



# Aaltoverb

Stretchable spaces  
for performance



MADRONA LABS

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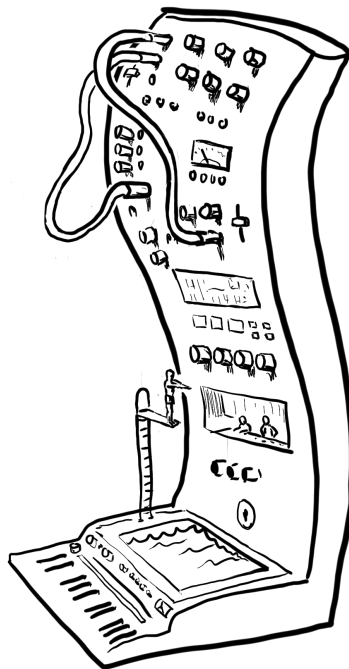
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## Introduction

Once upon a time there was Aalto, a friendly synthesizer with a lot of functions for designing and organizing sounds. Made by the nice folks at Madrona Labs, Aalto had some features that were inspired by their favorite vintage synthesizers, and one of these was a humble single-function reverberator with a good tone, but like the ones in those synths of yore, with no way to tune it.

Time passed, and many people discovered the joys of Aalto. Every once in a while someone would consider its little reverb and suggest, wouldn't a dial to control the decay of the sound be nice? Or, wouldn't it be useful to have a version of this humble reverberator with a good tone that ran on its own? These are both good ideas, but are they reasons for making a whole new plugin? It didn't quite seem like it. Then one day we asked ourselves: since our focus as a company is on instruments, both hardware and software, and live performance, what features would a *performance reverb* have that might set it apart? This question led us to Aaltoverb, a reverberator with a focus on dramatic sound sculpting and completely smooth tweakability.

Aaltoverb is designed to have a minimal amount of controls that of-



fer a maximal amount of control, within the space of sounds it provides. For the seasoned user of audio technology, it's such a simple beast that a manual seems hardly necessary. If you feel this way, by all means *dive in!* However. There are some hidden tricks you can get out of Aaltoverb's deceptively simple controls that you might not figure out for a little while on your own. And besides, if we didn't have a manual, where would we put the cartoons?

## First things first

Aaltoverb is a software reverb *plugin* that comes in both VST3 and AU formats. A plugin does not run on its own. It needs a piece of application software, a *host*, to provide an environment in which to run. Sometimes hosts are also called DAWs, for *Digital Audio Workstation*. Some good hosts include Logic and Numerology (Mac), FL studio (Windows), and Ableton Live (both Mac and Windows). All of these hosts provide easy ways to use plugins like Aaltoverb.

In Ableton Live 10, for example, you start by clicking the plug icon to show the “Plug-Ins” menu. Within this menu, you can find the Aaltoverb AU plugin on Mac OS in Audio Units / Madrona Labs, and the VST3 plugin, for both Mac and Windows, in VST3 / Madrona Labs.

There are so many different hosts out in the wide world that we can't provide instructions for all of them here. If you are unsure about how to set up Aalto with your host, feel free to contact us for assistance by email: [support@madronalabs.com](mailto:support@madronalabs.com).

# Getting around

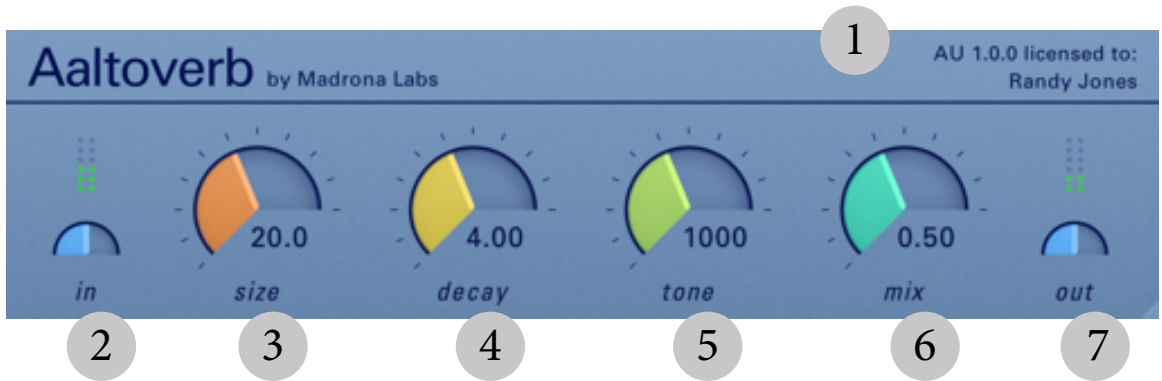
Let's take a look at Aaltoverb's minimal yet spicy set of controls:

## 1. Header

We call the area at the top the *header*, maybe because it sounds better than “the top.” This area contains our byline at the left, and at the right, the header shows your license information as well as the type of plugin running. This last information can be handy to see at a glance, since Aaltoverb comes in multiple formats including VST3 and AU.

