ClickFix for Adobe Audition User Guide

Welcome to ClickFix for Adobe Audition, version 3.04. ClickFix is a plug-in for Adobe Audition that removes unwanted clicks and pops from audio signals. ClickFix and Adobe Audition make an ideal combination for cleaning up LPs before transferring them to CD.

ClickFix also works with Cool Edit 2000 and Cool Edit Pro from Syntrillium Software Corporation.

ClickFix features include:

Fast, accurate click removal ClickFix uses a proprietary statistical technique to locate clicks and pops. It does not employ edge detection or spectral analysis. This special technique results in *much faster*, more accurate click and pop detection than other methods.

Auto/Dynamic Mode Tells ClickFix to adjust most of the settings automatically. This improves detection and repair, and makes ClickFix even easier to use.

Real-time Preview Lets you listen to the results while you make setting adjustments.

Keep Only Clicks Lets you remove the undamaged signal, leaving only the clicks and pops, so you can see and hear what ClickFix would otherwise remove.

Force Fix Lets you repair short waveform defects such as tape dropouts that ClickFix cannot repair automatically.

Musical Transient Rejection Prevents ClickFix from removing musical transients, such as percussion and brass attacks.

Results Summary ClickFix can optionally display a detailed summary report after processing completes. Included is information such as the number of clicks repaired, average click width, and average time between clicks.

Presets ClickFix integrates seamlessly with Adobe Audition. It provides easy-to-use presets for immediate results, or you can configure the settings yourself for optimal performance.

To get help about a control on the ClickFix dialog, click on the control and press F1.

ClickFix supports 8-bit, 16-bit, and 32-bit stereo or mono, at all sample frequencies supported by Adobe Audition.

Quick Start

Now that you've installed ClickFix, follow these steps to get an idea of what ClickFix can do.

1. Use Adobe Audition to record a noisy signal, such as a scratchy LP.
2. Select a portion of the signal. (You are limited to processing no more than 30 minutes' worth of signal if you are using an unregistered copy of ClickFix.)
3. Select "ClickFix Click and Pop Removal..." from the Transform/Noise Reduction menu or the Effects/Restoration menu.
4. On the ClickFix dialog, click on an appropriate preset from the list at the left side of the dialog. Choose one that matches the type of signal you're working with, or simply select "Auto, normal".
5. Click OK.

See The Main ClickFix Dialog for information about adjusting the settings to get the best results with your particular signal.

To get help about a control on the ClickFix dialog, click on the control and press F1.

The Main ClickFix Dialog

Presets

The Presets feature works as it does elsewhere in Adobe Audition:

- To select a preset from the list, just click it.
- To add a preset, set the controls to the desired values, click Add, type the name of the preset in the entry field, and then click OK.
- To delete a preset, highlight it in the list and click Del.
- To change a preset, select the preset, make the desired control setting changes, click Del, then click Add. Type the name of the preset in the entry field, and then click OK.

Default presets are provided for the most common click removal tasks.

Preview

The Preview feature lets you actually hear what ClickFix will do before you click OK. Preview continuously repeats the selected waveform, so you can adjust the settings while you listen, until you are happy with the results.

The Preview feature can be a real timesaver. Without it, you would have to process the signal, listen to the result, make adjustments to the settings, and then process the signal again, over and over.

Preview is possible because of ClickFix's high processing speed. Nevertheless, if a signal has a high click density, ClickFix may not be able to repair the clicks fast enough, and the sound will be choppy. Unfortunately, the only solution for this is to use a faster computer.

You can check the Bypass checkbox to bypass ClickFix processing and listen to the original, unprocessed signal.

If you change settings while previewing, it will take a second or two before the change is audible. (This is due to the signal buffering that is necessary to make Preview work.)

Bypass

The Bypass checkbox is used only with the Preview feature.

If you check this box, ClickFix processing is bypassed, so you can hear the original, unaltered signal. This lets you compare the original signal to the repaired signal while previewing.

If you click the Bypass checkbox while previewing, it will take about a second before the result is audible. (This is due to the signal buffering that is necessary to make Preview work.)

Force Fix

Click this button to force ClickFix to repair the selected portion of the waveform, as if it were a click. (This is similar to the "Fill Single Click Now" feature in Adobe Audition.)

