The Owner's Guide to Piano Repair

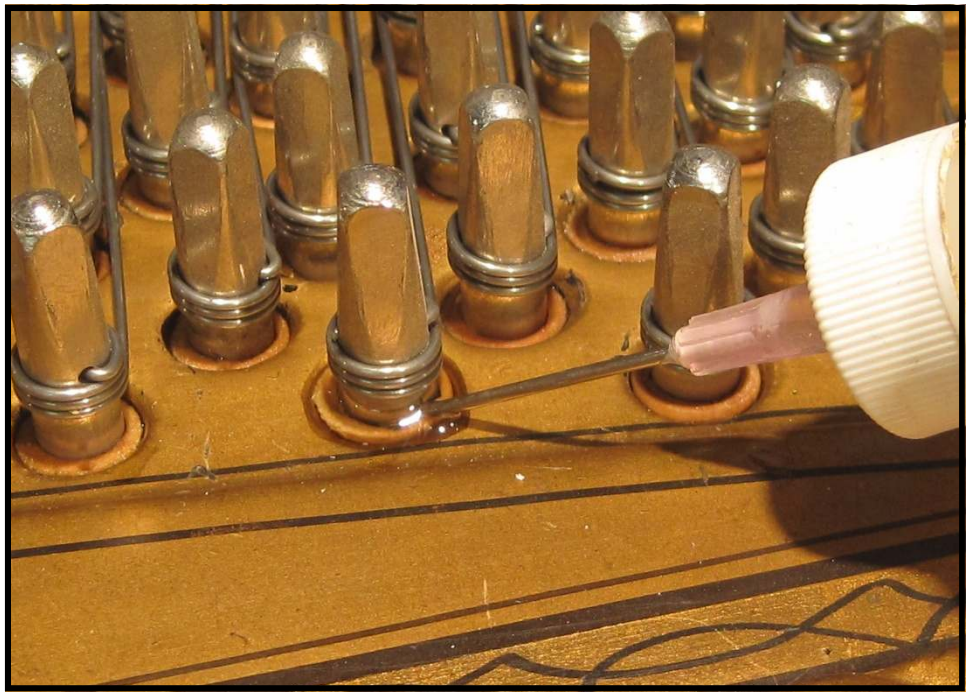


Focus On: CA Treatment of a Loose Pinblock

Information provided courtesy of:

Lee Gordon / The Piano Shop
Member: Piano Technicians Guild
P.O. Box 22958
Honolulu, HI 96823-2958
Phone: (808)722-0618
Email: leegordon53@gmail.com
Web: www.hawaiipianoshop.com

For a piano to hold a stable tuning, it's essential that the tuning pins are tight. While there are other factors (such as fluctuations in humidity) which have an impact on the longevity of a tuning, a tuning pin which is loose to the point where it slips and turns in its hole will cause the individual note involved to sound horribly out of tune. **Your piano is tending to go quickly out of tune in part because of loose tuning pins. One treatment to consider is to apply CA (cyanoacrylate) glue around each tuning pin where it meets the pinblock.**

