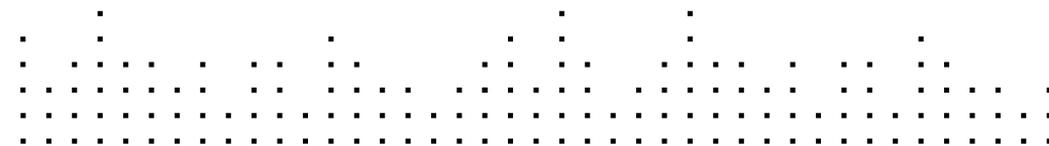


# AKOUSTIK PIANO



OPERATION MANUAL



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Special thanks to the Beta Test Team, who were invaluable not just in tracking down bugs, but in making this a better product.

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# 1. Welcome to AKOUSTIK PIANO!

First off, we at Native Instruments would like to thank you for purchasing AKOUSTIK PIANO. It is because of you that we can continue to build great software which suits all your creative needs.

AKOUSTIK PIANO is the new benchmark in sound quality, capturing the feel of the originals with unprecedented authenticity. The result is a uniquely warm, transparent and **flexible sound that delivers the same distinctive character of each individual piano** in detail and can still be adjusted to meet **specific needs**.

Built on the award-winning Kontakt engine, AKOUSTIK PIANO takes advantage of groundbreaking sampling technology. The keys were sampled at varying velocities and great care was also taken to capture the entire sustain and release phases. The brand new Layer Morphing Technology generates a seamless dynamic gradient. The characteristic resonances caused by use of the pedals can be adjusted, as can the subtle mechanical noises of the pedals and keys themselves.

AKOUSTIK PIANO also has a **first-class integrated convolution module, allowing highly authentic spatial characteristics** to be added to the sound. Place the piano in a studio, jazz club, concert hall and a cathedral or use the dry signal as it is. The acoustic parameters of these spaces, such as their size, can also be manipulated.

The additional benefits **inherent in the exceptional quality of these world-class grand pianos** was a privilege only a few could enjoy. AKOUSTIK PIANO makes these benefits, **and the added pleasure they induce, accessible to everyone. We sincerely hope you enjoy AKOUSTIK PIANO.**

– Your Native Instruments Team

## 2. Basic User Interface Protocols

There are five main types of controls that let you interact with AKOUSTIK PIANO. knobs, buttons, drop-down menus, click menus and numericals. This chapter will introduce you to these controls. Additionally you will learn how to load and save Presets in AKOUSTIK PIANO.

### 2.1 Knobs

- ▶ To change a knob value, click on it and drag up to move the knob clockwise, or down to move it counter-clockwise.
- ▶ Knobs can be fine-tuned if you hold down your computer keyboard's Shift key as you move the knob.
- ▶ Ctrl + Click (Mac: Cmd + Click) resets a knob to its default value.

### 2.2 Buttons

These are all toggles – click once to turn on, again to turn off. The background of most buttons will change color for the On and Off states. The *Track* button lights red when record enabled, and green when in playback, for example.

## 2.3 Drop-Down Menus

These look like buttons, but have small arrows that point down. To access a drop-down menu's entries, click on the menu. A list holding several entries drops down. To select one of the entries, move the mouse to the regarding entry so that the entry gets highlighted, then release the mouse button. AKOUSTIK PIANO takes whatever action you've requested, then closes the menu.

## 2.4 Click Menu

These work like scroll bar arrows in any computer program. Click the top arrow to access the previous setting. Click the bottom to access the next one.

## 2.5 Numericals

These are fields that contain numbers. In AKOUSTIK PIANO this only relates to the tuning number fields.

- ▶ Choose a preset value from the drop-down list. This is the fastest way to change values.
- ▶ Click on the numerical, then drag the mouse up to increase the value, and drag down to decrease the value.
- ▶ Double-click on the numerical, and type in the desired value.

## 2.6 Saving and Loading Presets

With AKOUSTIK PIANO, once you create a beautiful Preset, you can always get it back again – that's the benefit of being able to save.

Preset files have a distinctive .nki suffix. Presets are saved within a Presets folder located in the main AKOUSTIK PIANO directory unless otherwise specified by the user.

### 2.6.1 Loading a Preset

At the top of the AKOUSTIK PIANO interface, next to the Preset name, is a downward arrow. Click on this and select the desired Preset from the drop-down menu.

### 2.6.2 Saving a Preset

**Save to new Preset:** Double-click the Preset name to highlight it. Type a new name into the Preset name field and press Save (diskette icon). The file will be automatically saved to the AKOUSTIK PIANO Presets folder.

