LAUNCH PAD RESEARCH

Introduction

In Large space crafts, their launch results in vibrations. Therefore there is need to have a suitable launchpad which should absorb the vibrations ad protect the ground from heat. Similarly, in a model rocket, a launch pad is necessary for various reasons. These are:

- It permits us to choose a starting direction for our rocket
- It protects the ground from the hot blast of flame as the rocket leaves the pad, preventing us from starting grass fire
- It directs the rocket's flight until the rocket's systems can guide it.

Discussion

A launch pad consists of three parts:

- A Base to hold everything and aim the rocket
- A blast deflector to protect the ground from burning
- A launch rod to guide the rocket to it's path before the fins can take over

Base

A launch pad base can be made from wood, plastic , metal or anything else. The heavier the rocket the heavier the base. The base provides stability while he rocket launches and you do not want it to tip over. You also need a place for the blast deflector to rest. PVC pipes can be easy to use as a base since they are easy to cut.

Blast Deflector

The blast deflector prevents fires by deflecting the exhaust away from the ground. The ideal deflector is 5-12 inches across. Deflector can be steel plates, flower pots,saw blades, ceramic tiles among other items.

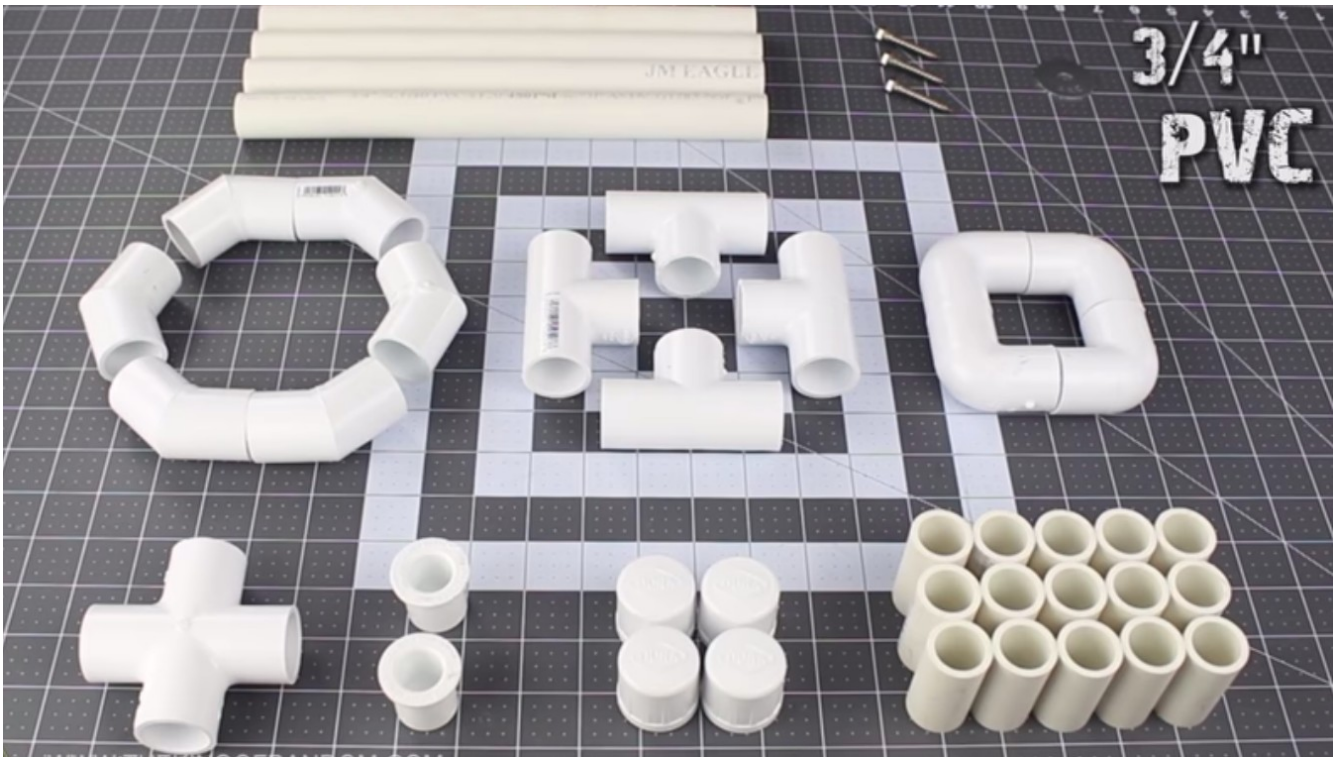
Launch Rod

A launch rod is meant to guide the rocket in a straight trajectory until the fins can guide it. Most model rockets use a 1/8" , 3 feet rod. For the best, a stainless steel rod is recommended since it's resistant to corrosion.

Reccomendation

Base

For the base, PVC fitting would be ideal to create a flexible and stable base to support the blast deflector and the rocket.



