TECHNICAL BULLETIN #1
PITCH RAISING

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Your piano is designed to sound its best when tuned to A-440 (A above middle C vibrates at 440 cycles per second), the international pitch standard. At this pitch, power and tonal range are optimum and your piano will match the pitch of other instruments. When your piano varies from A-440, pitch adjustments are required to bring it back to standard. By always maintaining your piano at standard pitch, you create long-term tuning stability because the strings and structure stay in equilibrium. You also ensure proper ear training because you always hear your music in the correct key.

Why does a piano's pitch change?

Piano strings change pitch for two primary reasons: the initial stretching and settling of strings when the piano is new, and soundboard movement due to humidity variation. In the case of new pianos, the pitch drops quickly for the first couple of years as the new strings stretch and wood parts settle. It's very important to maintain any new piano at the proper pitch during this period, so the string tension and piano structure can reach a stable equilibrium. (Most piano manufacturers recommend three to four tunings the first year, and at least two per year after that.)

Aside from this initial settling, climate change is the main cause of pitch change. That's because the piano's main acoustical structure -- the soundboard -- is made of wood. While wooden soundboards produce a wonderful sound, they also react constantly to climate changes. As the relative humidity goes up, the soundboard swells, increasing its crowned shape and stretching the piano's strings to a higher pitch. Then during dry times the soundboard flattens out, lowering tension on the strings and causing the pitch to drop. The drop in the dry season tends to exceed the rise during humid times, so the net result is a drop in pitch each year that the piano isn't serviced.

Won't tuning restore my piano's pitch to A- 440?

If a piano has gone without tuning for an extended period, its pitch may have dropped far below A- 440. This means that each of its approximately 220 strings needs to be tightened considerably, adding tremendous additional tension to the piano's structure. The problem is that as each string is tightened, the additional load causes the pitch of previously adjusted strings to change. Thus it is impossible to make a substantial change in pitch and end up with a fine, accurate tuning in one step. Instead, a process called "pitch raising" must first be done, in which all strings are raised to their correct average tension levels. (Likewise, when a piano's pitch is higher than standard, a pitch lowering procedure must be done to reduce string tensions to approximately correct levels.) Only then can the piano be accurately tuned. In other words, accurate tuning is only possible when all strings are so close to their proper tension that only small further changes are needed during tuning. These small changes then do not disturb the tuning of other strings.

How far from standard pitch must a piano be before a pitch raise is necessary?

Just when a pitch raise or lowering is necessary depends upon how accurate the final tuning must be, and the size and quality of the piano. Any net change in a piano's string tension during tuning will distort the final result and reduce stability. Realistically, a pitch difference of a few percent can usually be accommodated successfully during tuning. For average situations, when a piano's pitch is noticeably different from that of other standard pitched instruments, a pitch correction procedure is necessary before tuning. Whenever exact pitch level is critical, such as in concert or recording instruments, any pitch deviation must be corrected before tuning.

How long does a pitch raise take?

A pitch raise is essentially a special tuning procedure designed to leave the piano approximately in tune. For moderate pitch corrections the procedure takes about the same time as a tuning, or less. Extreme pitch changes may require two separate pitch adjustments.

The pitch adjustment and subsequent tuning may be done in one visit, or the tuning may be scheduled for a short time later depending upon how far the pitch had to be changed. In general, the longer a piano has gone without regular service, the more tunings will be required to reestablish tuning stability.

Like your car, your piano is a major investment which deserves regular servicing to keep it working well and preserve its value. Most importantly, the well-maintained piano sounds better, plays better, and gives you and your family a wealth of musical pleasure.