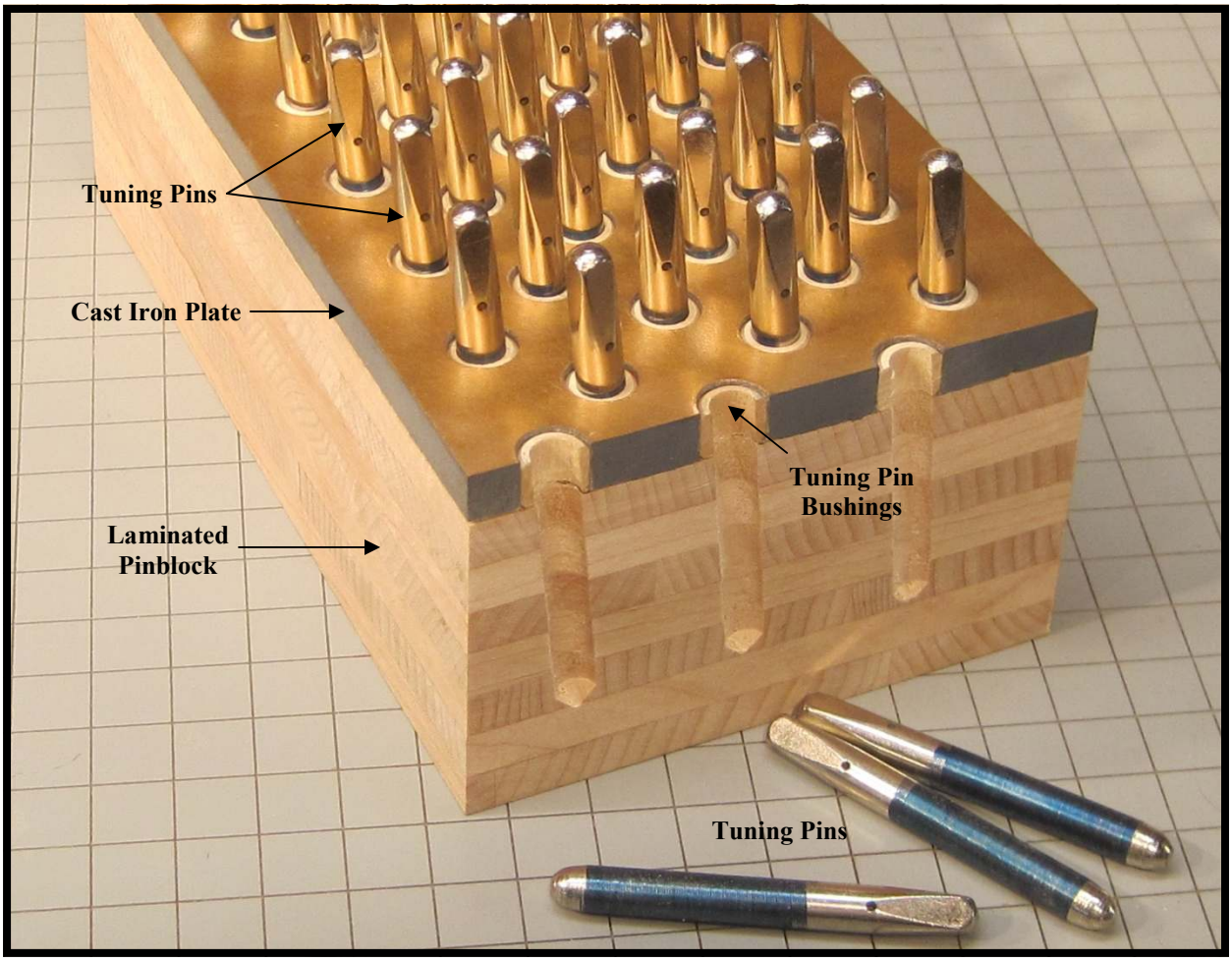


The following commonly asked questions have been answered to give you the information you need in order to decide whether or not to have me treat the pinblock of your piano with CA glue:

Are loose tuning pins caused by a defect in my piano or is it something that just happens as a piano ages?

On an older piano the problem most likely is caused by a pinblock that has gradually been losing moisture content over the years. This is a natural process which is difficult to prevent entirely, although keeping the humidity level of your home at a comfortable level during periods of dry weather will help prevent a rapid worsening of the situation.

If your piano is new and has loose pins, it is a situation that should be brought to the attention of the dealer, in that it could be a warrantee issue.



The above cut-away model of a piano pinblock, plate and pins illustrates the origin of the problem. The pinblock is made hardwood, in this case hard rock maple. Its laminations run cross grain to each other to prevent splitting, and to better hold the tuning pins. The pinblock is not ordinarily visible, but is hidden beneath the cast iron plate, which is necessary to hold the tremendous tension on the strings, measuring anywhere from 18 to 20+ tons for the piano as a whole..

The holes for the tuning pins are drilled into the pinblock with a drill bit approximately 1/100 of an inch smaller than the pins. After the holes are drilled, the pins are pounded in and are tight, usually having a torque of 120 inch pounds or more. Tuning a piano which has been newly pinned is a lot of work! The noticeable slant of the pins, by the way, is away from the pull of the strings, much in the same way that tent stakes are driven with a slant away from a tent.

As the piano ages, the pinblock typically loosens up as the wood loses some of its original moisture content. Pins in an older piano will almost always feel quite a bit looser than on a new piano. When the torque on pins drops down below 20 or 30 inch pounds, slipping of the pins may start to be noticed. Your piano has reached that point.

Why does application of CA glue improve pin tightness?

The reason that CA improves the torque of the pins has less to do with the gluing properties of the liquid, and more to do with the fact that the CA acts to swell and stiffen the wood fibers around the pins. Capillary action pulls the liquid down and around the pin where it quickly acts to improve the tightness felt by the tuner when the hammer is placed on the tuning pin and the pin is turned.

