The Verituner QuickStart User Guide for Android Devices

Phones • Tablets

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Legal Terms and Notices:

February 12, 2020

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Getting Started

Know Your Android Device

This user guide describes the features and operation of the Verituner App for **Android** devices running Googles's Android operating system. If and when you plan to use or purchase an Android device to run the app, some things you might want to consider are:

- **Storage** Will the device be used primarily as a dedicated Verituner, or will it also used as a phone and/or to use with other apps, such as taking pictures? Verituner files are very small and use little of the device's storage.
- **OS** If the device is an older one, can it run the minimum Android operating system (OS)? As the Verituner app continues to be developed, a future update might require a version of the OS that cannot be installed on the device. It's a consideration of "future-proofing" the device to some extent. For the minimum OS requirement for the current Verituner version, go to the product page and tap the Requirements tab:

  www.veritune.com/verituner-for-android.html

- Screen size, portability, readability, battery runtime, and cost are other obvious considerations.
- Through the Verituner Forum you can ask questions and learn from the experience of other Verituner users.

  www.veritune.com/community.html

In using the Verituner App, Veritune Inc. assumes you are a piano technician and/or you have at least basic piano tuning skills and that you are familiar piano tuning terminology. It is assumed that you are familiar with the operation of your device and the Android OS. For device-specific issues—hardware and operating system—seek support from the manufacturer, dealer, documentation, online support, etc.

Purchasing

Purchasing and downloading the Verituner App are done through the Veritune website:

www.veritune.com

When new Android OS versions are released, check the Veritune Support page to see if compatibility with the Verituner app is confirmed. If there are known issues with OS updates that effect Verituner performance, they will be noted.

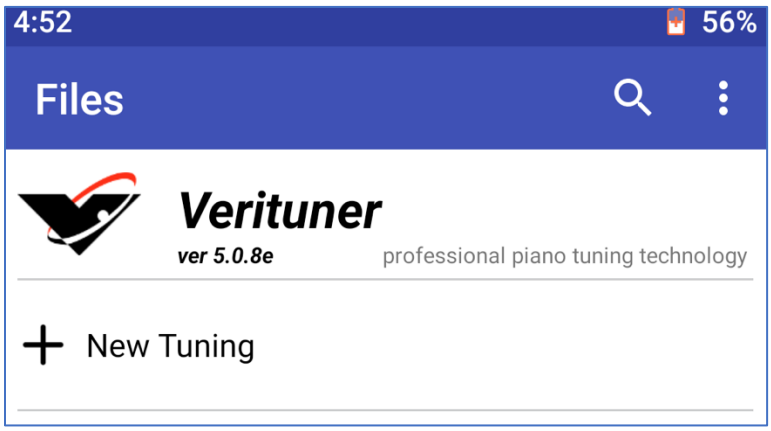
A Note to Aural Tuners

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.

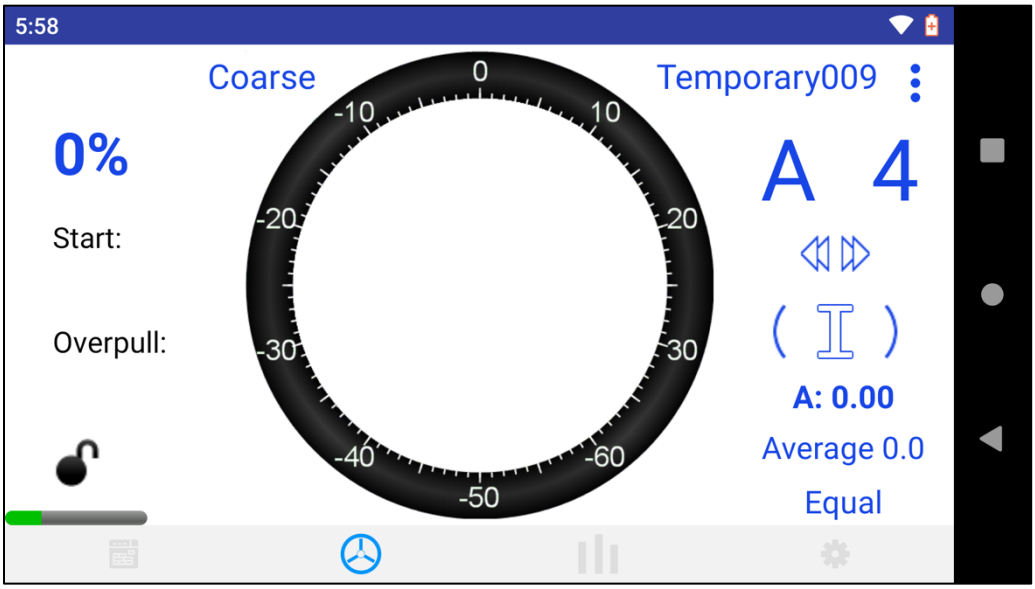
QuickStart Tuning

Eager to tune you first piano with the Verituner? If you want to pass on the details for now, give these streamlined steps a try. Be aware that this QuickStart applies to typical tuning situations. If, for example, you have special circumstances such as the need to raise the pitch greater than 50 cents or you want to use an alternate tuning sequence, see the Verituner Tuning Procedures in this User Guide for additional guidelines, procedures, and sequences.

1. Tap the Verituner app.
2. Tap + New Tuning.

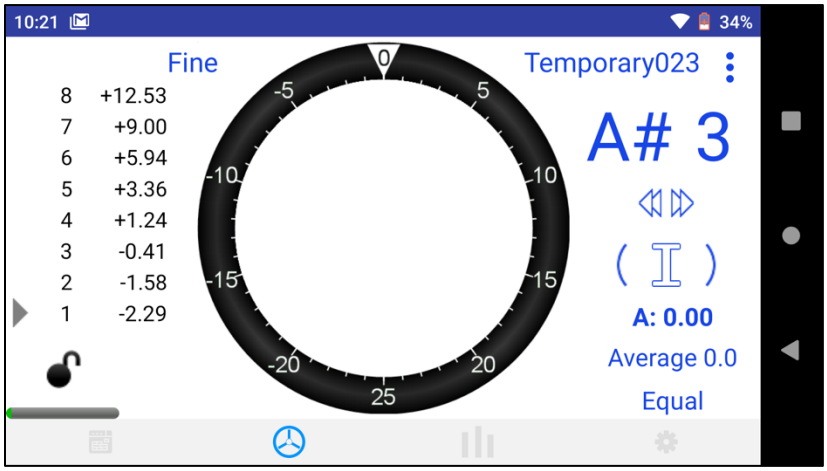


3. Tap Save to accept the default tuning settings. This takes you to the Coarse tuning screen.



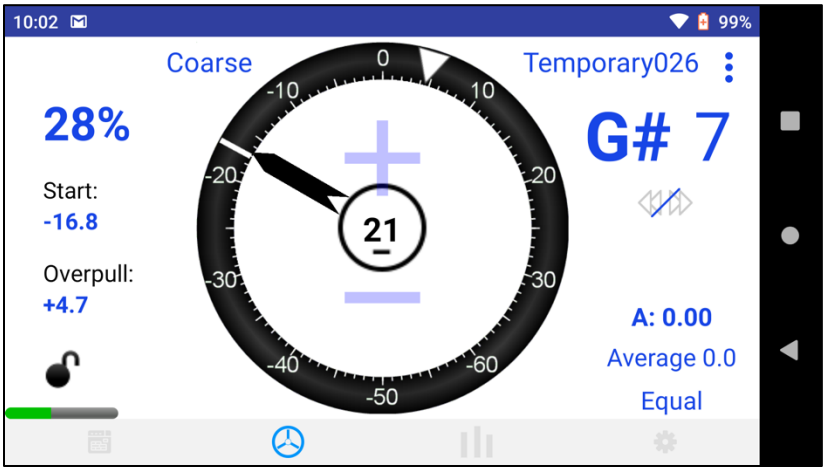
4. Play several notes in different parts of the piano, muting so that only one string is open, and observe the piano's pitch level. Decide whether a pitch raise or lower will be needed.
5. If a pitch correction is necessary, tap **0%** to select the desired amount of overpull (from three preset values). This pass will be done in Coarse tuning mode. (See the User Guide for more detailed steps). However...

   ...if the piano's pitch is close enough to fine tune, tap Coarse and then tap Fine on the popup menu to switch to Fine tuning.



6. Play a single open string of A4 until the ⟪I⟫ fills ⟪**I**⟫. Repeat with A3. While tuning with the Verituner, tune each note first with only one string open. Tune to align the needle to the target marker ▽ in Coarse tuning, and until the needle aligns and the spinner stops in Fine tuning. Unisons can be tuned aurally, or each string can be individually tuned to the Verituner.
7. With A3 selected, tap ⏮⏭ and tap ⏭ on the popup menu to change AutoNote movement to Up/Down by steps.

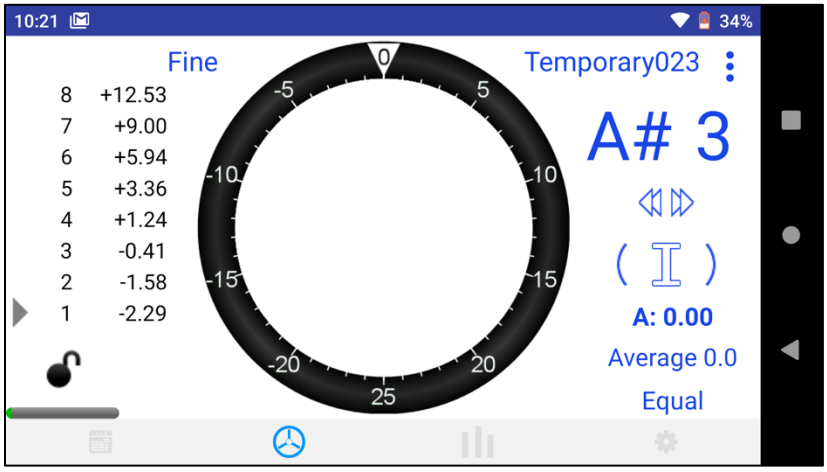
8. As in aural tuning, tune all the notes between A3 and A4 to complete the Verituner's temperament octave. Tune unisons as you go. Continue upward to C8. Next, tune downward from G#3 to A0. (For further details on optimal tuning sequences, see the Tune with a New Tuning File)
9. NOTE: If, at the extreme ends of the piano, note recognition is less accurate, tap ⏮⏭ and tap ⏮⏭ Auto OFF, and select notes manually. Manual note switching is performed by tapping either the note name or octave number and then tapping the large + or – .



