

Hopper Agitator – Electric



Introduction:

This project is much simpler than: "Build Your Own Goggle Fan", but requires a little more patience, some nerve to do a little cutting on your pistol grip, and some ingenuity and imagination on your part.

I never liked the idea of a loader that uses an infrared sensor to tell the agitator when to turn on. It seemed to me that it could be seriously improved upon by making your **trigger** tell the agitator when to run. That is exactly what my design does.

Before you begin I want to warn you that my pictures show a **very ugly prototype** of the finished product. You can use Plexiglas, Radio Shack project boxes or whatever you'd like to enclose the components when you're finished, but I haven't finished mine off yet because I wanted pictures to go with these instructions.

Materials:

- VL-200 Loader
- 3/8 or 7/16 inch dowel rod
- 9-18VDC or 12VDC motor
- Small piece of sheet metal (can be purchased at a hobby or arts & crafts store)
- 1-1½ inch pipe clamp
- 9V battery
- 9V battery holder
- Small wood screws
- Small gauge hook-up wire

- Male & female headphone plugs (non-stereo, open circuit type, 2 conductor)
- Epoxy
- Dremel tool (or something that can cut the sheet metal into strips and grind/sand wood)
- Soldering iron, solder, paste.
- Drill w/small bits
- Volt/ohm meter (VOM)

Where Can I Get That Stuff?

Some of the above can be found at the following places:

- Radio Shack (or other electronics stores)
- Paintball store
- Hardware store
- Hobby shop
- Home improvement warehouse (Lowes/Home Depot)

Construction:



Lets start by building the agitator itself.

1. Cut 1½" x ½" strips of sheet metal and fold them into an "L" shape.
2. Attach them to the side of the DC motor using the pipe clamp. Don't over-tighten the clamp or you will crush the motor.
3. Drill a hole where you want the shaft of the motor to enter the loader.
4. Drill holes in the motor brackets that will fit the wood screws.
5. Drill small pilot holes in the loader for the wood screws to fit in.
6. Attach the motor to the loader with the wood screws thru the brackets.
7. Cut a ¾" section off the dowel rod.
8. Drill a hole in the center of it that will fit the motor shaft snugly.
9. Epoxy the dowel rod section onto the motor shaft. Be careful not to drip epoxy down the shaft and inadvertently glue the shaft to the loader.



Attaching the Battery Clip

1. If there is not a previous hole in the battery clip, drill one that will fit a small wood screw.
2. Drill a small diameter pilot hole for the wood screw in the loader.
3. Screw the clip onto the loader.

After attaching all this, I epoxied the battery clip and "L" brackets down to the loader so a random paintball wouldn't rip the components off.

You may also want to drip epoxy on the pointy parts of the wood screws inside the loader or put electrical or duct tape over them to protect your paintballs.

Trigger Switch:

This is where you may have to get imaginative. There is no set way to do this for every paint-gun. This is how I did it on an Auto-cocker.



If you look closely, I cut a strip of sheet metal and epoxied it to the inside of the trigger assembly with a rubber insulator (one of those rubber feet you stick under a lamp so it doesn't scratch furniture) under it. I soldered a wire onto it that will connect to a plug later.

The other lead is just stuck under the spring.



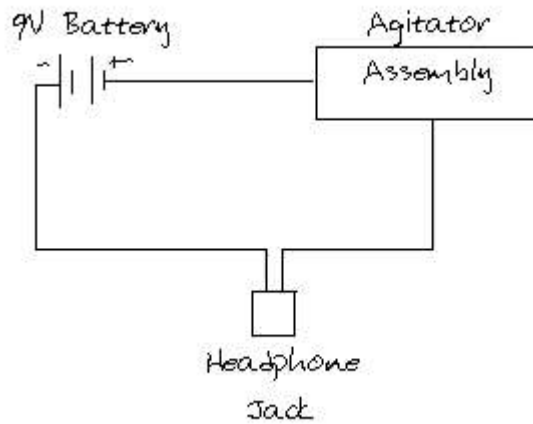
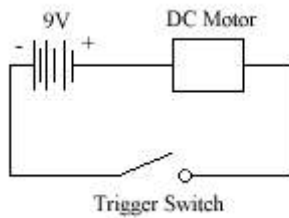
Notice that when I pull the trigger, a part of the trigger touches the strip of metal which completes the circuit.



I used a Dremel cutting too to etch a groove in the grip so the "switch" leads would fit thru.



Wiring:



Wire the components together according to the schematic



When wiring the whole assembly, you will want to solder your female headphone plug on the leads coming from the battery/motor and the male plug on the trigger leads. This way you can disconnect the agitator and take the hopper off the gun for cleaning, maintenance, or whatever. (Mine is backwards from what I just told you...it was a mistake that I will soon correct)

**Notes:**

You can try using a small pushbutton inside your trigger to make it work instead of my homemade job.

I would suggest enclosing the whole thing somehow using Plexiglas, PVC, sheet metal, or something to protect the components from rain, paint, paintball hits, etc.

Try wiring up a second motor in parallel with the first on the front of the hopper.

Try using a rheostat, potentiometer, or volume control to limit the voltage to the motor to slow it down.

Sand/grind the rough edges of the dowel rod section so you don't turn your hopper into a paintball blender. Pureed paintballs make a hell of a mess!

