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Customers who prefer support by email, please contact: support@bias-inc.com

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User’s Guide:
Zac Wheatcroft

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Welcome!

Thank you for purchasing BIAS SoundSoap Pro! SoundSoap Pro is a professional noise reduction plug-in for VST, RTAS, Audio Units, and AudioSuite host applications. It features tools for removing hum, rumble, clicks, crackle, and broadband noise — and also includes a noise gate. SoundSoap Pro is a "universal restoration solution" — as it contains all of these powerful noise reduction tools within a single interface — and it can be "plugged-into" virtually any host application that supports the aforementioned plug-in formats.

SoundSoap Pro shares some of the same technology that has makes the original SoundSoap such a popular application/plug-in — tools such as the intelligent noise learning algorithm and Noise Only mode are also a part of SoundSoap Pro.

SoundSoap Pro adds the ultimate in parameter control — as well as new Click & Crackle removal tools, a global spectrogram, and many other visual feedback tools that help in the audio restoration process. This powerful collection of controls requires a totally different user interface, which allows access to these many parameters, but in a logical and easy to use manner. SoundSoap Pro features a tab-based user interface, with dedicated tools for specific noise types. These tabs are arranged to suggest an order of processing to the user that produces optimal results. There is no restriction however, on using these tools — individual tools may be toggled on or off, depending on the types of noise present in the digital media file at hand, and they may be used in any order desired. SoundSoap Pro also offers advanced preset control — the settings for all four tools are saved into a preset, but individual tool settings may be loaded at will.

SoundSoap Pro can be used within practically any Audio Units, RTAS/AudioSuite, or VST host — on both Macintosh and Windows platforms. Users of Peak, Pro Tools, Logic, Cubase, Nuendo, Premiere, WaveLab, Sound Forge, and many other applications that support plug-ins may easily add SoundSoap Pro’s powerful noise reduction technology directly into their application of choice.

SoundSoap Pro is the perfect solution for removing unwanted hiss, room noise, rumble, electrical hum, click & crackle, and other background noise from almost any digital media file — including digital video (DV) soundtracks, PowerPoint and other presentation software soundtracks, Flash and other web-tool soundtracks, digital audio workstation tracks, cassette, vinyl, or other analog tape recordings that have been transferred to a computer, and other sources.

We’re sure you’ll find SoundSoap Pro to be a powerful and useful tool, allowing you to enhance the quality of your digital audio and video projects.

SoundSoap Pro Features:

- Powerful, professional noise reduction
- Convenience — includes AudioSuite/RTAS, Audio Units, and VST format plug-ins
- Easy-to-use tab-based user interface with dedicated tools for specific noise types
• Launch Tab – Contains Getting Started information to help you quickly get up to speed with SoundSoap Pro’s controls

Global Tools (available within each tab):
- Spectrogram
- Global Presets
- Noise Only mode
- Default View Checkbox
- Processing Bypass Buttons
- Automation (parameters automatable within compatible host applications)
- Numerical Value Entry

Hum & Rumble Reduction Tab:
- Hum Frequency Slider
- Q (Bandwidth) Slider
- Depth Slider
- Harmonics Slider
- Harmonics Tilt Knob
- Hum Meter
- Rumble Slider

Click & Crackle Tab:
- Sensitivity Slider
- Click Threshold Slider
- Crackle Threshold Slider
- Click Indicator

Broadband Tab:
- Threshold/Reduction View Slider
- Threshold Sliders
- Reduction Sliders
- Threshold/Reduction Lock Buttons (Slider Grouping)
- Meters
- Learn Noise Button
- Attack Knob
- Release Knob
- Attack Tilt Knob
- Release Tilt Knob

Noise Gate Tab:
- Attack Knob
- Release Knob
- Threshold Sliders
- Reduction Depth Slider
- Visual Waveform Display
- Left, Right, & L+R Waveform Display Buttons
- Freeze Waveform Display Button

Who is SoundSoap Pro designed for?

SoundSoap Pro is designed for the demanding audio professional who requires high-quality noise reduction/removal, coupled with the convenience of using their editing environment of choice. SoundSoap Pro uses advanced noise reduction technology and an
Innovative user interface to provide access to a wide array of controls – allowing incredible noise reduction in a minimal amount of time, with minimal artifacts.

With access to virtually any imaginable noise reduction parameter, SoundSoap Pro offers powerful tools that are easy to use, and should allow anyone to achieve amazing results.

Minimum System Requirements

To use SoundSoap Pro on a Macintosh – you will need:
• G4, G5, or Intel-based Macintosh (≥500mHz processor recommended)
• Macintosh OS 10.3.9 (OS 10.4 recommended)

To use SoundSoap Pro on a Windows PC – you will need:
• Intel P3/P4, Athlon w/SSE Instructions (≥ 800mHz processor recommended)
• Windows XP Home/Professional or Windows Vista

Both:
• Compatible Audio Units, RTAS/AudioSuite, or VST host application
• 128 MB RAM (256 or more recommended)
• 20 MB available hard drive space

For the most up-to-date info, please visit:
http://www.bias-inc.com/soundsoappro/

About Your User’s Guide

SoundSoap Pro is designed to be simple and intuitive. Your User’s Guide is designed to help you set up and use SoundSoap Pro for noise reduction/removal as quickly as possible.

This User’s Guide assumes that you are familiar with standard Macintosh and/or Windows operating techniques, including:
• Setting up, starting, and using your computer
• Choosing commands from menus
• Double-clicking, selecting, shift-selecting, and dragging with the mouse
• Opening, copying, saving, and deleting files
• Opening, closing, scrolling, moving, re-sizing, and selecting windows

If you don’t know how to perform these tasks, please refer to the documentation that was included with your computer, and spend a little time learning about your operating system before going any further. This will make using SoundSoap Pro much easier and effective.

The chapters in your SoundSoap Pro User’s Guide are arranged in the order in which you would typically perform tasks when the need arises to remove unwanted noise from your media.

• Chapter 1 introduces you to SoundSoap Pro and explains some of the requirements for using it
• Chapter 2 explains how to install, register, and authorize your computer to run SoundSoap Pro
• Chapter 3 explains the various features in SoundSoap Pro and how they are used to reduce/remove noise
• Chapter 4 demonstrates how to use SoundSoap Pro
• Chapter 5 contains a hands-on tutorial, with step-by-step directions on how to remove various types of noise from the included sample files.

Look for important tips and notes whenever you see this exclamation mark.

Help with SoundSoap Pro

SoundSoap Pro offers two types of help. The first type, appears in the Launch Area of the SoundSoap Pro interface. This type of help contains quick getting started tips. You can vary the amount of text shown at any time by clicking the “See More” button.

The second, and more comprehensive type of help is the SoundSoap Pro User’s Guide. A .pdf edition of this documentation is installed into:

On Macintosh systems:
/MacintoshHD/Library/Documentation/BIAS/SoundSoap Pro/

On Windows systems:
C:/Program Files/BIAS/SoundSoap Pro/

Clicking the Help (“?”) Button will launch your web browser and take you to the BIAS Documentation page, where you can download additional tutorials on SoundSoap Pro, as they become available.

Conclusion

Now that you know a little about SoundSoap Pro, proceed to the next chapter to learn how to install and start using it.
Chapter 2: Installation, Registration, and Authorization
Chapter 2:
Installation, Registration, and Authorization

Installing SoundSoap Pro

SoundSoap Pro’s auto-installer software makes installation very easy. The steps below will guide you through the process.

Your complete SoundSoap Pro system consists of:
• CD-ROM installer
• Serial number
• Authorization File

Before you install SoundSoap Pro, please check the Minimum System Requirements on Page 15.

To install SoundSoap Pro on a Macintosh:
1. If you are using any virus protection software, turn it off or temporarily remove it, and restart your Macintosh.
2. Insert the SoundSoap Pro installer CD-ROM into your CD-ROM drive — when its icon appears on your computer’s desktop, double-click the Install SoundSoap Pro icon.
3. When prompted about the Installer package running a program to determine if it can be installed, click the Continue button.
4. When the Installer dialog appears, click the Continue button.
5. Read the Software License Agreement — then click the Continue button to proceed.
6. Click the Agree button if you agree to the terms of the Software License Agreement.
7. Select the hard drive/volume on which you wish to install SoundSoap Pro, and click the Continue button.
8. Click the Install/Upgrade button (depending on the configuration of your user account, you may need to enter your account password. If prompted for your password, enter it and click the OK button. If you do not know your account password, please contact your system administrator for assistance).
9. When the installation is complete, a message will appear indicating that the installation was successful. Click the Close button to quit the Installer. (Don’t forget to turn back on any virus-protection software that you may be using the next time you restart the computer).

What SoundSoap Pro installs on Macintosh systems:

The SoundSoap Pro installer places a number of files on your computer. The files and install location are described below:

Audio Units Hosts: (Peak, Logic, Digital Performer, etc.)

SoundSoap Pro automatically installs the Audio Units format plug-in into the following directory:
/Macintosh HD/Library/Audio/Plug-Ins/Components/
RTAS/AudioSuite Hosts (Pro Tools):

SoundSoap Pro automatically installs the RTAS/AudioSuite format plug-in into the following directory:

/Macintosh HD/Library/Application Support/Digidesign/Plug-Ins/

VST Hosts: (Peak, Cubase SL/SX, Nuendo, etc.)

