SUPER MARS SNOOPER

VERSION 1.0
SKILL LEVEL 4

Thank you for the purchase of a
Hawks Hobby Model Rocket.
Problems or questions contact us at
thehawksnest@hawkshobby.com
or call 281-217-3217 feedback welcome.

Before you start on your model

Please take a few precautions:

1) Children should be supervised by an adult at all times.
2) Inventory and inspect all parts carefully before you begin. Check parts in kit against the parts list. If you find any that are missing or damaged please contact us at the above email address with the part letter and description found on the parts list.
3) Follow safety procedures when launching your rocket. See pages 24 - 25

Before you begin.

1) Read all the instructions.
2) Find a suitable work area.
3) Gather your kit and all additional items needed.
4) Layout all your parts and tools in your work area.
5) Identify all parts with the parts list in the instructions - page 3.
6) Read all the instructions again.
7) Remember to not rush - take your time and complete each step fully before moving onto the next step.

Terms you need to know.

1) Forward - Forward is the end that points to the top or nose cone of the rocket or is assembled in that area.
2) Rear - Rear is the end that points to the bottom of the rocket or is assembled in the area that engine is inserted.

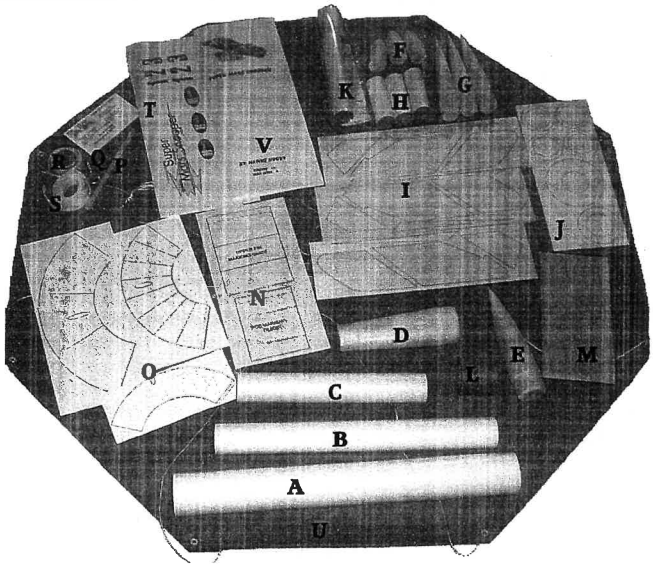
Assembly Procedure:

It is advised that you ***test fit*** each part ***before*** glueing to insure proper fit as some gentle sanding may be needed.

Your ready to begin. GOOD LUCK !

ENJOY YOUR ROCKET !

SMS Page 3 - Your Kit Contains

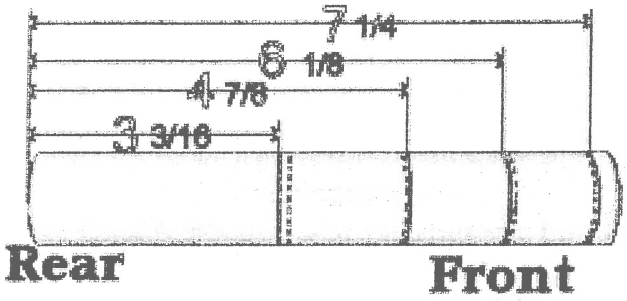


A	1	LOWER BODY TUBE 1.640 DIAMETER 13 INCHES LENGTH
B	1	UPPER BODY TUBE 1.140 DIAMETER 11 INCHES LENGTH
C	1	ENGINE TUBE 1.140 DIAMETER 7.50 INCHES LENGTH LINES @ 3 ½ , 5 5/8 & 6 7/8 INCHES ALL MEASURED FROM END OF TUBE
D	1	BODY TAPER ADAPTER
E	1	NOSE CONE
F	3	LOWER POD CONES
G	3	UPPER POD CONES
H	3	POD TUBES .908 DIAMETER 1.750 INCHES LENGTH
I	3	FIN STOCK
J	1	CENTERING RING SHEET
K	1	SEMROC ENGINE MOUNT KIT
L	1	COUPLER
M	1	RADIATOR FINS
N	1	FIN / POD MARKING GUIDE
O	1	PRINTED SHROUD CARD STOCK
P	1	LAUNCH LUG
Q	1	EYE SCREW
R	1	KEVLER SHOCK CORD ANCHOR
S	1	SHOCK CORD
T	1	DECAL
U	1	PARACHUTE pre assembled
V	1	INSTRUCTIONS

