Building an Antenna Rigging Air Launcher

By

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W2AUS

Building an Air Launcher

- Precautions:
  - You are building an air pressure vessel – **Attention to detail is critical (i.e., no short cuts)**
  - Schedule 40 pipe was designed for pressurized water, not compressed air – **KNOW the risks**!
  - Use new PVC stock, or at least PVC components that have **NOT** been stored outside or exposed to UV light or oil/solvents for any length of time.
  - Purchase fresh PVC glue and primer (this stuff deteriorates quickly within just a year)
  - Prep **all** your joints by lightly sanding them before applying primer and glue.
  - Use thread sealing compound instead of Teflon Tape on PVC joints. Teflon Tape is OK for metal/metal joints.
  - **Paint** the Air Launcher to protect against UV, oil and solvent damage.

Material List for Launcher Body

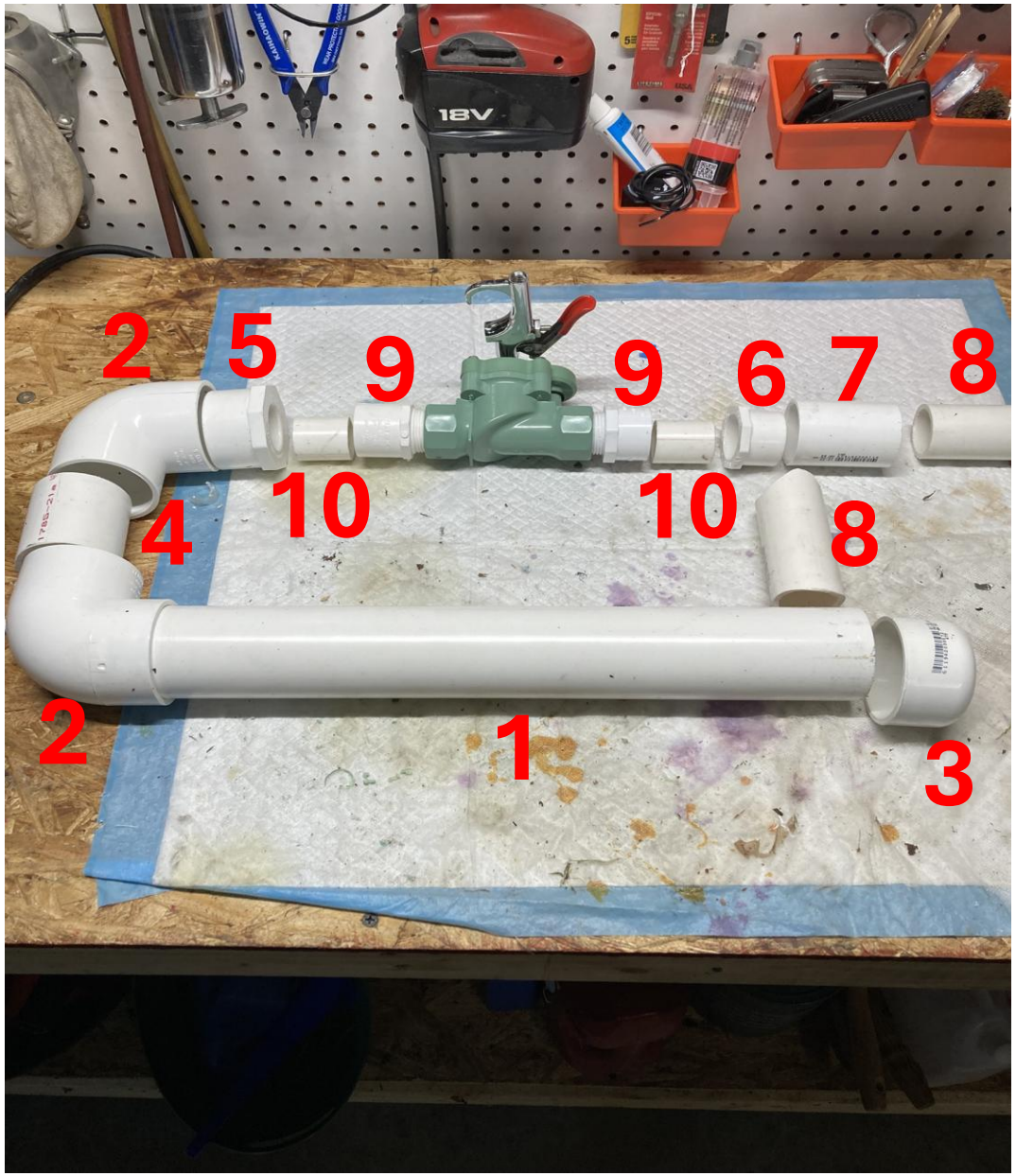
(1) Metal Tire Valve Stem (Amazon Link)