**Overwrite existing Preset:** To overwrite a Preset, press the save as (diskette) button. A dialog box opens up, asking you to confirm the overwrite process.

## 3. Getting to know your new Pianos

Contained in an intuitive interface, AKOUSTIK PIANO combines pristine samples from 3 of the most prestigious and reputable grand pianos in existence: the Boesendorfer™ Imperial, Bechstein™ D, and Steinway™ D. A particularly charismatic vintage Steingraeber™ 130 upright piano is also included.

### 3.1 Bosendorfer™ – Vienna Classic

#### **Model: 290 Imperial Grand**

On 25 July 1828 Ignaz Bosendorfer established himself in Vienna as a piano maker. This was the beginning of a classic and vibrant company, that is not only connected with the Vienna musical development of the 19. and 20. Century, but also remains the only company which continues to build pianos in the highly regarded Vienna tradition.

The „Imperial“ is known worldwide for its unsurpassed power, singing tone and a resonance that seemingly lasts forever . These tonal characteristics derive from the unique craftsmanship and design which has made the Model 290 famous. The Imperial boasts the largest sound board area of any piano currently in production and it is the only concert grand with nine sub-bass notes – down to bottom C – which give it a full, eight octave range. The Model 290 is truly capable of delivering the most thunderous piano concerto or a whisper soft recital. Suited for classical, contemporary as well as jazz, the Bösendorfer unique sonic characteristics make it the choice of countless world-famous pianists.

This is the chosen grand to faithfully reproduce the works of Bartok, Debussy, Ravel and Busoni.

Famous Fingers: Franz Schubert, Frederic Chopin, Richard Wagner, Johannes Brahms, Richard Strauss, Leonard Bernstein

[www.boesendorfer.com](http://www.boesendorfer.com)

## 3.2 Bechstein™ – German Precision

### **Model: D 280 Grand**

Growing disillusioned with current piano-maker techniques, Carl Bechstein realized the need for a new type of piano design, one with a resonating body and enormous span of sound expression. In 1853, he crafted his achievement when he set up in Berlin, Germany. With his vision, he developed the Bechstein concept for sound and technique.

The Bechstein™ 280's tone is one that is gentle in nature. Its duplex scale design provides subtle harmonic overtones which add to the tonal color and help shape the primary note. This piano is known for a clean, thin treble and strong, velvety bass, thus allowing players to produce powerful temperaments while retaining full freedom of expression.

Famous Fingers: Claude Debussy, Franz Liszt, Elton John, David Bowie, Rick Wakeman, Supertramp and The Beatles

[www.bechstein.de](http://www.bechstein.de)

### 3.3 Concert Grand D

The Concert Grand D is a unique Native Instruments creation which fuses the KONTAKT 2 sampling engine with high resolution samples from the most widely used concert piano in contemporary music, the Steinway™ Model D.

For the sample recording session we hired the **finest Model D available directly** from Steinway™, Hamburg. It is a three year old German Concert Grand D model in excellent condition and is regularly maintained by the best piano tuners from Steinway™, Hamburg.

The Concert Grand D's intonation and regulation were optimized for the lightest playing style. Thus, even with very light strokes, an impressive sound spectrum and controllable tonal nuances are generated. This results in wonderfully smooth and perfectly sounding Pianissimo notes.

In keeping with the Hamburg tradition, the Piano was recorded at 443 Hz. Our feeling is that with this slightly higher tuning the tones tend to „sing“ better. After the initial recording sessions, the Concert Grand D was re-tuned to 440 Hz; ensuring that the „singing“ tonal quality was retained and at the same time conforming to the AKOUSTIK PIANO standard tuning.

This piano has an incredibly versatile sound and is particularly suited for solo piano work, jazz, classical, new age and other styles of music.

## 3.4 Steingraeber und Soehne™ – Tried, Trusted and Tempered

### **Model: Vintage Upright 130**

The history of the piano makers, Steingraeber und Soehne, began in Thuringen in the year 1820. Eduard Steingraeber established himself in Bayreuth in 1852 and within three decades had become Bavaria's largest and most important manufacturer of upright and grand pianos.

The Steingraeber™ 130 is a vintage upright piano with a warm, charismatic , and compact sound which ideally suits productions that attain their charm through small quirks and imperfections. When the „perfect“ concert grand sound isn't desired; the Steingraeber™ 130 with its characteristic tone, makes a **fine replacement**.

This piano is typically used in blues, jazz, blue grass, and individual forms.

Famous Fingers: Tom Waits, Johnny Cash.

[www.steingraeber.de](http://www.steingraeber.de)

## 4. AKOUSTIK PIANO Architecture

AKOUSTIK PIANO was specifically designed for the enthusiast that is looking for a pristine sound without a complicated interface. Our focus was to simply make it sound great, and it also happens to look great too!

