Tuning in the Context of a Full Service Call

Joe Goheen

April 16, 2018

Initial Quote

When people ask, “How much does it cost for a tuning?” give a price range to include other repairs. Allow time for repairs, pitch adjustment, cleaning, etc.: 2 to 2-1/2 hours is typical. Do necessary other work first. How much time is left for tuning?

Factors to consider in tuning:

- Quality and age of piano
- Skill of player
- Pitch raise needed?
- Time available

Keep a service record in the piano. Use the PTG form. Give them a copy, and hide your copy inside by the action.

Pitch Raising

- Big pitch raise: use RCT, 2 strip mutes, tune unisons by whole steps
- For a new piano, maybe raise the pitch to 441 or 442. Explain improvement will be one or 2 letter grades, e.g. D to B. It will drop to a C, come back sooner to get to B+ or A-.
- Risk of breakage? Consult with the customers. Give pros and cons of the options; let them decide.
- Corrosion?
    - Lubricate string friction points
    - Lower tension slightly before raising.
- If more than 5 or 10 cents, use Levitan C lever for grands, Reyburn impact lever for verticals.

Tuning Sequence

- *Float Pitch?*
  If between 439 and 441 and in good tune, usually tune at that pitch – maybe 438-442 – depending on the season, piano use, etc. Keep tuning records in the piano.
- *Tune Twice*
  If within about 5 cents, use RCT smart tune, and center strings accurately. On the second pass, the piano may need very little adjustment.

- *ETD*
  The farther out of tune, the more reliance on ETD. If very close, listen before moving the pin. Check the temperament octave and work out from there. If raising the pitch, go from A0 to C88.
- *Bass*
  Leave bass monochords flat to RCT, and tune later aurally, checking 17ths. More stretch in low bass makes any piano sound bigger. Pick the least offensive overtone to tune to.
- *Time*
  - If there is limited time and a pitch raise is needed, tune the unisons by whole steps, and touch up.
  - If more time is available, tune unisons from C88 down with RCT to check stability and drift. Check aurally using octave, 12th, double octave, 17th, and 19th.

Importance in order:

1. Unisons (especially octaves 4 to 5-1/2 or 6)
2. Unisons C4 down to break
3. Other unisons
4. Octaves
5. Temperament
   (Temper means color. If you have a temperature, your face is flushed and colored. Temperament affects the color of the tone.)

Always allow time at the end to touch up the unisons.

Working Tips

- *If the piano is very close* to being in tune, strip out the tenor and bass, check the temperament and octaves. Use RCT, and check aurally to decide whether to move a note. Use wedge mutes for the treble.
- *Fix notes in between*: octaves up from temperament. Use 3rd , 10th, 17th checks.
- When discussing with the customer, a good rule is to *under-sell* and over-deliver.
- *Graph of diminishing returns*. Where is the piano on the curve in Figure 1? (Piano quality: improvement vs. time & cost)
  - We make the most improvement at the beginning, and as we get better, the improvement increments become increasingly smaller. Most of us would like to be working on the upper right-hand of the curve, whereas a lot of what we do is more toward the lower left. The higher levels take more money and time. Depending on where the piano is on the curve determines how far we can go. The piano's basic quality will also be at a certain point on the curve.

- *Plan your time*. Work backwards from unisons (maybe 45 minutes) at the end, and touch up.
- Use RCT, then check the temperament aurally; fix *the worst intervals*. Check both notes with contiguous intervals. Move to improve the majority of intervals.
- *Steve Brady's Theory of Reactivity*: Figure 2. (Sweet spot: tuning pin friction vs. string friction) Pianos near the line are easiest to tune. Upper left corner -- new pianos with tight pins -- are difficult to tune. Lower right: old pianos with loose pins, lots of string friction: difficult to tune. Guess in equalizing tension to set pin.
    - Steve Brady settled on a name of "reactivity," which is how much the pitch reacts when we move the pin a certain amount. Over time, pins get looser, and friction changes. At any point on the line is where the pitch moves when the pin moves in the pin-block. The sweet spot is a little above the line. The closer to the line, the better. We want the pitch to move slight y before the pin moves in the block.
    - The point of Figure 2 is to establish a visual way to talk about how to deal with pianos that are in different spots on the graph. For instance, if the farther below the line the piano is, the more difficult it becomes. An open-face pin-block means the pins don't flex at all, or extreme friction in the pin makes a difference. Hit it on the flat side, work it up, and stop when you reach the pitch. Don't pound it out; it will stay. Pulling it up increases the tension anyway. Sometimes do the change by feel, then listen; know where it should go.
- To tune a piano above the line, rotate the pin just above the point, lower it a little, then pull it up and nudge it.

Tools

Tuning Levers

- Joe started with an *extension hammer*.
- Then he moved to a handle with a *ball* on the end.
- *Keith Bowman* wrote a series of articles in the journal about a handle with a complete solid shaft in the handle, with a ball on the end.
- *Charles 'Falk* made a solid hammer with a reinforced elbow for the tip.
- If you can spread the pressure out, that's better, Nate *Reyburn makes a carbon fiber* shaft what is molded to fit the hand, with a ball on the end. With a light, rigid hammer is easier to feel the pin move. Reduces stress on arm and wrist, light weight makes feeling the pin easier. Feel the pin turn in the block.
- *Fujan hammers* have a really fat shaft. It's stiff and light weight. This is Jack Lofton's favorite hammer.

- With *Dan Levitan's C Lever* you don't have to move it back and forth, but you do have to move it up and down. It is good for coarse tunings and pitch changes. For closer, more accurate tunings, use a stiff hammer.
- *Reyburn impact hammer* is useful, particularly for tight pins. Keep your hand loose, near the hammer head. Go a little sharp, then rock it back a little. This can be done with either hand. There is no need to flagpole. Steve tried the original M'Haffey, then a John Role, but Nate's takes very little time. It might make sense to use your left hand, since your left hand is not trained in how to tune. Steve quickly transferred to his right hand. Joe tunes the tenor with his left hand and the treble with his right, which gives each hand a rest.
- *T-shaped impact hammers* are good for medium-tight pins.

Joe's Wave Theory

Joe has a theory that a wave travels from the pin up the tuning hammer as the pin is moved. What we feel is being transferred in the tuning lever somehow. A stiff, rigid handle is best. A stiff but light handle can feel the movement more sensitively. The wave travels tangentially rather than transversely. In contrast, a less dense lever medium causes less absorption of the wave. Compare a steel bar vs. light wood.

Tuning Aids

- *Key pounders*
    - Bass hammer glued into a handball or tennis ball.
    - Wooden egg with rubber-tipped dowel glued into the side.
- *Hand protection*
  Wear fingertip *protectors* or bicycle gloves with a key pounder or impact hammer
- *Mutes*
  Strip mutes, strips of action cloth, wedge mutes, felt, and rubber, small black mutes for unison touch-up, split mute.
- *False Beats*
    - Seat strings on bridge with brass tool. Test a couple, maybe do them all if improves. No hard pounding!
    - Try also Roger Gable's false-beat twisting tool.
- *Phasing*
  Hammer-to-string mating. Practice listening for this. Check with finger on jack

Demonstration

Joe demonstrated hammer technique and tuning styles with various hammers.

Doctors practice medicine.
We practice piano technology. Enjoy the satisfaction of a job well done.