How to tune a piano

The simple and accurate method to tune a piano

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Chapter I: Basic tuning tools

Basic tuning kit

To start we need a basic tuning kit. This type of material except the tuning hammer can be purchase at any music store. The tuning hammer and the rest of the equipment can be bought over the internet. Actually there are many online sites which sell piano parts and tools for pianos. We could buy all together as a kit and have it send to us, which would be a lot easier.

A very important element is to have a piano so that we can do our practices and exercises. Let us clarify that the piano might be old but has to be tunable, that means the piano have to able to be tuned in standard A4 440 Htz pitch and hold it. For educational purposes is better a good size piano as that will facilitate the work. Bigger pianos

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Setting the pins

Piano tuners call “setting the pins” the operation of moving the pin accurately with controlled and subtle movements, pulling or loosening up and firmly fixed in its new place (which corresponds to the pitch of the string). This might seem an obvious and simple operation but it is not so. The pins are literally driven into the pinblock about 3 cm deep. By moving the tuning hammer just a little bit we will notice that the pitch of the string changes, but that does not mean we have moved the pin. This is due to the elasticity of the steel which pins and strings are made.

Modus-operandi as follows: Rotate the pin, feeling the amount of twisting and bending as you manipulate the hammer. Any twisting and bending is only temporary, and a string that you tune by flexing the pin will go out of tune as soon as the pin spring back to its natural position Because of the tight grip of the pinblock and the slight flexing of the

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Chapter III: The main elements, parts and functions

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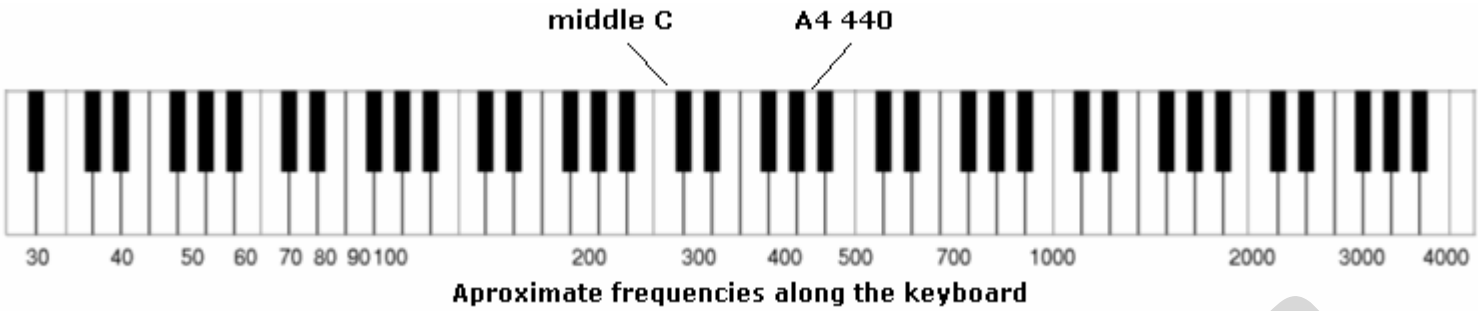
The purpose of this book is to teach to tune pianos the simplest and easiest possible way. However, it is important to acquire a basic knowledge of the mechanics and functions of the main parts in the piano. No doubt, it will widen your understanding and give you a better perspective.

The piano is a much more complex instrument than it might appear at first sight. It contains about four or five thousand parts. In this



Aproximate frequencies along the keyboard

The intervals

Intervals could be defined as the distance between two notes on the keyboard. We will concentrate on the intervals that are useful for tuning. In order of importance they are: thirds, sixths, fifths and fourths. As an example, if we take the note C as reference, the interval that correspond to the notes C and E is a third, C and F is a fourth, C and G is a fifth and C and A is a sixth.

Regarding intervals the names of the notes is not important since its the relationship between then that really matters. The intervals C to C#, E to F, and F to F#. The three of them share adjacent notes, therefore they all are “half step” intervals, also called “minor second” intervals.

