

The Verituner App for iPhone, iPod touch, and iPad



QuickStart Guide

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The Verituner App for iPhone User Guide

was written by

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* RPT is the Piano Technicians Guild's designation of a Registered Piano Technician.

Preface

Know Your Apple Device

This user guide describes the features and operation of the Verituner App for iPhone. This app runs under Apple’s iOS operating system, as does the iPod touch and the iPad. It runs identically on the iPhone and iPod touch, and it runs on the iPad, although not in native mode; i.e. it displays in either the smaller iPhone size or in a larger (2x) zoomed view.

The use of the Verituner App assumes you are a piano technician and have at least basic piano tuning skills and that you are familiar piano tuning terminology. It is also assumes that you are familiar with the operation of your Apple device. For device-specific issues—hardware and operating system—contact Apple or your dealer. Documentation can be downloaded from Apple’s website:

iPhone: support.apple.com/manuals/iphone

iPod touch: support.apple.com/manuals/ipodtouch

iPad: support.apple.com/manuals/ipad

NOTE: for simplicity in this guide, the device is referred to as the iPhone, but it refers to the iPod touch and iPad as well.

A Note to Aural Tuners

A special note to those who have little or no experience using an Electronic Tuning Device (ETD): Be patient! Working with any ETD, including the Verituner, requires the use of hand-to-eye coordination while tuning, which is quite different from the hand-to-ear coordination that you are accustomed to. In addition, with an ETD you will be sounding the strings of only one note at a time instead of two notes, and *during tuning* the frequent aural checks you rely on in aural tuning are best done infrequently with the Verituner. This will most certainly require an adjustment period. Most first-time ETD users report that they actually tune slower—at first. After an adjustment period, we expect you’ll be saving time *and* getting excellent results with greater ease.

Chapter 1

Getting Started

Installation

Purchasing and installing the Verituner App is done only through Apple's iTunes App Store. You will need an iTunes account and the iTunes application, which is available for both the Macintosh and Windows operating systems.

www.apple.com/itunes/how-to

The minimum requirements for the Verituner App are: iPod touch 2nd, 3rd or 4th generation models, an external microphone required for 2G and 3G; iPhone 3G, 3GS, or 4G; iPad or iPad 2; running iOS version 4.1 or later. NOTE: For best results with the 3rd and 4th generation iPod touch, plug in the external mic *before* starting the Verituner app.

Battery

Battery Become aware of your device's battery runtime. For extended periods of use, have an AC charger to use while tuning and/or a car charger while driving. An external battery pack is another option. Apple offers tips on optimizing battery performance:

iPhone: www.apple.com/batteries/iphone.html

iPod touch: <http://www.apple.com/batteries/ipods.html>

iPad: <http://www.apple.com/batteries/ipad.html>

Push the Home button to exit the app when have finished using it or won't be using it for more than a short while. It will reduce battery drain and memory usage. For shorter breaks, press the On/Off Sleep/Wake button to lock the app and keep it running; upon waking the app will be where you left off. With the iPhone, answering a call will exit the app.

Tuning Preliminaries

The information in this section will be clearer as you perform the tuning procedures that follow in the next section. First, familiarize yourself with this overview of the Verituner's tuning interface and functions, and then refer back to it as needed.

Entering Numeric Values

Some screens call for entering values in *fields*¹ without the virtual keyboard. Entering a value in a field is done with the Verituner's *numeric entry commands* that appear on the command bar. The buttons are + and – and the increment value by which the number in the field will be changed. Tap the increment button to cycle through the available increments, e.g., 1, .1, .01. Tap + or – to add or subtract the selected increment value from the value in the field. For example, this is the method for entering values in the Calibration procedure (described below) and in the Standard Tuning Setup when starting a new tuning file.

Startup

The Startup screen appears when the Verituner App is opened. It offers three options for starting a tuning: (1) **Start** a new tuning (for which a new tuning file will be created), (2) **Load** a saved tuning file of a previously tuned piano, and (3) **Resume** the last tuning that was open.

¹ A *field* is a small rectangular area in a dialog that contains information which can be manipulated, e.g., entering a pitch offset value; or it may be empty and ready for you to enter text or a value.



Verituner®

professional piano tuning technology

Start	a new tuning ...	?
Load	a saved tuning ...	
Resume	tuning: Steinway M	

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The Swipe

A *swipe* is a short brush of your fingertip across the display. This simple gesture is widely used in iPhone apps to turn pages in eBooks, magazines and the like, to scroll a webpage or list, etc. In the Verituner app the swipe is used to scroll, to reveal the hidden menus, and to change a note name or octave on the tuning screens. If the swipe is new to you, here's a tip: make a light, short sweep on the screen with your fingertip, ending by lifting your finger off the screen. A little practice and it will be second nature.

Revealing Hidden Menus

There are two menus that are hidden from view but are readily accessible. The Menu is on the right, and Settings is on the left. A horizontal swipe of a finger across the screen brings them into view. Only the Menu (on the right) is available at the Startup screen. To see it, swipe your finger across the screen from right to left as if you were dragging it from hiding into view on the screen. When available, a swipe from left to right brings Settings into view on the left. To hide a menu, tap on the screen. Only one menu can be open at a time.



Verituner®
professional piano tuning tec

- Start** a new tuning ...
- Load** a saved tuning ...
- Resume** tuning: Steinway M

- Standard
- Style
- Temperament
- Measured
- Spectrum
- Verituner

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Fine Steinway M

F 1

⏪ ⏩

ⓘ

A: 0.00
Average
Equal

Coarse
Overpull
Alter
ReCalc
Inharm
Settings

2.7

?