SHOTGUN

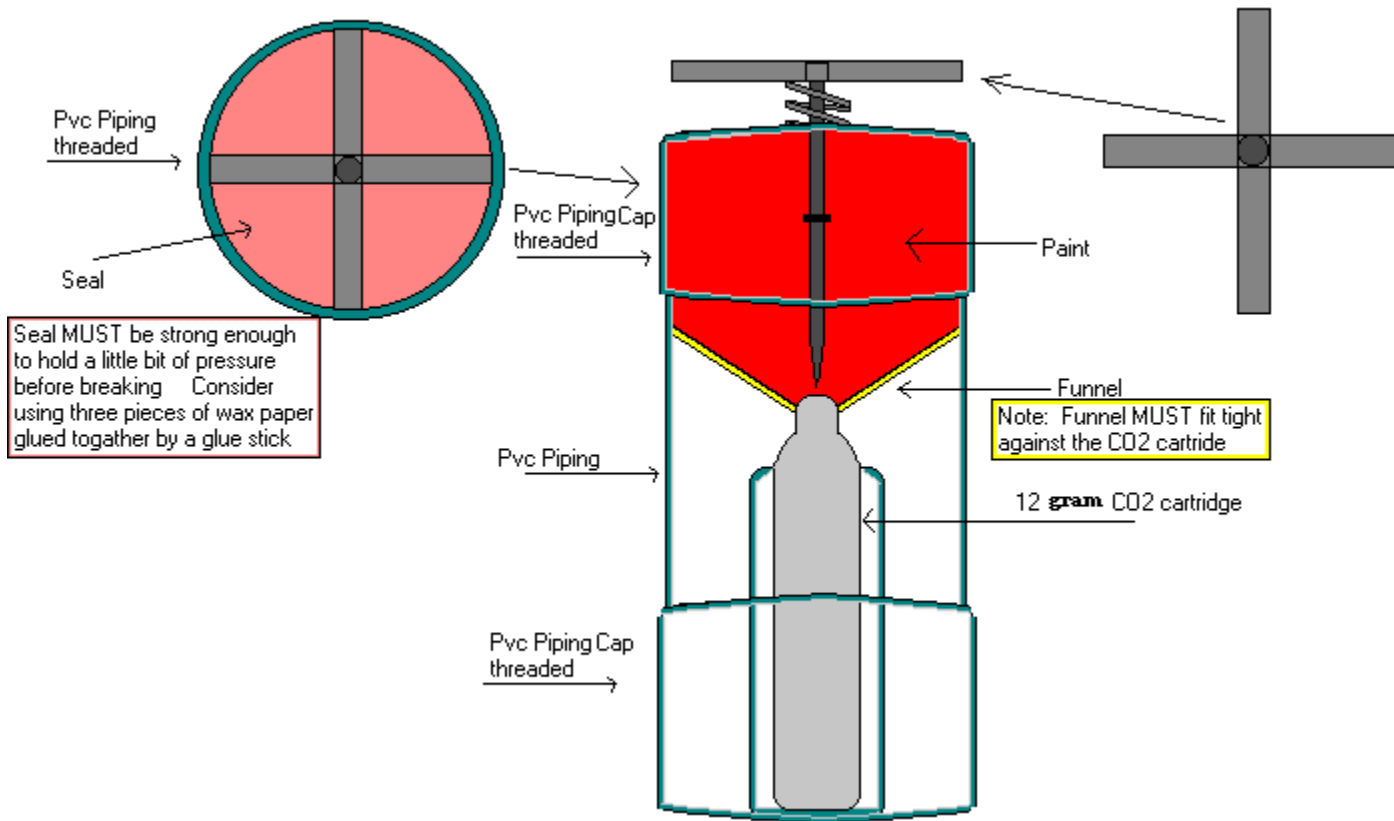
The Indisputable Rules for calling the passenger seat in any vehicle.

- To call "Shotgun" you must be outside of the building from which you came.
- You must stay outside of the building or any other type of refuge for the shotgun call to stand otherwise the person has lost the call and the seat goes back into fair game.
- Just to signify outside, whole body out of the doorway, not touching the premises or vehicle.
- If another person whines about not getting shotgun for more than 15 seconds total, they lose shotgun privileges for 5 rides for every 15 seconds period of whining.

- The person that calls shotgun has to be witnessed by another person that will verify that it was said in time.
- Shotgun cannot be called when letting another person out of the car, until the car door is closed without anyone in the shotgun position and the caller outside of the vehicle.
- You can't push a person out of the car in the shotgun position to gain it.

Paintball Land Mine

This plan is for a paint ball land mine. We've used this mine several times and have made special adjustments to it. However, it still proved to be dangerous. Therefore, the plans provided are the originals and should be considered for informational purposes only. I am working on horizontal spray mines. So far, I have had no luck because I can't find a way to store the paint horizontally. My new plan is the same as the one provided but it is a bit larger and has 4, 12-gram CO2 caplets and is made out of industrial foam and PVC painted different colors to match the ground in my area.



Materials:

Qty. Description:

- 2 3" Threaded PVC Pipe Caps
- 1 3" x 6" Threaded PVC Pipe Nipple
- 1 Plastic Funnel
- 1 2" x 1.25" PVC Pipe
- 2 Wooden Ice Cream Sticks (Tongue Depressors or Basswood strips will also work)
- 1 8-penny nail (filed to very sharp point) Trigger (piercing pin)
- 1 Small compression spring (from an old hair curler If you can find one)
- 1 small rubber band
- Sheet of common waxed paper
- PVC cement, Paint & 12 gram CO2 cartridges

Function:

- End pieces
- Body
- Paint separator (see diagram)
- CO2 cartridge holder
- Trigger platform
- Trigger spring
- Piercing pin captor
- Top Seal

This device can damage personnel and property. If you make one, be very careful with it. The recommendation from me is to leave this one alone. You assume all risk and liability if you make this device.

Remote Detonators

Remote Detonator I

I built this as a multi-purpose unit. When tripped, this unit sends 12v through the leads sticking out the side. I mounted the receiver board and the laptop battery into a case. I wired it with an on/off switch and put a red LED on the front of the box that displays activity. The receiver board can learn different remotes so it could be button 2 or 3 on the remote mine or vice versa. It sends 12v for approximately 2 seconds and shuts off again. The unit carries enough power to run my FA Stingray so it could be used as a remote turret. It would shoot 8-10 shots per trip of the box. It can also set off rocket engine igniters to ignite remote smoke packs or igniter based mines. I may also build another remote mine and use this as a removable detonator.



Top View



Picture of the right side. Has on/off switch and the battery has a button to check the battery status (notice the glowing LEDs)



Front View. The red LED lights up when the unit is powered on and off and also when the unit has received a signal and is sending current through.

Remote Detonator II

I wanted a new detonator because the first one was kind of big. I bought a cheap RC car on eBay and proceeded to gut it. I took out the receiver board and mounted it in a small plastic case that I had. I wanted the unit to be universal and basically act like a remote "switch" for any type of device. I made a small relay board and mounted it inside also. You can see the wires running off of the relay in the second picture below. The RC car was a piece so even though the board was supposed to support 2 devices using the Forward/Reverse on the Transmitter, something was wrong with it so I could only use the "forward" function.

