



Model Rocket Safety Code

- 1. Materials.** I will use only lightweight, non-metal parts for the nose, body, and fins of my rocket.
- 2. Motors.** I will use only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.
- 3. Ignition System.** I will launch my rockets with an electrical launch system and electrical motor igniters. My launch system will have a safety interlock in series with the launch switch, and will use a launch switch that returns to the "off" position when released.
- 4. Misfires.** If my rocket does not launch when I press the button of my electrical launch system, I will remove the launcher's safety interlock or disconnect its battery, and will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket.
- 5. Launch Safety.** I will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 15 feet away when I launch rockets with D motors or smaller, and 30 feet when I launch larger rockets. If I am uncertain about the safety or stability of an untested rocket, I will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance.
- 6. Launcher.** I will launch my rocket from a launch rod, tower, or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and I will use a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, I will place launchers so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use.
- 7. Size.** My model rocket will not weigh more than 1,500 grams (53 ounces) at liftoff and will not contain more than 125 grams (4.4 ounces) of propellant or 320 N-sec (71.9 pound-seconds) of total impulse. If my model rocket weighs more than one pound (453 grams) at liftoff or has more than four ounces (113 grams) of propellant, I will check and comply with Federal Aviation Administration regulations before flying.
- 8. Flight Safety.** I will not launch my rocket at targets, into clouds, or near airplanes, and will not put any flammable or explosive payload in my rocket.
- 9. Launch Site.** I will launch my rocket outdoors, in an open area at least as large as shown in the accompanying table, and in safe weather conditions with wind speeds no greater than 20 miles per hour. I will ensure that there is no dry grass close to the launch pad, and that the launch site does not present risk of grass fires.
- 10. Recovery System.** I will use a recovery system such as a streamer or parachute in my rocket so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.
- 11. Recovery Safety.** I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.

LAUNCH SITE DIMENSIONS

Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
0.00 — 1.25	1/4A	50
1.26 — 2.50	A	100
2.51 — 5.00	B	200
5.01 — 10.00	C	400
10.01 — 20.00	D	500
20.01 — 40.00	E	1000
40.01 — 80.00	F	1000
80.01 — 160.00	G	1000
160.01 — 320.00	2 Gs	1500

HAWK™ BOOST GLIDER



EASY TO BUILD

GREAT PERFORMER



BALSA FINS & NOSE CONE

LASER CUT FINS

FLYING
MODEL
ROCKET KIT



Made in the U.S.A by Semroc Astronautics Corporation - Knightdale, N.C. 27545

HAWK™ Kit No. KV-65

Specifications	Engine	Approx. Altitude
Body Diameter .736" (1.87 cm)	1/2A6-2	125'
Length 12.4" (50.2 cm)		
Fin Span 8.8" (41.1 cm)	A8-3	250'
Net Weight 0.5 oz. (14.2 g)		

GLIDE RECOVERY

What is a Retro-Repro™?

A Retro-Repro is a retro reproduction of an out-of-production model rocket kit. It is a close approximation of a full scale model of an early historically significant model rocket kit from one of the many companies that pioneered the hobby over the past half century. A Retro-Repro is not a true clone or identical copy of the original. It incorporates improvements using modern technology, while keeping the flavor and build appeal of the early kits.

About AMROCS

AMROCS was one of the small model rocket companies that started during the early days. It was founded in 1965 by Lyndsay Audin as Advanced Model Rocket Systems (AMROCS) and was a division of Rocket Supply Company in Tappan, New York.

AMROCS released five model rocket kits in their first catalog in 1965, including a three-stage model and two gliders. Their Accelerometer kit was the first commercial accelerometer designed for model rockets. They had plans to release their own line of model rocket engines that were to be an improvement over the private label Estes line they were selling.

In 1970, the AMROCS line was incorporated into the Space Age Industries line. SAI was founded at the same time by Tag Powell as a division of Mini-Wheels of Edison, New Jersey. The line was expanded to fifteen models, keeping the Accelerometer kit and adding the Blinking Beacon. In 1972, SAI ceased its operations.

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Box 1271 Knightdale, NC 27545 (919) 266-1977

LIMITATION OF LIABILITY

Model rockets are not toys, but are functional rockets made of lightweight materials and are launched with NAR or Tripoli safety certified model rocket motors, electrically ignited and flown in accordance with the NAR Model Rocket Safety Code. If misused, model rockets can cause serious injury and property damage. Semroc certifies that it has exercised reasonable diligence in the design and manufacture of its products. Semroc cannot assume any liability for the storage, transportation, or usage of its products. Semroc shall not be held responsible for any personal injury or property damage whatsoever arising out of the handling, storage, use, or misuse of our products. The buyer assumes all risks and liabilities therefrom and accepts and uses Semroc products on these conditions.