- ▶ AKOUSTIK PIANO contains four pianos with one user interface.
- ▶ The pianos can be placed in one of four acoustic spaces.
- ▶ All pianos have the same dedicated controls to shape the original piano sound.
- ▶ Factory presets (instruments) can be tailored to your personal taste and saved for later editing or performance.
- ▶ Built-in record function which doubles as a MIDI file player.

## 5. Instrument Header



The Instrument header is where you'll find AKOUSTIK PIANO's main controls such as Preset management (renaming and saving), main volume, and piano views; to name a few. The corresponding Header buttons are described in detail from left to right.

1. **Select View:** This view can be thought of as piano select. This is where you can choose from any of the four different piano types and rooms. It also contains the Editor: Edit view is the control center for shaping and adjusting sound characteristics. Here you have all piano parameters available for customizing, fine tuning and shaping the character of your piano.
2. **Play View:** On the left you have the Play view. The emphasis here is not on editing any sound parameters. This is the standard view for, as you probably guessed, playing your chosen piano. This view also contains the instrument header, which gives you easy access to presets, and the Recorder, which can be used to play back MIDI files or record a new song.
3. **Full View (Not available when used as a plug-in):** To the right is the Full view. The spotlight is on performance. There are no distracting knobs or buttons, just pure keys, allowing you to concentrate on what is most important...playing.
4. **Preset Name Field:** Enter a name by double-clicking the name field and typing in a new name. To edit a name, drag across the section to be changed, and type in any changes. Press the SAVE button to save the Preset.
5. **Preset menu:** The drop-down menu to the right of the Name field allows selecting a new Preset from the available Instrument presets. Selecting one replaces the current Preset.

6. **Load Next / Previous Preset:** The left/right arrows to the right of the Name field select the previous or next Preset in the preset list. **Selecting this replaces the selected Preset.**
7. **Save Preset:** Click this to save the current Preset. **Use this if you wish to overwrite any changes to the same Preset.** Presets are saved in the Native Instruments .nki format.
8. **Delete:** Deletes the current Preset from the list and from your computer.
9. **Voices:** The range goes from 15 to 150. In combination with the ECO mode, this allows you to optimize performance on computers with minimum requirements. Please note that this is the number of keys that can be played at the same time - including sustain pedal. AKOUSTIK PIANO will play much more voices under the hood since special effects like sustain resonance trigger more samples.
10. **CPU overload:** The ! lights red when the computer is at its limit. This is a clear sign that you should reduce the number of playing voices (release all keys and sustain pedals) and / or turn on the ECO button. In case of an overload, press this button again to reset the engine.
11. **ECO:** This button switches from convolution (default) to a normal Reverb. If you get a CPU overload message or audio dropouts, you should turn this on.
12. **Level Output Meter/ Master Volume:** This slider doubles as a signal output meter and a volume control. The meters show the Instrument's signal level. If the red clipping indicators toward the right light up, reduce the master volume to prevent distortion. As with most software instruments, AKOUSTIK PIANO adds the voices at the output. The more voices you play, the more likely that clipping will occur. When setting levels, play the maximum number of voices you expect to play, and adjust the level based on that. A built-in limiter will prevent any harsh clipping from occurring.
13. **NI Logo:** Click this to access the AKOUSTIK PIANO "About" window. This window contains useful information regarding the software, such as version number, as well as update and support links.

When AKOUSTIK PIANO is used as a plug-in,  enables the "offline bounce" feature. Offline bounce prepares AKOUSTIK PIANO for bouncing / freezing tracks which use AKOUSTIK PIANO and is helpful for reducing crackles or drop-outs in the rendered audio. When AKOUSTIK PIANO receives the bounce signal from the host, this will automatically turn on. If it doesn't, this means the host does not support this feature and you may have to enable it manually (it will turn yellow). However, before turning this on manually, listen to the exported audio. You may not even need to use this.

## 6. Select View

As you know by now, at the heart of AKOUSTIK PIANO's sound are four meticulously sampled pianos. Through this process, we were able to achieve a flexible sound that delivers each piano's distinctive character in exacting detail and can still be adjusted to meet specific needs.



### 6.1 Four Pianos, Four Rooms

The Select View presents you with the standard AKOUSTIK PIANO sound set, four pianos and four rooms. Each of the four pianos can be placed in any of the four acoustic environments to accentuate the sound's spatial characteristics.

## 6.2 The Pianos

Click on the piano of your choice to load the dry version. Please note that loading a piano may take a moment.