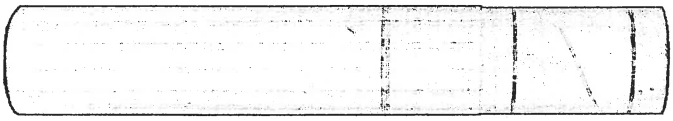
Additional items needed not included in this kit.
Fine sand paper pencil
weight for balancing scotch tape
screw for weight if using washers or other such item
wood or white glue And CA glue
sanding sealer
paint
engines and launch system

SMS Page 4 **Engine Tube**

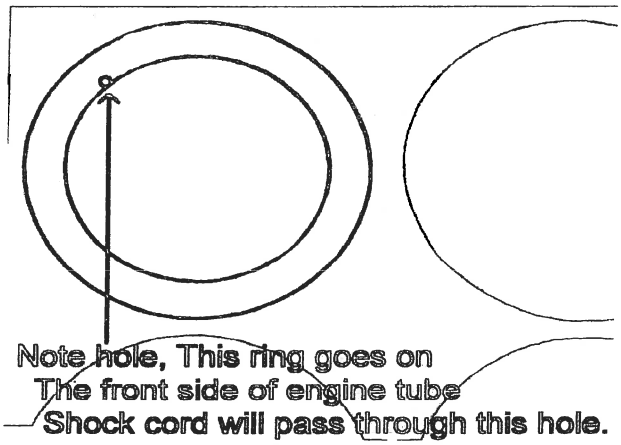
☐ Get engine tube part # C and mark it as shown below
☐ @ 3 3/16, 4 7/8, 6 1/8 and 7 1/4



☐ Wrap a piece of paper around the tube at the marks and draw the line completely around the tube.



☐ Gather the centering rings and coupler. Do not use the ring with the hole in it - shown below - this ring will be used later.



☐ Insert the first small centering ring onto the engine tube at the 4 7/8 mark. The line should be just in front of the ring. Put glue fillet on the rear side of the ring.

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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 the 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 a risk of grass fire.

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.** I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.

Launch Site Dimensions

Instal 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

Limitation of Liability

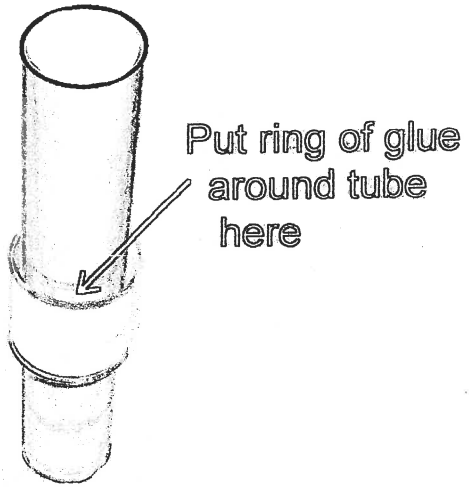
Model rockets are not toys, but are functional rockets made of light weight materials that are launched with NAR or Tripoli safety certified model rocket motors, electrically ignited and flown in accordance with the NAR Model Rocket Safety Code. If misused model rockets can cause serious injury and property damage. Hawks Hobby certifies that it has exercised reasonable diligence in the design and manufacture of it's products. Hawks Hobby does not assume any liability for the storage, transportation, usage or misusage of our products. Nor shall Hawks Hobby be held responsible for any personal injury or property damage whatsoever arising from the handling, storage, use or misusage of any of our products. The buyer assumes and accepts all risk, liability and responsibility and accepts and uses Hawks Hobby products under these conditions. Your purchase and use of any Hawks Hobby product is construed as your acceptance and agreement of these terms. If you do not agree with these terms and conditions promptly return the product unused for a refund.

