Upright Dampers

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9/15/2014

Upright dampers are sometimes very difficult to adjust. While often they work really well, there are times when they don't. Often the bass dampers are short and don't have enough oomph to shut off the sound.

We'll talk about two parts: rebuilding and reconditioning older dampers rather than tweeking new dampers. A damper works by pushing the felt against the string to keep it vibrating. The damper lift rod pulls all the dampers out of the way and lifts them all, or the spoon on the whippen lifts a single damper.

Damper Replacement

The number of pianos in good shape is getting increasingly smaller. Today bridges and other wood parts are starting to weaken, loosen and fall apart. Before taking on a job, inspect the rest of the piano to determine if the job is worth the time.

There are a lot of parts that go into a damper mechanism. Begin by investigating the pedal, trap work, the integrity of the bottom board, the screws, etc. Shimming or wedging the bottom board is a quick temporary solution, but probably if the bottom is falling off it might be time to rebuild the bottom or to get another piano. Check out the damper lever, flange, spring, felts, spoons and wires. The idea is to look at everything.

Be particularly suspicious of the damper flanges. Sometimes the wood is punky and old. If you can easily stick your fingernail into the wood, throw it away. When the springs get weak it is time to replace the set. The brass=colored springs go in the bass because they are stronger. Replacing the springs is often as important as replacing the felts.

Another part that frequently wears out is the damper lever felt. Sometimes this felt gets really noisy. The spoon can dig in and wear it sometimes down to the wood. Some are woven and some are pressed. The pressed don't seem to work as well. Pratt Winn had trouble because they didn't neutralize the pH when they died it, so the springs and spoons would corrode.

Carry a selection of felts so you can match up what you are really going to need. The thickness is very important because it effects the distance of the damper felt from the string. If you can't tell about the thickness, there are a couple parameters to examine. The damper lift rod is a small distance of travel. Describing an arc, there is less sliding friction when the starts with the angle at an angle rather than at vertical. The felt will wear out faster and there will be more noise.

The question is where to locate the damper lift lever so that there is a little bit of lost motion between the rod and the lever. Especially in the bass, you should be able to push the string and the damper should follow the string. Bass strings oscillate so far that without that contact there will be more noise. If the damper felt is too thick, there would be too much lost motion. If the damper felt is too thin, the damper lever will be touching the lift rod which will prevent the damper from following the string. Using samples with flat dampers and bass dampers, determine which thickness works best for the damper levers. The stops for the lift bar should be as thin as possible. The line you're looking at is a straight line behind the hanger of the damper lift rod. Often there is a dummy damper with a spring that holds the rod back.

Bill Spurlock in June and July, 1990, describes step-by-step how to pre-regulate dampers. The hard part of gluing it in first and regulating later is that it is squishy and hard to tell. Bill describes how to hear and feel the differences.

Take the very top damper out, install the new damper, and adjust the wire. Then switch the next and so on. It is often way easier to do damper work if you remove the hammer spring rail; by removing these four screws will save a lot of time and frustration. Replacing the spring rail takes a while to fit, screw and re-seat the springs, but the time saved with the dampers is worth it.

A good part of damper work is done out of the piano. Set damper samples at the end of each section while in the piano. Take the time – 1.5 hours or whatever – in the piano before removing the action and taking it to the shop. Also make a scale stick, which is a piece of wood with blue tape along it, and take it to the ends of the samples. On this line of blue tape, mark where all three string grooves are from the hammers; this is then your sample for aligning the damper heads. Align the blocks before the felts are glued on. Run a string across to do the damper timing; this saves time before putting it all back.

Practice on an old action. Do a set of dampers three or four times over to develop a system and to increase agility and speed. This month and last month has an amazingly detailed description of doing grand dampers. David discussed rebuilding old systems.

Assuming that now the damper system works, it is now time to regulate the dampers. Curtis likes to use the damper spring to glue the damper felts in place in the piano. Curtis uses carpenter's glue because it is quick and easy, although ideally hot hide glue is the best. Pre-regulate before the damper is glued on, so that the damper block is exactly in the center. Bill uses block of wood that hand between the damper head and the string so you can see where it's parallel and how it fits side-to-side. If it is crooked you an hear the rattle.

