Kit #05047
Skill Level 4

Made In USA

FLAME THROWER

The Beast That Belches Out
Two Columns of Fire

Flame Thrower Parts List

Item #	Item Name	Qty
10172	AT-56/9”	1
10188	AT-66/18 3-Slot	1
10191	AT24/3.75	2
13056	1/4” Launch Lug 3” Long	1
13080	#8-32 Nut	1
13085	#8-32 X 4” Full Thread Stud	1
13258	Centering Ring Sheet 1/8” Plywood	1
14000	#8 Flat Washer	1
15716	FlameThrower Fin Sheet	3
17080	BT-70 to BT-80 Blow Mold Transition	1
19470	PNC-56mm (BT-70)	1
29123	32” Parachute Pack	1
29528	300# Kevlar Shock Cord X 10 feet	1
31234	FlameThrower Instruction Sheet A	1
31235	FlameThrower Instruction Sheet B	1
35594	24mm Cluster-Engine Display Stand (Cardstock)	1
37038	Cardstock Spacer Rectangles	2
39038	FlameThrower Face Card	1
41015	Decal Sheet (FlameThrower - Clear)	1
41017	Decal Sheet (FlameThrower - White)	1
47133	Clear Plastic Bag 10x6x24	1

Skill Level 4
Slightly Challenging

The FlameThrower kit is a big mid-power rocket that uses a cluster of two 24mm diameter rocket motors. Because of the twin engines, it puts out much more smoke and fire than an ordinary rocket. And with its bold and colorful decals, the FlameThrower is a visual spectacle that always provides an impressive launch.

The kit is considered a Skill Level 4 rocket, not because of the assembly, but because it uses a cluster of motors that have to be ignited simultaneously at launch. We consider a cluster of motors to be a more advanced skill. They can be a little tricky because it requires a slightly different method of hooking up the igniters and a more powerful launch system. The kit itself is of average complexity, and isn’t difficult to assemble.

Needed Tools and Materials

- ☐ Hobby Knife with Sharp Blades
- ☐ Ruler with a straight edge
- ☐ Pencil
- ☐ Wood Glue (recommended) or White Glue
- ☐ Epoxy Clay
- ☐ Sandpaper 200 grit, 400 grit and Sanding Block
- ☐ Masking Tape
- ☐ Scissors
- ☐ Paper Towel
- ☐ Wood Sealer

Optional Tools / Finishing Supplies

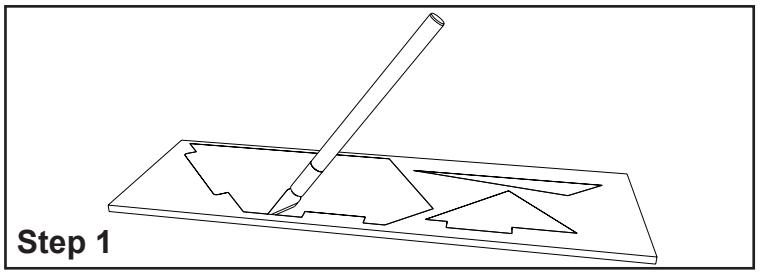
- ☐ Aluminum “Angle” to draw lines on the tube
- ☐ Paint Supplies: Spray Paint, Brushes, ect.
- ☐ Bowl of water with a little dishwashing soap
- ☐ Safety Glasses (or general protection while building)
- ☐ Super Glue (CyA Adhesive medium viscosity)
- ☐ Wood Sealer/Sanding Sealer

DYNA STAR
Mid-Power Rockets
Manufactured in the USA by:
Apogee Components Inc.
Colorado Springs, Colorado, USA
Visit us online at:
www.ApogeeRockets.com