10. If you just completed a pitch correction pass, tap Coarse and then tap Fine on the popup menu to switch to Fine tuning.

    Tune your final pass in Fine tuning mode.


5:26
Coarse
0
10
0%
Fine
Coarse
Start:


10:21
34%
Fine
Temporary023
8 +12.53
7 +9.00
6 +5.94
5 +3.36
4 +1.24
3 -0.41
2 -1.58
1 -2.29
0
-5
5
-10
10
-15
15
-20
20
25
A# 3
A: 0.00
Average 0.0
Equal

Preliminaries

The information in this section will be clearer as you perform the tuning procedures that follow. First you will be introduced you to the the Verituner's tuning interface and functions.

Battery

Become aware of your device's battery runtime. For extended periods of use, have an AC charger, a compact battey bank/charger, and/or a car charger in the field. Android has a user selectable Battery Saver option that will extend battery runtime, as will reducing brightness.

Startup

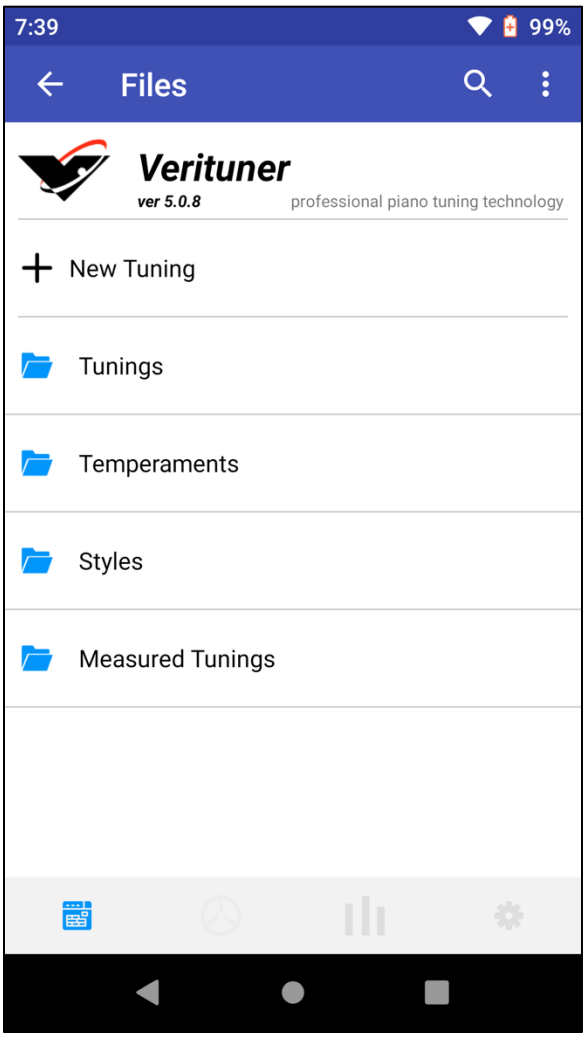
Verituner screens can be viewed in either portrait or landscape view determined by the device's orientation—vertical or horizontal. In the Android Display settings, "Auto-rotate screen" must be on to see the display in the landscape view.

Auto-rotate

To open the Verituner, swipe up on the Android home page and tap the app's icon in the alphabetized list of apps.

The File Manager screen appears when the Verituner app is first opened. Five options are available: (1) open a New Tuning file; (2) open the Tunings folder to select a previously saved tuning file; (3) open the Temperaments folder; (4) open the Styles folder; and (5) open a saved manually Measured tuning file.

Tap a folder to open it. Tap the ⋮ button *to show more options*, such as commands.



At the bottom of the screen there are four tabs. Tap to navigate between the screens.

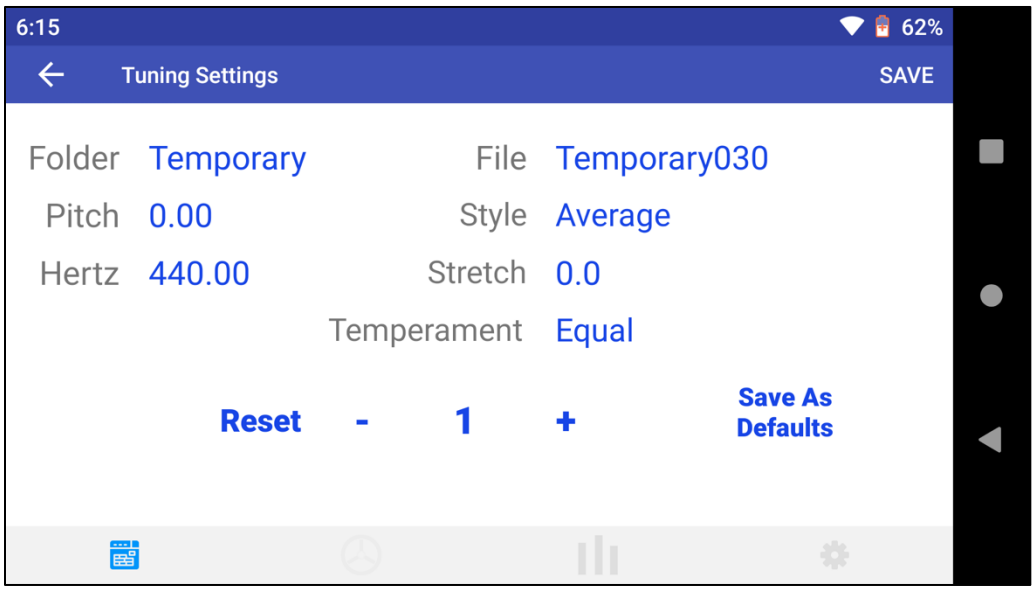
- the File Manager screen
- the Tuning screen
- the Spectrum Analyzer screen
- the Preferences screen

NOTE: Particularly in working with a small screen, you may find that unexpectedly another screen is showing. The reason: another tab was inadvertantly tapped. For example, you're tuning but all of a sudden you're looking at the Spectrum Analyzer. Simply tap the Tuning screen tab to return to tuning.

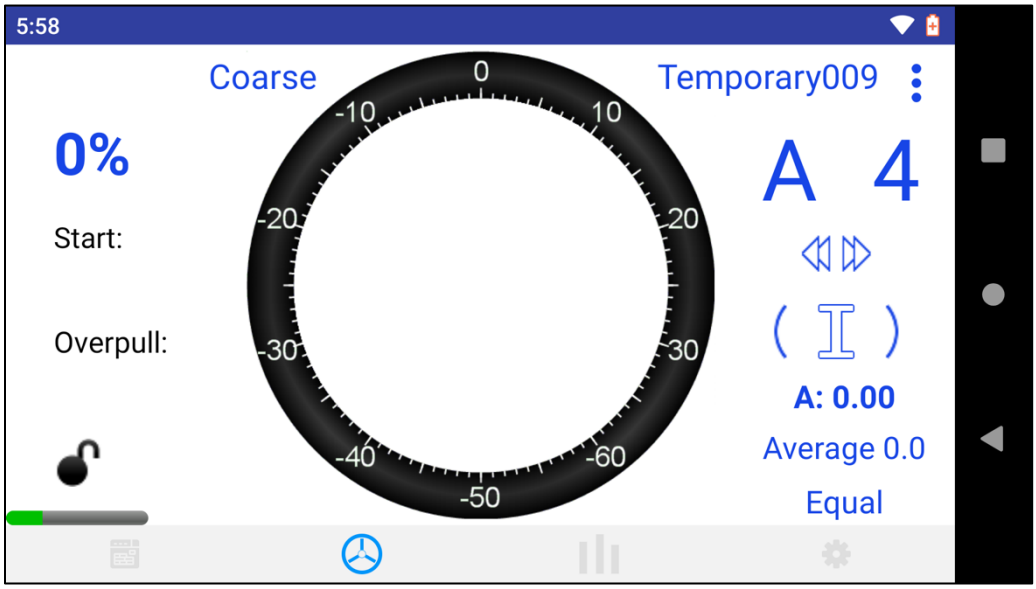
The Tuning Screen Interface

Open a New Tuning

At the top of the File Manager screen, tap + New Tuning. This takes you to the Tuning Settings screen.



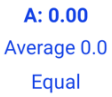
Initially, the default tuning settings for a new tuning are A4=0.00¢ (440 Hz), an “average” stretch style, and equal temperament. Tap SAVE to open the Coarse tuning screen.



Interface Features

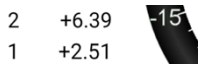
The Verituner's tuning screen interface provides various information and controls. There are two similar tuning modes—Coarse and Fine—with both common and distinctive features.

