

Piano Stringing Made Easy

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A. Focus & Goals

1. Get basics down first, then proceed to faster, more advanced techniques
2. Neatness & uniformity
3. Establish an efficient, fool-proof routine.
4. Make speed & quality go hand-in-hand while still being careful.
5. Learn & understand variables associated with different piano designs & scales.
6. Proper & creative tool usage.

B. Tear-Down: Review

1. Piano stringing can be made fun & easy, but the most important foundation is in proper tear-down, understanding what makes each piano tick. I have strung many pianos that other tuner/technicians and rebuilders have torn down while neglecting to note very important items which can cause mistakes and be very time-consuming to rectify. Seek help from someone if you are in doubt about anything before tearing a piano down.
2. Caster blocks
 - i. Set the piano casters on blocks

C. Tools:

1. Suggested Tool List
 - i. Tuning hammers with long & extra-long tips or extensions
 - ii. Coil lifter/spacer – deep coil lifter
 - iii. Approximately 2.5 lb. sledge hammer
 - iv. 2 or 3 string hooks
 - v. Slide hammer coil setter/tightener
 - vi. Long & small regular blade screwdrivers
 - vii. Wire cutters/dikes
 - viii. Needle-nose pliers & needle-nose vise grips
 - ix. Small hammer
 - x. Tuning pin & plate bushing punches
 - xi. Bass drift for seating strings
 - xii. Machinist screw jacks & pin block supports
 - xiii. Good scissors, razor blade & felt knife
 - xiv. Agraffe wrench
2. Tool Tips
 - i. Lay out all your tools in order.

D. Preparation for Stringing Checklist

1. Proper plate position
2. Plate bolts & screws seated & tight
3. Nose bolts properly adjusted & tight
4. Piano belly & bridge assemblies integrity
5. Duplex bars, roller bars polished & located
6. Scale marked, ties & unusual hitch pins tagged, or anything else unusual

7. Proper under-string rests, felt & cloth (don't forget necessary shims under felts)
8. Plate bushings (reaming optional)
9. If using old block: clean or ream
10. Plate wedge(s) marked, installed & taped in place
11. Establish tuning pin length & diameter
12. Protect case & plate
13. Support pinblock on grands & yes, even on some uprights
14. Capo bars cleaned, shaped & polished
15. Proper tool lay-out
16. Taping your thumb & finger
17. Calculate proper tuning pin to hitch pin ratio

E. Stringing Procedure

1. Lace wire through capo bar or a-graffe, wind 2.5 coils on tuning pin & drive in pinblock slightly higher than a level string plane height with beckett positioned at exactly 3:00. Thread string through proper bridge pins and bring string to left-hand side of hitch pin, pulling tightly, removing as much slack as possible. Quickly whip around hitch pin, slightly more than 180 degrees. Continue to pull tight and thread through bridge by making a loop. Cut the extra wire approximately one hole and four fingers behind the selected tuning pin hole, and make your preliminary cut. Lace through cap or agraffe and cut four fingers from front to rear of hole by placing the forefinger on the hole. While stringing pianos with pressure bars removed, or bass section with no agraffes or capo bars, preliminary cuts are not necessary.
2. You may need to slightly adjust amount of wire you cut governed by the following variables: hand size, tuning pin size, amount of tension that string scale requires, and the amount of slack that your wire has. Get a good feel for these changes before you pick up too much speed.
3. After wire is cut, wind another 2-1/2 coils on your number 2 tuning pin and position becket at 3:00 to 6:00. Tighten #1 tuning pin to approximately 11:00 using firm pressure, holding up string with lifter, string hook, or, yes, even a screwdriver. Now pull #2 tuning pin to approximately 1:00 or 12:00, or just until tight enough for coil to stay up. Tighten becketts, set coils and space strings. Adjust tuning pin level to allow for level string plane or up to 5 degrees deflecting downward. Bring #1 tuning pin level to allow for level string plane or up to 5 degrees deflecting downward. Bring #1 tuning pin to pitch and then #2. Sometimes you need to juggle tuning pins slightly to get your becketts even at approximately 12:00. Do final string leveling after completing each section. Don't forget to space "dead side" of strings. Chip to pitch as you go.
4. With tied and wound strings you need to cut a little more wire to take up slack in tied strings. Wound strings usually need more tension to bring to pitch. Turn or "twist" the tuning pin one to two turns counter-clockwise, before driving in the tuning pin in order to tighten the windings on the wire. This will insure that windings will be tight and produce a good tone. If you turn the wrong way, the strings will sound flat and dead. Use a brass drift and seat all strings at the hitch pins, and very gently on the bridges at the front and rear bridge pins.
5. When tying string loops for tied strings, use 4 or 5 windings. Some situations require more or less, although 4 windings is about the fewest that would be safe to use. Fewer than four might unwind.

