

About Semroc Astronautics

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.

About the PSC Infinity™

May 2011 marks the 25th Anniversary of Pittsburgh Space Command, Section #473 of the National Association of Rocketry. Formed in 1986 by Club Founder Art Nestor, PSC has established a rich tradition over the years, introducing hundreds of enthusiasts to the exciting hobby of model rocketry.

Conceived and designed by Club member Mike Hardobey, and engineered by fellow Club member John Brohm, the PSC Infinity™ was created to commemorate this important milestone in PSC's storied history.

The PSC Infinity's Red & Grey paint scheme captures the Club's colors, while the silver nose cone reflects our Silver Anniversary. The Booster represents the Club's solid foundation, and the Sustainer and the name "Infinity" expresses PSC's forward-looking commitment to the continued growth of model rocketry in the Western Pennsylvania region for years to come!

March 23, 2011

May 25, 2011 Rev A

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

PSC Infinity™

**PSC's 25th
ANNIVERSARY KIT!
1986 - 2011**

**TWO STAGE
CLUSTER DESIGN**

**DESIGNED BY
MIKE HARDOBEY**

**ENGINEERED BY
JOHN BROHM**

**FLYING MODEL
ROCKET KIT**

LAZER CUT FINS

MADE IN THE USA

Pittsburgh Space Command

SEMROC

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

PSC Infinity™ Kit No. KN-5

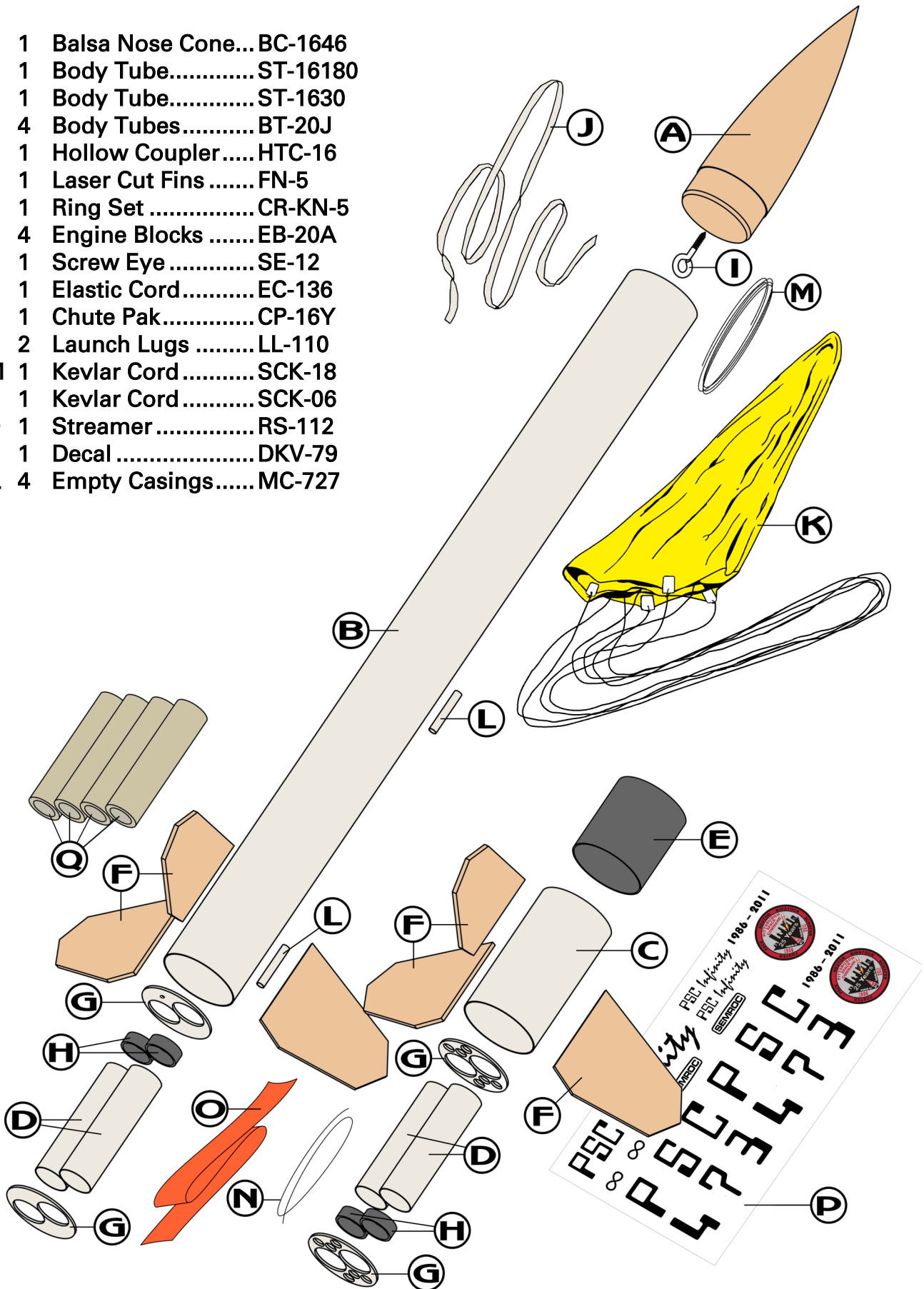
Specifications	Engine	Approx. Altitude
Body Diameter 1.64" (4.2 cm)	C6-7 (Single Stage)	1370'
Length 25.9" (65.8 cm)	B6-0, B6-6	1150'
Fin Span 7.1" (18.0 cm)	C6-0, C6-7	2135'
Net Weight 2.4 oz. (68.1 g)		

