QuikQuak
Audio plug-ins

Pitchwheel
User guide   Version 5.2

The Pitchwheel plug-in freely alters the pitch of a sound without changing it's length. It has a large, easy to use dials and simple parameters making it a fast and creative effect unit. The wheels have a 48 semitone range, but allows fractional semitone control with the wheel for tuning and vibrato effects, and massive rangs can be achieved by swinging the dial. Through the use of MIDI, 8 note chords can be played, creating vocal harmonies. It's simply a matter of sending notes to the plug-in at the same time as the notes are sung.

The user pointer acts as a desired pitch change, and the actual pitch is produced by gravity and inertia controls. Pitchwheel moves towards the desired pitch at sample accuracy, enabling nice transitions without stepping artifacts. A DJ turntable feel can be created, but the difference here is that the tempo remains the same, so your track can go on without sequence timing changes.

Timbre wheel changes allows complete control over the incoming spectral envelope, which is a great effect, but can also pitch vocals without the 'chipmunk' effect.

You can of course use it statically, to create odd alien sounds, and character changes. Doppler effects can be easily simulated, or just use it to alter background atmospheres in real-time to get them just right.

Once you start feeding your sample collection though Pitchwheel, you start to think it's completely natural to bend and twist sounds around freely, and wonder why you couldn't do this before.

Pitchwheel is a mono and stereo effects plug-in, for Audio Unit and VST compatible hosts. As there are many different hosts, please consult your hosts' manual for FX usage and routing. We'll just start with playing the effect.

The plug-in has been designed with the least controls as possible, and they have been kept fairly large to aid live control. The main control is of course the great big wheel. Simply route any sample you like through the plug-in and move the dial like you would a normal plug-in dial. Note that you can click and drag from anywhere inside the circle. Have fun!

Controls

Range:
Click on the button to change the range the dial spans over. You have a choice of 48, 24, 12, 6, 4, and 2 semitone ranges. These ranges enable the user to increase accuracy while mouse operating the pitch wheel. The range is marked clearly by changes in the tick marks around the wheel.

Snap:
This button sets 'snap' to on or off. When on, you'll see that the glowing light always remains at exact semi-tone values near the pointer. This shows you that wheel has been quantized to the nearest note offset. This is often set, as it helps to accurately change pitch to musically pleasing values.

Main Pitchwheel:
This wheel controls the pitch of the plug-in. The triangular pointer always reflects the user position of the wheel, and will only go from left to right 270 degrees. The movement covers the note values defined by the range control setting.

Inner ring indicator:
Inside the main wheel is a glowing ring that is brighter at one point. This important indicator displays the *actual* note the effect is playing. This is here because the actual note is governed by the other controls, which cause it to move differently from the main user position. For example, the smooth dial can make the pitch slide smoothly from one note to another, which produces a lag from the user wheel movements, which will be indicated by this inner ring.

User pointer always shows direct user movement.

Inner ring showing actual pitch offset value.
This pointer can spin all around the dial because it is influenced by the other parameters.

Actual pitch offset value.

Blue dials:
The three dials labelled Gravity, Inertia, and Smooth, interact with each other in complex ways. Playing with them in the following order may help to understand the interactions.
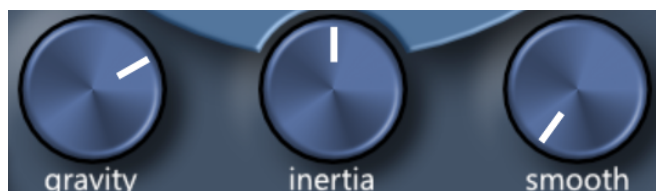
Manual Pitch value:
You can input values directly via keyboard entry.
Right click or CTRL/Control click the pitch offset value in the middle of the display, then type in the pitch value you want. The wheel will instantly jump to that value, ignoring any gravity or inertia values.

Gravity:
The gravity dial controls the amount of influence the users' wheel position has on the actual pitch. Set high values and the pitch will clamped hard to the user position. It may help to think of it as a piece of elastic tied between the actual pitch and the users' pitch. Set at low levels the elastic is weak the pitch will swing wildly until settling down on the desired pitch value.
Experiment: Set gravity to lowest and the other parameters to the plug-in's load up defaults. Now swing the main wheel to the extreme right, and you'll see the inner ring indicate the actual pitch flying straight past the arrow, when it slows accelerating spin the wheel all the way to the left, and the pitch will accelerate down. Keep go left and right in this swinging action and you can achieve huge octave leaps in pitch.
(In previous versions of Pitchwheel this control was called 'Dampen')

Inertia:
This governs the speed at which the actual pitch heads towards the user pointer.
Note that you will only see this effect when Gravity is set to low values. This is because high valued Gravity overrides Inertia by clamping the pitch to the pointer all the time. If the concept is a little confusing, simply play with different Inertia and Gravity values to get better idea of the flexibility in this combination.

Smooth:
The Smooth dial changes the reaction time for the underlying values of the user pointer. It basically smooths out the user pointer locations. This is useful for getting nice transitions between pitches, averaging out the user inputs and inaccuracies. Note this effects Gravity and Inertia values and should be kept at a minimum if you want to have effective Inertia play.

