BASIC PIANO TUNING by Mark Cerisano, RPT

FREE Chapter Muting the Piano



howtotunepianos.com

TRAINING MANUAL eBook EDITION

Mr. Tuner Piano Service **OFFICE:** 307 Fieldstone Dollard-des-Ormeaux QC, H9G 1V9 514-771-8666 1-866-MR-TUNER(678-8637) <u>www.mrtuner.com</u> service@mrtuner.com

BASIC PIANO TUNING COURSE

Instructor: Mark Cerisano, RPT, Mech.Eng. Cell: (514) 978-8637 or 1-866-678-8637

CLASSES: MONTREAL, QC

Westend Pianos, 17 Ronald Dr., Montreal West, QC H4X 1M9 (514) 486-5373

TORONTO, ON

Beaches Conservatory 1224 Kingston Road, Scarborough, ON M1N 1P3 (416) 694-4792 ext. 100

VANCOUVER, BC

Oakridge Music Studios 497 West 40th Avenue, Vancouver, BC V5Y 2R5 (604) 321-1551

© 2017 Mr. Tuner Inc. Please do not copy and/or distribute this manual. Bound copies can be supplied for a reasonable price. Please call 1-866-MR-TUNER(678-8637)

EACH COPY HAS BEEN UNIQUELY IDENTIFIED AND ANY COPIES OF THIS DOCUMENT SHARED ON THE INTERNET CAN BE TRACED BACK TO THE ORIGINAL PURCHASER WHO WILL BE CONSIDERED TO HAVE BROKEN COPYRIGHT LAWS AND WILL BE PROSECUTED.

INTRODUCTION

LEARN TO TUNE and REPAIR PIANOS!

MR.TUNER'S SCHOOL OF PIANO TECHNOLOGY

Welcome to Basic Piano Tuning. Learning to tune a piano can be a difficult task but this course is designed to make it as easy as possible. In this class you will learn two basic skills. One easy; the other will take much more time than we have here to master. The easy skill will be where to put the hammer and what notes to tune and when. The hard part will be hearing and comparing the beats. Without being able to hear the beats produced by un-pure intervals, it is impossible to be a great tuner. (We will discuss what beats and un-pure intervals are soon) This class will give you many tricks that should ease the challenge of hearing these beats.

This is a course in aural piano tuning. There are other ways to tune a piano, but if you can tune a piano aurally, you will be a better tuner than if you went straight to an Electronic Tuning Device (ETD).

The course is organized from the beginning of tuning a piano to the end. We will concern ourselves mostly with upright pianos for two reasons. One, uprights are much more prevalent than grands and two, beginner tuners usually tune only uprights until their skills are better. We will talk about grands and try tuning one if it is available at the school.

You will be asked to hear the beats produced by un-pure intervals right from the beginning and you will spend the rest of the course trying to improve your ability to hear these beats. Relax. You will never hear these beats by trying too hard. Stay relaxed and focused. Do not spend too much time trying to hear any one interval's beat. If you are having difficulty, change it up and listen to something else. The skill will come as long as you keep trying to listen. Try to always listen from a relaxed frame of mind. If you are having difficulty, take a break.

Many students report the sensation of time slowing down when they are tuning; many are surprised when they are told the class has finished. Indeed the instructor often goes overtime without being aware; that is how intoxicating tuning can be.

Good luck with the class and I hope you all find the class interesting, your expectations exceeded, and learning new skills; successful.

Mark Cerisano, RPT

GENERAL OUTLINE of CLASS PROGRESSION

This manual and the class will follow this order of topics.

CHAPTER I - General Concepts	6
1.1 Tuning Tools	6
1.2 Note Nomenclature	7
1.3 Pure, Wide, and Narrow Intervals (introducing the Harmonic Series)	8
1.4 Design of the Piano.	10
1.5 Basic Tuning Procedure	11
CHAPTER II - Muting the Piano	12
2.1 Creating Single Strings (Upright Piano)	12
2.2 Muting the Bichords (Upright Piano)	13
2.2.1 Muting the Bichords When They End at the Tenor Break (Design #1)	14
2.2.2 Muting the Bichords When They End in the Tenor Section (Design #2)	15
2.2.3 Muting the Bichords When They End in the Bass Section (Design #3)	16
2.2.4 The Treble Section	16
2.3 Muting the Grand Piano	17
-	