You can use Force Fix to repair short waveform defects that ClickFix does not normally repair, such as tape dropouts, thumps, and clicks wider than the maximum click width.

Force Fix works only with small waveform segments less than 0.1 seconds in length. The Force Fix button is disabled if the selected portion of the waveform is larger than this.

To use Force Fix, zoom in on the defect you want to fix. Select the defect, as well as a few extra samples on each side. The number of extra samples should be at least as large as the Blend Size setting. However, don't select too many extra samples or you will alter too much undamaged signal. Click the Force Fix button, and the defect is repaired.

Force Fix is a useful feature if you prefer to repair clicks individually, instead of letting ClickFix do it automatically.

The only setting Force Fix uses is Blend Size.

Here are some tips to get the best results with Force Fix:

- Before using Force Fix, use ClickFix in the normal manner to remove clicks from the waveform, at least on the portion of the waveform in the vicinity of where you plan to use Force Fix. This is not absolutely necessary, but Force Fix can do a better job if the surrounding signal is free of clicks.
- If you are performing several Force Fix operations in a row, you can use the F3 (Repeat Last Command, no dialog) key to make it easier. Use Force Fix to perform the first repair. After that, just select the waveform segment for each repair and press F3.
- If you don't like the results, just press Ctrl-Z to undo. Select a different number of extra samples on each side of the defect and run Force Fix again (you can press F3 to do this). The number of extra samples you select affects the result, since Force Fix uses the extra samples to supply a context for the repair.

Detection Settings

Lowest Meaningful Frequency

Set this to the lowest frequency present in the signal, or slightly above. For most LPs, set this in the 20Hz to 40Hz range.

Setting this value exactly is not critical -- an approximate value is sufficient. However, if you set this value either too high or too low, detection accuracy can suffer.

This setting adjusts the size of an internal statistical detection buffer. It does *not* adjust a low-pass or high-pass filter. *ClickFix performs no equalization or frequency-domain filtering of any kind.*

This setting is disabled if Auto/Dynamic Mode is turned on.

Sensitivity

This setting determines how sensitive the detector is to clicks and pops. It is probably the most important setting, and the one you'll adjust most often.

Although the value can range from 1 to 100, this is *not* a percentage.

The higher the setting, the more clicks and pops the detector will find and repair, but it also increases the chance of false positives. Too many false positives can result in signal distortion and removal of musical content.

The sensitivity values in the presets may be a bit low for some signals. You may get better results by increasing the sensitivity setting.

One way to make sure you don't set Sensitivity too high is to use the Keep Only Clicks feature. Select a representative portion of the waveform, turn on Keep Only Clicks, and start Preview. If you can hear musical content in the clicks being removed, the Sensitivity setting may be too high. (It may also mean that the Musical Transient Rejection setting is too low.) You can adjust Sensitivity while previewing.

Threshold

This control tells ClickFix to ignore clicks and pops smaller than the specified amplitude. Its main purpose is to speed up detection. The smaller the value, the more clicks ClickFix will find, but the slower it will run. The higher the value, the faster ClickFix will run, since it won't be spending time repairing a lot of small clicks.

This setting displays as both decibels and absolute sample amplitude.

This setting is disabled if Auto/Dynamic Mode is turned on.

Maximum Click Width

Set this control to the maximum length of signal ClickFix should consider to be a click. The detector ignores potential clicks that are longer in duration than this value.

If this value is too large, the detector may consider short, percussive signal segments to be clicks, and erroneously repair them.

If this value is too small, the detector may reject actual clicks that it should repair.

One way to set this value is to use Adobe Audition to visually examine some of the wider clicks and pops in the signal, and note their duration. Use this value, or a value slightly larger.

This setting displays as both microseconds and number of samples.

This setting is disabled if [Auto/Dynamic Mode](#) is turned on.

Margin Size

This control determines the how much extra signal on each side of the detected click should be included as part of the click.

If this value is too large, a larger segment of signal is repaired for each click than is necessary. In extreme cases, distortion can result.

If this value is too small, part of the damaged signal segment may remain after repair.

This setting displays as both microseconds and number of samples.

This setting is disabled if [Auto/Dynamic Mode](#) is turned on.

Musical Transient Rejection

A musical transient, such as the leading edge of a percussion or brass attack, has some of the same characteristics as a click. As a result, ClickFix may remove these leading-edge transients, causing the attack to be dulled. Use this setting to help prevent ClickFix from removing these musical transients.