Your purchase and use of any Semroc products is construed as your agreement to and acceptance of these terms. If you do not agree to these terms and conditions, you must return the product, unused, for refund or credit.

100% SATISFACTION GUARANTEE

If you are not 100% satisfied with your Semroc product, we will make it right by providing whatever you consider fair, from refund to replacement.

Contact us at:

Semroc Astronautics Corporation
Customer Service Department
P.O. Box 1271
Knightdale, North Carolina 27545

JOIN THE NAR!

Sign up online at www.nar.org to join the premier model rocketry organization. Semroc fully supports the National Association of Rocketry and recognizes it as the sport's official voice. The NAR is the oldest and largest sport rocketry organization in the world. Since 1957 over 80,000 serious sport rocket modelers have joined the NAR to take advantage of the fun and excitement of organized rocketry. It is always more fun if you fly with friends. The *Sport Rocketry* magazine is one of the best ways to keep informed of new developments in the hobby. Check online at www.semroc.com/nar for promotions just for NAR members.



FINISHING

❑ **17.** A glider needs very little finishing. For most gliders, the additional weight from paint will cause them to not glide as well. A very light coat of paint or magic markers will give the best results. Re-trim the glide after applying any paint!

❑ **18.** If you are flying the Hawk™ in competition under NAR rules, you will have to cut off about 1" from the bottom of the engine tube. Before flying, tape a 1" wide by 12" long streamer to the nozzle end of the engine and roll it around the engine. Insert it in the engine tube with the streamer still wound around the engine. Upon ejection, the streamer will slow the fall of the engine sufficiently to meet contest requirements. If you will be flying around several spectators, this step is still a good idea.

❑ **19.** If the Hawk™ was constructed properly, it will fly perfectly straight during boost. Start with a 1/2A-2 engine and check that it is aligned properly. If it arcs over during boost, check for alignment problems and fix them before flying with a larger engine.

FLIGHT PREPPING

❑ **20.** 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. Use a dowel or some other support to keep the clips from catching on the glider after ignition.

❑ **21.** Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the Hawk™ from a 1/8" diameter by 36" long launch rod. Recover the spent casing and dispose of it properly.

About the Hawk™

The AMROCS Hawk was released in their first catalog in 1965. Upon first glance, it looks like the Estes Falcon and was heavily influenced by it. The changes were the elimination of 1/16" balsa to give it more strength and durability and changing to a metric body tube and a hollow hardwood nose cone. The lead weight was eliminated due to the weight of the nose cone. Instructions were added to modify it for NAR competition. The Hawk was catalog #K-6 and was introduced at a price of \$.75 or 3 for \$2.00.

The Semroc Retro-Repro™ Hawk™ uses laser-cut balsa fins and a balsa nose cone. Pre-printed lines on the balsa sheet make assembly even easier.

BEFORE YOU START!

Make sure you have all the parts included in this kit that are listed in the Parts List in the center of 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 in the center of these instructions. 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.

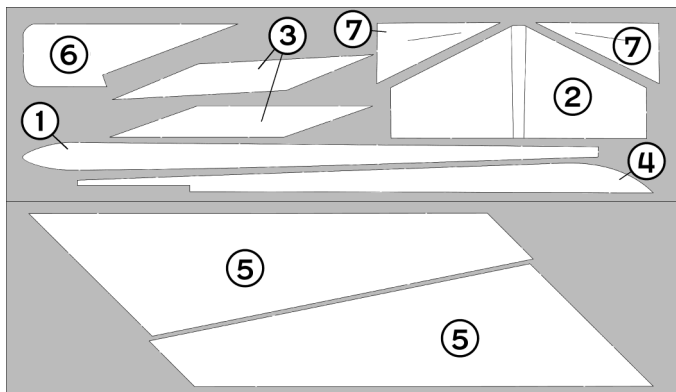


ASSEMBLY

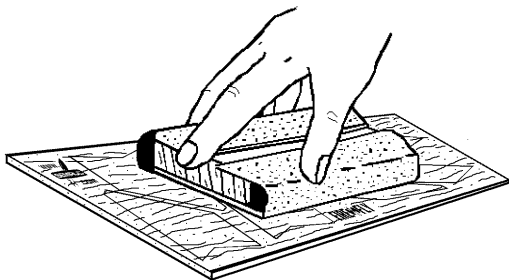
❑ **1.** These instructions are presented in a logical order to help you put your Hawk™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

