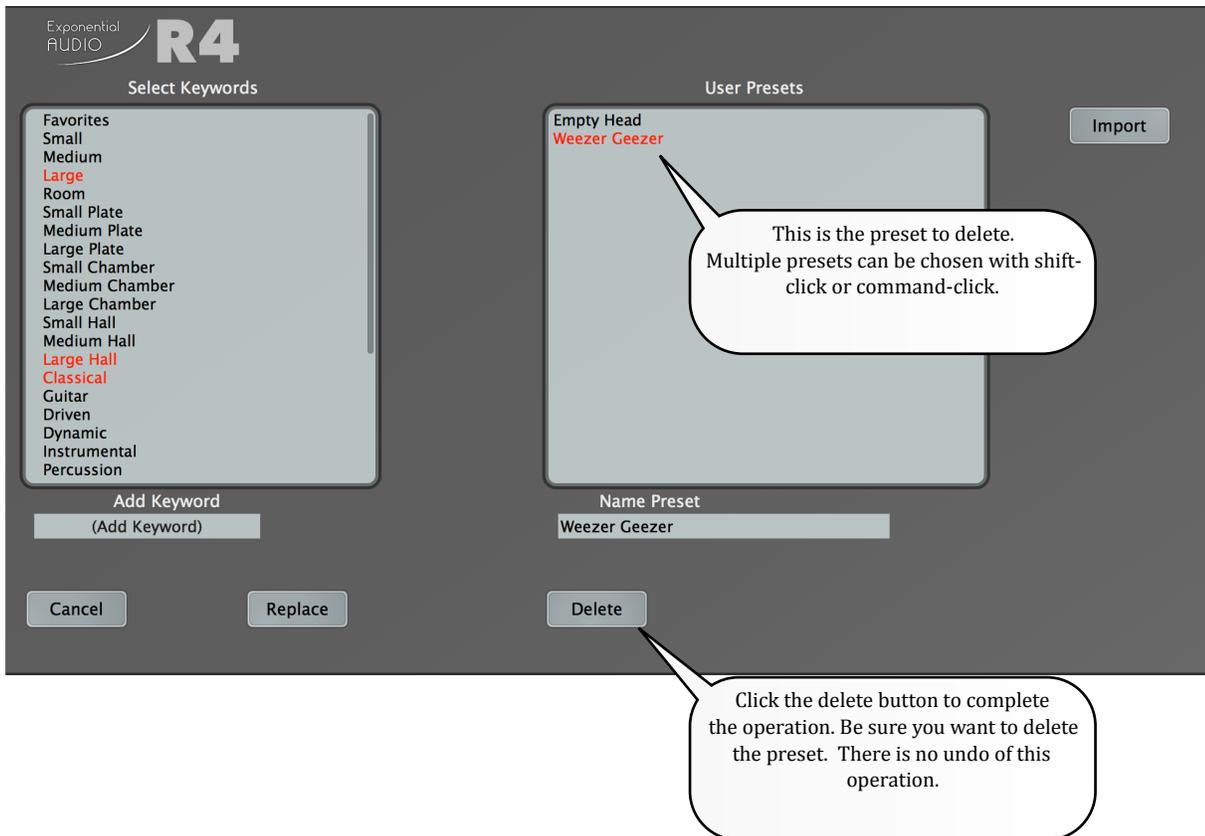
There are always a few changes you'd like to make after you save a preset. To make those changes, load the preset and edit. When you're ready, click the Store button. You'll notice a very small difference in the store page:



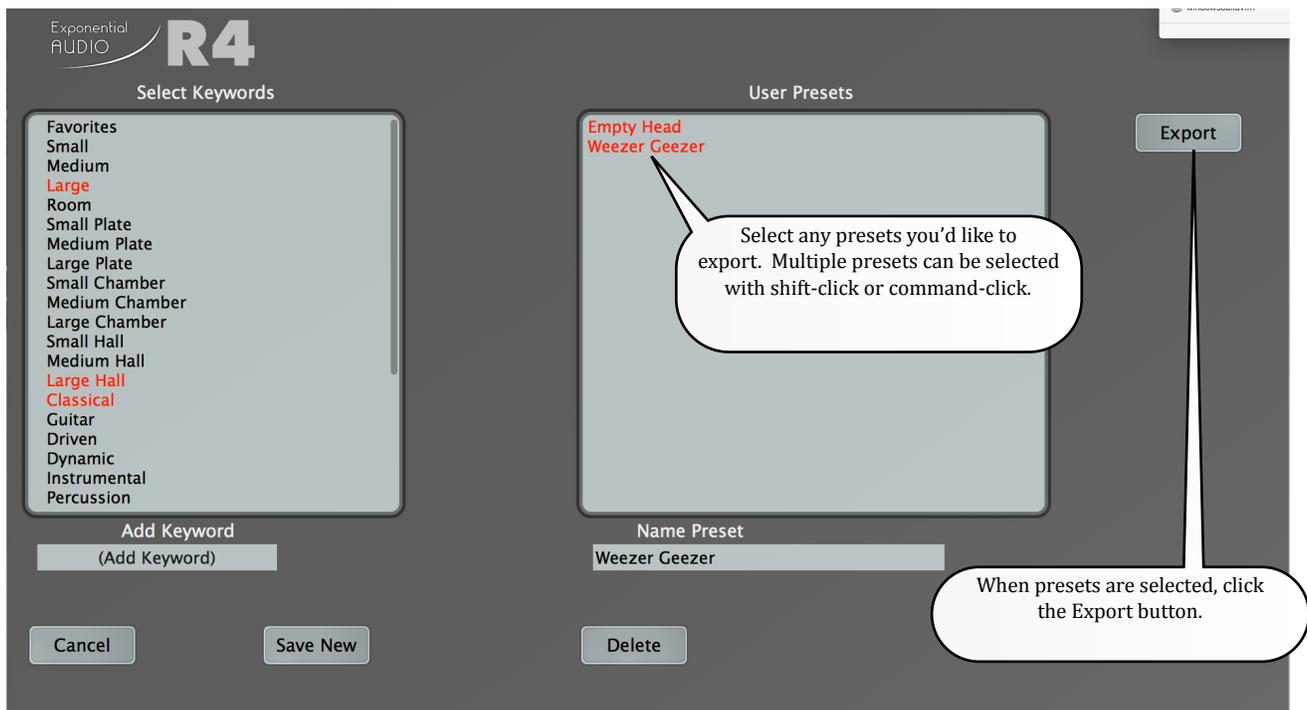
You can still change and add new keywords. As soon as you press the Replace button, your preset is updated. If you change the preset name, the button will revert to "Save New".

### 7.2.3. [Deleting a preset](#)

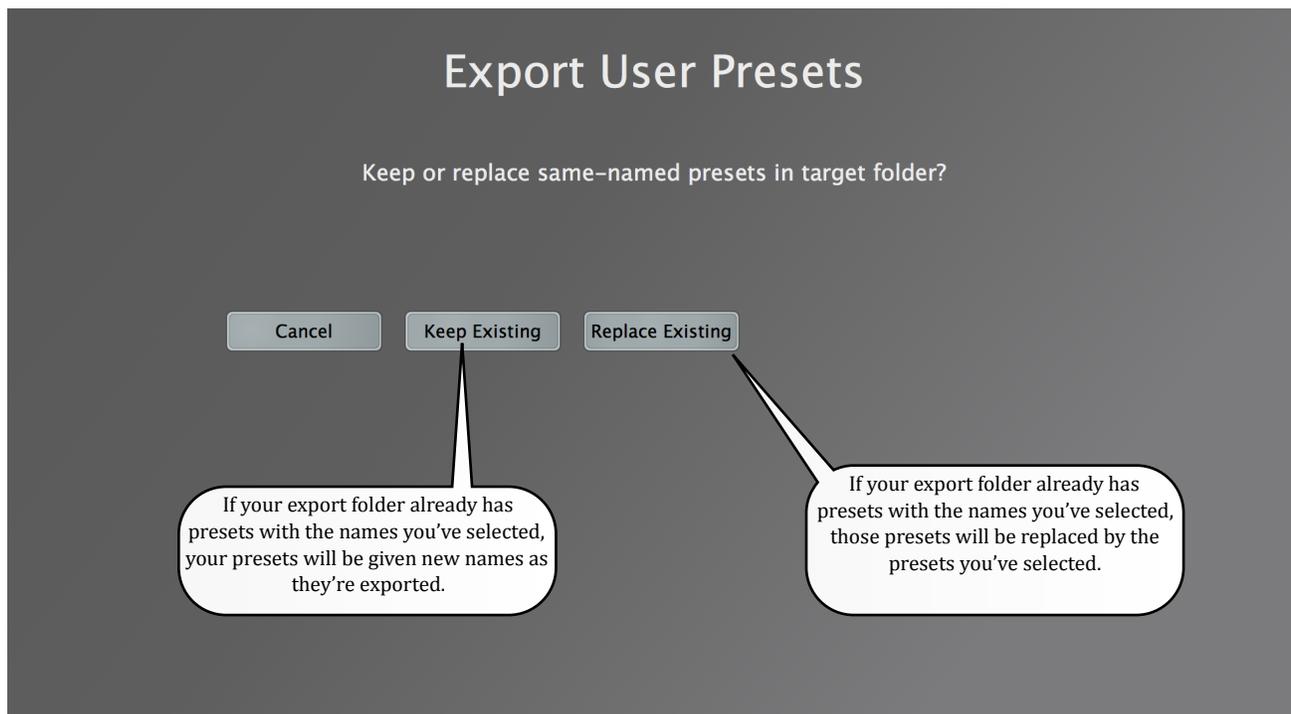
Once in a while, it's time to get rid of a user preset. Press the store button and select any presets you wish to eliminate:



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:



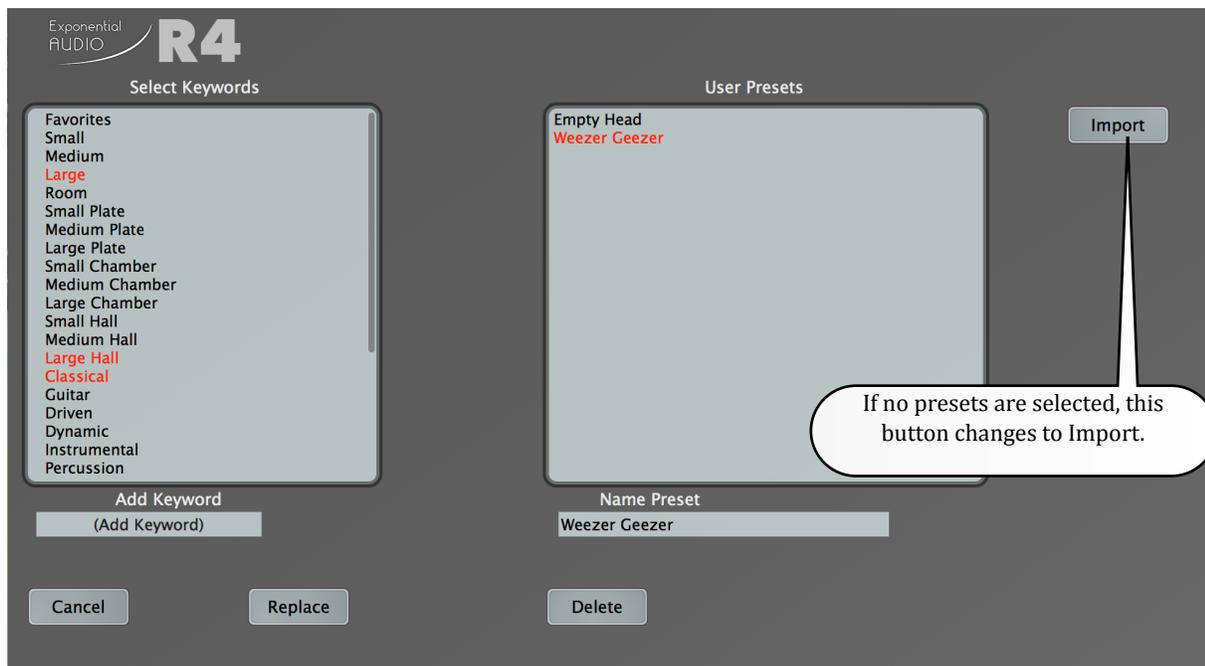
As soon as the Export button is clicked, you'll see a new window:



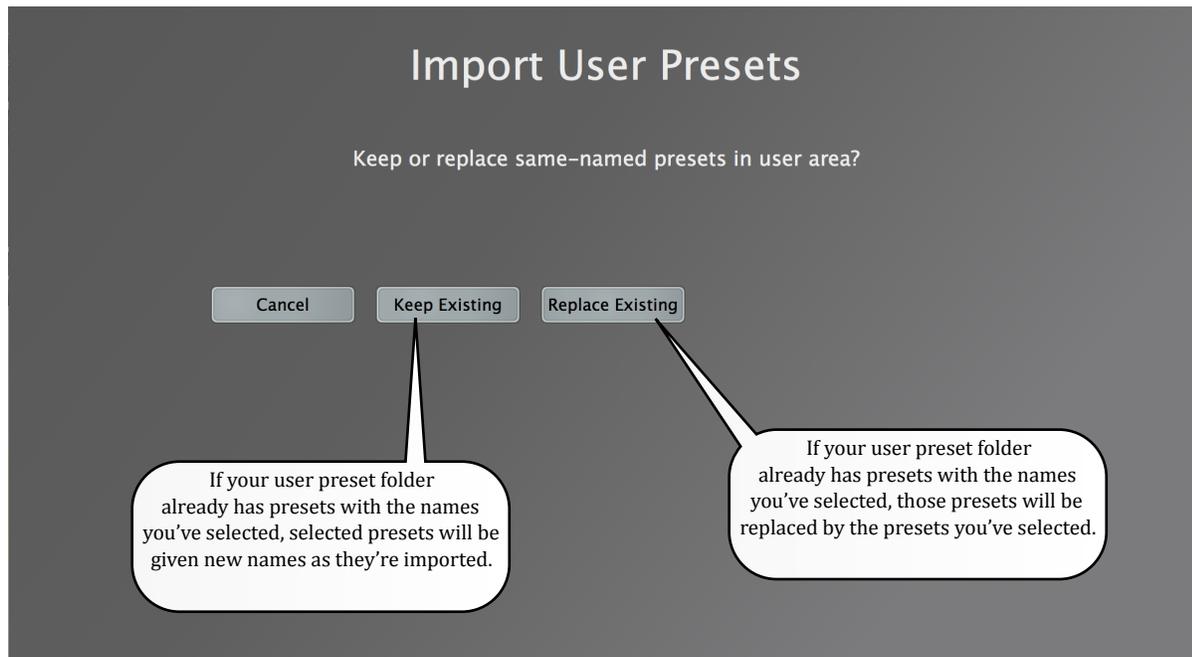
Your target folder may have presets of the same name. This gives you the choice to replace them or not. After you make your choice, you'll be taken to a standard Mac or Windows file saving window.

