



Rebuilding Pianos

by Rob Mitchell, RPT

It's a common myth that pianos improve with age. Like most mechanical devices, pianos need more attention as they get older. Depending on the brand and quality of the instrument, there may reach a point where rebuilding some or all of the piano is warranted.

How to Tell?

For owners of new pianos, this is not something you should need to worry about for many, many years if your usage is typical for a home environment. The "big name" piano manufacturers are turning out high quality products these days that will easily last for many decades before needing major work.

But for a more "mature" piano, how would a piano owner know when it's time to think about a rebuild? Your best source of information should be your piano technician. Anyone servicing your piano on a regular basis should identify problems needing attention -- be they minor repairs to major issues. Barring inputs from your technician, indicators would be: unusually frequent repairs, sluggish or heavy play, loss of sustain in the mid- to upper-treble, or a "tubby" sound in the bass strings (just to name a few).

Evaluation

The first step in any rebuild is complete evaluation of the piano. Just about anything in a piano "can" be fixed, but it's an entirely different matter to determine if it is "worth" fixing. Some of the top rebuilders in the country go to amazing lengths to completely rebuild and restore high quality concert grands. It's not uncommon for them to replace the pinblock or put in a new soundboard (either would be considered fairly major surgery). But these repairs would usually only be justified for the best instruments. For the more typical in-home piano, the evaluation will determine if a rebuild is worth the effort and cost.

The first step of the evaluation is to determine if any of these more serious problems are present:

- Is the cast-iron plate cracked or otherwise damaged? Do the wooden structural beams and rim show any signs of rot or serious infestation? Either of these would generally be considered a deal breaker and would spell the end of the instrument's life.
- Does the soundboard have any "crown" left? To work effectively, soundboards are under

compression and have a slight upward peak or "crown" in a piano. (On the other hand, loose planks, cracks or gaps in a soundboard are quite repairable).

- Are the bridges (on top of the soundboard) and ribs (under the soundboard) in good condition?
- Is there enough integrity in the pinblock to firmly hold the tuning pins (even if larger pins are used)?

To varying degrees, the presence of any of these problems would push a rebuild into the "major" category.

Past these serious problems, a more typical rebuild would involve replacing or repairing: the strings, action components, keytops and key bushings, and pedal trapworks.

Keys

Two areas of the keys are usually addressed in a rebuild. The most visible is the condition of the keytops. For many years, keytops on the best pianos were made of ivory. Since new ivory is not available, considerable effort may be put into preserving existing ivories if they are in decent shape. This can include repairing minor chips and polishing the surface. The other option is to replace the ivories with new plastic keytops, which can go a long way to restoring the visual appearance of the piano. (It is possible to buy ivory in good condition that has been recovered from old pianos or was acquired pre-ban. However, be forewarned that this is very expensive option).

Each key is held in place by two pins mounted in the keyframe. The pins pass through channels in the keys that have small pieces of felt on each side called the key bushings. These wear over time and are almost always replaced as part of a rebuild. Usually the felt punchings under the keys would be replaced at the same time.

Hammers and Action Components

As I've discussed in other articles, the piano action is the mechanical assembly inside the instrument that translates the downward press of a key into the hammer striking a string. Composed mostly of wood, felt, metal springs, bushings and leather, these

parts either wear out or can get consumed (moths or rodents) over time.

In the piano action, hammers probably show the most visible signs of wear -- either being deeply grooved or having been filed down to the wooden molding. But even without visible signs of wear, hammers don't last forever and eventually lose the resiliency needed for good tone. (It is common in performance halls to replace the hammers every three to four years). Action rebuilds will almost always include replacing the hammers along with the shanks and flanges they are mounted on.

Past the hammers, the evaluation would determine other areas in the action needing attention. Possible repairs would include repining flanges or replacing backchecks (leather), leather or felt stops, jack or hammer springs, etc.

Special note regarding Steinway pianos. For several decades in the early 20th century, Steinway produced pianos that would later develop a problem called "verdigris". This is due to a chemical interaction between the plating on center pins and tannins in the bushing felt that caused a greenish contamination on the flanges. Verdigris causes unacceptable friction to develop in the flanges, leaving the piano nearly impossible to play. Correction requires either wholesale rebushing of all the flanges or replacement of the affected action parts.

Strings

Pianos generally have two types of strings: the plain-wire treble strings and the copper-wound bass strings. Over time, dirt and corrosion can build up in the windings of the bass strings giving them a "tubby" or dead sound. The windings can also come loose to produce a rattle or a buzz on particular notes. Any of these would indicate the need to replace the bass strings.

Although they don't deteriorate as dramatically as the bass strings, the plain-wire treble strings will also degrade over time. If the bass strings are being replaced, it's common to do the treble strings at the same time, along with a new set of (larger) tuning pins.

Dampers and Backaction

Damper felts need to be replaced when they become hard and do a poor job of damping the string vibrations. Just as with the main piano action, parts and flanges in the backaction need to move freely without resistance. Parts here would be either reworked or replaced depending on their condition.

Pedal Trapworks

The pedals, pedal box and lyre can take a lot of abuse over many years of play. Depending on their condition, some level of rebuild may be necessary for these components. In addition, the trapwork mechanism that connects the pedals into the piano action should move freely without any clicks or noises.

Tuning, Regulation & Voicing

In some sense, rebuilding or replacing piano components is the "easy" part. The real work starts after all the rebuilding is complete.

If strings have been replaced, it will take three to four tunings to get the piano up to pitch and stable. Depending on how much action work was done, the piano will need many hours of adjustment (regulation) to bring it back to a point of fine operation. New hammers will always require voicing to bring them into playable condition suitable for the instrument and surroundings.

Beyond the Basics

The rebuild process gives the piano owner the choice to make some changes in the instrument's operation, if desired. Most notably, different hammers can be selected to produce different types of sounds, varying over a range of bright to mellow sounds. Also, many pianists would prefer a lighter touch to their instrument and now is the time to address this. Modifying the touchweight of a piano is a complicated process involving the weight of hammers, weights in the keys and geometric ratios in the action. But the results can be an exceptionally even touch across the entire keyboard that is a true pleasure to play.

Summary

Depending on the extent of the rebuild and the capabilities of the technician or rebuilding shop, it would not be unusual for the entire process to take up to several months. Major rebuilds would involve moving the instrument to a shop for most all the work. On smaller scale projects, some work would be done on just the piano action out of the customer's home followed by considerable in-home time.

For more information or to request an appointment, visit www.mitchellpianoservice.com.