## About Centuri Engineering Company

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.

## About the SLS Javelin™

The Javelin was introduced in the 1965 Centuri catalog. It became one of their signature beginner kits and was included in at least two of their multi-kit outfits. The Javelin was Centuri #KC-31 and was introduced with a price of $1.50. Semroc introduced a full scale Retro-Repro Javelin in 2003.

The SLS Javelin is a 175% upscale of the original Centuri kit. Using the SLS parts a precise upscale is possible using much more rugged parts than the original-sized Javelin. The SLS Javelin uses precision laser-cut basswood fins instead of balsa for additional strength. An 18" Nylon chute is used instead of the original poly plastic. The body tube is laser-slotted to match the through-the-wall fins. The original Javelin had a rubber shock cord and is replaced with Kevlar® cord and elastic cord for greater strength and reliability. A 24 mm engine mount adapter is included to increase the selection of engines that can be used.

## What is SLS™?

SLS™ is short for Semroc Large-Scale Rocketry. Based on the original Centuri Large Scale Line using larger, thicker-walled body tubes, Semroc is introducing several models in the Mid-Power range. Most of the models will fly on 24mm and 29mm engines in the C through G (and small H) impulse levels. Featured in the family are laser-cut basswood fins, Nylon chutes, and laser-slotted tubes allowing much more robust construction designed to last for years of flying.

SEMROC SLS JAVELIN™

**ALMOST 2 FEET TALL!**

**SINGLE STAGE**

**RUGGED CONSTRUCTION**

**Smooth precision-sanded balsa nose cone**

**Laser-cut basswood fins**

**18" Diameter 1.9 oz. Rip-Stop Nylon Chute**

**Laser-slotted thick-walled tube**

**24/29mm engine mounts**

FLYING MODEL ROCKET KIT


MADE IN THE USA

*FLIES ON D - G ENGINES!*

SEMROC

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

**SLS Javelin™**
**Kit No. KLV-16**

| Specifications | | Engine | Approx. Altitude |
|---|---|---|---|
| Body Diameter | 1.34" (3.4cm) | D12-7 | 1000' |
| Length | 22.3" (56.6cm) | E9-8 | 1900' |
| Fin Span | 6.7" (17.0cm) | F25-9 | 3900' |
| Net Weight | 3.33 oz. (94.5g) | | |