7.2.5. [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.

## 8. [The Algorithms and their Parameters](#)

### 8.1. [Reverb for Newbies](#)

If this is your first experience with reverb, you might be confused by some of the terms. The two most important terms are Early Reflections and Tail. The early reflections represent the first few bounces of sound--off the stage floor, off the sidewalls. After a hundred milliseconds or so, the number of reflections grows so much that you perceive only that pleasant effect of the sound gradually dying away. This second part is called the tail (although old hands might call it 'echo' as well).

R4 generates both of those components in ways that are both powerful and subtle. Experience is always the best teacher in learning how to get the most out of it. Experiment with the presets. See how they differ from each other and learn how parameter changes can affect the sound of the reverb.

Don't be afraid to use different presets on individual tracks or subgroups. Reverb can help place sounds into three dimensions and make each component sit in the mix more nicely. Reverb is almost always most effective when it's subtle. Many a mix has been ruined by the too-liberal application of reverb. Dial in what you think you need and then back off a notch.

### 8.2. [Description of the Algorithm and its applications](#)

If you're looking for a colorful character reverb, then R4 is the reverb for you. It's designed to give a rich, produced flavor to any material. It can also help to "fatten up" a recording that might be thinner than you like.

### 8.3. [Parameter Descriptions](#)

#### 8.3.1. [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 a reverb is placed on a send path, shared by several sources. In that case, the mix should stay at 100% and reverb level should be controlled by changing the level of the channel strip holding the reverb. 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 reverb channel strip and the original signal channel. While DAWs are very good at delay compensation, there's always the chance of cancellation. Don't do it.

#### 8.3.2. [Predelay](#)

Predelay is a delay added to the entire effect. In a general sense, it represents the difference in time between the direct audio signal and the first reflections reaching the ear of the listener. Practically, it adds a little (or a lot of) separation to the dry signal and the reverb. This can work wonders in increasing the clarity of the signal while still adding warm and enveloping reverb. Depending on the value of the Predelay Tempo Mode parameter, predelay can be expressed directly (in milliseconds) or related to tempo (16th-note, etc).

#### 8.3.3. [Predelay Tempo Mode](#)

This is a switch that toggles Predelay from Absolute to Tempo mode.

#### 8.3.4. [Reverb Time](#)

Reverb Time works in conjunction with the [Reverb Size](#) parameter. Reverb Time may be seen as the reflectivity of the space you're modeling. More reflectivity (harder surfaces)—no matter the size of the room--will cause the reverberant energy to last longer. A small Reverb Size with a long reverb time will produce a long reverb with dense reflections and perhaps some coloration. A large reverb size with a shorter reverb time may also create a longer length with lower density and a more natural sound. It's best to test these parameters with impulses such as clicks or snare drum strikes.

#### 8.3.5. [Trim](#)

This is a master gain for the current preset. Preset should be designed so that 0dB is the appropriate value here. But sometimes the character of the input signal may require a change. This allows the overall wet level to be quickly adjusted.

#### 8.3.6. [Early Level](#)

The early signal may be thought of as the energy that's only been reflected off one or two surfaces. It can give the listener a sense of position relative to the sound source (near/far) and also give some sense of the area immediately around the source (boxy, open, etc). The Master Early Level parameter gives the mix engineer control over the level of this component. If the studio is blessed with a good recording space, it might make sense to reduce this level. If a sample library is in use, or if a vocal or drum booth has been used, a little more early signal can help to place the audio into a real space.

