

## Dave's Antenna Line Launcher

David Warwick  
K4DJW

### 1. List of materials:

- a) 2" PVC Cap
- b) 1 Tire air valve, tubeless tire type. (Use metal nut type for greater strength)
- c) 2 inch diameter Sch 40 PVC pipe, 28 inches long (air accumulator)
- d) 2 inch coupling
- e) 2 inch to 1-inch reducer bushing
- f) 1 inch diameter PVC pipe, 2 inches long
- g) 1 inch threaded male adapter
- h) 1 inch brass ball valve
- i) 1 inch threaded male adapter
- j) 1 inch diameter PVC pipe 2 inches long
- k) 1 inch coupling
- l) 1 inch to 1.25 inch adapter bushing
- m) 1.25 inch diameter sch 40 PVC pipe, 30 inches long (barrel)
- n) 1.25 inch shallow coupling (front sight)
- o) SS hose clamp (clamps sight and reel to barrel)
- p) Fishing reel with 30 lb test line
- q) Small can of PVC Primer (purple)
- r) Small can of PVC glue
- s) Teflon pipe thread tape
- t) 1.25 inch wood dowel drill and fill with lead (projectile)
- u) SS eye hook (screw into projectile for line attachment)
- v) 1 inch diameter PVC pipe 8 to 10 inches long for projectile (plug and fill to 16 oz. of total weight).

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### 2. Assembly Instructions:

#### Notes:

- Use PVC primer (purple) before gluing joints. Ensure all joints are fully seated and hold for 30 seconds when gluing.

- I used twice the air volume in the chamber to the volume of the barrel. The barrel and chamber length could be adjusted as desired but I am sure the ballistics will change.

- a) Cut 2-inch diameter PVC pipe to 28 inches long (for air accumulator).
- b) Drill a 1/2 or 5/8 inch hole near end and insert tire valve.  
(apply dish detergent to make valve slide in hole easily).
- c) Glue 2-inch end cap onto tire valve end of 2-inch pipe.
- d) Glue 2 inch coupling onto open end of 2-inch pipe.
- e) Glue 2 inch to 1-inch reducer into open end of 2 inch coupling.
- f) Glue 1-inch diameter pipe 2 inches long into reducer.
- g) Glue 1 inch threaded male adapter to 1-inch pipe.
- h) Wrap threads with at least 2 times around with Teflon tape in the direction of rotation.
- i) Screw 1-inch ball valve onto male adapter.  
( I prefer the handle positioned so you pull back to open the valve).
- j) Cut 1.25 inch diameter PVC pipe to 30 inches long (for barrel).
- k) Glue 1.25 inch coupling onto pipe.
- l) Glue 1.25 inch to 1-inch adapter to coupling.
- m) Glue 1-inch diameter pipe 2 inches long to adapter.
- n) Glue 1 inch threaded male adapter to 1-inch pipe.
- o) Wrap threads with Teflon tape and screw barrel into valve.
- p) Attach fishing reel to bottom of barrel near the end using stainless steel hose clamp.

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q) Attach 2" coupling (for the sight) to top of barrel near the end using stainless steel hose clamp.

### Operating Instructions:

**Note:** This is not a toy and is intended for use by responsible adults only. Personal and/or property damage could result if this line launcher is not used according to instructions and for its intended use. This line launcher is designed for use by amateur radio operators or other personnel installing wire communication antennas. This launcher will launch a projectile (with 30 pound test fishing line attached) over tree limbs or other objects for the intent of attaching and raising antenna support lines to appropriate heights for radio communication.