SoundSoap Pro automatically installs the VST format plug-in into the following directory:

/Macintosh HD/Library/Audio/Plug-Ins/VST/

Documentation

An electronic (PDF format) version of the SoundSoap Pro User’s Guide, and a Read Me file with late-breaking information are both installed into:

/Macintosh HD/Library/Documentation/BIAS/SoundSoap Pro/

To install SoundSoap Pro on a Windows PC:

1. If you are using any virus-protection software, turn it off or temporarily remove it, and restart your computer.
2. Insert the SoundSoap Pro Installer CD-ROM in your CD-ROM drive. If the SoundSoap Pro Setup program does not automatically launch, double-click the Install SoundSoap Pro icon.
3. When the InstallShield Wizard for BIAS SoundSoap Pro appears, click the Next button.
4. Read the Software License Agreement, and then click the “I accept the terms in the license agreement” radio button to continue with installation.
5. To install SoundSoap Pro into the default directory (recommended), click the Next button (Vista users – skip this step).
6. In the Setup Type dialog, choose the Typical option (Vista users choose the Complete option), and click the Next button.
7. In the Select Program Folder dialog, click the Next button to continue with installation.
8. In the Ready to Install dialog, click the Next button to continue with installation.
9. When you are finished installing, click Finish to exit the installer.

At the end of installation, the Installer program will instruct you to authorize the plug-in – this is described later in this chapter.

What SoundSoap Pro Installs on Windows Systems:

The SoundSoap Pro installer places a number of files on your computer. The files and install location are described below:

RTAS/AudioSuite Hosts (Pro Tools):

SoundSoap Pro automatically installs the RTAS/AudioSuite format plug-in into:

/Program Files/Common/Digidesign/DAE/Plug-Ins/

VST Hosts: (Cubase SL/SX, Nuendo, etc.)

SoundSoap Pro installs the VST format plug-in into the VstPlugIns folder of your VST host program.
Documentation

An electronic (PDF format) version of the SoundSoap Pro User’s Guide, and a Read Me file with late-breaking information are both installed into:

/Program Files/BIAS/BIAS SoundSoap Pro/

If you would like to register and authorize SoundSoap Pro at this point, launch the host program you will use (which is installed into your Applications folder by default), and have your Owner’s Certificate handy, and follow the directions in the next section.

Registration & Authorization

SoundSoap Pro must be authorized to work on your computer. You must register SoundSoap Pro with BIAS in order to authorize it. The registration and authorization process is outlined below.

Serial Number-Based Authorization System

SoundSoap Pro’s standard authorization system consists of the following components:

- **BIAS Authorization Manager** – A simple application for managing BIAS software licenses.
- **Serial Number** – Located on Owner’s Certificate.
- **Registration Account** – Your registration and authorization information on the BIAS Server.
- **Authorization Request File** – A file transferred from your computer to the BIAS server, which adds the computer you are authorizing to your BIAS Registration Account.
- **Authorization File** – A file transferred from the BIAS server to your computer, which authorizes it to run SoundSoap Pro.

You must register with BIAS in order to authorize your computer – SoundSoap Pro will not launch unless your computer is authorized to run it.

The registration/authorization process provides the following services:

- Registers your software with BIAS – making you eligible for technical support and product updates.
- Authorizes your computer so it can run SoundSoap Pro. You may authorize up to two computers for use with SoundSoap Pro – for example, a studio or office computer, and a laptop for home or mobile use.

Keep in mind that for each license of SoundSoap Pro – the software may only be used by one user on one computer system at a time. If you have used both of your authorizations, and need to authorize a new computer, you will need to first de-authorize one of the authorized computers before you are issued a new authorization for the new computer.

To Register & Authorize a Computer to Run SoundSoap Pro:

1. Attempt to open SoundSoap Pro in your host program – the first time it is opened on an unauthorized computer, you will be prompted to use it in trial mode, or to authorize it – click the Authorize button.

2. When the BIAS Authorization Manager appears, select BIAS SoundSoap Pro 1.x in the “Please Choose a Product” section – then enter your SoundSoap Pro serial number (your SoundSoap Pro serial number is printed on the Owner’s Certificate included in the SoundSoap Pro package, or on the electronic receipt from a downloadable purchase) and email address in the appropriate fields, and click the Authorize button.
If you use more than one email address, be sure to make a note of which one you registered with – this will make managing your BIAS Registration Account faster and simpler in the future.

3a. If you have previously registered another BIAS product, using the same email address, SoundSoap Pro will be authorized automatically – please continue to step 4.

3b. If the BIAS Registration system does not recognize your email address (i.e., if this is the first BIAS product you are registering, or if you enter a different email address than with previously registered BIAS products) – a dialog will appear, prompting you to enter your registration information. Enter your registration information, and click the Submit button – a dialog will appear indicating that you have been successfully registered – please continue to step 4.

4. A dialog will appear indicating successful authorization – click the OK button, and then click the Done button to exit the Authorization Manager, and begin using SoundSoap Pro.

Alternate Methods of Registration/Authorization

If the computer on which you plan to use SoundSoap Pro cannot be temporarily connected to the Internet, even for this one-time authorization process, there are a number of other ways to register and authorize SoundSoap Pro.

Registering & authorizing SoundSoap Pro using another computer with internet access

To use this method of registration/authorization, you will need to run the BIAS Authorization Manager program from your installer CD-ROM – or copy the BIAS Authorization Manager from your installer CD-ROM to the internet-equipped computer’s hard drive and run it from there.

To register & authorize using another computer with internet access:

1. Attempt to open SoundSoap Pro on the computer where it will be used (i.e., the computer without internet access) – the first time SoundSoap Pro is used on an unauthorized computer, the Welcome to SoundSoap Pro dialog appears – click the Authorize button to proceed to the BIAS Authorization Manager.

2. In the BIAS Authorization Manager dialog, select BIAS SoundSoap Pro 1.x in the “Please Choose a Product” section – then enter your SoundSoap Pro serial number and email address (your SoundSoap Pro serial number is printed on the Owner’s Certificate included in the SoundSoap Pro package, or on the electronic receipt from a downloadable purchase).

3. Click the Alternate Authorization button – the Alternate Authorization dialog appears.

4. In the Alternate Authorization dialog, click the Generate Authorization Request button – the Serial Number/Email Address dialog appears.

5. Confirm that the email address and serial number are correct, and click the OK button to save an Authorization Request File to your hard drive.

6. Transfer the Authorization Request File to another computer that has Internet access (via a LAN, by burning it to CD, copying to a floppy diskette, flash drive, external hard drive, iPod, digital camera, etc.)

7. Launch the BIAS Authorization Manager program on your internet-equipped computer.

8. In the “Please Choose a Product” section, choose BIAS SoundSoap Pro 1.x.
9. Click the Alternate Authorization button in the BIAS Authorization Manager program.

10. Go directly to step 3 in the Alternate Authorization dialog – click the Open Authorization Request button.

11. In the Open dialog that appears, locate and select the Authorization Request File, then click the Open button – this will transmit the Authorization Request File to the BIAS Server.

12a. If you have previously registered another BIAS product, using the same email address, the BIAS server will transmit an Authorization File back to your internet-equipped computer – click the Save button to save this to the internet-equipped computer’s hard drive. Please proceed to step 13.

12b. If the BIAS Registration system does not recognize your email address (i.e., if this is the first BIAS product you are registering, or if you enter a different email address than with previously registered BIAS products) – a dialog will appear, prompting you to enter your registration information.

12c. Enter your registration information, and click the Submit button, then click the OK button when the successful registration dialog appears.

12d. You will be prompted to open the Authorization Request File a second time – locate it, and then click the Open button – The BIAS server will transmit an Authorization File back to your internet-equipped computer – click the Save button to save this to the internet-equipped computer’s hard drive.

13. Click OK to exit the Authorization Successful dialog, then click the Done button in the Alternate Authorization dialog, and again in the BIAS Authorization Manager.

14. Transfer the Authorization File (the file is called “BIAS SoundSoap Pro 1.x”) from the internet-equipped computer back to the host computer where SoundSoap Pro will be used (via a LAN, by burning it to CD, etc.).

15. Go directly to step 4 in the Alternate Authorization dialog – click the Open Authorization File button.

16. In the Open dialog that appears, locate and select the Authorization File, then click the Open button.

17. Click OK in the Authorization Complete dialog, and Done in the Authorization Manager.

To register & authorize SoundSoap Pro with no Internet access

If you do not have temporary Internet access on any computer, or need help with any part of the registration/authorization process, please contact BIAS at:

US Toll-Free: 1-800-775-2427
International: +1-707-782-1866

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**Deauthorizing a Computer**

If you need to de-authorize a particular computer that will no longer be used to run SoundSoap Pro, you can do so by following the steps below.

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⚠️ The computer running SoundSoap Pro must be connected to the internet in order to deauthorize it.

**To De-Authorize a Computer:**

1. Launch the BIAS Authorization Manager from your hard drive (or launch the BIAS Authorization Manager program from your installer CD-ROM).

2. In the BIAS Authorization Manager, select the product you wish to de-authorize – the serial number and email address used to authorize that product will be automatically recalled and will appear in the Serial Number and Email Address fields.

3. Click the Deauthorize button.

4. Click the Deauthorize button to confirm the deauthorization process – the Deauthorization Successful dialog appears.
5. Click the OK button – then click the Done button in the BIAS Authorization Manager.

Conclusion

Now that you have installed, registered, and authorized SoundSoap Pro, please proceed to the next chapter to learn about using SoundSoap Pro.
Chapter 3: SoundSoap Pro User Interface & Controls
Introduction

This chapter explains key SoundSoap Pro concepts and functions, and what each control in the user interface is used for.

A Brief Explanation of Noise Types

If you are using SoundSoap Pro, chances are you have run into some sort of undesirable noise in your digital media files. SoundSoap Pro offers many tools and precise control, allowing you to easily and effectively remove practically any type of unwanted audio signal — clicks, pops, crackle, hiss, hum, rumble, HVAC system noise, SMPTE timecode crosstalk, camera motor noise — and many other types of noise from a wide variety of digital audio and video media files. Such noise can be a big distraction from the desired audio signal, resulting in an unprofessional-sounding final product.

While SoundSoap Pro can do a great deal to reduce noise from a file, there may be situations in which the desired audio signal is lower than the level of noise, making it impossible to fully remove the noise. In cases like this, SoundSoap Pro may not entirely remove the noise, but may be able to significantly reduce its presence. The types of noise that SoundSoap Pro is designed to reduce are outlined below:

Hum

The type of noise known as “hum” is typically composed of a fundamental frequency (such as 60 Hz) and its harmonics, and is often associated with audio equipment being used on faulty electrical circuits, or equipment that is not properly grounded.