(1) Air Pressure Gauge (0-60 PSI) 1/8 MIP (aka NPT) with Rear Inlet Connection (Amazon Link)

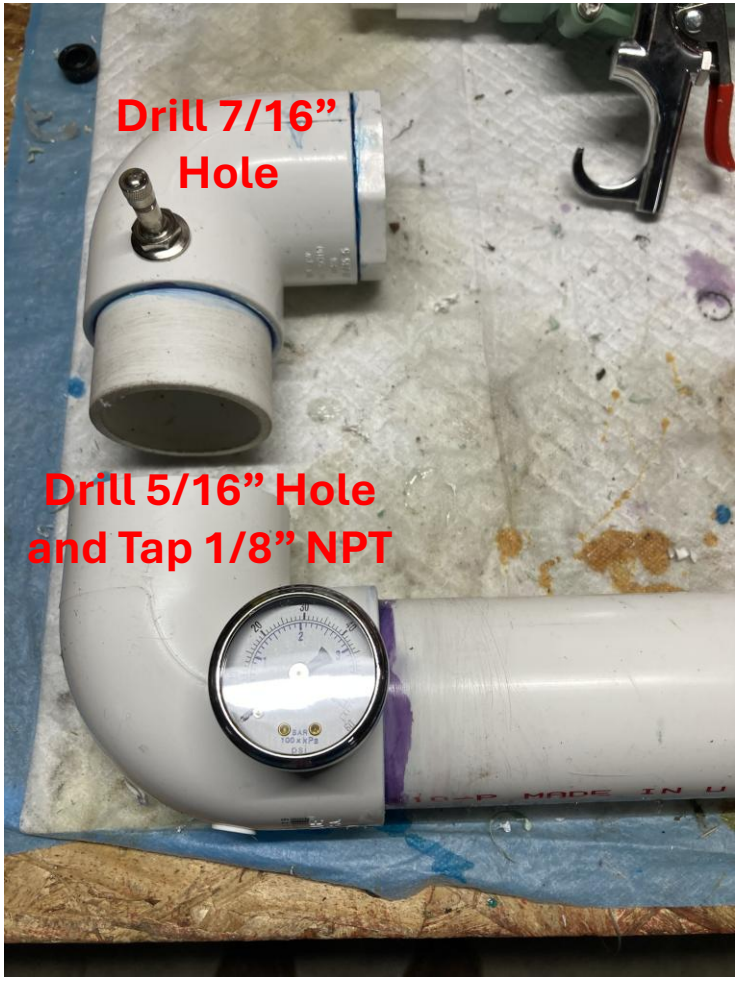
PVC Schedule 40 Pipe and Fittings

Location on Diag.	QTY	Description
1	(1)	2' x 2" Dia. Pipe (cut to 16" for main pressure vessel body)
2	(2)	2" Dia. - 90° Elbows
3	(1)	2" Dia. Endcap
4	(1)	3" x 2" Dia. Coupling (made from cut off remainder of 2" Dia. pipe)
5	(1)	2" Dia. to 1" Dia. Reducer/Adapter
6	(1)	1-1/4" Dia. to 1" Dia. Reducer/Adapter
7	(1)	1-1/4" Dia. Standard Pipe Connection Fitting
8	(2)	1-1/4" Dia. x 24" Pipe (one will be the 24" barrel and the other will be used to make the approximately 5" long front barrel brace/handle)
9	(2)	1" Dia. Threaded to 1" Dia. Adaptors (these will connect the sprinkler valve assembly to the barrel on one end, and to the main pressure vessel body on the other end)
10	(2)	1" Dia. x 1-1/2" Pieces of Schedule 40 Pipe (may need to buy a larger bulk section to get this small amount of pipe)

Location Diagram



Step 1 - Build Air Reservoir in Two Separate Sections



“Don’t use Teflon Tape on PVC Joints!”
…use thread sealant on valve stem, air pressure gauge, and 1” sprinkler valve pipe threads.