- Coarse or Fine (at the top left) indicates the current tuning mode. Tap to change the mode.
- The file name (at the top right), which is entered in the Settings screen
- The More options menu ⋮
- The note and octave
- The selected AutoNote movement, e.g. ⏮⏭
- The inharmonicity icon with "sound waves" indicating measuring is On or, without the waves, Off
- The pitch standard A440 (A: 0.00) or a deviation expressed in cents, e.g., A: 8.00
- The selected stretch Style, e.g. Average
- The selected Temperament, e.g. Equal



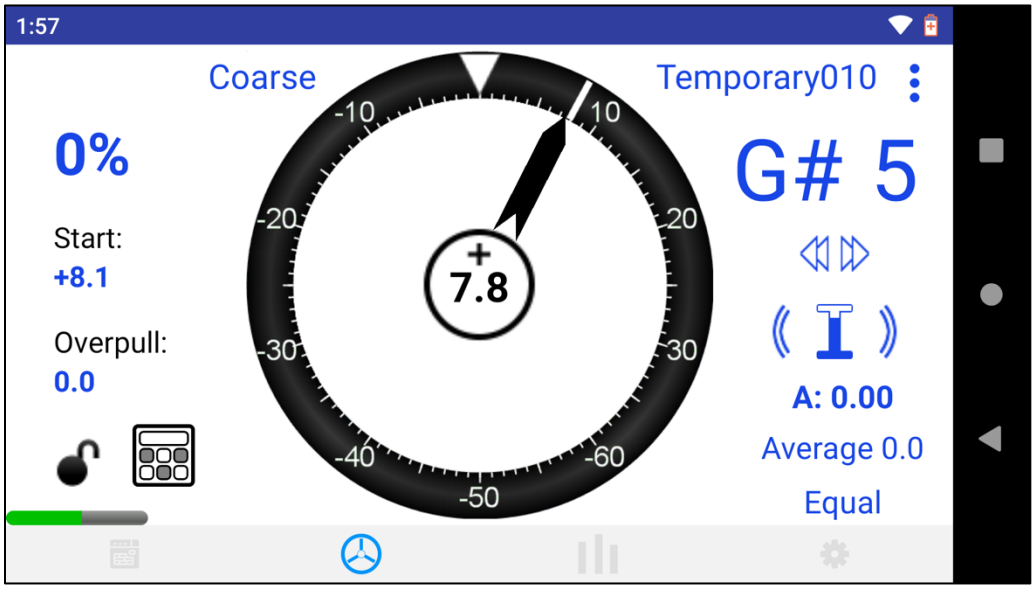
- The signal activity indicator shows the relative strength of the audio signal.
- The calculator icon which appears only briefly to indicate that recalculation of tuning targets is taking place
- The lock icon, indicating whether the calculated target for the note is subject to change or not
- The selected overpull percentage **0%** and measurements of the Start pitch and calculated Overpull (always shows in Coarse tuning mode and otionally in Fine mode)

- Calculated targets for various partials (visible only in Fine tuning mode in landscape view)

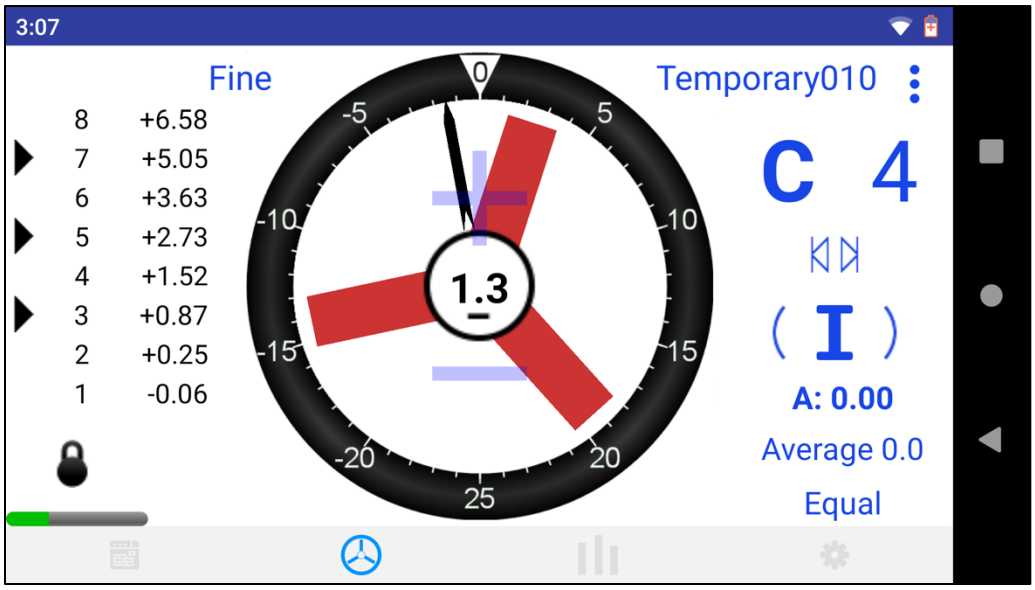


- The spinner (ring, needle, blades, hub)

The Coarse Tuning Screen



The Fine Tuning Screen



Accessing Menus

Four menus are accessed by tapping on: Coarse or Fine ⋮ ⏮⏭ (I) A popup lists options.

The tuning Settings screen can be accessed by tapping either ⋮, the filename, or A: 0.00 Average 0.0 Equal

Tuning Settings

Initially, the default tuning settings for a new standard tuning are A4=0.00¢ (440 Hz), an average stretch style that can be used with any piano, and equal temperament. Each of these tuning settings—pitch, tuning style, and temperament—can be changed if you prefer. So for example, you might find you prefer the Clean style for spinets and very small grands, and you might want the wider stretch of the Expanded style for concert grands. Custom styles offer additional options. These settings are displayed on the tuning screen at the lower right. Regardless of the style used, the Verituner adapts the stretch based on each piano's inharmonicity. (Up to 469 partials are measured by the Verituner.)

The Spinner

Both the Coarse and Fine tuning screens indicate pitch deviation (sharpness and flatness) by

- the position of the speedometer-like needle on the ring, marked in cents
- the rotation of the spinner blades in Fine tuning
- the number in the spinner hub is the difference in cents between the current pitch and the target pitch (marked ▽). The starting pitch is marked on the ring by a straight white line.
- In Fine tuning, a large ♭ or ♯ appears inside the ring when pitch deviation is beyond the range of the spinner to indicate it accurately.

In Fine tuning, the goal is to stop or slow the spinner as much as possible, so the needle and the number in the hub are as close to **0** as possible. In Coarse mode, "reasonably close" to target is probably good enough. When using overpull, the white line marks the starting pitch, and the ▽ marker on the ring is the target. 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.

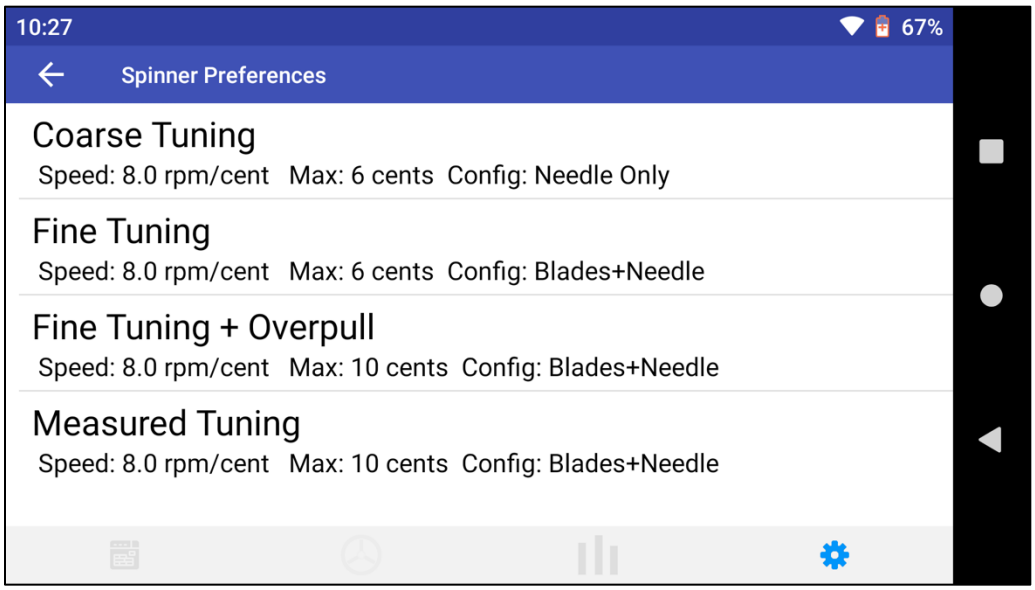
The scale (the range) of the cents gauge can be changed in Coarse mode. Tap More ⋮ and tap **Zoom** on the popup. Three scales are available:

Narrow (–32.5¢ to +17.5¢) Medium (–65¢ to +35¢) Wide (–130¢ to +70¢)

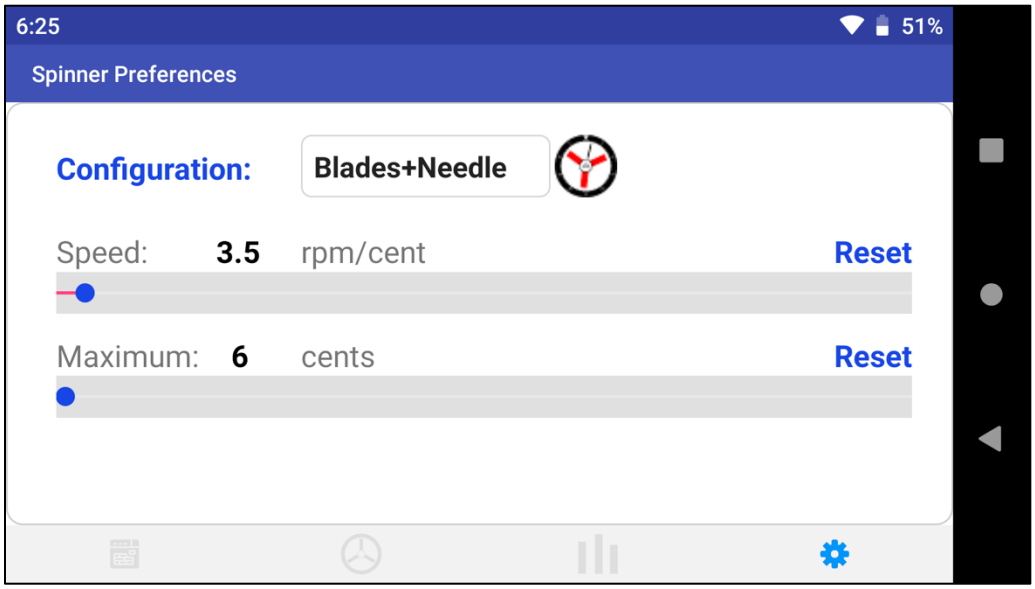
The scale used in Fine tuning is –25¢ to +25¢.

