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.

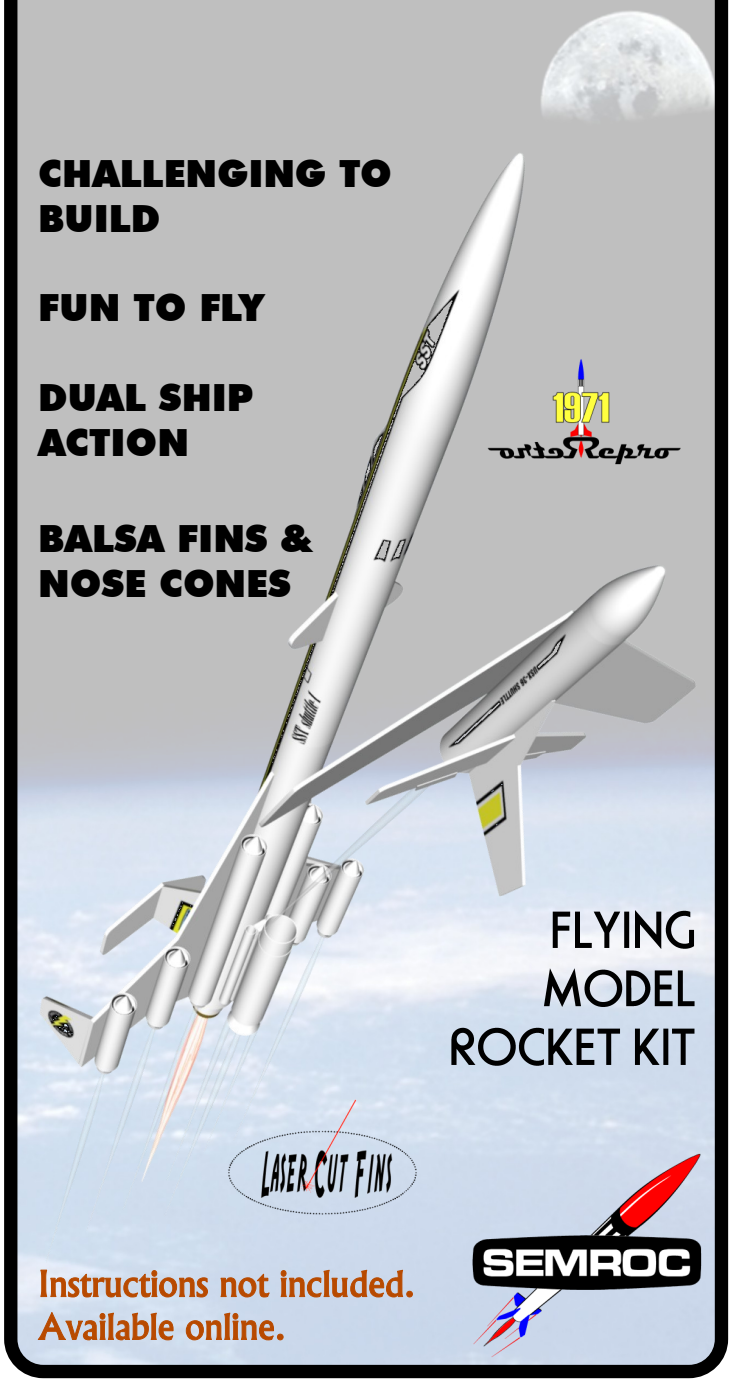
10. Recovery System. I will use a recovery system such as a streamer or parachute in my rocket so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.

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

cc: SST *Shuttle-1*



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

cc: SST Shuttle-1

Kit No. KCC-1

Specifications	SST	Glider	Engines	Alt.
Body Diameter	1.04" (2.6 cm)	0.76" (1.93 cm)	B6-2	150'
Length	24.4" (62.0 cm)	8.5" (21.6 cm)		
Fin Span	7.2" (18.3 cm)	7.2" (18.3 cm)	C6-3	550'
Net Weight	2.7 oz. (77.6 g)	0.4 oz. (11.4 g)		

PARACHUTE/GLIDER

What is a ~~retroRepro~~?

A ~~retroRepro~~ 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 ~~retroRepro~~ 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.

What is a cc:Kit?

The term cc: is used to indicate a carbon copy of a document. A Semroc cc:Kit is a ~~retroRepro~~ that uses materials very similar to the original version. They are close enough that original instructions can be used to construct the kit. Copies of original instructions are available online from several sources, the two best-known being Jimz and Rocketshoppe.com.

About Centuri Engineering

Centuri Engineering Company was started in 1961 by Leroy (Lee) Piester in his garage while he was still in college in Phoenix, Arizona. With his wife, Betty, they built Centuri into one of the largest model rocket companies ever.

Centuri was known for its unusual and innovative designs, producing over 140 different kits with something for every model rocketeer. They also produced model rocket engines and pioneered the modern composite high powered engines with their Enerjet line.

