

### 5. Advanced tuning, wind supply and touch

In tutorial number four I explained the basic tuning and winding options accessible from the Physis Tuning control panel. There are, however, further subtleties in tuning, wind supply and keyboard touch sensitivity that can be introduced to tailor the organ's behaviour. For example, there are various ways in which celestes can be tuned for an authentic effect, the wind supply can be made to emulate various natural characteristics, and the key touch can be made to control virtual pipe speech.

[Title: Celeste tuning]

[Shot of Physis panel, Celeste stop parameters]

Celeste stops involve one or more ranks that are detuned in relation to others, in order to create a beat frequency that results in an undulating or shimmering tone quality. If we take a look at the voicing parameters page for a typical Swell string celeste, you can see that there is both a Detune parameter and a Detune Type.

Celestes on Physis organs are always single ranks that need to be sounded with another complementary stop, so we'll turn it on together with the adjacent Gamba [\[demo\]](#). The Detune can be either sharp (positive) or flat (negative), with a range of 8 steps either way. As you can hear, the beat gets faster and the timbral effect changes as the celeste is detuned more.

The Detune Type affects the way that the beat frequency changes as the note pitch increases. With pipe organ tuning there have traditionally been two alternatives for celestes — one where the beat rate remains relatively constant across the scale, and another where it gets faster as the pitch increases. Type A is relatively even across the scale, whereas B and C get faster to different degrees at the top of the scale. The bottom octave remains pretty much the same in all these modes. The setting is very much a matter of taste, and the timbral quality you are trying to achieve.

[Title: Wind supply configuration]

[Shot of presenter]

From version 1.11 of Physis, you can choose the style of wind supply. This emulates the subtle pitch fluctuations of the instrument in response to the quantity of air demanded by the pipes, and works in conjunction with the overall Air Pressure function on the main Tuning page.

[Shot of home screen]

It's accessed from the Setup menu, Air Supply Configuration. Here you can see that it's possible to choose from a number of options. It's hard to demonstrate the effects of these with any clarity here, as it's a subtlety only really experienced while playing, but I can explain what happens:

STANDARD offers the same behaviour found on previous Physis versions, although slightly improved in realism.

BAROQUE SMALL emulates the behaviour of a small baroque organ, with particularly sensitive and unstable wind.

BAROQUE LARGE, on the other hand, emulates behaviour of a large baroque organ, being more stable and with a slower response to transients.

ROMANTIC emulates the behaviour of a large romantic/symphonic organ, with a rather stable wind supply, but one that has a noticeable "ensemble" effect when big chords are played.

GENTLY FLEXIBLE emulates the behaviour of an organ equipped with flexible winding, affecting the instrument in a very gentle manner.

If we skip down to the next screen, you can see that it's possible to adjust the magnitude of this effect for each manual separately, with 8 steps of intensity (demo), so we could have the Great responding more to changes in wind pressure than the Swell, for example.

[Title: Keyboard touch]

[Shot of presenter]

Pipe organs with mechanical action offer some control over the way that the pipe speaks during the onset and offset of a note, depending on the speed with which a key is pressed or released. The Tracker Touch function of Physis emulates this by sensing the key velocity and adjusting the attack and release of virtual pipe speech accordingly. With flue stops, only the attack is affected, whereas the release is affected on all stops.

[Shot of control panel from Home screen]

Tracker Touch is turned on from the Utilities and MIDI page of the Physis control panel. We'll turn it on, and you should be able to hear that the note attack of this four foot Principal changes depending on how hard I hit the key, both in terms of its speed and start-up chuff (demo with video shot of key press?).

If we scroll down to the bottom of this menu we also find Pedal/Keyboard Touch. Here there are options to change the key velocity response curves of the Tracker Touch function. Set to Fixed 64, as for the Pedal division, a fixed MIDI velocity value of 64 is used no matter what speed the pedal is depressed, so there is essentially no touch effect. The other options are SOFT, NORMAL and HARD, which affect scaling of key velocity. This can be used to change the way the instrument responds to your touch during performance.

[Shot of presenter]

I've shown you a number of features during this tutorial that highlight the attention to detail and range of flexibility possible in tuning, winding and touch response of Physis organs. It's subtleties such as these that make the difference

between playing an instrument that sounds bland and unmusical, and one that responds in a convincing and natural way to your playing. The physical modelling approach to creating pipe sounds means that virtual pipe and wind parameters can interact in a realistic way, responding dynamically to your performance technique.