If the distance between two notes is two half steps, the interval is a “whole step” or “major second”. Two white keys with a black one in the middle shall always correspond to a whole tone or “major second”. The same thing can be said to two black keys with a white one in the middle, also a whole tone or “major second”, for example C# to D# (C sharp to D sharp).

To clarify this, let see these examples. D to E is a whole step or a “major second” interval. C to D# is a “minor third” (three half steps). C to E has two whole steps, therefore is a “major third” interval. C to F is a “fourth interval” as it has two and an a half steps. C to G

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audible beats as the two strings (the one that you are tuning and the centre one used for reference) will sound as two completely different tones.

Now grasp again the tuning hammer and turn it clockwise (just in the opposite direction than before) very slowly till the beats become audible again.

As we turn the hammer clockwise the beats will progressively slow down till they become inaudible. Then the two strings, the one that we are tuning and the one we are using as a reference will be at exactly the same pitch and therefore “in tune”. However, if at that point you release the push on the lever the note will flatten and will go slightly out of tune again.

The way to overcome this nuisance is this: when you get the string “beatless” just give the string a bit of extra pull (clock wise) until it is just a bit above beatless, so you will hear very slow beats again (one per second approximately), then as you relax your pull the pin will settle back in tune. The idea is to correct that slight “spring back” and get the pin properly set in its new place.

Putting this in words I think its harder than doing it. I am confident that with some practicing in a short time you will be able to calculate accurately the amount of extra pull needed for each string that you are tuning.

In the next recording you can perfectly appreciate how to tune the unisons. Just listen carefully and notice how the beats slow down and then speed up to slow again till the unisons become beatless and the two strings sound as a single one.

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Chapter VI: Standard tuning procedure

The reason to build the temperament is to overcome the inharmonicity problem, inherent to all pianos. If this problem does not exist, tuning a piano would be quite a straight forward job to do, then anybody with a reasonable tuning hammer technic could be able to tune a piano.

Using the tuning lever

Given that every note at the piano has a theoretical perfect pitch (for example A4 = 440 htz) it could be assumed that to tune a piano all you have to do is to tune each note, to the same pitch of those theoretically perfect. Unfortunately this is not true and whoever has tried that way, will agree that the outcome is quite disappointing.

Step 9. Tune B39 to D#43 (-)

Tune this third interval to 10- bps. If you play A#38 – D42 you will see that it beats a bit slower than B39 – D#43. Lets do the following check: Play B39 and F#34 (fifth interval). It should roughly beat a little slower than 1bps.

Step 10. Tune G35 to B39 (-)

Tune to 8- bps (negative). At this point of your temperament, for testing purposes you could do some progressions with the intervals that you have already tuned. Lets try these ones: F#34 – A#38, then G35 – B39 (this Step 10 interval) and G#36 – C40. You should see that the beat rates increases or decreases as we move upward or downward the chromatic scale.

Check that G35 – C40 beats at 1 bps, somewhat faster than F#34 – B39. Also try this, G35 – D42 should beat about ½ bps, just a tiny little bit faster than F#34 – B39

Step 11. Tune E44 to G35 (+)

This is a sixth interval and we tune it to 9+ bps, somewhat faster than F#34 - D#43. Check your tuning of E44 – G35 doing the following progressions: C40 – E44 should beat at 10,5 bps. B39 – E44 (fourth interval) 1bps and A37 – E44 (also a short beat interval) a little bit less than 1 bps.