#### 8.3.7. [Reverb Level](#)

Reverb Level is used to control the amount of reverb 'tail' in the signal. The tail is the most noticeable part of the reverb--the energy that dies away slowly and gives the sense of a small or large space. Balancing the Reverb Level and Early Level can give a good sense of microphone placement. For example, a low level with a long reverb tail might indicate close mic'ing in a large space. If the reverb tail is higher and early level is lower, that might give a sense of more distant mic'ing.

#### 8.3.8. [Input Filt Freq](#)

This controls the cut-off frequency of the input filter. This can be adjusted to remove or accentuate input signals.

#### 8.3.9. [Early Filt Freq](#)

This controls the cut-off frequency of the early reflections filter. This may be for reasons of material--getting the most natural sound with the source audio--or to slot into a busy mix.

#### 8.3.10. [Tail Filt Freq](#)

This controls the cut-off frequency of the reverb tail. This value is frequently adjusted. This may be for reasons of material--getting the most natural sound with the source audio--or to slot into a busy mix.

### 8.3.11. [Input Filter Type](#)

Often there are signals in the input signal that you may need to control. You may have environmental rumble to remove. You may wish to add a little air. R4 give you the choice of six filter types:

- 1-pole (6dB per octave) lowpass
- 2-pole (12dB per octave) lowpass
- 1-pole highpass
- 2-pole highpass
- Bandpass with variable Q
- Notch (band-reject) with variable Q

### 8.3.12. [Early Filter Type](#)

Managing early reflections may require special attention to their frequency characteristics. As with the input filter, R4 provides a choice of six filter types.

### 8.3.13. [Early Modulation](#)

This controls the amount of modulation of the cutoff frequency for the early filter. It is expressed as a percentage of the distance between the specified cutoff frequency and 20 kHz. Rate is controlled on the Chorus page. The cutoff frequency is always modulated upward.

### 8.3.14. [Tail Modulation](#)

This controls the amount of modulation of the cutoff frequency for the reverb tail filter. It is express as a percentage of the distance between the specified cutoff frequency and 20 kHz. Rate is controlled on the Chorus page. The cutoff frequency is always modulated upward.

### 8.3.15. [Reverb Filter Type](#)

Managing the reverb tail often requires some adjustment of the tail's frequency characteristics. As with the input filter, R4 provides a choice of six filter types.

### 8.3.16. [Reverb Type](#)

This control adjusts many of the internal characteristics of the plugin. In general, plates are the most dense, with a little potential coloration. R4 provides a choice of two halls. Chambers are also quite dense, but without coloration. Halls are the least dense, with a little more obvious back-wall effects. There are two different Halls. Hall 1 resembles the reverbs of the late 70s and early 80s, with some obvious pitch artifacts. Hall 2 resembles reverbs of the late 80's and 90's, with much less pronounced pitch modulation.

### 8.3.17. [Diffuser Size](#)

Diffuser Size controls the feature size of the imaginary material that covers the wall of our space. Feature size is one way to describe what might be lined up along the wall. Your shelves full of Grammys would be small features. A row of life-sized Greek statues would be larger. In most cases, the 'linked' choice is best. Diffuser Size will be linked to Reverb Size. But the diffuser size can be controlled independently as well. In most cases, it's best to test with percussion and short reverb times.

### 8.3.18. [Diffusion](#)

When a sharp transient hits a wall, the way it reflects is driven by the shape of the wall, that row of Grammys, and the material that makes up the wall. There may be a single hard reflection, or there may be many smaller reflections with tiny time delays between them. This is diffusion. The diffusion control, unsurprisingly, controls the overall amount of diffusion. Once the basic Reverb Type and Diffuser Size parameters have been adjusted, this is used to make final adjustments. As a rule of thumb, sharper transients will benefit from more diffusion. But rules are made to be broken. Feel free to experiment.

8.3.19. [Envelope Attack](#)

The envelope parameters are among the harder parameters to understand. They control the way that the audio signal enters the reverb. In some cases they may affect your sense of microphone placement. In others they may affect your sense of listener placement. The user interface gives a strong sense of what's going on with these parameters. The narrow vertical bars indicate reflections (the number of bars and relational placement are only approximations for the purpose of illustration). Note: it's easier to hear the effect of the envelope parameters by turning early level off and using a short reverb time.

