

SAFETY

Since I wrote the article, I have learned more about precautions needed in cold weather. PVC parts can become quite brittle in very cold weather. In January, our club, The Vienna Wireless Society, participated in the NAQP SSB contest. The predicted temperature was in the single digits. After some experiments, I used the following procedure. Eight chemical hand warmers were put into the sports bag and the temperature in the bag was monitored by the outdoor sensor of an indoor-outdoor thermometer. The temperature in the bag stayed in the 50's. When I was ready to make a shot, the launcher was taken out for only a minute or two. The fishing reel had been taken off of the barrel so the spud gun could go back immediately. In the 8 degree weather, one of the projectiles, which was not kept in the bag shattered when it hit a large limb.

On the electrically fired guns, as well as the pneumatically fired guns, it is very important to prevent the gun from being fired accidentally either by touching the trigger or by laying the gun down. Although the photographs do not show this, on the electric trigger, extend the aluminum plate and bend it back over the pushbutton to prevent accidental firing.

Always use the minimum pressure necessary to do the job. I have never had to use more than 45# and most of the time 30 – 35# works.

ELECTRICALLY FIRED TRIGGER

I realize that the pictures in the article did not describe very clearly how the trigger was assembled and hope that the attached pictures will help. The batteries, the switches, and the solenoid are all wired in series. As far as which valve to use, I would recommend the Toro valve described in the article. There may be others that work as well, but one valve I tried (sorry, but I do not recall the model) did not work as well.

PNEUMATICALLY FIRED GUN

In figure 7 in the article, the small gun on the right is my current favorite. The tank is 2" pipe about 10" long, the valve is a 3/4" valve fired pneumatically, and the barrel is the standard 1 1/4" pipe. The pneumatic valve has some advantages over the electric in that it produces a stronger shot and you do not have to worry about batteries. The disadvantage is that it is more difficult to build. A word about theory for the sprinkler valves. They are called solenoid valves (not the electric kind) and Wikipedia has a nice short article about how they work. Whoever came up with this concept was a genius. Basically the valve has a big rubber pancake inside that divides the space into a lower part and an upper part. The valve is fired by creating a controlled leak in the upper part which can be done either with the electric coil or by creating a leak by some other means such as the pneumatic valve.

With the pneumatic valve, remove the top of the valve (either like a jar top or by taking out the six screws), remove the electric coil and fill up the little holes with epoxy. The pneumatic valve is a standard "dusting valve" with an ell and a length of brass pipe. Find a good spot on the top, and tap the hole for the short length of pipe. Most valves have a hand operated screw and this is a good place. Tapping the plastic top has to be done very carefully because the plastic is fairly soft. I have had the most success by screwing the top to a piece of wood, putting the tap in a drill press and turning it by hand. Use plenty of Teflon tape or epoxy the seal the joint. For safety sake, use a brass threaded plug to prevent accidental firing.



Electrically Fired Trigger

The trigger assembly is taped to tank and valve. The aluminum strip should be extended and bent up over top of the push button to prevent accidental firing.



Pneumatically fired Valve and spudgun