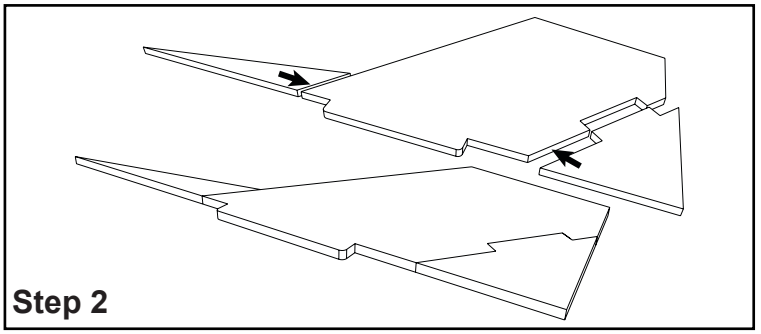
P/N 31234

Assembly Steps

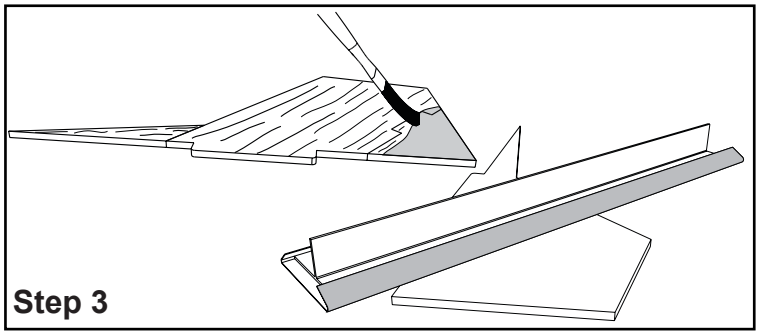
☐ 1. Carefully remove all the pieces from the sheet by freeing the edges with a sharp hobby knife. Do not sand the edges of the fins until after assembling them in the next step.



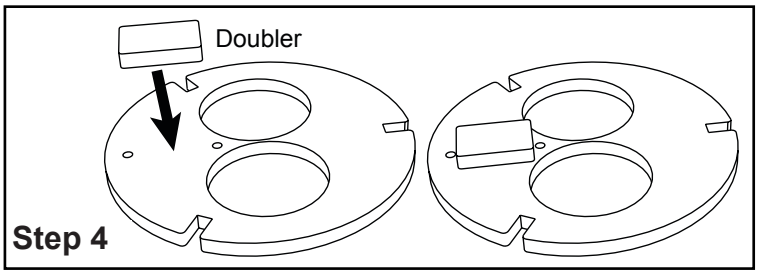
☐ 2. Assemble the three fins by gluing the edges together as shown using wood glue.



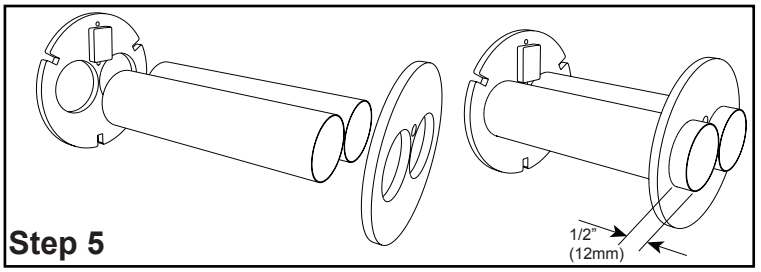
☐ 3. Sealing the surface of the basswoood with sanding sealer makes the surface of the wood consistent and improves the rocket's appearance. Apply the sealer with a paintbrush. When dry, sand it with 400 grit sandpaper with a sanding block or Apogee's Sanding Tee. Repeat the procedure until the basswood grain is filled and the fins look and feel smooth.



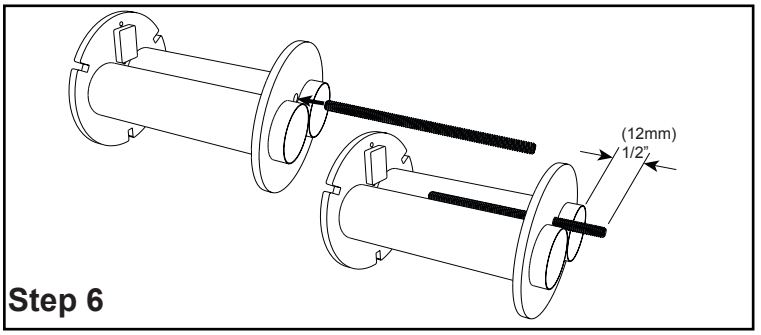
☐ 4. Remove the plywood rings and the rectangular doubler piece from the sheet. Using wood glue, attach the doubler to the ring with the notches around the exterior perimeter. It is centered between the two holes to provide extra strength to prevent damage from the Kevlar® shock cord.