### Pedals

All of pianos represented here have three pedals. The pedals can be engaged using standard MIDI control changes (CCs). The corresponding CC number is noted next to the pedal name.

**DAMPER PEDAL (CC 64):** The Damper Pedal is also called the **SUSTAIN PEDAL**. Every note on the piano, except the top two octaves, has a damper, which is a padded device that prevents the strings from vibrating. The damper is lifted off the strings whenever the key for that note is pressed. When the damper pedal is pressed, all the dampers on the piano are lifted at once, so that every note can “sustain”.

**UNA CORDA (CC 67):** Una Corda (literally means “one string” in Italian) or the soft pedal is placed left most in the row of pedals. On a grand piano, this pedal shifts the action to one side slightly, so that hammers that normally strike all three of the strings strike only one or two of them. **This softens the note and also modifies its tone quality.**

**SOSTENTUNTO (CC 66):** The Sostenuto Pedal or middle pedal maintains in the raised position any damper that was raised at the moment the pedal was depressed. It makes it possible to sustain some notes (depress the sostenuto pedal before releasing the notes to be sustained) while the player’s hands have moved on to play other notes. **The sostenuto pedal was the last of the three pedals to be added to the standard piano, and to this day many cheap pianos don’t have one, but all grand pianos do. A number of twentieth-century works will require use of this pedal.**



At any time you may click the I button in the upper right corner to open to an info window which contains information about the pianos and web site links from the piano manufacturer.

## 6.3 The Rooms

AKOUSTIK PIANO's impulse response-based convolution effect combines the realism of acoustic spaces with the **flexibility and control possibilities of signal processing**.

Convolution works by **first taking a "sample" of an acoustic space, and using that sample as the basis to model the space**. With convolution technology you can reproduce the sound of some pretty amazing places where you may never get to play a piano. However, thanks to AKOUSTIK PIANO, at least you'll know how it would sound if you could.

Click on the room to load a convolution preset. Click again on the room to disable it. **The following presets can be further edited in the Reverb section.**

Venue	Room Size	Floor Material
Cathedral	Very Large	Marbel
Concert Hall	Large	Parquet (wood)
Jazz Club	Middle	Hardwood
Recording Studio	Small	Linoleum

# 7. Editor



As described in the previous section, the Instrument Header is your gateway to instrument editing operations. The Editor is only available in the Select View.

## 7.1 Input



In this section you configure and fine-tune your piano and MIDI setup.

**CHANNEL:** Channel sets the Instrument's MIDI channel.

**TRANPOSE:** Transpose incoming MIDI data in semitones. For example, if this is set to 2 and you play C on your keyboard, the Instrument will play D. The range is from -12 to +12.

**FINE TUNE:** Adjusts the overall tuning of the Instrument. The default is A=440, but it can be adjusted from A=420 to A=460. Use the up-down arrows to incrementally step through values or double-click the number field and enter even finer values in by hand, for example 441.5Hz.

**TUNING:** Here you can choose an alternative tuning for your piano. The most commonly used for piano are equal temperament and less so, stretch tuning. You'll find a complete list and description of these tunings in the Appendix of this handbook.

**VELOCITY CURVE:** Menu to select from 7 different velocity curves. This affects how AKOUSTIK PIANO responds to the incoming MIDI velocity. See more on Velocity in the Appendix.

**LAST NOTE:** Displays the incoming note velocity, the scaled velocity (in case of using the velocity curve) and the dynamic marking. You cannot edit this section.

### **Dynamic markings and their abbreviations**

- ▶ **Pianississimo:** ppp, very soft volume
- ▶ **Pianissimo:** pp, softer volume
- ▶ **Piano:** p, soft volume
- ▶ **Mezzo-piano:** mp, medium soft volume
- ▶ **Mezzo-forte:** mf, medium loud volume
- ▶ **Forte:** f, loud volume
- ▶ **Fortissimo:** ff, very loud volume
- ▶ **Fortississimo:** fff, extremely loud volume

## 7.2 Piano Details



Everybody knows the common sound of a piano, but the character of one is something else entirely. With this section you control how much character actually comes through. The different settings mix with the dry piano signal and create something which until now, only real pianos could reproduce.

**SUSTAIN RESONANCE:** Sustain Resonance is a unique AKOUSTIK PIANO feature which controls the sustain sample resonance and release sample volume. When used in conjunction with a sustain pedal, SUSTAIN RESONANCE gives an effect of spaciousness similar to that of reverb. It can be thought of as the tonal nuances created by the strings and body after the dampers are lifted.

**RELEASE RESONANCE:** Released keys also have a similar effect on undampened high notes, generating overtones. RELEASE RESONANCE adjusts the intensity of the release samples and in turn, controls the overall presence of these tones.