Calibration

When you first install the Verituner App, your iPhone's pitch accuracy will typically be well within 1.0 cent. To increase the accuracy even more precisely, a calibration should be done.² The Calibration Function is accessed on the right menu. Show the menu by swiping the screen from right to left; tap Verituner; and tap Show Calibration Function.

² For more on calibration, see Robert Scott's informative article, "Calibration of Pitch References" in the August 2001 *Piano Technicians Journal*.



1. In the Calibrate dialog, use a trusted electronic source to sound A440 while you use the numeric entry commands (- 1 +) to stop or slow the spinner as much as possible. Calibration can be done to hundredths of a cent.
2. Tap Save. (You might also want to write down and save the value for future reference in case recalibration is necessary.)

NOTE: the *signal activity indicator* at the lower left corner, gives a relative measure of the strength of the audio signal.

Tuning Options

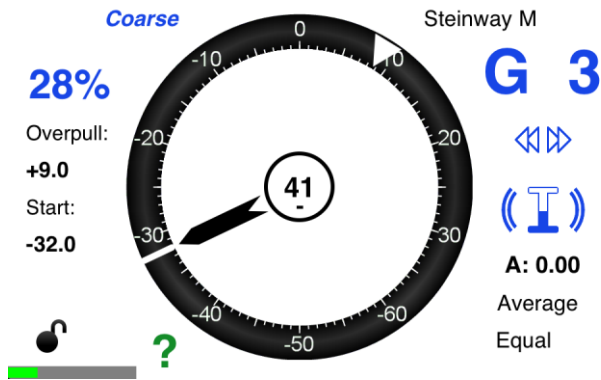
Initially, the default tuning settings for a new standard tuning are A4=0.00c (440 Hz), a stretch style designed for “average” pianos, and equal temperament. Each of these tuning options—pitch, tuning style, and temperament—can be changed for a tuning in the Standard Tuning Settings dialog. (In general, use the “Clean” style for spinets and very small grands, and use the “Average” style for most other pianos.)

The Spinner

The tuning screens indicate pitch deviation (sharpness and flatness) by

- the rotation of the **spinner blades** (and by a large flat or sharp symbol that appears in the ring when the blades rotate too fast to be read distinctly);
- the position of speedometer-like **needle** on the ring marked in cents
- the number in the spinner **hub** is the number cents from the current pitch to the target pitch (represented by the triangle marker).

In Fine Tuning, the goal is to stop or slow the spinner *as much as possible*, and/or get the needle and the number in the hub as close to zero as possible. When using overpull, the slash marks the initial measurement of the pitch, and the triangular marker on the ring is the target with which to align the needle. If there are pronounced variations in the pitch, from attack through decay, tune the string so the spinner blades are slowest, or the zero target is closest, *just following the attack*.



The Coarse Tuning Screen



The Fine Tuning Screen

Pitch Correction and Overpull

The Verituner’s Standard Tuning function consists of two modes: **Coarse** tuning and **Fine** tuning. Coarse tuning is used for correcting pitch—raising or lowering—in preparation for fine tuning. **Overpull** targets can be calculated with the pre-defined or user-specified overpull percentages. The percentage currently in use is displayed on the left side of the screen in Coarse tuning and can be shown in Fine tuning by showing the menu on the left and tapping Overpull. The initial percent is **0%** (for no overpull). Tap on the percentage number to cycle through the percentages for wound, plainwire, and treble strings, which begins around F5.

The default percentages are merely suggestions, perhaps a starting point. Use the defaults if they work well for you or experiment to determine the values—and where they are used—that give you the best results. These percentages can be changed at any time. Touch & hold the display number to open the Overpull Preferences dialog, where you can select from or set up multiple overpull configurations and freely switch from one set to another.

When an overpull percentage is being used, the straight line on the ring indicates the starting pitch, and the triangular *overpull marker* marks the overpulled tuning target.

Erase markers: Occasionally, the *start marker* is obviously not set correctly. When it happens, erase the markers are by tapping the spinner hub. Touch & hold the hub to erase markers for all notes.

Zoom

In Coarse Tuning, the Zoom command on the left menu changes the scale (the range) of the cents gauge. Tapping Zoom cycles between the Medium (-65¢ to +35¢), Wide (-130¢ to +70¢), and Narrow (-32.5¢ to +17.5¢) scales.

AutoNote

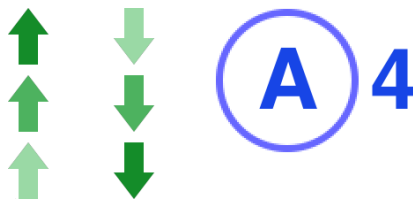
The Verituner's AutoNote feature identifies the note and octave of the pitch it hears (displayed at the upper right) within the limits of the current response setting. You choose how you want it to respond. The choices differ in their combination of *direction* (up, down), *distance* (random or step), and/or *sensitivity* (medium, high, low.) Tap the AutoNote icon (located under note/octave) to cycle between Random/Medium, up/down by half or whole step, and AutoNote Off. Touch & hold the AutoNote icon to open the list of all seven AutoNote response choices. Use movement by up or down by step for the most consistently accurate response while tuning.

⏪⏩ Random movement, medium sensitivity

⏪⏩ Movement up or down by step

Changing the Note and Octave Manually

In addition to AutoNote, note and octave changes can be made manually:






Tap the note name or the octave number you want to change, which circles it to show it is selected; then, swipe the screen up or down. (When moving from B to C, and vice versa, the octave also changes.)

Inharmonicity

All measuring for inharmonicity is done automatically in the background as you tune. It is important to follow the recommended tuning sequence for a piano's first-time tuning with the Verituner so this data can be used to optimal advantage.