PARACHUTE RECOVERY

Parts List

EXPLODED VIEW

- A 1 Balsa Nose Cone...BC-1646
- B 1 Body Tube.....ST-16180
- C 1 Body Tube.....ST-1630
- D 4 Body Tubes.....BT-20J
- E 1 Hollow Coupler.....HTC-16
- F 1 Laser Cut FinsFN-5
- G 1 Ring SetCR-KN-5
- H 4 Engine BlocksEB-20A
- I 1 Screw EyeSE-12
- J 1 Elastic Cord.....EC-136
- K 1 Chute Pak.....CP-16Y
- L 2 Launch LugsLL-110
- M 1 Kevlar CordSCK-18
- N 1 Kevlar CordSCK-06
- O 1 StreamerRS-112
- P 1 DecalDKV-79
- Q 4 Empty Casings.....MC-727



BEFORE YOU START!

Make sure you have all the parts included in this kit that are listed in the Parts List to the left. 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.

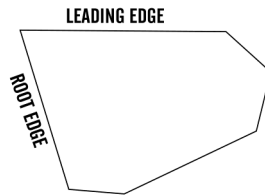


ASSEMBLY

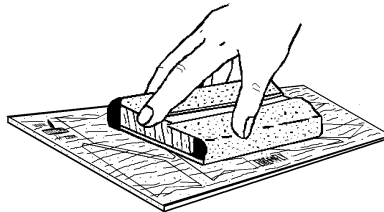
1. These instructions are presented in a logical order to help you put your PSC Infinity™ together quickly and efficiently. Check off each step as you complete it and we hope you enjoy putting this kit together.

FIN PREPARATION

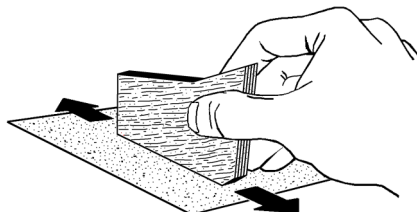
2. There are two identical fin sets provided on the laser-cut sheet (FN-5), one set for the booster and another for the upper stage. Use the pattern below to identify the root and leading edges of the fins.



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

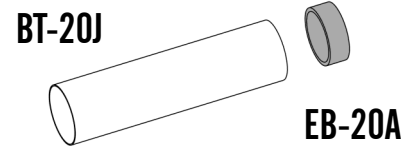


4. Stack the fins in two groups of three fins each. Line each group up squarely and sand the fins back and forth over some fine sandpaper to get rid of the hold-in tabs as shown below. Round all edges except the root edges which will be glued to the body tubes.

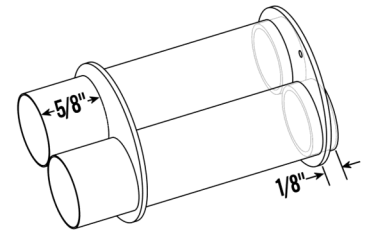


SUSTAINER ENGINE

5. Locate two engine tubes (BT-20J) and two engine blocks (EB-20A). Glue an engine block into the top of each engine tube, making sure that the engine block is flush with the end of the engine tube.

