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# ① Precision Time Align

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## User Guide

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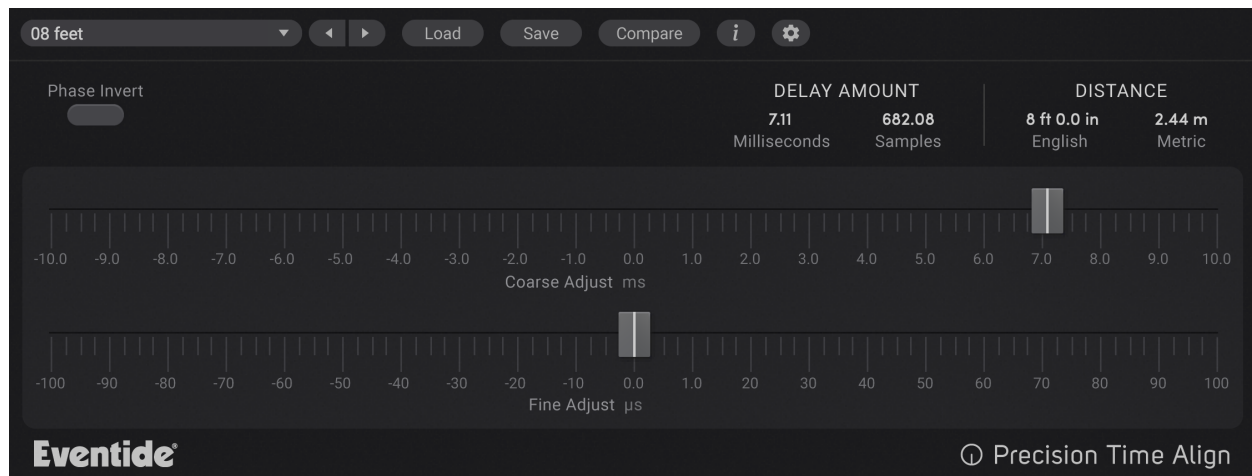
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## 1.1 About This Product

The Eventide Precision Time Align plug-in is an intuitive environment through which to synchronize a signal to microsecond accuracy, featuring four different methods for calibrating the signal to achieve perfect signal matching. It also supports phase inversion and two levels of precision controls for optimizing the time shift in a recording. Additionally, Precision Time Align permits you to perform negative delays, which essentially moves the track up in time relative to the tracks in the recording. Whether you wish to correlate multiple tracks of a single instrument, compensate for phasing from different mics on a kick drum, or align audio segments for a tracking-only session, Precision Time Align is ideal for these and many other engineering tasks.

Unlike many of the effects Eventide is known for, Precision Time Align is a special purpose problem solving tool which can have a subtle, but important, effect on your mixes. The primary use of Precision Time Align is to align the outputs of several microphones placed at different distances from a sound source, correcting the phase cancellations that can arise from mixing multiple microphones together.

Any time you place a microphone near a sound source the recorded audio is delayed by the distance from the source to the microphone. The time of this delay is determined by the speed of sound. If you place two microphones near the same sound source, but at different distances from it, the resulting waveforms in your DAW will be similar, but delayed with respect to one another. This can cause comb filtering whereby some frequency bands cancel each other when the two signals are mixed together. This often makes the combination of the two signals sound worse than either track soloed.

This problem can be partially addressed by shifting one of the recorded tracks relative to the other in your DAWs arrange view. However, this is a tedious process which requires you to use your eyes to align the tracks rather than your ears, which are the proper tool for making things sound good. Precision Time Align is designed to allow you to quickly and easily align these tracks, while listening, and with much higher precision than you are able to in your DAWs arrange view.

The following steps outline this alignment process.

## **RECORD AND SOLO TWO TRACKS**

For this to work you must record two tracks of the same instrument. This is usually two microphones on the same source, but can also be two of the same signal which has run through different convertors or digital effects units, or anything which applies a relative delay to two signals which are very similar. Also, the more frequencies contained in these signals the more opportunities for cancellations, so the more important the alignment will be. One of the most common problems is a close and far microphone on a distorted guitar cabinet.

It will be easiest to hear these effects if these two tracks are soloed, but if you'd like to hear it in the context of a mix it is not required.

