

About Semroc Astronautics Corporation

Semroc Astronautics Corporation was started by Carl McLawhorn in his college dorm at North Carolina State University in November, 1967. Convincing a small group of investors in his home town of Ayden, North Carolina to invest in a small corporation, the company was re-incorporated as Semroc Astronautics Corporation on December 31, 1969.

Semroc produced a full line of model rocket kits and engines. At its peak, Semroc had twenty-five full time employees working at two facilities. One was for research and development, printing, shipping, and administration. The other was outside town and handled all production and model rocket engine manufacturing. For several years, Semroc was successful selling model rocket kits, supplies, and engines by mail-order and in hobby shops. In early 1971, Semroc became insolvent and had to close its doors.

After 31 years of dreams and preparations, Semroc Astronautics Corporation was reincorporated on April 2, 2002 with a strong commitment to helping put the fun back into model rocketry. Many years of excellent service to the rocketry community followed until sadly, on August 11 2013, Carl passed away and left a great void in the hearts of many rocketeers. He is forever in our hearts and minds.

In February of 2015, Semroc was sold to eRockets and moved to Dayton, Ohio where it resides today. It is our goal to continue the level of service and dedication to the hobby that Carl and his family were so well known for. We strive to serve you, our customers, to the best of our abilities as we carry the vision of Carl McLawhorn boldly into the future.

About the ThunderStorm™

The ThunderStorm™ is the seventh and largest member of the Thunder-kit series. It is based on a design produced by Centuri Engineering in the early 1980's. Each member in the family of seven is about 1.25 times the size of the previous member. All of the Thunder kits are designed for the same long-and-lean look providing slow, realistic liftoffs. The ThunderStorm is great for Magnum (D and E size) engines demonstration flights.

July 2017

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SEMROC
**THUNDER
STORM™**

Over 6 Feet Tall!