The inharmonicity icon () serves three functions:

- The animated “sound waves” indicate that inharmonicity is being measured. If there are no waves, inharmonicity reading is off.
- The amount the icon is filled indicates the amount of inharmonicity information that has been collected for the note.
- Touch & hold the () icon and a list of options that pertain to inharmonicity appears:
 - **On/Off** – turns inharmonicity reading on or off
 - **Retune** – clear inharmonicity data for the current note, and reread its inharmonicity and recalculate its tuning targets. (Tip: if you encounter a note that apparently is not being measured adequately, try Retune and start over.)
 - **ReCalc** – recalculate all tuning targets using the current inharmonicity data.
 - **Clear Data** – clear all inharmonicity data
 - **Clear All Data** – clear all inharmonicity data *and* restore all tuning settings, except filename and storage location, to the defaults.

The lock icon at the lower left indicates whether the tuning targets for the current note are locked  or open to additional calculations . Recalculation of targets is continuous in Coarse tuning; therefore, and targets are not locked and are subject to revision as new inharmonicity data is collected. Targets are locked in Fine tuning after initially being unlocked so the target does not move for notes you have already tuned. The ReCalc command can be used to recalculate all targets in Fine tuning. The appearance of the calculator symbol next to the lock indicates that calculation of targets is taking place.

Files

Tuning files are saved automatically and continuously as you tune.

Tuning, temperament, and style files are stored and managed in directories. When you start a new tuning file, you select a folder in the directory where the file will be saved. The default location is the Temporary folder. If you anticipate using the saved file in future, select another folder in which to save it.


To change the name of a folder (excluding the Temporary folder), tap the folder name and then tap Rename.

Directories

There are four file directories:

- **Standard** – Most, if not all, of your tunings will be Standard Tunings and are saved in this directory.
- **Style** – The built-in tuning styles and custom style files are saved here.
- **Temperament** – The pre-installed temperaments and custom unequal temperaments are stored in this directory.
- **Measured** – Files generated by measuring a tuning (such as in the PTG tuning exam) are stored in the Measured directory.

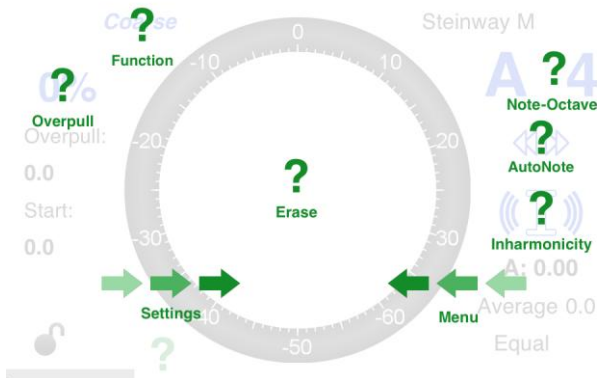


To access the file directories, swipe (from right to left) to show the menu on the right. Tap the desired directory. Tap the arrow button at the right to open a folder. Tap the  button to start a new tuning. Tap a file and a list of options appears:

- **Delete** – Confirm by again tapping Delete or Cancel
- **Save As** – Follow the on-screen prompts to select a destination folder and name the file. Upon tapping Done, you are given the option to delete the original file.
- **Load** – Tap to load (open) the selected saved file. You are asked one or two questions: (1) If the file was saved with a non-standard pitch set, do you want to use to use that pitch? If no, A440 is set. (2) Do you want the tuning targets recalculated? If no, inharmonicity reading is turned off.
- **Cancel**

? Help Tips

When available, tap the green question mark **?** to access how-to tips on using various functions, e.g. how to change the overpull percentage or preferences, or change the AutoNote setting. For example, tap **?** and a translucent overlay of additional questions marks appears superimposed on graphic elements in the tuning screen. Tap the overpull question mark and the blue overpull percent is circled, and you're told how to cycle through the preset percentage values and how to change the preset percentage values in the overpull preferences. Tap on the screen to hide the overlay. The functions are then available by tapping or touching & holding the blue percent value.



Chapter 2

Standard Tuning Procedures

This chapter presents step-by-step procedures for tuning with a new tuning file and tuning a piano with a Saved tuning file.

Tips

- **Aural Checks** - The Verituner is designed to listen to a single note at a time. It filters out and ignores other notes while reading inharmonicity. During tuning, playing one note at a time is recommended.

Aural checks are important—please do listen to your tuning! But because of how the Verituner works, the frequent playing of intervals during the tuning process can potentially cause some problems. Therefore, it is recommended that aural checks be delayed until a substantial section or the entire piano has been tuned.

- **Tuning Unisons** - Tuning unisons as you go is recommended. You can tune each string of a note individually to the tuner, but if you have the skill, tune unisons aurally for greater speed and accuracy.

Procedure for Creating a New Standard Tuning

This procedure is used when you do not have a previously saved tuning file for the piano; i.e. you will create a new tuning file for the piano.

1. Turn on the iPhone and tap the Verituner icon to start the app.
2. At the startup screen, tap Start.



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3. At the **Standard Tuning Settings** screen, set the tuning options you want for this tuning.

Standard Tuning Setup

Folder: Temporary File: Temporary047

Pitch: 0.00 Style: Average

Hertz: 440.00 Stretch: 0.0

Temperament: Equal

Reset - 1 +

- a. **Folder:** Unless you select a different folder for the file, it will be saved in the Temporary folder, where only the 15 most recent temporary files are stored. To select another folder, tap the folder field, the name of the folder, and then tap Select.
- b. **File:** To change the temporary file name, tap the File field; delete the temporary name; enter a new name and tap Return.
- c. **Pitch:** To change the **Pitch** from A440 (0.00¢ deviation), tap either the Pitch field to enter cents or the Hertz field, and use the numeric entry buttons at the bottom of the screen to set the desired value. A change in the cents field is automatically updated in the Hertz field and vice versa.
- d. **Style:** Tap the Style field and tap the arrow at the right to open a folder. Tap the name of the style and tap Select. (The **Average** style has a moderate degree of stretch and is probably the best choice for most tunings. The conservative **Clean** style has the least stretch and may be best for spinets and very small grands. The **Expanded** style gives the greatest amount of stretch. Use it on concert grands when wider octaves are desired.)

