Concert Preparation

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Suggested Tool List

Basic Tools

- 2 Tuning Levers (Normal & pocket size)
- Regulating tools
- Stringing tools
- LED light
- Action support
- Phillips screwdrivers
- Wrenches
    - 11mm – plate
    - 14 mm – EX pedal rods
    - 10 mm – other pedal rods
- String seating tools
    - Use a plastic upright jack and a light hammer as tapping tools.
    - For new wires, tap with an angle at the front and back of the bridge pins
    - On heavily played pianos, tap on the top of the bridge.
- Felt mutes
- Duplex mutes
    - Bean bags with silica gel beads
    - The Kawai duplex is very active
    - These bean bags are also good to rest on the dampers when adjusting
- Teflon powder
    - Used on knuckles
    - Bill Spurlock's powder is very fine and consistent
- Music wire
    - Container with every size
- Paper punchings
    - Mini-case
    - Small scissors for cutting slits in punchings
- Ear plugs
    - Concert grand pianos are very loud and can cause ear damage
- Key pounding aid
    - Weighted tool with comfortable soft handle
- Coil winder and spare tuning pin

Voicing Tools

- Sanding paddle – 1,000 grit
- Sanding strips – multiple grits
- 3-needle voicing tool
- Single long needle voicing tool
- Single short needle voicing tool
- Hammer tail support
- String hook
    - Used for leveling strings
    - Never pull free-hand. Always brace yourself, and leverage against something.
    - Pull on the hook side. This jams it against the wire.
- String pick
- String seating tool

Pre-Concert Service Checklist

Piano Location

- Position on stage determines the sound for both the player and the listener
    - A poor position makes the audience feel distanced and far away
    - A poor position makes the pianist disconnected from the audience.
    - Generally the best position is close to the front of the stage.
- Clap and stomp
    - Starting from the front of the stage, walk towards the back while clapping hands and stomping feet.
    - Listen for the sound changes when hand-clapping, and listen for the point where you feel detached from the auditorium.
    - Stomping feet finds the soft spots in the floor. If the piano casters are on a soft spot, the piano sounds weak. The best spots are over a beam.

Casters

- If the casters are both out, the key bed will bow down and the key-frame will knock in the middle.
- Make sure all the casters are in the same direction.
- Lock the wheels. Just unlock it a little and it will spin. Lock both casters. If the casters get noisy and have a little play in them, skew them out.
- Tell the stage hands to put some tape down on the floor and to push the piano in place in this direction.

Screws

- Every tuning, check screws. Every piano will have certain screws that work loose.
- Lid latch, structural screws

- Get a bamboo skewer, dip it in the glue, stick it in the screw hole, and it will quickly shim a loose screw.
- The most common cause of the buzz is the little metal plate on the bottom of the fallboard. This little screw comes loose in the plate.
- There is a felt-wrapped spring inside, but this usually is quite. If the spring is bad, work a cotton ball up in there.

Time

- The key is to find the balance between the work needed and the amount they are paying.
- Establish a relationship with the people at the hall. Do more than you are paid for at the start, because what you are doing is establishing that you care about their piano. Don't be stingy, especially when getting to know the hall. When they know you are doing extra work, eventually you will be able to charge them for the extra work.
- The stage hands get to know you and how you relate to the stage manager.
- Schedule 2-3 hours before, and then an hour to 1.5 hrs. just before the concert.
- Do the things you have time for, and then prioritize.

Key frame

- Norm Neblitz would come in and bang the keys and watch if the other hammers were bouncing.
- After a piano is moved, it is very common to have a knock.
- First, check the after-touch. Very often the tight parts will have more after-touch.
- If rushed, at least check if there are no knocks.
- Power is lost if there is knocking.
- The "TR" screw ("Touch Regulating Screw") is the main adjustment. Loosen up the center glides, and then tighten them to no knock.
- To test the back rail, tap a short screw driver with the palm in back to listen for knocking. Usually this is OK.
- While the balance rail is knocking is a good time to check the front rail.
- In dry places, the front rail will come up on the ends.
- Over the years, the bedding will settle down in a customer's house. If a piano is being moved a lot, it will keep changing.
- There is no trick. You just have to keep going in and out. Turn it up, and then start turning it down in little increments until the knock disappears.
- If you work for colleges and serious music places where they keep breaking treble wire, look at their wrists. They usually have really ridged wrists. File the hammers. Hammer shape will stop it for a while. Spin the treble key frame guide and the power and energy will be absorbed. This produces a little more give in the treble for these hard players.
- Use McLube.
    - Schaff now sells a little McLube with a dauber.

