



Jumbo Sax Tootophone

by [Thinkenstein](#) on March 7, 2012

Table of Contents

Jumbo Sax Tootophone	1
Intro: Jumbo Sax Tootophone	2
Step 1: Cleaning the x-ray film	2
Step 2: Rolling the tubes	4
Step 3: Gluing the plastic with silicone rubber	5
Step 4: Making the bends	6
Step 5: Various assembly shots	8
Step 6: CPVC mouthpiece attachments	10
Step 7: String shoulder strap	12
Step 8: Playing tips	13
Step 9: Hear the jumbo sax tootophone	14
File Downloads	14
Related Instructables	14



Author: Thinkenstein [author's website](#)

I'm a refugee from Los Angeles, living in backwoods Puerto Rico for about 35 years now and loving it. I built my own home from discarded nylon fishnet and cement.

Intro: Jumbo Sax Tootophone

The jumbo sax tootophone is a reed instrument. The mouthpiece is the basic tootophone made of an insulin syringe. (See my instructable <http://www.instructables.com/id/Tiny-Tootophone> to make the mouthpiece.) This instructable deals with making the x-ray film body.

I wanted to make a long horn, which involved bending itself up and down a few times to make it more compact and playable. The areas where the pipe doubles back upon itself use an interesting solution for making the necessary bends. There is undoubtedly more turbulence in the bends of this instrument than there is in the smooth bends of professional instruments. It only costs a couple dollars to make, though, and it is so much fun to play that I'm willing to cut it a little slack in my critique.

The use of rubber bands in combination with clothespins is also an interesting technique for holding the rolled up plastic while gluing it all together with silicone rubber. They make adjustable, elastic clamps. They would undoubtedly come in handy for other projects, and maybe deserve an instructable of their own -- simple but effective holding devices.

Silicone rubber makes an excellent glue for this material. I use hypodermic syringes with plastic tips for precise application of the silicone.

Be sure to hear the audio sample of the jumbo sax tootophone in the last step.



Step 1: Cleaning the x-ray film

I got free rejected x-ray films from our local hospital. You can get the image emulsion off of the film right away with a little water, a metal scouring pad and some elbow grease. The scouring pad leaves scratches in the plastic, which may or may not be a problem.

You can save yourself a lot of work by just letting them soak in water for a few weeks until the emulsion lets go of the plastic. You can then wipe it off with a sponge, and the plastic is free from scratches.

Wear rubber gloves to protect your hands from whatever chemicals may be in the emulsion. I saved the wash water, in hopes of someday reclaiming the silver in it, but have gotten nowhere with that idea yet.



Image Notes
 1. The x-rays are soaked and scrubbed in this basin.



Image Notes
 1. The inky wash water contains silver.
 2. Metal scouring pad.



Image Notes
 1. These cleaned films are hanging from a clothesline for drying.

Step 2: Rolling the tubes

Rolling up the plastic is just like rolling up a tube of paper, except it is much more springy, and it wants to unroll. The tube diameter slowly increases from one end of the roll to the other. I eyeball engineered the whole thing.

In this case, I wanted the small end to fit inside a 1/2" CPVC "T" fitting. It was a little hard getting it rolled up that tightly, but it can be done.

To keep the plastic from unrolling, I came up with the idea of rubber bands and clothespins to make easy tension adjustments. This simple clamping device would probably be useful to lots of inventors.



Step 3: Gluing the plastic with silicone rubber

Where sheets of plastic overlap, you can inject clear silicone rubber between them as a glue. Silicone rubber doesn't stick well to some plastics, but it sticks like crazy to this kind.

When the full grease gun cartridge of silicone is too awkward to maneuver, I use it to fill smaller syringes I get from the pet store. They are used for feeding baby animals, I think. The tip is conically shaped plastic. You can cut it with a knife in different locations along the cone to get different size extrusions. Inject the silicone from the big cartridge into the back of the syringe. Leave some air in the front of the syringe, which will be expelled when the plunger enters from the back. When filling the syringe, fill it all the way to the back of the syringe, so as to not trap air when you insert the plunger.

Note the washer around the syringe, which is used to give more area for the fingers to press against. Be careful to not press too hard too long with your thumb on the plunger or you may get thumb pain. More pressure can be gained by using the palm of the hand on the plunger and squeezing the hand.