**BASS:** contains three settings which help add low end character to the sound.

**KEY NOISE:** adjusts the volume of the piano action as a key is released. Extreme left is very faint, while right is more present. The knobs middle position is the sound as originally recorded.



Turning the SUSTAIN RESONANCE up makes for a more realistic piano sound, but if used in conjunction with a sustain pedal polyphony can accumulate rather quickly. This tends to result in a higher CPU load.

**PEDAL NOISE:** adjusts the volume of the pedal mechanism, thus creating a more realistic sound when using them. As with **KEY NOISE**, the middle value is the original recorded sound.

**LID:** sets the lid position of the grand piano. The three positions are open, half-open and closed.

**DYNAMIC:** Adjusts in dB the difference in dynamic between the lightest (minimum key velocity) and hardest (maximum key velocity) keystroke.

## 7.3 Equalizer



AKOUSTIK PIANO's 3-Band EQ provides controls for frequency (where any boosting or cutting will occur), the amount of boost or cut (gain), and the bandwidth over which the boost or cut occurs, from narrow to wide. Narrow bandwidths give a sharper filtering effect, whereas wide bandwidths are more subtle and gentler.

For editing, select a band with the mouse and drag it around. Finer adjustments can be made with the knobs described below.

**FREQUENCY:** chooses the frequency at which boosting or cutting will occur.

**BANDWIDTH:** sets the width of the frequency band (in octaves) to be boosted or cut.

**GAIN:** Controls the amount of boost (positive values) or cut (negative values)  
**ON/OFF:** When On, this enables the EQ. Off is used to bypass the EQ settings.

## 7.4 Reverb



Reverb synthesizes the myriad reflections that occur when sounds play in an acoustic space, thus adding spaciousness to the sound.

**AMOUNT:** Adjusts the reverb wet/dry amount. This is likened to a processed and unprocessed signal.

**SIZE:** Sets the impulse response size, which affects how long the reverberation lasts. Higher values are equivalent to larger rooms.

**DISTANCE:** Simulates distance from the piano to the reflective surface by adding pre-delay.



The ECO button in the instrument header switches from convolution to a normal reverb. Switch this on if your computer is reacting slowly. The above controls remain the same with normal reverb active.

## 7.5 Position



PAN: Sets the stereo position of the Instrument.

WIDTH: Sets the width of the stereo field. Negative values close it in until at full counterclockwise, the signal becomes mono. Positive values push the stereo spread outward.

L<->R: Swaps the left and right audio channels. This is useful for changing the listening position from *Pianist* to *Audience*. The default setting is *Pianist*, where the lower notes are on the left side of the stereo field. If enabled, lower notes are on the right side.

Please note that if you experience crackles or audio drop-outs with larger reverb settings, it is recommended that you increase your sound card latency. Please see the Installation chapter for more information on how to do this.

## 7.6 Recorder



AKOUSTIK PIANO includes a simple two track recorder which facilitates getting inspirational moments on tape. With its MIDI file player functionality, it also doubles as a useful practice aid.

### 7.6.1 File



This is where you create, name, load, export and save your songs in the AKOUSTIK PIANO song format (\*.aps).

**NEW DOCUMENT:** This creates a new blank template for your song. You can name the pre-recording at any time by typing in the text field above and pressing enter.

**LOAD:** Click on the Load button, navigate to the file you want to load, and click on Open. **The File Player accepts AKOUSTIK PIANO song files, standard MIDI files and karaoke file types (\*.kar).** The Recorder cannot load audio files, such as .wav, .aif or mp3.

**SAVE:** Opens a file dialog where you can choose a location to save your song in the AKOUSTIK PIANO song format.

**EXPORT AUDIO:** Render the current MIDI or Song to a WAV file. This brings up a save file dialog where you can select the save-to location. By default the audio file retains the name of the Instrument.

## 7.6.2 Tempo



This glorified **metronome section helps you keep time, but that is not all**. It can also be used to slow down and speed up takes in song mode.

**CLICK:** Turns the metronome On or Off

**VOLUME:** Adjusts the level of the click sound

**BPM:** Set the metronome tempo by clicking on the up/down markers. Alternatively, double-click the number field and enter the value manually. BPM can be used post-recording to slow down and speed up songs.

**TAP:** Tap allows you to mouse click the correct tempo. This uses the intervals between mouse clicks to figure out which tempo the metronome should use. **Note that** you need a minimum of three clicks for this to work accurately, so we recommend using the quick key (TAB key on your computer keyboard) to tap tempo. The yellow light blinks to reflect **the current tempo**.