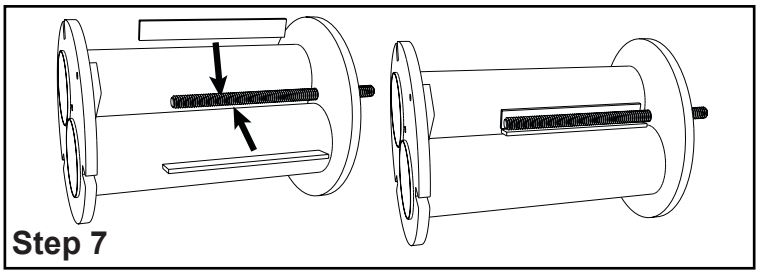
☐ 5. Group the two motor tubes together so the ends are even. Slide the two centering-ring disks over the ends of the tubes. The forward disk labeled with the doubler is positioned about ⅛-inch (3mm) from the end of the tubes so that a stout wood glue fillet can be applied to each side of the disks. The remaining aft disk with the single small hole between the tubes is at the rear end, and it is positioned ½-inch (12mm) from the end of the tube as shown. Put a ring of glue at each location and slide the rings into place. Add fillets.



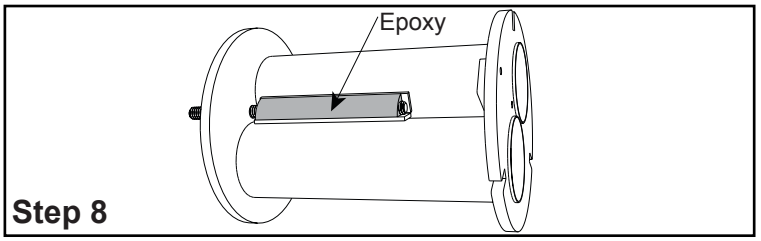
☐ 6. Temporarily insert the threaded steel rod through the small hole in the rear disk. The end of the rod should stick out past the end of the tubes by ½-inch (12mm).



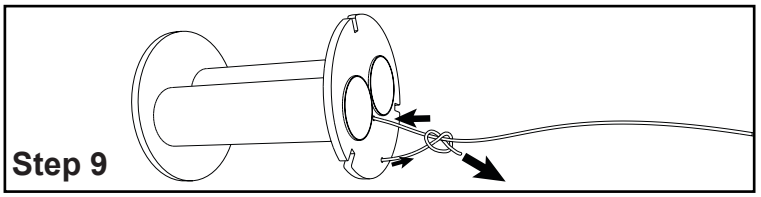
☐ 7. Take the two cardboard spacers, and nest them under the rod as shown to support it so it extends straight along the tubes. Glue them to the tubes using wood glue. Allow the glue some time to dry.



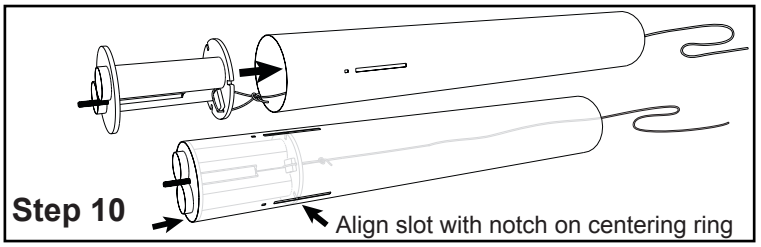
☐ 8. Epoxy the threaded rod to the tubes. We recommend a thick paste-type or clay epoxy to prevent making a mess. Allow the epoxy to fully cure before you insert the engine mount into your rocket.



