

Make a burrito blaster, an air cannon that can shoot burritos, hot dogs, tee shirts, even confetti into the bleachers at the ballpark.

The blaster looks similar to the well-known potato gun, but this device uses compressed air, not combustion for shooting its projectile. Ready, aim, . . .FIRE!

Tools

Saw
Miter box
Electric drill
15/64" drill bit
1/4" - 20 tap and wrench
Wire stripper and cutter
Pipe wrench

Materials

2" diameter PVC pipe, 36" long
3" diameter PVC pipe, 16" long
3" smooth to threaded PVC adapter fitting
3" to 2" PVC reducer fitting
2" to 1" PVC reducer bushing
1" diameter steel pipe nipples (2)
2" to 1" PVC reducer fitting
1" diameter 24-volt water sprinkler solenoid valve
Momentary pushbutton switch
On-off toggle switch
9 volt batteries (3)
9 volt battery harnesses (3)
Electronic project box
Miscellaneous wire, electrical tape, duct tape
Pipe compound

Estimated Cost:

\$60 – \$90.

Before you begin:

You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!



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Project Overview

The Burrito Blaster uses common PVC pipe and pipe fittings available in most hardware stores.

The Blaster has three main sections:

1. The air tank. This holds the compressed air.
2. The electrically-controlled solenoid valve, which releases the compressed air.
3. The barrel, into which you load your burrito.



Step 1. Cut the sections of PVC pipe

Cut a 16" length of 3"- diameter PVC pipe for the air tank. This provides enough volume to shoot a burrito about 50 yards. Next, cut a 3' length of 2" PVC pipe for the barrel.

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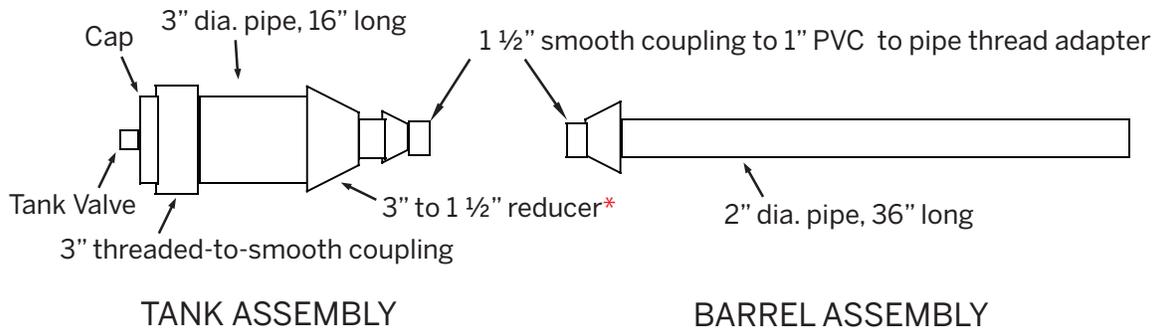


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Step 2. Assemble the pipe and fittings

Assemble the pipe and pipe fittings according to the diagram below.



***Note:** other fittings may be substituted in order to reduce from 3" dia. PVC fittings to 1" dia. threaded pipe

The process of joining and cementing PVC pipe is called solvent welding. The solvent melts the plastic so when you push the pipe and the pipe fitting together, the two parts fuse as the solvent evaporates. Each type of plastic pipe has its own special solvent. Some solvents are advertised to work on several types of plastic. At the hardware store the solvent you need is called PVC cement.

Solvent welding is a two-step process. First, paint the PVC pipe and fittings with a primer that softens and prepares the surface for bonding. Then, cement the pieces together permanently with PVC cement. Once it's applied, the connections are permanent and strong.

⚠ WARNING: Solvent welding smells pretty noxious and the fumes can be toxic, so be sure to do this outside or in a well-ventilated area.