Low Attack Value

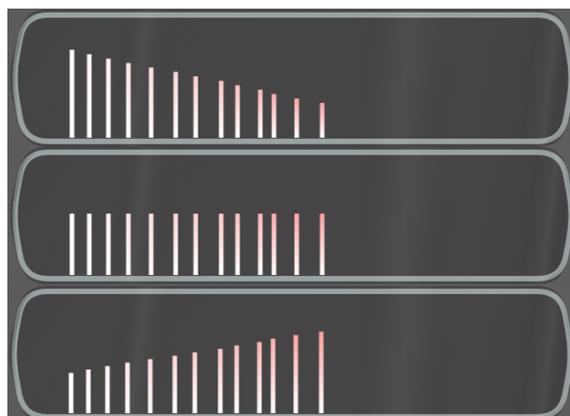
Early audio is stronger

Medium Attack Value

Audio evenly distributed

High Attack Value

Late audio is stronger

8.3.20. [Envelope Time](#)

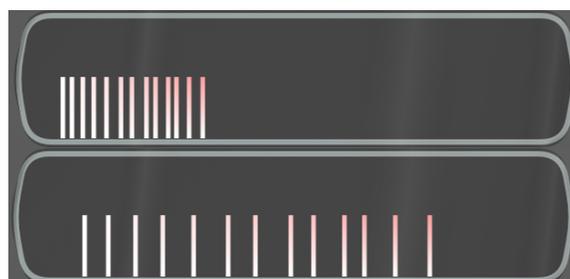
The time parameter adjusts the overall time of the reverb envelope. This can have a great effect on the sense of reverb distance and depth.

Short Envelope Time

Signal injection in a short time window

Long Envelope Time

Signal injection in a longer time window

8.3.21. [Envelope Slope](#)

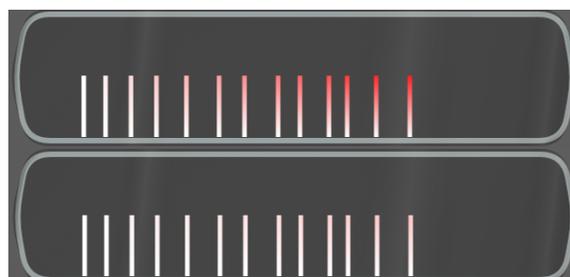
The reverb envelope has a lowpass filter for each delayed signal. Those filters are adjusted by this parameter. The lower the slope value, the more filtering on later signals. In many ways this is a model of air absorption. The red coloration on the delay bars helps to illustrate the effect.

Low Slope

Later energy is highly filtered

High Slope

Later energy is slightly filtered.



### 8.3.22. [Reverb Delay](#)

This parameter allows some separation between the early reflections and the reverb tail. In the majority of cases it should remain at zero. But in many situations, reverb delay can add some clarity to the mix. It can be especially helpful when adding reverb to accent microphones.

### 8.3.23. [Reverb Delay Tempo Mode](#)

This switch (located below the Reverb Delay knob) allows you to set the reverb delay into tempo mode. It allows the delay to be set to a musical value related to the tempo.

### 8.3.24. [Tail Suppress](#)

This dynamic process acts as a reverb “ducker”. It causes the reverb level to be lowered when the input signal is strong. Small amounts of tail suppression can be helpful in creating clarity when mixing voiceovers or instrumental solos. Larger amounts can create dramatic effects, such as a tail that blooms after a snare drum hit.

### 8.3.25. [Key](#)

This switch (located below the Tail Suppress knob) allows you to select the area of the signal flow that is used to control tail suppression. Normally, the Input level should be chosen. For longer values of Reverb Delay, the Output (the level of the reverb tail) might provide a better result. There’s also an option to choose both.

### 8.3.26. [Tail Recovery](#)

This parameter controls the recovery of reverb level after tail suppression ends. Short values combined with subtle suppression levels will make suppression effective without being obvious. Longer values can have the effect of extending a more constant reverb level.

### 8.3.27. [Reverb Size](#)

Reverb Size works hand-in-hand with the [Reverb Time](#) parameter. The size parameter gives you a general sense of the overall size of the space you're modeling (expressed in meters) and the time parameter controls the reflectivity of the walls. A larger size will lower the density of reflections and is generally more natural-sounding. But there's nothing like experimentation.

### 8.3.28. [Xover Frequency](#)

Natural reverberation in a large space typically lasts longest at the lowest frequencies. In very small reverberent spaces (locker rooms, for example), the lower frequencies may die away sooner. The reverb passes through a crossover filter, which is typically set to divide the low range from the mid range. This parameter controls that frequency. The Low-Mid Balance parameter controls how the reverb time is affected.

### 8.3.29. [Low-Mid Balance](#)

This parameter controls the way the reverb operates below and above the Xover Frequency. In the center position, low and midrange reverb time stays approximately the same (reverb time is always affected by the sort of audio material you use). Lower values of the parameter favor the low frequencies, meaning the midrange dies away sooner. Higher values favor the midrange and the lower frequencies die sooner.