Build Air Reservoir in Two Separate Sections

- **Important to Note!**
- Freshly glued joints have a tendency to pull apart due to the hydraulic push-back of the viscous liquid glue. You don't want that to happen……
- …..therefore, apply primer and glue to **both** components of the joint, **….then twist both components together and apply continuous pressure for at least 15 seconds before releasing them.**
- Failure to do this step can cause a weak and leaking joint.

Materials List for Air Valve

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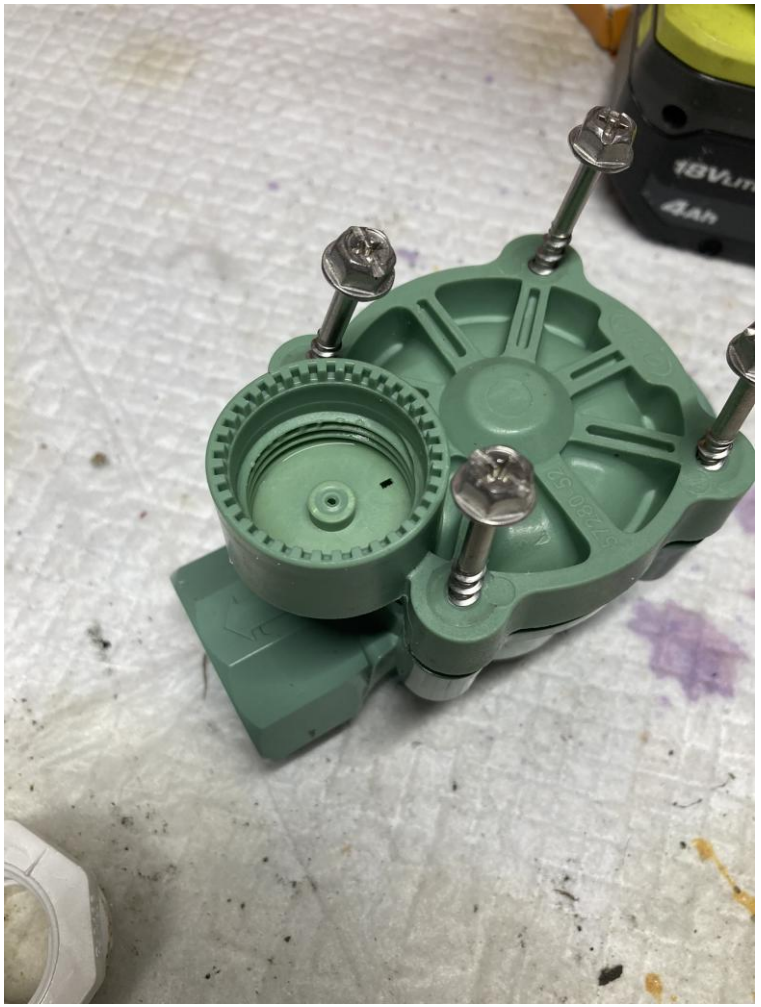
Hardware & Fittings

- **(1) 1” Dia. Inline Orbit Sprinkler Valve (Amazon Link)**
- **(1) Compressed Air Blow Gun (Amazon Link)**
- **(1) ¼” Male to ¼” Male MIP (aka NPT) 90° Brass Elbow Fitting (Amazon Link)**
- **(1) J-B Weld, ClearWeld Epoxy (Amazon Link)**