Once you get some silicone injected under the edge of the film, use some masking tape to hold it down firmly until the silicone dries. Large paper clips are also useful for holding layers of film together.



Step 4: Making the bends

The rolled up sections join at their ends to make something similar to a "U" joint. It is not a perfectly smooth channel inside for redirecting the air flow, so there is bound to be more turbulence than in professional instruments. Since I don't have two physical samples, I can't test how the sounds from each would compare. I didn't hear anything bad resulting from turbulence, though, so I just kept going. I didn't have any better ideas as to how to make the bends.

The ends of both tubes to be joined are cut down one side a bit further than the diameter of the tube. Then there is a side cut to half way on either side of the first cut. The cut looks like a "T".

When cut, the two flaps spring outward. The flaps from both tubes are brought together and held with big paper clips for gluing, creating a large oval, instead of the two circles. The section that plugs the end of that oval is a longer, elliptical shape. Two holes are punched in the sides of the oval and a straight wire is inserted through them. The elliptical plug section bends to go over the wire and spring out against the inside wall of the oval area. Once you hold it in place with a little silicone, it is going nowhere. Remove the wire and patch up the glue job. I like the way the plug curves, hopefully making less turbulence for the flow of air than a flat cap might create.

At the other end of the joint area, you will find two basically triangular holes that need to be filled with some cut pieces of film to prevent air leakage. I used tweezers to hold the patches and the syringe to glue them in place.

Condensation builds up inside of wind instruments, so it helps to make a little drain hole at the bottom of the bends for water to escape from. The tiny drain holes don't affect the sound much.