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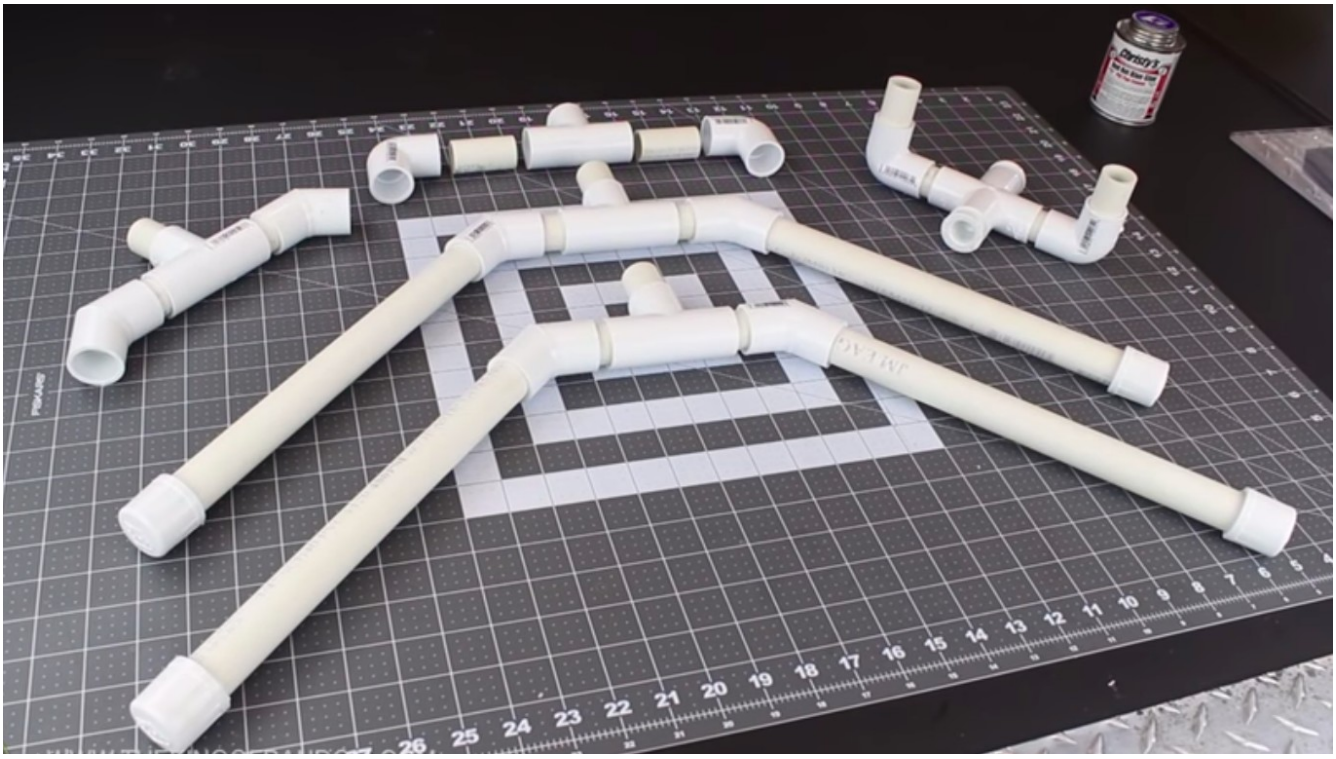
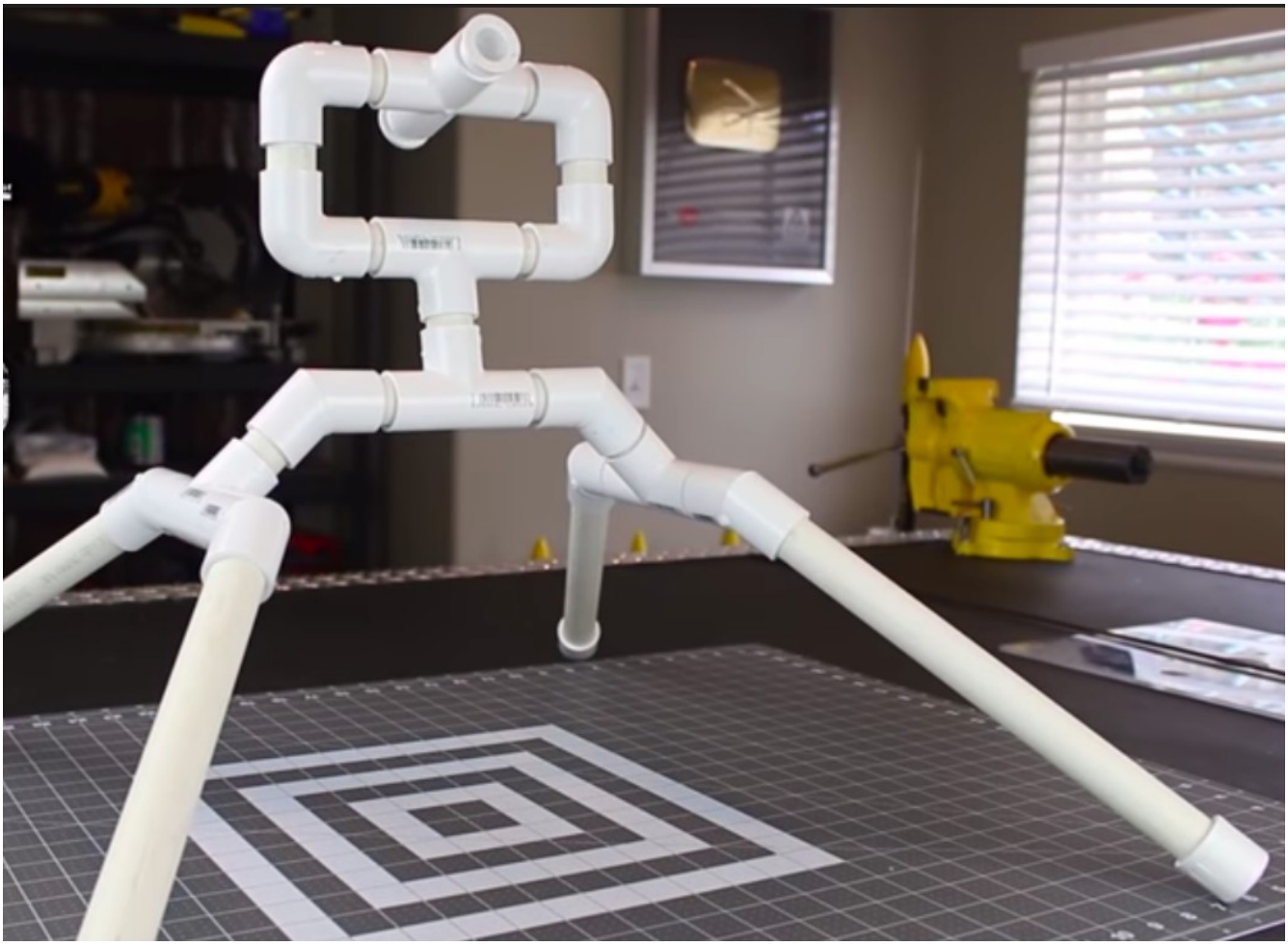
¼” * 1-1/2” fender washer and ¼” * 1-1/2” hex nut srews would also be necessary to screw some of the parts.