Step 2 - Build the Air Valve



Build the Air Valve

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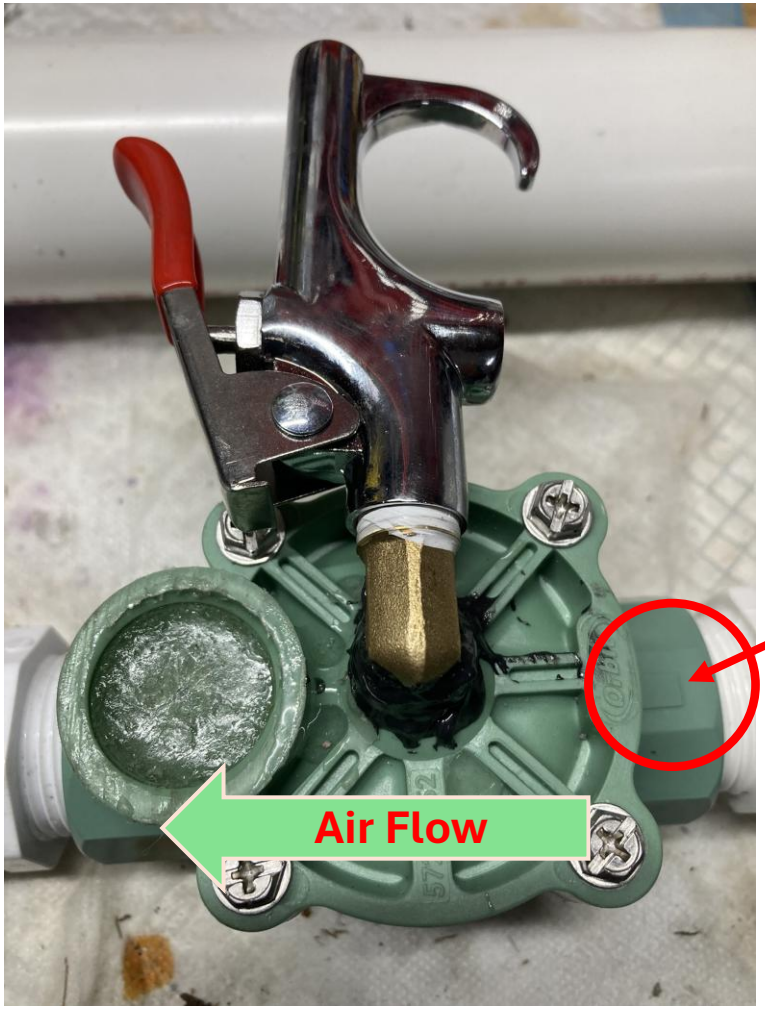
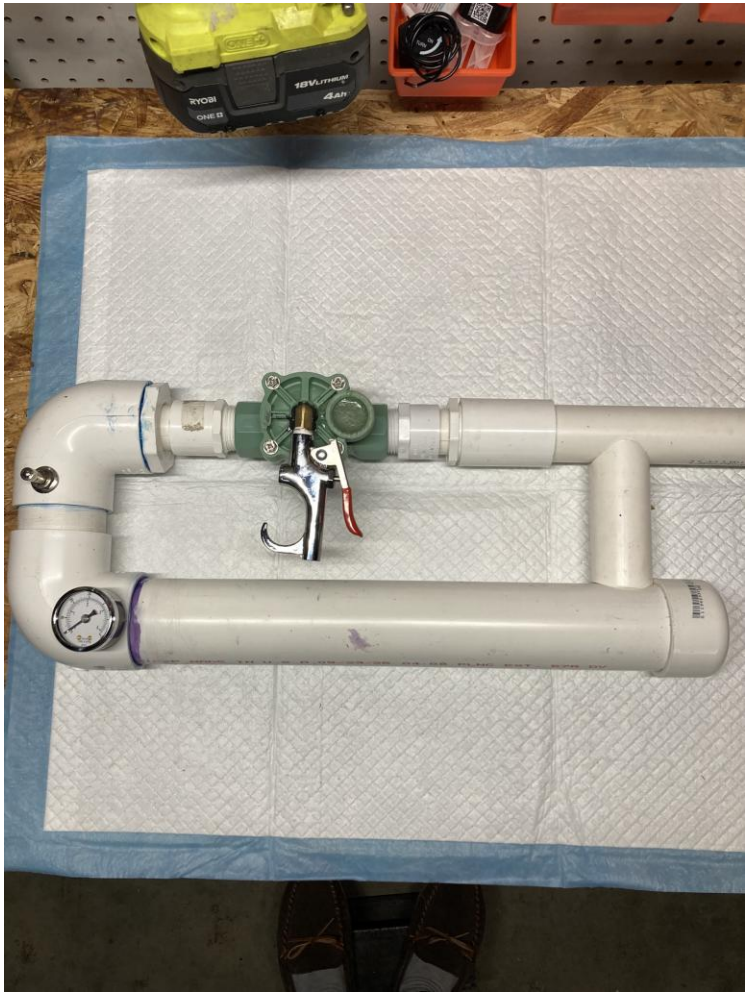