- Lube the spring, the front, the glides, the unicorda lever, back rail & front rail.

Regulation Check

The best pianos are wonderful when they are new, but after ten years or so they become averages pianos. Our goal is to bring the condition back as close as possible to the original. Examine the basic condition and focus on the most obvious and work to the finest details. Time determines the amount of work that can be done. Concert pianos that are played on frequently like practice pianos will wear out quickly, and they will need to be service more frequently. Eventually they will need to buy another piano.

- **Knuckles**
  - A bristle brush shines up the knuckle material and doesn't play as well.
  - Brush with a soft brass brush to get rid of wear and grooves.
  - Use a shank with a piece of bushing cloth wrapped around it for applying Teflon powder. Spurlock's Teflon powder lasts longer than others
- **Jack regulation to the knuckle**
  - Do five or so at a time.
  - This regulation adjusts what arc the jack will contact the knuckle.
  - Consistency is the ultimate goal. Make sure they are perfectly aligned.
- **Key Height/level**
  - Eyeball down the back of the keys to see if dirt has gotten in there.
  - Use split punchings. These make it look pretty, and take only a few minutes. Leveling the keys makes it easier later for doing dip.
- **Repetition Lever**
  - Feel the jack rub against the knuckle.
  - It has to be able to return completely by itself.
  - Do a sample in a section, then feel the whole section the same.
- **Hammer position/capstan**
  - This changes with seasons and with moves.
  - Use a gauge through the strings.
  - Let the hammer itself be the gauge. Put the gauge in place, press the key down so that the hammer itself holds it in place. Now regulate the next hammer to the one at the proper height.
  - Once these samples are set, slide the action out slightly and set all the others between the samples.
- **Let-off**
  - Take glasses off, put headlight on, lean on the piano, and eyeball it.
  - The measurement is 1.5mm.
    - For concert grands, set as close as possible.
      - 1 mm to 2-2.5mm in the bass
    - The thickness of the wire is the rule.

    - Start with one using the gauge, then eyeball the rest.
    - The trick is to practice.
        - Get a short tool.
        - Feel the jack with the finger and get used to how high they are.
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        - Put the jack on the button and adjust.
        - Gauge has blow, damper lift, back-check distance, & let-off
- **Drop & After-Touch**
    - The action responds well with a small after-touch.
        - There is not much room for the jack to move after the note is played.
    - We want only 1 mm for the initial fall.
    - The nicest feeling pianos, the drop screw and the after-touch happen at the same time.
    - Lower it, then go up and the sense of touch gets nice.
        - Come in contact with the two buttons, then see that the amount of rise of the hammer slightly goes up and back.
        - This adjustment is very sensitive and controllable in Kawai's.
        - Too much after touch will block.
    - If the jack is too far under the knuckle, you need more drop.
    - If there is no contact, then the jack is probably back too far.
    - There needs to be a slight rise after the initial fall, meaning that the jack is slightly out from the knuckle.
- **Back-checks**
    - Goal: firmness, angle and checking height
    - Quick check: put it in check and tap the hammer down
        - It should not drift on through with a tap
        - If it stops instantly
        - If it moves through, it will be inconsistent with playing
    - Etched lines provide a positive back-check
    - Adjustment
        - Use flat pliers.
        - Set samples. Tap down the first and last of each section by feeling.
        - Grab the back-check, grab the bottom of the wire with the tool, and bend the back-check.
    - Check the tail length and etching.
- **Repetition Springs**
    - There should be just a slight rise.
    - The springs should rise faster on a dry day, and slower on a humid day.
    - After doing the springs, re-check the repetition levers.
- **Dampers**
    - First check function.

