THE GEEK DAD'S GUIDE TO WEEKEND FUN

Cool Hacks, Cutting-Edge Games, and More Awesome Projects for the Whole Family

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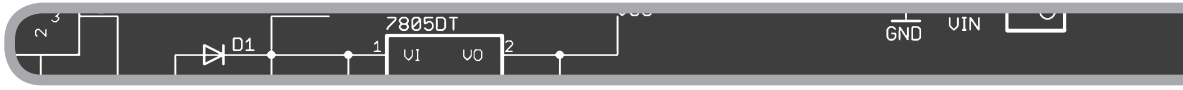
NERF Dart Blowgun



Two slightly interesting facts about NERF: first, it's as old as I am (not telling), and it's an acronym that stands for "Non-Expanding Recreational Foam." There, you've learned something you didn't know before you read this chapter.

But seriously, if your kids are like mine, there are NERF blasters in your home, and the ubiquitous darts ALL OVER EVERYWHERE. You can likely move a few couch cushions or the doggie beds and find a couple lost darts.

I'm glad NERF blasters exist. When I was a kid, I had a pellet gun that looked one heck of a lot like a .45 caliber automatic. These days, my far more protective parent instincts tell me that was CRAZY! Those fluorescent orange pseudo-guns with foam darts are a much better way for kids to get out their gun play.

Thankfully, this book isn't going to debate the finer points of overprotective parenting. What it is going to do is give you a project in which you can build an alternative to the store-bought NERF guns that'll launch the darts FARTHER and HARDER. Your choice will be whether you share this project with your kids or keep it to yourself for a while.

PROJECT	NERF DART BLOWGUN
CONCEPT	Make a blowgun for NERF darts that will launch them much farther than store-bought guns.
COST	$–$$
DIFFICULTY	⚙ — ⚙⚙
DURATION	⏲ — ⏲⏲⏲ (1 to build, 3 to play with)
REUSABILITY	◍◍◍ — ◍◍◍◍
TOOLS & MATERIALS	NERF darts, ½ inch copper pipe, ½ inch copper fittings (as needed), silicone sealant

NERF advertises its Longstrike blaster (designed to look and act like a sniper rifle) as firing a dart "up to 35 feet," and it costs around $30. I'm not trying to compete with Hasbro! The NERF blasters are great toys—I can only dream of replicating their clip loading systems. And their Vulcan (a replica of the M60 machine gun) is just an awesome toy (props to www.makezine.com contributor John Parks, who hacked together an autofire turret for the Vulcan). We wouldn't have all these spare darts lying around if our kids didn't love them in the first place.

However, this project provides a way to have even more fun with them—to hack them, if you will. And maybe teach our kids a little science in the process.

If you take a NERF blaster apart, you'll learn that the propulsion system is based on a mechanical force applied to the dart, usually by a spring-loaded firing pin. A dart is loaded, the pin is cocked, the trigger pulled, and the pin hits the dart and launches it down a barrel. This works pretty well. But it can work better.

Aside from mechanical force, the other good way to propel something down a tube is by pneumatics. Indeed, if you consider it, the way real guns work is via pneumatics. The explosion of power causes rapidly expanding gases to launch the bullet down a rifled

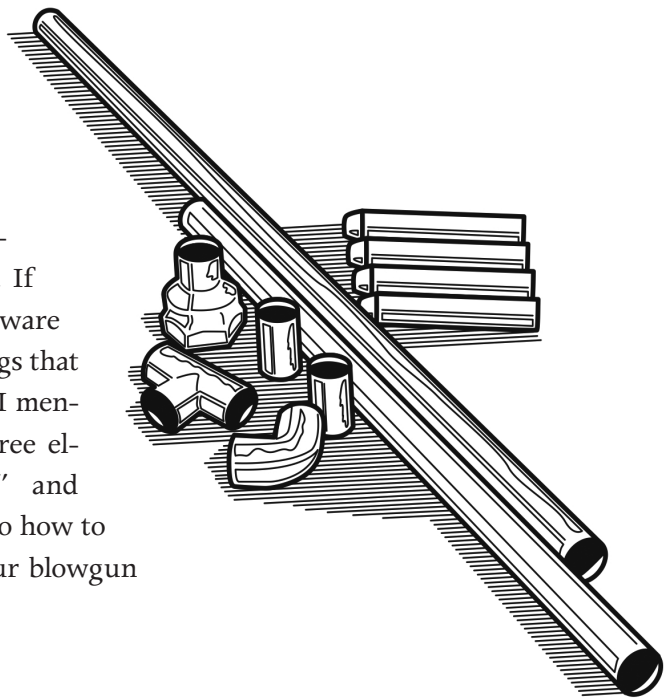
barrel at high velocity. So why can't we replicate that with NERF, which is basically a scale model of a "real" firearm?