Because all notes are affected when a style is changed, it is best to choose a tuning Style and/or use +/- Stretch Adjust *before* you begin tuning. If you do make a change after a tuning is underway,

the notes you have already tuned (i.e., *locked* notes in Fine Tuning) will not be affected, *but* the notes that have not yet been tuned will use the new style's parameters calculated against what you have already tuned. Alternatively, you can recalculate the entire tuning (with the ReCalc command), but this would require retuning, because *all* notes will be affected.

Stretch: If you want to modify a built-in style's **Stretch**, enter a stretch "value" (from -2.0 to +2.0). Use the numeric entry buttons at the bottom of the screen to set the desired value in increments as small as a tenth of a cent. This function is not available for custom styles.

- e. To change the **Temperament**, tap the Temperament field; open a folder; tap the file name and tap Select. (NOTE: tapping the arrow by a file name shows the offsets for that temperament.)

When you change the temperament, any *previously set tuning targets are recalculated immediately* for the current tuning file. Be aware that if you change the temperament *after* a fine tuning is underway, many of the notes you have already tuned may be invalid, unless you retune them.

4. When you have finished with the Tuning Setup, tap Done, which takes you to the Coarse tuning screen; or tap Cancel to cancel the new tuning. (To make changes to these settings from the tuning screen, swipe to show the menu on the left.)
5. **Check the pitch level of the piano** to determine whether pitch raising or lowering is needed. Follow this the procedure:
 - a. **Play A4.** Mute the left and center strings of A4 and play the note's right string while you check its pitch. If the string is off by 50¢ or more, tune it close to 0¢ and continue to play it until the

«I» is as full as possible.³

- b. Play A3** and check its pitch. Then, play several additional notes in various sections of the piano and check their pitch. If needed, tap Zoom on the left menu to change the gauge of the spinner ring.

NOTE: If the pitch is off by more than 50¢ and AutoNote is not consistently displaying the notes you are actually playing, turn AutoNote off and change notes manually.

6. Decide how you want to proceed. Choose the best procedure for the situation:

- Two passes, coarse tuning followed by a fine tuning. If the piano requires a coarse tuning to raise or lower pitch, go to step 7.
- One pass, fine tuning. If the pitch is close enough, go to Fine tuning by tapping the Function popup at the upper left of the screen) and go to step 8.
- One pass, fine tuning with a small pitch correction. If the pitch is close enough for a single pass but you want overpull to compensate for anticipated settling, switch to Fine Tuning (by tapping the Function popup at the upper left of the screen) and go to step 9.

Coarse Tuning

7. Raise or lower the pitch in one or more passes.

As you tune, monitor the note name and pitch deviation. Be alert to any discrepancies between the note you are playing and the note the Verituner indicates it is hearing.

³ Why the right string? It is assumed it is the last string you would normally tune for this note. When the note is tuned in a later step, overpull will be correctly calculated since it will be based on the deviation of the center or left string, which was not moved.

- a. Hide the overpull percentage by tapping **Partials** on the settings menu (on the left).
- b. **Set AutoNote.** Set the Verituner to the lowest note in the tenor section. Then, for the best response, set AutoNote to move by step.
- c. **Set the overpull** percentage for the lowest tenor note. As you tune, change overpull percentage at the recommended points. (If you need to raise pitch with more than one coarse tuning, consider little or no overpull for the first pass.)
- d. **Coarse Tuning Sequence²**

The Verituner must have inharmonicity information from A4 and A3 before beginning this sequence. (See step 5.)

1. Tune each string of the lowest tenor note.
 2. From there, tune upward by half steps, tuning unisons as you go, until you have tuned C8.
 3. Tune from the top of the bass section down to A0, tuning unisons as you go.
- e. Switch to **FINE** tuning by tapping **Coarse** at the upper left of the screen) and go to step 8.

Fine Tuning

8. Fine tune the piano.

² Other tuning sequences can be used. The sequences for new tunings are designed to work with the Verituner's three built-in styles—Average, Clean, and Expanded. They may or may not work well with custom styles.

a. Set AutoNote Set the Verituner to A4. Then, for the best response, set AutoNote to move up or down by step \lll .

b. Fine Tuning Sequence

1. Tune each string of A4.
2. Manually set the tuner to A3, and tune each string of A3.
3. Tune A#3 and continue tuning upward by half steps, tuning unisons as you go, until you have tuned C8.
4. Set the pitch to G#3 and tune each of its strings.
5. Tune downward by half steps, tuning unisons as you go, until you have tuned A0.
6. Set AutoNote to random movement \lll .
7. Check the completed tuning and touch it up if needed. If desired, use the ReTune command to unlock an individual note, erase and re-measure its inharmonicity, and recalculate its targets.


Fine Tuning with Overpull

9. Fine tune the piano with a small pitch correction.

- a. Set AutoNote** Set the Verituner to the lowest note in the tenor section. Then, for the best response, set AutoNote to move up or down by step \lll .
- b. Set the overpull** percentage for the lowest tenor note, depending on whether the string is wound or plainwire. Show the left menu and tap Overpull. Change the percentage [10%] by tapping it. Change the overpull percentage at the recommended points as you tune.

c. Fine Tuning Sequence with Overpull

The Verituner must have inharmonicity information for A4 and A3 before beginning this sequence. (See step 5.)