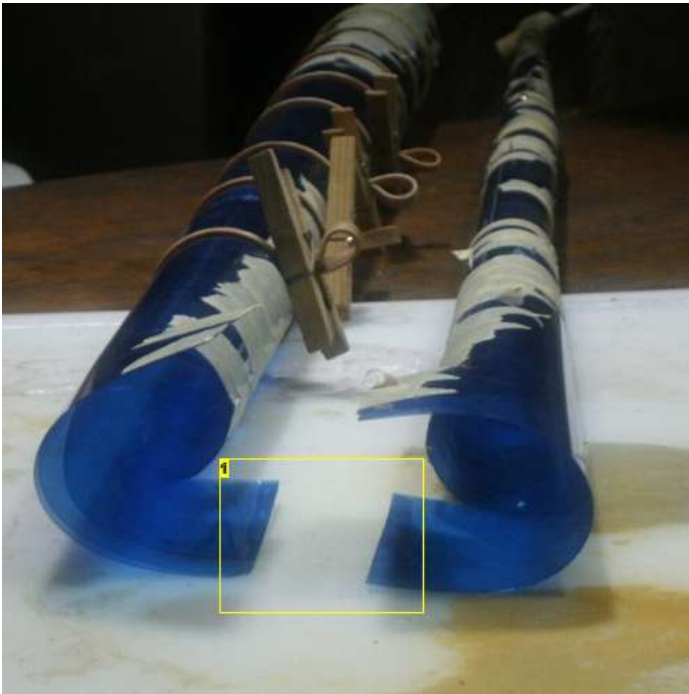


Image Notes

1. The flaps made by the "T" cut spring outward and are joined to make a big oval .

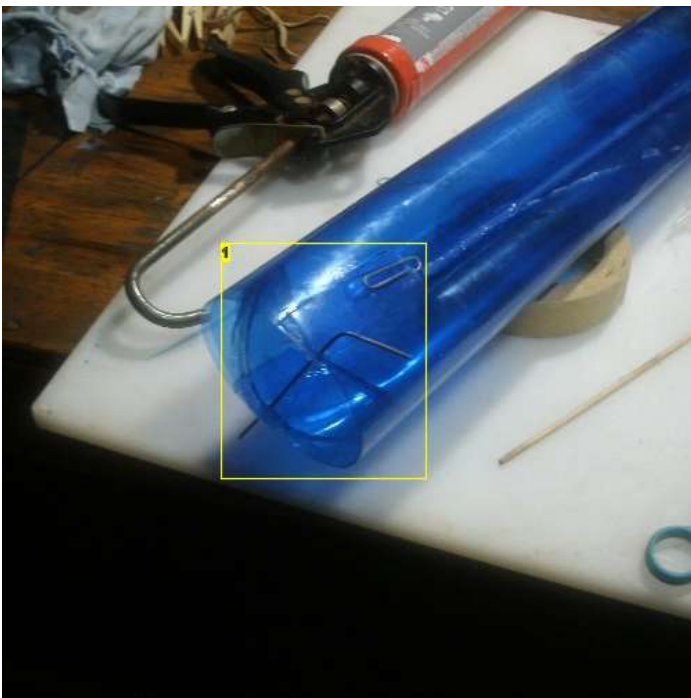


Image Notes

1. The wire helps bend the elliptical film section and hold it in place.

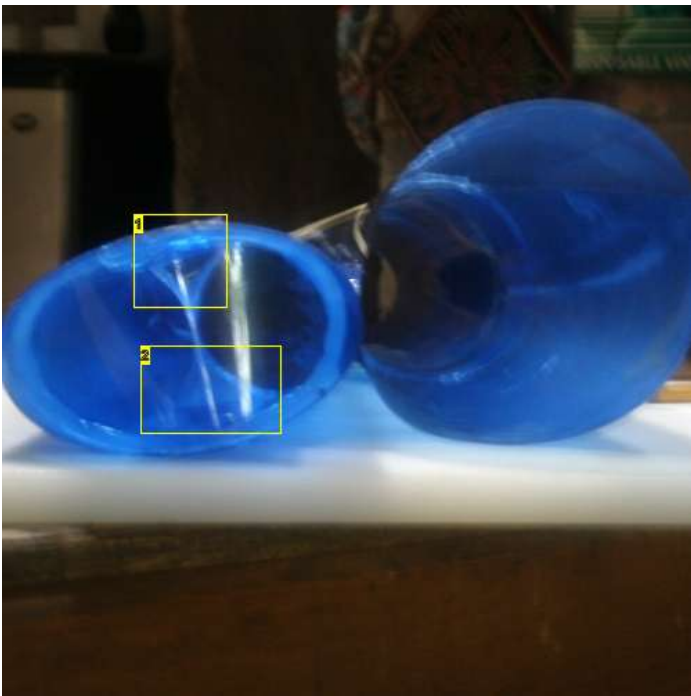


Image Notes

1. Triangular patch.
2. Triangular patch



Image Notes
1. Paper clips



Image Notes
1. The wire keeps the elliptical plug piece arched in place



Step 5: Various assembly shots

These are just some shots of assembly details. The jewel-like effect of this material suggests other possible uses for sculpture, or lighting fixtures.





Step 6: CPVC mouthpiece attachments

CPVC water pipe is like PVC water pipe, except it can be used with hot water. The 1/2" diameter CPVC pipe is smaller than 1/2" PVC pipe. I use it because the caps that the syringes come with fit nicely inside 1/2" CPVC. The caps, with holes cut in them for air flow are held in place with a #9 rubber "O" ring pressed between them and the walls of the CPVC fitting, using another section of pipe to push them in with.

By opening and closing the open hole in the "T", one can get wah-wah effects and adjust the pitch of notes.

Some of the parts assembly shots are borrowed from my Tootophone Sax and Trumpet instructable. <http://www.instructables.com/id/Tootophone-Sax-and-Trumpet> . The jumbo sax tootophone uses one "T", one 45 degree bend, and one short straight piece of pipe to connect them. I drill a little breather hole in the 45 degree fitting. In effect, that prevents the wah-wah hole from ever being completely closed, which can create some playing problems for some notes.