Edit Spinner Preferences

Spinner Preferences can be edited. Tap ⚙ to open the Preferences screen, and then tap Spinner Preferences.



There are four pre-set spinner configurations, illustrated above, that correspond to the various tuning functions. Each can be edited, if desired. Tap a configuration to edit it. Tap Reset to restore the Verituner defaults.



Three editable options are available:

- Tap **Configuration** to cycle through the blade and needle options. The image on the right illustrates each configuration.
- Use the slider to adjust the **Speed** the blades rotate (rpm=revolutions per minute) for each cent of deviation; e.g., set at 8 rpm, if the pitch is 3 cents from target, the spinner will revolve at the rate of 24 rpm.

- Use the slider to set the **Maximum** pitch deviation, beyond which a large sharp or flat symbol appears inside the spinner ring; e.g., set at 10¢, the large ♭ or ♯ appears (replacing the blades & needle) when the pitch deviation is >10¢ from target.

Guidelines for Editing Spinner Speed and Maximum

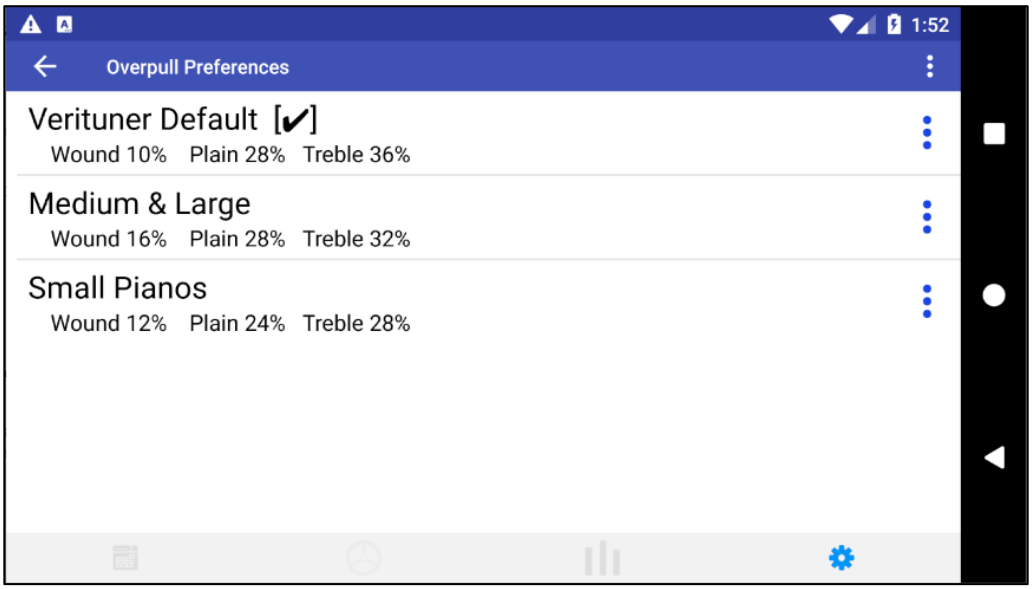
When the note you are tuning is sharp or flat, the spinner blades rotate at speeds in proportion to the amount the pitch is off from the target. The proportion can be changed, which has the effect of changing the sensitivity of their response to the deviation. A higher speed setting, for example, will result in higher sensitivity, i.e., its rotation will be relatively fast for small pitch deviations. However, its useful range will be narrower because it will more quickly pick up speed at greater deviations, to the point that it is unclear which direction it is rotating. The point at which the blades become too indistinct to be helpful—the point of "maximum" deviation—would be the logical place to set the ♭ or ♯ to appear. A lower spinner setting results in a lower sensitivity of response, i.e., slower rotation at small pitch deviations, but a wider range is clear enough to be useful.

Pitch Correction and Overpull

The Verituner's Tuning function consists of two modes: Coarse tuning and Fine tuning. Switch from one to the other by tapping Coarse or Fine on the tuning screen. The Coarse mode is used for correcting pitch—raising and lowering—in preparation for fine tuning.

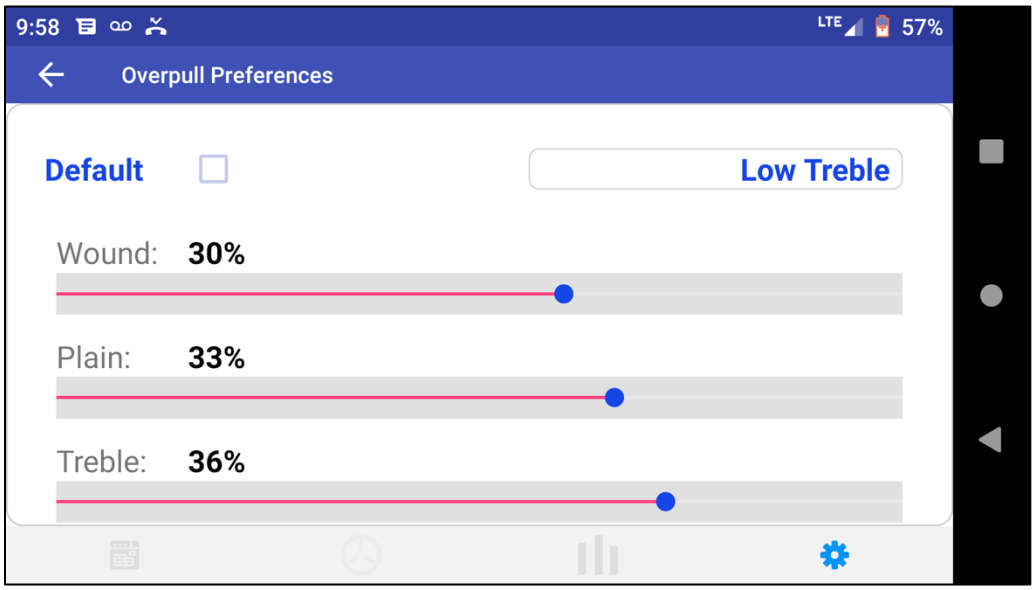
Overpull targets can be calculated with the pre-defined or user-specified overpull percentages. The current percentage is displayed on the left side of the screen in Coarse tuning. The initial percent is **0%** (for no overpull). Tap on the percentage number to cycle through the percentages for the wound, plain, and treble strings. The overpull function can optionally be used in Fine tuning by tapping ⋮ and then tapping Overpull.

The default percentages are merely suggestions, perhaps a starting point. Use them if they work well for you or experiment to determine the values—and where they are used—that give you the best results.



To use another set of percentages while tuning, tap ⚙ and tap Overpull Preferences. Tap ⋮ at the right of the set you want to use and tap Use Setting. Note too the other options: Edit Setting (change the name of the set and the percentages); Make Default (make the set the default when a tuning file is opened); and Delete Setting.

Two new sets can be added to the pre-installed sets, for a total of five sets. Tap ⋮ at the top right corner and then tap Add Setting. Name the set; use the sliders to set the percentages, and check the box if you want this to be the default set. Tap ← when you are done.



Overpull Markers When an overpull percentage is being used, two white markers appear on the ring. The straight line indicates the starting pitch, and the ▽ marks the overpulled tuning target.

NOTE: Occasionally, the *start marker* is obviously set incorrectly. When this happens, **erase** the markers for the current note by tapping on the Start and Overpull status. To erase markers for all notes, Tap ⋮ and tap Erase All Markers.

Start:
-16.8

Overpull:
+4.7

AutoNote

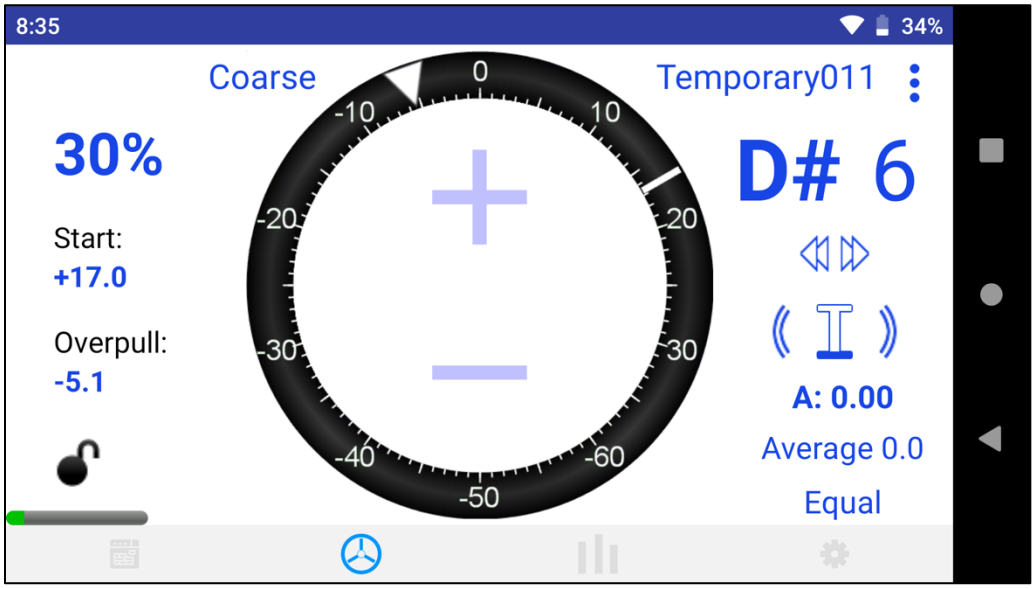
The Verituner's AutoNote feature identifies the pitch it hears and displays the note and octave (at the upper right) within the limits of the current response setting. You choose how you want AutoNote to respond. The choices differ in their combination of *direction* (up, down) and *distance* (no limit or by step). Tap the AutoNote icon (located under note/octave) and select the response you want from the popup list.