Model Rocket Safety Code

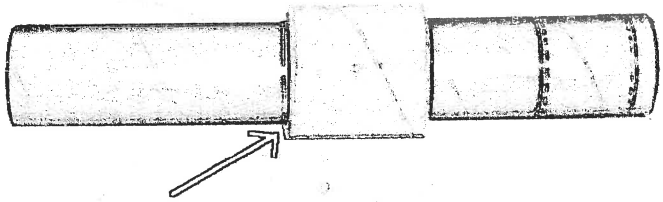
1) **Materials**. I will use only lightweight, non-metal parts for the nose, and fins of my rocket.
2) **Motors**. I will use only certified, commercially - made model rocket motors, and will not tamper with these motors or use them for any purpose except those recommended by the manufacture.
3) **Ignition 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 and 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 motors 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 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 weighs more than 1 pound (453 grams) at liftoff or has more than 4 ounces (113 grams) of propellant, I will check and comply with the 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 I my rocket.

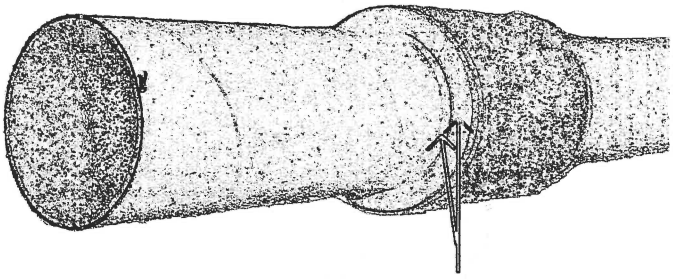
☐ Put glue around the rear outside edge of the ring and install the coupler.

☐ Put a ring of glue around the line on the tube and top edge of the coupler.

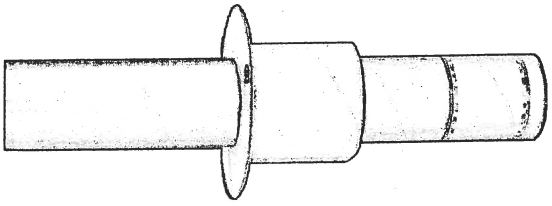


☐ Install second small centering ring as shown.





☐ To the rear of second centering ring apply glue and install large centering ring. Apply glue fillet to the rear of large centering ring.



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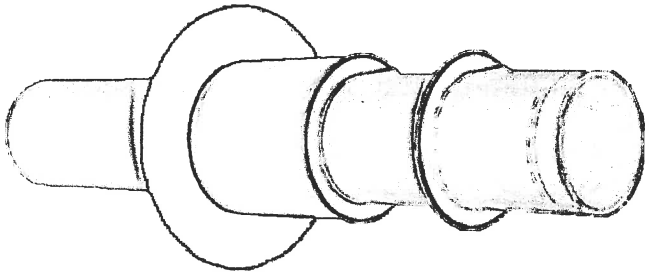
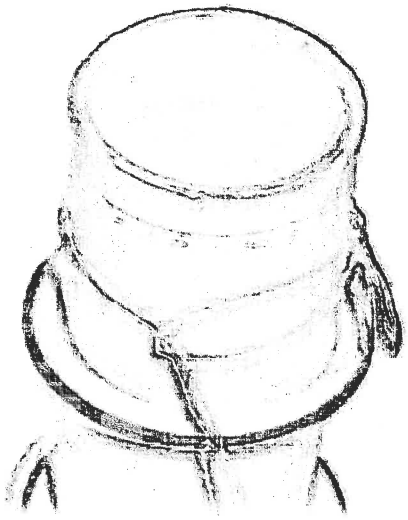
☐ Install the third small centering ring @ the 6 1/8 mark. The line should be to the rear of the centering ring. Maintain a gap of 1 1/4 between the 2 rings. Put a glue fillet in front of the ring.



☐ Tie a loop in the Kevler Cord part # R
☐ Secure the knot with a drop or two of CA glue.

☐ Wrap the cord around the tube and bring end of the line through the loop and pull tight. Use CA glue to secure cord around the tube.