1. Tune each string of the lowest tenor note.
2. From there, tune upward by half steps, tuning unisons as you go, until you have tuned C8.
3. Tune from the top of the bass section down to A0, tuning unisons as you go.
4. Hide the overpull percentage by tapping Partial on the settings menu.
5. Set AutoNote to random movement  .
6. Check the completed tuning and touch it up if needed. If desired, use the ReTune command to unlock an individual note, erase and remeasure its inharmonicity, and recalculate its targets.

Tuning Procedure Using a Saved Standard Tuning File

This procedure is used to tune a piano using a previously created tuning file.

1. **At the startup screen, tap Load.**
2. **Open the folder, tap the file, and tap Load.**
 - a. If a deviation from standard pitch was in effect when the file was last used, you'll be asked **Use Saved Pitch?**. If you tap No, A=440 will be reset (displayed as A:0.00).
 - b. When asked **Recalculate Tuning?**, tap Yes if you are going to re-tune the piano. Tap No if you are only checking or touching up a recent tuning, or if you are using this file as a template for a different piano. By default, Inharm measuring will be on if you tap Yes; off if you tap No.
3. **Check the tuning Settings.** Change the current settings for Pitch, Style, and/or Temperament, if you want.
4. **Check the pitch level of the piano.** Check the pitch of selected notes to determine whether pitch raising or lowering is needed. If the pitch is off by more than 50¢ and AutoNote is not consistently displaying the notes you are actually playing, turn AutoNote off and change notes manually.
5. **Decide how you want to proceed.** Choose the best procedure for the situation:
 - Two passes, coarse tuning followed by a fine tuning. If the piano requires a coarse tuning to correct pitch, go to step 6.
 - One pass, fine tuning. If the pitch is close enough, switch to Fine Tuning and go to step 7.
 - One pass, fine tuning with a small pitch raise or lower. If the pitch is close enough for a single pass but you want over-pull to compensate for anticipated settling, switch to Fine Tuning

and go to step 8.

Coarse Tuning


6. Raise or lower the pitch in one or more coarse passes.

As you tune, monitor the note name and pitch deviation. Be alert to any discrepancies between the note you are playing and the note the Verituner indicates it is hearing.


- a. Hide the overpull percentage by tapping **Partials** on the settings menu (on the left).
- b. **Set AutoNote.** Set the Verituner to the lowest note in the tenor section. Then, for the best response, set **AutoNote** to move by step.
- c. **Set the overpull** percentage for the lowest tenor note. As you tune, change overpull percentage at the recommended points. (If you need to raise pitch with more than one coarse tuning, consider little or no overpull for the first pass.)
- d. **Coarse Tuning Sequence²**
 1. Begin with the lowest tenor note and tune upward by half steps to C8, tuning unisons as you go.
 2. Tune from the top of the bass section down to A0, tuning unisons as you go.
- e. Switch to **Fine** tuning and go to step 7.

Fine Tuning

7. Fine tune the piano.


a. Set AutoNote Set the Verituner to A4. Then, for the best response, set AutoNote to move up or down by step  .

b. Fine Tuning Sequence

1. Begin with the lowest tenor note and tune upward by half steps to C8, tuning unisons as you go.
2. Tune from the top of the bass section down to A0, tuning unisons as you go.
3. Set AutoNote to random movement  .
4. Check the completed tuning and touch it up if needed. If desired, use the ReTune command to unlock an individual note, erase and remeasure its inharmonicity, and recalculate its targets.


Fine Tuning with Overpull

8. Fine tune the piano with a small pitch correction.

a. Set AutoNote Set the Verituner to the lowest note in the tenor section. Then, for the best response, set AutoNote to move up or down by step  .

b. Set the overpull percentage for the lowest tenor note, depending on whether the string is wound or plainwire. Show the left menu and tap Overpull. Change the percentage [**10%**] by tapping it. Change the overpull percentage at the recommended points as you tune.

c. Fine Tuning Sequence with Overpull


1. Begin with the lowest tenor note and tune upward by half steps to C8, tuning unisons as you go.
2. Tune from the top of the bass section down to A0, tuning unisons as you go.
3. Hide the overpull percentage by tapping Partial on the settings menu (on the left).
4. Set AutoNote to random movement  .
5. Check the completed tuning and touch it up if needed. If desired, use the ReTune command to unlock an individual note, erase and remeasure its inharmonicity, and recalculate its targets.



Chapter 3

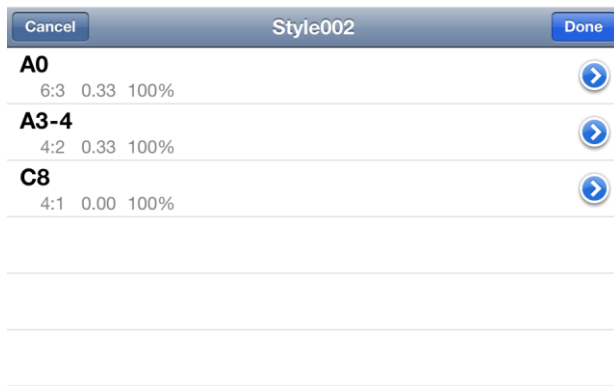
Custom Styles




The Verituner Custom Styles feature gives you precise control of how a tuning is calculated. When you create a custom style, you specify the type and degree of interval stretch throughout the range of the piano. This is done by selecting the stretch points, intervals, the desired beat rates, and the weighting.

Getting Started

One approach is to copy an installed style file. To do this, tap Style on the right Menu, tap  to open the folder, and tap the style's name. On the popup, tap Save As, rename the file if you want, and tap Done to save it in the Custom folder. The next screen lists the files in the Custom folder.