PREPARE FINS

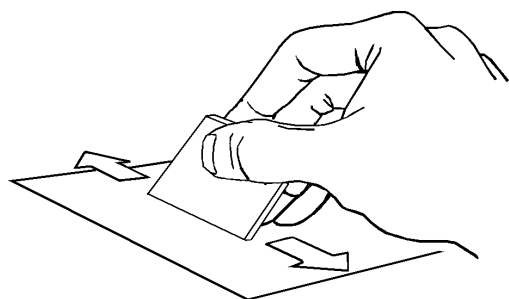
❑ **2.** There are two different sheets of laser-cut fins. Use the guide below to identify the parts that are called out in these instructions.



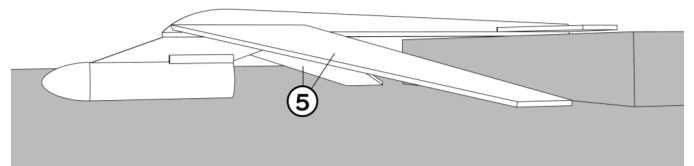
❑ **3.** Lightly sand each side of each of the laser-cut fin sheets. Carefully push the laser-cut fins from their sheet. Start at one point on each fin and slowly and gently work around the fin.



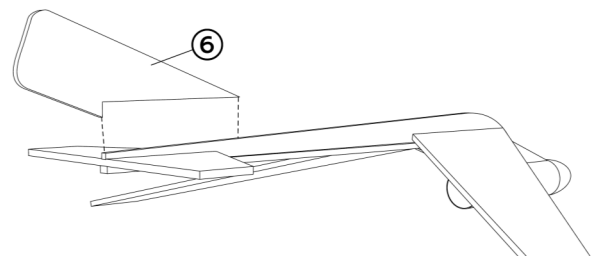
❑ **4.** Sand each fin edge to remove the hold-in tabs as shown below



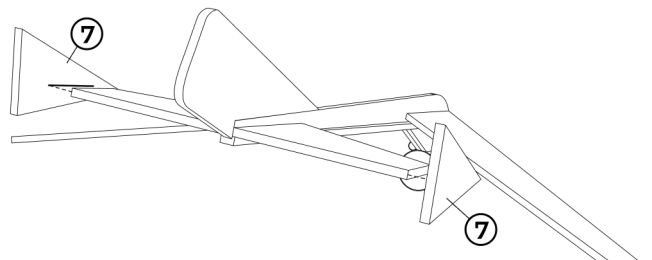
❑ **13.** Attach the wings (5) to the joint between the fuselage top and bottom. Support the wings in place and make sure the tips just touch the table. View the assembly from the front and make sure both wings form a symmetrical pattern and the pylon is vertical. Some masking tape at the tips of the wings will help support them while they dry.



❑ **14.** While still in the inverted position, glue the rudder (6) at the end of the bottom fuselage. Hold it in position until the glue sets, then allow to dry.

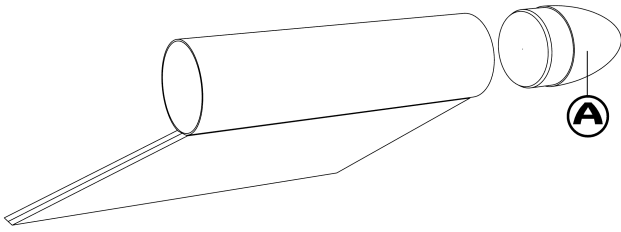


❑ **15.** Glue the two stabilizer tips (7) to the edge of the stabilizer along the black lines provided. The longest edge should be facing upwards. Make sure they are perpendicular to the stabilizer. Allow to dry.

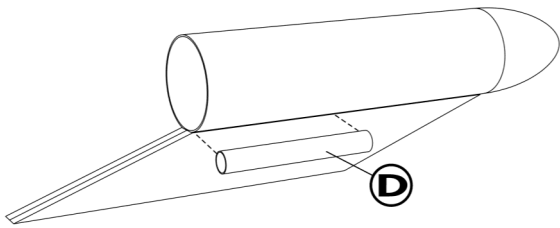


❑ **16.** Run a thin fillet of glue along all the joints. Do not add too much or the increase in weight will affect the performance. After all the glue is dry, sand all the edges round on all balsa parts, except the main wings. Sand them to an airfoil shape for best results. The Hawk™ is fairly easy to balance. Toss it gently. If it dives, add some weight to the tail, If it stalls, add some weight to the nose cone. When the glider is balanced, **glue the nose cone in place.**