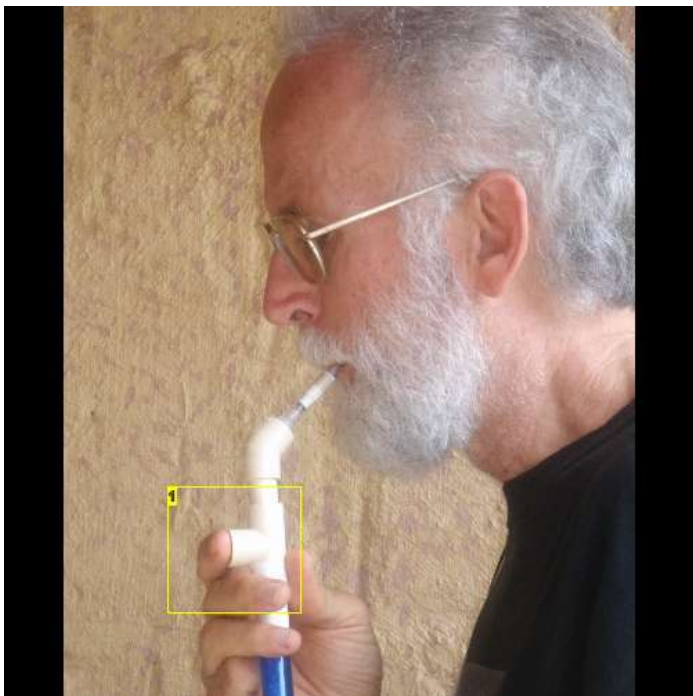


Image Notes

1. Opening and closing this hole in the "T" creates a wah-wah effect and helps to adjust notes.

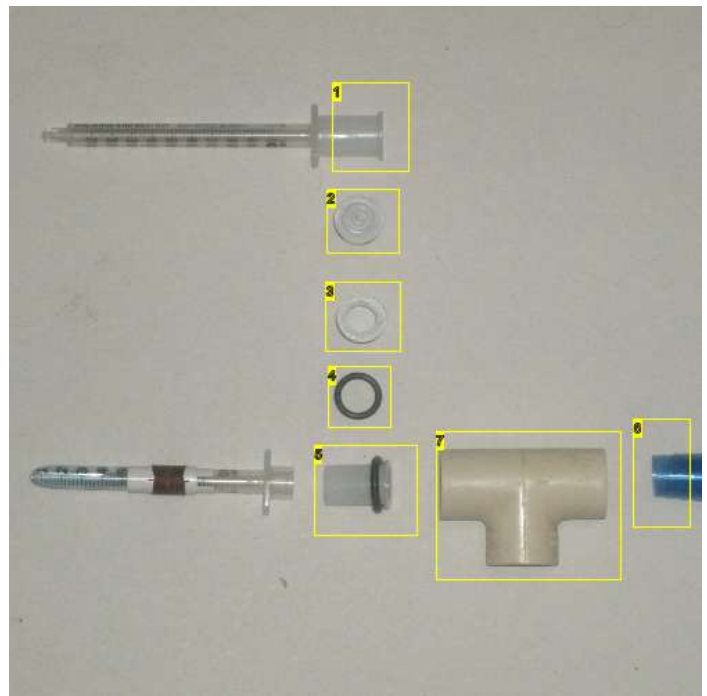


Image Notes

1. This cap holds the plunger inside and keeps the interior of the syringe clean.
2. This is how the end of the cap looks.
3. I drilled a hole and trimmed out the rest of the end with an X-acto knife.
4. Rubber "O" ring
5. Without the "O" ring, the cap fits loosely inside the end of the "T". The "O" ring holds the cap firmly in place, while the tootophone mouthpiece end fits snugly inside the cap.
6. The end of the cone fits inside the "T" with a little clear PVC cement and is then taped.
7. The trumpet model only uses a "T". The sax also uses a 45 degree angle fitting.