**7th in the
Thunder Series**

**Precision Turned Balsa
Nose Cone**

**Laser Cut Plywood
Fins**

**Through the Wall
Fin Construction**

**Waterslide
Decals**

**24" Nylon
Parachute
Recovery**

**MADE
IN THE
USA**

**FLYING
MODEL
ROCKET KIT**

Made in the U.S.A by Semroc - Dayton, Ohio

ThunderStorm™ Kit No. KA-2

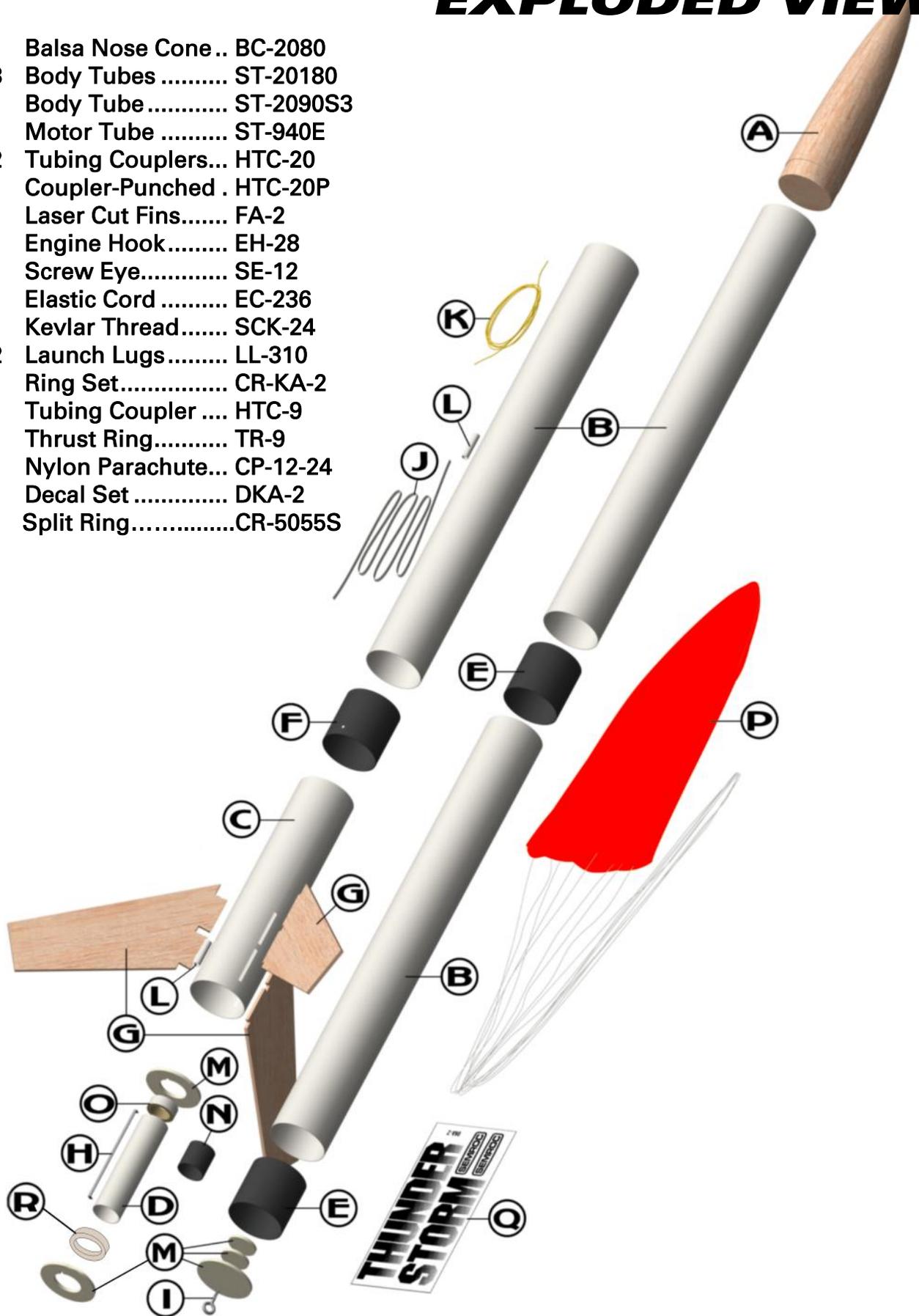
Specifications	Engine	Approx. Altitude
Body Diameter 2.04" (5.2 cm)	D12-3	200'
Length 72.2" (183.4 cm)	E12-4	350'
Fin Span 10.0" (25.4 cm)	F44-8	750'
Net Weight 11.1oz. (207.1 g)		

Skill Level 2

Parts List

EXPLODED VIEW

- A 1 Balsa Nose Cone.. BC-2080
- B 3 Body Tubes ST-20180
- C 1 Body Tube ST-2090S3
- D 1 Motor Tube ST-940E
- E 2 Tubing Couplers... HTC-20
- F 1 Coupler-Punched . HTC-20P
- G 1 Laser Cut Fins..... FA-2
- H 1 Engine Hook..... EH-28
- I 1 Screw Eye..... SE-12
- J 1 Elastic Cord EC-236
- K 1 Kevlar Thread..... SCK-24
- L 2 Launch Lugs LL-310
- M 1 Ring Set..... CR-KA-2
- N 1 Tubing Coupler HTC-9
- O 1 Thrust Ring..... TR-9
- P 1 Nylon Parachute... CP-12-24
- Q 1 Decal Set DKA-2
- R 1 Split Ring.....CR-5055S



BEFORE YOU START!

Make sure you have all the parts included in this kit that are listed in the Parts List in these instructions. In addition to the parts included in this kit, you will also need the tools and materials listed below. Read the entire instructions before beginning to assemble your rocket. When you are thoroughly familiar with these instructions, begin construction. Read each step and study the accompanying drawings. Check off each step as it is completed. In each step, test-fit the parts together before applying any glue. It is sometimes necessary to sand lightly or build-up some parts to obtain a precision fit. If you are uncertain of the location of some parts, refer to the exploded view to the left. It is important that you always ensure that you have adequate glue joints.

TOOLS

In addition to the parts supplied, you will need the following tools to assemble and finish this kit.



ASSEMBLY

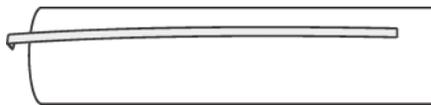
These instructions are presented in a logical order to help you put your Thunderstorm™ together quickly and efficiently. Check off each step as you complete it. We hope you enjoy putting this kit together.

MOTOR MOUNT

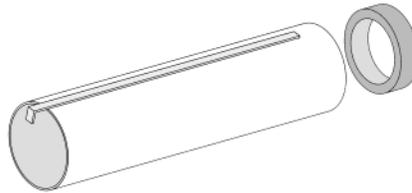
- ❑ 1. Bend the engine hook (H) slightly so it forms a bow in the direction shown.