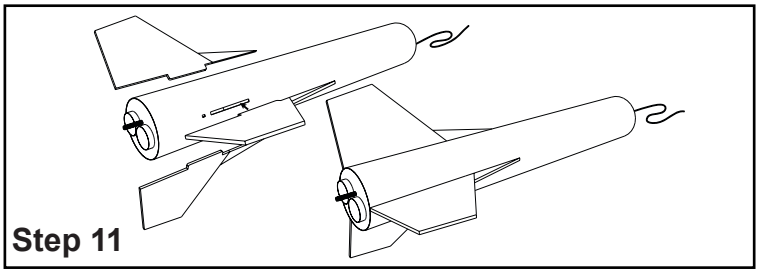
☐ 9. Thread the yellow shock cord through the two holes on the forward centering ring and tie a knot to hold it in place. You can put some wood glue on the knot to make it permanent.



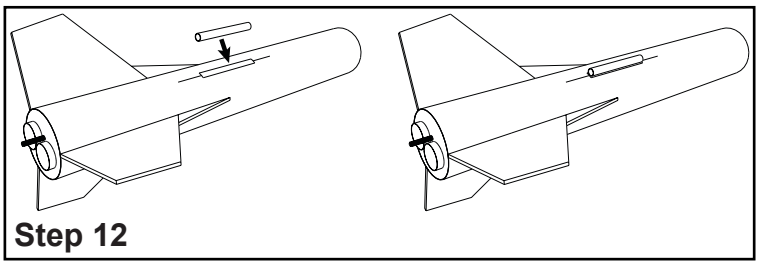
☐ 10. Slide the engine mount into the large tube with the shock cord coming out the front end. Make sure the notches on the centering rings align with the slots in the tube. The aft centering ring should be flush with the end of the tube. Glue the engine mount in this position using wood glue. Allow the glue some time to completely dry.



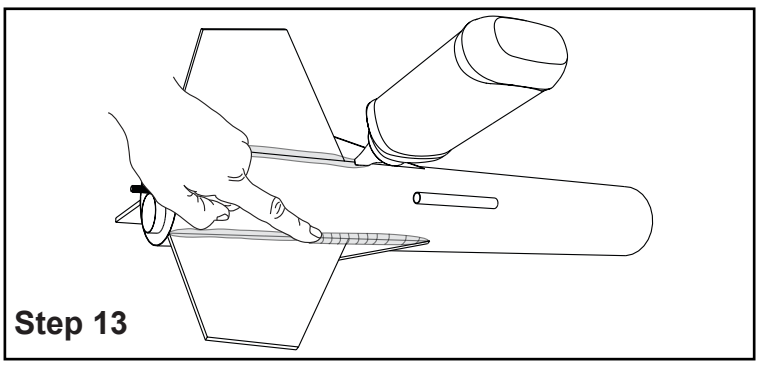
☐ 11. Using wood glue, attach the fins to the rocket. The tab on the base of the fin extends into the slot of the tube and rests in the notch on the forward centering ring. Allow the glue some time to dry.



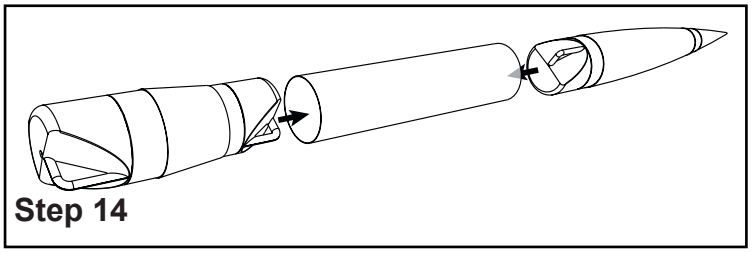
☐ 12. Attach the launch lug to the tube using wood glue. It is centered in the etched rectangle on the body tube. Make sure the launch lug is straight along the tube. Allow the glue some time to dry.