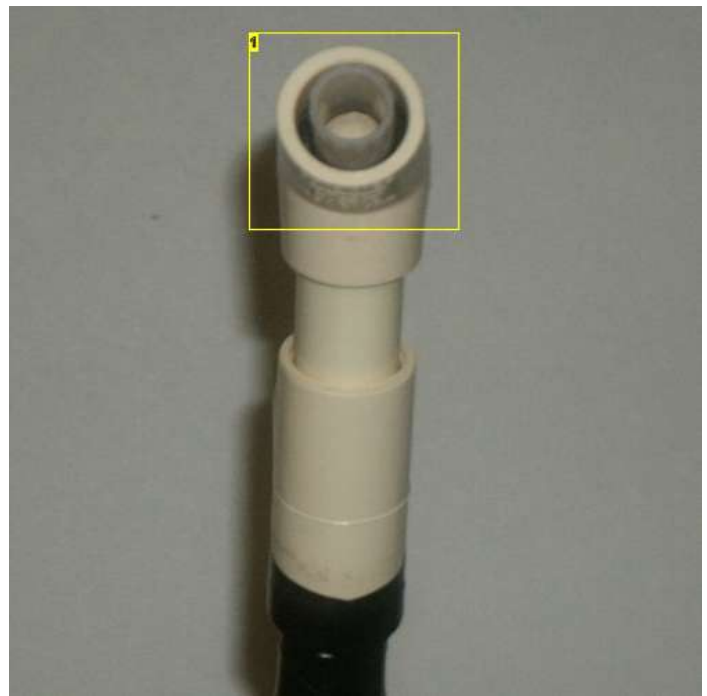


Image Notes

1. The black area in the photo is the rubber "O" ring.

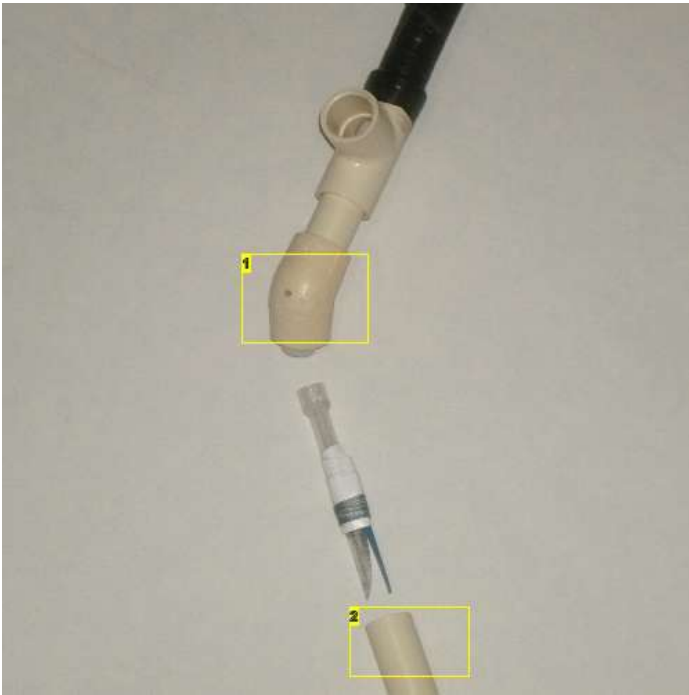


Image Notes

1. This is the tiny breather hole.
2. This separate piece of pipe acts as a mouthpiece protector for the reed when not being played.

Step 7: String shoulder strap

The jumbo sax tootophone is not very heavy, but it is a little bulky. A strap is handy sometimes so on can let go of the instrument and do other things with the hands.

I found an appropriate attachment point that let the instrument hang the way I wanted it, and put a nylon cord loop at that point to tie onto with the strap. The loop is attached just by fraying the ends of the cord and working the loose fibers into a tangled mess inside the silicone. That way, the string can't pull out of the silicone. And like I said, silicone sticks like crazy to this x-ray plastic.

Tie the string shoulder strap, as long as you need it to the loop and you are ready to go.





Step 8: Playing tips

http://www.youtube.com/watch?v=h_f7W-J9Sr8

The above link is a Youtube video I made for the basic tootophone, the same as the mouthpiece for the jumbo sax tootophone. One nice thing about tootophones is that you can break the bodies down, or add on to them to get different voices. In the video, with just the mouthpiece, you use the hands to enclose a ball of air at the end of the tootophone body and create the wah-wah effect by opening and closing one's fingers.

The jumbo sax tootophone uses the open hole in the "T" fitting and one finger to play it and create the wah-wah effects.

Try to keep the reed dry while you play. Saliva gums up the works and makes you stop playing to blow it out. Bend the lower lip in over the lower teeth and rest the reed on the dry, outer side of the lip.

Playing fluency comes with practice. The high notes are the tough ones. Practice a lot and you build up the facial muscles needed to get them easily.

Tootophones are played by ear, so listen carefully to the sounds you make to polish up your pitch precision.



Step 9: Hear the jumbo sax tootophone

Click on the icon below, that looks like a dog-eared piece of paper and it should open an audio MP3 file. Hope you enjoy it.

File Downloads



12-3-7 THE JUMBO SAX TOOTER.mp3 (929 KB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to '12-3-7 THE JUMBO SAX TOOTER.mp3']

Related Instructables



Tootophone Sax and Trumpet by Thinkenstein



Tiny Tootophone by Thinkenstein



Baby Bass Tootophone -- a reed instrument by Thinkenstein



pvc "TOOTOPHONE" -- a musical reed instrument by Thinkenstein



Basic Alto Saxophone (could be applied to tenner, baritone, ect.) Guide by waverider894



Hypotooter -- a mini-musical instrument by Thinkenstein