To start with a template file, open the Style Directory, tap  to open the Custom folder, and on the next screen tap . A new file is saved in the Custom folder, and a screen opens showing a list of the default notes and their parameters:



Cancel		Style002	Done
A0	6:3 0.33 100%		
A3-4	4:2 0.33 100%		
C8	4:1 0.00 100%		


Note the following:

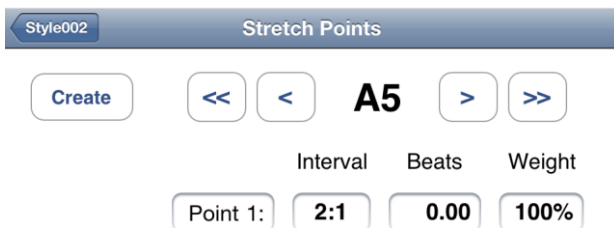
- All custom files are automatically saved in the Custom folder.

- To save a file with a different name or to delete it, tap its name in the Custom folder.

Designing and Editing a Style

A style consists of a set of *stretch points* that specify the desired stretch at various points in the scale. If you started a new template style, the file will have only the three required starting stretch points—A0, A3-A4, & C8—to which you will add others. These default stretch points cannot be deleted, but you are free to change their parameters. A style is customized by adding and specifying stretch points, by customizing parameters, and/or by deleting stretch points.

To add a new stretch point, tap the existing stretch point that is just above the one you want to add (C8 excepted). A new note (not necessarily the one you want) with parameters is added to the list. Tap  to go to the edit stretch points screen where you can modify the new stretch point's note, interval, beats, and weight.



Change the stretch point's parameters as follows:

- **Note** defines the position of the stretch point in the scale. Tap the buttons beside the note name to advance the up or down by half-step or octave.
- **Interval** defines what type of interval is being tuned, listed by its size and coincident partials:

OCT = Single Octave (2:1, 4:2, 6:3, 8:4, 10:5, 12:6)

DO	=	Double Octave	(4:1)
TO	=	Triple Octave	(8:1)
12th	=	Twelfth	(3:1)

To change the interval, tap to select the desired interval, and then tap the Change key. Successive taps cycle through the available intervals. (Not all intervals are available in all parts of the scale.)

- **Beats** is the number of beats per second present in the interval. Positive numbers indicate intervals that are wider than pure, and negative values indicate narrower than pure. Tap the + and – and increment buttons to change this parameter.
- **Weight** is a weighting percentage used to set up a compromise between multiple stretch points on the same note. If there is only one stretch point on a note, this value is ignored. Use the + and – and increment buttons to change this parameter.

Multiple Stretch Points

A single note can have up to three stretch points. To add a stretch point, click Create. If the first field of a stretch point — Point 1: or Point 2: — is selected the Create button is not available. Instead, a Delete button is available for deleting the selected stretch point. (Successive taps on the Point field toggle between it being selected and unselected.)

Multiple stretch points would be used to strike a compromise between two intervals—for example, a single octave and a double octave, or a 4:2 and a 2:1 single octave.

Design Considerations

The Verituner will blend your stretch points into all the notes between stretch points. You can place stretch points on as many different notes as you like. You must have a stretch point assigned to the first note in the scale, A0, and the last note, C8, because these define the endpoints. Also required is a stretch point on notes A3 and A4, because these are used to set the stretch of the Verituner’s temperament octave, A3 to A4. The stretch settings for A3 and A4 are identical.

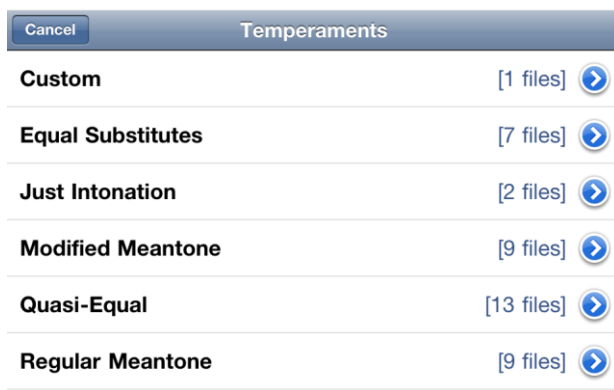
In most cases you will also want to create at least one additional stretch point in the middle of the bass (between A0 and A3) and in the middle of the treble (between A4 and C8) in order to better control the octave stretch in these sections. You can define as many other stretch points as you want. However, because the Verituner blends the notes in between your stretch points, having more than 6 or 7 stretch points might be superfluous.







Chapter 4



Unequal Temperaments

The Verituner's default temperament is Equal. You can also tune with any of the approximately 90 unequal, historical and modern temperaments that are stored in the Temperament directory. You can also design, store, and tune with your own unequal temperaments or other temperaments you add to the temperament directory. If you select an unequal temperament, it will be loaded and saved in the current tuning file, and it will be in effect the next time you load the file.

Tap the Temperament button on the right Menu to open the directory. The pre-installed temperaments are organized in seven folders. There is also a Custom folder for temperaments you add.

A screenshot of a mobile application interface showing a list of temperament folders. At the top, there is a dark blue header bar with a 'Cancel' button on the left and the title 'Temperaments' in the center. Below the header, there is a list of seven folders, each with a name, a file count in brackets, and a blue circular arrow icon on the right. The folders are: Custom (1 file), Equal Substitutes (7 files), Just Intonation (2 files), Modified Meantone (9 files), Quasi-Equal (13 files), and Regular Meantone (9 files).

Temperaments	
Custom	[1 files] 
Equal Substitutes	[7 files] 
Just Intonation	[2 files] 
Modified Meantone	[9 files] 
Quasi-Equal	[13 files] 
Regular Meantone	[9 files] 

To see the offsets (from equal temperament), open a folder by tapping  and then tap  by the temperament.


