

HOW TO MAKE GIANT SMOKE RINGS

Years ago, toy manufacturers sold air blasters that sent bursts of air sailing across a room to the surprise and delight of any innocent victim. With a little practice, it was quite easy to shoot a cup off of someone's head from 20 feet away.

I took this idea to the next level using the motto, "Make It Big, Do It Right, Give It Class!" and created the Trash Can Smoke Ring Launcher, which turned into one of my signature demonstrations. There's both a small and a large version of the demonstration depending on just how much fun you want to have. Here's my advice . . . go for the trash can version!

WHAT YOU NEED

5-gallon bucket or a
large trash can

Bungee cord

Plastic shower curtain or
thick plastic sheet

Knife or keyhole saw

LET'S TRY IT!

1. The smaller version of the air blaster uses a 5-gallon plastic bucket. Carefully cut a 2- to 3-inch hole in the bottom center of the bucket. Use care when cutting the hole with a knife or keyhole saw.
2. Stretch a membrane across the top of the bucket. A piece of clear plastic shower curtain works great. Just stretch a piece of the shower curtain or plastic sheet over the top of the bucket and secure it in place using a bungee-type cord.
3. Lightly hit the shower curtain with your hand or the end of a stick. An invisible blast of air shoots out of the hole. Just aim the air cannon at someone or something across the room and send a blast of air their way with a whack of the membrane.
4. The larger version uses a plastic trash can in place of the smaller bucket. Carefully cut an 8-inch diameter hole in the bottom of the trash can. Stretch a piece of clear shower curtain or a thick plastic sheet over the top of the trash can and secure it in place using a large bungee-type cord. Aim the hole in the bottom of the trash can at your victim and smack the membrane. The blast of air is strong enough to really startle the unsuspecting person.

TAKE IT FURTHER

How can you make the invisible blast of air visible? Try adding a little smoke. Believe it or not, the so-called blast of air is actually shaped like a ring, and just a little smoke will make the rings visible.

How to Make a Smoke Ring Launcher

Smoke rings are made by filling the bucket or trash can with a little theatrical smoke. Just position the hole in the trash can or bucket up against the smoke



machine and give it a blast. Smoke machines (foggers) are commonly used in stage productions and are available at department stores at Halloween. You just need enough smoke to fill the container—a quick blast will do the trick.

Aim the hole in the bottom of the container up into the air and *gently* tap the shower curtain (a hard smack results in a fast blast of air that is difficult to see). The flying vortices are best seen against a dark background with light coming from either side. With a little practice, you can use the power of the smoke ring to knock a cup off of someone's head at a distance of 20 to 30 feet!

Fourth of July Smoke Bomb Twist

The smoke machine is the traditional way of creating smoke rings in your air blaster, but there's no need for a smoke machine when smoke bombs are readily available around Fourth of July! Use care when handling or lighting any smoke bomb, and only do this activity outdoors. Start by placing the smoke bomb on a flat surface and light it. Use the hole in the bottom of the trash can to cover





the smoke bomb and fill the can with smoke. Use caution as hot debris can shoot up from the smoke bomb and burn tiny holes in the plastic membrane. The trash can is ready for you to tap the membrane and produce dozens of colorful smoke rings.

Whether you choose the more traditional smoke machine or the much more exciting smoke bomb, the rule is the same—never shoot smoke in anyone's face (people or animals)! Aim the flying rings of smoke in the air and fire away. I also recommend that you do this activity outside, or be prepared for the smoke alarms to go off. It's always interesting to have to explain the smoke rings to the fire department, especially when the rings are created by smoke bombs . . . been there, done that.

WHAT'S GOING ON HERE?

The proper name for the air cannon device is **vortex generator**. The blast of air that shoots out of the cannon is actually a flat vortex of air, similar to rings of smoke blown by a talented cigar smoker. Please note that this is not an endorsement of talented cigar smokers, nor should you ever take up smoking, but I think you know what I mean. Wow . . . I'll think twice before ever mentioning talented cigar smokers again.

A vortex is generated because the air exiting the container at the center of the hole is traveling faster than the air exiting around the edge of the hole. Bernoulli's principle states that the faster a flow of air is moving the lower its pressure. Since the air inside the vortex is moving faster than the outside air, the resulting inward pressure is the force that holds the smoke ring together. Eventually, air friction steals away all the energy stored in the vortex and the smoke ring drifts to a stop. Very cool!

This activity demonstrates the simple concept that air occupies space. Bernoulli really understood the idea that fast-moving air creates an area of low pressure . . . and the flying smoke rings are an added bonus.