## **INstantiate PRECISION TIME ALIGN ON ONE OF THESE TRACKS**

It often helps to instantiate the plug-in on the far microphone (or later track) and pull it towards the close mic using Precision Time Align's negative delay feature by pulling the delay slider to the left. However, you can pull the close microphone backwards to the far microphone by pulling the delay slider to the right, as well.

## **INVERT THE PHASE**

This step is optional, but I find it easiest to invert the phase (or really polarity) of the signal in the Precision Time Align and try to find the point of maximum cancellation between the signals, then turn off the Phase Invert to get minimum cancellation.

**GET MAXIMUM  
CANCELLATION WITH  
THE COARSE SLIDER**

If the phase is inverted you want to find the amount of delay that totally cancels the two sounds, or comes as close as possible. As you sweep the Coarse Adjust Slider the two signals should sound like a flanger. You're looking for the highest frequency flange you can find with this control. As it gets very close to the proper point the signal level may begin to drop as the signals are cancelling.

If the phase is not inverted, you will still aim for the highest frequency flange, but you're now trying to find the least signal cancellation instead of the most, which will mean the loudest signal.

If you already have a good idea of the relative offset between the two signals, you can enter this delay amount in milliseconds or samples. Or if you have a good sense of the distance between the microphones you can enter this distance in feet or Meters. Either way, you should always follow the next step and fine tune by ear.

**REALLY GET MAXIMUM  
CANCELLATION WITH  
THE FINE SLIDER**

Once you get the Coarse Adjust Slider to the highest frequency flange, or most quiet audio, use the Fine Adjust Slider to really dial in the point where as much of the signal as possible cancels out. You might find that at different overall delay settings, different frequency bands in the signals will cancel. If this is the case, you can decide which frequency bands you'd like to stand out in your mix by selecting either as an artistic decision.

Remember as long as Phase Invert is on, anything that is cancelled now will be present, and anything you can hear now, will be cancelled in the next step when you...

**UN-INVERT THE PHASE**

Once you've found the maximum cancellation, un-invert the phase to hear how your two microphone signals blend. At this point you can play with the relative levels of your signals, or continue to use the Fine Adjust Slider to dial in your desired sound. Also, bypassing the plug-in will allow you to hear the difference between your modified and unmodified mixture.

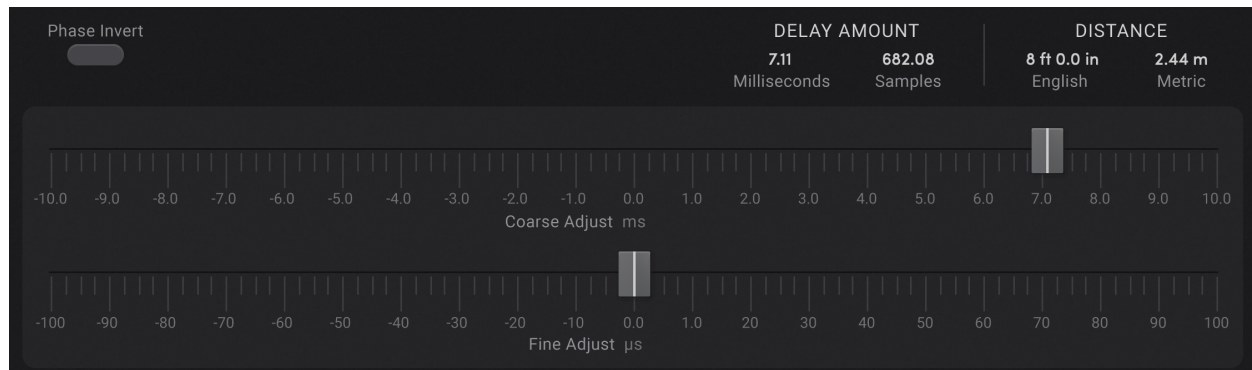
## **YOU'RE DONE**

Once you understand the workflow of Precision Time Align you should be able to reproduce these steps very quickly and naturally. We hope it's a great time saver and helps you achieve your best mixes.