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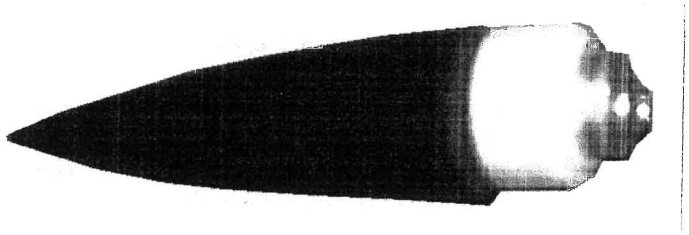
☐ If using our balancing method
☐ Mark the center of the bottom of nose cone.
☐ Put washers on the screw and screw the into the mark on the nose cone.
☐ Add or subtract washers until the rocket is balanced.



Pre Flight

☐ Install engine into the engine mount.

☐ Pack the recovery wadding from the top of the lower body tube. Use a sufficient quantity to protect the parachute, but not to much that there is no room left.

☐ Fold the parachute and pack it and the shock cord on top of the wadding.

☐ Slide the nose cone into place making sure that it does not pinch the parachute or shock cord.

☐ 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.

☐ Carefully check all parts of your rockets before each flight as a part of your pre-flight checklist. Launch the Super Mars Snooper from a 3/16 " diameter by at least 36" long launch rod. However a 48" long launch rod would be preferable.

100 % Satisfaction Guarantee

If you are not 100% satisfied with you Hawks Hobby product, we will do what we can to make it right.
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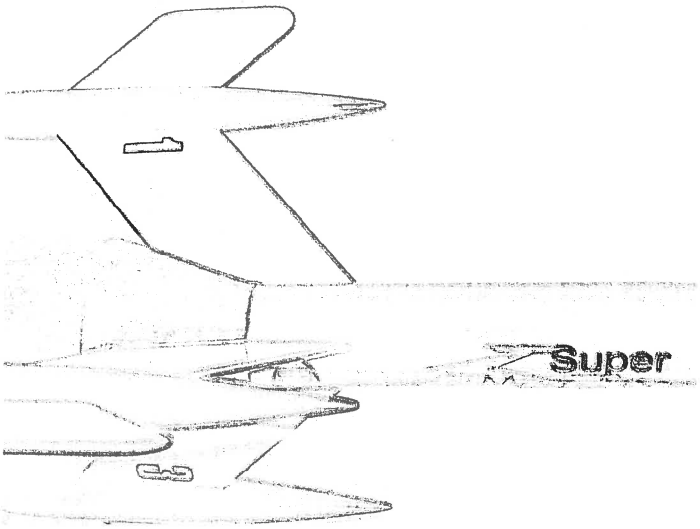
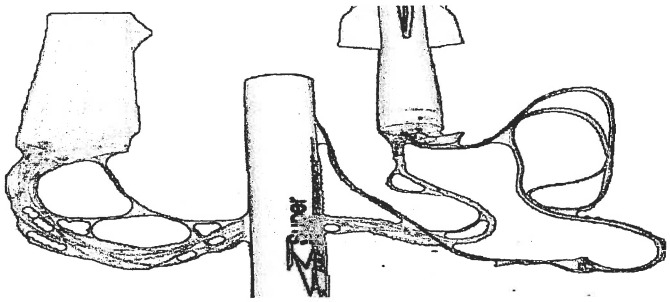
thehawksnest@hawkshobby.com

SMS Page 22 - Installing Parachute

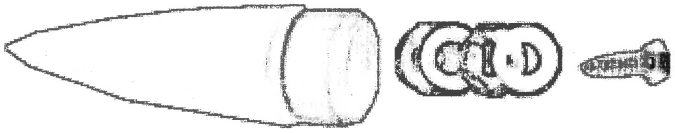


- ☐ Tie a loop in the end of the kevler anchor cord and secure knot with CA glue.
- ☐ Tie elastic shock cord through the loop, tie the other end of shock cord though the eye screw.
- ☐ Attach the snap swivel of the parachute to the eye screw.



Balancing Weight Installation

- ☐ The balancing point for this rocket is 25 1/4" from the tip of the nose cone with engine installed.
- ☐ Depending on your engine choice your ability to change balance weights needs to be flex able.
- ☐ The method we used in the prototype was a wood screw and washers.