- Any Note
- Up/Down by steps
- Up by steps
- Down by steps
- Auto OFF

Use Up/Down by steps for the most consistently accurate response while tuning. NOTE: If AutoNote does not respond well for the notes at the extreme ends of the keyboard, turn Auto OFF and switch notes manually.

Changing the Note and Octave Manually

In addition to AutoNote, note and octave changes can be made manually. Tap on either the note or the octave at the upper right of the tuning screen. It turns bold to indicate it is selected. When selected, a large plus and minus sign appears inside the ring. Tap to move the selected note or octave up or down. When moving from B to C or C to B, the octave automatically changes.



To hide the **+** and **–** , tap the selected note or octave.

Inharmonicity

All measuring for inharmonicity is done automatically in the background as you tune. It is important to follow the recommended tuning sequence the first time you tune a piano with the Verituner. In doing so, the collected data can be used to optimal advantage in calculating tuning targets.

The inharmonicity icon serves these functions:

- The animated “sound waves” indicate inharmonicity measuring is on. No waves indicates measuring is turned off .
- The amount the icon is filled indicates the relative amount of inharmonicity information that has been collected for the note.

Inharmonicity Options

Tapping reveals a popup list of these options:

Inharm On/Off The inharmonicity measuring function is turned on or off.

Remeasure clears inharmonicity data for the current note, which empties the . Upon remeasuring the note’s inharmonicity, the Verituner recalculates the targets for all unlocked notes.

You might want to Remeasure if you think ambient pitches, such as a partial-rich chiming clock, may have compromised a note's measurements; or, if the Verituner is set to a different note than the one you are playing.

TIP: if you encounter a note that is apparently not being measured sufficiently, i.e. barely filling, try moving your device; try another string; play another note and then return to the stubborn note; try Remeasure again.

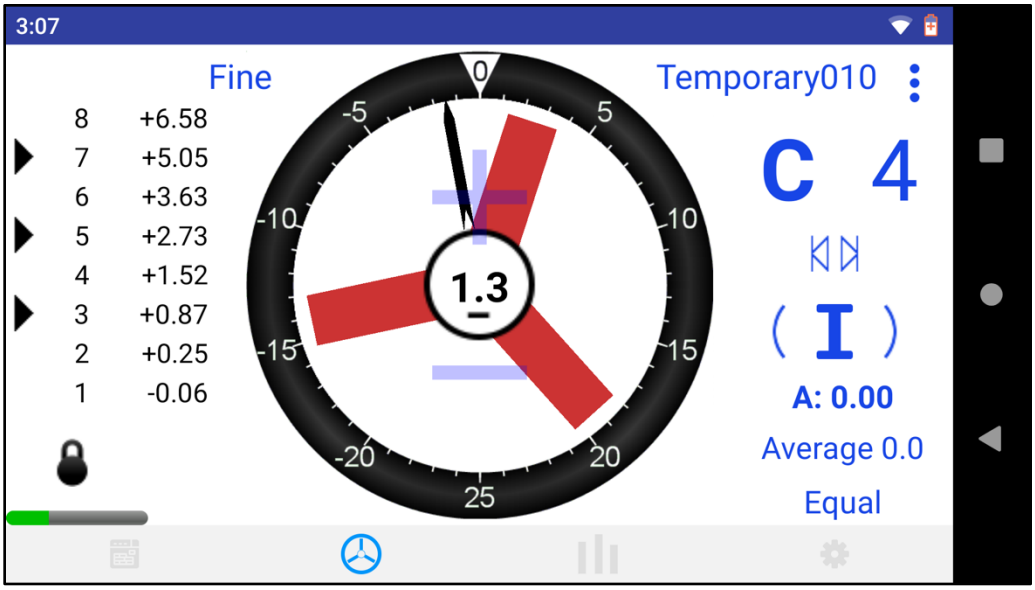
Recalculate all tuning targets using the current collection of inharmonicity data and the style and temperament.

Clear All Inharm clears inharmonicity data for all notes.

Tuning Targets

The lock icon at the lower left indicates whether the tuning targets for the current note are locked or open to further calculations. Recalculation of targets is continuous in Coarse tuning mode, and because it is assumed you will follow with a pass in Fine, targets are not locked and are therefore subject to revision as new inharmonicity data is collected. In Fine tuning, targets are initially unlocked but are subsequently locked so the targets of already-tuned notes do not move. The brief appearance of the calculator icon next to the lock indicates that calculation of targets is taking place.

In Fine tuning, the targets for the partials are listed in a column on the left side of the display. The digits on the left are the partial numbers, and the values on the right are the calculated targets in cents. Which partials are being measured varies in different sections of the piano.



The small right-pointing triangles ► at the left indicate the presence or absence of each partial in the sound. A dark arrow indicates a strong partial, a gray arrow indicates a weaker partial, and the absence of an arrow indicates little or no presence of that partial. These arrows flicker on and off as you sound the note, typically showing a strong presence of all the partials when you first sound the note and the higher partials dropping off as the sound decays.

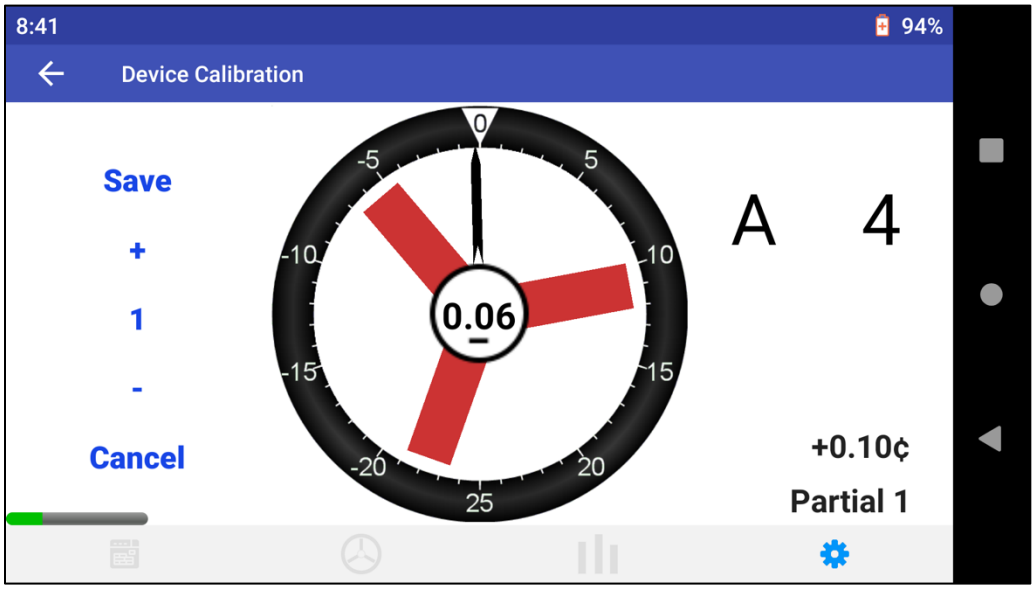
Entering Numeric Values

Some screens call for entering values in *fields* without the device's virtual keyboard. [A *field* is a small rectangular area that either already filled or into which text or a value can be entered or edited. Some fields are filled from options on a popup list.] Entering or changing a value in a selected field is done with the Verituner's *numeric controls* **+ 1 –** .

Tap the *increment number* to cycle through the available increments: **1 .1 .01** . Tap **+** or **–** to change the value in the field by the increment amount with each tap. This is the method for entering values in the Calibration procedure, in tuning Settings when setting a non-standard pitch, in creating custom styles, etc.

Calibration

The accuracy of your Android device's A440 pitch will typically be within 1.0 cent, which is suitable for most piano tuning. The Verituner's ability to tune accurate intervals is unaffected by a device's pitch inaccuracy, if any. However, with the Verituner you can improve your device's pitch accuracy. With the Device Calibration feature, the Verituner app can be calibrated to a trusted source for A440 to compensate for a device's inaccuracy. This can be done at any time to check the device's accuracy and tweak it if possible and desired. Tap ⚙ and then tap Device Calibration.



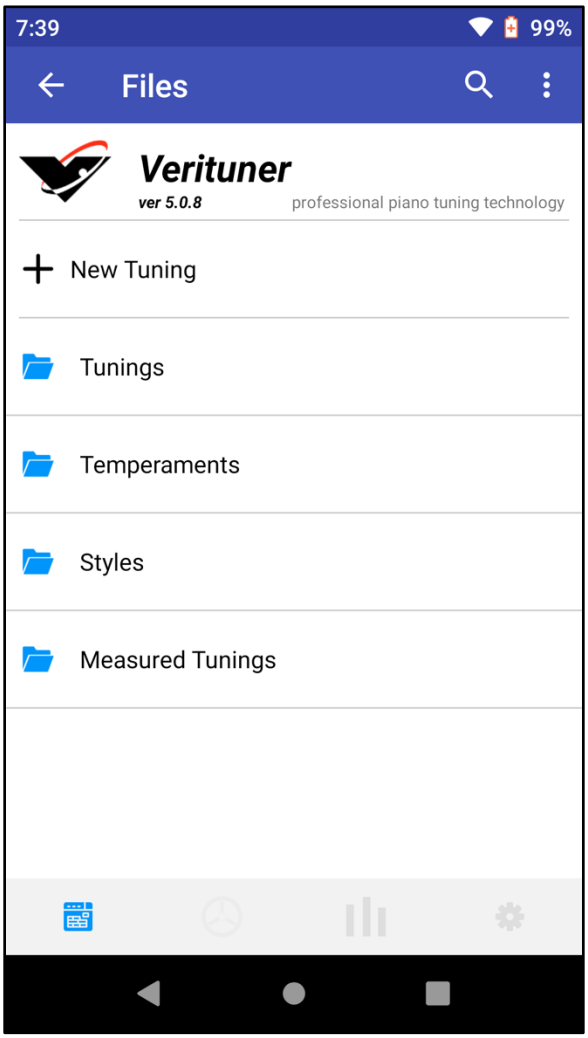
1. In the Calibrate screen, use a laboratory-grade frequency source to sound A440 while you use the numeric controls **– 1 +** (available increments: **1 .1 .01)** to stop or slow the spinner as much as possible. Calibration can be set to a precision of hundredths of a cent.
2. Tap **Save**. TIP: record and save the value for future reference in case recalibration is necessary.

