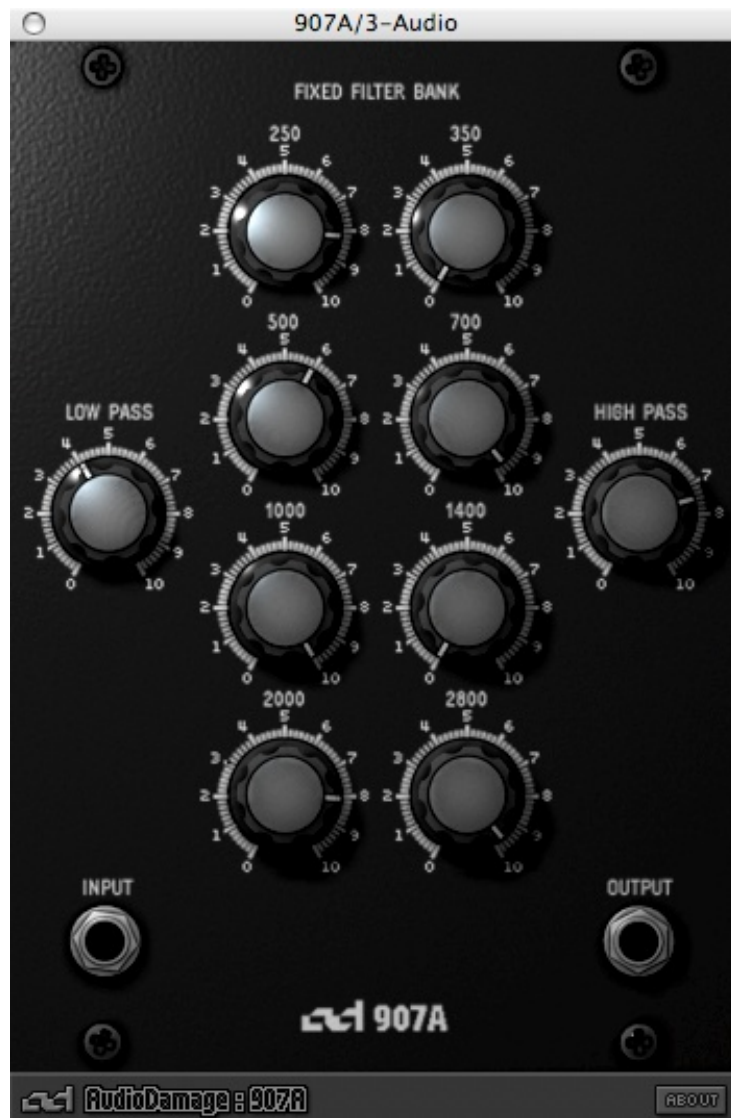


## 907A Fixed Filter Bank User's Guide

Audio Damage, Inc.  
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# Introduction

Thank you for purchasing the 907A Fixed Filter Bank (hereafter referred to simply as “907A”), Audio Damage’s plug-in emulation of the Moog 907A Fixed Filter Bank module. This plug-in creates a variety of tonal effects by passing its input signal through eight band-pass filters, one low-pass filter and one high-pass filter. The relative output levels of these filters can be adjusted independently, creating peaks and dips in the frequency spectrum of the signal. Quoting from the owner’s manual for the Moog Modular:

“The Fixed Filter Bank is often referred to as a formant filter because it can be set to emphasize or attenuate midrange frequencies which fall within a particular band, no matter how the frequencies of the signal are moved. Like many acoustic instruments, a characteristic set of formants are always a part of the resultant output (given a particular complex waveform).”

*Moog Modular Owner’s Manual*, by Dan Wyman. Moog Music, Inc. 1981

Our 907A plug-in is a faithful recreation of the Moog hardware filter bank, accurately reproducing both the frequency responses and phase-shift characteristics of its filters. Of course, it also provides all of the modern conveniences of a software plug-in, such as a true stereo signal path, zero background noise, preset storage and recall, parameter automation, remote MIDI control, and as many instances as your CPU can handle.