You're probably thinking "Huh?" Basically the unit is just a switch. I ran the 2 wires from the relay out the back of the box. So let's say you wanted to use this unit with the Cyclone mine. The mine would have it's own battery. You would just wire this "switch" in the connection from the mine to the battery and use it to turn on the mine from a remote location.

Why did I make it like this? Well most of the stuff I plan on using it for required more power than the RC board would support. The relay can take quite a bit more and I can use all sorts of different power ranges with it. Also, I wanted the device to be compatible with a bunch of stuff I'm working on including the Cyclone mine, smoke packs...etc. so it had to be easily portable and transferable between devices.

I haven't done any modifications to the transmitter, but the internal board is tiny (1" x 2" or so) so I will probably put it in something different later on. I ranged it at 50+ feet, which is pretty decent for a RC car that I paid about \$10 for.



Back side of the receiver unit

Transmitter and Receiver



The guts of the receiver

Paint Launcher Cannon



This device is actually a large-bore launching weapon. The basic design can be modified slightly so that you have a Spud Gun (Cannon), a paint ball mortar, or a paint ball grenade launcher. What the heck, why not make all three of them and have a complete paint ball arsenal.

MATERIALS:

1. One 2-inch Thick wall PVC pipe approx. 12" long.
2. One, 2-inch threaded end-cap.
3. One, 12-gram quick-change adapter.
4. PVC cement.
5. Super Glue.
6. A Solenoid Valve (one used in lawn sprinklers works fine).
7. One length of 2" x 4" about 30" long.
8. A 9-volt battery.
9. A short length of hookup wire.
10. A push button switch (a door bell button works fine).

INSTRUCTIONS:

This weapon was designed in order to make it more paintball friendly. The use of a 12-gram quick-change adapter enables it to be reloaded relatively quickly on the paintball field. It basically uses the same principle as a compressed air cannon, but the air chamber is replaced with the 12-gram quick changer and a 6" expansion chamber.

As with all homemade paint ball weapons, all PVC parts must be glued together using PVC glue. All threaded pipe connectors must use Teflon plumbers tape (and lots of it). The hardest part in the construction is making an airtight pressure chamber. If the chamber is not air tight, then the pressure will slowly leak out and leave you with a "dud" when you need it most - on the paintball field! The best procedure is to put it all together and pressurize it, then check for leaks with a soap and water solution (a spray bottle works best).

Drill a small hole in your PVC pressure chamber to make an area for your small 12-gram adapter. (Pressure chamber is 2-4" thick PVC pipe about 6-12" long capped on one end) Glue it in with PVC glue and then use super glue to keep it in under high pressure. You could use a remote if you worked on timing the air. You don't need purple primer, as it isn't using water.

Using a solenoid valve (like the ones used for lawn sprinklers). Attach it between the barrel and your pressure chamber with PVC glue. It is basically a big valve to control airflow. Connect the 9-volt battery and push button switch so the valve opens when you push the button.

Attach an adapter to the valve that changes to your desired barrel size 3/4" or larger as a paintball is .68". The barrel should be smaller (in diameter) than the presser chamber to propel the ball.

To use, close the valve and load your desired amount of paint balls down the barrel. You might try sticking a paper towel in the end so they don't fall out. Turn on the CO2. Point at target. Flip the switch and let her rip'.

TIP: to make paintballs go faster add some type of filler inside the chamber. This will cause less area for the CO2 to expand meaning more pressure when they exit the muzzle.

Paintball Mortar

Simply Build the above cannon and put a bipod on it so it is tilted up into the air.

Grenade launcher

The paint cannon is a 12-gram type with an actual stained wood stock, trigger loop, sights, fore grip assembly and sling. This cannon is easily the best looking one I have seen.

Design and Construction:

The grenade launcher is basically the same as a 12-gram cannon, with the addition of the wood stock and PVC fore-grip. The barrel is wider to accommodate grenades from paint to smoke and even a dummy.

The wood stock is cut from a block of 2" by 4" wood. The wood is cut and shaved/sanded to provide a smooth surface. It was then stained with several coats of wood stain to get the wood stock effect. The stock is attached to the quick changer/valve assembly by metal straps screwed into the stock itself to hold everything together. There is also a trigger loop under the stock that assists in holding the weapon and adds to the realism/aesthetics.

When you finish you can add a sling for easier carrying.

Mask Fan



The mask fan is made up of the following 4 standard electronics store items:

The fan (Made by ADDA, part number AD0412MB-G70) 1-9/16" square by 3/8" thick).
A battery box with either a 12-volt battery or 8 1.5-volt flashlight cells with an on/off switch.
A male/female jack set (to easily disconnect the battery pack from your mask).
A length of twisted-pair wire (length to suit where you want to carry the battery box).

Connect the leads attached to the fan to the male or female jack piece. And attach the fan to your mask (fan mounting will depend on which mask you have).

Connect the length of wire to the other jack piece and the battery box.

Happy hunting!

The most convenient place to get the fan, jack, wire and battery box is your local Radio Shack. Fans are also available from Marlin P. Jones & Associates, PO Box 12685, Lake Park, FL 33404-0685. They will send you a catalog of Electronics Parts by mail if you send a request on a postcard or you can request one by e-mail to catalog@mpja.com. The current price of the fan from Marlin is \$1.25 but they have a \$15.00 minimum order.

Prelate/Carbine and Model 98 Full Auto Modification



WARNING! Doing this modification could damage your bolt, valve and gas chamber if done incorrectly or overly used. This upgrade is not recommended.

Materials:

Nail or similar round object (diameter of a receiver roll pin)
Something to cut the nail

Directions:

Cut the nail point and head off. You must make it 1/4" long. Unscrew the left side of the lower receiver. Make sure to leave all the roll pins in the right half of the receiver along with the screws, springs, trigger, and sear. Cock the gun carefully. (Make sure nothing flies out) Notice the small gap between the sear and receiver roll pin that it swivels on. Put the modified nail there. It should fit snugly but not restrict the movement of the sear. Keep the gun cocked. Replace the left half of the receiver and screw it into place. You can now dry fire the gun. See how the sear constantly engages the trigger? This is what allows it to be full auto. Connect your CO2 and hold down the trigger for an amazing display of firepower. You would probably want to get a motorized hopper to keep up with the rate of fire. I noticed that a VL-200 jams up and the gun shoots air. I don't believe that this is because of the quick cycle rate of the gun (stock ProLite is 300 rpm) but rather from the fact that most hoppers jam up often if not jiggled. You probably would want to limit your rate of fire to three or four shot bursts, as I've found it chops up balls if you don't have a constant feed of paint.