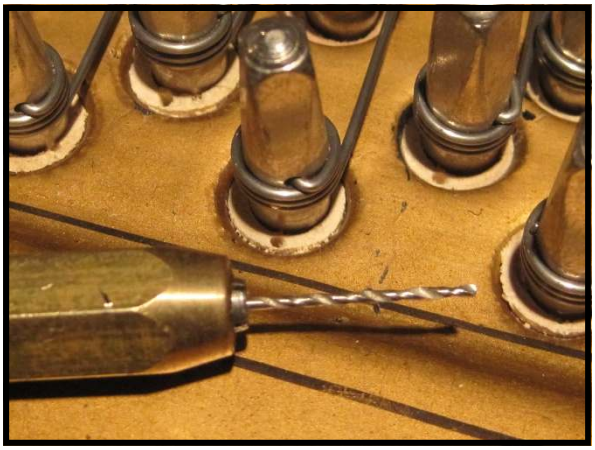
The beauty of the CA treatment is in how quickly it acts. Earlier liquid pin tighteners could take days or even weeks before improvement in pin torque was noticeable. With CA, results are achieved within minutes.

How exactly will the treatment be accomplished?

With a vertical piano, it is sometimes necessary to lay the piano on its back to prevent the CA treatment from running down the cast iron plate. If tilting the piano is called for, a piano tilter will be used to safely tip the piano backwards. To make the job go more quickly, it is helpful if any furniture directly in front of the piano be moved out of the way.



Once the piano is readied, the CA will be applied with a small diameter applicator around each tuning pin. Ordinarily, it will take more than one pass to reach the saturation point. Once the CA quits wicking in, the process is done.



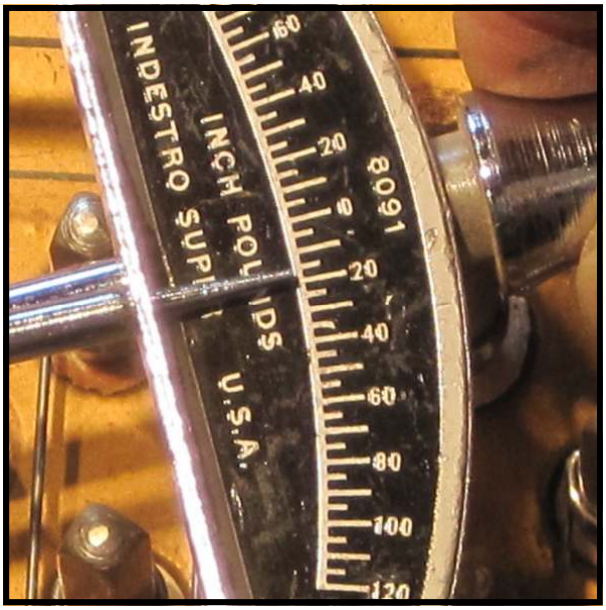
Sometimes if the tuning pin bushing is very tight, it may be necessary to drill a tiny hole through each bushing to allow the liquid to seep down to the pinblock. The drill in the photo to the left measures a mere .025", small enough to drill a hole in the thin wooden bushing surrounding each tuning pin. By drilling this hole, the liquid can better penetrate to where it's needed.

Besides having furniture moved out of the way, are there other preparations or precautions to consider?

It is very helpful if there is a window that can be opened, or at least cracked if the weather is cold, to provide for ventilation. The fumes from the CA glue can be intense. Closing the doors to keep the odor confined to the room which houses the piano might be a good idea. The chemical smell of the treatment will dissipate after a few hours, but may be noticeable while sitting at the piano for some time after I leave.

How much improvement will be made in my piano by this treatment?

Results will vary from piano to piano, but oftentimes the pins are much more snug after application of CA.





The above photos show torque reading measurements done on the same tuning pin before and after CA glue was administered. In the photo on the left, the untreated pin measures just under 20 inch pounds of torque. After a single treatment the pin measures a much better reading of 55 inch pounds of torque.

Are there other remedies for this problem?

Certainly. There are a number of methods of treating loose pins, which vary widely in cost due to a huge difference in the amount of time required and the cost of the materials involved. For both uprights and grands, the most complicated procedure involves the total replacement of the pins, strings and pinblock. The time required to perform this procedure is measured in days or even weeks, so it's not a job to be entered into without considering the value of the instrument. For many pianos, the much less costly procedure of treating the pinblock with CA glue makes sense, in that measureable improvement may be made at a reasonable cost.

My piano has so many tuning pins! Would it save money if I just had you only treat the pins that were the loosest?



Not really. To do that, I would first need to go through the piano with a torque wrench to identify the worst offenders, mark them, and apply the CA treatment to those pins while avoiding the others. It is much more efficient to treat them all.

Besides that, if even just a few pins are showing symptoms of a pinblock that is not holding well, more will eventually follow. Thankfully, the problem can be remedied. The key to keeping your piano in good condition is having expert maintenance done on a regular schedule. With improved pin tightness, the tuning stability of your piano should be enhanced, making it more of a pleasure to play between tunings.

"In business to bring your piano to its full potential."

Please advise me when you wish to have this repair professionally done.

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