If your name is shown here, you are a registered owner of Aaltoverb! Thank you for your support. If you don't have a license, this area will gently remind you of that, along with the “wave” sound that periodically interrupts your blissful reverberations. To register Aaltoverb with a newly purchased license key, just copy the key, with all its symbols, and click on this text. A little status animation will be shown and when successful your name replaces the demo notice, and the license is saved to disk. On Mac OS, license keys are stored in (Your

home directory)/Music/Madrona Labs/Licenses. On Windows, in C:/AppData/Roaming/Madrona Labs/Licenses.



*Figure 1: Map of Aaltoverb, a performance reverb.*

## 2. Input

The input section has a volume control as well as a simple meter. The volume control ranges from 0 at the low end of its range, to unity in the middle, its default setting, to a 6dB increase at the high end. Think of the meter as more of a glorified overload light than a precision meter—in a typical DAW there are precision meters by the truckload, so we wanted to add one with minimal visual overhead to let you know if your gain structure is reasonably OK. The top row of lights glows red to indicate an overload: a signal higher than 0dB. Below that, there is a single row of yellow lights indicating levels from

-6dB to 0dB. Below that, more green lights show 6dB steps down to -30dB.

Aaltoverb's algorithm maintains its fidelity over a wide range of input levels, so we recommend that you avoid clipping and keep the lights in the green.

### 3. Size

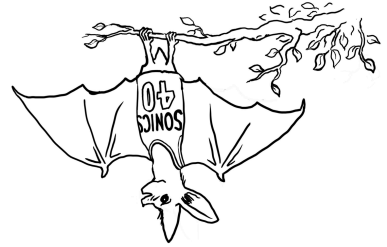
The size dial is the key to Aaltoverb's most remarkable trick: smoothly changing the size of the virtual space that the sound is reverberating in. This results in pitch shifting that is reminiscent of what tape delays do when the speed changes. But instead of a single speed, the shift applies to the whole acoustic space, vibrating "air" and all. So a giant space can turn smoothly into a small and natural sounding chamber, and then into a tiny and very unnatural resonator. With longer decay times, weird spring-like beasties can be found along the way.

What the size dial's number displays, roughly speaking, is the size of the acoustic space in meters. So if you think about a 20 meter long room (let's say it's 16 meters wide, or something) it's going to be a pretty big sounding space, and that is indeed what you get at the default size of 20. At bigger sizes you get bigger rooms, with the first reflections taking longer to start. These are more obviously heard as discrete echoes, and can add rhythmic "bounce" in the way that delays can.

At very small sizes, there's no sense of rhythm from the reflections, but rather one of tone. Imagine a one-meter box into which you've somehow gotten your sound source and a microphone. This box has extremely reflective walls, so that any sound rings out in this space

for a long time. It's possible to make something like this physically, yet it will make a sound we can be justified in describing as unnatural. This is the territory that small size settings bring us into.

When the size is turned all the way to zero, something special happens. (We told you there was a reason to read the manual.) Over the range from the lowest possible reverb size setting, around 0.5, to 0, the signal coming out of the reverb is faded from the reverberated signal to a copy of the input. Just think of zero as “no reverb.” Why would we want no reverb, in a reverb? Two main reasons. For one, the tone dial (over to the right there) is a really transparent and special EQ effect that comes after the reverberation. Bypassing the reverb lets us apply the tone filter directly to the input. Another use for the zero setting is to get the little “thewp” or sound transition that is made switching in and out of it. It's full of techno.



#### 4. Decay

While size controls the time between reflections in the reverb tail, decay controls how long these reflections last. Technically speaking, it allows you to adjust the RT60, which is defined as the number of seconds it takes for a sound to decay to 60dB less than its original amplitude. Perceptually, this is a good measure of how long a sound seems to last.

As a rule of thumb, when the size dial and the decay dial are pointing the same way, you get natural sounding spaces. For example, the default setting of size=20 and decay=4.00 gives a “medium hall” effect that's plausible as an acoustic space. Likewise a size of 10 and a decay around 2.0 gives a small chamber type of space, a room good for playing drums in, possibly.