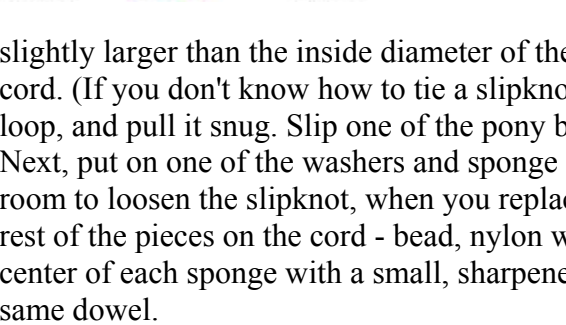
Warning. The tipman may fire faster than you think. An agitated hopper may not be able to keep up with the amount of firing coming from the prelate/carbine. I must say this is the problem they had with the tip man F/A. You will have full auto, but may chop a lot of balls.

PLEASE READ: it is not recommend making any semi auto marker into an automatic. It can damage your internals of your marker and replacing the parts may be expensive. The best thing to do if you want to shoot faster is to reduce the trigger pull. This way you can launch more in a shorter period of time.

Pull Squeegee

This is a cheap, easy to make, yet effective squeegee that you can pull right through the feed port, without removing the barrel. Here's what you'll need:

- About 24" of 1/8" braided nylon cord (I used black)
- 3 plastic or wood "pony" beads
- 2 nylon flat washers, about 1/2" O.D.
- 1 Sponge, 1/2" to 1" thick
- 1 piece of absorbent cloth, about 3" square



slightly larger than the inside diameter of the barrel. Tie a slipknot in one end of the nylon cord. (If you don't know how to tie a slipknot, ask a Boy Scout!) Put the cloth through the loop, and pull it snug. Slip one of the pony beads over the cord, and slide it to the slipknot. Next, put on one of the washers and sponge discs. Tie a knot above the first sponge, leaving room to loosen the slipknot, when you replace the cloth. Referring to the diagram, put the rest of the pieces on the cord - bead, nylon washer, sponge disc. I poked a hole through the center of each sponge with a small, sharpened dowel, then pushed the cord through with the same dowel.

repeating as necessary. You may need to guide the sponge discs a bit as they enter the feed port and make that hard right turn into the barrel. If you have trouble getting the nylon cord to go through the barrel, try putting a 14" length of 1/4" ID vinyl tubing over the nylon cord. Makes it much easier to slip it through the barrel.

I used all plastic, nylon, and wood parts to keep from scratching the inside of the barrel. That aluminum is pretty soft!

You could use insulated wire instead of the nylon cord. 18 or 20-gauge stranded wire should be about right. The stiffness of the wire might make it easier to put it through the barrel. You can actually tie knots in the wire. Just be sure none of the strands are sticking out. It hurts when they poke you!

You also might be able to use very heavy monofilament, like the cutting line from a Weedeater. The only problem with that, might be the ability to tie knots in it.



Make sure your Stingray is cocked and the safety is on. Push the end of the squeegee cord through the feed-port and into the barrel.



Keep pushing the cord until it sticks out the end of the barrel.



Pull on the cord, gently but firmly, while simultaneously guiding the sponges into the feed-port.



Pull it slowly and evenly, all the way out. Clean the paint off the squeegee with a rag.

Non-electric Agitated Hopper

Model I.

This plan is very simple. Take your VL200 or other hopper, and drill two small holes in it. One on the top, forward of the center, and one on bottom, about 1/2 " behind the stalk. Now, take a rubber band, and cut it so it is about 1" long. Next take some string (I prefer leather cord) and tie it to one end of the rubber band. You will knot this in the top hole, so that the rubber band hangs down into the hopper. But not yet! Next, tie a length of string to the other end of the band. Now, crumple up a ball of tape, preferably duct tape ;) and attach it to the bottom of the rubber band, around the string/ band knot. Finally, run knot the top string to the top hole, the top of the band should touch the top of the hopper, with the tape ball hanging in the hopper, then run the other end of the string out of the hole in the bottom of the hopper. Simply attach the end of the string to some moving part of your paint gun, such as the cocking arm, or cocking block.

This is how it works: when the gun fires, and the cocking rod moves back and forth, it will tug on the string which will pull down on the tape ball attached to the rubber band. On each shot, the tape ball will stroke across the feedhole in the hopper, clearing any jams. The rubber band insures it will return to its place.

Model II.

This method will only work on guns with an exhaust valve, such as a 3-way (4-way) valve like on the Auto Cocker. Basically, if you look at the back of the 3way, there is an opening. This is where gas is released during the cycle. If you stick a small tube in the hole (not to far in or you will jam the cycle!) and route it to the hopper (drill a hole in the bottom of your VL200) you can use it to agitate the balls! I have heard however, that this may cause ball breaks in the hopper, if so, put a tiny piece of foam on the end of the tube and see if it helps!

Paintball Silencer (sound suppressor) Plans

PAINTBALL SILENCER I

Materials & Tools:

- PVC pipe.
- Electrical tape.
- 6 Brillo or scouring pads.
- Fine sandpaper.
- A saw.
- A drill.

#1:

Go to any hardware store and purchase a piece of PVC pipe that fits snugly over your barrel. (Remember: If it's not tight, the sound won't be dampened at all).

Bring your barrel with you, because there are different diameters of PVC and not all barrels are a standard diameter.

Buy approximately 2 feet of PVC just in case you run into problems and have to start over. Cut it to your desired length. I recommend that it extend approximately 4-6 inches past your barrel tip and 2-3 inches on the barrel itself for a total of a 6-9 inch length of tubing. The longer your silencer is, the more likely it will be quieter. On the other hand, you don't want to make it too long. That will shift the

weight of the gun too far forward and ruin its balance.