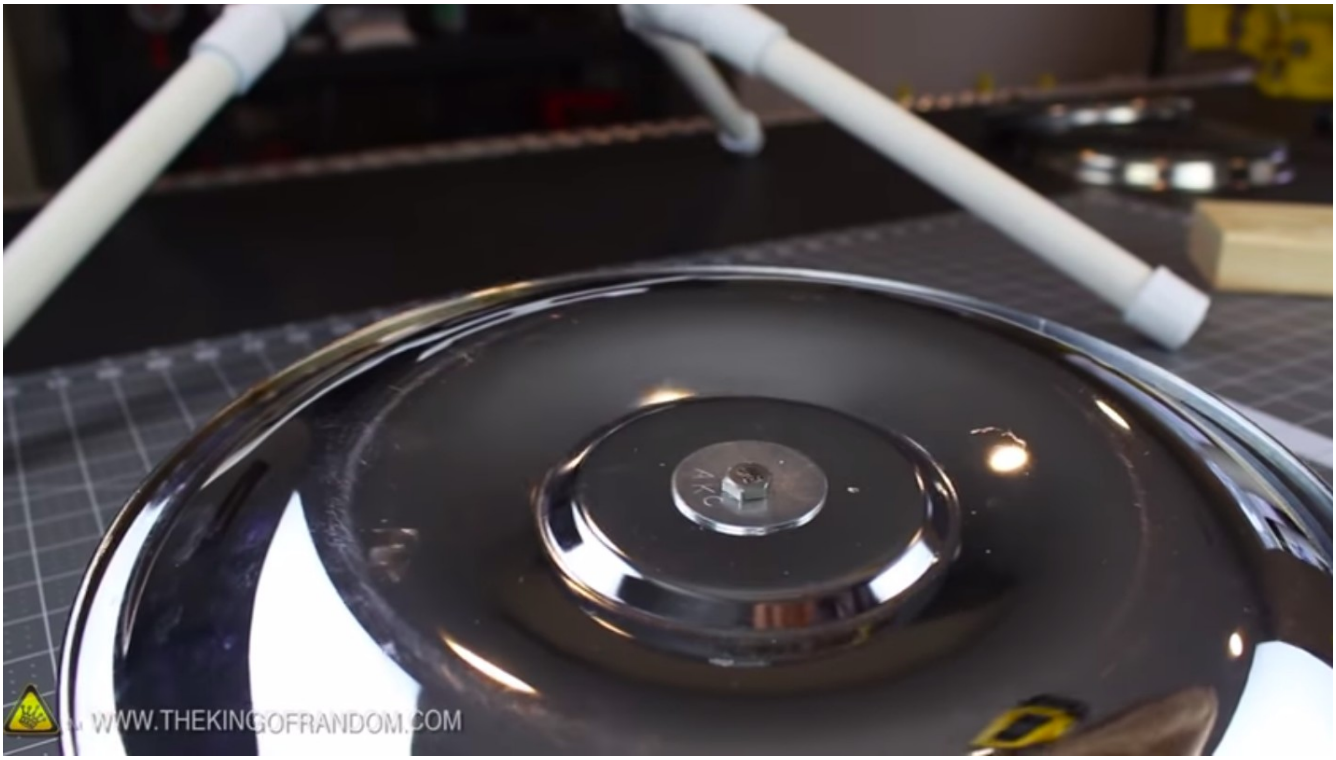


The assembles PVC base should look as shown below.



Blast deflector

The blast deflector can be an aluminum plate of diameter 5”-12”. While screwing it to the PVC base, the steel washer should be held on top of the plate in order to prevent the heat from burning through the plate. The washer and aluminum plate can be machined in the workshop.