Rumble

Rumble is a type of noise similar to hum, but typically occurs at lower frequencies, usually around 40 Hz or below. An example of rumble would be the low frequency noise from phonograph turntables — often present in recordings made from vinyl records. The rumble filter may also be effective in removing other types of low frequency noise.

Clicks/Crackles/Pops

This category of noise is generally identified by random abrupt transients in an audio signal. When examined closely in a waveform editor, these transients will usually appear as abrupt “spikes” which do not fit within the overall pattern of an audio waveform. Clicks and crackles are often found in recordings made from vinyl records. Pops are a common result of performing cut/copy/paste type edits on audio or video media, especially when the editing platform does not accurately make these edits at zero-crossings (sections of the audio signal with zero amplitude). Pops may also result from
faulty electronic equipment, which can sometimes produce pops at regular intervals in an audio or video recording – or from clocking problems with digital transfers.

**Broadband Noise**

Broadband noise is any noise that is composed of a broad frequency spectrum. Tape hiss, room noise, air-conditioner noise (as well as noise from other types of appliances, lighting systems, etc.), buzzing, white noise, and pink noise, are common examples of “broadband” noise.

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**Getting Started with SoundSoap Pro**

SoundSoap Pro is designed to be used as a plug-in within your favorite AudioSuite/RTAS, Audio Units, or VST-compatible host application, on Mac OS X or Windows XP and Vista. SoundSoap Pro was designed to provide professional-quality audio restoration, but also to be very simple to use, with maximum control over parameters that can reduce/remove the types of noise described in the previous section.

While SoundSoap Pro does offer some level of automated processing, and carefully adjusted default settings, it is important to understand what each control does, in order to use the best possible settings to address particular types of unwanted noise. The next section introduces SoundSoap Pro’s graphical user interface.

Take a few moments to familiarize yourself with the various knobs, buttons, sliders, and visual feedback tools, and then move on to the next section, for detailed descriptions on how they are used.

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**SoundSoap Pro Controls Explained**

The SoundSoap Pro GUI (graphical user interface) was specifically developed to provide the ultimate in control over a large number of parameters, while still being intuitive to use. The interface contains many controls to reduce most types of broadband noise, hum, rumble, or clicks, crackles, and pops from most digital media files.

The interface is based around five individual tabs – each contains tools that address a specific noise type. These tabs are, in order from left to right:

- Launch/Getting Started Tips
- Hum & Rumble
- Click & Crackle
- Broadband
- Noise Gate

The recommended way to use SoundSoap Pro’s is to start from the left side of the interface, and work your way to the right through the tabs that contain the noise reduction tools relevant to the type of unwanted noise at hand. For example, in a situation where there is hum, crackle, and broadband noise, you could start with the left-most tab (Hum & Rumble). Once the hum is removed, leave that tab active, and move one tab to the right, to the Click & Crackle tool. When any clicks/crackles present are removed, leave it active, and move along to the Broadband tab, and so on.

Do not turn on a tab if it does not contain tools relevant to the type of noise that needs to be reduced. For example, if you are restoring cassette recordings that contain only broadband noise, the Hum & Rumble and Click & Crackle tools should be turned off.

SoundSoap Pro’s various controls are detailed below on a tab-by-tab basis, as they appear in the plug-in:
Global Controls (Available in all interface tabs):

While SoundSoap Pro offers several noise-specific tools, it also features tools that are “global” – meaning they can be accessed at any time, even when working between different noise reduction tools. For example, you may be fine-tuning Broadband noise reduction settings, and using the built-in spectrogram as a visual aid. Then, you may need to switch over to the Click & Crackle tool to make another adjustment. Since the Spectrogram operates globally, it is always in view, regardless of which tool is selected. What is particularly nice about the layout of the SoundSoap Pro interface, is that each tab contains a thumbnail representation of that tool’s current settings. This makes it easy to move between various tabs, while still monitoring the settings of each tool. Below is a brief description of these “global” tools, and how they operate.

Default View Checkbox – A default view checkbox is available within each tool tab, allowing a particular tool to appear by default when SoundSoap Pro is instantiated.

SoundSoap Pro Preset Save Button – Saves a SoundSoap Pro preset – which saves the settings for all four tools.

SoundSoap Pro Preset Load Button – Recalls a previously stored SoundSoap Pro plug-in – with the option to load either a tool-specific preset, or one that reflects the overall state of the plug-in.

SoundSoap Pro can use either its own form of advanced presets, which can load either the state of an individual tool, or the state of all the tools – or, it can use the usual host-provided presets available in each plug-in format.

Host-Provided Preset Save Button – Saves a preset, of the host-provided variety (see alert above). Host provided presets only save a snapshot of the state of the entire plug-in.

Host-Provided Preset Load Button – Recalls a host-provided preset, which is a snapshot of the overall state of the SoundSoap Pro plug-in.

A/B/C/D Compare Buttons – The A/B comparison feature is common in audio plug-ins, and gives the ability to preview different settings before committing to them. Essentially, various tool settings are made and assigned to memory location “A” – another group of settings can then be assigned as “B” – and then clicking the A or B buttons in the interface instantly toggles between the two. As SoundSoap Pro is geared toward professional restoration, and offers many fine-tuning options, it features not just two comparison modes, but instead includes four A/B/C/D “snapshot” style comparisons. These four unique settings can be compared instantly, before committing to any file processing or saving presets. These memory locations are similar to saving and loading presets, but are instantaneous and temporary, and do not require selecting presets from a menu to load them. Only the active “snapshot” may be saved within a preset for later recall.
Help Button – Clicking the Help button launches your web browser, and takes you to the BIAS website’s documentation page, where you can download various tutorials on SoundSoap Pro. The SoundSoap Pro User’s Guide (in .pdf form) is installed into your system when you install SoundSoap Pro – see Chapter 2 for details on where the user’s guide is installed.

Noise Only Mode Button – The Noise Only button changes the audio output of SoundSoap Pro. When in Noise Only mode you hear what is being removed from the audio signal, based on the current settings. Noise Only is an essential feature, as it lets you verify whether your settings are optimal, and that you are not removing any of the desired signal. If you’re using Noise Only mode, and hear any of the desired audio signal, you can continue to make adjustments until you are only removing noise.

Spectrogram – SoundSoap Pro’s spectrogram is another essential tool, which provides visual feedback regarding the state of the file being restored. It features an animated color display which scrolls from right to left as a file is played through SoundSoap Pro. White and red graphics appear in the spectrogram to represent the following:

- **White** = Input signal prior to noise reduction
- **Red** = Input signal after noise reduction

Hovering your mouse over the display brings up a reset button – which clears any graphical data out of the spectrogram – as well as a Freeze Display button. The Freeze Display button temporarily stops the spectrographic display, and can also help conserve CPU power. In addition to this graphical display, the spectrogram contains a frequency scale – which varies depending on the tab in the foreground. The spectrogram provides valuable information about where in the frequency spectrum noise occurs in a given file, as well as what frequencies are being removed. Directly beneath the spectrogram is a horizontal slider, which is used for both scrolling backward and forward in time, as well as for increasing or decreasing the zoom level (precision) at which the spectrogram data is viewed.

When working in the Hum & Rumble tab, the spectrogram’s frequency scale changes from 4Hz – 20kHz to 4Hz – 1kHz, so as to give greater display precision when analyzing and removing hum and rumble – which characteristically occur in the lower portion of the frequency spectrum.

Tool Tabs/Tool State Thumbnails – The bottom portion of the SoundSoap Pro interface contains the “tabs”, each of which contains specific noise reduction tools. Clicking a tab brings a specific set of parameters to the foreground.

Each of SoundSoap Pro’s Tabs contains a thumbnail representation of its tool settings, allowing you to easily monitor all settings at all times.

Each tab also contains a miniaturized graphical display (thumbnail) of the settings currently active within that tool. The tab-based interface is an essential part of streamlining the way SoundSoap Pro operates. It allows many controls to be placed within a fairly small area, and also allows the state of any tool’s primary settings to be monitored at any time – even when working with a
different noise reduction tool. For example, if you’re working in the Noise Gate tool, and need to know what your current settings are for the Broadband Release knob, you can simply glance at the Broadband thumbnail, and view its settings, without having to leave the Noise Gate tab.

You have now learned about SoundSoap Pro’s Global Tools – please continue on to the next section to learn about the Launch Tab.
Launch Area:

- Preset Save Button
- Preset Load Button
- A/B/C/D Compare Buttons
- Help Button
- Noise Only Mode Button
- Default View Checkbox
- Credits Screen
- "See More" button
- Getting Started Tips
- Recommended Processing Order
- Launch Tab
- Hum & Rumble Tab (with tool settings thumbnail)
- Click & Crackle Tab (with tool settings thumbnail)
- Broadband Tab (with tool settings thumbnail)
- Noise Gate Tab (with tool settings thumbnail)

Getting Started Tips

SoundSoap Pro combines four powerful noise reduction and restoration tools all in a single plug-in. In the lower section of the SoundSoap Pro interface you will find 4 tabs each representing one of 4 restoration tools. You will use these:

- Click & Crackle Tab
- Hum & Rumble Tab
- Broadband Tab
- Noise Gate Tab
Launch Area

Credits/Info Screen – This area of the Launch Tab contains product credits, and version number information.

Getting Started Tips – The Getting Started Tips section of the Launch Tab contains useful information about how each tool works.