The best value for the Musical Transient Rejection setting depends on the kind of signal you have. Signals with few musical transients (choral music, for example) can get by with a low setting, even 0. Signals with many musical transients (such as jazz with lots of brass and percussion) will need a higher setting.

Although the value can range from 0 to 100, this is *not* a percentage.

Using this feature allows you to use a higher [Sensitivity](#) setting, with less chance of removing musical content.

If this setting is too low, ClickFix may remove musical transients as if they were clicks. When this setting is at 0, the musical transient rejection feature is completely turned off.

If this setting is too high, ClickFix may not remove legitimate clicks, mistaking them for musical transients.

One way to determine the proper value for this setting is to use the [Keep Only Clicks](#) feature. Select a representative portion of the waveform, turn on Keep Only Clicks, and start [Preview](#). If you can hear musical content in the clicks being removed, you may need to increase the Musical Transient Rejection setting. (It may also mean that the [Sensitivity](#) setting is too high.) You can adjust Musical Transient Rejection while previewing.

Passes

This control determines the number of passes ClickFix makes over the signal.

ClickFix can detect and repair the vast majority of clicks in one pass. However, if clicks are closely spaced, ClickFix may miss some clicks during the first pass. Additional passes insure that these clicks are detected and repaired.

Although this control has a range from 1 to 9, it is seldom necessary to use a setting greater than 3 or 4.

You can use Preview with any Passes setting. However, unless you use a fast machine, the result could be choppy with setting values greater than 1.

How It Works

ClickFix processes the selected signal in small chunks. When the Passes setting is greater than 1, ClickFix makes the multiple passes over a chunk before moving on to the next chunk. This explains why it appears that ClickFix is making only one pass over the signal even when this setting is greater than 1. Also, this makes it possible to use Preview with multiple passes.

The Passes feature is optimized. If a pass over a chunk uncovers no clicks, no additional passes are performed on the chunk. This explains why it usually takes so little additional time to perform multiple passes, even with a high Passes setting.

This setting is disabled if Auto/Dynamic Mode is turned on.

Repair Setting

Blend Size

This control has two purposes:

- It determines the size of the signal comparison buffer used when looking for a candidate replacement signal fragment.

- It determines how much signal on each side of the click to use when blending or cross-fading the replacement signal fragment.

It is difficult to give a rule-of-thumb for determining this setting. It is best to set it to the lowest value possible that still gives good results.

The larger the value, the longer it takes ClickFix to repair each click, thus increasing processing time. Also, the larger the value, the more signal is affected when the replacement segment is cross-faded, which can result in signal distortion. This is especially true when the click density is high.

This setting displays as both microseconds and number of samples.

This setting is disabled if [Auto/Dynamic Mode](#) is turned on.

General Settings

Display Results Summary

Check this box if you want ClickFix to display a results summary report dialog after processing is complete.

This dialog displays much useful data that you can use to fine-tune the settings. For example, you can use the Average Click Width and Widest Click values to help set the Maximum Click Width setting.

When using a script, the Results Summary dialog will not display, even if this box is checked.

Printing the ClickFix Results Summary

1. With the ClickFix Results Summary displayed, press Alt-PrintScrn (that is, while holding down the Alt key, press the Print Scrn key). This puts an image of the Results Summary dialog onto the clipboard.
2. Open a program that can accept images from the clipboard, such as Microsoft Word, WordPad, or Paint. Press Ctrl-V to paste the image into the application.
3. Print the image from the application. For example, from Word, WordPad, or Paint, choose "Print..." from the "File" menu.

NOTE: This feature is disabled until you register your copy of ClickFix.

Keep Only Clicks

Check this box if you want ClickFix to remove all of the *undamaged* parts of the signal, leaving only the clicks. (This is the opposite of normal processing.)

You can use this feature to see and hear the clicks that ClickFix would otherwise remove from the waveform. This is a useful way to find out whether you are removing any musical content.

This feature is automatically disabled when using Force Fix.

Auto/Dynamic Mode

Check this box if you want ClickFix to adjust most of the settings for you automatically.