Folders & Files

Working with Folders and Files

Verituner files are stored and organized in four directory folders in which both folders and files are stored. The directory folders are

- **Tunings** – Most, if not all, of your tunings are saved in the Tunings folder, which contains multiple folders that can be used to organize tuning files.
- **Styles** – The Style folder contains a folder for the Verituner's built-in stretch styles. The Custom folder contains user-designed style files.
- **Temperaments** – Many pre-installed temperaments are organized and stored in multiple folders in the Temperaments folder. Custom unequal temperaments are also stored in this folder.
- **Measured Tunings** – Tuning files generated by measuring a tuning (such as in the PTG tuning exam) are stored in this folder.



The File Manager screen with these directory folders appears when the Verituner app is first opened. From other screens in the app, tap at the bottom of the screen to go to the File Manager. Tap the desired folder to open it.

Tuning files are saved automatically and continuously as you tune. Tuning, temperament, and style files are stored, organized and managed in their respective directory folders.

When starting a new tuning file, in the Tuning Settings screen, you select a folder in the directory where you want the file to be saved. The default location is the Temporary folder, which stores only the 15 most recently added files. If you anticipate using a file in the future, select another folder.

Directory *folders* that have the More ⋮ button at the right have one or more of the following commands available:

- **Open** – opens the selected folder
- **Rename** – rename a folder
- **Delete** – deletes the selected folder
- **Paste** – pastes a copied file into an open folder

Directory *files* that have the More ⋮ button have one or more of the following commands available:

- **Open** – opens the selected file
- **Rename, Cut, Copy, Paste** – commands to rename, cut, copy, and paste files
- **Duplicate** – makes a duplicate copy of the selected file
- **Delete** – deletes the selected file

Renaming Files & Folders There are 16 pre-installed folders in the Tunings directory and 9 in the Measured tuning directory that can be renamed to suit your preferences for organization. More folders can be added. Some folders are reserved by the Verituner and cannot be renamed. Those that can will have the More menu button ⋮ at the right. To rename a folder or file, tap ⋮ and tap Rename.

Searching for Files To search for a file in a folder, tap to open the folder, and then tap the magnifying glass 🔍 at the upper right corner of the screen. Enter what you're searching for in the search field —a portion or all of the file name, including alphanumeric characters, symbols, and spaces. All files in the folder that contain the search text will be listed. When you see the file you want on the list, tap the filename to open it, or tap ⋮ for the available options. If the file is not found, confirm that your search text is correct and/or search other folders.

To search all folders at once, tap 🔍 on the top-level screen of the File Manager (that shows the tuning, style and temperament folders). Enter your search text in the search field. The results of this global search list the files that contain the search text plus the folder in which each file is located.

Importing & Exporting Files

This section presents two methods for transferring (exporting) Verituner files from an Android device to a computer and for transferring (importing) files from a computer to an Android device.

With the first method, **files are transferred via the USB cable** that came with the Android device. This method is the more direct and simpler of the two; however, all transfers are done manually. Wi-Fi is not used.

Google Drive (or simply Drive) is used in the second method. It can be set up to automatically sync Verituner files from Drive on the Android device to Drive on a computer. However, the Verituner files must be manually copied from the Verituner app's Library to Drive on the Android device. From there they are synced to Google Drive on the computer.

You will need a Google account to do this. Google Drive is free with a Google account. Both the Android device and the computer will have the Drive app, and the transfer is done wirelessly via an Internet connection.

Either one or both methods can be used. Regardless the method, once the files are on the computer, they can be copied to other devices, backed up to local storage devices, such as hard drives and flash drives, and stored off-site such as with cloud services. Verituner files are very small. Hundreds of tuning files require only a few megabytes of storage; e.g. 10 MB will store ~650 tuning files.

Method 1: Transferring Files with a USB Cable

If you are using a **Windows computer,** click here and select Windows computer under Option 2 and follow the instructions.

If you are using a **Macintosh computer…**

1. Go to www.android.com/filetransfer and download and install the Android File Transfer for Mac.
2. After installing the app, click GET MORE HELP and select Mac computer under Option 2 and follow the instructions.

NOTES:

- If you are alerted that the computer "Can't access device storage", unlock the Android device; swipe downward from the top of the screen, and at the bottom of the notifications—tap "Charging this device…" and then tap for more options. Select File Transfer.
- Drill down through the files: Android > data > com.veritune.verituner > files > Library
  The Library folder contains the four top level Verituner data folders: vmt, vot, vuo, & vus.
- Drag files from the Android File Transfer window to where you want them on the computer, or drag files or folders into the transfer window into the folder(s) you want them in. In transferring files into the Verituner Library, remember: Verituner file types must go in their corresponding folder, e.g. vot tuning files go in a subfolder in the vot folder.

Method 2: Transferring Files with Google Drive

For how to set up and use Google Drive, use these Google resources:

www.google.com/drive support.google.com/drive

In setting up Google Drive, establish an Internet connection, and follow these steps to add and name folders, organized to your preferences.

On the computer, right click My Drive in the sidebar at the left and select New folder. Folders can be added inside folders. For example, a folder named Verituner Files, could contain a Tunings folder, which could contain a Schools folder.)

Name the folders.

Import Follow these steps to import files into the Verituner app from a computer:

1. Establish an Internet connection with both the computer and the Android device.
2. If you are not already logged into your Google account, go to google.com on the computer and log in.
3. Open Google Drive: drive.google.com
4. Drag and drop files from the computer into the desired folder in Google Drive.
5. On the Android device's home page, select the Files app on the alphabetized listing of installed apps.
6. Tap ⋮ to show options. If "Show internal storage" is on the popup list, tap it. (You should only have to do this step once.)
7. Tap the menu icon ☰ at the upper left and then tap (Google) Drive on the popup list.
8. Tap My Drive, and then locate and open the folder where the file(s) or folder(s) you want to import into the Verituner. NOTE: If you don't see your file(s) or folder(s), there may be a delay in syncing. Wait a while.
9. On the list, "long" tap each file or folder you want to import. Selected items have a checkmark. If you are selecting a large number of files, you can tap ⋮ and Select all.
10. Tap ⋮ and tap Copy to… but do not tap the blue Copy button that now appears at the bottom right. In the next steps, the files or folders will be copied into the Verituner's Library.
11. Tap the menu icon ☰ at the upper left and then on the popup tap the name of your device.
12. Beginning with the Android Folder, tap each of the following in this order:

    Android > data > com.veritune.verituner > files > Library

    The Verituner's Library folder contains four folders, each of which contain additional folders:

    vmt (Measured tuning files)
    vot (Tuning files—the typical files that are created when you open a new tuning)
    vuo (Temperament files)
    vus (Style files)

    A valid destination folder for files depends on the following Verituner requirements:

    - Custom style files (filename.vus) go in the Custom folder that is inside the vus folder.
    - Custom temperament files (filename.vuo) go in the Custom folder inside the vuo folder.
    - Tuning files (filename.vot) are stored in various tuning folders inside the vot folder.

    NOTE: the vot, vus, vuo, & vmt folder names correspond to the file extension appended to file names. The filename extension must match the folder name; for example: the file

Choir Room 361872.vot must be stored in one of the folders in the vot folder for the Veriutner to recognize it.

13. When the destination folder is open, tap the Copy button at the bottom right. If you want to, go to the Veritуner app's File Manager and confirm that the file(s) or folder(s) were copied into the destination folder.
14. If you have further imports to do, repeat steps 7-13.

Export Follow these steps to export files or folders from the Veritуner app to a computer:

1. Establish an Internet connection with both the computer and the Android device.
2. If you are not already logged into your Google account, go to google.com on the computer and log in.
3. Open Google Drive: drive.google.com
4. If you want one or more new folders for the files you are going to export, right click My Drive in the sidebar and select New folder. Folderscan be added inside folders. Name the folder(s).
5. On the Android device's home page, select the Files app on the alphabetized listing of installed apps.
6. Tap ⋮ to show more options, and if "Show internal storage" is on the popup list, tap it. (You shouldn't have to do this if you've done it before.)
7. Tap the menu icon ☰ at the upper left, and then, on the popup, tap the name of your device.
8. Beginning with the Android Folder, tap each of the following in this order:

   Android > data > com.veritune.veritуner > files > Library

   The Veritуner's Library folder contains four folders, each of which contain additional folders:

   vmt (Measured tuning files)
   vot (Tuning files—the typical files that are created when you open a new tuning)
   vuo (Temperament files)
   vus (Style files)
9. Locate the file(s) or folder(s) you want to export, and "long" tap each to select them. A checkmark indicates they are selected. If you are selecting a large number of files, you can tap ⋮ and Select all.
10. Tap ⋮ and tap Copy to… but *do not* tap the blue Copy button that appears at the bottom right. In the next steps, the files will be copied into Google Drive.
11. Tap the menu icon ☰ at the upper left and then tap (Google) Drive on the popup list.
12. Tap My Drive, and then locate and open the folder where you want to put your copied file(s) or folder(s).
13. Tap the the Copy button at the bottom right.