You’ve now learned a bit about the Launch Tab, the next section describes SoundSoap Pro’s Hum & Rumble Tool.
Hum & Rumble Tool:

![Diagram of the Hum & Rumble Tool interface]

- **Presets Save Button**
- **Presets Load Button**
- **A/B/C/D Compare Buttons**
- **Help Button**
- **On/Bypass Radio Buttons**
- **Hum & Rumble Tab** (with tool settings thumbnail)
- **Click & Crackle Tab** (with tool settings thumbnail)
- **Broadband Tab** (with tool settings thumbnail)
- **Noise Gate Tab** (with tool settings thumbnail)
- **Spectrogram**
  - White = Input
  - Red = Output
- **Spectrogram Slider**
  - (Scrolling & Zooming)
- **Default View Checkbox**
- **Spectrogram Slider**
- **Hum Meter**
- **Hum Frequency Slider**
  - (with numerical entry field)
- **Q (Bandwidth) Slider**
  - (with numerical entry field)
- **Depth Slider**
  - (with numerical entry field)
- **Rumble Slider**
  - (with numerical entry field)
- **Enable/Disable Rumble Processing Checkbox**
- **Harmonics Slider**
- **Harmonics Tilt Knob**
  - (with numerical entry field)

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*SoundSoap Pro User’s Guide*
**Hum & Rumble Tool**

*On/Bypass Radio Buttons/Checkbox –* These controls allow the Hum & Rumble tool to be turned on or off, while other tools remain active. They are useful for comparing the difference between having the Hum & Rumble tool on or off.

*Hum Meter –* SoundSoap Pro’s Hum Meter is another visual feedback tool, which along with your ears, is a useful tool for helping to locate the fundamental frequency causing a particular hum. Typically, most hums occur at either 50Hz or 60Hz – however, there may be cases in which they occur at other frequencies. The Hum Meter works in conjunction with the Hum Frequency Slider. To find a hum’s fundamental frequency, simply sweep the Hum Frequency Slider while listening to a media file containing hum. As you get closer and closer to the fundamental frequency, the Hum Meter’s reading intensifies. When you see the strongest reading in the Hum Meter, you’ve found the fundamental frequency responsible for causing the hum, and can then use other Hum & Rumble controls to adjust how much the hum is reduced.

*Hum Frequency Slider –* The Hum Frequency Slider allows you to reduce a specific frequency, and has a range of 20Hz – 200Hz. Moving this slider determines the fundamental frequency that will be targeted (a specific value may also be entered by typing a value in the numerical entry field). If the frequency causing a hum is unknown, the Hum Frequency Slider may be swept as the noisy media file is played, and the Hum Meter, located directly above the Hum Frequency Slider, will register activity as you approach the offending fundamental frequency. The setting that gives the strongest reading in the Hum Meter is the frequency (or very close to it) causing the hum problem.

*Q (Bandwidth) Slider –* The Q Slider determines the bandwidth of the notch filter being applied to a particular frequency. The range of the Q slider is from 10 to 50. A larger Q value affects only a very narrow frequency range, and a smaller value affects a wider frequency range. Hum will vary depending on the source – a very narrow Q (higher value) will eliminate only the frequency set with the Hum Frequency Slider, and will do very little to frequencies that are very close, either higher or lower. On the other hand, a wider Q (smaller value), will still affect the same fundamental frequency, but will also affect some of the surrounding frequencies. Ideally, the narrowest Q (largest value) possible should be used, so as to affect just the offending frequency. If the Hum Meter shows a strong reading, but some hum is still audible, it’s best to experiment with the Q value setting, as well as the Depth and Harmonics Sliders.

*Depth Slider –* The depth slider controls the amount of audio being cut out by the notch filter responsible for eliminating hum, and is directly related to both the Q...
Slider and Hum Frequency Slider. The Depth slider has a range of 0dB (no audio being cut out) to 50 dB of reduction. The Depth setting cuts the most audio at the fundamental frequency, as determined by the Hum Frequency Slider, and affects the surrounding frequencies proportionally, depending on the Q value that is used.

**Harmonics Slider** – The Harmonics Slider designates how many harmonics of the fundamental frequency should be removed in either direction from the fundamental frequency. The range of harmonics that can be removed is 1 – 9, always as integers, never as fractions. When dealing with hum, there is always a fundamental frequency, and commonly there are harmonics at other frequencies, due to resonance. Harmonics typically will have similar characteristics to the hum found at the center frequency, but will be proportionally lower in amplitude. For example, a 60Hz hum may have harmonics at higher frequencies, such as 120Hz, 180Hz, 240Hz, and so on. Assuming the fundamental frequency is 60Hz, a setting of “3” on the Harmonics Slider would also remove the hum that occurs at 120Hz and at 180Hz.

It is common for a hum that occurs at a certain harmonic of the fundamental frequency to have a lower amplitude than the hum at the fundamental frequency. The Harmonics Tilt Knob controls the relationship between the depth of each successive notch filter created by the Harmonics slider. With a value of “0.00”, each additional notch created by raising the value of the Harmonics slider cuts at the same value as the notch placed at the fundamental frequency.

For example, if the Hum Depth slider is set to cut by 20dB, and the Harmonics Tilt Knob is set to “0.00”, each additional notch created by increasing the value of the Harmonics slider will also cut each harmonic by 20dB. However, if the Hum Depth slider is set to cut by 20dB, and the Harmonics Tilt Knob is set to “0.50”, then each successive notch created by increasing the value of the Harmonics slider will cut at half the depth of the previous notch.

**Rumble Reduction Slider** – The Rumble Reduction Slider focuses on very low frequency noise, commonly known as “rumble”. Rumbles typically occur around 40Hz or below, and SoundSoap Pro’s Rumble reduction tool has a range of 20Hz – 100Hz. The Rumble reduction tool is a high-pass filter (it lets high frequencies pass through, while blocking low frequencies), with a slope of 12dB and a Q value of 5.

**Global Tools** – As with all the other tool tabs, SoundSoap Pro’s global tools may be accessed from within the Hum & Rumble tab. These global tools include Preset Buttons, A/B/C/D Compare Buttons, Help Button, Noise Only Mode Button, Spectrogram, and the ability to monitor other tool settings with the Tool Tabs/Tool State Thumbnails. These tools are described in more detail at the beginning of this section.

This concludes the overview of the Hum & Rumble Tool.
– the next section covers Click & Crackle reduction with SoundSoap Pro.
Click & Crackle Tool:
Click & Crackle Tool

On/Bypass Radio Buttons/Checkbox – These controls allow the Click & Crackle tool to be disabled, or bypassed, while other tools remain active. They are useful for comparing the difference between having the Click & Crackle tools on or off.

Click Threshold Slider – The Click Threshold slider dictates how bad clicks must be to be detected and removed. The range of the Click Threshold slider is 1.00dB – 25.00dB. When clicks are present in the media file being restored, if they fall below the threshold value, they remain unaltered – if they’re above the threshold, they are removed. The general rule with the Click Threshold slider is, moving it to the left will remove more clicks, and moving it to the right removes fewer clicks.

Crackle Threshold Slider – The Crackle Threshold slider dictates how bad crackle must be to be detected and removed. The range of the Crackle Threshold slider is 12.0dB – 25.0dB. When crackle is present in the media file being restored, if it falls below the threshold value, it remains unaltered – if it’s above the threshold, it’s removed. The general rule with the Crackle Threshold slider is, moving it to the left will remove more crackle, and moving it to the right removes less crackle.

Click Meter – The Click meter is another of SoundSoap Pro’s visual feedback tools. It illuminates in red to indicate that a click is being repaired.

Global Tools – As with all the other tool tabs, SoundSoap Pro’s global tools may be accessed from within the Click & Crackle tab. These global tools include Preset Buttons, A/B/C/D Compare Buttons, Help Button, Noise Only Mode Button, Spectrogram, and ability to monitor other tool settings with the Tool Tabs/Tool State Thumbnails. These tools are described in more detail at the beginning of this section.

Congratulations! You’ve now learned about SoundSoap Pro’s Click & Crackle Tools – the next section discusses the Broadband Tool...
Broadband Tool:

![Diagram of SoundSoap Pro interface with Broadband Tool highlighted]
Broadband Tool

**On/Bypass Radio Buttons/Checkbox** – These controls allow the Broadband tool to be disabled, or bypassed, while other tools remain active. They are useful for comparing the difference between having the Broadband tool on or off.

**Learn Noise Button** – The Learn Noise button is used to automatically “learn” a profile of frequencies responsible for causing a particular type of broadband noise. There are two modes of operation available with the Learn Noise button. The first mode, called “Snapshot Mode”, (represented by a camera icon) works by initiating audio playback within the host application, and then pressing the Timed Learn Noise button. SoundSoap Pro analyzes a short amount of audio (from the current playhead position) to create a noise profile, and then automatically snaps the 12 Threshold sliders to the appropriate positions to reduce/remove the unwanted broadband noise. The second Learn mode is Timed Learn Noise mode, represented by a Clock icon. To use this mode, one would initiate playback, then click the portion of the Learn Noise button with the clock icon. SoundSoap Pro continues to analyze audio (beginning from the original playhead position) that is played until the Timed Learn Noise button is clicked a second time. At this time, the 12 Threshold sliders are snapped into the appropriate position to reduce/remove the broadband noise present, based on the average noise profile learned over the duration indicated by the user.

**Threshold/Reduction View Slider** – This horizontal slider allows viewing either just the Threshold sliders, just the Reduction sliders, or can be positioned so that both Threshold and Reduction sliders are visible and adjustable.

**Reduction Sliders** – The Reduction sliders control the amount of noise reduction being applied to a particular frequency range.

**Meters** – The 12 meters in the Broadband Tool indicate the level of audio contained within each frequency range. The meters on the left-most side of the interface indicate low frequency ranges, while the meters on the right-most side of the interface indicate high frequency ranges – with meters between these two extremes indicating the midrange frequencies between the two. The actual frequency range of each band is not fixed – it depends on the learned noise profile.
may be locked together, while others remain unlocked and can be moved independently. By default, the Reduction sliders are set to a value of –15dB, and have an overall range of 0dB to -40dB.