    - Bass dampers leak on a concert grand. Weighting the levers would make the touch too heavy. We don't want them leaking long. Go for evenness. Don't think that they should shut off immediately in the bass.
- **Pedals**
    - Specs
        - The damper tray is 2mm under the levers in Kawai.
        - Some pianists like more or less than this.
        - Start with the generic point, and most pianists will say it's fine.
    - Soft pedal
        - Russian school teacher to play where the unicorda sounds the best.
        - Most of the time it will clear the left string.
        - Adjust the pedal and pre-load the system. You don't need pre-play. The pedal should shift instantly, without squeeze distance.
        - Turn the screw up to the point where you just play the pedal there will be no give. Loosen the lock nut to adjust.
- **Damper up-stop**
    - Adjust it first so it lifts the same as the key.
    - If you hold the key down and move the pedal, the damper head moves a little. The leader center-pin swings a little up and back. What this does is cause the dampers to lift at a little angle. This makes a softer pedal and allows more control.
    - This means that the stop rail has to have some play with a little free motion on the black keys.
    - Allow a little more than a mm of free play. It depends on the damper lift.
- **String Seating**
    - New pianos need a lot of seating. Tap both sides of the duplex, on the bridge, at the capo, and set all the wire bearing.
    - Used pianos need nothing more than light tapping on the top of the bridge because they are already fairly well seated.
    - If you don't see any movement or change, stop. They are fine.
    - Seat concert grand pianos once or twice a year.
- **Voicing**
    - Every time a piano is tuned, touch up the voicing on a few hammers.
    - Avoid changing the tone. Changing the voicing can take an entire day.
    - Kawai hammers do not like needling on the top.
    - If a pianist needs a little bit of a change, there are a number of psycho-acoustics.
        - *If you lower friction, you brighten the tone.*
        - Take a wood wedge with a little Teflon powder on it. Take off the up-stop rail and polish the pins and capstans.

Tuning

Lights on or off?

- Sequence:
  - Tune
  - Prep
  - Touch-up fine tuning with lights on
  - If the piano is cold, do not heat it up while you're working on it.
- Don't use electronic tuning devices while the temperatures are changing. The piano will move. To prove this, rub one of the strings and listen to the unison change. Fan the string and listen to it change back.
- If the lights come on, it will take about an hour to come down
- Give it about 1 hZ sharp when it's cold. If they want 440, tune to 441.
- Do not do the final tuning when it's cool. The lights must be on for the final tuning.

Rehearsal concert tuning

- Your fee should cover a second tuning during intermission.
- Whether or not it needs it, go check it.
- Some pianists demand an intermission touch-up.
- It is also enjoyable to attend the concert.

Four Dimensions of Tuning

- **Temperament**
  - Most pianists do not even notice the temperament.
  - What the pianist and the audience hears is multiple beats in big complicated chords. When playing fast there is a lot of tension, particularly from the thirds. The smoothness of thirds is noticeable.
- **Octaves**
  - For concert tunings & big venues, stretch the octaves more. In smaller venues, stretch the octaves less.
  - Fairly low-inharmonicity piano tunes well with minimal octave stretching.
  - Use a narrow stretch on the Cybertuner. The 3-7 setting is normal.
  - The color of the thirds can be veried from sweet to aggressive.
  - A "New York" stretch can make the fifths nearly pure and the fourths are faster. The thirds become faster. Instead of 7 beats from F to A, it would be more like 9 beats.
- **Unisons**
- **Stability**
  - Approaches
    - Some don't understand stability and are still learning
    - Some think all pianos should be easy to tune. Sometimes the best pianos need to be fought with.
    - Others have learned to adjust their technique for each piano to achieve stability.
  - Hard playing

        - All good tuners use at least one hard blow
    - Lever Positions
        - Be aware of pin vs. string motion.
        - Flex it up, tug the wire, and it comes down.
        - If it's a loud piano, lean back because it's loud.
        - Put the lever out a bit and bump it down.
        - If it goes past, spring it up and bump it up.
        - The mid-section has a lot of friction and goes out the most.
    - Pin/String Movements

Working with the Pianist

How's the Piano?