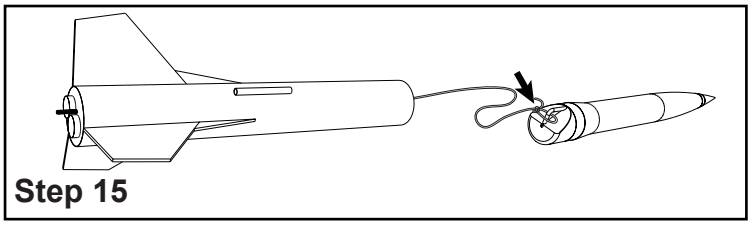
☐ 13. Put a wood glue fillet along the edges of all the fins and the launch lug. Smooth out the glue and remove excess by sliding your finger along the glue. Lay the rocket in a horizontal position while the glue dries.



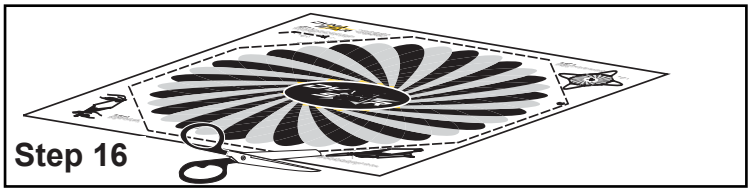
☐ 14. The short body tube can be attached to the nose cone and the smaller end of the blow-molded plastic transition. If you want it to be used as a payload tube, wrap masking tape around both shoulders to create a tight friction-fit of the pieces into the tube. Alternatively, to make them permanently attached they can be bonded into the tube using super glue (CyA adhesive).


Step 14

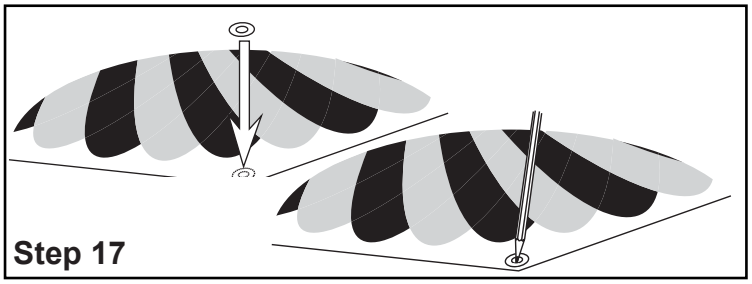
☐ 15. Tie the free end of the yellow shock cord to the loop on the base of the shoulder of the transition section. Put a little wood glue on the knot to make it permanent.


Step 15

☐ 16. Cut out the parachute from the plastic sheet using a scissors or hobby knife.

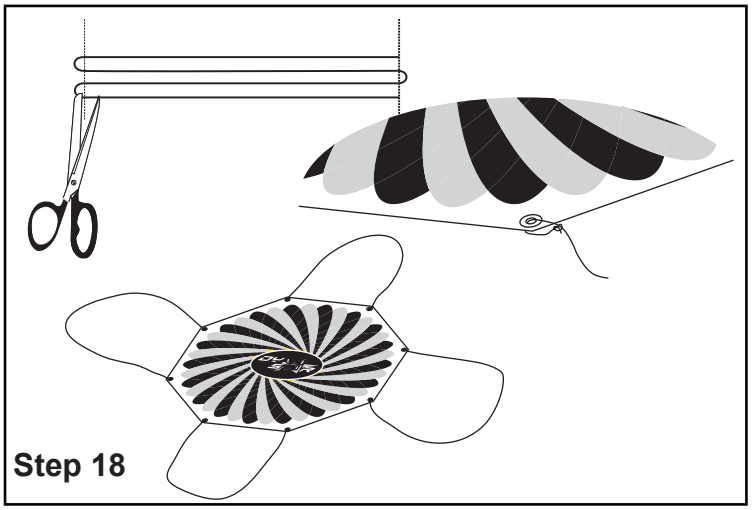

Step 16

☐ 17. Place one reinforcement ring on each of the corners of the plastic parachute canopy. Take a sharp pencil or knife and poke a hole through the plastic in the center of each ring.

