

# MY SECRETS

I have tried to reply to all questions on the Internet regarding player rebuilding, and I answer them as fully as I can, taking into consideration what they already understand and couching my suggestions accordingly. I don't hold anything back, because I know that even after understanding the so-called "tricks of the trade" they cannot really pass it on, and besides-- I want them to have success.

I have always wondered in this business, why so many rebuilders like to feign helpfulness because so many have confided, and personally told me that they don't want to tell anybody too much or they will lose their advantage. Frankly, that is *their* secret, and that's their own business. But I don't quite see it that way. I have found that one can tell someone else exactly how to do something because so often they will either disregard it or modify it, or combine what you have said with what somebody else told them, or get everything they have been told so mixed up they can't even recall who said what. The other problem is, the real solution cannot be given to them because without background understanding they will ruin things and blame me for it. The methods I suggest is always based, first of all, on their experience and ability and the extent of their experience in related things, their shop facilities, the available materials and so forth, so what one may hear to be the solution, another may hear differently.

"There are many ways to skin a catfish." I have repaired many a player when I didn't have available what I would normally expect to have around to do the job, and yet I finished it and it would be permanently fixed. How? I used what I had on hand at the time. There are many ways to fix things properly, thoroughly, and permanently. The really neat thing about pneumatic players is that when you understand them, you can fix them, often with things just a bit beyond household items.

Repairing player pianos is one thing. But rebuilding or restoring them is a completely different thing. Re-manufacturing is probably a much more accurate term. Repairing can be done often with what is at hand. Rebuilding cannot be done that way. So the secrets of rebuilding cannot be shared over the Internet with an answer to a question because the background knowledge and experience required are just too great.

When I first got into this business I did so because it looked like fun, and I had another job at the time. I'm glad I didn't know then what I know now, because I would have not attempted it. There was no way of knowing how baffling and complex some of these mundane little pneumatic devices can actually become. Here's how I saw them at the time:

"What can be so hard about this? Valves are just poppets, pouches, and bleeds. Pneumatics are two boards covered with cloth. Everything is done that way. DUH! How difficult can it be, anyway?" And in a nutshell, that's what I was probably thinking.

Here's what I didn't know: Everything in a player that matters is the sublime element of the device. It's the percentage of active pouch area, lifter area, valve area, valve travel, bleed size and percentage, tube length, dimensions, percentages, resistances, flexibility and stiffness, material quality and surface, tiny little details that sometimes require magnification to see, then we have spring rates, tolerances, tolerances, and more tolerances. If you don't understand tolerances, you are in the wrong business.

When everything is perfect statically, tests tight, and the valves function normally and rapidly but the stack doesn't work dynamically as well as it should, will you tear it back down and find what the problem is? Or will you say, "Well, that particular one doesn't work as well as most, but that just goes with the territory. Tough! We do the best we can. They paid for it—it's theirs."

There is one way, and one way ONLY to learn player pianos, and that is, "Do them over again as often as necessary until you get them right." So when I say that everybody has their secrets and I also have mine, but am not afraid to share them with anybody, this is what I mean.

When you have a simple device (basically) like a pneumatic player is, you can learn in an afternoon all you need to know to understand perfectly how they work. From there on, it takes a lifetime of accumulated experience and knowledge, of knowing what is good quality and what isn't, and then after that, doing them over again as many times as necessary to learn all the little details that separate one kind of action and even one model within that same brand name from another action. So when I say for instance that I chart every Duo-Art box that I restore and get that box as perfect as is possible to make it, that's what I mean. But it took 20 years after I started doing it, before I could get the same chart on each one. Getting one box charted linearly is a feat. Getting the next 20 years of Duo-Art boxes all reading as well as the best one-- now that's a lot different. Ask any manufacturer. When explaining this process to one rebuilder, I was accused of fabricating a bunch of numbers, because "*Nobody can make a Duo-Art box come out that well.*" So much for telling some people what to do. You could get called a liar, just trying to help.

Were I to set valves, pneumatics, expressions, and actions the very same way in every player piano, then I would have a wide-ranging performance standard among all my units, varying from unworkable to excellent, and mostly, mediocre. That is because every player piano is different, including identical units built in the same week. The reason for this difference is partly because of all the many individual adjustments made to each of them at the factory before they were passed by the inspector. These modifications and adjustments were always discrete to that instrument and no other, if no more than valve flexibility. They loved to change bleed sizes slightly to adjust for an otherwise wildly tracking roll shifter or a weakly playing note. They would shim and twist and turn things just a little to make up for a weak note or a poorly operating sustain pedal. And all it is-- is still just leather, wood, and cloth, but boy, can it be troublesome, during the process of restoring it.

Every player has between 90 and 110 valves, at least. Some have close to 190 valves. If the average valve is between 5/8" and 11/16" dia. and sealed with suede leather against a hole, then we know there must by necessity be air seepage through each closed valve. Nothing is perfect. So

the question is, how much? Were you to take a shirt pin and make a tiny hole with it in aluminum foil (a #70 hole), you would see just how very tiny a hole that really is. Now if the total seepage of that suede over that hole equates to only that much, then by multiplying that area of the hole by 100, you come up with the equivalent seepage of a little over 1/4" hole (in actions having almost 200 valves, double it). Drill a 1/4" hole through your pumps then, to see how much that is, and there's your overall leakage. So you see, a really tight player cannot have that much leakage, can it? If you closed your reservoirs and timed them to see how long it took for them to reopen normally, then if you drilled a 1/4" hole in them and timed it again, you would be lucky to count to 3 before all vacuum would be lost. So you see, there is a lot to rebuilding valves after all, that cannot be covered in an email suggestion. And then you come to certain stacks in the player business which, if they are too tight, will not work right! These things you have to know before-hand, and how to make them leak the right way. It's all very sublime, and what was at first so simple suddenly becomes a real challenge.

Just as our forefathers realized that *"each player is a bit different, some are a lot different, and some have no relationship to the rest,"* likewise are they also restored-- if and when restored correctly. This then is my "secret," and unless I get an apprentice soon, I suppose I will someday take all these secrets to my grave. As you might guess, unless I can actually see and work on the instrument in question, there is no way I will be able to help you do much more than make a repair. This is also why "Do It Yourself How To" books are, for the most part, only the classroom discussion which tend to lead you to a dead end because they seldom teach principles. Without principles, you always reach an impasse. The reasons why you would do something, as well as the reasons why you should not do something else tend to remain undiscussed and hidden. I think that every would-be player owner who has ever decided to rebuild his own player can wholeheartedly agree with everything here, and it really doesn't matter how simple or difficult a job he may have had. By then, if he has made a good job of it, he can see the course he would travel, were he to decide to tackle them all, in any condition.

But if you love the unobvious, the subtle, and the unlikely, clever-beyond-words adjustments and corrections which you will learn, and if time and money are no object, then player piano rebuilding is for you, and these secrets we will someday share, but only as mutually appreciated facts we both learned the hard way. At that time, each of us would understand why we cannot really tell somebody else everything they really need to know to do it. We can only guide them with the principles, and after that, they have to use those principles and learn themselves, the hard way. It's a secret that really isn't all that hard to keep, but, that's my secret.

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