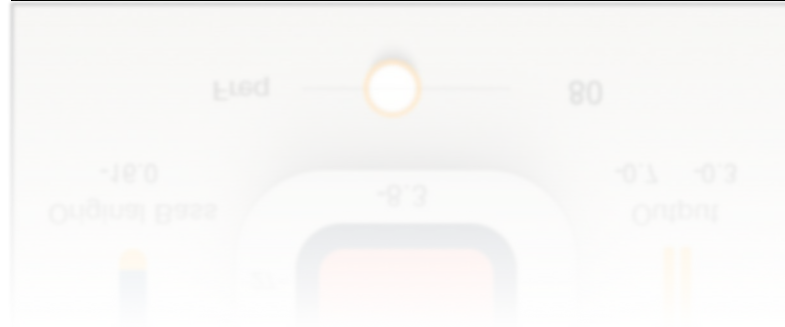# Renaissance Bass

User Guide

Introduction

Renaissance Bass lets you accurately reproduce low-frequency sounds on playback systems that cannot handle low-frequency signals. With Renaissance Bass, even bass-rich songs can be played through speakers that are too small, too inefficient, or (up to a point) too cheap to reproduce deep sounds. It also lets you add bottom to a mix without losing headroom.

Renaissance Bass uses a patented technology that Waves developed for the original MaxxBass processor, which is used to improve the listening experience with computers, televisions, and portable devices. To this tried-and-true technology, Renaissance Bass adds significant improvements in psychoacoustic bass performance, a streamlined interface, and clip-free signal flow.

What's the Secret?

Every sound has a fundamental: the lowest frequency from which harmonics are generated. The complexities of these harmonics help your brain distinguish instruments from one another and provide the information you need to faithfully experience the rich world of sounds. Sometimes the fundamental cannot be played back properly, which dramatically alters your experience of the low frequencies. A radio with a small speaker, for example, cannot properly reproduce the bass guitar in a rock song or the double bass in a jazz piece; the fundamental pitch is too low. Using an EQ to add more bass to the signal just makes matters worse, since it further stresses the playback system.

The brain, however, can reconstruct a "missing fundamental" from just the harmonics the ear is hearing. Your ear hears these harmonics, and your brain can then "go backward" to recreate the fundamental. You hear the low bass note, even though the speaker is not capable of reproducing it. You can also use Renaissance Bass to "tune" the low end of a room. If, for example, you are the FOH in a venue with a bottom end that is muddy or inarticulate, you may be able strip the signal of some of the low frequencies that are causing the mess, and then introduce higher harmonics that the room can handle. The result: a powerfully perceived low frequency without the muck that was keeping the real mix from coming through.
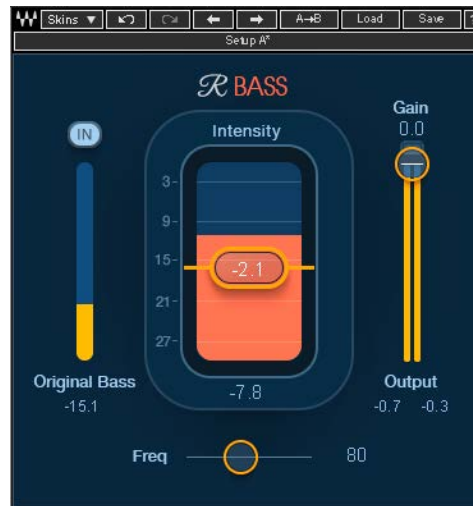
Interface

You can view the Renaissance Bass interface in any of three styles.
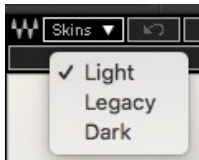
Select a style with the **Skins** drop-down menu, on the left side of the WaveSystem Toolbar, at the top of the interface.

| Light View | Dark View | Legacy View |

- All three skins have the same controls. When you change skins, the values don't change.

- The skin of the current instance sets the default view, so new instances will open with that skin.

Quick Start

Use Renaissance Bass to enhance and focus an instrument in a mix or to optimize a mix for a specific playback setup. The process is essentially the same for both uses.

1. Insert an instance of Renaissance Bass on the DAW track or mix buss, depending on how you want to use the plugin.
2. Set the Freq value to the approximate frequency of the signal's fundamental. This sets the harmonic sequence of generated harmonics. You can do this by ear or with a frequency analyzer.
3. Use the Intensity control to determine how much of the of generated harmonics signal will be added to the output signal.
4. Listen with the Original Bass in or out and decide which you prefer. The Original Bass is the input signal below the Freq setting. Whether or not to keep this part of the signal is very program-dependent.
5. Adjust the output level to avoid clipping. The RBass process can increase the output gain, so pay attention to output level.