Damper timing is a four and a half bend. Every time you make a distance bend you must make a second bend to re-align the damper to the string. Take the damper felts out of the box in order and keep the trapezoids all facing the same way. Pre-think which way they should all go. Sometimes it is a good idea to take a pencil and mark the order of the felts before removing them.

When you step on the damper pedal, assuming that side-to-side all the alignments are correct, all the dampers should move forward and backward simultaneously. This is an incrementally more detailed procedure to refine the damper lift. *Get the damper lift rod timing correct first before adjusting damper spoons.*

Tools

Curtis uses some basic wire-bending tools with combination handles. The two primary tools are the straight and the 45 degree angle, each on its own handle. The factories install dampers in the action before installing hammers. During the exam, remove the hammers, adjust the dampers, then replace the hammers. Also, on the models it is easy to adjust the dampers from the side.

A very useful tool is to use a turn-buckle to hold the lift rod. Hook the turn-buckle to the action bracket and the damper lever lift rod lever. Set it to the point where the dampers should be resting against the strings and you see some are not, there is your reference point and you can make them equal. Use the lift rod to simulate the rest position of the dampers on the strings.

Now that the damper lift rod is adjusted, it's time to adjust the spoons. When the capstans are adjusted, the lost-motion of the spoons is altered. If the spoons are now lifting the dampers too early, the spoons need to be bent back. Do the best adjustment possible out of the piano, but ultimately the fine adjustments have to be done in the piano. Place a thin spoon bender in a vice and bend it 45 degrees so that it will reach up around the wooden wippen rail.

People won't buy an expensive damper re-build, but they will go for "You know, I can make your dampers work better for a couple hundred bucks."

Damper Regulation

Be really precise when squaring up damper placement. Go through and even things up. A quick way to adjust the spoons is to remove the keys, to un-hook all the bridles, and to press on the wippen. Another way is to reach back with one hand and with the thumb, push up on the lever. Every time the rest position of the wippen is changed, the lost motion of the spoon is changed.

The whole thing is a mechanical system. Over time, the blocking felt switches as people continue to push on the pedal. The system is wearing out more quickly than it needs to. Mind the felt under the pedal that determines how far the pedal goes down. Limit the travel on that system; the more it travels, the more it will stress out the damper lift rod, the pedal springs, etc. Just adjusting this one thing can improve all 88 keys; pedal adjustment is important.

Curtis does not do tunings: he does service calls. This includes removing the action to examine and improve the mechanisms. When the damper lift rod hinge screws get loose, the rest of the rod will start to get loose. Once it starts to distort, it will increasingly distort and the others will start to distort. Service the lift rod.

- Check the tightness of the screws.
- Drop some ProTeck lube into the felts.
- Re-bush any worn-out felts.
- Replace worn out grommets, or re-place them with felt. If you get the felt right, it will last. Curtis used to get a needle and would sew the felt in place.

The grand up-stop rail should not stop the pedal. Upright dampers should not travel very far. Assuming the spoons are correctly and evenly regulated, if you touch a white key the damper should not move. If you touch a black key, the damper should just tick. Make sure the spoons are not contacting when you have a damper pedal at rest.

Bass Dampers

When replacing bass dampers, replace the double grooved bass felts with triple grooved felts. If the felt is installed too high, the adjacent hammer might hit it. If it is too low, it can catch on the adjacent damper wire. If the bottom of the dampers touches the string just a little before the top, it works a little better. This slight bit of favor seems to take up the energy. Since the damper moves in an arc it will naturally do this anyway, but given the choice, err on the side of the bottom rather than the top touching first. For single strings on really big old American uprights, adding a fisherman's weight onto a damper wire under the head works. It adds more mass.

In the case of the Steinway double flanges, we must set up the hammer first. The travel must be straight and the spacing correct before adjusting anything else. If you are replacing just the flanges, althought they are structurally sound, they have vertigree. However, the hammers must be repined, installed and spaced and then the dampers must be installed and the wires must

be bent. The felt for the spring guide is wider than the slot. Therefore we take the pin off, take the spring off, and trim the felt. Some get cut so short that the felt needs to be replaced. If the felt is too wide it may never fit. Allow time to do all this.

Practice is the one thing that will get you good at this. Take an old upright action and fix the spoons, the damper wires, and so forth until you have the feel. It is both a motor muscle skill, a mental exercise and a test of your memory.

If you don't like tuning unisons, this is not the job for you. ~ Dan Leviton