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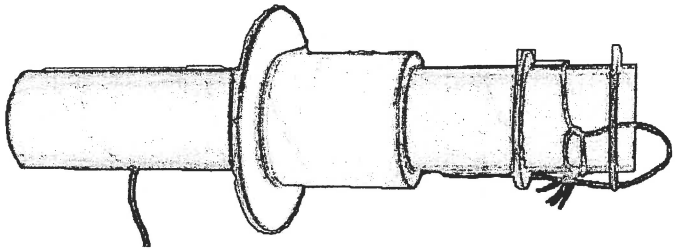
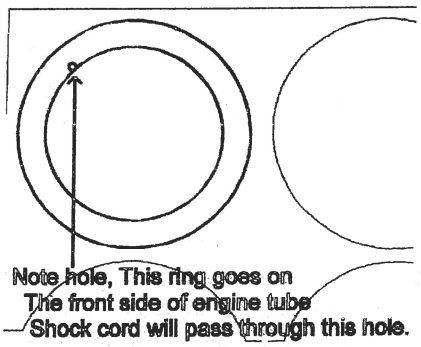
- ☐ Bring cord up along the top of the tube and slide on the last centering ring. Making sure that the cord is in the notch between the tube and centering ring. Add glue fillet to the rear and front of this ring. Set aside to dry throughly. Pull the cord down through the engine assembly so that it is out of the way.





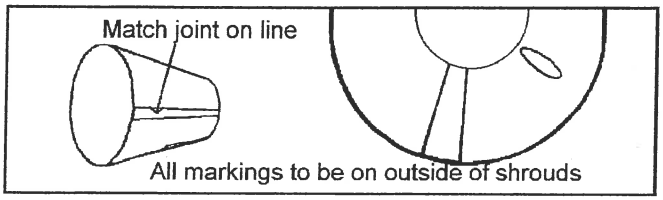
Pod Assembly

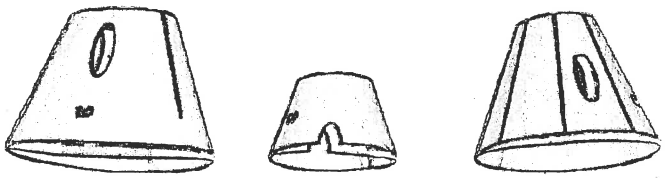
- ☐ Parts needed : F, G, H, I & N
- ☐ Apply glue around the inside of the pod tube (part H)

- ☐ Insert nose cone **F** into the end of the pod tube, repeat on other end with nose cone **G**
- ☐ Roll on flat surface to assure that they are straight.
- ☐ Repeat this step for the other 2 assemblies.
- ☐ Set aside. To dry.

SMS Page 8 - Shroud Assembly

- ☐ Cut out the shrouds - part # O and cut out the launch lug holes from each shroud.
- ☐ Form into cones matching up joint lines and assuring that the markings are on the out side.

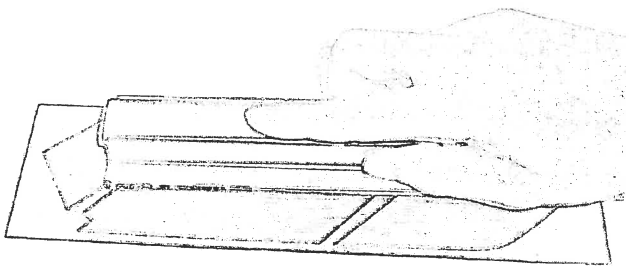




- ☐ Tape at joint lines to hold shape.
- ☐ Test fit on the lower body tube - part A. This should glide onto the tube. Fit should be snug but not distort the shroud. You may need to trim the top of the shroud in order to achieve proper fit.
- ☐ Test fit all the shrouds than glue at the joint lines.
- ☐ To reinforce the shrouds apply a thin layer of CA to the inside of the shrouds till saturated. Be careful where you put this till dry.
- ☐ **NOTE : Easier if you do ½ the shroud and let dry than do the other ½ .**
- ☐ Set aside to dry.