EXAMPLE ONE: LIVE AND STUDIO MIXING

Let's suppose the bass guitar is not prominent enough in the mix. If you merely boost its low frequencies with an EQ, you may run into a few problems:

- The bass likely will not become more pronounced and richer, but rather it will be gooier, lost in a sea of low frequencies.
- Boosting low frequencies to excess with an EQ may stress the playback system, which is what we are trying to avoid.
- Boosting low frequencies will reduce headroom.

Start with these steps to enhance or bring forward a bass instrument:

1. Set Freq to about 100 Hz.

2. Adjust Intensity to a rather low level (say, -10 dB or so). A little bit of Intensity goes a long way. When you want to boost low frequencies without calling attention to the effect, start with Intensity settings below 0 dB. Excessively high settings will increase the perceived bass level but may result in bass distortion.

3. Use the Bypass switch to compare between the harmonically enhanced signal and the unprocessed signal. Use the Original Bass On/Off switch to hear the effect of completely removing the original bass signal.

4. Fine tune the Freq control to locate the frequency at which bass enhancement is best: too high and the bass effect will not be sufficient; too low and it may become inarticulate.

5. Choose between Original Bass in or out.

6. Set the output level. A red light above the meters indicates clipping.

EXAMPLE TWO: MASTERING

Insert Renaissance Bass on the Master buss.

Enhancing bass while mastering is similar to enhancing the bass of a single instrument. However, when you master you're working with a full mix, so your options are limited. The most important thing to consider when you master with Renaissance Bass is to start off with a very low Intensity setting and increase it slowly. Carefully tune the Freq control and pay close attention to any impact that you may have on other parts of the music. Use the Intensity and Freq controls interactively with small adjustments. Don't forget to set the output level.

EXAMPLE THREE: FIXED INSTALLATION

A very different situation occurs when you must prepare a mix that will always be played back with a specific speaker system that does not reproduce bass well. This could be a kiosk, a commercial installation, or any setting where the playback system is less than ideal. You need to know precisely what speakers will be used, and you need to have a set of these speakers to mix with.

Let's say you're designing the sound for an installation at a theme park. The speakers have 5-inch drivers and a cutoff frequency of about 110 Hz and you want to extend the bass response from these speakers. Since you know that the program material will be played only on this particular system, you can be more aggressive and replace the low bass completely with new harmonics. This keeps the small speaker from trying to reproduce the low frequencies that it's incapable of and saves on overtaxing the amplifier, all while sounding better than the speaker can actually sound!

1. Set Freq to the cutoff frequency of the playback speaker (in this example, 110 Hz).
2. Set Intensity to 0.0 dB and then raise it until the bass feels natural and balanced.
3. Fine tune the Freq and Intensity for the smoothest bass response. You can set up the processing with frequency sweeps and then work with the source material you are mixing.

These settings are optimized for a specific sound system. If you want to play this program material on a different system, you'll need to adjust your RBass settings.

Controls

1 FREQ

Controls the frequency from which Renaissance Bass begins generating harmonic. Frequencies below this value will be removed from the signal and replaced with generated harmonics. The original bass frequencies can be mixed with the generated harmonics using the Original Bass In/Out switch.
Range: 32 dB to 256 Hz

2 ORIGINAL BASS METER

Indicates the amount of low-frequency sound in the input signal that is below the Freq setting. Generally, the higher the Freq setting, the greater the Original Bass.

3 ORIGINAL BASS IN/OUT

Sets whether or not the Original Bass sound is mixed with the generated harmonics signal. When off, only the generated harmonics are heard. When On, the original sound below the Freq setting is added to the generated harmonics.

Range: In or Out

4 INTENSITY

Controls the level of the generated harmonics. The higher the Intensity value, the more generated harmonics are added to the output signal.

Range: -24 dB to +24 dB

5 CREATED HARMONICS METER

Indicates the intensity of generated harmonics processing. It shows the mix of generated harmonics with the input signal, minus the original bass signal below the Freq value. This value is influenced by the Intensity fader and the Freq value.

Range: -24 dB to +24 dB

6 GAIN

Sets the plugin output level. You can use this as a makeup gain and to match the input level with output for A/B comparison.

Range: -infinity to 0 dB

7 OUTPUT METER

The full-scale meter Indicates the output level of the processor. Just below meters are infinite peak hold numeric indicators. To reset, click the meters anywhere. At the top of the meter is a clip light—click to reset.

Working with Presets

Renaissance Bass offers a large collection of presets. These are useful starting points for solving problems and creating effects: load the most relevant preset and go from there. In some cases, a factory preset will give you just the settings you need.

There are also Artist presets. These were designed by recording, mixing, FOH, and broadcast engineers, so they capture a personal point of view about sound. They provide a *head start with an attitude* when you're creating a specific sound or making a track sound better.

Use the bar at the top of the plugin to save and load presets, compare settings, undo and redo steps, and resize the plugin. To learn more, click the icon at the upper-right corner of the window and open the WaveSystem Guide.