Input keyboard:
The keyboard graphic at the bottom of the first panel shows the current offset, the origin note, and all incoming MIDI note values.

Starting with the 'origin' value on the right - this is the zero offset origin note, and all pitch changes are relative to this note. Click on it to change the value.
Example: If the origin note is F4 and you play F4 then there will be no pitch change of the incoming audio. But if you play F#4, then you will hear a 1 semitone rise in pitch.
This is useful if you know the pitch of your source audio, and want to play it on a MIDI keyboard.
Example: If you have a clarinet sample playing at D5#, simply set the origin value to this, and then you'll be able to play actual notes with this on the keyboard.
The origin note is also shown as a small blue dot on the keyboard display (see diagram above).
The highlighted note on the keyboard graphic shows the current actual offset from origin, which is played though MIDI to Pitchwheel. If they are both on the same key then the incoming sound is not changed.
You can play up to 8 note chords with the keyboard with '8 Channel MIDI' set, but remember you are playing an effect and altering an incoming signal rather then play a sample. See next page for details.

Mix:
This is the output mix between the original source and the effected audio. The original signal is delayed to match the effected output. See latency.

MIDI:
Select between Single note and Multi-note mode when using incoming MIDI to play notes. Multi allows you to play up to 8 times the input signal at once!

2

Single / Multi midi mode:
 Pitchwheel is an effect, so its normal state is to always transform incoming audio. This is set with the 'Singe' position.
When 'Multi' is set **you will not hear any incoming audio until a note is played** though it from MIDI. This allows you to play the audio stream in chords.
This ability to play chords allows great control over vocal parts. As you can pitch shift at any time and set complex harmonies simply by laying out MIDI notes in your host sequencer.
With 'Mono - Constant' set, the first singular MIDI note sent to the plug-in will determine the pitch offset. This enables quick and accurate shifting, rather than rely on the mouse to control Pitchwheel.
At the same time as playing the sample on the keyboard the wheel also be moved to create vocal slides and effects simultaneously.
You can use extremes of pitch change when using MIDI, and combined with low Gravity values causes it to go a little crazy, so... have fun!
* When set to '8 Channel MIDI' and no MIDI notes are play, the output will be silent, the glow at the centre of the plug-in indicates an audio signal is present.

Timbrewheel dial:
 This acts in exactly the same as the Pitchwheel and will change identically when using
 the same parameters below it.
* Don't open the Timbre section if you want normal pitch shifting mode.

'What is the Timbre wheel?':
Timbre is the texture or colour of a sound, and is defined by the overall shape of a sound's spectral content.
In Pitchwheel for example, if you increase the pitch of a vocal with Timbre off, it will sound squeaky with 'chipmunk' sound. This is because ALL the frequencies have been shifted up.
But in reality when a voice increases in pitch, the vocal chords are effected by the shape of the throat of the speaker, so the Timbre is kept the same. The same effect applies to other instruments, like wind instruments.

For example: Switch the Timbrewheel on, and keep it's pointer at . While playing a
vocal sample through the plug-in, change the pitch wheel. Notice that the sound is more natural. This is because the Timbrewheel is keeping the overall shape of the sound in place.
Another name for the peak shapes in a vocal tract is 'formants.'

Note that when you set the Pitchwheel to 0 and move the Timbre wheel up, you are keeping the same pitch but moving the spectral shape upwards. This has the same effect as breathing out with helium in your lungs (not something recommended, as it can cause harm, but fun never the less!).

Lock button (legacy):
There used to be a lock button on the plug-in. This connected the two outer wheels together. To do the same thing now, simply **close the Timbrewheel**.

Input meter:
The level of input is shown in the 'input.' This just shows you if there's any incoming audio.

MIDI meter:
This light indicates if there is any acceptable MIDI input, like Note On and Pitch Bend.

Plug-in Latency:
Your <u>host DAW should set this automatically for you</u>:-
2048 samples at anything below 48Khz.
4086 above 48k and below 96k,
8192 samples above 96k.
To calculate the latency in milliseconds, use 'samples / sample rate * 1000 = ms'
So for example: 2048 / 48000Hz * 1000ms = 42.67ms.

Hints and tips

* Remember to close the timbre wheel to go to normal pitch shifting mode.
* Use the Multi' setting and create chord and note changes in your host
software. Using word and syllable positions to make harmonies and alternate expressions to single vocal recordings.
* Use the Timbrewheel at 0 setting for vocals, this keeps the formants fixed for natural vocal pitch changes. That is, unless you want to create strange alien voices of course. :)
* Holding down several keys near the origin can really thicken up a drum loop, and certainly fatten the sound as though several drum kicks are being played at the same time.
* Play the wheel like a DJ! The beat timings all stay in place, so you can really push those tonal synth loops about, and not worry about getting everything back into sync.
* Just use the Timbre wheel on its own to alter the whole feel or tone of a sound.
* Using high 'smooth' values will override the gravity and 'inertia' controls. If you want to swing the pitch around the wheel position wildly, then set the 'gravity' and 'smooth' to minimum.
* Try going through your sample collection with Pitchwheel, you may be surprised how it breathes new life into them.
* Above all else - experiment!

Dave Hoskins
QuikQuak audio plug-ins.