**Threshold Sliders** – The Threshold sliders set the level that the signal must exceed for processing to be enabled in each frequency range. The sliders default to being locked together, so that moving one slider moves all the other sliders. Individual sliders may be fine-tuned by unlocking them and moving them independently. You can optionally choose to lock any number of sliders together so they can be adjusted in unison. By default, the Threshold sliders are set to a value of 0dB, and have an overall range of 0dB to –70 dB.

**Lock/Unlock Reduction Sliders Button** – This control either locks or unlocks all the Reduction sliders so that they may be moved independently of one another — or moved as a group, each in its relative position. In addition to the master Lock/Unlock button, each individual slider has its own Lock/Unlock control positioned at its base. These controls allow the locking or unlocking of each frequency band’s Threshold slider, without having to unlock all the sliders simultaneously. By default, all the Threshold sliders are locked together.

**Attack Knob** – The Attack knob sets the attack time in milliseconds for each frequency band, and controls how fast broadband noise reduction is turned on when the audio signal exceeds the threshold for that band. By default, the Attack value is set to 75 milliseconds.

**Release Knob** – The Release knob sets the release time in milliseconds for each frequency band, and controls how quickly broadband noise reduction is turned off when the audio signal falls below the threshold for that band. By default, the Release value is set to 100 milliseconds.

**Attack Tilt Knob** – The Attack Tilt knob adjusts the ratio of Attack between the lowest and highest frequency bands. By default, the Attack Tilt knob’s value is set to 1.0.
For example, if the Attack Knob’s value is set to 50 ms, and the Attack Tilt knob is set to “1.0”, then the Attack time for the lowest frequency band will be 50 ms, as will be the Attack time for all other frequency bands. If however, the Attack Tilt knob is set to “2.0”, then the Attack time for the lowest frequency band remains at 50 ms, but the Attack time for the highest frequency band will be 25 ms – or, a 2:1 ratio between the lowest and highest frequency bands. In this case, moving to the right from the lowest frequency band to the highest, each successive band will have an incrementally faster attack time.

**Release Tilt Knob** – The Release Tilt knob adjusts the ratio of Release between the low frequency bands and the high frequency bands. By default, the Release Tilt knob’s value is set to 1.0.

For example, if the Release Knob’s value is set to 50 ms, and the Release Tilt knob is set to “1.0”, then the Release time for the lowest frequency band will be 50 ms, as will be the Release time for all other frequency bands. If however, the Release Tilt knob is set to “2.0”, then the Release time for the lowest frequency band remains at 50 ms, but the Release time for the highest frequency band will be 25 ms – or, a 2:1 ratio between the lowest and highest frequency bands. In this case, moving to the right from the lowest frequency band to the highest, each successive band will have an incrementally slower release time.

**Global Tools** – As with all the other tool tabs, SoundSoap Pro’s global tools may be accessed from within the Broadband tab. These global tools include Preset Buttons, A/B/C/D Compare Buttons, Help Button, Noise Only Mode Button, Spectrogram, and the ability to monitor other tool settings with the Tool Tabs/Tool State Thumbnails. These tools are described in more detail at the beginning of this section.

You’ve now learned about SoundSoap Pro’s Broadband Tool – the next section goes over the Noise Gate Tool, which can be used to eliminate any residual noise leftover after using the previously mentioned tools.
Noise Gate Tool:

- Preset Save Button
- Preset Load Button
- A/B/C/D Compare Buttons
- Help Button
- Noise Only Mode Button
- Spectrogram
  - White = Input
  - Red = Output
- On/Bypass Radio Buttons
- Default View Checkbox
- Threshold Attack Knob (with numerical entry field)
- Threshold Release Knob (with numerical entry field)
- Threshold Slider (with numerical entry field)
- Reduction Slider (with numerical entry field)
- Spectrogram Slider (Scrolling & Zooming)
- Noise Gate Tab (with tool settings thumbnail)
- Hum & Rumble Tab (with tool settings thumbnail)
- Click & Crackle Tab (with tool settings thumbnail)
- Broadband Tab (with tool settings thumbnail)

Visual Display (with audio waveform and noise gate)

Launch Tab
Noise Gate Tool

On/Bypass Radio Buttons/Checkbox – These controls allow the Noise Gate tool to be disabled, or bypassed, while other tools remain active. They are useful for comparing the difference between having the Noise Gate tool on or off.

Visual Display – The Noise Gate’s visual display shows the audio waveform being processed, as well as the noise gate’s threshold indicators. Options for viewing the waveform include displaying just left or right channel data, or adding the left and right channels together and displaying the overall audio data for the two channels as a single audio waveform. In addition, there is a Freeze button that appears when the mouse cursor is placed over the visual display. Clicking the button temporarily pauses waveform scrolling, and clicking the button when the waveform is paused starts it scrolling again.

Threshold Slider – The Threshold slider determines the audio level required for the Noise Gate to open. The threshold level is represented by a pair of parallel white horizontal lines, which appear superimposed over the audio waveform in the visual display. Audio signals which exceed the Threshold slider’s setting are not affected, and do not have noise reduction applied to them. By default, the Noise Gate Threshold slider is set to a value of 20dB, and has a range of 0dB to –60dB.

Reduction Slider – This slider provides a proportional amount of noise reduction, and only affects audio which falls below the threshold setting. A lower value for the Reduction slider provides a lower ratio between the threshold level to the amount of noise reduction, whereas a higher setting increases this ratio. By default, the Noise Gate’s Depth slider is set to a value of 2.00, and has a range of 1.00 to 5.00.

Threshold Attack Knob – The Threshold Attack knob determines how quickly the Noise Gate opens. By default, the Attack value is set to 30 milliseconds, and has a range of 10 milliseconds to 500 milliseconds.

Threshold Release Knob – The Threshold Release knob determines how quickly the Noise Gate closes. By default, the Release value is set to 100 milliseconds, and has a range of 50 milliseconds to 1000 milliseconds.
Conclusion

Congratulations! You’ve now learned about all of SoundSoap Pro’s powerful noise reduction tools. Please continue on to the next chapter, which gives step-by-step directions on how to use SoundSoap Pro.
Chapter 4: Using SoundSoap Pro
Chapter 4:
Using SoundSoap Pro

Introduction

This chapter will cover the basic operation of SoundSoap Pro. For more specific details on how to remove certain types of noise, please refer to Chapter 5 – a hands-on tutorial, which covers removing various types of noise from various types of audio material, and focuses on sample files included on your installer CD-ROM.

Tips for Noise Reduction

SoundSoap Pro can be used in a variety of ways, but by observing the following tips, you will get the best results in the least amount of time.

Evaluating the Noise Content

SoundSoap Pro contains many different tools for removing/reducing noise. In some situations, you may wish to use all the tools at the same time, and in others, you may only need to use a single noise reduction tool to remove/reduce a very specific kind of noise. Each of the noise reduction tools is contained within one of the interface “tabs” – each tab contains a checkbox to enable or disable processing. If the file you are cleaning does not contain Hum & Rumble, for example, it’s a good idea to disable the Hum & Rumble tool so as not to inadvertently remove low frequency audio content. By default, all tools are turned off.

Sampling Noise (Broadband)

Typically, noisy media files will have areas containing desired content, and other areas containing just the unwanted noise. A simple but very common example would be video footage of an interview.

This type of recording contains dialogue, interspersed with areas of silence (or what should be silence, except for the unwanted background noise). In cases such as this, the “silent” areas contain the same noise that interferes with us hearing the voice of the person being interviewed. These silent sections of the file allow us to sample just the noise itself – then SoundSoap Pro removes that type of noise from the entire file. The end result is that the unwanted noise is reduced equally in all parts of the file, making the dialogue much clearer. In other cases, there may not be an area present in your media that contains just the unwanted noise.

In media that contains the desired audio and unwanted noise throughout the entire length of the file, it is often best to first experiment and learn the noise profile in different parts of the file to get the best noise reduction results. This can be done by starting playback in the desired part of a file, and then clicking the Learn Noise button.

When you find the settings that work best, you can then apply (or render them) to the entire file. If in this process it seems that different settings would work best for different parts of the file, consult the next section.
If your host application supports looping playback of a designated section of audio, this is another technique that can be invaluable. For example, you might be trying to remove background noise from a dialogue track that has two alternating speakers, and there are only very short pauses containing ambient noise between their words. By setting up a very short loop between words or phrases, SoundSoap Pro can “Learn Noise” as audio playback repeats within this short loop a number of times, analyzing just the ambient noise within the loop’s boundaries.

**Constant Noise v. Changing Noise**

**Constant Noise**

Noisy media can be categorized into two basic groups – that which has a constant noise level and type, and that which has varying levels and types of noise throughout. Each category of media can be cleaned best by using a slightly different approach to noise reduction. Media with a constant noise level and type of noise is generally the easiest to clean, and is typically found in recordings of audio cassettes, or in cases where there is a constant hum present, due to using equipment that is plugged into poorly grounded electrical circuits. Media that falls into this category can be cleaned by making the appropriate settings within the various noise reduction tools—once the ideal settings are found, the entire audio file may be processed with these settings.

**Changing Noise**

Noise in media may vary over time – for example, a video clip’s soundtrack may contain air conditioning noise that varies in intensity throughout the clip, due to the camera being moved around the room while taping a subject. In a recording of an old LP, there may be more digitized scratches on one side of the LP than the other. In a live recording, an electrical hum may vary because of the changing settings on an instrument, or because of other equipment that is turned on or off during the recording session.

In cases like this, it is best to apply noise reduction with different settings for the different levels of noise that occur in the various sections. To reduce noise by varying degrees in different sections of the same audio document, it’s possible to select specific “target” areas, apply noise reduction with certain settings, and then move on to each area of the clip, targeting the specific noise that occurs in each. If your host application supports automation of plug-in parameters, you may wish to first experiment with SoundSoap Pro parameter settings that work best for each section of your file, and create automation values that will dynamically change settings to best clean each section.

If your host application does not support plug-in parameter automation, but does support the use of reference markers and/or regions, you may want to “mark up” a file into sections that contain different levels of noise or different noise types. This is a good strategy for isolating and processing areas of the file with a certain level and kind of noise, and then moving on to another section and processing it with different noise reduction settings more suitable for its level and noise type.