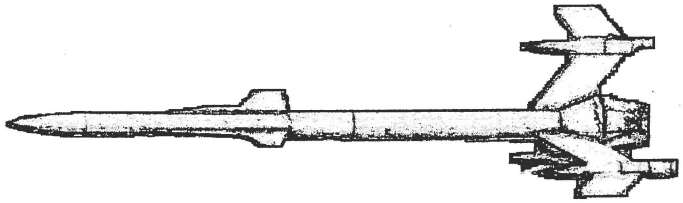
Fins

- ☐ Gather Fin sheets parts I & M and nose cones
- ☐ Lay the fin sheets on a flat surface and lightly sand.
- ☐ Remove fins from sheet and sand to desired air foil shape.
- ☐ Now would be a good time to apply wood filler to any imperfections in the fins, pods and nose cones.

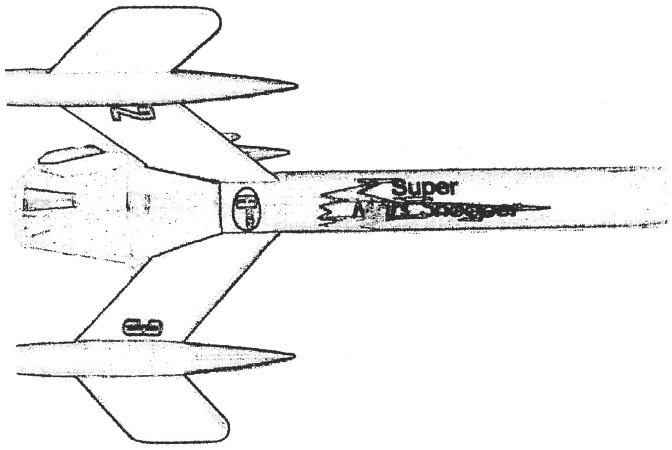


SMS Page 21 Painting and Decals

- ☐ Put the top of the rocket and the bottom of the Rocket together.

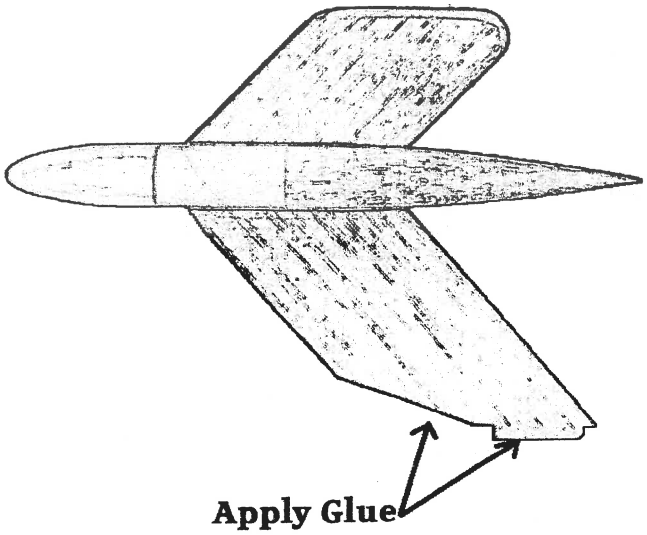


- ☐ Finishing
- ☐ You may finish as you wish or here is our way of finishing.
- ☐ Apply sanding sealer to any imperfections and sand gently.
- ☐ Spray the model with a sand able primer and gently sand.
- ☐ Spray paint the whole model with white gloss paint.
- ☐ Except the Shroud / tail cone area. This gets painted with flat black.
- ☐ Using a masking paint tape, tape off the area on the upper section that you want to keep white and paint the rest with a dark blue gloss. This will need to be done by masking off and painting 1 fin at a time.
- ☐ See the front picture or cover card for our paint job
- ☐ Cut out the decals by cutting close to the design.
- ☐ Soak decal in water for approx. 30 seconds slide decal off paper and apply to the rocket as shown.
- ☐ Note: The numbers go on both sides of the fin and the Hawks goes between each set of fins in the positions shown.