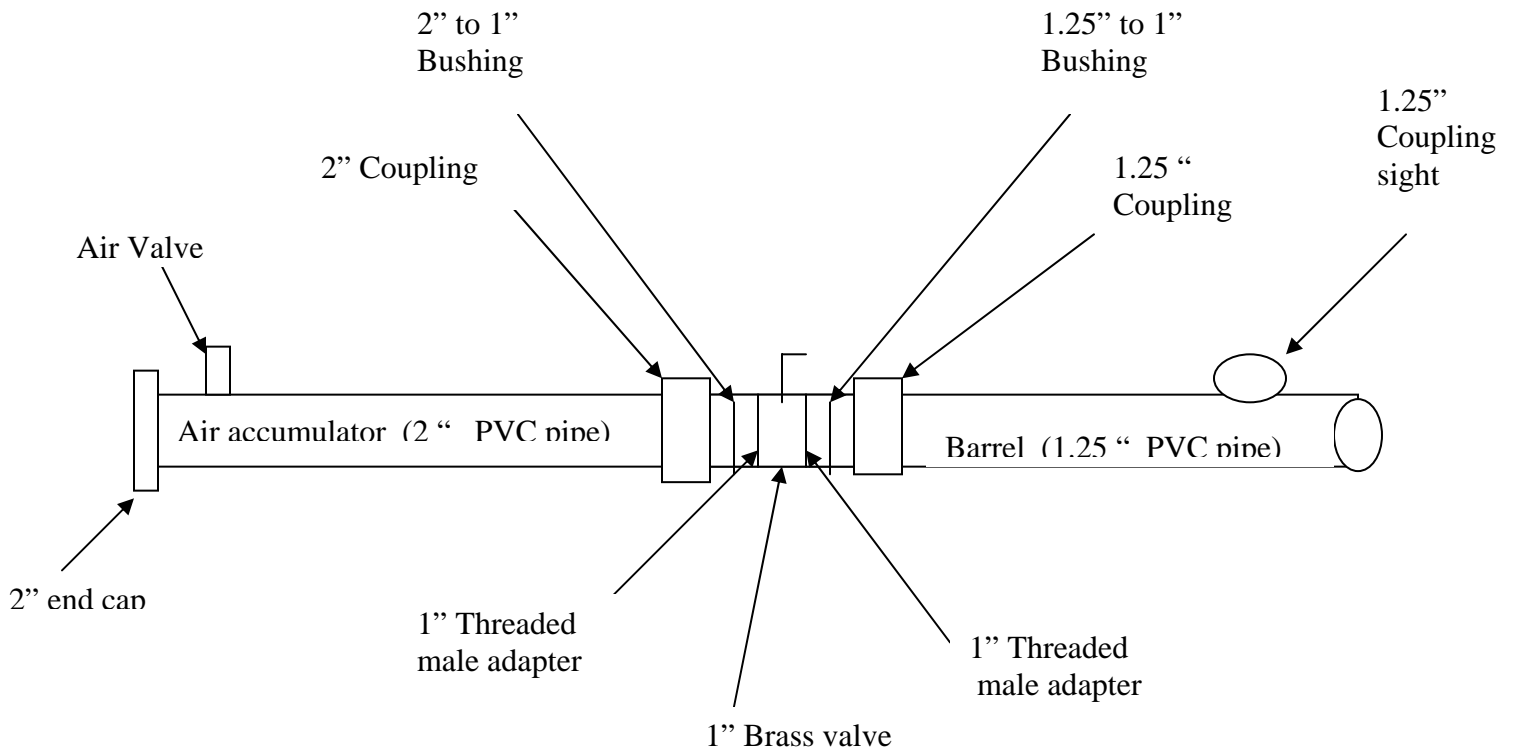
- a) Estimate target (tree limb) height using the following method:
  - 1) Measure up 5 feet from the ground and mark the tree.
  - 2) Step back 25 feet, hold a ruler at arms length and measure the height of your mark.
  - 3) Using the ruler, measure the distance to your target.
  - 4) Divide your measurement (in inches) to the target by 12 to get the height (in feet).
- b) Ensure valve is closed.
- c) Ensure fishing reel is set to release line. Attach fishing line to projectile, then insert projectile to the bottom of barrel with the eye hook facing the open end of barrel.
- d) Fill accumulator with estimated minimum amount of pressure needed to reach target.  
(Use 12-volt air compressor or pre-charged tire air tank)
- e) Place butt of launcher on ground as close to base of target (branch) as possible. You want the launcher barrel to be as vertical as possible to avoid the projectile going further down range than needed. (Launched can be shoulder fired if desired).
- f) To help stabilize the barrel when firing, put your left hand as high as possible on the barrel while looking through the sight.
- g) Aim through the sight at target.
- h) Ensure area past the target is clear of people and things for 300 feet that could be damaged.
- i) Pull valve handle to the rear as fast as possible.
- j) After projectile hits the ground, remove weight and tie antenna support rope to the fishing line using a bowline knot.
- k) Tape over the knot with black electrical tape to help it to slide through branches.
- l) Reel the fishing line in with the antenna support rope attached.

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*Ballistics Chart (Using 16-ounce projectile)*

50 PSI	60 PSI	70 PSI	80 PSI		
	98 Feet	119 Feet	126 Feet		
		<i>Using 8 oz</i>	<i>Projectile</i>		
	?				



## Estimate Distance to Target

- 1) Measure up 5 feet from ground and mark the tree.
- 2) Step back 25 feet, hold a ruler at arms length and measure the height of your mark.
- 3) Using the ruler, measure the distance to your target.
- 4) Divide your measurement (in inches) to the target by 12 to get your target distance in feet.

**Ballistics Chart Using 16-ounce projectile**

50 PSI	60 PSI	70 PSI	80 PSI
	98 feet	119 feet	126 feet