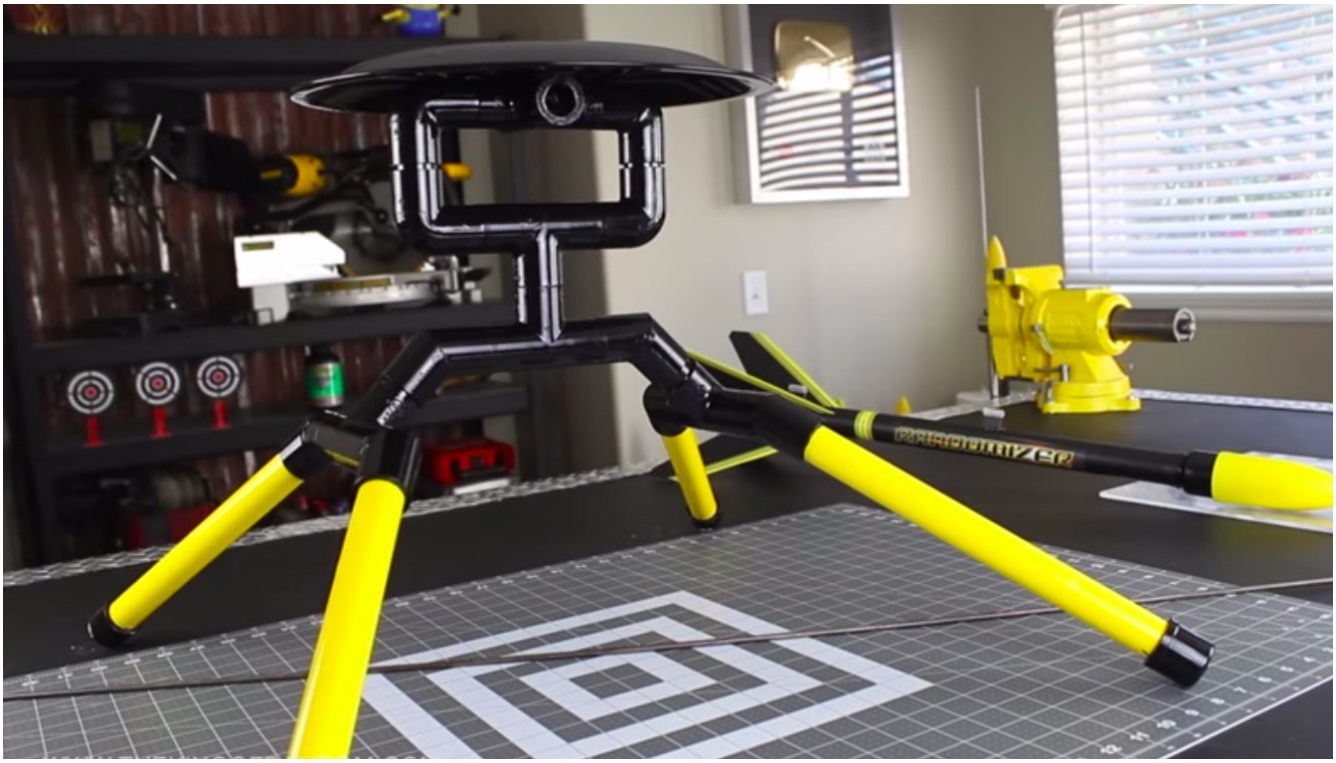


Launch Rod

A hole shound be drilled a distance from the centre of the plate to support the launch rod. This should be a 3/16” steel rod.

Customizing

The launch pad can be painted in any desirable color, most probably a color that matches the rocket.



Resources

1. https://www.youtube.com/watch?v=8a85ntmwbNU
2. https://space.stackexchange.com/questions/24379/launchpad-platform-structural-design
3. https://hackaday.com/2020/09/30/the-ultimate-model-rocket-launchpad/