#2:

Drill holes in the pipe on the length of PVC that extends over the barrel. (It doesn't matter how many, but the more the better). When you are finished, smooth the insides of the PVC and holes with fine sandpaper. Remember, the smoother the better. You can drill holes in a spiral pattern, like a J&J barrel or in straight lines like the Flat-line barrel. I recommend anywhere from a 3/16" to 1/4" drill bit.

#3:

Wrap the Brillo or scouring pads around the holes. Then tape the pads around the PVC pipe. I recommend using fine pads, not the coarse ones. If you don't want to use Brillo or scouring pads you may substitute cotton batting instead.

Now you have constructed your silencer. Don't expect this to totally silence your gun, it will just suppress the sound.

An additional method is to do the same as above, except fit a larger piece of PVC pipe over the smaller piece. Drill holes (optional) in it also. DON'T tape the Brillo or scouring pads around the smaller diameter tube; just wrap them around it tightly. Slide the larger diameter PVC pipe over the padding. Then tape the larger PVC pipe to the barrel.

You may want to tape the outer portion of the silencer with camouflage tape. You can purchase the tape at the hunting section at WalMart for about \$2.

PAINTBALL SILENCER II

First you will need...

1. Approx 17" of thin wall 3/4" PVC pipe
2. Approx 12" of thin wall 1 1/4" PVC pipe
3. Two 1.25" straight couplings
4. Two 1.25" x 0.75" reducers

5. PVC cement
6. A round file
7. Sandpaper
8. A drill and 3/16" drill bit
9. A 3/4" coupling or 1"x 3/4" reducer depending on barrel type of you gun (you may want to get an extra one)
10. Steel wool or insulation



These instructions are for a fairly large silencer, but you can trim length to suit your tastes. I have found this large silencer to be the quietest I have ever seen. First apply PVC cement to the inside diameter to one side of both 1 1/4" couplings. Tap the 1 1/4" reducers into the glued side of couplings. Take the round file and sandpaper and ream out the reducers so that the 3/4" pipe will go ALL THE WAY THROUGH THEM, BUT FIT TIGHT. Take your time and check size often to make it tight. Glue the 12" 1-1/4" pipe into ONE of the couplings, leave the other side unglued. That part is now complete.



We'll refer to that as the "cover". Measure own approx. 2" from end of 3/4" pipe and 6" from the other end, and start drilling holes all through the middle of the marks. Take your time and

make holes clean. Run sandpaper down the inside to clear any burrs. Glue the other reducer/coupling assembly to the 2" side of the barrel, leaving 1" extending out of the reducer. Here is where you have to determine what size coupling to fit your gun. The 3/4" straight coupling can be sanded to fit 13/16" barrels, or use a 1"x 3/4" reducer to attach gun to silencer. You may have to "custom fit" your silencer to the barrel you have. Just make sure that a paintball can slide through silencer easily. Wrap the now vented barrel with steel wool and slide into the cover assembly with end of the barrel through the opening.



The 2 pieces should fit together nicely in the couplings and allow you to take cover off for cleaning and changing steel wool. Do not pack steel wool too tight, because you want some air space inside for absorbing sound and expanding air. Here one is attached to a Talon; A pump gun is fine for use with a silencer, no need to rapid fire if they don't know where you are anyway.



Smoke Bomb

Ingredients:

Granulated Sugar
Potassium Nitrate (Salt Peter)

Directions:

Mix the ingredients (4 parts sugar to 6 parts Potassium Nitrate) in a steel or glass pan (**DO NOT USE AN ALUMINUM PAN**). Heat mixture over low heat until it melts. Patience is necessary, if you heat it too fast it will flame up and the smoke (an enormous amount) will be all around you. Pour the liquefied mixture into one or more containers (see caution below when choosing container size). As it begins to solidify, insert several wooden matches so that the heads are about even with the surface to use as fuses.

CAUTION; a pound of this stuff will fill up a whole city block with dense white smoke.

Sources for Potassium Nitrate:

Drug Stores. (All of them will not have it.)
Larger Garden Centers (it is used to soften the hard outer shells on seeds before planting).
Fisher Scientific. <http://www.fishersci.com/>
Some mom & pop Hardware stores (if you can still find one).
Make your own (see instructions on page 47).

Potassium Nitrate is a semi-controlled material in many communities. If you happen to live in one of these areas your best bet is mail order or the Internet.

Fuses (taken from, The Jolly Roger)

You would be surprised how many recipes there are out there that use what comes under the category of a "fuse." They assume that you just have a few laying around, or know where to get them. Well, in some parts of the country,

fuses are extremely hard to come by. This recipe tells you how to make your own. Both fuses presented here are fairly simple to make, and are reasonably reliable if you keep them dry.

SLOW BURNING FUSE (approximately 2 inches per minute):

Materials:

- Cotton string or 3 shoelaces
- Potassium Nitrate or Potassium Chlorate
- Granulated sugar

Procedure:

- Wash the cotton string or shoelaces in HOT soapy water.
- Thoroughly rinse with fresh water.
- Mix the following together in a glass bowl:
 - 1 part potassium nitrate or potassium chlorate
 - 1 part granulated sugar
 - 2 parts hot water
- Soak strings or shoelaces in this solution
- Twist/braid 3 strands together and allow them to dry
- Check the burn rate to see how long it actually takes!

FAST BURNING FUSE (40 inches per minute):

Materials:

- Soft cotton string.
- Fine black powder (make your own or empty a few shotgun shells!).
- Shallow dish or pan.

Procedure:

- Moisten powder to form a paste.
- Twist/braid 3 strands of cotton together.
- Rub the paste into the twisted/braided string and allow drying.
- Check the burn rate!

