



# THROAT

## USER GUIDE

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# Introducing Throat



**Throat** lets you process your vocals through a meticulously crafted physical model of the human vocal tract, so you can literally design your own vocal sound.

It begins by neutralizing the effect of the original singer's vocal tract and then lets you specify the characteristics of the modeled vocal tract, giving you individual control over each of the elements that go into creating a distinct vocal character.

The [Model Throat Controls](#) let you stretch, shorten, widen or constrict the overall dimensions of the modeled vocal tract.

For more detailed control, the [Graphic Throat Shaping Display](#) lets you individually adjust the position and width of five points in the vocal tract model, from the vocal cords, through the throat, mouth, and lips.

The [Breathiness Controls](#) let you add variable frequency noise to the model, for a wide range of vocal effects from subtle breathiness, to raspiness, to a full whisper.

The [Model Glottal Controls](#) let you specify the character and intensity of the glottal waveform produced by the vocal cords.

With the [Pitch](#) control, you can shift the pitch of your vocal up or down a full octave in semitone intervals, with automatic formant correction.

Whether you want to subtly enhance the quality of an existing voice, or create dramatically unique vocal effects, Throat gives you an unprecedented amount of control over the human voice.

# Quick Start

Follow these steps to get started with Throat.

## Try Out a Few Presets

Throat comes with a large collection of factory presets designed to help you get up and running. Start by trying out a few presets to get an idea of the range of creative effects you can achieve with Throat.

## Choose the Audio Input Settings for Your Track

Optimize Throat's pitch tracking and throat modeling algorithms by choosing the correct [Audio Input Settings](#) for your track.

Choose the [Vocal Range](#) setting that best describes the pitch range of your vocals. Select the [Source Glottal Voice Type](#) setting that best describes the intensity level of your vocals. Choose the [Source Throat Precision](#) that best describes how extreme the changes are that you'd like to make to your vocals (Subtle, Medium, or Extreme).

## Adjust the Throat Dimensions

Adjust the [Throat Length](#) and [Throat Width](#) controls to set the overall dimensions of the modeled vocal tract. Try moving the control points in the [Graphic Throat Display](#) and listen to the effect that it has on your vocal. For more realistic modeling start with small adjustments, but for more extreme effects feel free to drag them wherever you'd like.

## Try Out a Different Glottal Model

Try different settings for [Model Glottal Controls](#) to adjust the character and intensity of the glottal waveform from the modeled vocal cords.

## Shift the Pitch

Try using the [Pitch](#) control to shift the pitch of your vocal up to an octave up or down.

## Add Breathiness

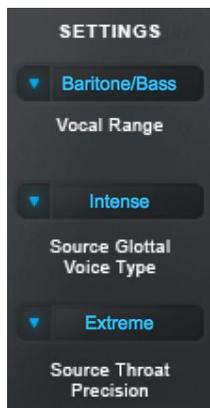
Experiment with the [Breathiness Controls](#) to add a whispery or breathy effect to your vocals.

## Adjust the Gain

Keep an eye on the [Level Meter](#), and adjust the [Output Gain](#) as needed to maintain appropriate levels and avoid clipping. Or turn on [Level Matching](#) to automatically match the output level to the input level.

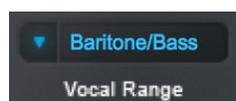
# Controls

## Audio Input Settings



The **Audio Input Settings** help to optimize Throat's performance by letting you specify the characteristics of your source audio and the type of modeling you'd like to do.

## Vocal Range



The **Vocal Range** menu lets you select the pitch range of your track, to optimize the pitch tracking and throat modeling algorithms. Choose the setting that best describes the pitch range of your vocals.

Options include Soprano, Alto/Tenor, Bass/Baritone and Instrument.

## Source Glottal Voice Type



The *glottal waveform* is the waveform produced by the vibration of the vocal cords. It's determined in part by the anatomy of the singer's vocal tract, but also varies based on loudness or intensity of singing.

The **Source Glottal Voice Type** menu lets you specify the intensity level of the vocal performance that you're processing.

This allows Throat to neutralize the glottal waveform of the source audio so that you can specify a new glottal waveform using the **Model Glottal Voice Type** menu.

Choose the setting (soft, medium, loud, intense) that best describes your vocal track.