The techniques described above will generally yield the best results, as one noise reduction setting alone may not be suitable for the different levels and/or kinds of noise that occur over the course of the entire file.

**Using SoundSoap Pro (with BIAS Peak as a Host Application)**

Most of the steps here will translate directly into working with SoundSoap Pro in other hosts—though it is normal for the operation to vary slightly depending on the plug-in format and implementation in each host.

For more information on using plug-ins in your host, consult the documentation provided with it. SoundSoap Pro will operate in a similar fashion to the other plug-ins included with it.
To use SoundSoap Pro with BIAS Peak, you will need to be running either Peak Express, Peak LE, Peak DV, or Peak Pro (version 3.2 or later) and have already installed SoundSoap Pro on your Macintosh – running Mac OS X (v10.2 or later).

The first step in reducing noise is to open a noisy media file in Peak, then open the SoundSoap Pro plug-in. The following steps will guide you through your first attempts at noise reduction.

To Eliminate Hum:

1. Launch Peak.
2. Open a noisy file.
3. Audition this file in Peak, to get an idea of the hum that needs to be cleaned up.

In a real-world situation, you may not have all the various noise types in every file you wish to process. A very important part of using SoundSoap Pro is to evaluate the types of noise contained in your media files. For example, if a file that needs to be cleaned contains only broadband noise, you can simply leave the Hum & Rumble, Click & Crackle, and Noise Gate tabs inactive. This lets you focus on the noise that needs removal, and prevents inadvertent removal of desired content.

4. From the Plug-Ins menu, choose Insert 1>BIAS>SoundSoap Pro – the SoundSoap Pro interface appears.
5. Click the Hum & Rumble Tab to bring it to the foreground.
6. Confirm that this tool is turned on — click the On radio button, or check the checkbox in the Hum & Rumble Tab.
7. Start playback of the file by pressing the Space Bar
8. As the file plays, sweep the Hum Frequency Slider slowly back and forth and look for activity in the Hum Meter. When you see activity in the Hum Meter, try to fine-tune the Frequency Slider’s position so as to get the strongest reading in the Hum Meter. If you know the exact frequency at which the hum occurs, you may also type this value in the numeric value field to the right of the Hum Frequency slider — press the Return or Enter Key.
9. Once you have determined the hum’s fundamental frequency, use the Depth slider to create a notch filter to cut the audio signal’s strength at this frequency.
10. Use the Q slider to adjust the bandwidth of the notch filter — a smaller Q value results in a wider notch, with more of the frequencies surrounding the fundamental frequency being affected — a larger Q value creates a narrower notch, and affects fewer of the frequencies around the fundamental frequency. Ideally, you’ll want to use the largest Q value (narrowest notch) that effectively eliminates the hum, so as to avoid unnecessarily removing frequencies that do not contain hum.
11. If you still hear a hum after setting the Hum Frequency slider, depth, and Q sliders, you can use the Harmonics slider to eliminate additional harmonics of the fundamental frequency.

12. If the hum reduction controls do not make a difference in reducing the hum, perhaps this “hum” is a rumble – or perhaps has a broadband noise component to it. You may wish to enable the Rumble slider and make adjustments to affect the lower frequencies that cause rumble, and also experiment with using the Broadband Tool in conjunction with the Hum & Rumble tool.

Using the Spectrogram as a visual aid can help determine where in the frequency spectrum certain kinds of noise occur.

A good technique for confirming your noise reduction settings is to switch SoundSoap Pro into “Noise Only” listening mode. In Noise Only mode, you will hear just the noise being removed with the current noise reduction settings. If you hear any of the audio that should be kept in the file, adjust the parameters until you only hear the undesired noise.

The steps above outline the basic operation of the Hum & Rumble tool – for more details on other parameters not mentioned here, please refer to the Hum & Rumble section in Chapter 3: SoundSoap Pro User Interface & Controls.

For hands-on examples of how to use these additional parameters, please refer to Chapter 5, and be sure to copy the tutorial files from your installer CD-ROM.

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To Eliminate Click & Crackle:

At this point, you’re either trying to eliminate click & crackle from the same file in which hum was eliminated in the previous section, or you’re opening a different file that contains click & crackle – if you’re working with the same file, ignore steps 1 and 2.

1. Launch Peak.

2. Open a file that contains click & crackle.

3. Audition this file in Peak, to get an idea of the noise that needs to be cleaned up.

4. Click the Click & Crackle Tab to bring it to the foreground.

5. Confirm that this tool is turned on – click the On radio button, or check the checkbox in the Click & Crackle tab.

6. Adjust the Click Threshold slider – moving it toward the left reduces more clicks and moving it to the right reduces fewer clicks.

7. Adjust the Crackle Threshold slider – moving it toward the left reduces more crackle and moving it to the right reduces less crackle.

The Click Meter gives valuable visual feedback – when the Click Meter lights up, it indicates that your current settings are effectively detecting and repairing Clicks.

A good technique for confirming your noise reduction settings is to switch SoundSoap Pro into “Noise Only” listening mode. In Noise Only mode, you will hear just the noise being removed with the current noise reduction settings. If you hear any of the audio that should be preserved, adjust the parameters until you only hear the undesired noise.
The steps above outline the basic operation of the Click & Crackle tool – for more details on other parameters not mentioned here, please refer to the Click & Crackle section in Chapter 3: SoundSoap Pro User Interface & Controls.

For hands-on examples of how to use these additional parameters, please refer to Chapter 5, and be sure to copy the tutorial files from your installer CD-ROM.

To Eliminate Broadband Noise (Basic Steps):

1. Launch Peak.
2. Open a file that contains broadband noise.
3. Audition this file in Peak, to get an idea of the broadband noise that needs to be cleaned up.
4. Click the Broadband Tab to bring it to the foreground.
5. Confirm that this tool is turned on – click the On radio button, or check the checkbox in the Broadband Tab.
6. Try to locate a part of the file that contains just the noise you’re trying to eliminate.
7. Start playback and click the Learn Noise button. (Snapshot mode “learns” noise from wherever the playhead cursor is located in the waveform, and requires just a fraction of a second to learn. In Timed mode, “learning” is initiated the same way, but you must click the Learn Noise button a second time to stop learning). Snapshot mode is indicated by a camera icon – Timed mode is indicated by a clock. Once SoundSoap Pro has “learned” what frequencies are causing the current broadband noise, the blue Threshold sliders till snap into a position that should be a good starting point for removing the broadband noise at hand.

- A good place to start “learning” noise – notice the playhead cursor is placed at the beginning of a section that contains just noise

- A bad place to start “learning” noise – in this case, as soon as playback starts, SoundSoap Pro would be attempting to learn the noise within a section of audio that contains the material we’re trying to preserve

- If no such area is available, try to find a very short section of noise by itself, so we create a very short loop, and learn noise within the loop – as it repeats a few times, SoundSoap Pro is given enough noisy audio to determine the noise profile

- In this case, there’s only a very short section of noise by itself, so we create a very short loop, and learn noise within the loop – as it repeats a few times, SoundSoap Pro is given enough noisy audio to determine the noise profile

8. Adjust the yellow Reduction sliders until they are removing the broadband noise.
**Advanced Steps:**

9. With the yellow Reduction sliders grouped together (as they are by default), move them all downward until they are not removing any broadband noise.

10. Move them all upward as a group until you can no longer hear any broadband noise.

11. Now, click the lock icon for the yellow Reduction sliders.

12. Starting on the lowest band (left-most slider), lower it all the way – you will most likely hear a low frequency component of the broadband noise become audible as you do this. Raise this slider to the lowest position that effectively removes this low frequency component.

13. Repeat Step 12 for each slider, moving from the lowest frequency bands on the left, all the way through the highest bands on the right. This technique applies variable amounts of noise reduction in each frequency band, ensuring that desired content is preserved, and unwanted noise is removed.

To Eliminate Residual Noise with the Noise Gate:

If you’ve already used the Hum & Rumble, Click & Crackle, and Broadband tools on a noisy file, chances are there’s little if any residual noise left. If some noise is still present, and your audio material has areas of what should be silence, this is a perfect opportunity to use the Noise Gate to eliminate the remaining noise.

1. Launch Peak.

2. Open a file that contains noise.

3. Audition this file, to get an idea of the noise that needs to be cleaned up.

4. Click the Noise Gate Tab to bring it to the foreground.

5. Confirm that this tool is turned on – click the On radio button, or check the checkbox in the Noise Gate Tab.

6. Adjust the Threshold slider – moving it to the left lowers the threshold (more noise can pass through), and moving it to the right raises the threshold (only audio exceeding this threshold will pass through the gate).
7. Adjust the Reduction slider – moving it to the left lowers the amount of reduction, and moving it to the right increases the amount of reduction.

A good technique for confirming your noise reduction settings is to switch SoundSoap Pro into “Noise Only” listening mode. In Noise Only mode, you will hear just the noise being removed with the current noise reduction settings. If you hear any of the audio that should be kept in the file, adjust the parameters until you only hear the undesired noise.

Applying SoundSoap Pro Settings

The steps below outline how to apply SoundSoap Pro settings to a media file in Peak – if you are using SoundSoap Pro in another host application, please check that host’s documentation for information on how to apply/render plug-in settings to files.

To Apply SoundSoap Pro Settings to a File:
1. Make desired settings.
2. Select the range of audio you wish to apply the current noise reduction settings to – if no selection is made, the entire file will be processed.
3. Choose “Bounce” from the Plug-Ins menu

Be sure to disable SoundSoap Pro after “bouncing” in Peak. If you leave SoundSoap Pro active, you will hear the processed file being played through SoundSoap Pro in realtime, giving the effect of twice the amount of noise reduction. For your convenience, Peak presents a dialog box after bouncing, with options to turn plug-ins off or to leave them active if you need to process additional files. If you would like to save your current settings, be sure to save a preset first!