**PARACHUTE RECOVERY**

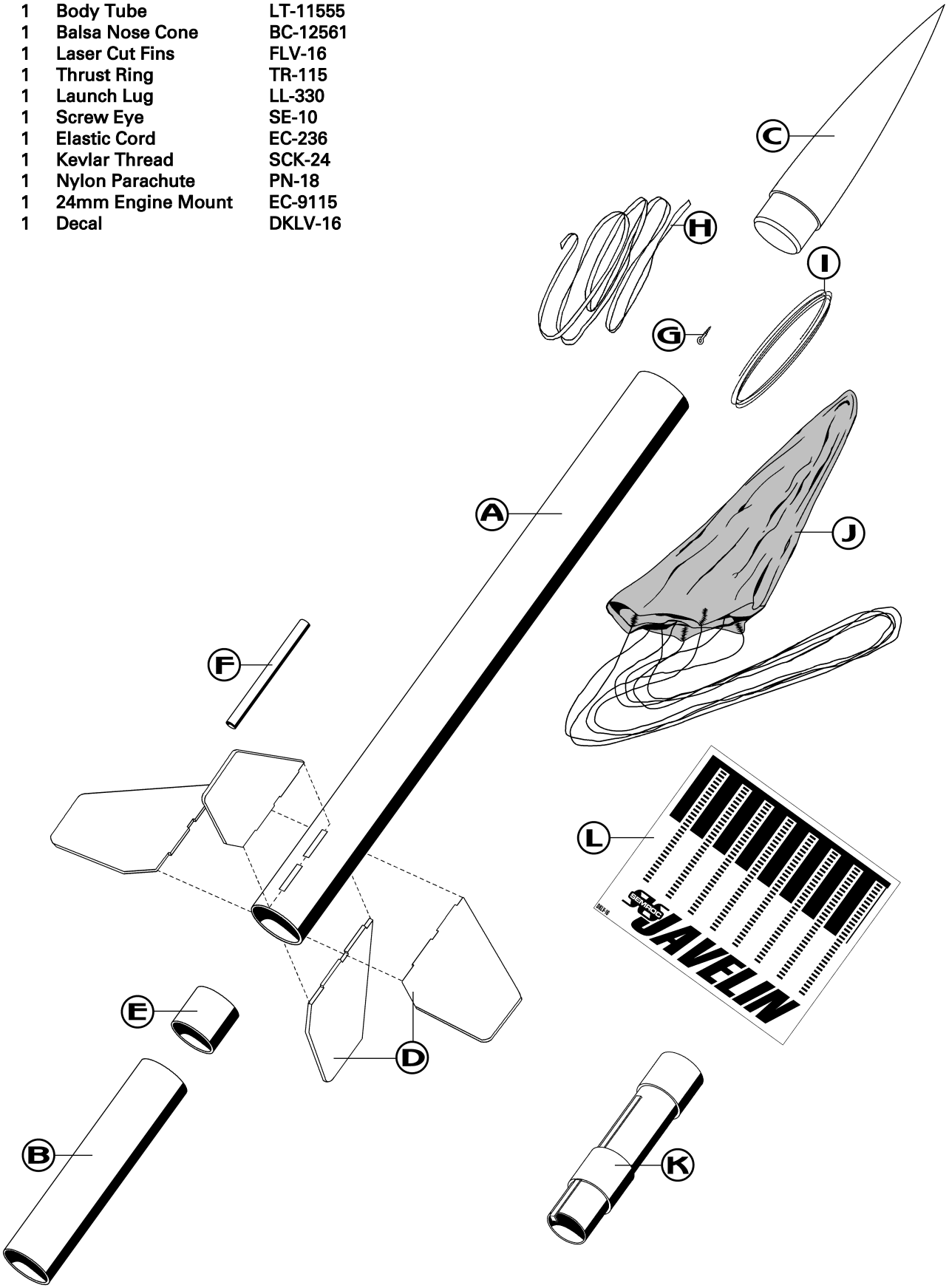
**July 29, 2004**


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

# Parts List

| | | | |
|---|---|---|---|
| A | 1 | Body Tube | LT-125157 |
| B | 1 | Body Tube | LT-11555 |
| C | 1 | Balsa Nose Cone | BC-12561 |
| D | 1 | Laser Cut Fins | FLV-16 |
| E | 1 | Thrust Ring | TR-115 |
| F | 1 | Launch Lug | LL-330 |
| G | 1 | Screw Eye | SE-10 |
| H | 1 | Elastic Cord | EC-236 |
| I | 1 | Kevlar Thread | SCK-24 |
| J | 1 | Nylon Parachute | PN-18 |
| K | 1 | 24mm Engine Mount | EC-9115 |
| L | 1 | Decal | DKLV-16 |

# EXPLODED VIEW



## 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.

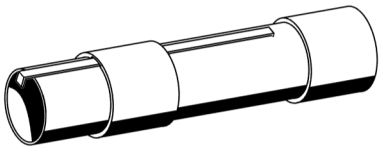
## TOOLS

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

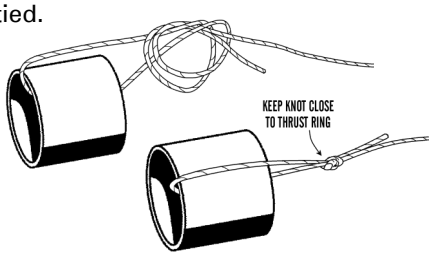

## ASSEMBLY

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

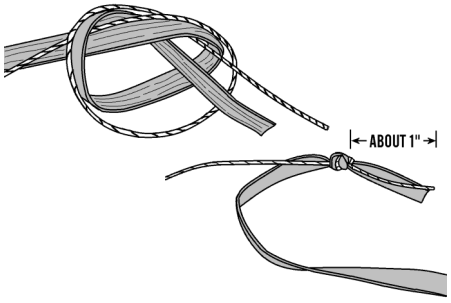
❑ **2.** Follow the instructions included with the EM-9115 Engine Mount kit to build the adapter. Allow it to dry thoroughly.