Well Temperaments Coleman 11, 1999

A	-1.00	C	3.00	D#	0.00	F#	-2.00
A#	2.00	C#	0.00	E	-3.00	G	2.00
B	-4.00	D	0.00	F	4.00	G#	0.00

Major 3rds Range: 7.7 - 17.7

In equal temperament, all Major 3rds are 13.7 cents wide (precisely 13.6863¢). The offsets screen indicates the range of the widths of the M3rds of the temperament.

Creating a Custom Temperament

To create a new temperament file from scratch, open the Custom folder and tap . Use the + and - and increment buttons to enter the offsets with a precision of up a hundredths of a cent. When you are finished, tap Done.

Note the following:


- All temperaments you add are stored in the Custom folder.
- To save a file with a different name or to delete it, tap its name in the Custom folder.

If you'd like to practice entering a custom temperament, here is a useful, very mild well temperament you can add to your Verituner.

Coleman 10 (2001)

A	-0.50
A#	1.00
B	-2.00
C	1.50
C#	0.00
D	0.00

D#	0.00
E	-1.50
F	2.00
F#	-1.00
G	1.00
G#	0.00

Another way to create a custom temperament is to copy an installed temperament file and change its offsets. This approach would be efficient if you want to use an already-installed temperament as a point of departure. To do this, tap Temperament on the right Menu, tap  to open the folder, and tap the temperament's name. On the popup, tap Save As, rename the file if you want, and tap Done to save it in the Custom folder.

Chapter 5

Measured Tuning

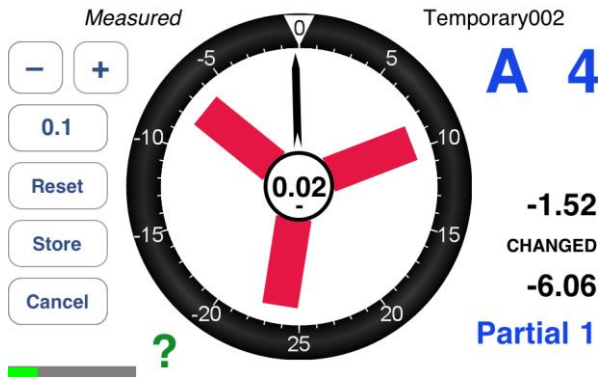
The Verituner's Measured Tuning function is used to measure the pitches of an already-tuned piano or other keyboard instrument and store the measurements. Typically the tuning would have been done either aurally or, perhaps, with an ETD. An aural tuning could, for example, be measured and stored, and the Measured tuning file could then be used to replicate the tuning at a future time.

Unlike the Coarse and Fine Tuning functions, Measured Tuning does not measure inharmonicity and calculate tuning targets. Its primary function is measuring pitches and storing their measurements. Since there is no calculated stretch or use of a tuning style, Measured Tuning is not intended for tuning a piano *until* it has been tuned and all notes have been measured and stored. Once the measurements have been stored, it can be retuned by loading its Measured Tuning file from the Measured Tuning directory. Theoretically, an **organ** has no inharmonicity and, therefore, no stretch. Thus, Measured Tuning could be used to tune an organ with all offsets at 0.00. Since **harpsichords** typically do have inharmonicity, albeit low, they should be tuned in Fine Tuning.

Unlike standard tunings, in which the target of each note is based on multiple partials, each note in a measured tuning is based on the measurement of a single partial. Each of the 88 notes is preset to a default partial and zero offset. The default partials are:

A0 – B3	Partial 4
C4 – B4	Partial 2
C5 – C8	Partial 1



The current partial and cents offset are displayed at the lower right corner of the screen, e.g., 0.00. Tap **Partial** to cycle through the available partials to select the desired partial. Successive taps cycle through the available partials for the note. For example, you might want to change it if the default partial is weak or unstable.



All notes in a new Measured tuning are set at 0.00. When a note has been measured and its offset stored, the display will indicate this with: **STORED**. If either the partial or the offset is changed from the stored setting, the screen will display **CHANGED** and the partial and/or offset number will blink.

NOTE: In Measured Tuning, AutoNote is off by default. Change note & octave manually, or if you prefer, turn on AutoNote.

Procedure for Measuring and Storing a Tuning

From the right Menu, tap Measured to open the Measured Directory; tap  to open the folder you want the file saved in; and on the next screen tap . The Measured Tuning Setup Screen opens. When you are finished with the setup, tap Done to exit and open the Measured Tuning screen. (NOTE: If later you want to change the file name, go to the file in the directory and tap its name.)

1. Before beginning measuring and storing, **minimize ambient noise** as best you can.
2. Strip **mute the piano**, or if you prefer, mute each individual note as you measure.
3. **Check the tuning** and make any necessary final adjustments.
4. **Measure and Store:**

- a. Set the note you want to measure.
- b. Change the partial, if you want. If you do, it will blink in the display, indicating it has been changed.
- c. If necessary, pause until there has been a second or two of musical silence before beginning the next step.
- d. Tap the Measure button and immediately...
- e. ...play the note at a moderately soft volume. In about a second, the offset that was measured will be displayed— as the *cents offset* number—under the partial number. It blinks to indicate that it has not yet been stored.
- f. If necessary, adjust the measurement manually. When the measurement (expressed by the cents offset number) matches the pitch, the spinner will have stopped or slowed as much as possible, and the needle and number in the hub will be as close as possible to zero. If there are pronounced variations in the pitch, from attack through decay, adjust the offset so the spinner is slowest, and the zero target is closest just following the attack.

To adjust the measurement, play the note (with a consistent, moderately soft volume) as you use the + , - , and increment buttons to tweak the offset for the slowest spinner motion you can get. When the offset is changed, it will blink in the display.