CHAPTER III - Tuning A4 to the Fork	18
3.1 Sounding the Fork	
3.2 Turning the Tuning Pin	
3.3 Unison Concepts	19
3.3.1 Unison Theory	
3.4 Equal Temperament Brief Introduction	<u>2</u> 0
3.5 Using the A4 Check Note to Improve Your Tuning of A4	
3.6 Techniques for Hearing Beats.	
3.7 Stability	
,	
CHAPTER IV - Tuning the First Octave, A3A4	<u>2</u> 3
4.1 Different Octave Sizes	
4.2 How to Tune a Proper Octave for A3A4 using Check Notes	25
4.3 Stretch and Inharmonicity	
CHAPTER V - Tuning the Temperament, F3F4	27
5.1 Different Temperaments	
5.2 Cycle of Fourths and Fifths Temperament (Basic Temperament)	
5.3 Wide Noisy Fourths and Narrow Rolling Fifths and What They Sound Like	
5.4 Basic Refining Techniques	
5.5 Using Fourths and Fifths to Refine	
5.6 Using Thirds and Sixths to Refine	
5.7 Important and Useful Considerations for Tuning the Temperament	
5.7.1 The White Anchor	
5.7.2 The Skeleton	<u>3</u> 7
5.7.3 Landmarks along the Way	

GENERAL OUTLINE of CLASS PROGRESSION (Continued)

CHAPTER VI - Extreme Octaves	40
6.1 What Octave Sizes and Where	40
6.2 Speed of Thirds, Sixths, Tenths, 12ths, 17ths	40
6.3 Bass Tuning Pin Patterns.	
6.3.1 Patterns for the Four Row Orientation	
6.3.2 Patterns for the Two Row Orientation	
6.4 Tricks for the Bass	
6.4.1 Melodic Tuning	
6.4.2 Tuning Higher Harmonics Melodically	44
CHAPTER VII – Unisons	45
7.1 How to tune the Unisons	
7.1.1 Unisons on the Grand Piano	45
7.1.2 Upright Piano Treble	45
7.1.3 Upright Piano Middle and Bass Sections	48
7.1.3a Pulling Mutes in the Middle Section	
7.1.3b Pulling Mutes in the Bass Section	
7.2 What to Listen For	48
7.2.1 What Does a Clean Unison Sound Like?	48
7.2.2 General Approach to Tuning Unisons	
7.2.3 Comparison Technique for Trichords	
7.3 Extreme Treble Octaves	
7.4 False Beats	
7.5 Phasing	
7.6 Harmonic Technique for Tuning Unisons	55
7.7 Unmatched Strings	
CHAPTER VIII – What Next!?	57
APPENDICES	58
Appendix A - The Harmonic Series and Tone. Worksheet and Answer Sheet	58
Appendix B - Tuning A4 with a Check Note	61
Appendix C - Tips for Hearing the Coincidental Partial Easier	63
Appendix D - Tuning Stability	66
Appendix E - Hammer Technique	68
Appendix F - Equal Temperament	
Appendix G - Cycle of Fifths	73
Appendix H - Check Notes	75
Appendix J - Basic Temperament by Fourths and Fifths (Musical Notation)	
Appendix K - Interval Size Worksheets	79
Appendix L - Basic Tuning Procedure	81
Appendix M - Mock Exam	82
Appendix N – Different Skeleton Procedures	
Appendix O – Tuning Hammer Stability Worksheet	
Appendix P – Mark Cerisano's Temperament Notation	
Appendix Z - Octave Templates	

CHAPTER II - MUTING THE PIANO

2.1 Creating Single Strings (Upright Piano)

The purpose of muting the piano is to have only one string free to vibrate for each note, where possible. (We only tune one string at a time.)

MUTING THE MID-SECTION

Start with a temperament mute strip and screwdriver or other flat thin object like a Papp's mute, and push the folded end of the strip between the last two notes of the middle section. I.e. to the left of the treble break. If your strip is too wide for these high notes, taper about 6 inches narrower on the end or use a thinner strip. Leave the loose end of the strip dangling to the left.

Continue down, inserting the felt strip between each note until you come to the bichords. This way, you will have the center string free to vibrate on all trichords. (except of course the trichords at the ends.)

BE VERY CAREFUL TO LEAVE ENOUGH OF A LOOP BETWEEN EACH NOTE SO THAT THE MIDDLE STRING IS NOT MUTED. When the loops are small and tight, the felt can actually touch the middle string and cause it to have very poor tone.

