BOTTLE ROCKET LAUNCHER ASSEMBLY

Parts:
Reference Quantity Description
A – 32 in. LONG 1/2 " CPVC Pipe (SCH40)
B – 2 1/2 in. LONG 1/2 " CPVC Pipe (SCH40)
C – ONE 1/2 " CPVC Cap
D – ONE 1/2 " CPVC Elbow
E – ONE Auto Tire Valve Stem (Long one if you can find it)
F – ONE board – 2" x 10" x 4'–0"LONG
G – ONE board – 2" x 6" x 3'–0"LONG
H – ONE board – 2" x 4" x 1'–0"LONG
I – 2 Pipe clamps for 1/2 " pipe
J – 7 Deck screws or similar flat head wood screws
K– Duct tape (Wrap enough around pipe so bottle will not slip thru)
4–8 – 2–Liter Plastic Soft Drink bottles

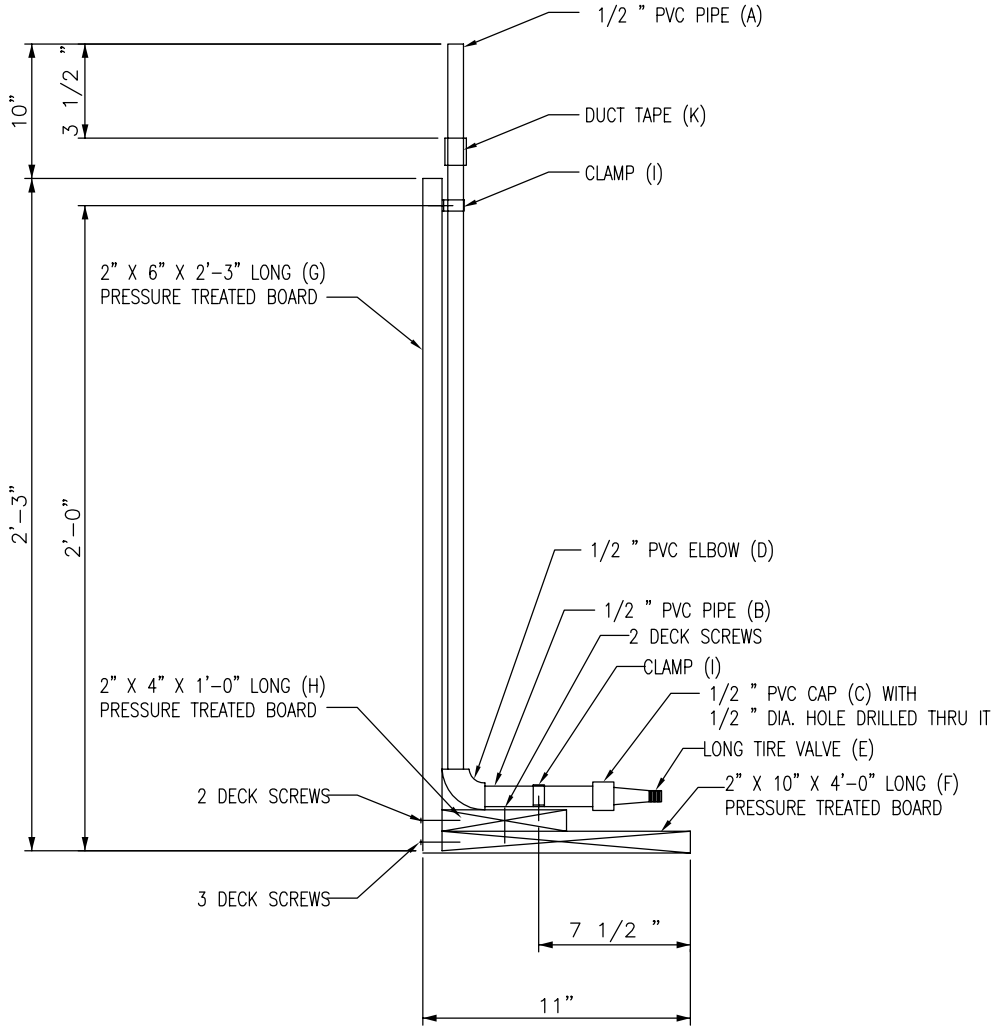
Material Note:
CPVC is the correct designation for these pipes and fittings. To be on the safe side, shop with a tape measure and the top from a 2–liter bottle in hand.

Construction:
Drill a 1/2 " hole in the center of one end cap (C); insert valve stem and pull it firmly through the hole. Clean and cement all PVC parts together according to the above diagram. Attach to board using clamps and screws. Center boards "G" & "H" and pipe assembly on board "F"

Operation:
Pour about 3 inches of water into the 2–liter bottle. Invert the bottle and place over 1/2 " PVC until firmly seated against duct tape. Hold bottle in place with one hand, the air pressure will force the bottle to slip out of your hand. For safety reasons avoid having your face or hands in the path of the bottle. Use 1" (inside diameter) bicycle tire pump attached to the valve stem to pump air into the bottle. (Launch is at 30 to 45 psi is typical.

Results:
When internal air pressure overcomes the friction of the seal the rocket will shoot into the air trailing a brief stream of water. Altitudes of 50 to 80 feet are typical. If you try to hold the bottle to long, the 2–liter plastic bottle may rupture and spew water. (Adults use good judgement and always keep it supervised.)

Safety considerations:
Only launch light plastic bottles.
Use with adult supervision.
Keep boys clear of the launch area (3 or 4 feet back). A roped pen would be a good idea.
Do not launch at angles below about 60 degrees. In particular, do not launch at very low angles. When launched at high angles, all of the water leaves the bottle within the first few inches of flight, so there is very little momentum to cause injury. But don't take chances on a "point blank impact" with soft tissue (noses, eyes, etc.) The boys will want to catch the bottles as they come back down... Only allow this if the area is clear of ground hazzards that might trip them. The plastic bottles descend with little momentum.



SAFETY FIRST

(TOMAHAWK DISTRICT – PACK 588)