How to make Potassium Nitrate

(Taken from; The Jolly Roger)

Potassium Nitrate is an ingredient in making fuses and smoke bombs, among other things. Here is how you make it:

Materials needed:

- 3.5 gallons of nitrate bearing earth or other material
- 1/2 cup of wood ashes
- Bucket or other similar container about 4-5 gallons in volume
- 2 pieces of finely woven cloth, each a bit bigger than the bottom of the bucket
- Shallow dish or pan at least as large in diameter as the bucket
- Shallow, heat resistant container
- 2 gallons of water
- Something to punch holes in the bottom of the bucket
- 1 gallon of any type of alcohol
- A heat source
- Paper & tape

Procedure:

- Punch holes on the inside bottom of the bucket, so that the metal is "puckered" outward from the bottom.
- Spread cloth over the holes from the bottom.
- Place wood ashes on the cloth. Spread it out so that it covers the entire cloth and has about the same thickness.
- Place 2nd cloth on top of the wood ashes.
- Place the dirt or other material in the bucket.
- Place the bucket over the shallow container. NOTE: It may need support on the bottom so that the holes on the bottom are not blocked.
- Boil water and pour it over the earth very slowly. **DO NOT** pour it all at once, as this will clog the filter on the bottom.
- Allow water to run through holes into the shallow dish on the bottom.
- Be sure that the water goes through **ALL** of the earth!
- Allow water in dish to cool (for an hour or so).
- Carefully drain the liquid in the dish away, and discard the sludge in the bottom
- Boil this liquid for at least two hours. Small grains of salt will form
- scoop these out with the paper as they form.
- When the liquid has boiled down to 1/2 its original volume, let it sit and cool.
- After 1/2 hour, add equal volume of the alcohol; when this mixture is poured through paper, small white crystals appear. This is the Potassium Nitrate.

Purification:

- Dissolve the crystals in small amount of boiling water.
- Remove any crystals that appear.
- Pour the solution through a filter.
- Heat concentrated solution to dryness.
- Spread out crystals and allow them to dry.

URL List for Paint Ball Supplies & Accessories

First, a word about URLs. As you know, they come and go more frequently than the weather changes. Here is a list that, so far at least, has withstood the test of time. This does not mean, however, that they will be there when you try to access them.

1. <http://www.paintballondemand.com/>
2. <http://www.lockandloadpaintball.com/>
3. <http://www.paintball.8k.com/>
4. <http://www.piratepaintball.com/>
5. <http://www.paintball.com/>
6. <http://www.paintballpx.com/>
7. <http://psn.virtualave.net/>
8. <http://www.hellhounds.saskhost.com/>
9. <http://www.bbtpaintball.com/>
10. <http://www.paintballcommand.com/>
11. <http://www.ball-busters.com/>
12. <http://www.countypaintball.com/>
13. <http://www.jtpaintball.com/>
14. <http://www.airconcepts.com/>
15. <http://www.foxholepaintball.com/>
16. <http://www.paintball-world.com/>
17. <http://www.800paintball.com/>
18. <http://www.arrow-precision.com/>
19. <http://www.viewloader.com/>
20. <http://www.warpedsportz.com/>
21. <http://www.nitroduck.com/>
22. <http://www.spankypaintball.com/>
23. <http://www.kickasspaintball.com/>
24. <http://www.playpaintball.com/>
25. <http://www.allenpaintball.com/>
26. <http://www.earthpaintballnetwork.com/>
27. <http://www.thenppl.com/>
28. <http://www.diablodirect.com/>
29. <http://www.sport.com/>
30. <http://www.djspaintball.com/>
31. <http://www.greatlakespaintball.com/>
32. <http://www.easternpaintball.com/>
33. <http://www.paintball-games.co.uk/default.htm>
34. <http://www.paintball-guns.com/paintball.html>
35. <http://www.ypc.co.uk/shop/>
36. <http://espproshop.com/>
37. <http://www.geocities.com/Pipeline/7734/>
38. <http://www.biohazardpaintball.homepage.com/>
39. <http://www.angelfire.com/il2/teamnolimit/indexreal.html>
40. <http://www.geocities.com/SouthBeach/Canal/7801/AOC.html>

41. <http://www.spitfirepaintball.com/>
42. <http://www.geocities.com/breizerman/Paintball2Xtremes.html?943921612040>
43. <http://redrival.com/bunkered/>
44. <http://users2.50megs.com/airhead/Home.html>
45. <http://monsterpaintball.com/>
46. <http://www.expage.com/page/paintballglory>
47. <http://paintball-extreme.virtualave.net/>
48. <http://www.geocities.com/Pipeline/Shore/6591/teampressurepoint.html>
49. <http://members.aol.com/ARP8NTBALL/PAINTBALL.HTML>
50. <http://www.geocities.com/HardcorePaintball/>
51. <http://members.theglobe.com/igo4uf/snipersrenagade.html>
52. <http://members.tripod.com/paintballadvisory/>
53. http://cybergeek_99.tripod.com/paintball/playhome.html
54. <http://www.semo.net/suburb/jwawak/paintball/>
55. <http://paintballfanatics.safeshopper.com/>
56. <http://extrememercenies.homestead.com/index.html>
57. <http://paintball-extreme.virtualave.net/cgi-bin/topsites.html>
58. <http://team.eclipse.homepage.com/>
59. <http://www.ghilliesuits.com/>
60. <http://www.fishersci.com/>
61. <http://www.paintball-online.com/>
62. <http://www.paintballplanet.com/>
63. <http://www.predator-paintball.com/index2.html>
64. <http://store.yahoo.com/779331/index.html>
65. <http://www.skanline.com/menupbgg.html#Paintguns>
66. <http://www.dropzonepaintball.com/index.html>
67. <http://www.bestpaintballprices.com/>
68. <http://www.paintballgear.com/>
69. <http://www.nationalpb.com>
70. <http://pcspaintball.com>
71. <http://www.paintballmart.com>
72. <http://www.corin.com/coasttocoast>
73. <http://www.adventurepaintball.com>
74. <http://www.888paintball.com>
75. <http://cepaintball.com/merchant/merchant.mv>
76. http://New_Napster_Site.MP3.pif

How to Make the Spyder Fully Automatic

Danger:

The Spyder is not made to go full auto. If you do this you will probably chop balls and you may risk damaging the valve.