- Answers
    - Never answer. Don't
    - ""It's over there."
    - Wait for their opinion.
    - "Well, I'd like to hear your opinion about it. What really matters is what you think."
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    - When the pianist is nervous, it's always their fault.

Keys

- If they rehearsed on dirty keys, ask if they want the keys cleaned.
- It's not the time to clean them just before the concert.

Confidence of Pianist and Technician

- Give them the confidence that you are their advocate.
- Be confident yourself.

Repetition

- Friction
    - Sometimes repetition is not super-fast. It is with fast trills when the keys are not returning back. Check the key balance holes.
        - To quickly tighten key balance holes, swab the holes with boiling water and let them dry. Then go through with the easer.
        - Snugging up the balance hole so the key doesn't just fall down, but glides down, is ideal. This should be done the day before, not the day of the concert.
- Back-checks and hammer rails
    - Rough the tails a couple swipes with dragon skin
- Drop screws
- Repetition Springs (not often): look for evenness

Control in soft playing

- Knuckles: teflon
- Drop screws: slight
- Let-off: close
- After-touch

Damper Timing

- Spend maybe 20 minutes
- With ABS system the adjustments are fairly easy.
- A clean legato, how fast their fingers come up is a decision.
- If the damper lift is consistent and even, the pianist won't have to adjust.

Broken Strings

- Bass
    - Carry spare wire for tying knots
    - Bass strings rarely break
- Treble
    - Treble strings break frequently
    - Put a string in as fast as possible
    - Pull it ½ step sharp right away
    - Tap all the wire bends.
        - Squeeze around the hitch pin
        - Aloquat
        - bridge pins
        - either side of the capo
        - tap the counterbearing
        - tighten the becket.
    - The string will have dropped
    - Check adjacent strings and re-tune
- Wire bends and elongates
    - Massage it with wood to get the string hotter
    - Rollers don't heat it

Voicing

- Goals
    - Even progression of tone across keyboard
    - Fullness of tone
        - Think in terms of human voice
- Range of tone within each note
    - Softer playing produces warmer, mellow tone
    - Tone becomes brighter and more powerful as you play louder
    - Should be easy to hear a change within each note, especially in the tenor and low treble
    - Close let-off give both a close, sweet soft sound as well a more zing.
- Fitting to strings
    - Check visually that the hammers line up with the strings
    - Check visually & with feel that the strings are level
- Needling
    - Top effects pianissimo
    - Lower down effects forte.
    - To make soft playing more even, needle near the strike point. Do the whole width of the hammer to avoid unicorda issues.
    - Restore the shape with a fine grit paddle.
    - To soften the forte, do the front side deeper. Don't go under the strike point. Do five to seven pokes along the whole width. This

creates a ridge that needs to be filed with a quick up and over. Make these pokes more vertical. You can feel the density.
    - On concert pianos you will feel soft spots that have already been needled a lot. Leave these spots alone, because more won't help.
- Filing
    - Block or brace the hammer
    - Hammers like to be filed up and over and down the back.
    - With a flat paddle you can visually level the paddle over the stretcher to make sure that you are filing level.
    - Good paper does not need to be changed much
    - Imperial letter drive silicone carbide for automotive work.
    - Buy a clip board, cut it to size, spray glue and trim the paper.
- Sustain
    - Bloom
        - Less attach, but a swell to the tone: sings well
        - A little wave in each string give a voice to the piano
        - The needling point for tone bloom and dwell is around 10:00-11:00 – below the upper section for brightness, tone range and detail, and above the sides of the hammer which is more for sustain, fullness, and power.
    - To needle for sustain, needle lower on the front and back of the hammer.
    - For a little glow, the unisons can be very slightly out. Select the notes that sound flat and don't do much. Pick one string, with no mutes on the unisons, and set one string with a slight waver by ear.
    - On one string only, needle out at the end of the string notch with about five or six pokes.
        - If the drop screw is too low, this won't work.
        - Listen. If it needs more, needle the back side as well.
        - Clean up the strike point with a fine sandpaper paddle.

Respect the instrument
Be conservative with any changes you make
Enjoy servicing these rare pianos!