



Steps to Building the Air Pressure Rocket Launcher

1. Purchase Materials – The rocket launcher is made from Schedule 40 PVC plumbing parts, available at most hardware stores. Refer to the diagram and list below for parts to purchase.

- a. Schedule 40 3" Cap
- b. Schedule 40 3" x 2" Coupling
- c. Schedule 40 Flush Bushing 2" x ¾"
- d. Schedule 40 3" Elbow (need 2)
- e. Schedule 40 Compact ¾" Ball Valve
- f. Schedule 40 ¾" 90 Degree Elbow (One end a "Slip Joint" and other end "Threaded")
- g. Schedule 40 ¾" 90 Degree Elbow (Both ends "Threaded")
- h. Schedule 40 Flush Bushing ¾" x ½"
- i. Snap-in Tubeless Tire Valve (TR418 or similar) – available at auto supply stores
- j. PVC Purple Primer and PVC Cement kit
- k. Pipe :
 - i. 3" pressure (total length needed, including loss for cuts = 30 inches)
 - ii. ¾" pressure (total length needed, including loss for cuts = 6 inches)
 - iii. ½" pressure (total length needed = 18 inches)

2. Cutting Parts – Use a saw hand saw or electric chop saw.

- a. Cut the 3" pipe into three pieces, one 17" long, one 6" long, and one 5" long
- b. Cut two 2" long pieces of ¾" diameter tube
- c. Cut one 18" long section of ½" diameter tube

3. Adding the Valve Stem - Using a drill and a drill bit, drill a hole in the center of the 3" end cap. The size of the hole will depend upon the diameter of the tire valve stem purchased. Make sure the diameter of the hole is smaller than the rubber stem so that the stem self-seals to the cap when it is pushed through the hole from the inside out.

4. Assembly – Purchase PVC joint compound at the hardware store and follow label instructions.

- a. Join the end cap and the 17" pipe segment using PVC cement.
- b. Join the 5" and 6" segments with 3" elbows using PVC cement. Note: the large tubes will serve as the launcher base. Ensure the elbows are aimed in the same direction.
- c. Cement the 3" x 2" Coupling and the 2" x ¾" Flush Bushing.
- d. Prepare the two 2" long pieces of ¾" tubes for cementing. Join one 2" long piece to the flush busing and the other 2" long piece to the end of the valve attachment.
- e. Cement the slip joint end of the ¾" elbow (with the outside threads on opposite end) to the ¾" tube. Screw the second elbow on to the first. Do not cement this threaded elbow as it needs to allow for rotation.
- f. Cement the ¾" x ½" Flush Bushing into the open end of the second elbow.
- g. Cut an 18" long piece of ½" pipe and push it into the elbow. It can be cemented if you wish. This will be the launch tube. Consider sanding or beveling the end or tip of the launching tube as this will allow for rockets to be added easily for launching.
- h. Optional (*recommended*): For extra strength, wrap the tubes with nylon filament tape.

Air Pressure Launcher Design

Uses 3" Elbows to make launcher self-standing