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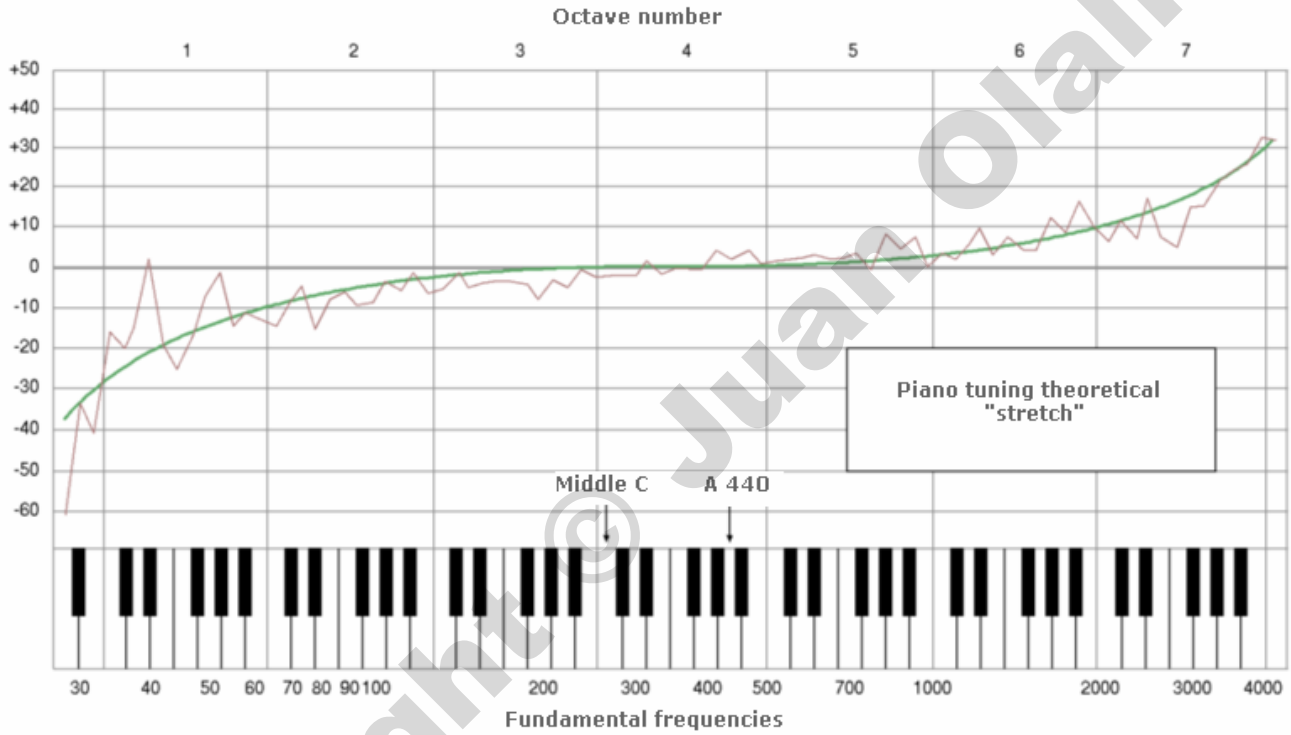
others involving piano tuning there is not rule of thumb, and in reality every piano tuner do the “stretch” at his/her discretion.

I think to be precise, when in the lower notes the stretch shouldn’t be call that way, but the “shrink”, as that’s what really happens, but that’s just a point of view. Have a look at the diagram below. As they say, a picture is worth a thousand words.



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Stretch tuning, the standard procedure

You have already learned the standard procedure of tuning a piano without doing the stretch. Now you will learn the way to stretch the upper and lower part of the piano. Lets go back to the point where you have finished tuning the center section, from G23 to C64 (C at the six octave). Let me remind you that this center section is always tuned flat (without stretch). The stretch is only applicable on the high and low section of the piano.

Lets start stretching the upper section, about the last two octaves of the keyboard. The stretch that we are about to implement goes from

Chapter VIII: Managing a piano tuning business. The best advices

This chapter is specially thought for all of you who want to take piano tuning as a full time or part time job. It will show you the best way to manage your business.

It is reasonably easy to start a business tuning pianos. To get you started all you need is: a tuning kit (tuning hammer, tuning fork, rubber wedges) a mobile telephone and a vehicle to get you around. You don't even need a workshop, at least at the beginning as most jobs will be carried out at the client's place.

Promoting your business, get yourself known

If nobody know about you, obviously nobody is going to call you. Once you feel proficient enough to tune a piano you should get

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