ALSO, INSERT THE MUTE AS CLOSE AS POSSIBLE TO THE HAMMERS WITHOUT TOUCHING THEM. When the mute strip is close to the V-bar, the dampening effect of the felt mute strip is inefficient and the vibrations of the other strings will interfere with the middle string's tone.

The first note you muted (just to the left of the treble break) will have two strings free – the second and third string. Insert the Papp's mute between the first and second hammer shank in the treble section and stick it between the first and second string segment of the note to the left of the treble break. Now the third string segment of that note is the only one free to vibrate. (See diagram below)



2.2 Muting the Bichords (Upright Piano)

You have some choices on how to mute the strings when you reach the bichords. Your choice depends on how the piano is designed.

There are three ways the bichords of a piano are designed. They always start in the bass section but can end in three different places depending on the design of the piano.

Design #1. The bichords stop at the tenor break. (Most uprights) See below.



Design #2: The bichords go past the tenor break and end in the tenor section. (Most spinets or apartment size pianos.) See diagram below.

Design #3: The bichords start in the bass section but do not go all the way to the tenor break. (The trichords in the bass section are usually wound and are found in larger uprights and grands.) See diagram below.

2.2.1 Muting the Bichords When They End at the Tenor Break (Design #1)

The first note of the tenor section will only have its third string segment muted by the mute strip you inserted previously. So, insert a rubber wedge mute between the second and third string segment. Now, only the first string segment is free to vibrate. See diagram below.



Now, the first tenor note only has one string segment free to vibrate, segment #1

Now, insert the mute strip between every 2nd pair of bichords. This will leave alternating left-right-leftright strings free to vibrate. Hang the loose end, if any, out of the way, or insert it between some already muted bichords pairs.



Note that this unichord is muted. Keep it like this until you need to tune it.

In the example above, the mute strip ends up between a bichord and a unichord. When the strip ends between two bichords, then each note in the bass will have only one string free to vibrate, which is what we want. In the case above, the last unichord is muted by the strip. Leave it like that. As we tune our way down the piano, we will pull the strip out when we get here and deal with it then.

2.2.2 Muting the Bichords When They End in the Tenor Section (Design #2)

Count how many bichords are in the tenor section. If it is an odd number, you can stick the strip between the trichord and bichord and continue down inserting the strip into every 2nd bichord. When you get to the tenor break, each note will have only one string unmated.



Odd number of bichords (5 in this example) results in every note with only one unmated string.

If there is an *even* number of bichords, then do *not* stick the mute strip between the bichord and the trichord. Start with the top two bichords and continue muting every 2nd bichord until you get to the tenor break. Now you will have one unmuted string for each note *except* the first trichord. That will have string segment #1 and #2 unmuted. To get only one unmuted string segment here, stick a wedge mute between strings #2 and #3. Now #1 is the only unmated string segment for that note.



Even number of bichords (4 in this example) results in every note having one unmuted string when the rubber wedge mute is used in the first trichord.

2.2.3 Muting the Bichords When They End in the Bass Section (Design #3)

In this arrangement, you will have trichords on either side of the tenor break. Use the wedge mutes to leave the string segments close to the break free to vibrate. (#3 on trichord to left of break, #1 on trichord to right of break) Then mute the rest of the bichords as usual.



2.2.4 The Treble Section

For the upright piano treble section, all three strings of each note are tuned as you go, using the Papp's mute. (More on exactly how in the unison section)

For grand pianos, you can mute all the strings with the strip and use the rubber wedges at the ends of each section to leave the outside segments free to vibrate.

2.3 Muting the Grand Piano

Since the hammers are under the strings, they do not get in the way of the mute strip, and we can use the mute strip to mute off the entire piano.

Start at the treble and place your mute strip between the top two notes. Continue down, muting between each two notes.

When you get to the end of a section, don't try to put the strip between the note and the frame, you only put the strip between two notes. Leave the end notes with two free strings for now.

Near the middle, you will find that the mute strip is going farther and farther away from you. At this point, find a convenient place to cross over the frame towards you, and continue muting closer to you.

Only mute every second pair of bichords, as with the upright.

When finished, insert rubber wedge mutes in the notes that are at the ends of each section; the notes where you left two strings free. See the diagram to get an idea where to put them. We want only one string free for these notes. There are two ways to think about how to mutes these strings:

- 1. Leave the string on the outside of the section free to vibrate.
- 2. Put the rubber wedge mute between the string muted already by the felt, and the center string.



End of Free Chapter

You can purchase the entire book at https://Store.HowToTunePianos.com/