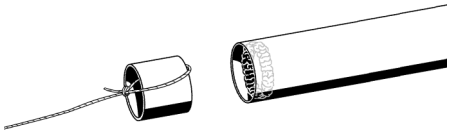
❑ **3.** Loop the yellow Kevlar® thread through the thrust ring as shown. Tie both ends of the Kevlar® thread in an overhand knot leaving one end short and the other end as long as possible. Keep the knot and one end as close to the ring as possible as shown. Put a drop of glue on the knot to keep it from coming untied.



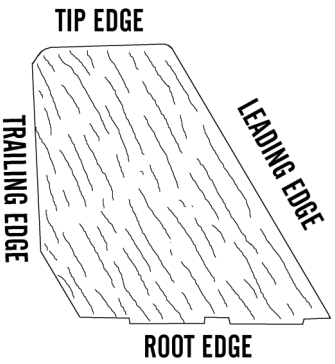

❑ **4.** Using the long free end of the Kevlar® thread and one end of the elastic shock cord, tie an overhand knot joining the elastic shock cord to the Kevlar® thread. Pull the thread and cord tight leaving about 1" of excess after the knot. Put a drop of glue on the knot to keep it from coming untied.



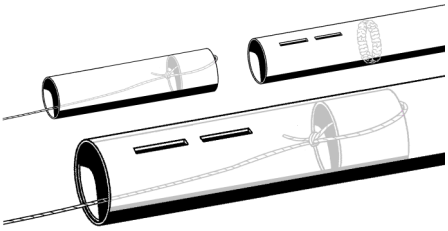

❑ **5.** Apply a bead of glue inside one end of the small body tube (LT-11555.) Insert the thrust ring into the body tube until the ends are even. Clean up any excess glue pushed inside the tube or the engine will not fit properly. When the assembly is dry, push the shock cord back through the body tube so it comes out the bottom away from the thrust ring.



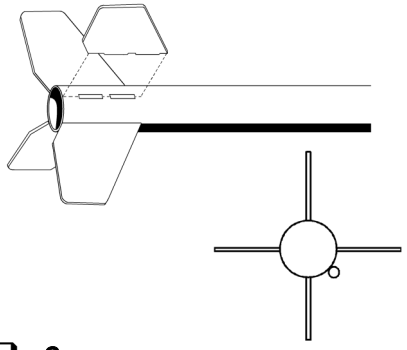
❑ **6.** Lightly sand each side of the four fins. Round all edges except the root edges (which will be glued to the body tube). The tip edges and trailing edges may be tapered for better aerodynamic cross section. Check all fins for fit in the slots in the body tube and sand if necessary.



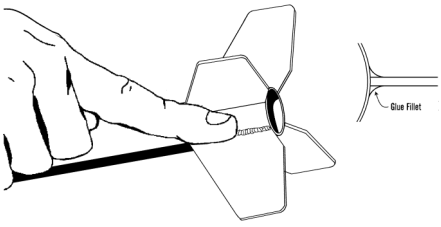

❑ **7.** Apply a generous bead of glue inside the slotted end of the main body tube just above the slots. Push the engine mount assembly with the thrust ring end first into the main body tube until both ends are even. Proceed to the next step without waiting for the glue to completely dry.



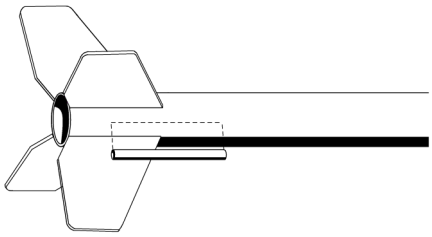
❑ **8.** Run a thin bead of glue along the root edge of one of the fins. Attach it to the body tube in one of the sets of slots on the main body tube. Repeat for the other three fins. Refer to the end view.