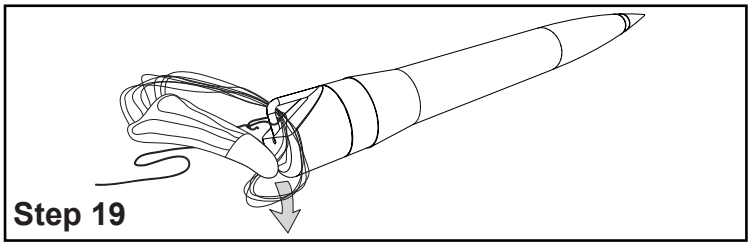

Step 17

☐ 18. Find the white cotton shroud line and cut the string into four equal lengths as shown. Tie the shroud lines through the ring holes as shown. Put a little bit of glue on the knots to secure them in place. Allow the glue to dry.

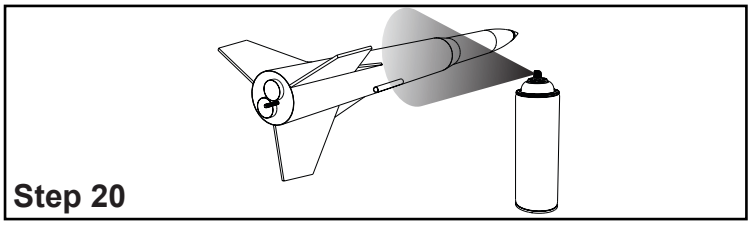
☐ 19. Holding the parachute at the center of its top, pull the lines together to even up the ends. Thread the four looped lines through the screw-eye at the base of the transition. Take the top of the parachute and pull it through all four string loops at the same time and then pull to tighten the knot. This securely attaches the parachute to the rocket.


Step 18

☐ 20. When all the glue has completely dried, you can paint your completed FlameThrower rocket. Allow the paint to harden at least two days before applying the vinyl decals. We recommend removing each one from the paper backing and then dipping them in soapy water to lubricate them so they will slide around and can be repositioned easily. Keep them wet by occasionally dripping some soapy water on them if they start to grab the rocket too quickly. When the decal is in the right location, press down firmly, and squeegee out any water underneath. When the decal dries, it will be permanently fixed. The soapy water will not affect the adhesion of the glue on the back of the vinyl decal.


Step 19

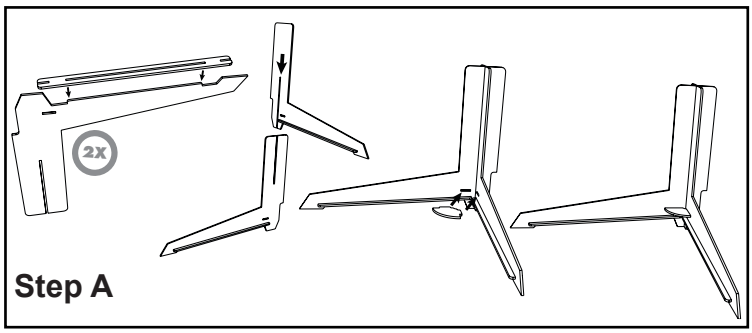
Congratulations! Your FlameThrower rocket is now complete.

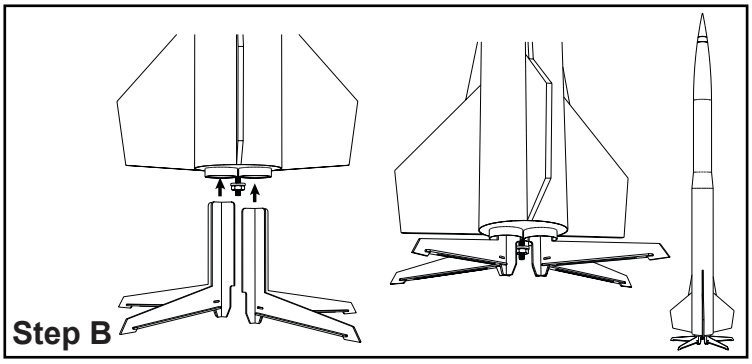

Step 20

Display Stand Assembly

☐ A. Carefully remove the pieces using a hobby knife from the cardstock. Each leg has a stiffener that is glued to the underside of the base piece. The stiffener piece has a slot that fits over the tab on the bottom of the leg. Apply wood glue to all the corners where edges meet, and allow it to dry.