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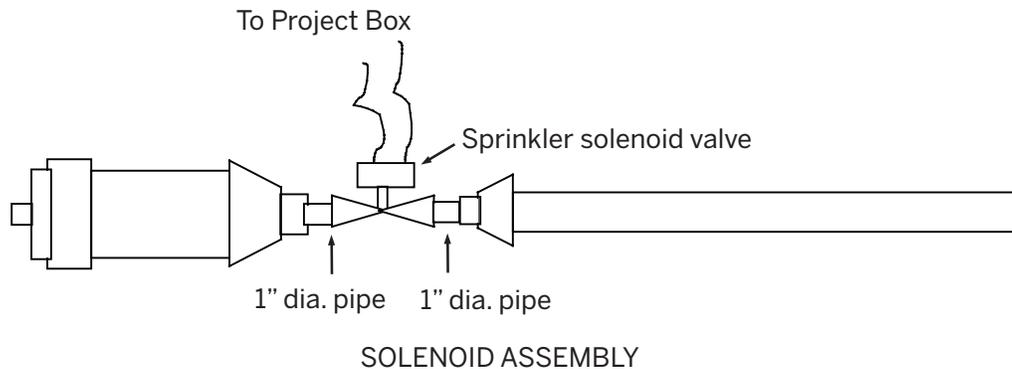
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Step 3. Install the solenoid valve

The solenoid releases the air pressure into the barrel. It's an electrically operated valve that opens when voltage is applied and closes when the voltage is removed. Available at home and hardware stores, the solenoid valve is a common part used for lawn sprinkling systems and costs about \$20.

Iron pipe nipples connect the solenoid to the PVC fittings. To prevent pressure leaks, first apply pipe thread sealant to the nipples. Screw one nipple into each end of the solenoid and tighten with a pipe wrench. Screw the solenoid/pipe nipple assembly to the tank and the barrel. The finished assembly is shown below.



Step 4. Install the tank valve

The tank valve is similar to a tire valve, and is used to fill the pressure tank.

On the flat part of the pressure tank's end cap, drill a 15/64"-hole in the center of the cap. This hole is a bit smaller than the diameter of the valve so you can tap it. Tap the hole and then carefully insert the tank valve and tighten.

Leak-test the device by pressurizing the tank to 50 psi. Use a tire gauge to determine if the tank holds pressure. If the tank leaks, wet the joints with some soapy water. You'll see bubbles where there's a leak. Disassemble the parts, add a little more pipe thread sealant, and reassemble.

Once the assembly holds pressure, wrap the 3" pipe with duct tape for added strength.



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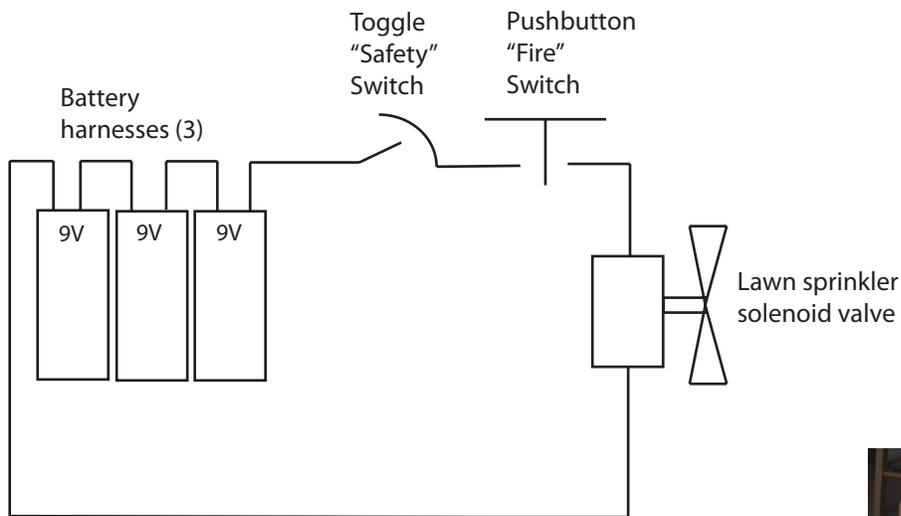
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Step 5. Wire the Control Switch

Finally, construct a circuit to control the solenoid. It's a very simple circuit -- three 9-volt batteries connected in series with a safety switch, a pushbutton trigger, and the solenoid itself.

