Player Pianos

Jeff Davis

5/20/2019

There were about 55 different makers of players, and each of them went through about three different model changes, so there is an infinite number of variations. About 50% of players have Standard stacks. Standard was manufactured in NY by Kohler and Campbell.

Stacks were held in place with cams, machine screws, wood screws, long bolts, and other methods. The benchmark year for players was 1910, and sales went downhill from there. If you have never worked on a player before, it's usually a good idea to read the directions.

The valves need to be cleaned periodically. There are either single or double valve stacks. The cover over the valves is held on with either two or four screws. The valves will be dirty. The valve should be floppy on the stem. If it's not floppy, there is probably verdigris in there. Jeff uses a very thin burning knife (pallet knife.) This knife is thinner than a razor and enables getting into thin windows and spaces.

Pouches used to be cleaned out with egg white. Jeff used to seal off the pouches with paper rubber cement and thinner. Now uses an RV silicone, which is a clear caulking compound used around windows. He thins it down and brushes it on. After it dries, he brushes it off with talcum powder. We live in a good climate for players. Gaskets were often leather. Ampico used cork. Cork gaskets break.

In 1909 there was a convention. Back then there were 65-note players. At this meeting, all the makers colluded and set up a standardized tracker bar. Before 1909 people frequently had double tracker bars for the 65-note players.

A valve can work at 5 inches. Fortissimo is 25. The entire path from the pedal bellow to the tracker bar is all under suction. The pouch is inside the valve cover and puffs up. Nobody does this kind of system anymore. The front side is less than normal atmosphere. The valve moves roughly 35 thousandths of an inch. Anything more, and the repetition won't work.

Larry Gibbons wrote "Rebuilding the Player Piano." Art Reblitz wrote a player piano book. "The Piano Book" is another book worth having.

When the holes are covered up on the tracker bar, all the tubes are evacuated. The bleeds are in the line between the tracker bar and the valve. These holes are $1/10^{th}$ the size of the valve, so the air rushes past them when being played. The bleed is a small vacuum that exposes both sides of the pouch.

The wind-motor and the chain can make noise. It's about the only place that's metal on metal; here Jeff uses 5 weight oil. Often it says to use graphite on the wind motor sliding plates. First, graphite is filthy dirty, plus it attracts moisture and gets gunky. Instead, Jeff uses parting compound or talcum powder. McLube also works well on the wind motor. Roughly 1/3 of your pedaling goes into making the wind-motor to work. The governor and the pin on the left of the music roll can bind.

Don't get motor cloth: it's too stiff, and it gets stiffer over time. It also has a memory. Use pneumatic cloth, which came out in the 90's. Schaff makes a nylon cloth. A player can use 150-200 feet of player tubing. Schaff tubing is consistent. Jeff buys thousands of feet at a time. Player Piano used to sell something close to these parts, but they were inconsistent. Bilon was really good, but it is no longer available.

There is a lot of information on the internet and YouTube on player pianos, maintenance and repairs. There is an archive section. By watching You Tube you can learn to rebuild pneumatics.

Use hot hide glue. It is heat sensitive and water sensitive. It makes rebuilding much easier. It can be sanded. Below 100 degrees it starts to set up. Above 150 degrees it will break down. As hide glue cools, it gels. If left a long time, it hardens.

To remove old felts, Jeff uses an iron to break down the glue, and then he can remove the felt by hand, or sometimes with a chisel. Jeff does not use acetic acid, glacial acetic acid or vinegar. Soak a

rag in water and wallpaper paste and wrap it in a cloth. Let it set and do something else. This will break down the water surface tension and will break down the cloth and rubber. Another way is to use a belt sander, but this is very slow. The best is to soak it, scrape off the glue, and maybe sand it afterward.

Jeff doesn't use clamps. Because the glue is liquid, parts and felts move as the clamp is tightened. Instead, he uses heavy weights, such a box of new or used tuning pins. Gravity works. As long as the deck is flat, the boxes of pins will balance on them.