With a small size and longer decays the sound moves out of the territory of natural sounds. Try a size of about 3 and a decay of around 10 seconds for something reminiscent (though not an accurate simulation, mind you!) of a spring reverb.

At its maximum the decay dial goes to infinity. Instead of having a separate “freeze” function. Like other features of Aaltoverb, this one is designed to be an inspiring performance tool. Just map a physical dial for live control over both finite and infinite decays. Worlds at your fingertips. And when we say “infinite” we mean infinite—our high-resolution allpass filters let the sounds captured in the buffer ring out unchanged forever, or as long as there’s power, anyway.

## 5. Tone

The tone dial is the one-stop shop for frequency makeovers ranging from subtle to drastic. A whole range of sounds can come out of the tone section that are great for creative mixing, both for positioning sounds in the mix and for making exciting transitions out of static loops.

The tone dial has a numerical readout that’s an accurate display of its center frequency in Hertz. What’s controlled is a unique (as far as we know) configuration of two shelving filters, one low and another high, that cancel out one another in phase to give a very transparent sound. Adjusting the dial moves the center frequency while simultaneously changing the amount of shelving in each filter to get a smooth and perceptually consistent sweep from just lows to just highs. The result is a new and high-fidelity take on the kind of drastic EQ or “isolator” you might find on a DJ mixer.

When set to its default frequency of 1000Hz, the tone section passes



its input completely transparently. Just double-click the dial to get back to this position.

At settings lower than 1000, highs are rolled off and the sound becomes more and more muffled. At the lowest settings, this sound reminds us of the sound of a PA heard from out behind the warehouse. Going up from 1000 to the maximum of 4000, we enter a completely different realm as the low end is dropped and highs are boosted. It's very dramatic seasoning to be used with care—subjectively “sizzle” and “air” are to be found here.

## 6. Mix

The other big dials have a lot going on behind the scenes. The mix dial, not so much. It does what it says, fading from only the input signal at 0, to only the reverberated signal at 1. No tricks, we promise.

## 7. Output

Here we have an output meter and attenuator in the same minimal style as the input section. If you like what's recirculating in the infinite delay, but added some more sound at the input and it started clipping, here's where you can correct it.

Finally, just to the right of the output section is where we've put the window resizer. Change the window size here, and your DAW should remember and bring it up the same way the next time you open the window. You might find that resizing the window is nice and smooth as compared with some other plugins (including our other synthesizers!) This is because Aaltoverb is using a brand new framework we've developed that does all its drawing on the GPU. We are excited to update all of our instruments to use our shiny new code.

## (Oh, Where Are My) Presets

You may be wondering where the preset menu is. With Aaltoverb we're taking a different approach. With so few dials, and really only three of them that affect the sound quality, we think it's more enjoyable and frankly quicker to dial in any conceivable fresh sound than to go hunting for the right preset. And using the dials, you hear all of the intermediate sounds that happen along the way, giving the potential for what Bob Ross called "happy accidents."

Of course, Aaltoverb's dial settings are recalled to their saved positions in any DAW project that you use it in.





## *Frequently asked questions*

*Why “Aaltoverb?”*

It’s the reverb from Aalto, or it started that way, anyway. Aalto is the Finnish word for “wave.”

*Where is it? I installed it but I can’t find it in the Start Menu / Dock / Applications.*

Aaltoverb is a VST3 and Audio Units format plugin. To run it, you need a VST3 or AU host on your computer. Please see the Introduction to this manual for more info, and try asking on our web forums if you need advice finding a host to use. As of mid-2019, most but not all VST hosts support the newer VST3 standard.

*I bought one license for Aaltoverb. Can I use it on my Mac and my PC too?*

Yes. Aaltoverb’s license is very simple, but different from some you may have encountered. One purchase gives you a license for both Mac and Windows. You are restricted to running Aaltoverb on one computer per

license at any one time. If you want to run the software on more than one computer at a time, you must buy a licensed copy for each computer.

*How does your copy protection work?*

Aaltoverb does not have copy protection. Copy protection always creates hassles for legitimate users, and is not compatible with giving the most pain-free possible user experience. You are free to copy Aaltoverb to any computers that you wish.

*How do I make Aaltoverb's dials change in response to MIDI or OSC (Open Sound Control) data?*

You would think that a performance reverb would have a best-of-breed controller learn functionality built in, no? And indeed, we have one on the drawing board but could not finish it in time for the 1.0 release. Please stay tuned.

Meanwhile, most plugin hosts provide good interfaces for MIDI learn that work well with Aaltoverb. Please consult the manual for your host for details.