☐ B. Once the glue is dry, the stands are quite strong and can be painted your favorite color. When dry, the FlameThrower rocket can be placed on them. Rotate the stands as necessary to provide maximum stability in the vertical position.





Launch Supplies Needed

To launch your rocket you will need the following:

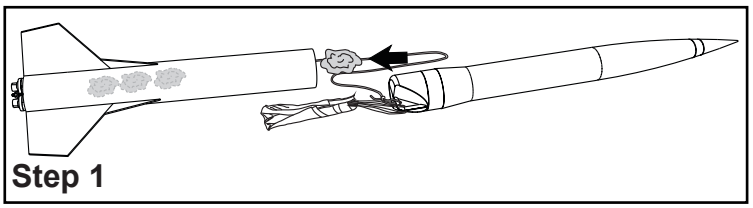
- A mid-power launch pad and 12v controller
- Several recommended 24mm Rocket Engines for the FlameThrower are listed in the motor chart.

Go to our website for a broader motor selection for this kit at https://www.apogeerockets.com/Model-Rocket-Kits/Skill-Level-4-Model-Rocket-Kits/Flamethrower#motors

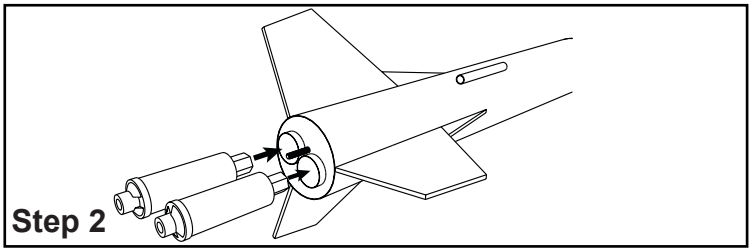
Motor	Manufacturer	Estimated Altitude
D12-5	Estes	699 ft
E20-7	AeroTech	1714 ft
E30-7	AeroTech	1932 ft
E6-6	Apogee	2004 ft
F32-8	AeroTech	2566 ft
F44-8	AeroTech	2032 ft
(This is a two motor cluster rocket)		

Rocket Preflight

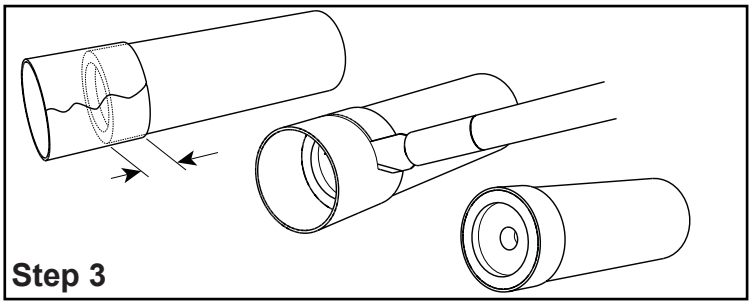
☐ 1. Loosely crumple and insert 6 to 8 sheets of recovery wadding into the body tube (not included with this kit). Slide the folded parachute into the tube ahead of the recovery wadding. Then slide the transition into the main body tube.



☐ 2. When you are ready to launch your rocket, slide the rocket motors into the tubes. The thrust ring on the back of the motors will butt up against the tubes.



☐ 3. If you're using Estes engines that don't have a thrust ring on the rear, you can make one from masking tape. Wrap 5 layers of tape over the nozzle end of the rocket motor. It needs to be only over the bottom ¼-inch (6mm). Using a hobby knife, trim off any tape that sticks over the edge of the motor. Note: This thrust ring is plenty strong, so it will not allow the motor to move on you during launch. Once the thrust ring is created, install the motors as shown.