- Reassemble the Valve and Test the Blow Gun Trigger Release by Blowing from the Flow Arrow Side.
- The Valve Must Be Installed According to the “Flow Arrow” Marked on the Valve.

Assemble, Fit, Adjust, & Glue Up



- Take your time to assemble the components and do a dry fit first. Adjust as necessary to get tight joints, then sand, prime and glue the pieces together.
- Apply primer and glue to both sides of the joint, **….then twist the pieces together and apply pressure for at least 15 seconds before release.**

Materials List for Projectile(s)

Projectiles

- **(1) ¾” Dia. x 3-1/4” Pipe Section**
- **(2) ¾” Dia. Pipe End Caps**
- **(1) 10x5mm Small Eyelet Screw (Amazon Link)**
- **(1) Small Tube of Super Glue (for securing eyelet)**
- **(1) Package #5 Snap Barrel Swivels (Walmart Link)**

For Higher Pressure Projectile “Magnum” Conversion use Slip-on “O” Ring ***

- **(Standard Industry Part = Nr. 215 “O” Ring)**

***** - higher compression in barrel is more risky**

Step 3 - Build the Projectile(s)

Build The Projectile(s)

- Drill a 1/16” Hole in One End Cap. Apply Super Glue to Eyelet and Twist the Eyelet Into the Cap
- Prime/Glue One End Cap on the Pipe and Pack Tightly with **Dry Play Sand, or Clean Gravel*****.
- **…** then Prime/Glue on the Other End Cap to Seal the Projectile.
- Prime/Paint the Projectile with a High Visibility Enamel.
- ***** Experience has shown that this projectile’s size and weight (when filled with sand or gravel) will give excellent performance from this air launcher design. Don’t add more weight than necessary because air launcher performance will suffer.**

Build the Projectile(s)

- "**Magnum**" Projectile with Higher Barrel Pressure "O" Ring Installed
- **NOTE: This Setup is *Only* useful for launching over long distances, and *Not very useful* for normal antenna installation shots over tall trees or high platforms.**

Accessories to Complete the Air Launcher Outfit

Fishing Rod, Rigging, and Foot Pump

- ZEPCO Boss HAWG **Spincast** Fishing Rod/Reel
  - (**Walmart Link**)
- Berkeley Trilene 30lb Test Fishing Line
  - (**Walmart Link**)
- Franklin Sports Foot Pump
  - (**Walmart Link**)

Final Thoughts!

- You now have a comprehensive compressed Air Launcher design that can potentially be dangerous.
- Follow the 4 most Basic Firearm Safety Rules!
  - Always keep the muzzle pointed in a safe direction.
  - Treat every firearm as if it is loaded (or pressurized).
  - Keep your finger off the trigger until ready to shoot.
  - Be sure of your target and what is beyond it.
- Prime/Paint the entire Air Launcher with a Quality Enamel to Protect against UV, Solvents, and Oil.
  - (I prefer RUST-OLEUM Hammered Finish Paint because there's no primer required)
- **Finally:** Keep the pressure within reason. I never exceed **50psi** in my own Air Launcher. Most all my high antenna shots have used pressures between 30 and 45 psi.

Good Luck with your build!

Questions?

Merry Christmas

&

Happy New Year!