A blowgun does just that. The projectile is put in the barrel, and the human supplies the rapidly expanding gas (exhaled air) to propel it. What's truly fascinating is that, for the NERF darts, this system actually works better than the mechanical one.

The most basic part of this project can be done in one step: Go to your local hardware store and pick up a 20–24-inch section of ½-inch copper pipe. This is the kind of pipe that is commonly used for water in domestic plumbing. A piece like that will cost about $1.

Take a NERF dart, insert it into one end of the pipe, with the "business" end of the dart pointed up the length of the pipe. Hold the pipe up to your face and aim it at some unsuspecting target. Put your mouth on the pipe, take a deep breath, and, in as short and sharp an effort as possible, blow.

Without much practice, the most basic blowgun design I just described can hit targets more than 60 feet away. That's longer than 35 feet!



But one length of pipe does not a project make, so let's try upping the complexity of this idea. If you go down to your local hardware store and start browsing the fittings that go with the ½-inch copper pipe I mentioned above, you'll find 90-degree elbows, 45-degree turns, "tees," and reducers. Here are some ideas as to how to use these extra parts to make your blowgun even cooler:

REDUCER: As the name suggests, a reducer is a fitting used to reduce from one pipe size to another. I picked up a ¾-inch-to-½-inch reducer and found out that it works as a perfect mouthpiece for the blowgun. Using the reducer on the blowing end of your blowgun allows you to purse your lips and blow into the gun like a trumpet rather than wrapping your lips around the end of the blowgun. This is more sanitary, and it lets you build up air pressure for a nice burst more easily than without the mouthpiece.

ELBOWS: Taking a shot from cover can't be any easier if you can literally shoot around corners! Link two lengths of pipe with an elbow, load a dart into the end tube, stand at a corner with the end tube directed around the corner, and shoot!

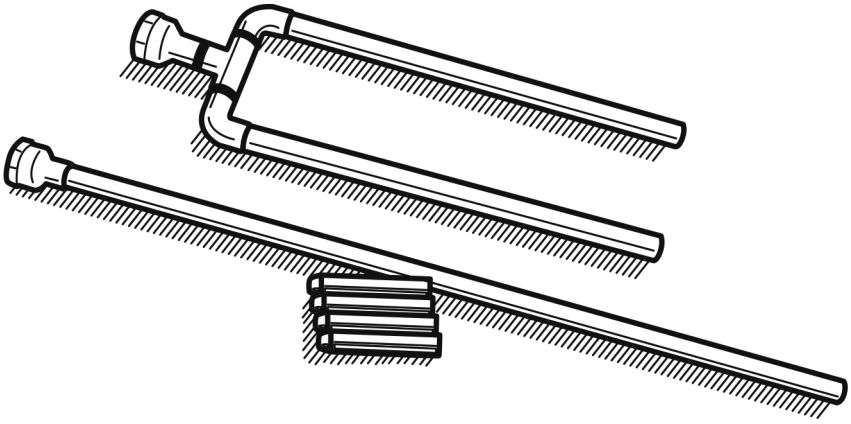
TEES: Tees allow you to branch off multiple pipes from one blowpipe, so you can rain down destruction with a multishooting blowgun. Just don't get too carried away, because you or your geeklet's lung capacity will be the ultimate arbiter of how many darts you can shoot, and how far.

One thing to understand when working with the fittings: The inside dimension of the fittings is only larger than the outside dimension of your pipe, meaning the pipe is meant to slip inside the fittings, but fittings won't slide into each other. The way to attach together a series of fittings is to cut small 1-inch-to-1 ¼-inch lengths of pipe to use as connectors between the fittings.

As you put pieces together, you're going to want them to actually stay together and not flop around. Rather than soldering the pipe, as is usually done for true plumbing, use a clear silicone caulk as you might to seal around fixtures in your bath or kitchen. It'll keep the fittings connected and pretty airtight, and if you end up deciding to take things apart again, it's not that hard to break the seals. Just put a little bead of the caulk around the surface of the pipe

piece that's going into the fitting, and slip it in. Once you have your pieces together, let them sit and dry for a couple hours (depending upon the instructions on the caulk packaging).

Because of the versatility of the fittings, you could even put together a series of pipe constructs that are interchangeable, depending on need. Maybe you'll have a mouthpiece and short pipe section that can be used as a simple single-shot device, but also carry an elbow attached to another short length, which your NERF warrior can slip on the end for the emergency corner shot. And have a special multibarrel piece to add when the extra firepower is needed.



After you've built your arsenal, it's time to play. Maybe try some target practice and see what the accurate range of the blowguns is versus the traditional NERF blasters. Or just go have a backyard firefight and see how well the stealth blowgun stacks up. Maybe your geeklet will become a NERF ninja!