Method 1:

This is probably the best method of the two presented here. What you will want to do first is remove the trigger frame. Once the frame has been removed figure out how the trigger works. You will notice that the sear can be pushed forward. When the sear is in the forward position it is engaged with the trigger and when you decrease the pressure on the sear it is disengaged with the trigger. The idea behind this is to keep the sear constantly engaged with the trigger. That way the sear cannot go back to it's original position and reengage the striker making you pull the trigger again. Once you understand how the trigger and sear work remove the pin that holds the sear in place. When the sear is removed you will notice the hole that the pin goes through has room for about 2 pins. What you want to do now is place a piece of metal in the front part of that hole. However make sure that the metal pin will still fit. Now reattach the sear to the frame making sure that the sear will still move up and down when the trigger is pulled, only this time the sear should stay down for as long as you have the trigger pulled. This should render the gun full auto, one word of advice you will probably not want to shoot long strings of paint because the valve will need time to recharge.

Method 2:

This method also works but it is more difficult than the first one. You will notice that when you take the sear out there is a spring that makes it go back after the trigger has been pulled. What you are going to want to do is reverse the spring so that it pulls the sear against the trigger. Thus making the sear stay in constant contact with the trigger. I have no idea what to attach the spring to. It's just an idea that I came across, it would work so long as a place can be found to put the spring. I still think that the first method is the best.

PLEASE READ:

It is not recommended making any semi-auto marker into an automatic. It can damage the internals of your marker and replacing the parts may be expensive. The best thing to do if you want to shoot faster is to reduce the trigger pull. This way you can launch more in a shorter period of time.

Paintball Bazooka

WARNING: The paintball bazooka is designed for long-range fire only. Do not fire or point at any person or animal within 50 ft. when it is ready to fire. Never aim or fire at the head or genitalia of a person or animal. Always wear eye and ear protection. Always make sure anyone within firing range is wearing eye and ear protection.

Introduction:

This paintball bazooka design is a variation of the spud gun or potato launcher. In principal it works the same way. It is constructed of PVC piping, uses hair spray (or just about any other flammable aerosol product) for fuel and will fire about 40 paintballs at once. I'm sure you'll find the construction and use of the paintball bazooka fun and easy. Be careful and have fun.

Instructions for the assembly of the Paintball Bazooka:

Materials required:

3' x 3" PVC pipe
4" x 3" PVC pipe coupler
1' to 2' x 4". PVC pipe
4" PVC pipe clean out end cap
Barbecue/stove lighter
Cheap unscented hair spray
Graphite
PVC pipe cement
PVC pipe cleaner
Thin cardboard
White glue
8 OZ. Styrofoam coffee cups
Lots of paintballs

Tools required:

Rounded file
Drill and bit
Knife (utility knife)
Scissors

Assembly:

File the 3' x 3" PVC pipe around the inside edge at both ends. This will help with loading paintball cartridges into the chamber and also clean off any burrs at the muzzle. Cement the 3' x 3" PVC pipe into 4" x 3" PVC pipe coupler. Be sure to

clean the mating surfaces of both pieces with PVC pipe cleaner before they are cemented together. This softens up the plastic so that the cement can work properly. Apply the cement evenly and completely on all mating surfaces. Cement the 1' to 2' x 4" PVC pipe into the 4" x 3" PVC pipe coupler. Cement the 4" PVC pipe clean out end cap onto the 1" to 2' x 4" PVC pipe. Using a drill and or heated knife to make a rectangular hole in the center of the threaded cap that screws into the 4" PVC pipe clean out end cap. Make this hole just big enough so that the barbecue/stove lighter will fit snugly into it all the way up to its handle. To simplify firing procedures you may want to cement the barbecue/stove lighter into the hole with strong plastic cement or epoxy. Do not use PVC pipe cement; it only works to cement PVC pipe together. Before use, and whenever needed, lubricate the inside of the barrel (3' x 3" PVC pipe) with graphite.

Paintball cartridge assembly:

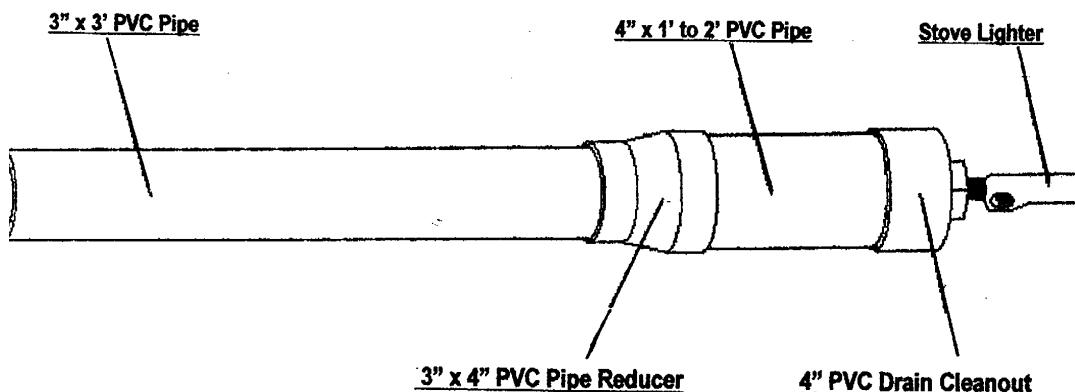
With a utility knife cut an X into the bottom of an 8 oz. Styrofoam coffee cup (I use Styrofoam cup brand but any brand should work). This X cut will help the cup to break open when it leaves the muzzle. With scissors cut the very lip around the mouth of the cup off. Don't cut the whole mouth of the cup off, just the small lip around the edge of the mouth. This lip makes the cup too large to fit into the barrel. Fill the cup with paintballs (about 40). Use the inside edge of the 1" X 3" PVC pipe to stencil a circle onto the piece of thin cardboard and cut it out with scissors. With white glue, glue the cardboard circle onto the mouth of the cup. Pass the whole thing through the 1" x 3'. PVC pipe to make sure it will fit into the bazooka barrel. Let the glue dry thoroughly before use.

Directions for loading and firing:

1. Unscrew rear lid. Blow one deep breath into the combustion chamber.
2. Load paintball cartridge into the firing chamber through the rear opening by pushing it through the combustion chamber and into the beginning of the barrel.
3. Spray hair spray into the rear opening in a circular motion for three to five seconds. Quickly screw the rear lid back on tightly and insert igniter (barbecue/stove lighter) into the hole in the rear lid.
4. Hold the bazooka in a comfortable firing position and aim at your target. This can be done one of two ways. Hold the bazooka midway down with one hand and the other on the igniter or kneel down with the bazooka resting on your shoulder so someone else can aim and fire the bazooka from behind. Depress the igniter button when you are ready to fire. If it does not fire the first time, it most definitely will with the second push on the igniter button. Make sure you have a firm grip on the bazooka because it will kick back on ignition.