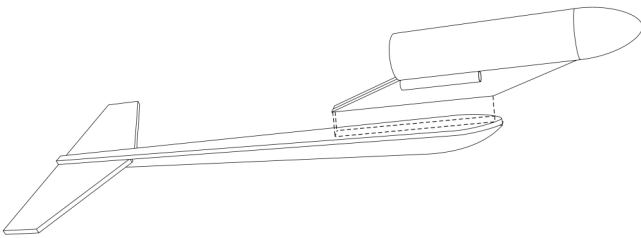
- 9.** Insert the nose cone (A) in the top of the engine tube and check for fit. Sand it if necessary. Do not glue at this time, but be sure to glue it after balancing the model.



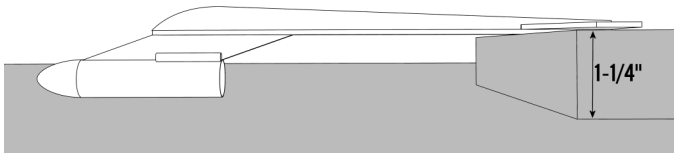
- 10.** Glue the launch lug (D) to the joint between the pylon and engine tube, even with the end opposite the nose cone.



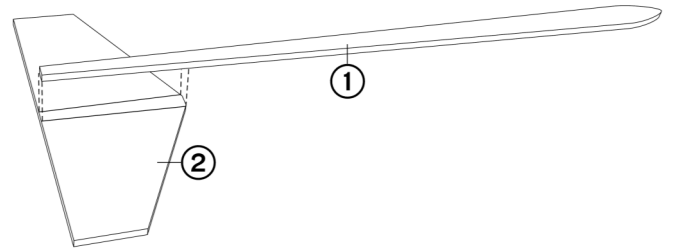
- 11.** Glue the pylon and engine mount assembly to the top of the fuselage assembly. Center it on the top fuselage and even with the front. Allow to dry, checking that the engine mount is in exact alignment with the fuselage.



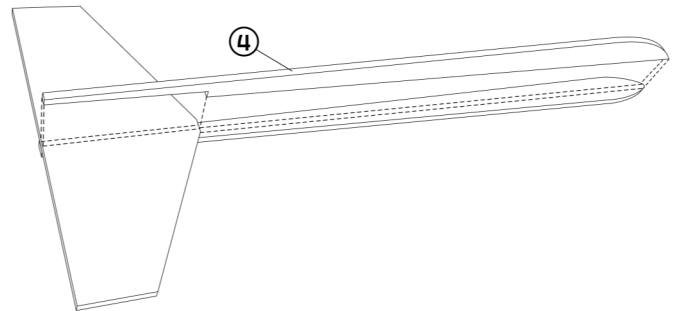
- 12.** Before the glue dries, invert the assembly and support the stabilizer end on a book about 1-1/4" from the surface. The engine tube should be flush with the table. Allow to dry in this position.



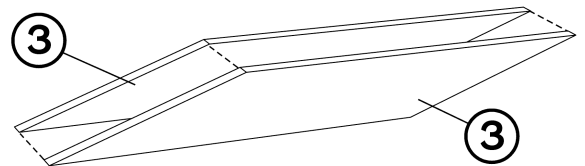
- 5.** Glue the small end of the fuselage top (1) to the stabilizer (2) lined up with the black lines on one side of the stabilizer. Allow to dry.



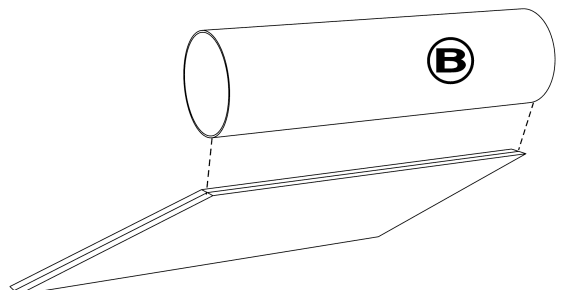
- 6.** Turn the assembly over and glue the fuselage bottom (4) centered on the fuselage top and stabilizer as shown.



- 7.** Glue the two halves of the pylon (3) together to form one thicker piece. Allow to dry pressed between books.



- 8.** Glue the engine tube (B) to one side of the pylon. Make sure it is centered and is even with the tip end.



Parts List

Exploded View

- A) 1 Balsa Nose ConeBNC-20H
- B) 1 Body TubeBT-20J
- C) 1 Laser-Cut Fins (#1-7) .FV-65
- D) 1 Launch LugLL-2A