### 8.3.30. [Damp Frequency](#)

In the real world, the highest frequencies die away sooner than midrange and low frequencies. This has many causes, including air absorbency and room treatment. Air absorbency is a function of basic humidity as well as humidity caused by a room full of breathing people. Room treatment typically means carpeting, absorbers on the walls, ceiling tile and so on. R4 gives you the ability to control the way these highest frequencies die away. The Damp Frequency parameter allows you to set the frequency above which this damping takes place.

### 8.3.31. [Damping Factor](#)

This parameter controls how quickly frequencies above Damp Frequency actually die away. The middle range approximates normal damping (your normal may differ). Lower values mean that the sound is darker and higher values mean it is lighter. Lower damping values may be used to simulate band-limited vintage equipment.

### 8.3.32. [Tail Width](#)

The reverb tail in R4 is naturally wide and enveloping. Depending on your application, you may need to vary this. A wider tail will open up the space. High widths may cause some cancellation upon fold-down. A narrower tail might be useful in focusing the source more tightly, especially when centering dialog. It's important to note that the width control applies only to the tail: Early reflections are not affected.

### 8.3.33. [Early Width](#)

This width affects only the early reflection part of the reverb. As with Tail Width, you should check mono compatibility when moving the width to wider values than Normal.

### 8.3.34. [Early Time](#)

The time parameter adjusts the overall time of the early reflections. This can have a great effect on the sense of soundstage. It can also be used to smooth the harshness of close mics. This parameter works in the same manner as Envelope Time

### 8.3.35. [Early Slope](#)

The reflection group has a lowpass filter for each delayed signal. This parameter affects the early reflections in the same manner as the reverb Attack Slope parameter.

### 8.3.36. [Early Pattern](#)

R4 allows you to choose any of several early reflection groups. There is an R2 group which will help you duplicate the sound of R2. There are several unique R4 groups (choose what you like). And there's a special Vintage group. This is a much sparser set of reflections (only three) which may help you recreate the sound of your favorite hardware processors, which typically have far fewer early reflections.

### 8.3.37. [Warp on/off](#)

This switch adds the warp effect. The effect itself is managed by the warp parameters, which you'll find in the final part of this section.

### 8.3.38. [Threshold \(Warp\)](#)

This is the threshold of the input compressor. Any incoming signal above the threshold will begin compressor operation. Below the threshold, the input signal is boosted by the amount of the "Compression" parameter. Special note: There's also a downward expander applied to very low level signals. This helps to keep noise from being boosted.

### 8.3.39. [Knee \(Warp\)](#)

This controls exactly how the compressor works. A soft knee means that compression is applied very gently—as soon as the threshold is crossed. This keeps compression effects from being noticeable. A hard knee means that compression has its strongest effect as the signal approaches 0dBFS. This can be quite audible, but is a classic effect for percussion.

### 8.3.40. [Compression \(Warp\)](#)

When positive, this controls the amount of gain added to an input signal before compression begins. When negative, it controls the amount of cut below the threshold.

### 8.3.41. [Limiter \(Warp\)](#)

This switch enables a hard limiter that's applied to a compressor. With the limiter on, any signals above 0dBFS will be limited aggressively. With the limiter off, it's quite possible that signals can overshoot 0dBFS. This can cause clipping if not managed later in the signal chain.

### 8.3.42. [Attack \(Warp\)](#)

This determines how quickly the compressor begins to act after a signal crosses above the threshold.

### 8.3.43. [Release \(Warp\)](#)

This determines how quickly the compressor begins to turn off after a signal crosses below the threshold.

### 8.3.44. [Cut \(Warp\)](#)

This sets a lower threshold for the compressor and is only active during compression. Normally, everything below the compressor threshold is boosted by the gain amount (determined by the Compression parameter). But often, very low level signals may be only noise—footfalls, breaths, leakage, etc. Any signal below the Cut level will not be boosted. For distance mics used in classical music, this should normally be set to a very low value.

### 8.3.45. [Overdrive Type \(Warp\)](#)

Allows any of several types of overdrive to be selected. This may be used to model analog electronics of the type you might see in the drive amplifier for a plate or chamber. The overdrive is not nearly as dramatic as it is in iZotope's Excalibur plugin. Its intent is to add some warmth to the signal.

### 8.3.46. [Overdrive XOv \(Warp\)](#)

Controls the crossover below which the overdrive works. Because overdrive actually creates high harmonics, it's important to have this crossover. Otherwise there can be aliasing effects.

### 8.3.47. [Drive \(Warp\)](#)

Controls the amount of drive. The higher the value, the more harmonics will be added. If not overdone, a subtle warm character can be added.

### 8.3.48. [High Passthru \(Warp\)](#)

This allows input signal above the crossover to be added back in. This may cause very interesting timbral effects, as this signal may reinforce or cancel harmonics added by the overdrive circuit.