Other uses for the Paintball Bazooka:

Certain size food cans and tennis balls will fit loosely into the barrel of this weapon. All you need to do is wrap a few layers of tape around the can until it slides down the barrel tightly but without binding. Some plastic drink bottles will work the same way. These are suggestions only and could be harmful to persons, animals and property. **CAUTION MUST BE EXERCISED.**



Painting Your Paintball Gun

Change the color and appearance of your paint guns for under \$10 at home without any expensive anodizing. A little while back there was a special time-filler after a NASCAR race on TV about automobile painting and I thought it might be an interesting technique to try on a paint gun. My auto cocker was looking pretty beat up from a year of hard almost weekly use and I was considering some anodizing and chrome dips. But this idea got me thinking.

Some of you out there I've heard complain about trying to get spray paint to stick to brass or aluminum and it just refuses to cooperate with you. The majority of the problem I've seen is that 99% of you use the wrong paint. You go to WalMart or your local home improvement shop and buy some interior/exterior all-purpose kind of paint or even model car/plane paint which is made to chemically bond to plastic, which peels off your gun the first day you play with it. The only place, I mean **ONLY** place (don't even try to argue otherwise) you should even bother to look is your local auto parts store. The paint you see at the department stores and home improvement warehouses is generally meant for use on plastics and wood. Some of it, such as primer, is meant as rust protective for lawn furniture and such, but it's not as durable as what you find at the auto shop. Also, automobile paint has the distinction of being meant for application on metal, including aluminum, and used in all weather and under harsh conditions.

The materials you need are (do all your shopping at the local auto parts store, not WalMart or some department store) :

1. Automobile spray primer
2. Automobile spray paint (Enamel - any color)
3. Fine grit wet-dry sandpaper (I like fine emery cloth)
4. A nice, cool, well ventilated area to spray paint
5. A respirator mask (the car parts store should carry disposable masks for painting)
6. Paper towels, Kleenex, napkins, toilet paper

Some other materials you may want to have :

- Rubber gloves
- Oven cleaner
- Newspaper or a drop cloth

First thing you should do is dismantle your gun down to the bare parts. You should take it apart so that the parts you are going to paint don't have any other internal or external parts attached. This guarantees you don't get paint where you don't want it. If you don't know how, consult your owners' manual. Most of the time they have an exploded parts diagram. If you don't have a manual contact the manufacturer through their web site and ask for one. They usually are happy to send them. Face it though, most paint ball guns aren't complicated. They practically fall apart when you wave a 1/8" Allen wrench at them.

An optional step you could take is to remove the anodizing from your gun by spraying the parts with oven cleaner and let them sit for 15-30 minutes before cleaning it off. Make sure

if you do this you clean the parts thoroughly before continuing. I don't know if removing the anodizing helps the paint stick better, but I tried it with a few of the parts on my gun to test it and it seems to, but it's not necessary.

OK, let's go to the actual painting process. Now before I begin to tell you what to do, I'm going to warn you. Make sure you have automobile primer and spray paint (enamel) from your local auto parts store and make sure you read and follow these steps to the letter. If you are not reading this article in it's entirety or you are planning on taking some shortcuts, don't bother e-mailing me with questions because I won't be able to help you if you aren't going to follow my instructions. Not doing so will **absolutely not** give you good results. So consider yourself warned.

Clean off all your parts to be painted with a mild soap and water. I use dish soap but Simple Green and others seem to work well too. Paint sticks better to clean parts. Also it's a good idea to plug all the holes in the gun with toilet paper or paper towels or something. Packing a ported barrel **tightly** with Kleenex will keep out the paint.

You now need to give your gun two to three **EVEN, thin coats** of **PRIMER**. Let the parts dry for 30 to 45 minutes between each coat. After the last coat let it sit for **no less** than an hour (overnight is even better).

Using the light sandpaper, **gently** sand the parts you've primed. You aren't trying to smooth anything out, just rough it up a little. This helps you in the next step. If the primer clumped or ran when you applied it, sand those areas smooth, reapply the primer, let dry an hour, and re-sand.

Be very patient painting your parts with the enamel. This is what people will be seeing, so **TAKE YOUR TIME**. It's best to do 5 ultra-light, smooth coats, than one big, thick, runny coat of paint. I'd recommend two to three light, smooth, even coats of paint, allowing 45 minutes to an hour to dry between each coat. No less than 45 minutes though.

After painting, you should bake on the paint. Set your kitchen oven to bake 175 - 200 degrees Fahrenheit and suspend your parts with bare wire or coat hangers from the racks or use a cookie sheet. Make sure if you have a spouse, or parents that you get their permission to do this, it will make your house smell like spray paint for a few hours. Baking the paint is not necessary but it will make the paint job last longer.

Either way, after baking or just after painting, you **MUST** let the parts sit undisturbed in a well-ventilated area for 24 hours. Don't touch them, don't breath on them, don't try to put the gun back together, heck, don't even look at them for 24 hours. This ensures that the paint completely dries and sets.

Oh, you didn't think you were done did you? Well for the most part you are. You could carefully reassemble the gun at this point and call it finished. But here are some tips for making it even **BETTER**!

Use a light polishing wax and buff the finish as per the manufacturers instructions. This will really bring out a deep shine especially with metallic paints.

Spray a good coating of clear coat over the finish after you've buffed it (or after you let the paint completely dry). This will help protect the finish from dings and scratches.

Lastly, a coat of wax helps keep the finish shiny and new. It's good to wax it when you clean your gun after a day of playing.

If you take care not to drop your gun or beat it up by tossing it in the trunk of your car or mixing it in with loose air tanks and parts, the paint job is nearly indestructible. My 'Cocker had a nice deep green for over a year and there were only a few scratches and chips in it where I had abused the gun a little. I repainted it recently to get a new look. After it's first day of play, the finish is still pristine.

Happy Painting.