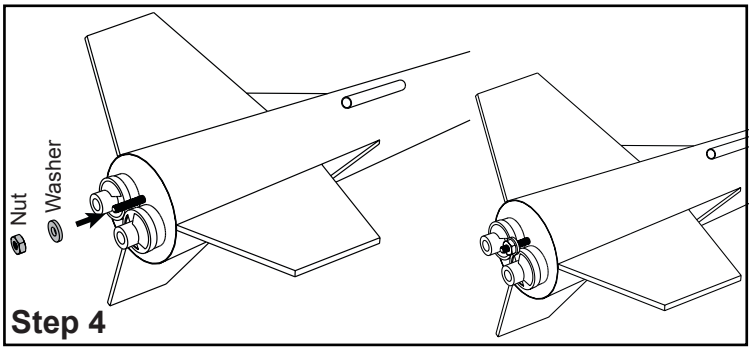


☐ 4. Slide the metal washer over the rod, and then thread

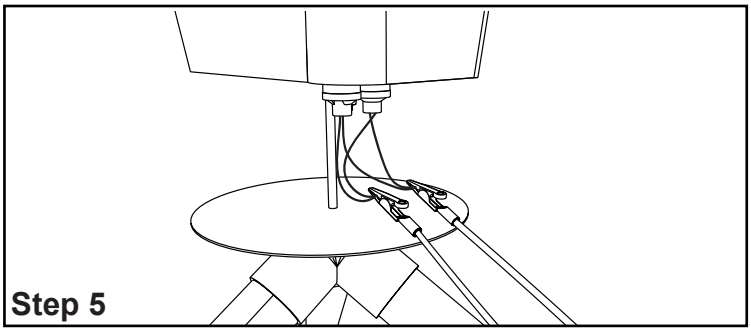
☐ 4. Slide the metal washer over the rod, and then thread the nut on. Finger tighten the nut to hold the rocket motors in place.

☐ 5. Insert and secure the engine igniters as directed on the package the engines came with. Twist the wire leads of the igniters (one wire from each igniter) together so you have two bundles of wires. For tips that will show you how to successfully ignite cluster rocket engines, see: https://www.apogeerockets.com/Advanced_Construction_Videos/Rocketry_Video_282

At this point, the rocket is ready for flight. Continue to follow the countdown and launch procedures.



Step 4


Step 5

Countdown and Launch Procedure

☐ Fly your rocket on a large field that is far from any power lines, trees, or low flying aircraft. The larger the field, the greater your chances of recovering your rocket. The launch area around the pad must be free of dry weeds and brown grass. Launch only during calm weather with very little or no wind and good visibility.

☐ 10. Remove the safety key from the launch controller.

☐ 9. Slide the rail buttons over the launch rail to place the rocket on the pad. The rocket should slide freely in the rail channel.

☐ 8. Attach the micro-clips to the igniter. The clips must not touch each other or the metal blast deflector.

☐ 7. Stand back from your rocket as far as the launch wire allows (at least 5 meters - 15 feet for G motors, or 12 meters - 40 feet for high power).

☐ 6. Insert the safety key to arm the launch system. The light (or buzzer) on the controller should come on.

☐ Give a loud countdown! 5… 4… 3… 2… 1… LAUNCH!

☐ Push and hold the button until the engine ignites. Then remove the safety key and place the safety cap on the launch rod.

Misfire Procedure

Occasionally the igniter will burn, but the motor will fail to ignite. If this happens, the cause is that the pyrogen on the igniter was not in contact with the engines propellant. When an ignition failure occurs, remove the safety key from the launch controller and wait 60 seconds before approaching the rocket. Remove the old igniter from the engine and install a new one. Make sure that the igniter is inserted fully into the engine and touches the propellant. Secure the igniter as directed on the engine package and repeat the countdown and launch procedure. Always follow the NAR* Model Rocket Safety Code when launching model rockets.