### 7.6.3 Position



Displays the recording/play position in hours, minutes, seconds and samples. The song position may be changed using the rewind or fast forward buttons in the Transport section.

### 7.6.4 Transport



This device can be thought of as a tape recorder. It doesn't use tape, but the principle remains the same. Press RECORD, play some notes, then save the result as one Song. AKOUSTIK PIANO Song files **have the extension \*.aps added to their names**. You can load saved Songs later on and use them as backing tracks for practice. Below is a description of the buttons, which should look familiar to you, followed by a typical application of the recording features.

RECORD: Click the RECORD button to record-enable the device. The red light flashes to let you know record-ready mode is on. Recording begins upon note input or when pressing the Play button.

**UNDO:** Undo is used to bring back the second to last recording. It does not clear the song buffer, i.e. Undo only becomes active after the **SECOND** take has been recorded!

**RESET:** Click this button to return the selected track's start position.

**REWIND:** Click and hold this to rewind. One mouse-click step through the selected track at intervals of 1 second.

**PLAY:** Playback or pause the selected track.

**FAST FORWARD:** Click and hold this to fast forward the selected track. As with rewind, single mouse-clicks step through the track at 1 second intervals.

**LOOP:** Loop selected track from beginning to end only

## 7.6.5 Recording

- ▶ Create and name a New Document via the File section **NEW DOCUMENT** button
- ▶ Press the **RECORD** button to enter record standby mode. Recording does not actually start yet.
- ▶ Recording begins with the first note played or by pressing the **PLAY** button. If the metronome is on, you should hear it as well.
- ▶ Press the **RECORD** or **PLAY** button to stop recording. Recorder resets the song position to the beginning automatically.
- ▶ If you are satisfied with your take, you can press the File section's **SAVE** (diskette) button. This opens a save dialog where you can choose a save location for your song.

When done recording, press the **PLAY** button to play back the recorded performance. To stop playback, press the **PLAY** button again.



When in recording mode, the following controls are disabled: **Rewind**, **Play**, **Fast Forward**, and **Loop**.

If you are not satisfied with your take, you may re-record it. Use the **Undo** button to bring back the second to last recording.

## 7.7 Playing back a Song or MIDI file

- ▶ Load a Song or standard MIDI file if you haven't already (Load button).
- ▶ Press the **PLAY** button to begin playback.
- ▶ Use the **MASTER VOLUME** knob to adjust playback volume.

To adjust Playback tempo, either use the **BPM** button or the **Tap Tempo** function. When playback is complete, **AKOUSTIK PIANO** automatically goes back to the top of the song. If **LOOP** is enabled, then playback will continue. To stop playback in the middle of a song, press the **PLAY** button.



When you load a Standard MIDI file, MIDI channel **OMNI** will be assigned. Use the **MIDI CHANNEL** drop-down menu to select the proper MIDI channel for instrument playback.

 It is not possible to record a track during MIDI file playback.

 Note that the Player is **mono-timbral**. This means that if you use **OMNI** for MIDI file playback, and **Akoustik Piano** must process the same note from two different MIDI channels, one note will be cut off. To avoid this, only use one MIDI channel for playback.

# 8. Appendix

## 8.1 Troubleshooting

If you encounter any problems with crackles please try the following steps in the same order listed below.

- ▶ Ensure that you are using a high quality soundcard with an ASIO driver (on Windows XP). Increase the latency of your sound card in the Audio/MIDI setup dialog to a value that still lets you play the pianos with a nice feel (10ms - 15ms).
- ▶ If you still hear crackles, check if the CPU OVERLOAD button (!) flashes red. In this case, press the CPU OVERLOAD button to reset the sound engine, then click the ECO button. This will switch from convolution reverb to conventional reverbs. Alternatively, deselect all rooms by clicking on the currently selected room.
- ▶ Any further crackles are disk related. Make sure that you are using the 16 bit version instead of the 24 bit version of the library. If you are using a laptop, try moving the library to an external hard disk connected via USB 2 or FireWire.
- ▶ Reduce the number of voices in the VOICES drop-down menu.
- ▶ Set the volume of the SUSTAIN RESONANCE to 0 in the Editor.