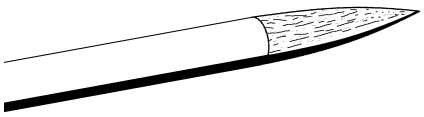
❑ **9.** After the fin assembly is completely dry, run a small bead of glue along both sides of each fin-body tube joint. Using your index finger, smooth the glue into fillets.



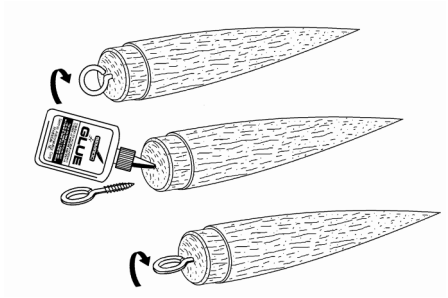
❑ **10.** Glue the launch lug along the side of the body tube, centered between two of the fins and about 1" from the bottom of the body tube.



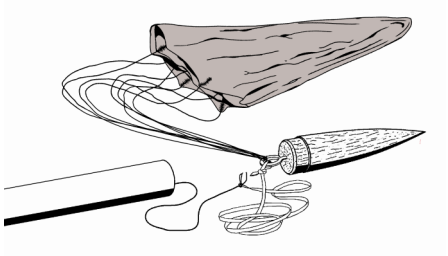
❑ **11.** Insert the nose cone in the body tube and check for proper fit. The nose cone should be snug to hold itself in alignment. If it is too loose, add masking tape. If it is too tight, sand the shoulder slightly.



❑ **12.** Twist the screw eye into the center of the base of the nose cone. Unscrew it and squirt glue into the hole. Reinstall the screw eye and wipe off any excess glue.

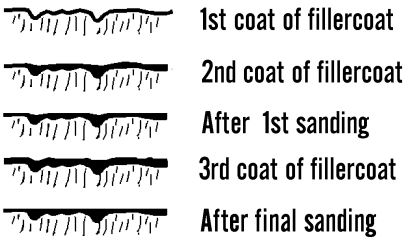


❑ **13.** Attach chute by passing the lines through the screw eye and looping them over the tip of the nose cone. Pull the lines tight and make sure they are all of equal length. Put a drop of glue on the joint to keep the lines from moving. Tie the loose end of the elastic cord to the screw eye. Put a drop of glue on the knot to keep it from untying.



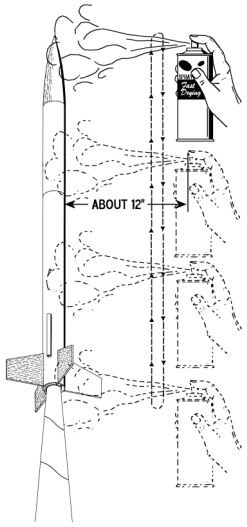
## FINISHING

❑ **14.** When the fillets have dried, prepare balsa and basswood 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.

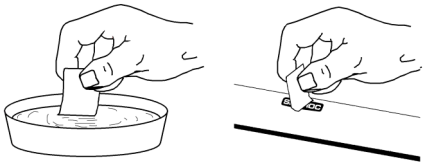



❑ **15.** After all balsa and basswood surfaces have been prepared, wipe off all dust with a dry cloth. First spray the model with an enamel primer. Choose a high visibility color combination like yellow and black for the final color.

❑ **16.** 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. Use rolled newspaper to hold the rocket while you spray it.




❑ **17.** After the paint has dried, decals should be applied. The decals supplied with the SLS Javelin™ are waterslide decals. Each decal should be cut separately from the sheet. Completely apply one of the decals before starting the next. Think about where you want to apply each decal and check for fit before wetting the decal. Make sure the ends are aligned with the roll pattern.



## FLIGHT PREPPING

❑ **18.** Pack the recovery wadding from the top of the body tube. Use a sufficient quantity to protect the parachute, but not too much that it will interfere with the proper deployment of the parachute.

❑ **19.** 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.

❑ **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.

❑ **21.** Carefully check all parts of your rocket before each flight as a part of your pre-flight checklist. Launch the SLS Javelin™ from a 3/16" diameter by 36" long launch rod.