Centuri Engineering was sold to Damon in the late 1960's and shared the same parent corporation with Estes Industries, the largest model rocket company in the world. The Centuri product line was kept separate from the Estes line until 1983. A few of the old kits have been reissued by Estes since then, but for the most part, Centuri Engineering Company lives today only in the dreams of the senior members of the model rocket community.

July 25, 2005

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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.

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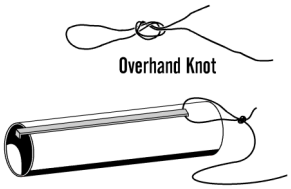
JOIN THE NAR!

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.

Construction Notes

1. Download a copy of the original instructions from http://www.dars.org/jimz/kc-17.htm. The downloaded instructions should be read and understood before beginning construction. Mark the following notes on the original plans:

2. In step 1 of the original instructions, add the Kevlar® thread as shown to the right. In step 7, tie the elastic cord to the free end of the Kevlar® thread instead of the shock cord mount.

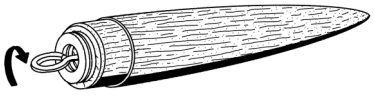


3. Step 3 calls for a 10" long tube. The tube was changed to the standard 10.5" long ST-1010 tube after the instructions were printed.

4. Step 5 describes a horizontal recovery position. This makes the tail section vulnerable to being broken during rough ejections. Although this is an option, normal vertical recovery may be safer to prevent damage to the rocket.

5. Step 10 describes attaching the original 20" parachute. This kit has two 12" chutes supplied. For a soft field, one 12" may be desirable for minimum drift. For hard fields, use both chutes.

6. Also in step 10, add the two washer weights on the screw eye as shown to the right. Glue securely.



7. In step 29, the nose cone for the glider supplied is balsa instead of the original plastic. It may be slightly lighter than the original plastic. This may affect the adjustment during the glide tests.

8. Step 31 calls for cutting a strip from the unused balsa. There are two strips provided on the 3/32" laser-cut sheets. Both may be required to provide clearance for the launch rod from the glider wings. Check your model for fit.

9. In step 32 the coupler is glued into the forward end of the rocket tube. Make sure the fit of the coupler is relatively loose in the rear of the glider. Sanding may be required to achieve the proper fit. The glider must be loose enough to shake free when the ejection charge blows the main nose cone and chutes. This is one of the most critical steps to achieve proper deployment of the glider.

We hope you enjoy building and flying your

cc: SST *Shuttle-1*

About the cc: SST Shuttle-I™

The SST Shuttle-I was introduced in the 1971 Centuri catalog. At the time, NASA was busy with several concepts that could place several tons in earth orbit and return to land at a conventional airstrip and reuse the craft in a short time. This model was based on one of those proposals. It was also the Centuri response to the highly popular Estes Orbital Transport. The SST Shuttle-I was released as Catalog #KC-17 and had an introductory price of $4.00. The SST Shuttle-I was a very popular model having a production run of over ten years. It was listed as a skill level 5 kit, requiring expert modeling skills.

The ~~OrbiRepro~~ cc: SST Shuttle-I™ is a very close approximation of the original kit. Laser-cut fins are provided using the original patterns as models. The hinges are made of a more durable plastic adhesive instead of the original paper. Kevlar and elastic replace the original rubber shock cord.

Plans are not provided in this kit but they are available are online at http://www.dars.org/jimz/kc-17.htm thanks to the tireless efforts of Jim Zalewski and the generosity of Estes Industries in allowing him to help preserve the past.

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.



Parts List

A)	1	Body Tube	ST-10105
B)	1	Body Tube	ST-1080
C)	4	Body Tubes	ST-525
D)	2	Body Tubes	ST-560
E)	1	Body Tube	ST-730
F)	1	Body Tube	ST-730E
G)	1	Body Tube	ST-749
H)	1	Balsa Nose Cone	BC-1050
I)	1	Balsa Nose Cone	BC-715
J)	1	Plastic Nose Cone Set	PC-5RJ-2
K)	1	Tubing Coupler	HTC-10
L)	1	Tubing Coupler	HTC-7
M)	1	Fiber Disc	IKCC-1P
N)	1	Thrust Ring	TR-7
O)	2	Launch Lugs	LL-330
P)	1	Screw Eye	SE-12
Q)	1	Elastic Cord	EC-124
R)	1	Kevlar Thread	SCK-30
S)	2	Centering Rings	CR-710
T)	1	Engine Hook	EH-28
U)	1	Laser Cut Fins	FCC-1
V)	1	Decal	DKCC-1
W)	2	Plastic Parachute	RC-12
X)	2	Tape Discs	TD-6
Y)	2	Shroud Lines	SLT-6
Z)	1	Shroud & Canopy Sheet	IKCC-1S
AA)	1	Hinge Sheet	IKCC-1H
AB)	2	Washer Weights	WW-8

Exploded View