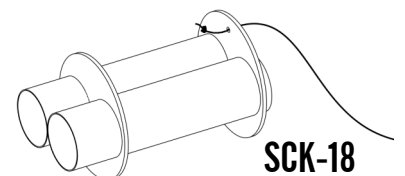


6. Punch out the two centering rings that do not have the six vent holes. Slide the two centering rings onto the two engine tube assemblies. Position the centering rings to the locations as shown. **Note that the ring with the small hole is toward the end with the engine blocks.**

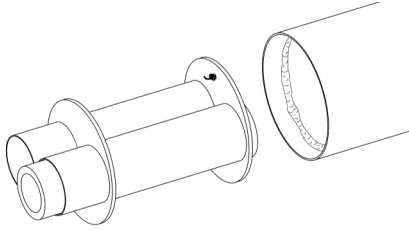


7. Apply a heavy fillet of glue around both sides of each centering ring at the joints with the engine mount tubes. Continue turning the assembly until the glue does not run. Set the assembly aside to dry completely.

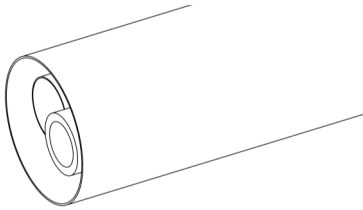
8. Insert one end of the long yellow Kevlar® cord (SCK-18) through the small hole in the top centering ring. Tie a knot in the end and pull it until the knot is against the ring. Apply a drop of glue on the joint. Set the assembly aside to dry.



❑ **9.** Insert an empty casing (MC-727) into one of the Sustainer engine mount tubes. Apply a bead of glue inside the sustainer body tube (ST-16180).

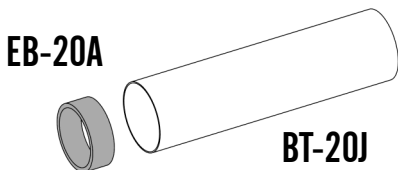


❑ **10.** Slide the Sustainer engine mount into the body tube until the aft end of the empty casing is even with the aft end of the sustainer body tube. Remove the empty casing once the assembly is dry. Apply a small glue fillet at the joint between the aft centering ring and the sustainer body tube. Set assembly aside to dry.

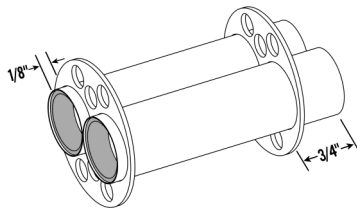


BOOSTER ENGINE MOUNT

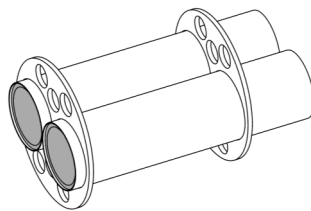
❑ **11.** Locate the remaining two engine tubes (BT-20J) and two engine blocks (EB-20A). Glue an engine block into the bottom of each engine tube, making sure that the engine block is flush with the bottom of the engine tube.



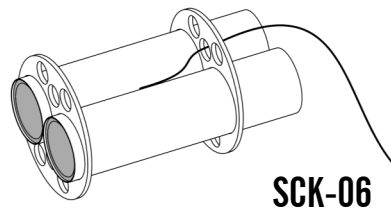
❑ **12.** Punch out the two centering rings that have the six vent holes. Slide the two centering rings onto the two engine tube assemblies. Position the centering rings to the locations as shown.



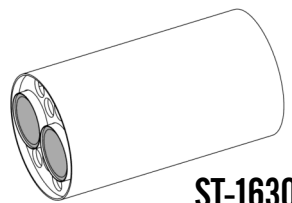
❑ **13.** Apply a heavy fillet of glue around both sides of each centering ring at the joints with the engine mount tubes. Continue turning the assembly until the glue does not run. Set the assembly aside to dry completely.



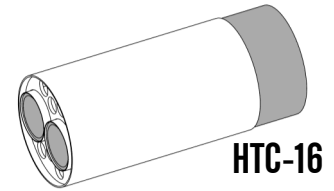
❑ **14.** Insert one end of the short yellow Kevlar® cord through one of the vent holes in the forward centering ring and glue the cord into the joint between the two engine tubes. Set the assembly aside to dry.



❑ **15.** Slide the Booster engine mount into the booster body tube (ST-1630) until the engine tubes are flush with the aft end of the booster body tube. Resting the assembly on a flat surface will ensure the aft end of the assembly is flush.



