Waves DeBreath



DeBreath – Breath Processor

INTRODUCTION -

If you've ever had to manually remove breaths from a vocal track, especially the inhaling sounds which precede sentences, you may have asked yourself, "Wouldn't it be great to have something that can do this automatically?" The revolutionary Waves DeBreath plug-in does just that.

Unlike classic noise-gate type processors based solely on energy threshold, DeBreath uses a unique template-matching algorithm to detect breath segments and separate them from the signal. The breath can then be controlled without affecting the rest of the signal.
Because breath detection and removal are as automatic as you care for them to be, DeBreath can save both time and mental energy, leaving you free to be more creative and productive.

DeBreath lets you control the amount of gain reduction applied to the detected breaths and to add room tone where breaths were removed or attenuated, thus avoiding unnatural holes in the track. For better control, you can split the audio into two paths: the Vocal path and the Breath path. The sum of these two paths will always equal the original source, regardless of DeBreath settings. This way, you can apply different processing to the vocals than to the breaths. For example, you might compress only the voice path, leaving the breaths quieter, more open and natural. Or, you might choose to darken the removed breaths.

Latency

Certain types of digital audio processors require buffering, windowing or look-ahead, resulting in a delay, called latency. Tune's latency is 32384 samples at 44.1 KHz or 48 KHz and 64768 samples at 88.2 KHz or 96 KHz. Many audio workstations automatically compensate for latency. Others don't. Refer to your workstation's operating manual.

The DeBreath plug-in is intuitive and easy to use, and has proven to be a true time saver. You will soon discover that perfect results are very easy to achieve.

QUICK START-

Insert the DeBreath processor into your vocal track.

There are two parts to the process of removing breaths: detection and reduction. First DeBreath will find the breaths, based on two settings. Once you are happy with DeBreath's detection choices, you will decide what to do with the breaths.

DeBreath's default settings are designed to provide good results under many conditions and are generally a good place to start your breath detection. Listen to the Voice path. Listen to the breath path. This will reveal to you the quality of the detection and the correctness of the detection settings. Then you can begin making adjustments.

There are two threshold settings used to fine-tune DeBreath's detection:

- **Breath Threshold –** To more accurately detect breaths, DeBreath stores a database of breath templates, or definitions, of what comprise breaths. The Breath graph displays the similarity between the incoming audio signal and the breath database template. The scale is from 1->100 and the higher the value the greater the likelihood that the event is a breath. If you set the Breath threshold very high, only the most certain of matches will be reported as breaths.
- **Energy Threshold –** Here we assess an audio event based on its energy. If the energy of the event lies below the threshold, it is more likely to be a breath.

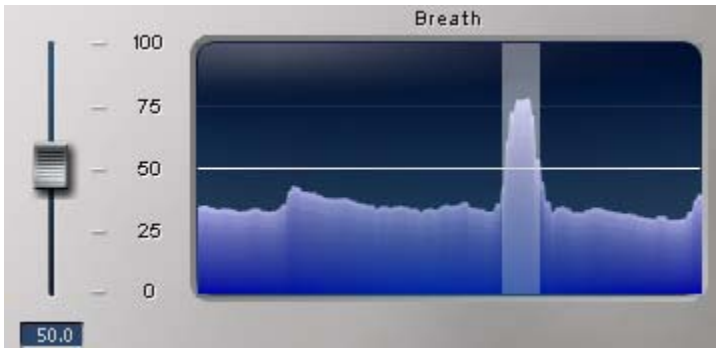
When the Energy is below the Energy threshold and the Breath is above the Breath threshold, the plug-in classifies the event as a breath and reduction is applied.

Fine-tune the detection threshold parameters until you are satisfied. Now you can adjust the Reduction slider to determine how much gain reduction should be applied to a detected breath.

PLUG-IN CONTROLS

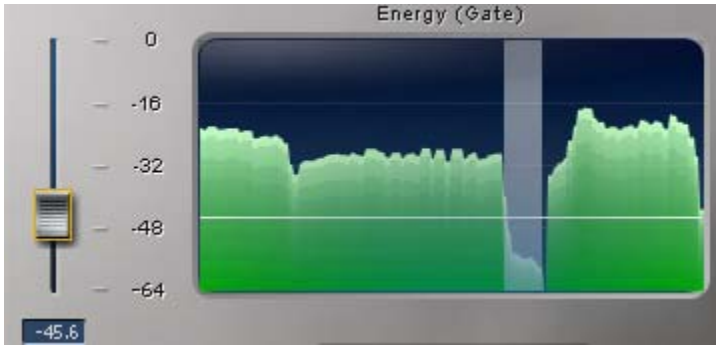
Detection Controls:

BREATH GRAPH –
The Breath graph registers a five-second history of the Breath rating factor, an indication of the similarity between incoming audio and a library of breath descriptions. Use this graph set the Breath threshold value.



BREATH THRESHOLD – 0 – 100%.
Default: 50% Linear Scale –
The Breath threshold control is located next to the Breath graph and shares its scale. When the breath rating passes above the Breath threshold value, it will register as a breath – if the audio event is also below the Energy threshold - and will be reduced by the amount set by the Reduction control.

ENERGY GRAPH –
The Energy graph displays a five-second history of the incoming audio's summed energy. This graph will quickly become a useful tool in determining the relative energy of voice as compared to breath. Use the Energy graph to set the Energy threshold.