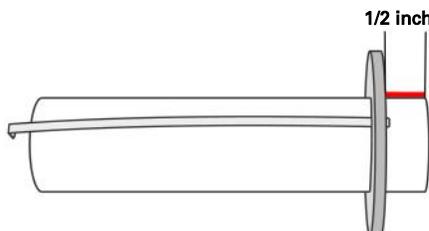
- ❑ 2. Insert the engine hook into the pre-cut slot in the motor tube (D)



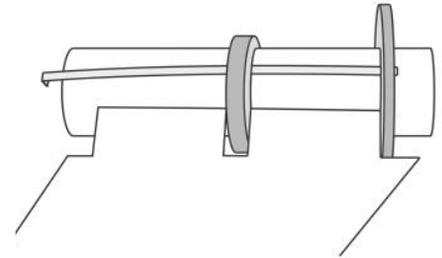
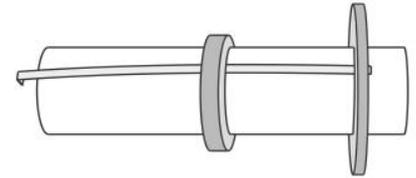
- ❑ 3. Smear some glue in the top of the motor tube (the right end in the illustration) and insert the motor block (O). Push it in until it stops at the top of the motor hook. Reach into the motor tube with a cotton swab or a piece of scrap balsa and wipe away any excess glue from the inside.



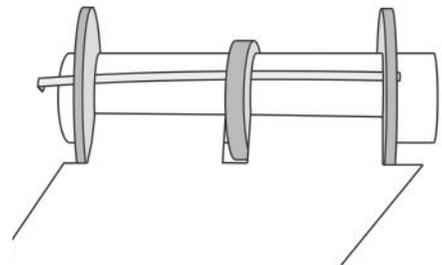
- ❑ 4. Punch out the centers of the centering rings and set them aside. Make a mark on the motor tube 1/2 inch from the top. Slide the centering ring with the small notch over the end of the engine hook and even with the line. Make sure it is on straight then tack it in place with C/A glue. Run a thin bead of white glue around both sides of the ring where it joins the motor tube.



- ❑ 5. Take the split centering ring (R) and slide it on the tube. Using the fin as a guide, tack the ring into place with CA glue. Remove the fin and glue the ring to the motor mount with thin CA. This is a critical step so make sure everything is lined up.

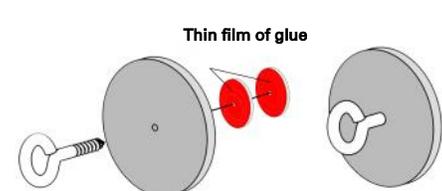


- ❑ 6. After the CA on the large centering ring has cured, put the fin up against the side of the motor tube again and use it as a guide to mark the location of the rear centering ring. Tack the rear centering ring in place with CA, then run a thin bead of white glue around both sides of the ring where it joins the motor tube. Set the motor mount assembly aside to dry.

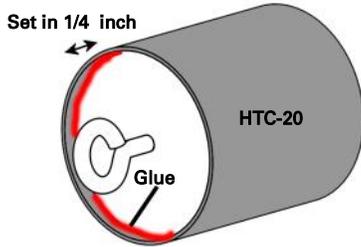


COUPLERS

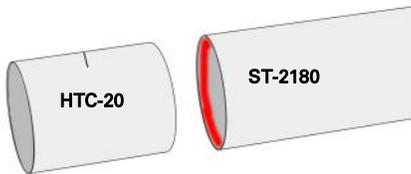
- ❑ 7. Take the two center pieces from the centering rings, the bulk-head plate (M) and the screw eye (I) and assemble as shown.



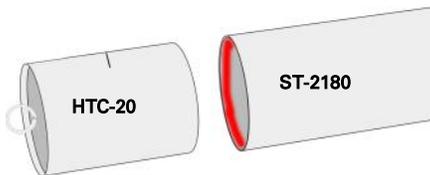
- ❑ 8. Run a line of white glue inside the end of one of the couplers (E) and insert the bulkhead plate assembly so that it sits 1/4 inch inside the coupler. When the glue inside the coupler sets, run a line of white glue between the bottom of the coupler and the bulkhead plate.