Because of the tolerance ranges of the components used to manufacture the original Moog synthesizers, there is quite a bit of tonal variation between modules of the same type such as the 907A. The degradation of some components (capacitors in particular) over time also contributes to changes in performance. Our software recreation represents an idealized instance of the original hardware in its factory-new condition.

To avoid possible confusion, a couple of things are worth mentioning explicitly. First, despite the presence of a bunch of knobs marked with frequencies, the 907A is *not* an equalizer. If the term equalizer was coined to describe devices which amplify or attenuate ranges of frequencies to even out (that is, equalize) the overall frequency content of a signal, the 907A might accurately be described as an unequalizer. Second, the 907A had a completely different filter architecture and implementation than the filter found in the Minimoog, and hence does not possess “that Moog filter sound”.

# System Requirements

To use 907A, you'll need a Steinberg VST-compatible host application, preferably conforming to the VST 2.0 specifications, and a computer capable of running it. For the AudioUnit version of 907A, you'll need an application capable of hosting AudioUnit plug-ins, and a computer capable of running it. The following specifications represent minimum requirements.

For use with Microsoft Windows:

- Windows NT, 2000, or XP
- 256 MB RAM
- Pentium III 600 MHz CPU
- High Color S-VGA Display

For use with Apple Macintosh:

- Mac OS X version 10.3.9 or newer
- 256 MB RAM
- G4 500 MHz CPU
- Display capable of "thousands of colors"

## Installation

Double-click the 907A Installer icon, and follow the instructions. During the installation process the installer will ask you to enter your registration code. You received this code in the email message you received after placing your order. Your registration code uniquely identifies your purchase, and you will need it if you need to reinstall your plug-in (for example, after upgrading to a new computer). Keep a copy of the code in a safe location and please don't share it with your friends. We're delighted if you like our products so much that you want to share them, but please ask your friends to buy their own copy so that we can keep making new products.

**Special note for OS X users:** you must be logged into an account with administration privileges in order to successfully install and authorize 907A.

To un-install from OS X, simply delete the plug-in from your VST folder, which is usually located at `/Library/Audio/Plug-Ins/VST/`, and your AudioUnits folder, which is located at `/Library/Audio/Plug-Ins/Components/`. To un-install from Windows, use the included un-installer application.

## Operation

Like its hardware predecessor, the 907A plug-in is simple to operate. There are no mysterious modulators, no critical level-dependent settings, no hidden windows or menus. Just turn the knobs until you like the way it sounds. Simple, eh? If you'd like a more detailed explanation of what it does, read on.

We assume that you are familiar with using plug-ins with your particular host. If you have general questions about using VST or AudioUnit plug-ins with your host, please refer to its documentation. 907A is a true stereo processor that can process either mono or stereo signals, and can be used as an insert effect or on an effects-send channel in your host's mixer. If used in a stereo context (for example, as an insert on a stereo channel in your DAW's mixer), the left and right channels are processed independently with no summing.

The 907A contains ten filters: eight band-pass filters, a low-pass filter, and a high-pass filter. These names refer to how the filter blocks signals of some frequencies and passes signals of other frequencies. A band-pass filter permits only a range (or band) of frequencies to pass through, blocking frequencies above and below its center frequency. A low-pass filter passes signals below its corner frequencies and blocks higher-frequency signals. A high-pass filter does the opposite: it passes signals above its corner frequency and blocks lower-frequency signals.

The filters in 907A operate in parallel; that is, the input signal is fed to all of the filters simultaneously, and their outputs are mixed together. Each filter has a knob which attenuates its output, controlling the amount of its signal that is present in the plug-in's output. The original 907A had passive filters; they only removed frequencies from the input signal, not boosted them.

Note that because the filters have a somewhat narrow bandwidth, and a non-linear phase response, you will hear some coloration of the signal even if you rotate all of the knobs fully clockwise. Also note that since this plug-in only attenuates signals, not boosts them, its output will always be quieter than its input. You may need to turn up the level control on your DAW's channel to compensate, and/or add a compressor or other gain-controlling plug-in to the signal chain.