When Auto/Dynamic Mode is on, the only settings you have to adjust yourself are Sensitivity and Musical Transient Rejection. ClickFix automatically adjusts the other settings as it processes. In many cases, this results in superior detection and repair quality.

Uncheck this box if you want to adjust all the settings yourself. This gives you complete control over the results you get from ClickFix.

Frequently Asked Questions

For the latest list of FAQs, visit the ClickFix Website at http://www.jdklein.com/clickfix/

What technique does ClickFix use to detect clicks and pops?

ClickFix uses a proprietary statistical detection technique to locate clicks and pops. It does not employ edge detection or spectral analysis. This proprietary technique results in much faster, more accurate click and pop detection than other methods.

What technique does ClickFix use to repair clicks and pops?

ClickFix analyzes the waveform in the immediate vicinity of the click and constructs an appropriate replacement fragment. It then replaces the click with this fragment.

ClickFix does not use linear or polynomial interpolation, nor does it employ frequency analysis to construct a replacement fragment. The method it uses insures that the replacement is as close as possible to the signal fragment damaged by the click.

Can I use ClickFix if I already have other plug-ins installed?

Yes. You can install and use ClickFix along with other plug-ins.

Can I use ClickFix with Cool Edit 96?

No. Cool Edit 96 does not provide the binary interface needed by ClickFix.

Does ClickFix work with Cool Edit 2000 Lite?

No. Cool Edit 2000 Lite does not support plug-ins.

Does ClickFix work with Cool Edit Pro 2.x?

ClickFix version 3.01 and later works with Cool Edit Pro 2.x. Earlier versions of ClickFix do not work with Cool Edit Pro 2.x.

Does ClickFix work with the demo versions of Cool Edit 2000 or Cool Edit Pro?

ClickFix works with the demo (unregistered) versions of Cool Edit 2000, but not with the demo version of Cool Edit Pro 1.2. ClickFix version 3.04 works with the demo version of Cool Edit Pro 2.x.

How can I print the ClickFix Results Summary?

See the Display Results Summary section for instructions.

After I run ClickFix, there is still noise in the signal. Why doesn't ClickFix remove it?

ClickFix does not remove continuous forms of noise, like vinyl surface noise and tape hiss. It removes only short, percussive transients like vinyl surface clicks, FM static, and clicks due to static discharge, and leaves the rest of the signal completely unchanged. To remove continuous forms of noise, use Adobe Audition's Noise Reduction tool.

This behavior is by design, to give you complete control over the degree of noise reduction you perform on your sound files.

Should I use ClickFix before or after Adobe Audition's Noise Reduction?

In most cases, you'll get better results by performing click removal first, then noise reduction. Clicks and pops can "confuse" the noise reduction process, so it is best to get rid of them first. The reverse is not generally true -- noise typically does not "confuse" ClickFix.

However, with extremely dirty signals, you may get better results performing at least some noise reduction before using ClickFix. In these cases, it's best to experiment and see what works best.

How do I uninstall ClickFix?

1. From the Start menu, choose Settings/Control Panel.
2. Double-click Add/Remove Programs.
3. On the Install/Uninstall tab, locate "ClickFix for Adobe Audition version 3.04" and double-click it.
4. Follow the on-screen instructions.

Tips and Tricks

For the latest list of ClickFix Tips and Tricks, visit the ClickFix Website at http://www.jdklein.com/clickfix/

Presets and Settings

The presets that come with ClickFix work well for most signals. But don't be afraid to experiment with the settings to get the best results with your particular signal.

The setting that makes the most difference is Sensitivity. You may find that you get better results by increasing the Sensitivity setting. The presets may not set Sensitivity high enough for your particular signal.

Do no harm

To make sure you are not removing too much from the signal you're trying to clean up, turn on Keep Only Clicks and click the Preview button. This lets you hear what ClickFix will remove from the signal. If you hear musical content, you may need to decrease the Sensitivity setting, or increase the Musical Transient Rejection setting.

Using F3 to speed up single-click repair

If you prefer to use ClickFix to repair clicks individually, use Adobe Audition's F3 feature. Zoom in on a single click and use ClickFix's Force Fix feature to repair it. To repair more clicks, just select each click and press F3 ("repeat last command").

ClickFix will not change any part of the waveform outside your selection, so make sure you select the entire click, plus some samples on each side.

Click and pop removal before or after Noise Reduction?

