

The philosophy behind this method of instruction is itemization and quick observation. They don't have to read the whole thing in order to get it. And it's separated into checks that stand on their own. I don't get into checking pumps, but link out to the pump tests.

I would start the instructions like this: "If you think your antique player is leaking or not playing correctly, here are some tips and methods to check that won't take very long." With that, then start with the stack, and from the stack, link everything else. (Just one other idea). But then as soon as I can, I hope to write some articles that they can buy from you, with pictures, to describe this in detail-- both testing and fixing player pianos. They can download the articles and we won't have to publish them.

BEGIN TESTING... (However you would want to organize this).

The player stack is the most important single component of the player piano because it has the most valves, and also because it plays the notes. It is the large "box" that usually sits above the keys in the majority of player pianos (there were a few older players whose stack was under the keybed).

If your player isn't playing or isn't playing very well, this will be one place to look. Naturally, we can always isolate it from the pumps to make sure that the problem isn't the pumps. But the first thing we should do is to test the pumping pressure when we operate the player by foot. This is done by **laying masking tape over the tracker bar holes** (that the roll glides over) and pumping the treadles manually (*this is better than using the blank portion of a roll*). If the pedals become very resistive and almost impossible to treadle, then you have a tight stack and the rest of the system is basically sound. But in most cases, when the valves have not been fully rebuilt, this pressure that you can feel under foot is less solid, and your pedals still move fairly easily. That means, your player leaks somewhere.

Assuming that you want to first see if you can fix your player yourself, here's the next things to do:

1. Remove the front boards of the piano and take a screwdriver to get down to the keys by removing the vertical front cover supports, music board, and nameboard. Now you can see the entire stack sitting in front of the piano action.
2. Disconnect the air motor hose (on the far treble end which drives the takeup spool and propels the roll, and cover it's hose with duct tape. Treadle the pedals again and see what percent tighter your player appears to be. An air motor can take up to 25% of the air used at full speed. If things suddenly get pretty tight, then you had an air motor leak, usually in the supply hose.
3. When you are not satisfied, look further and you will usually see on many players, screws which tighten things down. If these screws obviously are *clamping screws* (as determined by a leather or cork gasket), then press in hard at each screw site while you take out the slack by

turning in the screw and making it tight. If the screw is stripped, stop. Remove the screw, and fix the hole before continuing. But by pressing the cover hard, you will not over-tighten your screws by firming them down.

4. There are also other screws which tend to get loose as the gaskets shrink and expand over the years. For instance, some player stacks are made up of individual “shelves” clamped together with gaskets at their ends. If you have one of these, you will usually find either a large machine bolt at each end which draws them tight together, or long screws, often coming into the center shelf section from the top and bottom of the stack. At least, you can tighten the top pair without removing the stack, to see if it helps. Do this on each end. When you are satisfied that you’ve tightened all the clamp screws that you can get to, treadle the player once more.

Did your player respond a lot to your tightening it up? If it did, then that was at least a portion of your problem. Did the tightening “fix it?” If so, just remember, this was a “service problem” that many player manufacturers recommended that tuners always check on each time the player was tuned-- particularly if the customer complained about pumping too “easy.” They mean, the pedals go down too easy, and sometimes they said, “it pumps too hard.” Yes, that means they have to work too much. Any descriptive “too much” thing about the pedals means a leak.

Could you **not** find any clamping screws to tighten? That is also common, mostly in the Aeolian players, but all players which use cloth to tape the joints around, instead of gaskets to make them tight. Well, let’s continue:

5. Since your leak could also be the pumping system, we will consider this separately, so if at this point you wish to check out your pumps, use the LINK right here to go to [Testing The Pumps](#).

If you are getting enough vacuum to continue testing the stack, here’s how to proceed:

6. Remove the chain temporarily that attaches the air motor to the transmission. Make a note of how the chain is made. You want to replace the chain on the sprockets later, so that the 2 loops of each link in the chain which connect to the adjacent link are facing outboard, toward you when the chain is running.

7. Put a QRS test roll on and spin the take-up spool by hand until you get to the note test. Make sure now that the reroll lever is in the play position, and start treadling as you move the roll. Pretty soon, a note should play in the bass. That’s your first playing note. So keep treadling as you spool the paper by hand, noticing notes which may not play, or notes which play weakly, or which take lots of air. In all of this, make sure that your paper hole is directly over each hole in the tracker bar. Many a player doesn’t play because they aren’t tracking their roll well enough.

8. Using masking tape on the keys themselves, have a different mark for these 4 symptoms:

- A. Note not playing or very weakly, but leaks a lot.
- B. Note doesn’t play at all but doesn’t leak either.
- C. Note goes down and stays down too long.
- D. Note plays down as soon as vacuum is applied to the stack.

9. Use my ABCD system to mark your key tapes. There are many things that can be responsible, but assuming that your player used to play well, and now has a problem, here is the most likely problems:

- A. Worn out note pneumatics or dry-rotted valve leather.
- B. Tracker bar is clogged with a paper punching. Suck it out.
- C. Valve's pouch bleed is clogged, or the tubing from the tracker bar has a tiny leak in it.
- D. Tracker bar tubing has burst, or there is a leak at the input nipple.

Of course, there are other reasons. For instance, in players which have "primary valves" which look like little buttons popping up and down (just below the spool box, but above the main portion of the stack), you'll see that valve standing up if the problem is between the primary and the tracker bar. In that case, you usually have a leak to air at it's pouch. That would be air getting in all the time to inflate its pouch, like we said above. But it could also be some dirt or foreign object under the little button, holding it up. So check this, too. Primary valves are susceptible to dirt, and being also open to air, they tend to dry rot much more quickly than secondary valves, which are always enclosed.

These are stack checks that you can make. Repairing a pneumatic player by disassembling it is another matter, and requires a great deal of knowledge and experience. If you decide you are more than capable of doing it, we'd just like to throw this in for what it's worth: Plan on doing over as many times as necessary, in order to get it right! That implies that you use materials and glues that will allow you to access what you have already done, because it is a sure bet that you will not do everything right the first time, as careful as you may be, and as many notes as you may take. Players are very reliable, once fixed right. But they are both an art and a science, and require a certain "touch" and understanding that few organ builders or engineers know, by nature. Try it and see if this isn't a pretty accurate statement.

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