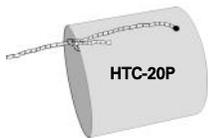
- ❑ 9. Make a mark in the middle of the remaining coupler, the one without the hole in it. Apply a line of white glue inside one of the body tubes (B) and slide the coupler in until the mark is even with the end of the tube.



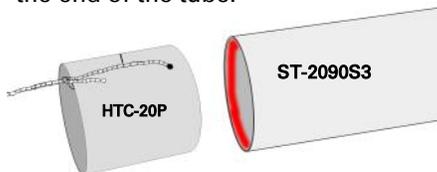
- ❑ 10. Mark the coupler containing the bulkhead plate in the middle and glue it into one of the body tubes (B) in the same manner.



- ❑ 11. Tie the Kevlar cord around the coupler with the hole punched in it (F).



- ❑ 12. Mark this coupler in the middle as well and then glue the coupler into the top of the slotted body tube until the mark is even with the end of the tube.



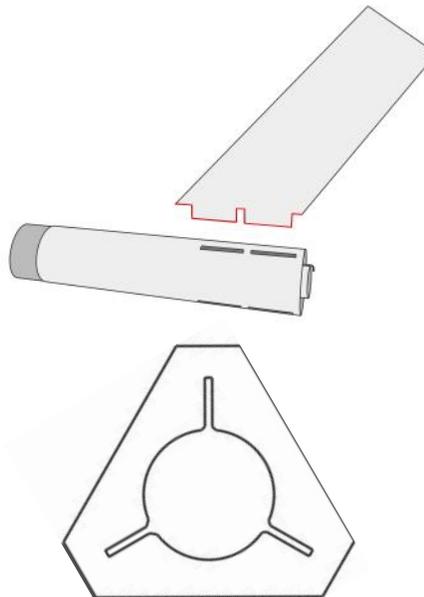
INSTALL MOUNT

- ❑ 13. Run a line of white glue inside the slotted body tube just above the slots. Quickly insert the motor mount, making sure the engine hook does not line up with any of the slots. The centering rings should line up perfectly with the top and the bottom of the fin slots.

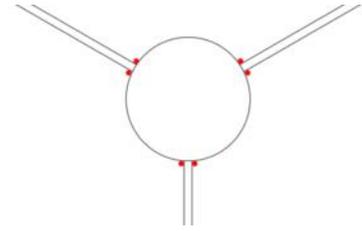


FINS

- ❑ 14. Cover the root edge of a fin with a bead of white glue. Line the fin up with the slots and insert the fin until it stops against the motor mount. Check the alignment with the fin alignment tool before the glue sets up by sliding the tool onto the ST-2090S3 from the coupler end. Repeat for all three fins.

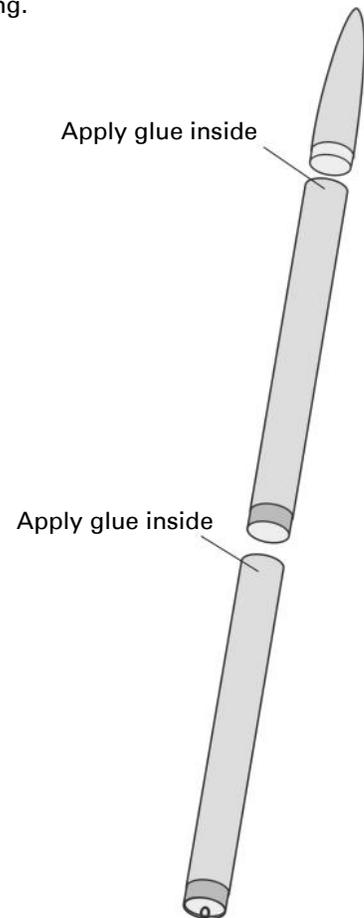


- ❑ 15. When the glue has set on the fins, run a line of glue in the fin/body tube joint to make a fillet on each side of all three fins.



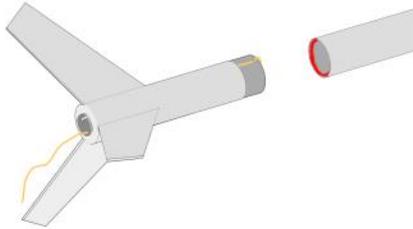
AIRFRAME

- ❑ 16. Glue the nosecone into the tube **without** the bulkhead assembly. Next, take the tube with the bulkhead assembly and run a line of white glue inside the end opposite the bulkhead. Slide the body tube with the nosecone into the tube with the bulkhead assembly. Make sure the assembly remains straight while drying.