Users sometimes ask whether to perform click removal before or after noise reduction. In most cases, you'll get better results by performing click removal first, then noise reduction. Clicks and pops can "confuse" the noise reduction process, so it is best to get rid of them first. The reverse is not generally true -- noise typically does not "confuse" ClickFix.

However, with extremely dirty signals, you may get better results performing at least some noise reduction before using ClickFix. In these cases, it's best to experiment and see what works best.

Using Spectral Display view to locate clicks

If you hear a click you want to repair but can't locate it in the waveform, switch to Adobe Audition's Spectral Display view. To do this, select the portion of the waveform that contains the click, and then select Spectral Display from Adobe Audition's View menu. The click will show up as a narrow vertical line. You can then use Force Fix to remove the click. You can even use ClickFix to repair the click while in Spectral Display view.

In Adobe Audition, you can use the marquee and lasso selection tools while in Spectral Display view to limit detection and repair to certain frequency ranges.

Adding clicks to simulate the sound of a scratchy LP

If you want to make a recording sound like it came off a scratchy old LP, use ClickFix's Keep Only Clicks feature. Use ClickFix on a recording from an actual scratchy LP, with Keep Only Clicks turned on. Then use Adobe Audition's Mix Paste feature to add those clicks and pops to a clean recording. ClickFix in reverse!

System Requirements

To install ClickFix, you need at least 2 Mbytes of free disk space.

To run ClickFix, you must have a running, registered copy of Adobe Audition (3.0 or earlier), Cool Edit 2000, or Cool Edit Pro (1.2 or 2.x). ClickFix has the same system requirements as Adobe Audition and Cool Edit.

ClickFix does not work with Cool Edit 96, the demo version of Cool Edit Pro 1.2, or Cool Edit 2000 Lite. It does work with the demo versions of Cool Edit 2000 and Cool Edit Pro 2.x.

Support

Support is provided only by e-mail.

Send your inquiries and comments to the author, Jeffery Klein, at clickfix@jdklein.com. *Please include the word "ClickFix" in the subject line.*

Also, the ClickFix Website at http://www.jdklein.com/clickfix/ has a Support page that lists answers to common support questions.

Registering ClickFix

ClickFix operates as an evaluation copy until you register and pay the registration fee. The evaluation copy:

1. allows you to process no more than 30 minutes of signal per Adobe Audition session,
2. allows you to use the Force Fix feature at most 30 times,
3. does not allow the use of the Display Results Summary feature, and
4. periodically displays registration reminder messages.

After you register, the session limits are removed, and the registration reminder messages no longer display.

When your register, you will receive a personalized Password to convert your copy to a registered copy.

For more information, visit the ClickFix website at http://www.jdklein.com/clickfix/.

ClickFix for Adobe Audition License Agreement

By installing and/or using ClickFix, you agree to the following:

1. Single Use

After you register your copy of ClickFix, you may use your registration Password on only one computer at a time. If you use ClickFix on more than one computer, you must purchase one registration for each computer on which ClickFix is used.

If ClickFix is made available over a computer network, one registration must be purchased for each computer on which ClickFix will be used.

You agree not to divulge your Password to anyone.

2. Disclaimer of Warranty and Liability

This software is provided "as is" without warranty of any kind. You agree to assume the entire risk as to results and performance of the software. If the software proves defective, you (not the author, Jeffery Klein) assume the entire cost of all necessary servicing, repair, or correction or repair of any hardware, software, or data files. Further, the author does not warrant, guarantee, or make any representations regarding the use of, or the results of the use of, the software in terms of correctness, accuracy, reliability, currentness, or otherwise. You rely on the software and results solely at your own risk.

3. Reverse Engineering

You may not reverse-engineer, de-compile, disassemble, or modify the software in any way.

4. Redistribution

You may make copies of the original ClickFix evaluation installation package and distribute it, provided that all files remain intact and not altered in any way. You may not sell or charge for ClickFix, except for shipping and handling charges.

5. No Refund of Registration Fee

No refund of the registration fee is available. By registering, you indicate that you have evaluated the software and that it meets your needs. Just like shrink-wrapped software from a computer store, once it has been opened (by unlocking it with your password), it cannot be returned for a refund. But unlike shrink-wrapped software, shareware like ClickFix has the advantage that you can "try before you buy."