If you are re-measuring a previously stored note, the difference between the stored offset and the new reading is displayed above the blinking offset:

-1.52

CHANGED

- g. Tap the Store button to store the offset and partial. (After storing, **.STORED.** appears, and the offset and partial stop blinking.) Tap Cancel to exit with no change to the stored measurement.
5. Repeat step 4 until all notes are measured.
 6. Confirm the measured tuning by playing each note in succession while checking that the spinner is virtually stopped for each.

Notes:

- When playing a note, the difference between the target (the partial and offset) and the pitch being played is displayed in the spinner hub.
- In the Measure mode, a blinking offset number and/or partial indicates a change in the Verituner's offset measurement—a temporary setting until it is stored (by tapping the Store button). If you move to another note before storing, the offset will be lost. The spinner, needle, and the number in the hub all indicate how close the pitch is *to the offset*—whether temporary or stored. Below the cents offset number, **STORED** or **CHANGED** indicates the current status.
- **Reset** sets the offset to 0.00
- **To re-measure** or tweak a note that already has a stored offset, repeat step 4.
- If you have a single-partial tuning measured by another tuning device, it can be transferred to the Verituner by keying in the partial number and offset for each note. Use these steps in the above procedure:

Step 1

Step 4 – a, b, d, f, g

Step 5

Measuring an Interval

To measure the width of an interval in cents, follow this procedure. (An example using a Major 3rd is given in brackets.)

1. Turn AutoNote off, if it is not already off.
2. Set the Verituner to the lower note. [F3]
3. Use the Partial key to set the lower coincident partial. [5]
4. Measure and Store (steps 4 d-g in the Procedure for Measuring and Storing a Tuning).
5. Without changing the note setting or the partial number, play the upper note. [A3]

6. Read the width in the spinner hub. (A positive number indicates an expanded interval; a negative number indicates a contracted interval.)

Coincident Partials

Single Octaves	12:6, 10:5, 8:4, 6:3, 4:2, 2:1
Double Octave	4:1
Fifths	6:4, 3:2
Twelfth	3:1
Fourth	4:3
Major Third	5:4
Minor Third	6:5

Measuring a Tuning Fork

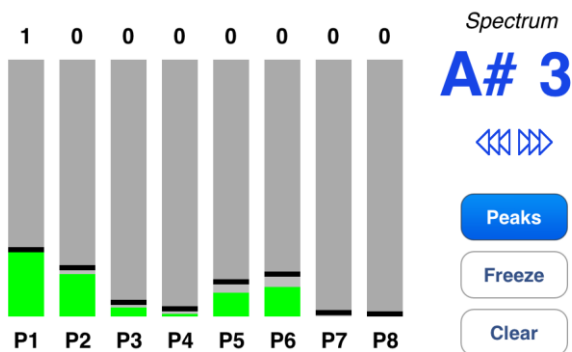
With Measured Tuning, the Verituner can be used as a reference to check the accuracy of a tuning fork. (The Verituner's accuracy is $\leq .01\%$.)

1. Go to Measured Tuning and open a new tuning file.
2. Set note & octave to the pitch of the fork (e.g., A4).
3. Use the Partial button to select Partial 1, and be sure that the offset reads 0.00.
4. Sound the fork, and hold it close to the iPhone's microphone. Hold the fork still.
5. Read the Verituner's measurement of the pitch deviation in the spinner hub.

Chapter 6

Spectrum Display

The Verituner’s Spectrum Display shows the harmonic content of a note rather than its pitch. It displays is a real time—what you are hearing is graphically represented instantaneously. The graphic representation consists of a set of vertical bars, one for each partial: P1, P2, P3, etc. Spectrum Display displays the same partials that are measured and used to calculate tuning targets.



These bars represent the relative strength of each partial—the longer the bar, the stronger the partial. Because they are displayed in real time, they dance across the screen as the note sounds and the tone fluctuates. By watching the sustain and decay of the notes, you can see how quickly certain partials decay in comparison to others. The Spectrum display is useful for voicing, or for otherwise correlating what you hear in a note against its partial content.

NOTE: Ambient noise in the same range as the partials being measured will be included in the display. This should be disregarded since it is not part of the piano tone.

Note & Octave can be manually selected or set by AutoNote just as in Fine and Coarse tuning. Tap the note or octave and swipe to change. Tap the AutoNote icon to choose random, stepwise, or off; or tap & hold the AutoNote icon for

more options. The **Peaks** button is used to toggle Peak Mode on and off. When on, the *peak amplitude* (volume) of each partial is remembered and displayed (with a black line across each bar) along with its real-time value in the column at the top of each bar. (See the illustration above.) When the Peaks mode is active, the Peaks button is blue. The memorized peaks can be reset by tapping the **Clear** button. This arms the peaks memory for another note strike.

Freeze is used to freeze the spectrum display. Tap the Freeze button while a note is sounding (it turns blue), and the display stops responding, and the peak bars remain frozen at exactly that point. This allows for a close examination of the readings. The display will remain frozen until the Freeze button is tapped again. When Freeze is on, Clear is momentarily disabled.

To leave Spectrum display, swipe to open the right Menu and make another selection.

Support

Contacting Veritune

Email support@veritune.com
Voice 888.VERITUN (888.837.4886)
773.793.6530
Fax 773.353.1665

User Forum

www.veritune.com/forum

To register, click the Register link.

The Latest Version of This User Guide

The latest version of documentation for Verituner is available at the Veritune Web site: www.veritune.com. Click the Downloads link, and on the Downloads page, click the link for the guide you want. It is in PDF format and opens in Adobe Reader or, on a Macintosh, in Preview.

Adobe Reader, can be download at

get.adobe.com/reader