## 8.2 AKOUSTIK PIANO Keyboard Shortcuts

Ctrl + S	Save Preset
Cursor left	Preset left
Cursor right	Preset right
F1	Select View (standard)
F2	Play View
F3	Full View
Space / Enter	Play
Space / Pad 0	Stop
Pad .	Reset
Pad -	Rewind
Pad +	Fast Forward
Pad /	Loop
Pad *	Record
Pad 5	Metronome on/off
Tab	Tap tempo
Page up	Tempo up
Page down	Tempo down
Cursor up	Volume up
Cursor down	Volume down
ALT + F4 / Cmd + Q	Quit AKOUSTIK PIANO

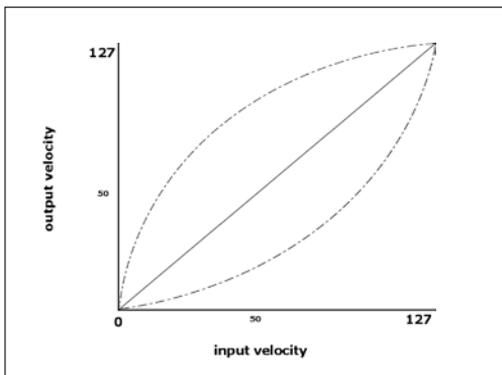
## 8.3 MIDI CC Chart

CC 7	Volume
CC 10	Pan
CC 64	Sustain
CC 66	Sostenuto
CC 67	Una Corda

## 8.4 A note about MIDI Velocity

Not all MIDI keyboards transmit the entire MIDI velocity range and less expensive controllers may be stubborn about sending the values which you actually play. For example, pianississimo may generate 30 and fortississimo may only transmit 110. This may make it hard to achieve the desired expression that suits your playing style. For this reason, AKOUSTIK PIANO offers some ways in which you can overcome this problem. It is recommended that you first set up your keyboard response before setting the DYNAMIC.

The VELOCITY curve drop-down menu in the Input section offers you 7 different slopes. The ranges are from -3 to +3, with a neutral curve in between. In general this means that with positive settings, AKOUSTIK PIANO is more sensitive to softer incoming velocity. This could also be good if your keyboard tops out at 100 for its max value, like some older models do. When the slope is negative, there is less response to softer velocity and more sensitivity to harder strokes. If pianissimo generates velocities around 40, then you should use negative slopes.



This picture illustrates how a -2 curve will scale an input velocity of 50 will result in an output velocity of about 20. With a +2 curve, an input velocity of 100 will yield an output of around 123.

While this type of setting is remains individual, we cannot say for certain which you might need. It is best to try out different settings and see which one works best with your setup.

When used in conjunction with DYNAMIC you can also control the AKOUSTIK PIANO's dynamic range in response to MIDI velocity. **Any note played with a velocity below the curve's lowest velocity will play at the minimum of the dynamic range.** Similarly, any note with a velocity above the curve's highest velocity setting will play at the maximum of the dynamic range setting. **The DYNAMIC function can also modify the dynamics of the whole instrument track (increase or reduce the difference between loud and soft note velocity), without compression or adjusting the sequencer's note velocities.**

# 9. Tunings in AKOUSTIK PIANO

AKOUSTIK PIANO allows you to select from a variety of tunings, each of which is suited for certain application. In the following you will be introduced to the tunings available in AKOUSTIK PIANO.

## 9.1 Equal Temperament (Equal)

To accommodate both keyboard design and the need to be able to play in all keys so that everything sounds acceptable, the octave on the piano is mathematically divided into 12 equal parts. This process is called tempering. **The specific type of tempering commonly used in piano tuning is called equal temperament.** In Equal Temperament the ratio between half-steps is 100 cents. This is the preferred tuning when playing with other instruments.

## 9.2 Stretched Tuning

The term Stretched Tuning describes a tuning where the high and low registers of the piano are tuned higher and lower, respectively, tuning the low strings' harmonics with the upper strings' fundamentals. The piano is intentionally tuned out of Equal Temperament in order to be in tune with itself. While this tuning may be the best for solo work, it is commonly not used when working with other instruments.

## 9.3 Pure Tunings

### 9.3.1 Pure (Pure)

Note	frequency ratio	deviation from equal tempered
C	1/1	0 cent
C#/Db	25/24	- 29.328 cent
D	9/8	+ 3.910 cent
D#/Eb	6/5	+ 15.641 cent
E	5/4	- 13.686 cent
F	4/3	- 1.955 cent
F#/Gb	25/18	- 31.283 cent
G	3/2	+ 1.955 cent
G#/Ab	8/5	+ 13.686 cent
A	5/3	- 15.641 cent
A#/Bb	9/5	+ 17.596 cent
B	15/8	- 11.731 cent
C	2/1	0 cent

### 9.3.2 Overtones 16-32 (Harmonic)

All intervals are taken from the **fifth octave of the harmonic series** (i.e. the scale is made up from the overtones 16 17 18 19 20 21 22 24 26 27 28 30 32):