Using Presets

SoundSoap Pro allows custom presets to be saved and recalled – this is particularly useful for saving parameter configurations that effectively reduce noise types that users may encounter on a regular basis. For instance, if a commonly used recording environment always introduces a particular kind of noise, creating a preset makes it much faster and easier to eliminate this noise from recorded material.

SoundSoap Pro features advanced presets, offering numerous advantages over conventional host-based presets. When a SoundSoap Pro preset is saved, all parameter settings are saved. However, when this preset is later recalled, all the parameter settings within that preset may be loaded – or, individual tool settings may be loaded.

The usual host-provided presets for each plug-in format are also supported, though these will not include the ability to load individual tool settings. BIAS recommends using SoundSoap Pro’s advanced presets rather than host-provided presets.

To Save a SoundSoap Pro Preset:
1. Configure noise reduction parameters as desired.
2. Click the Save Preset button.
3. Name your preset and choose a save location.
4. Click the Save button.

To Load a SoundSoap Pro Preset:
1. Click the Load Preset button.
2. Navigate to the directory where you have saved your SoundSoap Pro presets — choose (highlight) the desired preset.

3. Click the Open button — SoundSoap Pro loads the preset, and sets all parameters to the value reflected in the preset.

To Load Individual Tool Settings from a Preset:

1. Click the Load Preset button.

2. Navigate to the directory where you have saved your SoundSoap Pro presets — choose (highlight) the desired preset.

3. Uncheck the Load All Settings checkbox, as well as those for tools which you do not wish to load parameters — by default, all the tool’s checkboxes are checked, so as to load all parameter settings within a preset.

4. Click the Open button — SoundSoap Pro loads only the parameters for tools that are checked. All selected tool parameters are set to the values reflected in the preset — tools that do not have parameters loaded are set to their default values, and remain inactive until turned on.

Using A/B/C/D Comparisons (“Snapshots”)

In addition to user-definable presets, SoundSoap Pro also features A/B/C/D comparisons. This feature allows temporary snapshots of tool settings to be made, and is useful for deciding what parameter settings will work best for removing the unwanted noise at hand.

To Set a Snapshot (A):

1. Configure noise reduction settings as desired.

2. Click the Assign Snapshot A button.

To Set a Second Snapshot (B):

1. Configure noise reduction settings as desired — with settings slightly different than those used for Snapshot A.

2. Click the Assign Snapshot B button.

To Compare Snapshot A and Snapshot B:

1. Click the Recall Snapshot A button — parameters “snap” into the memorized positions.

2. Click the Recall Snapshot B button — parameters now “snap” into the positions memorized when you assigned snapshot B.

A/B/C/D snapshots are temporary — if you want to use one of these snapshots in the future, in another noise reduction session, be sure to save a preset!
The currently active Snapshot is indicated by a red border around the active Snapshot's Assign and Recall buttons.

The process for loading additional snapshots is similar – just apply the directions above to the Assign and Recall buttons for Snapshots C & D.

Conclusion

The steps above outline the basic operation of SoundSoap Pro – for hands-on examples of how to use these additional parameters, please refer to Chapter 5, and be sure to copy the tutorial files from your installer CD-ROM.
Chapter 5: Hands-On Tutorial
Chapter 5: Hands-On Tutorial

Introduction

This tutorial will guide you through the noise reduction process with SoundSoap Pro, using the included media files. These files contain samples of various noise types, in a variety of different types of recordings. Follow along with the lessons to learn how to use SoundSoap Pro.

The included examples focus on using SoundSoap Pro — and assume that you are familiar with how to use your host application. If you need help using your host application, please consult the documentation that was included with it. This will make learning how to use SoundSoap Pro much easier.

Regardless of what host application you are using, this tutorial should give you a good idea how SoundSoap Pro is used.

Lesson 1: Removing Tape Hiss

This example will teach you the basics of cleaning up tape hiss. This sample file is of a vocal, originally recorded on cassette, and then transferred to a computer for restoration.

To Remove Tape Hiss:

1. Launch your host application.

2. Locate the folder called “SoundSoap Pro Tutorial Files”, and open “Vocal_with_Tape_Hiss.wav”.

3. Play this file to get an idea of the noise (tape hiss) that we’re trying to remove.

4. Open SoundSoap Pro in your host application.

5. Click on the Broadband Tab, and then check the On/Bypass checkbox — this enables just the Broadband tool.

Since this file only contains tape hiss, we can use a single noise reduction tool to clean it. Each of SoundSoap Pro’s various tools can be used independently.

6. Position your host application’s playhead cursor a few seconds before the vocal starts.

Ideally, you will want to “Learn Noise” in an area that contains just the undesired noise.
7. Initiate playback in your host application.

8. Click the Learn Noise button in the Broadband Tool.

Within moments, SoundSoap Pro’s Learn Noise algorithm detects the frequencies that make up the tape hiss, and broadband noise reduction begins automatically.

Notice that the blue Threshold sliders have “snapped” into a position that represents the noise profile of the unwanted tape hiss.

You should hear a dramatic reduction in the tape hiss with this automatic setting. To fine-tune your results, continue with the steps below.

9. Set up your host application to loop the vocal repeatedly, with a few seconds of silence before and after the vocal.

10. Click the Noise Only Button.

11. Adjust the Attack knob to 80ms.

12. Adjust the Release knob to 45ms.

After “learning”, it’s a good idea to take into consideration the type of audio material you’re working with, and make adjustments to the attack & release values. Since the audio in this example is a vocal, it changes level relatively slowly from low signal level to high signal level. We adjusted the Attack and Release knobs to higher values than the default settings, so that as broadband noise reduction is activated, it occurs in proportion with dynamic changes in the audio material we wish to preserve. If working with other types of audio, such as a drum recording for example, you would want to use lower Attack & Release values, as a drum hit goes from a low signal level to a high signal level in a much shorter time. By adjusting these values to suit the audio material you’re working with, you will end up with better noise reduction results and minimize the occurrence of unwanted artifacts. By making these adjustments in Noise Only mode, we’re able to hear if any of the desired audio material is being removed. The goal in Noise Only mode is to hear *only* the undesired noise, and none of the audio signal we wish to preserve.

Loopying a section while making adjustments helps in fine-tuning your results.
13. Click the Noise Only Button again to go back into normal listening mode.

Another way to fine-tune your settings is to adjust the yellow Reduction sliders independently. SoundSoap Pro has the ability to apply variable amounts of noise reduction to different parts of the frequency spectrum. In this example, we’ll unlock the reduction sliders, so we can apply more noise reduction at the higher end of the spectrum where most of the tape hiss occurs, and less noise reduction in the lower part of the spectrum, where more of our desired content exists.

14. With these sliders grouped together (as they are by default), move them all downward until they are not removing any broadband noise at all.

15. Move them all upward as a group until you can no longer hear any broadband noise.

16. Now, click the lock icon for the yellow Reduction sliders to unlock them.

17. Starting on the lowest band (left-most slider), lower it all the way—you will most likely hear a low frequency component of the broadband noise become audible as you do this. Raise this slider to the lowest position that effectively removes this low frequency component.

18. Repeat Step 17 for each slider, moving from the lowest frequency bands on the left, all the way through the highest bands on the right. This technique applies variable amounts of noise reduction in each frequency band, ensuring that desired content is preserved, and unwanted noise is removed.

19. Lock the Reduction sliders back together.

20. Click the Noise Only Button to hear the noise being removed.

21. Move the locked Reduction sliders up and down until you find the best setting for eliminating the tape hiss and none of the vocal. When in noise only mode, the goal is to hear only the tape hiss we’re trying to remove.

22. Click the Noise Only Button again to go back into the normal listening mode.

23. Listen to the cleaned file—the tape hiss has been removed, leaving only the desired vocal!

24. Bounce/Apply/Render the SoundSoap Pro plug-in to the vocal track—the process is complete!
If you are not familiar with applying effects plug-ins to audio files within your host application, please consult the documentation that was included with it – applying SoundSoap Pro’s noise reduction tools will be similar to processing audio with other plug-ins.

Lesson 2: Removing Clicks, Crackles, and Hiss

This example will teach you the basics of removing clicks, crackles, and needle hiss from recordings of vinyl records.

To Remove Click and Crackle:
1. Launch your host application.
2. Locate the folder called “SoundSoap Pro Tutorial Files” and open “Guitar_from_Vinyl.wav”.
3. Play this file to get an idea of the noise that we’re trying to remove. You should notice clicks, crackles, and a bit of hiss.
4. Open SoundSoap Pro in your host application.
5. Click on the Click & Crackle Tab and then check the On/Bypass checkbox.
6. Set up your host application to loop the file repeatedly, allowing continuous audio playback as you listen and make adjustments.
7. Move the Click Threshold slider and the Crackle Threshold sliders all the way to the right – in this position, processing is minimized.
8. Slowly move the Click Threshold slider to the left until you no longer hear any clicks.
9. Now, slowly move the Crackle Threshold slider to the left until you no longer hear any crackles.
10. Click the Noise Only button to hear what is currently being removed.
11. Click the Noise Only button again to return to normal listening mode – if you are happy with your results, continue on to the next step.
12. Click on the Broadband Tab and check the On/Bypass checkbox.

Since this file only contains clicks, crackles, and needle hiss, we’ll use just two tools to clean it.

When files contain multiple noise types, it is recommended to use the required tools in order from left to right – in this case, first we’ll remove the clicks and crackles using the Click & Crackle tool, then we’ll enable the Broadband tool to reduce the needle hiss.

Since this file also contains needle hiss, we can use this additional tool to clean the additional type of noise.
13. In your host application, position the playhead cursor in the area a few seconds before the guitar starts.

14. Initiate playback in your host application – the noise profile is learned and the blue Threshold sliders snap into position.