Agraffes

- Whenever possible, replace agraffes. If the old agraffe is retained, clean them
 - Brass is soft, and the piano string over time is like a saw.
 - Re-establish the bevel by hand with an agraffe reamer (like a drill bit).
 - Clean out the hole with a pipe cleaner.
 - Agraffe shoulder shaver instead of washer spacers.
- Removing Broken Agraffes
 - Make a centering dimple. Drill with 7/16". Graduate from a small to larger bits. It will get so thin that it will collapse. Remove, then take a tap and clean the threads.
 - Make a dimple, drill, then use a reverse bit and unscrew the agraffe.
 - Ed McMorrow uses a propane torch.
 - Drill up through the bottom with a sheetrock screw
- Setting agraffes
 - Take a piece of string, hook it on a hitch pin, and pull it down to the agraffe. With an agraffe tool, turn the agraffe to be at 90 degrees to the string.
 - The goal is to make all the agraffes at the same height so the strings are all level
 - Brass washers are made to crush if the agraffes need to be turned more to line up. The only problem with these shims is that they can raise the height of the agraffe.

Hitch Pins

- Go to a hobby store and get shrink-wrap tubing to cover the hitch pins before painting the plate.

Pinblock

- Problems with putting larger pins in an old block
 - In the upper treble, the bigger pin the more difficult it is to tune.
 - Larger pins can cause crowding.
- Always replace a pin-block if possible. If the old block must be retained, here are some options:
 - Clean the hole with a gun brush.
 - Swab a large hole with epoxy several times to shrink large holes.

Tuning Pins

- **Companies**
 - New Octave
 - Denrose
 - International Piano Supply
 - Fly
- **Size selection**
 - Generally go up one or two sizes, depending on the condition of the holes
 - Avoid going up as large as 5/0 pins
- **Coils**
 - The goal is three coils around each pin
 - Tape your thumb and finger
 - Hold the pin in the left hand with the coil tip in the crotch of the fore and middle finger and the thumb just before the becket hole.
 - Insert the wire into the hole and feel that the end of the wire is flush with the pin using the right forefinger.

- Press the left thumb against the wire and turn the crank two and a quarter turns. When done, the wire should tangent off the pin at the becket insert.
- **Leveling tuning pins**
 - There should be a little down-ward pull from the agraffe.
 - The back tuning pins should be even and level. They establish the height of all the other pins. They are slightly lower than the other pins. The front pins are highest.
 - If the coils aren't tight the string plane will not be right
 - There should be no gap between the coils and the becket hole
 - There should be a slight deflection down to the tuning pin
 - The back tuning pins (closest to the player) are always lowest.
 - Find an ideal pin, then eye-ball and adjust the back row of pins to the sample.
 - With a finger, feel the three strings at the bar and tap the rest until all three are level.
 - Technically there are six levels of pins.
 - Steinways are very fussy about the level, and sometimes the under-string felt must even be shaved.
 - Even up the string sections between the bar and the pins, using a screwdriver, string hook or spacer.
 - Chip to pitch

Bass Strings

- Make sure your hands are clean. Some people put talc on their hands.
- Protect the piano and lay out all tools in order
- Finer-wound strings have a tendency to loosen.
- Mask off the back of the piano.
- Mapes strings wind their strings counter-clockwise, which helps them go on the coil better.
- After making the coil, twist the pin one turn before pounding it in.

Tips

- Use a tiny short-handle tuning hammer when stringing the treble
- Be careful, don't go to sleep, look back often to make sure you haven't missed hitch or bridge pins, and pay attention to your side bearing at the bridges.
- Have fun and do a factory-quality job.