## Source Throat Precision



The **Source Throat Precision** menu lets you optimize the throat modeling algorithm by specifying how extreme the changes are that you'd like to make to your vocals (Subtle, Medium, or Extreme).

For smaller and more realistic throat adjustments, you can leave this control set to Subtle.

For larger adjustments to the throat model, or if you encounter undesired artifacts such as whistling, choose the Medium or Extreme setting from the Source Throat Precision menu.

## Pitch Controls

### Pitch



The **Pitch** control lets you shift the pitch of the input voice up or down by semitones. The range is from -12 (one octave down) to 12 (one octave up).

The Pitch control includes automatic formant correction to preserve the resonant characteristics of the original voice when pitch shifting, but you can also adjust the vocal quality using the **Throat Length** and **Throat Width** controls.

## Breathiness Controls



The **Breathiness Controls** let you add variable frequency noise to the model, for a wide range of vocal effects from subtle breathiness, to raspiness, to a full whisper.

### Breathiness High Pass Frequency



The **Breathiness High Pass Frequency** control lets you set the frequency above which breathiness will be added to your vocal

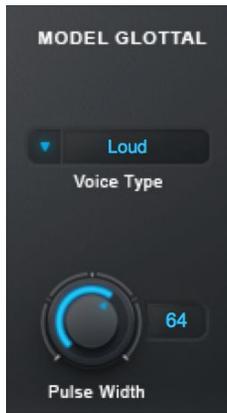
This determines the frequency range and character of the breathiness effect. The effect tends to be more whispery at higher settings, and more raspy at lower settings.

### Breathiness Mix



The **Breathiness Mix** control lets you select the amount of breathiness component to mix into your modeled voice.

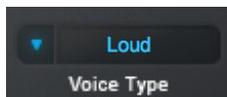
## Model Glottal Controls



The *glottal waveform* is the waveform produced by the vibration of the vocal cords. It's determined in part by the anatomy of the singer's vocal tract, but also varies based on loudness or intensity of singing.

While the **Source Glottal Voice Type** setting is used to help Throat neutralize the effect of the original vocal's glottal waveform, the **Model Glottal Controls** let you apply a new glottal waveform.

### Model Glottal Voice Type



The **Model Glottal Voice Type** control lets you specify the glottal intensity level (soft, medium, loud, intense) that you would like to apply to your track.

For best results, be sure to also set the **Source Model Glottal Voice Type** control to the setting that best describes the input audio. If you'd like to preserve the glottal waveform of the original vocal, set the Source and Model Glottal Voice type controls to the same setting.

Each of the Model Glottal Voice Type settings sets a default Glottal Pulse Width that is associated with it. Once a Voice Type is set, the pulse width can then be adjusted separately.

**NOTE:** Despite the setting names (soft, loud, etc.), the purpose of this control is not to change the level of the signal, but to model the glottal waveform that would result from the various styles of singing. That said, the settings can result in changes to gain, which you can adjust for using the Output Gain control or Level Matching button.

## Glottal Pulse Width



The **Glottal Pulse Width** control lets you select the pulse width of the modeled glottal waveform.

Each setting for the **Model Glottal Voice Type** menu sets its own default value for the Glottal Pulse Width control.

After choosing a Model Glottal Voice Type setting, experiment with the Pulse Width control to fine-tune the character of the waveform.

**Note:** If you're familiar with analog synthesizers, you can think of this control as similar to the variable pulse width control on a square wave oscillator.

## Model Throat Controls



The **Model Throat** controls let you adjust the overall length and width of the modeled throat.

Changes made to these controls will be reflected in the **Graphic Throat Display**, and the positions of the throat contour control points will be scaled to reflect the new throat dimensions.

For more realistic modeling start with small adjustments and keep the **Throat Length** and **Throat Width** settings between about 0.80 and 1.20.

## Throat Length



The **Throat Length** control lets you lengthen or shorten the model throat to adjust the formant frequencies of the input voice.

Settings greater than 1.00 will lengthen the throat, resulting in lower formant frequencies. Settings less than 1.00 will shorten the throat, resulting in higher formant frequencies.