15. Click the Broadband Tool's Learn Noise button.

16. Leave the yellow Reduction sliders locked together and lower them all slightly.

17. Click the Noise Only button to hear what is being removed by the Click & Crackle and Broadband Tools.

18. Click the Noise Only button again to return to normal listening mode.

If you are satisfied with your results, bounce/apply/render the SoundSoap Pro plug-in to this file – or, continue fine-tuning your Click & Crackle and Broadband settings, using Noise Only mode to monitor what is being removed.

Lesson 3: Removing 60Hz Hum and Background Noise

This example will teach you how to use SoundSoap Pro's Hum & Rumble and Broadband Tools to remove a 60Hz hum, some unwanted background noise, as well as how to use the Noise Gate Tool to clean up any residual noise between sections of dialogue.

To fine-tune broadband noise reduction further, you can use the additional broadband tuning steps discussed in Lesson 1 – including adjusting Attack & Release values and independently adjusting Broadband noise reduction values in each part of the frequency spectrum.

An audio-only version of this clip is also included for use in host applications that may not support opening and playing QuickTime movies – the audio only file is called "Dialogue_with_Hum.wav".
To Remove Hum & Rumble:

1. Launch your host application.
2. Locate the folder called “SoundSoap Pro Tutorial Files” and open “Dialogue_with_Hum.mov”.
3. Play this file to get an idea of the noise (60Hz hum and background noise) that we’re trying to remove.
4. Open SoundSoap Pro in your host application.
5. Click on the Hum & Rumble Tab and check the On/Bypass checkbox – this enables just this tool.
6. In your host application, initiate playback from the beginning of the file.

By default, SoundSoap Pro’s Hum Frequency slider is set to 60Hz, so you should immediately hear a dramatic reduction in the amount of hum in the audio. To fine-tune your hum reduction settings, continue to the next steps.

7. Adjust the Q slider to a value of 40 and adjust the Depth Slider to a value of 25 dB.

The easiest way to decide on settings for the Hum Tool’s Q and Depth sliders is to keep the noisy audio playing – perhaps in loop mode – and start with the Depth slider set to 0. Slowly move the Depth slider to the right and use the lowest possible setting that effectively eliminates the hum. To adjust the Q value, start with the Q slider all the way to the right – in this position, the notch filter being created is as narrow as possible and eliminates the fewest frequencies that surround the fundamental frequency causing the hum – 60Hz in this case. As the noisy audio plays, move the slider slowly to the left, until you hear the best results. Use the highest Q value setting that eliminates hum without removing the audio you wish to preserve.

8. In the Rumble filter section, check the On/Bypass checkbox to enable this filter, and use the slider to set the value to 25.

The reason we’re also using the Rumble filter in this example is that after adjusting the hum reduction parameters, a very low frequency component of this hum is still audible. By adding the Rumble filter to the noise reduction process, we can eliminate noise occurring at a lower frequency than what is typically considered “Hum”. To get an ideal setting with the Rumble filter, first enable it by checking its On/Bypass checkbox. With the Rumble slider at its lowest setting – all the way to the left – slowly begin to move it to the right as audio plays. As soon as the low frequency rumble becomes inaudible, stop moving the slider – this is the optimum setting.
9. Click the Noise Only button to hear what is currently being removed.

10. Click the Noise Only button again to return to normal listening mode.

These settings should remove all the unwanted low frequency hum and rumble, but should not affect the dialogue. To remove the unwanted background noise, continue on to the next few steps.

11. Click on the Broadband Tab and check the On/Bypass checkbox – this enables the tool. The Hum & Rumble Tool should remain active.

12. Set up your host application so it loops the entire file.

13. Position the playhead cursor at the beginning of the file.

14. Click the Learn Noise button and initiate playback in your host application.

15. SoundSoap Pro “learns” the noise, and snaps its blue Threshold sliders to values it has determined to be a good starting point for reducing the current background noise. There should be a dramatic reduction to the unwanted background noise with this automatic setting.

16. Click only the Unlock button for the Threshold slider on the lowest frequency band.

17. Move this Threshold slider into the position shown below.

Since we only need to unlock the Threshold slider for the lowest frequency band, use the unlock button *only* for that single slider.

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Note that you may also click within any numerical field next to one of the control sliders mentioned above and type in an exact value – or, you may click into one of these fields and use the Up/Down Arrow keys on your keyboard for nudging these values by small increments. If you use either of these methods, be sure to press the Return/Enter key on your keyboard to exit the numerical field!
The reason we only unlock the Threshold slider for the lowest frequency band is that there can be occasions when the automatically learned noise profile may need to be slightly adjusted. The example below shows the automatically learned profile (with the Reduction sliders rotated out of the way using the Threshold/Reduction View Slider):

By lowering just the lowest band, we create a smoother overall noise profile, which can often result in better sounding broadband noise reduction results – note the difference of the noise profile:

Finally, we locked all the Threshold sliders back together – this way, should we need to fine-tune the overall threshold level across all the frequency bands, we can maintain the same noise profile – note the positions of all Threshold sliders have changed, but their relative positions remain the same:

Unlocking all the Reduction sliders allows us to fine-tune exactly how much noise reduction is being applied in different parts of the frequency spectrum. Moving each Reduction slider while looping audio playback allows you to hear how it affects noise reduction within each frequency band. As you make adjustments to each band, use the lowest possible noise reduction setting that effectively eliminates the broadband noise (the unwanted “background” noise). This ensures that more of the desired content is left intact.

21. Audition the file to hear your results so far.

22. Now, click the Noise Only button and audition the file – you should hear only the unwanted noise being removed by the Hum & Rumble and Broadband Tools. If any of the audio we’re trying to preserve is still audible in Noise Only mode, we can adjust the Attack & Release knob values.
23. Adjust the Attack, Release, and Tilt knobs to the positions/values shown below:

![Attack, Release, and Tilt knobs](image)

24. Click the Noise Only button again to return to normal listening mode.

25. Audition the file to hear your results with the additional Attack, Release, and Tilt settings.

The reasons for making the adjustments in the previous steps are:

**Attack & Release** – The audio material we’re trying to preserve is a person’s voice, which changes level relatively slowly from low signal level to high signal level (slow attack). We adjusted the Attack and Release knobs to higher values than the default settings, so that as broadband noise reduction is activated, it occurs in proportion with dynamic changes in the audio material we wish to preserve. If working with music, we would likely have used much lower attack & release values, as musical notes played on many instruments have faster attack & release times of their own. By adjusting these values to suit the audio material you’re working with, you will end up with better noise reduction results, and minimize the occurrence of unwanted artifacts. In general, when making adjustments to the attack & release values, consider the audio material you’re working with – for audio with a slow attack, use a higher attack setting (slower), and for audio with a fast attack, use a lower attack setting (faster).

**Tilt** – The Tilt controls vary the attack or release times of broadband noise reduction that are applied over the entire frequency spectrum. With an attack setting of 80ms, and an Attack Tilt setting of 3.00, we created proportional attack times across the frequency spectrum. With these settings, we would be applying an 80ms attack value to the lowest frequency band, and a 26.7ms attack time to the highest frequency band, with each band between the two receiving an incremental setting. The Release Tilt control is set in a similar way – with the current settings, (Release: 30ms/Release Tilt: 3.00) the lowest band operates with an attack value of 30ms, the highest band at 10ms, with each band between them being set to some incremental value.

In general, when working with audio that has a wide dynamic range, use higher tilt values – when working with audio with lower dynamic range, use lower values. The best results are obtained by considering the type of audio material you’re trying to preserve, and toggling back and forth between regular listening mode and Noise Only mode, making adjustments that maximize noise reduction, and minimize artifacts and removal of the audio content we’re trying to preserve.

26. Click the Noise Only button to monitor your progress so far, with the Hum & Rumble and Broadband Tools activated.

27. Click the Noise Only button again to return to normal listening mode.

At this point, the file should sound much better than the original, now that all the low-frequency hum & rumble...
has been removed, and the background noise has been greatly reduced.

However, there is a bit of noise left over after our fine-tuning. Rather than use stronger settings in the Broadband Tool – which in some circumstances can add undesired artifacts or remove a bit of the audio we’re trying to preserve – we’ll add the Noise Gate Tool to the end of our chain of noise reduction processing, and apply a very light Noise Gate setting, which will remove (gate) the remaining noise in the pauses between dialogue.

28. Click on the Noise Gate Tab, and check the On/Bypass checkbox – enabling this tool, while the Hum & Rumble and Broadband Tools remain activated.

29. Adjust the Noise Gate’s Threshold slider to a value of -22.5 dB.

30. Adjust the Reduction slider to a value of 2.00

By setting the Threshold to a fairly low value of ~22.5 dB, we’re effectively telling SoundSoap Pro to *only* close the gate on parts of the audio signal that do not exceed ~22.5 dB. In other words, the sections of audio between passages of dialogue. When the audio level does exceed the ~22.5 dB threshold level, the gate is open. Therefore, in the passages of dialogue, which *do* exceed ~22.5 dB, the audio is unaffected, so the dialogue comes through clearly, at its original level.

The Reduction control is directly related to the Threshold control – for any audio that falls *below* ~22.5 dB, the Reduction slider determines how much the gate closes, and thus, to what degree the original audio’s level is cut – remember, this is only applied to those quieter sections between passages of dialogue that fall below the Threshold level.

The Noise Gate Tool’s display helps to visualize this concept:

31. Adjust the Attack and Release knobs to the settings shown below:

In the Noise Gate Tool, the Attack and Release values control how fast the gate closes and opens. When the gate closes, it cuts the level of any audio with a level that lies below the threshold. And when it opens, it allows audio which exceeds the threshold to pass through without affecting its original signal level.
32. Click the Noise Only button to hear your results after adding the Noise Gate into the signal processing chain.

33. Click the Noise Only button again to return to normal listening mode.

If you are satisfied with the results, bounce/apply/render the current SoundSoap Pro settings — the process is complete!

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**Conclusion**

You have now learned the fundamentals of using BIAS SoundSoap Pro to remove a variety of different types of noise from different types of audio material. We hope you enjoy using SoundSoap Pro, and find it to be useful in your audio processing toolkit!