## The Controls

1. The **LOW PASS** knob controls the level of the output of the low-pass filter. The low-pass filter's corner frequency is 200Hz, so this knob controls the loudness of all signal content with a frequency of 200Hz or below.
2. The group of knobs in the middle of the panel controls the levels of the outputs of the band-pass filters. Each knob is labeled with the center frequency of its filter. The frequencies are 250, 350, 500, 700, 1000, 1400, 2000, and 2800Hz. Each knob controls the loudness of signal content with frequencies near these center frequencies.
3. The **HIGH PASS** knob controls the level of the output of the high-pass filter. The high-pass filter's corner frequency is 3800Hz, so this knob controls the loudness of all signal content with a frequency of 3800Hz or above.

The knobs in our software recreation of the 907A behave in the same manner as the original. If you rotate a knob fully clockwise, the output of the corresponding filter is passed to the plug-in's output without attenuation. As you rotate the knob counter-clockwise, the level of the filter's output is reduced. If you rotate the knob fully counter-clockwise, the filter's output is attenuated by 64dB, which nearly silences the filter's output.

During your initial experimentation with this plug-in you will find it useful to use an input signal with wide frequency content, such as a buzzy synthesizer pad. For example, if you turn all of the knobs fully counterclockwise, then turn up the knob labeled **1000**, you will hear only signals with frequency content at or around 1000Hz. If your input signal doesn't have any frequency content near 1000Hz, you won't hear anything at all.





## MIDI Controllers

The VST version of 907A responds to MIDI continuous controller messages. You can use hardware MIDI controllers, such as MIDI slider boxes or the knobs found on some MIDI keyboards, to adjust 907A's parameters.

The VST version of 907A has a simple "MIDI Learn" mode for assigning its knobs to MIDI controllers. To assign a knob to a MIDI controller:

1. Hold down the `SHIFT` and `CTRL` keys on your PC's keyboard, or `SHIFT` and `CMD` keys if you're using a Mac, and click once on the knob. A white box will be drawn around the control to indicate that it is ready to learn which MIDI controller it will be assigned to.
2. Move the MIDI controller to send a continuous controller message—turn the knob, press the button, move the slider, whatever is appropriate.
3. The white square will disappear. Now the 907A's knob will move when you manipulate the MIDI controller.

907A waits until it has received two consecutive continuous controller messages with the same controller number before it makes an assignment. This filters out extraneous data sent by some MIDI controllers. If you are assigning a button or switch on a MIDI controller, you may have to press or move the switch twice before 907A recognizes the controller and assigns it to the desired knob.

- To assign a different MIDI controller to a control, repeat the same procedure using a different controller.
- To cancel MIDI Learn mode without assigning a controller, hold down the `SHIFT` and `CTRL` keys (`SHIFT` and `CMD` keys on a Mac) and click in any empty area in 907A's window (i.e., don't click on another control). The white box will disappear.
- To remove a MIDI controller assignment from a control, `SHIFT` and `CTRL` keys, (`SHIFT` and `CMD` keys on a Mac) click on the control once so that the white box appears, then click again on the same control.

907A's MIDI controller assignments are stored with the plug-in's preset data. If you use MIDI controllers frequently, you may find it helpful to store a template preset that contains the controller assignments that you

usually use. Use this template preset as a starting point when making new presets so that you do not have to reassign the MIDI controllers every time.

The AudioUnit version does not provide the same MIDI assignment features as the VST version. Almost all AudioUnit hosts provide their own mechanism for assigning MIDI controllers to parameters, so it would be redundant to implement MIDI controller assignments in the plug-in itself. Consult the documentation for your AudioUnit host to learn how to use its MIDI features.

## **And Finally...**

Thanks again for purchasing 907A. We make every effort to ensure your satisfaction with our products, and want you to be happy with your purchase. Please write [support@audiodamage.com](mailto:support@audiodamage.com) if you have any questions or comments.