

Electronic Tuner Calibration Charts for Sitar

Sitars sound better when tuned using the “Just Temperament” system. Just Temperament is a more natural tuning system than “Equal Temperament” which is the standard tuning system used in Western music. Unfortunately most electronic tuners only use Equal Temperament, so some calibration of the results provided by the tuners is required.

Equal tempered tuning is a compromise tuning method used in Western music where some notes are slightly flat or sharp so that they still sound in-tune when played in different chords and keys. You can hear this on a guitar, which is properly tuned to equal temperament: if you play an open E chord and listen to carefully to the third string, it might sound slightly sharp. If you then adjust it so that it sounds exactly in tune and then play a C chord, the third string will sound horribly out. The third string needs to be slightly sharp so that other chords sound close to being properly in tune as well.

In Western music, we live with and enjoy this slight dissonance, as it makes the complex harmonies we're used to possible. Indian instruments use Just Tuning where all the tones are tuned precisely to one key or monochord (harmony is not an feature of Indian classical music.) With Just Temperament the notes sound more in-tune with one another than with an equal tempered western instrument like a piano or guitar. And, that's why you shouldn't use a guitar tuner to tune the frets of a sitar, as guitar tuners are calibrated using Equal Temperament, and so the sitar will sound less in-tune than if it were tuned by ear.

Interestingly, for all notes in all keys and chord shapes to be in perfect harmony with each other on a guitar, the guitar would need 19 frets per octave (and probably be next to impossible to play!) There is a photograph of just such an instrument at the very bottom of this page:

<http://www.endino.com/archive/tuningnightmares.html>

Here is a discussion of how to calibrate tuners from the Peterson Tuners website:

http://www.peterson tuners.com/forum/topic.asp?TOPIC_ID=581&SearchTerms=indian

And, here are the Peterson calibration charts (which can be used with any tuner):

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www.PetersonTuners.com

Diatonic Major Scales – Just Temperament Tuner Offsets

| Note | Scale Degree | Cent Offset | Key | Key | Key | Key | Key | Key | Key | Key | Key | Key | Key | Key |
|------|--------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| DO | Tonic (root) | 00.0 | A | A# | B | C | C# | D | D# | E | F | F# | G | G# |
| RE | Super Tonic | +04.0 | B | C | C# | D | D# | E | F | F# | G | G# | A | A# |
| MI | Mediant | -13.6 | C# | D | D# | E | F | F# | G | G# | A | A# | B | C |
| FA | Sub Dominant | -01.9 | D | D# | E | F | F# | G | D# | A | A# | B | C | C# |
| SO | Dominant | +02.0 | E | F | F# | G | G# | A | A# | B | C | C# | D | D# |
| LA | Sub Mediant | -15.6 | F# | G | G# | A | A# | B | C | C# | D | D# | E | F |
| TI | Leading Tone | -11.7 | G# | A | A# | B | C | C# | D | D# | E | F | F# | G |
| DO | Tonic (root) | 00.0 | A | A# | B | C | C# | D | D# | E | F | F# | G | G# |

*A \flat , B \flat , and E \flat appear as G#, A# and D# respectively as displayed on the Strobe Tuner screen.

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Diatonic Minor Scales – Just Minor Temperament Tuner Offsets

| Note | Scale Degree | Cent Offset | Root | Root | Root | Root | Root | Root | Root | Root | Root | Root | Root | Root |
|------|--------------|-------------|------|-----------|------|------|------|------|-----------|------|------|------|------|-----------|
| DO | Tonic (root) | 00.0 | A | B \flat | B | C | C# | D | E \flat | E | F | F# | G | A \flat |
| RE | Super Tonic | +04.0 | B | C | C# | D | D# | E | F | F# | G | G# | A | A# |
| ME | Mediant | +15.7 | C | C# | D | D# | E | F | F# | G | G# | A | A# | B |
| FA | Sub Dominant | -01.9 | D | D# | E | F | F# | G | G# | A | A# | B | C | C# |
| SO | Dominant | +02.0 | E | F | F# | G | G# | A | A# | B | C | C# | D | D# |
| LA | Sub Mediant | +13.7 | F | F# | G | G# | A | A# | B | C | C# | D | D# | E |
| TE | Sub Tonic | +17.7 | G | G# | A | A# | B | C | C# | D | D# | E | F | F# |
| DO | Tonic | 00.0 | A | A# | B | C | C# | D | D# | E | F | F# | G | G# |

*A \flat , B \flat , and E \flat appear as G#, A# and D# respectively as displayed on the Strobe Tuner screen.