Note	frequency ratio	deviation from equal tempered
C	1/1	0 cent
C#/Db	17/16	+ 4.955 cent
D	9/8	+ 3.910 cent
D#/Eb	19/16	- 2.487 cent
E	5/4	- 13.686 cent
F	21/16	- 29.219 cent
F#/Gb	11/8	- 48.682 cent
G	3/2	+ 1.955 cent
G#/Ab	13/8	+ 40.528 cent
A	27/16	+ 5.865 cent
A#/Bb	7/4	- 31.174 cent
B	15/8	- 11.731 cent
C	2/1	0 cent

### 9.3.3 Pythagorean Tunings

Pythagorean tunings are based on pure fifths, two alternatives are available:

ΠΥΘΑΓ. ΜΙΔ (ΠΥΘΑΓ.): Five pure fifths are tuned down and up from C, F#/Gb is deliberately set to  $\pm 0$  cent.

Note	frequency ratio	deviation from equal tempered
C	1/1	0 cent
Db	256/243	- 9.775 cent
D	9/8	+ 3.910 cent
Eb	32/27	- 5.865 cent
E	81/64	+ 7.820 cent
F	4/3	- 1.955 cent
F#/Gb	-	0 cent
G	3/2	+ 1.955 cent
Ab	128/81	- 7.820 cent
A	27/16	+ 5.865 cent
Bb	16/9	- 3.910 cent
B	243/128	+ 9.775 cent
C	2/1	0 cent

## 9.4 Meantone temperaments

MEAN TONE (MEANT.): Classic mean tone temperament: the syntonic comma (sC) is divided into four equal parts, this fourth comma is subtracted from the pure fifth and constitutes the mean tone fifth. **The fifths Eb-Bb-F-C-G-D-A-E are tuned as mean tone fifths**, the thirds A-C#, D-F#, E-G# and G-B are tuned pure.

Note	frequency ratio	deviation from equal tempered
C	1/1	0 cent
C#	(135/128) / sC3	- 23.950 cent
D	(9/8) / sC2	- 6.843 cent
Eb	(32/27) / sC-3	+ 10.265 cent
E	5/4	- 13.686 cent
F	(4/3) / sC-1	+ 3.422 cent
F#	(45/32) / sC2	- 20.529 cent
G	(3/2) / sC1	-3.422 cent
G#	(5/4) <sup>2</sup>	- 27.372 cent
A	(27/16) / sC3	-10.265 cent
Bb	(16/9) / sC-2	+ 6.843 cent
B	(15/8) / sC1	- 17.108 cent
C	2/1	0 cent

## 9.5 Well-temperaments

WERCKMEISTER III (WERKIII): Temperament by Andreas Werckmeister (1645 - 1706), dating from 1691: the fifths C-G-D-A and B-F# are lowered by a quarter of the pythagorean comma.

KIRNBERGER III (KIRNIII): Temperament by Johann Philipp Kirnberger (1721 - 1783), dating from 1779. The fifths C-G-D-A-E are lowered by a quarter of the syntonic comma, the fifth F# - C# is lowered by the schism, the remaining fifths are pure.

VALOTTI (VALOTI): Temperament by Francesco Antonio Valotti, dating from 1754. The pythagorean comma is distributed over the fifths f-c-g-d-a-e-B; each of these fifths is lowered by 1/6 of the pythagorean comma.

YOUNG (YOUNG): Temperament by Thomas Young from 1800, sometimes referred to as Young II. The pythagorean comma is distributed over the fifths c-g-d-a-e-h-f#; each of these fifths is lowered by 1/6 of the pythagorean comma

## 9.6 Quarter Tone (1/4 Tone)

A quarter tone is an interval half as wide (aurally, or logarithmically) as a semitone, which is half a whole tone.

In equal temperament the quarter tone is 50 cents or  $21/24$  or 1.029302236643.

In 24 tone equal temperament, or the quarter tone scale, it is the smallest step.

In just intonation it is often 36:35 or 34:33.

This tunes all notes above and below the root, C, in quarter tones.

# 10. Facts about the Piano

The Piano was invented in 1726 by an Italian, Bartolomeo Cristofori. Although he made a few pianos in his lifetime, he was mainly a harpsichord maker.

The name piano is an abbreviation of the original name for the instrument: piano et forte or soft and loud.

A piano has over 9,000 parts, with about 4,500 of them moving. With so many parts, a piano is often considered the most complex mechanical device in most homes.

The working section of the piano is called the Action. All the moving parts in an action play a role in sending the hammers against the strings when keys are struck. Each note in a grand piano has more than 35 points of adjustment. Over 3,080 adjustments for the entire piano.

There is approximately 30 tons of pressure being exerted by the stretched steel piano strings in a concert grand.

There are about 230 strings inside a typical piano. The average string has about 160 pounds of tension.

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