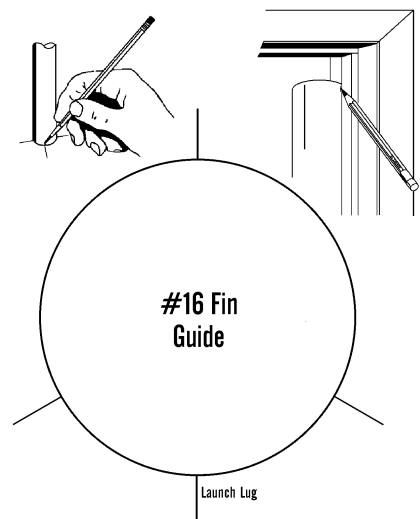
❑ **16.** Apply glue inside the top of the Booster section. Insert the coupler into the Booster tube until it rests against the forward centering ring. If installed correctly, 3/4" of the coupler should protrude out of the top of the Booster section. Make sure there is no extra glue on the exposed surface of the coupler or covering the centering ring vent holes. Set aside to dry. **Apply a thick layer of glue or epoxy around the inside surfaces to protect them from the hot engine flames during separation.**



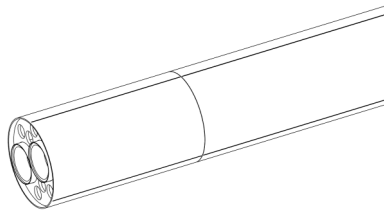
❑ **17.** Turn the Booster assembly over and run a bead of glue around the bottom centering ring where it contacts the body tube. Make sure the vent holes are not blocked with glue.

SUSTAINER FINS

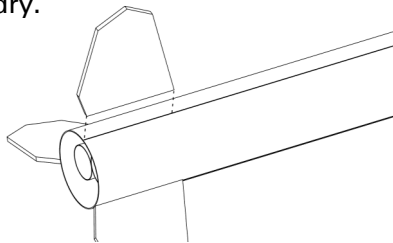
❑ **18.** Stand the longer Sustainer body tube (ST-16180) on the fin guide illustrated below and mark the fin positions on the sides of the tube. Mark an additional line at the Launch Lug designation and mark the line LL on the tube.



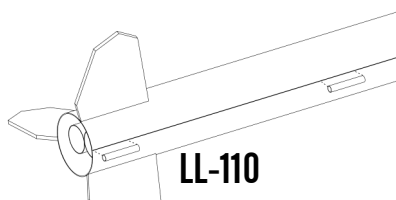
❑ **19.** Align a pair of empty casings (**MC-727**) and tape them together with a piece of cellophane tape. Make two such pairs. Insert the pairs into the Booster engine tubes and mate the Booster assembly with the Sustainer. Secure the two parts together with small pieces of masking tape. Find a convenient channel or groove such as a partially open drawer, a door jamb (as shown,) or a piece of molding. Using the channel, extend the marks on the sustainer the full length of the tube including the Booster section. This provides lines for aligning the fins on both sections.



❑ **20.** Apply glue to the root edge of a sustainer fin and position it along one of the lines drawn on the side of the Sustainer body tube. Remove, allow to dry, apply additional glue, and reposition. Repeat for the other two fins. Set the assembly aside to dry.

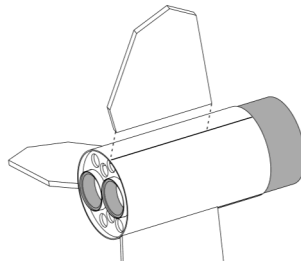


❑ **21.** Apply a bead of glue to one of the launch lugs (**LL-110**) and position it on the launch lug line and even with the base of the Sustainer. Glue the launch lug even with the bottom of the sustainer. Repeat for the second launch lug, locating the lug 7.5" from the base of the Sustainer body tube.



BOOSTER FINS

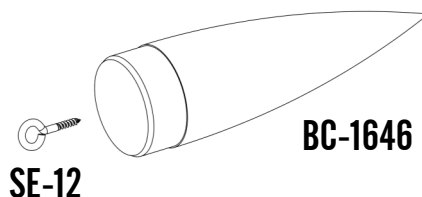
❑ **22.** You may wish to perform this step with the Booster coupled to the Sustainer. Doing so can help ensure the fins of each stage are in alignment. Apply glue to the root edge of a Booster fin and position it along one of the lines drawn on the side of the body tube. Remove, allow to dry, apply additional glue, and reposition. Repeat for the other two fins.



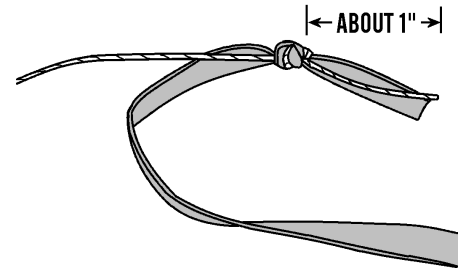
❑ **23.** After the fin assemblies are completely dry, run a small bead of glue along both sides of each fin-body tube joint. Using your forefinger, smooth the glue into fillets.