14. On the computer, go to Google Drive. If Drive is set up to automatically sync to the Google Drive folder on the computer, confirm that the transferred file(s) are there. If they are, skip to set 18. Otherwise…
15. On the Google Drive web page, open the folder(s) into which you copied the file(s) or folder(s). NOTE: If you don't see your file(s) or folder(s), If the files have not shown up, allow ample time and wait.
16. On the Google Drive web page, select the file(s) or folder(s) you want to copy to the computer.
17. Right click in the highligted area and select Download on the popup. The file(s) or folder(s) are downloaded into the desiganted Downloads folder on the computer.
18. Move the file(s) or folder(s) to the desired location(s) on the computer.

    At this point, copies of the files are on the Android device, on the computer, and on Google Drive. You may also want to backup all of your saved tuning files and custom style and temperament files in other locations, including local external drives and off-site cloud services such as Dropbox and OneDrive.

Verituner Tuning Procedures

This chapter presents two step-by-step procedures—one for tuning with a new tuning file and the other for tuning with a previously saved tuning file. Both procedures have three main sections:

Setup → **Coarse Tuning** → **Fine Tuning**

The Verituner's Coarse Tuning mode is for pitch raising or lowering (pitch correction) in preparation for Fine Tuning.

The primary difference between the new file procedure and the saved file procedure is that in tuning with a new tuning file, inharmonicity data is automatically measured and saved by the Verituner *as you tune*. (Up to 469 partials are measured.) The tuning sequences for a new tuning are designed to give the Verituner inharmonicity data in an optimal order for calculating targets since measuring is being done as you are tuning. In a saved tuning file previously measured inharmonicity has already been collected and stored, so the order is not a factor.

Two versions of the new tuning procedure are presented: The "Full" version has a more detail and guidance and is designed for your first Verituner tunings. The "Abridged" version is more concise, with less detail, and will keep you on track until the procedure is automatic.

The procedures that follow assume you are familiar with the tuning screen interface and functions, and the basics of working with files, which are covered in The Tuning Screen Interface section and the Folders and Files section.

Aural Checks

The Verituner is designed to listen to a single note at a time. It filters out and ignores other notes while measuring 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, playing an interval when first tuning a note can potentially cause some problems. Therefore, it is recommended that aural checks be delayed until a note has been tuned or, better yet, a substantial section or the entire piano has been tuned.

Tuning Unisons

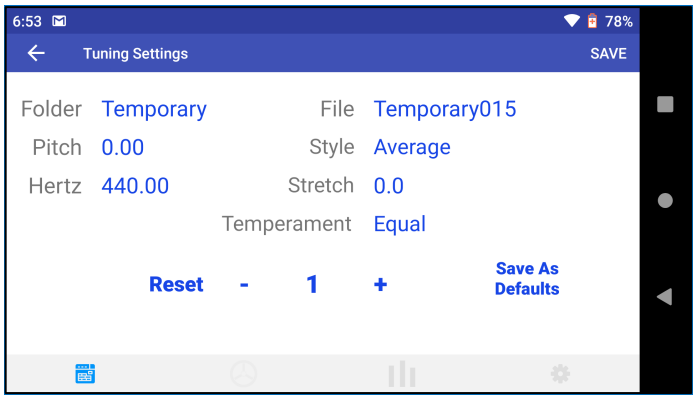
Tuning unisons as you go is recommended. Although you can tune each string of a note individually to the Verituner, if you have the skill, tune unisons aurally for greater speed. However, tuning strings individually to the Verituner may be advantageous in tuning a note with a challenging false beat. And, you might also find single string tuning to be particularly helpful and efficient in the high treble, especially in poor quality pianos. Do let your ear be the final judge.

Tune with a New Tuning File [Full]

Setup

This procedure is used to tune a piano when you do not have a previously saved tuning file for it. With these steps you will create a new custom tuning file for the piano.

1. Tap the Verituner icon to start the app.
2. On the File Manager screen tap + New Tuning.
3. On the Tuning Settings screen, set the tuning options you want for this tuning.



Folder Only the 15 most recent files are stored in the Temporary folder. To select another folder for storing the file, tap the folder field and then tap the name of the folder.

File To change the file name, tap the File field; enter a new name and tap ✓ .

Pitch To change the pitch from A440 (0.00¢), tap either the Pitch field to enter a deviation in cents, or tap the Hertz field to change the frequency. Use the numeric controls + 1 – to enter the value. A change in one field is reflected in the other.

Style To change the tuning style, tap the Style field; tap the folder, and tap the style you want.

DISCUSSION: There are three **Built-In styles**, the Average style has a moderate degree of stretch and of the three 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. **Custom styles** are designed by Verituner users and offer other options.

Because all notes are affected when a style is changed, it is best to choose a tuning Style and/or Stretch Adjust (see the next paragraph) *before* you begin tuning. If you want to change styles *after* a tuning is underway, see the discussion under Notes at the end of these procedures.

Stretch If you want to adjust a built-in style's stretch — to expand or contract the overall amount of stretch — enter a stretch "value" (from –2.0 to +2.0). Use the numeric controls to set a value that gives the desired stretch. *This function has no effect on custom styles.*

Temperament To select a different temperament, tap the Temperament field; tap to open the folder; tap the file name.

DISCUSSION: When you change the temperament, *all tuning targets are recalculated immediately* for the current tuning file. Be aware that if you change the temperament *after* a fine tuning is underway, the pitch of many of the notes you have already tuned may no longer be valid unless you retune them.

Tapping ⋮ by a file name shows the offsets from Equal for an unequal temperament.

4. Tap SAVE to save your settings and open the Coarse tuning screen.
5. Check the pitch level of the piano to determine whether a pitch correction pass for all or part of the piano is needed. Follow this procedure, which also begins inharmonicity measuring:
   a. With only a single string sounding, play several notes in various sections of the piano to check the pitch. If the pitch is flat near 50¢ or more and if AutoNote is not consistently displaying the notes you are actually playing, tap ⏪⏩ ; select ⏪⏩ Auto OFF and change notes manually. You may also need to change the zoom: tap ⋮ and tap Zoom and Wide.
   b. Play A4 with the left and center strings muted while you check its pitch. If the pitch is very far off, tune it closer to 0¢ and continue to play it until the 𝙸 is as full as possible 𝙸 .
   c. Repeat step b. playing A3.
6. Decide how you want to proceed. Choose the best procedure for the situation:
   - *Coarse Tune.* If all or part of the piano requires a pitch correction to raise or lower pitch in preparation for fine tuning, go to step 7.
   - *Fine Tune*. If the pitch is close enough for fine tuning, tap Fine and go to step 8.

   - *Fine Tune with Overpull.* If the pitch is close enough for a single pass but you want overpull for a small pitch correction and to compensate for some anticipated settling, switch to Fine tuning and go to step 9.

7. **Coarse Tune** to raise or lower pitch before fine tuning. As you tune, monitor the note and octave and be alert for any discrepancies between the note being played and the note the Verituner displays.
   a. Tap ⋮ and tap Erase All Markers.

b. Set the Verituner to the lowest note in the tenor section. For the best response, set AutoNote to Up/Down by steps . If at the extreme ends of the piano note recognition is less accurate, tap ; select Auto OFF and change notes manually.

c. Set the overpull percentage for the lowest tenor note by tapping the percent number **0%** . (Successive taps cycle through the available percentages.) As you tune, change overpull percentages at the recommended points shown in the Overpull Preferences. If you are doing a large pitch raise with more than one coarse tuning, consider little or no overpull for the first pass.

d. *Coarse Tuning Sequence* The Verituner must have inharmonicity information from A4 and A3 before beginning this sequence. (This was done in step 5.)

   1) Start tuning with the lowest tenor note. With the Verituner, tune each note first with only one string open. Tune until the needle is more or less aligned with the target marker ▽. (Save precision for the fine tuning!)

   2) Continue tuning upward by half steps, tuning unisons as you go, until you have tuned C8. (Inharmonicity is measured as you tune.)

   3) Tune from the top of the bass section down to A0, tuning unisons as you go.

   4) Tap ⋮ and tap Erase All Markers.

   5) Check the pitch, and if all or part of the piano is not as close as you want it for fine tuning, repeat these steps, 1) – 5), as needed.

e. Tap Coarse at the upper left and select Fine.
Proceed to either step 8 (Fine Tune) or step 9 (Fine Tune with Overpull).

8. **Fine Tune**

   a. Set the pitch to A3, and then set AutoNote to Up/Down by steps.

   b. *Fine Tuning Sequence* The Inharmonicity of A4 and A3 must have been measured before beginning this sequence. This was done in step 5.

      1) Tune A3 and continue tuning upward by half steps, tuning unisons as you go, until you have tuned C8. Tune each note first with only one string open, tuning until the spinner stops and the needle is aligned with the target marker ▽.

      2) Set the pitch to G#3, and tune downward by half steps, tuning unisons as you go, until you have tuned A0.

      3) Set AutoNote to Any Note .

      4) Check the tuning and touch it up if needed.

9. **Fine Tune with Overpull** for a small pitch correction, all or a portion of the piano.

   a. Set the pitch to A3, and then set AutoNote to Up/Down by steps.

b. Set the overpull percentage for the tenor section (plainwire strings). Change percentages as needed as you tune. If overpull is not needed for a portion of the piano, select **0%** , or tap ⋮ and tap No Overpull.

c. *Fine Tuning Sequence* The Inharmonicity of A4 and A3 must have been measured before beginning this sequence. This was done in step 5.

   1) Tune A3 and continue tuning upward by half steps, tuning unisons as you go, until you have tuned C8. Tune each note first with only one string open, tuning until the spinner stops and the needle is aligned with the target marker ▽. If overpull is still being used, change the percentage for the treble and bass sections.

   2) Set the pitch to G#3, and tune downward by half steps, tuning unisons as you go, until you have tuned A0.