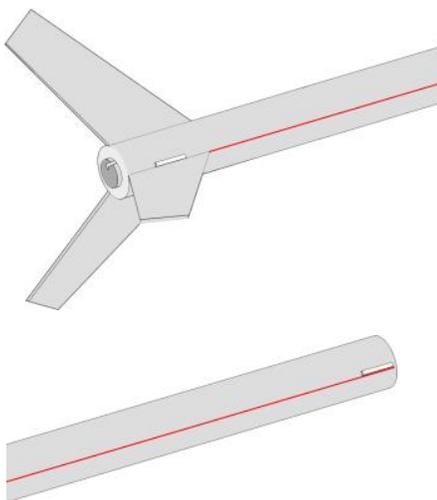
- ❑ 17. Tuck the Kevlar cord down through the top of the fin assembly, through the motor mount and out the bottom of the tube.

❑ 18. Take the remaining body tube (B) that doesn't have a coupler glued into it and run a line of glue inside the end of the tube. Insert the fin assembly. Make sure the tubes are aligned perfectly straight. Set aside to dry.



LAUNCH LUGS

❑ 19. Attach the launch lug in the middle of a joint between a fin and the body tube. Draw a straight line from this fin joint to the top of the tube. Glue the second lug on this line even with the top of the tube.

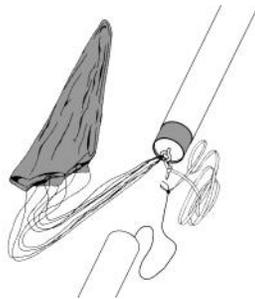


RECOVERY

❑ 20. Tie the free end of the Kevlar® cord (K) to one end of the elastic cord (J) using an overhand knot. Pull the elastic cord and Kevlar cord back through the body tube and out the top of the tube.

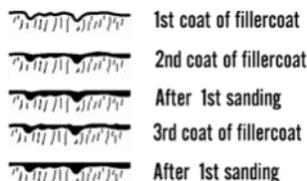


❑ 21. Tie the free end of the elastic cord to the screw eye. Attach the nylon parachute by passing the lines through the screw eye, forming a loop and then passing the parachute through the loop.



FINISHING

❑ 22. When the fillets have dried, prepare balsa surfaces for a smooth professional looking finish. Fill the wood grain with balsa fillercoat or sanding sealer. When dry, sand with fine sandpaper. Repeat until smooth.



❑ 23. After all surfaces have been prepared, wipe off all dust with a dry cloth. First spray the model with an enamel primer. Choose high visibility colors like white for the final color.

❑ 24. Spray painting your model with a fast-drying enamel will produce the best results. PATIENCE...is the most important ingredient. Use several thin coats, allowing each coat to completely dry before the next coat. Start each spray a few inches above the model and end a few inches below the model. Keep the can about 12" away and use quick light coats. The final coat can be a little heavier to give the model a glossy wet-looking finish.

❑ 25. After the paint has dried, decals should be applied. The decals supplied with the Thunderstorm™ are waterslide decals. Use the cover photo for suggested placement. Dip each decal in a small dish of water that has a drop of detergent. It will take about 30 seconds before the decal is loose enough to apply.

❑ 26. Slide the decal in place and use the paper backing to work the bubbles out. Repeat for all the decals.

FLIGHT PREPPING

❑ 27. Select a 24mm motor. If the motor is the shorter 2.75" length, you must insert a spacer (HTC-9) ahead of the motor. Insert the motor and make sure the engine hook keeps the motor in snugly. The hook may be slightly bent to make sure the motor is retained.

❑ 28. Apply a few sheets of recovery wadding in the top of the body tube. Fold the parachute and pack it and the shock cord on top of the recovery wadding. Slide the payload section into place, making sure it does not pinch the shock cord or parachute.

❑ 29. Refer to the model rocket engine manufacturer's instructions to complete the engine prepping. Different engines have different igniters and methods of hooking them up to the launch controllers.

❑ 30. Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the ThunderStorm™ from a 1/8" diameter by 36" long launch rod.

❑ 31. After each flight, promptly remove the spent engine casing and dispose of properly.