FINAL ASSEMBLY

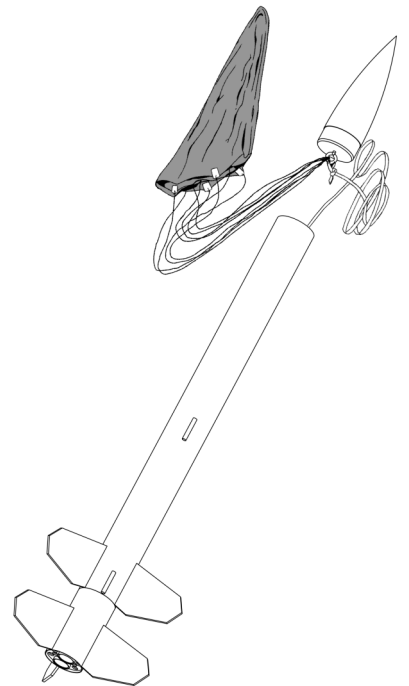
❑ **24.** Check the nose cone (**BC-1646**) for fit. If it is too tight, it may be sanded slightly to fit. If it is too loose, masking tape may be used to make it tighter. Turn the screw eye (**SE-12**) into the center of the base of the nose cone. Unscrew it and squirt glue into the hole. Reinstall the screw eye snug against the nose cone and wipe off any excess glue.



❑ **25.** Prepare the shock cord as follows. Line up one end of the elastic shock cord (**EC-136**) with the free end of the Kevlar® cord in the Sustainer and tie an overhand knot at the end of the two cords. Pull the knot tight and place a small drop of white glue on the knot to prevent it from loosening.

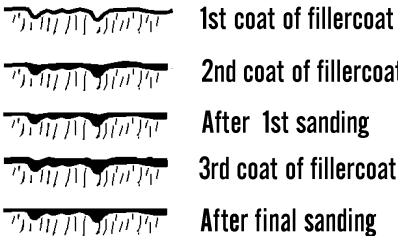


❑ **26.** Tie the free end of the shock cord to the screw eye in the nose cone. Assemble the chute using the instructions supplied with the kit and attach to the screw eye as shown.



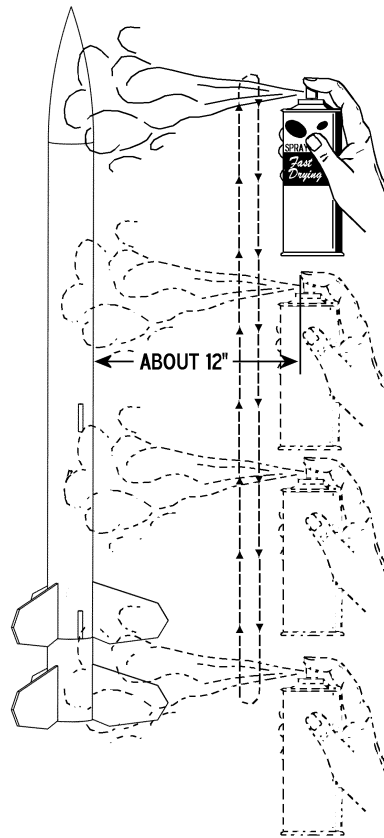
FINISHING

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



28. After all balsa surfaces have been prepared, wipe off all balsa dust with a dry cloth. First spray the model with an enamel primer. Use the face card illustration to guide your selection of paint colors and masking to finish the PSC Infinity™.

29. 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.



30. After the paint has dried, decals should be applied. The decals supplied with the PSC Infinity™ are waterslide decals. Each decal should be cut separately from the sheet. Apply each decal before starting the next. Think about where you want to apply each decal and check for fit before wetting the decal. Use the cover photo as a guide for applying decals.



FLIGHT PREPPING

31. Installing engines: Make two Booster and Sustainer engine pairs by lining up a Booster and Sustainer engine. Secure each pair by wrapping a small piece of cellophane tape at the joint between the two engines. Engine pairs must be friction fitted into the Sustainer and Booster with masking tape. Insert each pair into the Booster, making sure the aft end of each engine pair rests firmly against the Booster thrust rings.

32. Roll the Booster streamer and protect it with several layers of flameproof recovery wadding and pack it into the side space at the forward end of the Booster. Carefully slide the Booster assembly into the Sustainer until the engine pairs rest firmly against the Sustainer thrust rings.

33. Pack the recovery wadding from the top of the sustainer body tube. Use a sufficient quantity to protect the chute, but not so much that there is no room left.

34. Roll the parachute and pack it and the shock cord on top of the recovery wadding. Slide the nose cone into place, making sure it does not pinch the shock cord or chute.

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

36. After each flight, promptly remove the spent engine casings and dispose of properly. Clean any residue from your model for many flights.