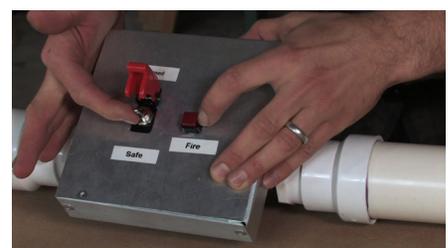
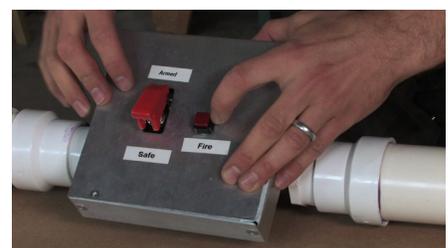
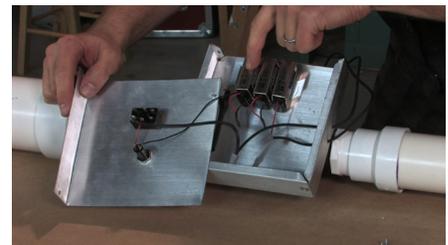
The circuit diagram is shown below. You can get switches, batteries, and a battery harness at an electronic store.



Install the switches, battery harnesses, and batteries inside the project box.

Connect the controls to the solenoid valve with a couple of wire nuts, then fasten the project box to the blaster with a pair of cable ties. The burrito blaster is now ready to fire!

With both switches down, the blaster is "safe." With the toggle switch turned up, it's in the armed mode. This means the cannon will fire as soon as you press the push-button.



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Step 6. Fire when ready!

To operate your burrito blaster:

- Insert a burrito wrapped in paper or foil (or other suitable projectile) into the barrel and push it to the bottom of the barrel with a stick.
- Make sure the safety switch is in the safe position.
- Put on your safety glasses.
- Connect the blaster to an air compressor or bicycle pump and pressurize to 40 psi.
- Switch the safety to "armed".
- Aim and depress the fire button.

⚠ WARNING: Do not pressurize the air tank to more than 50 psi. Excess pressure can cause PVC pipe to burst, scattering plastic shards. Be aware that the sprinkler solenoid and PVC pipe are designed and rated for use with water, not air. The blaster shoots with considerable force. Do not aim at people, animals or breakable objects. Wear eye protection. Use under adult supervision. Use the blaster only in temperatures greater than 40°F since PVC rapidly loses strength in colder temperatures.

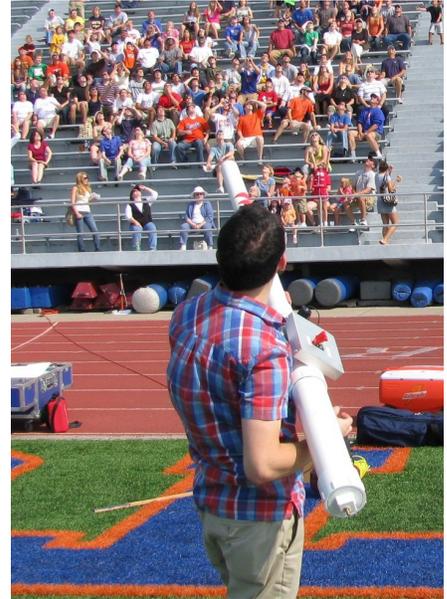
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Need help finding a burrito recipe?

Visit: http://www.pbs.org/everydayfood/recipes/breakfast_burrito.html

Want to see some really big air cannons?

Visit: <http://www.spudtech.com/>



TELL US HOW YOUR BURRITO BLASTER WORKS!

LEAVE A COMMENT UNDER THE VIDEO FOR THIS PROJECT AT <http://www.makezine.tv>

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