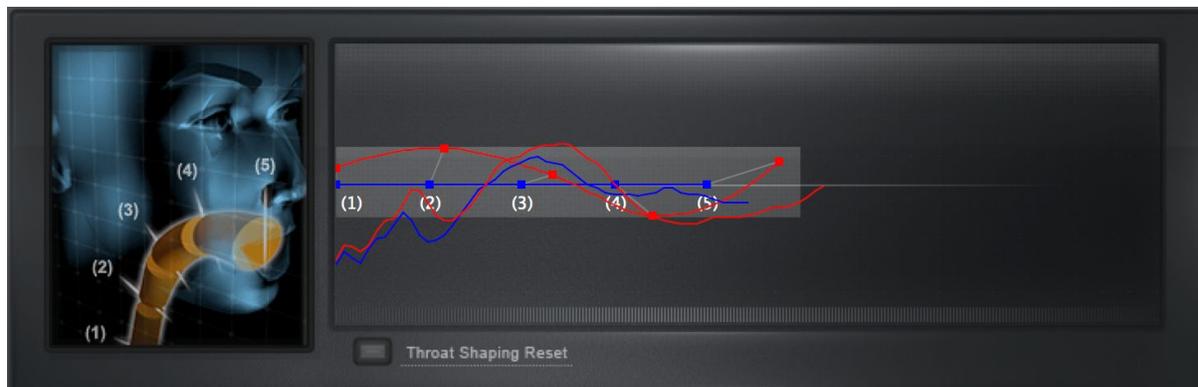
## Throat Width



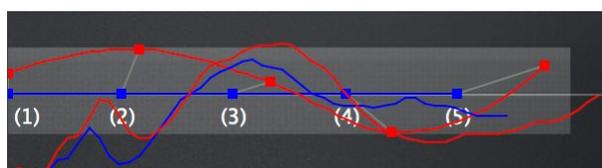
The **Throat Width** control lets you widen or narrow the model throat to adjust the formant frequencies of the input voice.

Settings greater than 1.00 will widen the throat, resulting in lower formant frequencies. Settings less than 1.00 will narrow the throat, resulting in higher formant frequencies.

## Graphic Throat Display



The **Graphic Throat Display** lets you create a custom model throat shape with 5 movable control points that specify the boundaries of the vocal tract (as illustrated in the head diagram to the left of the display).



The **red line and points** represent the dimensions of the modeled throat, and the **blue line and points** represent the original throat dimensions.

When Throat is processing audio, the display will also show real-time plots of the original throat in blue, and the modeled throat in red.

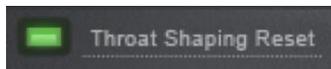
Try moving the control points around and listen to the effect that it has on your vocal. For more realistic modeling start with small adjustments and keep the points inside the **light gray box**. For more extreme effects feel free to drag them wherever you'd like.

The left/right axis of the display shows the length of the vocal tract, and the up/down axis shows the width at any given point, with up representing wider and down representing narrower.

**Point 1** represents the vocal cords. It can be moved up to widen the modeled vocal cords or down to narrow them. **Points 2-5** can be moved left/right to specify the boundaries and relative length of each segment of the vocal track. They can also be moved up to widen each segment or down to narrow it.

***Note:** When the Throat Width control is adjusted, the red line and control points on the Graphic Display will move up and down in parallel to illustrate a widening or narrowing of the entire vocal tract. When the Throat Length control is adjusted the spacing of the control points will scale proportionally to reflect the new throat length.*

## Throat Shaping Reset



The **Throat Shaping Reset** button resets the control points on the Graphic Throat Display to their default relative positions, without undoing any global scaling applied by the Throat Width and Throat Length controls.

# Output Controls



The Output controls let you monitor and adjust the level of Throat's output.

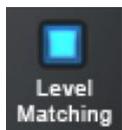
## Output Gain and Level Meter



The **Output Level Meter** shows the level of your audio after processing by Throat. The **Output Gain** control lets you adjust Throat's output gain.

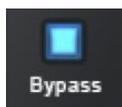
Various settings in Throat can result in amplitude changes. You can manually adjust the Output Gain to make sure that your output is at an appropriate level without clipping, or turn on **Level Matching** to automatically match the output level to the input level.

## Level Matching



The **Level Matching** button compensates for level differences between the original and processed versions by automatically applying gain adjustments to the modeled version.

## Bypass



The **Bypass** button lets you bypass Throat and pass your audio through unprocessed.

Use it to quickly compare the processed and unprocessed audio, or automate it in your DAW to bring in the modeled throat effect at certain times in your track.