### 8.3.49. [Word Size \(Warp\)](#)

R4 handles all audio in a floating-point format. The majority of older hardware devices cannot do this, and often have word sizes of 16-18 bits or lower. This parameter allows word size to be reduced, thereby adding the 'grain' that is beloved by some vintage fans.

### 8.3.50. [Warp Trim \(Warp\)](#)

A warped signal can have a significant level change from the same preset with warp off. This is especially true with the compressor is in place. This trim knob allows you to set a better level match between a warped and unwarped signal.

### 8.3.51. [Chorus Type \(Chorus\)](#)

This parameter lets you choose from four basic chorus types:

- Pitch - a regular modulation of pitch. This was a key feature of many reverbs in the late '70s and '80s.
- Pitch(fat) - similar to Pitch, except that pitch moves in two directions simultaneously. The effect is more a fattening of the sound than a chorus.
- Rand - pitch modulation that happens on a more random basis. If you wish to avoid the regularity of the 'Pitch' setting, then try this.
- Rand(fat) - Similar to Rand, except that pitch moves in two directions simultaneously. The effect is more a fattening of the sound than a chorus.

### 8.3.52. [Chorus Rate \(Chorus\)](#)

Adjusts the rate of the chorus effect.

### 8.3.53. [Chorus Depth \(Chorus\)](#)

Adjusts the depth of the chorus effect.

### 8.3.54. [Early Rate \(Chorus\)](#)

This controls the modulation rate of EQ for the early reflections. The depth of this effect is adjusted in the main EQ area.

### 8.3.55. [Tail Rate\(Chorus\)](#)

This controls the modulation rate of EQ for the reverb tail. The depth of this effect is adjusted in the main EQ area.

### 8.3.56. [Density Rate \(Chorus\)](#)

This is only enabled for the Hall 2 algorithm type. It adjust the rate at which the algorithm's density is modulated.

### 8.3.57. [Density Mod\(Chorus\)](#)

This is only enabled for the Hall 2 algorithm type. It adjusts the depth of density modulation. It is hard to describe this effect, so ears are recommended. Density modulation helps to break up room modes without adding pitch shift. Both traditional chorus and density modulation were designed to break up the effect of room modes, but they accomplish this in different ways. In general, Density Modulation is a more modern way of doing this. But both types fit squarely into the vintage reverb sound of the 70's 80's and 90's.

### 8.3.58. [Gate Threshold \(Gate\)](#)

The level of signal that must be coming into the reverb in order for the gate to stay open. When signal falls below this level, the gate will start to close over the time specified by Gate Clamp. If the threshold is off, then the gate will remain open and the reverb will be unaffected. Threshold is a sensitive parameter. The value you select will be determined by the material you are processing.

### 8.3.59. [Gate Hold \(Gate\)](#)

When the input signal falls below the gate threshold level, the Gate Hold parameter comes into effect. This is the amount of time that must pass before the gate begins to close. If new signal comes in before this time passes, the gate will remain open. This parameter is useful in shaping the gated reverb. It is also useful with choppy material and will keep the gate from thrashing open and closed.

### 8.3.60. [Gate Cut \(Gate\)](#)

Controls the amount that reverb level is reduced when the gate is closed. Low values mean that the gate effect is subtle. High values mean a much more audible effect.

### 8.3.61. [Gate Clamp \(Gate\)](#)

This controls how rapidly the gate will close after the Gate Hold period has passed. Short value cause the classic gate effect. Longer values are more natural in effect and may simply help to clear out the mix.

### 8.3.62. [Gate Recovery \(Gate\)](#)

This controls how quickly the gate will reopen when new signal enters the system. Generally short values are best, but longer values can create an interesting pumping effect.

## 9. [Getting Help](#)

### 9.1. [iZotope Website](#)

If you're having difficulty with the plugin, the first place to look is [www.izotope.com](http://www.izotope.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 R4 has difficulty connecting with your email program, it will place the log file on your desktop. Please send this file to [support@izotope.com](mailto:support@izotope.com), along with a description of your problem.

### 9.2. [iLok Website](#)

If you're having problem with licensing or with your iLok, then be sure to visit [www.ilok.com](http://www.ilok.com).

### 9.3. [Public Forums](#)

iZotope maintains a presence on several popular forums and blogs.

### 9.4. [Known Problems](#)

Check the FAQ on the iZotope website.

## 10. [Updates](#)

Be sure to check [www.izotope.com](http://www.izotope.com) periodically for bug fix updates to R4 . While you're there, be sure to check out new products coming available.

## 11. [Tech Notes](#)

Most modern DAW programs handle plugin delay compensation automatically. But if you need to know, the delay of a dry signal through R4 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. The live frequency display also takes cycles, so most of the time it's best to leave it off: its default position. Turn the display on to hypnotize the producer so he'll let you get your work done!