# Precision Time Align

## PART 3



Precision Time Align is a remarkably simple time-shifting resource that allows you to accurately compensate for timing disparities in a recording. Precision Time Align will generate perfectly synchronized double-tracked vocals, crisper background vocals, and entirely eliminate timing anomalies on instruments being recorded simultaneously from different microphones. As you master it, you'll find that precision truly is the operative description for this plug in. Between the Coarse and Fine Adjust slider controls, you can achieve perfect correlation between to tracks to 1/64th of a sample.

### PHASE INVERT

Click this button to invert the phase of the signal. An example where this might be employed is when two microphones are recording opposite sides of a snare drum, which naturally result in mirror-image acoustical phasing.

## **DELAY AMOUNT**

This displays the current active value for Precision Time Align, in milliseconds. Precision Time Align supports Negative Delay, allowing you to perform time adjustments that actually move the signal forward in playback relative to the other tracks. Delay, Samples, and Distance values will display as negative, reflecting that a negative delay is being performed. Delay times for Precision Time Align range from -10.1 ms to 10.1 ms.

The Samples display allows you to select the time delay based on the Sample rate. Precision Time Align supports sample adjustment in increments of 1/64 proportional to the selected sample rate. As a result, the larger the sample rate, the more granular the samples selector becomes. For example,

- A sample rate of 44100 yields +/-445.41 samples
- A sample rate of 48000 yields +/-484.8 samples
- A sample rate of 88200 yields +/-890.82 samples
- A sample rate of 96000 yields +/-969.6 samples
- A sample rate of 176400 yields +/-1781.64 samples
- A sample rate of 192000 yields +/-1939.2 samples

## **DISTANCE**

Distance is measured in both English (feet and inches) and Metric values. For Metric measurement units, you may enter a decimal value to express distances less than one meter. For instance, entering "0.65" will result in a new value of 65 cm. Precision Time Align supports distances +/- 11 feet, 4.5 inches (English distances) and +/- 3.47 meters (Metric distances).

## **COARSE ADJUST**

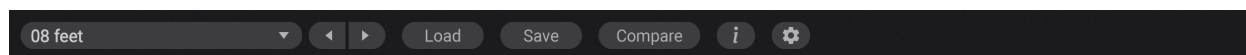
The Coarse Adjust slider control allows you to quickly find the general time shift range you are seeking. Move the slider to the right or left to gauge the delay compensation, then proceed to the Fine Adjust control to more accurately tune your general setting. Course Adjust for Precision Time Align is from -10 to 10 ms.

## FINE ADJUST

The Fine Adjust slider control works in conjunction with the Course Adjust to yield the most perfect time shift adjustment possible. After the general time delay has been established using Course Adjust in milliseconds, use Fine Adjust to tweak the settings in microseconds. Fine Adjust for Precision Time Align is from -100 to 100us.



*Precision Time Align achieves sub-sample accuracy through the use of oversampling. This process necessarily requires the use of an anti-aliasing filter. Although Precision Time Align uses a very high quality filter, at low sample rates the very high end of the audible spectrum may be affected. Using PTA at a sampling rate of 44.1 kHz will result in 2 dB of attenuation at 19000 Hz.*



Located at the top of the Precision Time Align Plug-In, the Preset Bar lets you load and save presets, along with several other features.

When Precision Time Align is installed, a library of settings is placed into the <user>/Music/Eventide/Precision Time Align/Presets folder (Mac) or the <user>/Documents/Eventide/Precision Time Align/Presets folder (Windows). These presets have a .tide extension and can be saved or loaded from the Precision Time Align preset bar in any supported DAW.

In many DAWs there is an additional generic preset bar that saves DAW-specific presets to a separate location. We recommend saving your presets using the Eventide preset bar to ensure that your presets will be accessible from any DAW. You can also create sub-folders inside the preset folders, if you wish.

<b>LOAD/SAVE</b>	Use these buttons to load and save your presets in .tide format.
<b>COMPARE</b>	Click to toggle between two different settings for the plug-in. This is useful for making A/B comparisons.
<b>INFO</b>	Click this button to open this manual.
<b>SETTINGS</b>	Click the gear icon to open a drop-down menu with scaling settings for changing the overall size of the plugin.

We hope you enjoy the Precision Time Align plug-in and put it to good use in all of your mixes. Please be sure to check out Eventide's other native plug-in offerings for more unique and interesting effects.

For further questions or support, head over to the [user forums](#).