ENERGY THRESHOLD 0 - -64dBfs. Default -30dB

The Energy threshold control slider is next to the Energy graph, which uses the same scale. Like the Breath threshold control, the Energy threshold is displayed as a horizontal line across the histogram graph. This will help you to visually set the threshold over a series of audio events.
Any event whose energy lies above the Energy threshold will not be considered a breath, even if the event was identified by the Breath threshold as a breath.

Breath Removal Controls-



FADEOUT 0.1 – 200ms; Default 5ms
This determines how quickly a breath will fade-out from the Voice path. Logically, this is the same duration in which the breath will fade-in to the Breath path.

FADEIN 0.1 – 200ms; Default 5ms
This determines how fast a breath will be faded back into the Voice path. Again, this is the same duration in which the breath will fade-out from the Breath path.



REDUCTION SLIDER – 0 - -inf. Default – -inf.
Reduction controls the amount of gain reduction to be applied to a detected breath.

REDUCTION METER –
This orange meter shows the gain reduction of detected breaths. Each time a breath is reduced or eliminated, an orange line is drawn on the Energy graph and the Breath graph, helping you to keep track of breath removal.

ROOM TONE – On/Off



Room Tone replaces the silenced or attenuated breath with a small amount of white noise. This eliminates unwarranted holes in the track and makes the breath removal much more natural. Room tone, when enabled, will come and go with breath attenuation, following the same fade rules as the breaths. The maximum level of white noise is -80dB and is otherwise scaled by the amount of attenuation.

MONITOR - Voice / Breath



The monitor section has two options:
Voice – Monitors the original audio after the breaths have been reduced or removed.
Breath – Monitors what has been reduced or removed from the original audio.

WORKING WITH DEBREATH.

Working with DeBreath is much like working with a gate. First, you set rules about what is to be processed and what is to be ignored. Then, you decide what to do with the selected material.

To get started, insert DeBreath onto your vocal track. When you play audio through the plug-in, DeBreath will automatically begin looking for breaths.

Next, you should evaluate the detection quality, to see if DeBreath is making the choices you like. Solo the vocal track in your workstation, then use the **Monitor** switch to choose between **Voice** path and **Breath** path. This way you can hear what you're removing or what you are keeping to determine if you need further adjustments of the **Breath** or **Energy** thresholds, or the **Fade In/Out** constants.

Here's how. Set the **Monitor** switch to **Breath**. If your breath detection settings are correct, you should hear only breaths, with no pitched sounds. The **Voice** path should be effectively free of breath sounds. Use particularly problematic breath segments to fine-tune the detections settings, then re-check the entire take to make sure you are not over- or under-detecting. Repeat this procedure – balancing the severe breaths with the average program breaths - to perfect your detection parameters.

Setting the thresholds

Breath Threshold -
As explained earlier, the Breath rating is a statistical figure derived from a template-matching algorithm. The Breath threshold sets a reference point where events with values above the threshold are very likely to be breaths. Events with values lower than the threshold are likely not breaths. The default Breath threshold is a good overall setting, so we recommend you start there.

When you encounter problem segments, first you will identify the segment by ear and find the corresponding graphic area on the Breath graph. Then, set the Breath threshold just below the breath's peak on the graph.

Energy Threshold -

Study the Energy chart histogram and you will quickly learn how to find the most effective Energy threshold settings for different types of music and narration. Experience has shown us that a –30dB Energy threshold is a good, average starting point. If your signal is especially loud, you will need to bring the Energy threshold up to –25 dB or –20 dB. Similarly, very heavy, loud breaths can be detected with Energy thresholds of –25 dB to –20 dB.

Remember, Energy is an average calculation, which means that a breath's average energy will almost certainly be lower than that of the surrounding vocal material. Don't let short energy bursts within a breath throw you off.

Fade Out / Fade In

DeBreath allows you to specify the length of the transition of a detected breath from the Voice path to the Breath path. In other words, how quickly does a breath fade-out from full level to the specified reduction factor?

Since a detected breath is not eliminated, but rather is moved from the Voice path to the Breath path, the **Fade-out** time from the Voice path is identical to the **Fade-in** to the Breath path. Similarly, when DeBreath stops detecting a breath, **Fade-in** determines how long it will take until unity gain is restored for the vocal path.

Working Disciplines

At times you want to aggressively remove all traces of breaths. In such cases, set the reduction to –inf. If the music is sufficiently noisy or the vocal track was recorded in a dead quite space, you may not notice the "floor dropping out from under the vocal track," in the form of a room tone hole. However, many times you will find it troubling when the vocal track's room tone is suddenly missing. DeBreath allows you to replace some of this missing "space" with very low level white noise. The Room Tone control adds noise only in places where a breath reduction was made. The maximum level of white noise is -80dB and is otherwise scaled by the amount of attenuation.

Oftentimes, you don't need very much breath attenuation to achieve great results. Reducing breaths by a mere 20 to 40 dB can sufficiently separate your vocals from breaths so that your vocal compressor won't "see" the breaths. This allows you to compress your vocal track as you like, leaving the breaths quite and uncompressed.

Sometimes, the best way to control breaths is to totally separate the voice from the breaths. To do this, duplicate the track in your workstation. On one of the tracks monitor the Voice path. On the other, the Breath path. In this manner you will have complete, separate control over the voice and the removed breaths. You can choose different - and automated - processing, level and dynamics for each path.