Jeff uses one iron specifically for removing old cloth. It gets sticky and stinky. Burn off the cloth and break off the glue joint. PVCE glue (Poly Vinyl Chloride Emulsion). Kraft glue might carry it, but the supply houses have discontinued it. It sets up nicely, but spring-loaded pneumatics can creep and pull the wood away from the cloth. It can be thinned down 10% and it works well. PVCE glue can be used on motor cloth, but hot hide glue is preferable.

Wind-motors are removable for tuning. The bass is usually open. The middle box is in the way, but there is still enough room for a tuning hammer. Player pianos are a couple inches deeper than a standard upright, and the keys are longer. Longer keys reduce the dogleg and plays better. American pianos have a lock underneath the key bed to keep little kids from playing the keys. European pianos don't have it because their keys are balanced toward the back; it takes more force to push them down, but they come back faster. Americans like to see the keys go up and down.

When removing the stack, there will be some wires that must be disconnected. There will be leather nuts threaded on the ends of many of them. The tempo adjustment lever was basically adjusted for 70 beats per minute but could be moved back and forth. Sometimes there would be push buttons for soft and loud bass and treble. These buttons and levers close the pneumatic, close the valve, and make the sound softer. Since the bellows pedals occupied both feet, hand levers were added to do what pedals do on a normal piano. Often on the tracker bar there would be a large hole on the left to engage the pedal when the hole in the paper roll lined up with it. This hole was larger to make it more efficient. Often there was a switch to operate it manually, but there is always a manual lever anyway.

For a little bit more expression, while they couldn't divide each pneumatic, they could do bass and treble. When it's working right, you should be able to sit and pedal it. There may not have been electricity back then. People were moving off the farms around 1910 and going to the city for manufacturing. If you didn't have music in your life, you were behind the times. Player pianos were designed to be played all night long.

Player pianos should be in all old-folks homes, because they are from their era and they play music the old folks remember. It's also a good exercise machine. If Jeff can make the bellows play with one foot or one hand on the workbench, then it will be easy to pedal with two feet when installed.

To find leaks, the old tuners used to use cigarette smoke. Jeff uses incense, which is a cool, dry smoke. If the ember turns bright, there is a leak because the air is rushing by. The incense shows seepages. He also uses a stethoscope with the diaphragm ripped off.

More and more often, leather has to be replaced. There is a leather place on 14th Ave. S. Jeff got a whole skin of leather from them a few years ago, but it was too thick for his purposes. They can also order stuff. Saddle leather is thick and hard and good for making punch-outs. Oregon Supply Industries, in Erie, PA, has a variety of leather choices, including sheep and kangaroo leather. Kangaroo is 30 thousandths of an inch thick, is white, even, thin and nice. Nappa chrome leather is really shiny and is used in the valves.

When compressed, cork will keep that shape, and breaks off during removal. It is also porous and leaks. Cork was used in the cheap pianos. It was fast to install, and there are often drips of glue.

In the old factories, the highest seniors were the quality control people. When there were no piano orders, the workers would be laid off. Then when another big order came in they would be hired back. People were hired by seniority. The quality control people would ignore one part and pay attention to another part of the manufacturing process.

Aeolian, Wurlitzer, and Baldwin made players. Internally, the Universal Player by Baldwin was better than Aeolian. Universal was Kohler and Campbell; Universal made exclusively players. The Universal had an electric motor. If the power went out, it wouldn't work. The Universal motor, spinning at 10,000 rpm, had a little gear as a transmission, with a hole driven into it. This gear was compressed onto a shaft, to slow the rpm down for the wind motor. The force of the gear would cause this connection to break, and a whole new motor had to be installed. This small gear was nylon to be quieter; brass would have been noisy. These became common in the 80's.

Zephyr skin is from the intestines of something. You better have clean hands when working with it. Bugs love it much more than leather. Pneumatic cloth became very stiff over time. Universal used thin plastic like plastic shopping bags, and over time this plastic broke down. So, they went back to leather. Nowadays, a lot of player piano cloths are stolen from the modern piano market, such as punching and punching material and action cloth.

To cut cloth and leather, hold a firm straight-edge on the cloth and cut with a sharp pizza cutter. It's on the downstroke or the upstroke where it will get stuck. If it gets dull, it won't cut. These cutting rollers come in different sizes and are available at craft stores and hardware stores. They are called rotary cutters.