   3) Tap ⋮ and tap Erase All Markers.

   4) If overpull is still on, tap ⋮ and tap No Overpull.

   5) Set AutoNote to ⏮⏭ Any Note.

   6) Check the tuning and touch it up if needed.

Notes

Defaults for New Tunings The default settings for Pitch, Style, and Temperament can be changed if you prefer. In the Tuning Settings screen, select the desired Pitch, Style, and Temperament and then tap **Save As Defaults** at the lower right. Tap Yes to confirm the change. These defaults are pre-set choices that can be changed at any time. (On the tuning screen, tap the file name to open the Settings screen.)

Changing Styles after a Tuning Has Begun Because all notes are affected when a style is changed, it is best to choose a tuning Style and/or Stretch Adjust (with a Built-In style) *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, *but* this would require retuning, because *all* notes will be affected. An automatic recalculation of *all* targets occurs when a different style is chosen in Coarse Tuning since notes are not locked in Coarse.

Measuring the Right String In starting a new tuning file, it is suggested that you mute the left and center strings while measuring A4 and A3 (filling the ((T))). It is assumed that it is the last string you would normally tune for these notes. Since overpull is not calculated in this step, when they are tuned in subsequent steps, overpull will be correctly calculated since it will be based on the deviation of the left or center string, which would not have been moved.

Tuning Sequences The tuning sequences for a new tuning are designed to give the Verituner inharmonicity data in an *optimal* order for calculating targets when measuring is done as you tune. Alternatively, if you prefer, you can use other tuning sequences that tune the temperament octave (A3-A4) first and then tune outwards from it. Once inharmonicity has been measured for all notes A0-C7 (after the first pass or in using a saved file), any tuning order can be used.

Alter a Calculated Target When and if you want to alter the Verituner's calculated target for a note, the Alter function enables you to tune the note aurally and store the altered target in the tuning file. Alter is covered in **TBD**.

Tune with a New Tuning File [Abridged]

Setup

Use this procedure to tune a piano when you do not have a previously saved tuning file for it.

1. Turn on your device and open the Verituner app.
2. On the File Manager screen tap + New Tuning.
3. On the Tuning Settings screen, set the tuning options you want for this tuning— Folder, File, Pitch, Style, Stretch, and Temperament.
4. Tap SAVE to save your settings and open the Coarse tuning screen.
5. Check the pitch level of the piano to determine whether a Coarse tuning pass is needed for all or part of the piano. Follow this procedure:
    a. Play a single string of several notes in various sections of the piano. If the pitch is flat near 50¢ or more, you may need to switch to Auto OFF and change notes manually. You may also need to change the zoom: tap and tap Zoom and Wide.
    b. Play the right string of A4. If the pitch is very far off, tune it closer to 0¢ as you play it to fill the .
    c. Repeat step b. playing A3.
6. Decide how you want to proceed. Choose the best procedure for the situation:
    - *Coarse Tune* for a pitch correction before fine tuning. Go to step 7.
    - *Fine Tune*. If the pitch is close enough for fine tuning, tap Fine and go to step 8.
    - *Fine Tune with Overpull* for a small pitch correction. Switch to Fine tuning and go to step 9.
7. **Coarse Tune** to raise or lower pitch. As you tune, be alert for any discrepancies between the note being played and the note the Verituner displays.
    a. Tap and tap Erase All Markers.
    b. Set the Note/Octave to the lowest note in the tenor section and set AutoNote to Up/Down by steps.
    c. Set the overpull percentage for the lowest tenor note. Change the percentage as needed as you tune.
    d. Coarse Tuning Sequence
        1) Beginning with the lowest tenor note, tune upward by half steps, tuning unisons as you go, until you have tuned C8.
        2) Tune from the top of the bass section down to A0, tuning unisons as you go.

3) Tap ⋮ and tap Erase All Markers.

4) Check the pitch to determine whether additional coarse tuning is needed for all or part of the piano. If so, repeat these steps, 1) – 4), as needed.

e. Tap Coarse at the upper left and select Fine. Proceed to either step 8 or step 9.

8. **Fine Tune**

a. Set the pitch to A3 and set AutoNote to ⏮⏭ Up/Down by steps.

b. *Fine Tuning Sequence*

1) Tune A3 and continue tuning upward by half steps, tuning unisons as you go, until you have tuned C8.

2) Set the pitch to G#3, and tune downward by half steps, tuning unisons as you go, until you have tuned A0.

3) Set AutoNote to ⏪⏩ Any Note.

4) Check the tuning and touch it up if needed.

9. **Fine Tune with Overpull** for a small pitch correction, all or a portion of the piano.

a. Set the pitch to A3, and then set AutoNote to ⏮⏭ Up/Down by steps.

b. Set the overpull percentage for the tenor section (plainwire strings). Change percentages as needed as you tune.

c. *Fine Tuning Sequence*

1) Tune A3 and continue tuning upward by half steps, tuning unisons as you go, until you have tuned C8.

2) Set the pitch to G#3, and tune downward by half steps, tuning unisons as you go, until you have tuned A0.

3) Tap ⋮ and tap Erase All Markers.

4) If overpull is still on, tap ⋮ and tap No Overpull.

5) Set AutoNote to ⏪⏩ Any Note.

6) Check the tuning and touch it up if needed.

Tune with a Saved Tuning File

Setup

This procedure is used to tune a piano using a previously created tuning file. The following sequences are the similar to the ones used for a new tuning during which inharmonicity was being measured. However, since the inharmonicity for notes A0-C7 has been collected and stored in saved tuning files, any tuning order can be used.

1. Turn on your device and open the Verituner app.
2. On the File Manager screen, tap the Tunings folder and locate and tap the saved file.
    a. If a non-standard pitch is set in the file, you'll be prompted to tap either Yes to leave it unchanged or No, which will reset A440.
    b. When prompted, choose whether to recalculate the tuning.
3. Check the Tuning Settings. If you want to make changes, tap the file name to open the Settings screen.
4. Check the pitch level of the piano to determine whether a Coarse tuning pass is needed. If the pitch is flat over 50¢, you may need to turn Auto OFF and change notes manually. It may also be helpful to tap ⋮ and tap Zoom and Wide.
5. Decide how you want to proceed:
    - *Coarse Tune* for a pitch correction, followed with a Fine tuning. Go to step 6.
    - *Fine Tune*. If the pitch is close enough for fine tuning, tap Fine and go to step 7.
    - *Fine Tune with Overpull* with a small pitch correction. Switch to Fine tuning and go to step 8
6. **Coarse Tune** to raise or lower pitch. This step is pitch correction to prepare the piano for fine tuning. As you tune, be alert for any discrepancies between the note being played and the note the Verituner displays.
    a. Tap ⋮ and tap Erase All Markers.
    b. Set the Note/Octave to the lowest note in the tenor section, and set AutoNote to Up/Down by steps.
    c. Set the overpull percentage for the lowest tenor note. Change the percentage as needed as you tune.
    d. *Coarse Tuning Sequence*
        1) Beginning with the lowest tenor note, tune upward by half steps, tuning unisons as you go, until you have tuned C8.
        2) Tune from the top of the bass section down to A0, tuning unisons as you go.
        3) Tap ⋮ and tap Erase All Markers.
        4) Check the pitch to determine whether additional coarse tuning is needed for all or part of the piano. If so, repeat step 6. d.

e. Tap Coarse at the upper left and tap Fine. Proceed to either step 7 or 8.

7. **Fine Tune**
   a. Set the Verituner to the lowest tenor note.
   b. Set AutoNote to ⏮⏭ Up/Down by steps.
   c. *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 ⏪⏩ Any Note.
      4) Check the tuning and touch it up if needed.
8. **Fine Tune with Overpull** for a small pitch correction, to compensate for some anticipated settling.
   a. Tap ⋮ and tap Overpull.
   b. Set the Note/Octave to the lowest note in the tenor section, and set AutoNote to ⏮⏭ Up/Down by steps.
   c. Set the overpull percentage for the lowest tenor note.
   d. *Fine Tuning Sequence with Overpull*
      1) Tune the lowest tenor note and continue tuning upward by half steps to C8, tuning unisons as you go. Change the overpull percentage at the recommended points as you tune.
      2) Tune from the top of the bass section down to A0, tuning unisons as you go.
      3) Tap ⋮ and tap Erase All Markers.
      4) If overpull is still on, tap ⋮ and tap No Overpull.
      5) Set AutoNote to ⏪⏩ Any Note.
      6) Check the tuning and touch it up if needed

Notes

Prompts When Opening a Saved File Upon opening a saved tuning file you will be asked to respond with a with a Yes or No to one, two or three prompts.

- If the saved file is set for a non-standard pitch, e.g. A: 442, you are asked "Use Saved Pitch A=+8.00?" Tap Yes to not change it or tap No to reset pitch to A: 440.
- Do you want to "Recalculate Tuning?" As a general guideline, tap Yes if you are going to retune the piano. Tap No if you are only touching up a recent tuning. If you tap Yes,

inharmonicity measuring is turned on by default. If you tap No, inharmonicity measuring will be turned off. Of course, inharmonicity measuring can be turned off  and on  manually.

- If you used the Alter command to alter one or more of the Verituner-calculated tuning targets, you will be asked "Keep Alterations?" If you tap Yes, the altered targets will continue to be used. If you tap No, the alterations will be permanently erased.

Verituner Support

Contacting Veritune

Email	support@veritune.com
Voice	888.VERITUN (888.837.4886) outside US: +1.773.793.6530

User Community

www.veritune.com/community.html
To register, tap or click LOG IN and click Register on the Forum webpage.

The Veritуner App Version

The version number of the installed Veritуner App is shown on the startup (File Manager) screen.

The Latest Version of This User Guide

The latest version of the Veritуner User Guide is available at the Veritune website:

https://www.veritune.com/veritуner-for-android.html

The User Guide 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/