Jeff showed a sample of bellows cloth. It comes 48-60' wide. Jeff orders 20 feet at a time. Bellows are a couple feet across. He uses squeezer hole punchers, which come in different sizes. They are available at Wood Craft or Rocklers. Punches make things look professional, instead of cutting shapes out by hand.

Aeolian tracker bars use rubber tubing, which needs to be sliced off with a utility knife. Jeff made an 18"x3" PVC tube with a cap glued on the bottom. He fills it with gasoline and puts the tubing in it and sets it outside overnight. Brass and lead tubes are held together with shellac. Jeff used denatured alcohol to remove it. By morning things should be apart.

Jeff showed a large goose-neck flashlight that he uses to see what he's doing inside an upright. He uses an 18-volt battery and carries three batteries. He also has a converter with a 20-volt nicad battery, and also a direct plug-in. Lead batteries last only a year and cost about $40.

A bull-nose 4" plier allows him to grab hold of the valve. He filed a slight indent in the pliers so he can grab the stem of the valve. The stem fits in one of the teeth. Say he wants to move a particular piece of the collar, which is a pressed fit. With this plier he can push it apart. He used a 6" file to make the dent; he also filed off the tip. Anything less than 30 is too soft, and anything more than 40 is too much on the valve. The valve work would have been one of the younger women's jobs. If they screwed up on a valve, they could throw it away and grab another one. All that was needed for a double valve was a dumbbell with a piece of leather on one end, and a dumbbell with a piece of leather on the other end.

A new Aeolian has the wind motor on the left with an arm attached. This can be unscrewed and bent forward. The rinky-tink bar usually has to be removed. Be careful with parts made of compressed metal, because they can be very sharp. Aeolian was not selling enough to justify high quality, so they were making cheap pianos. They made the Sting and the Cabaret. They would make the pianos shorter, and would then send them out to the furniture stores to make the fancy tops. Kimball made a player when the spinet had a bad name, so they would drop the keys and call it a consolette.

One of the hardest things we do is to say no. Sometimes we have to say no.

Jeff's beginnings happened by a series of events. Larry Miller, back in the 50's was one of the founders. Jeff married his daughter. In his kitchen Larry had a built-in dishwasher. It leaked while Larry was on vacation and the water dripped on three players. Jeff started working on them. Mark Silver rebuilt player parts and had technicians do the piano parts.

TOOLS

- Jeff showed a small tray made of silicon rubber that he uses to hold glue. It looks like a soap dish or a tiny painting tray. The glue peels right off.
- Use a sash brush. The glue can be washed off.
- Tubing is 5/32" inside diameter. This is standard throughout the whole industry.
- Soft pedal tubing is 3/16" and is called expression tubing.
- Baldwin uses 1-1/2" or 1-3/4" for tubing from below up to the stack.
- Do not use auto supply tubing: too thick, too strong, unnecessary.
- Schaff tubing and parts work well.
- Tiny pliers

Some tracker bars used ears as guides, which, over time, would damage the edges of the paper. QRS has a warehouse of rolls they haven't sold. Around the year 2000 they stopped making rolls. Back in the days there were 50-100 companies making rolls. In the 70's, if you had a favorite roll that was getting destroyed, you could call QRF and they would make a new one, but they had to make at least twelve to make it cost-effective. You would have to order all twelve and give the others to your friends. They were using techniques from the twenties to make these rolls.

The chain should be facing out. Think of links as your hands lifting weights with your palms up. If the chain is turned backwards, it will catch. Make sure the link is facing outside and up towards the wind motor.

Now these pianos are pretty much obsolete. PianoMation and Disklavier are the same idea, but they are modern, simpler, smaller in design, and have expression in every key. With modern technology you can hook up a video and have your piano playing along. You can record your grandmother player her favorite song, complete with mistakes. You can watch the symphony on Public TV and have the piano in your home playing along. You can buy recordings of all your favorite pianists and have them perform in your own living room. With digital and laser technology, it is no longer necessary to sit and pump pedals with your feet.