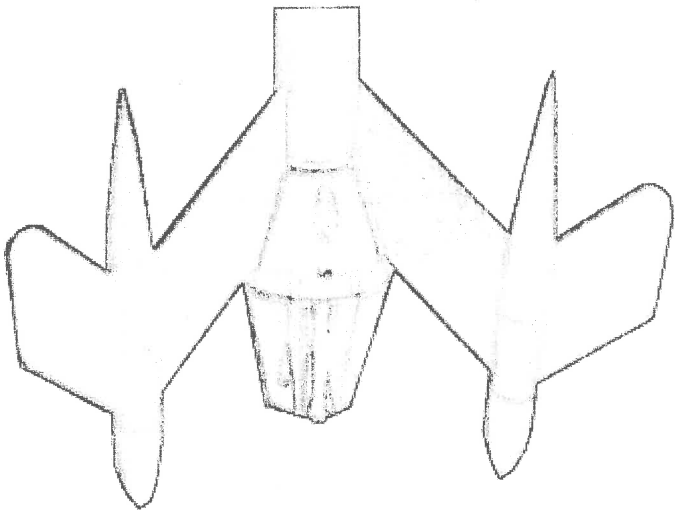
SMS Page 20 Installing the Fins

☐ Apply glue to the inside of the fin slot and to the tab of the fin assembly and along the edge that will fit against the shroud.



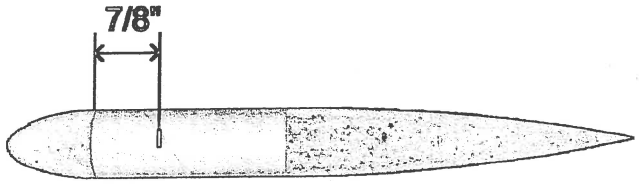
☐ Insert the fin tab into slot assuring that it has proper alignment.

☐ Let dry and repeat for the other 2 fin assemblies.

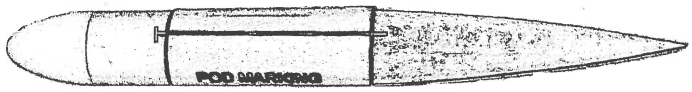


SMS Page 9 - Fin / Pod Assembly

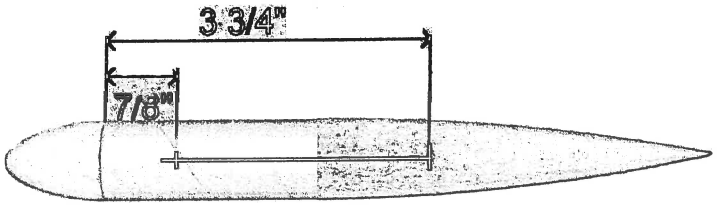
☐ Get pods and mark each pod @ 7/8 from the rear end of the tube. Mark this on both sides of the pod (180 degrees).



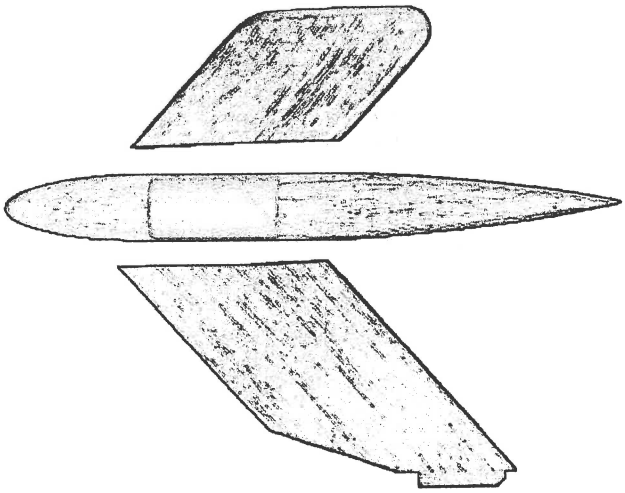
☐ Cut out the pod marking guide and wrap around the pod lining up the lines on the marking guide with the marks you just made. Mark at both ends of the guide on both sides.



☐ Remove guide and connect marks with a straight line starting at the 3 3/4 mark extend line up and through the both marks as shown.



☐ Carefully sand each fin to fit the contour of the pod between the lines. Apply glue to the fins and position on the lines between the first two marks you made. Assure that the fins are perfectly straight.



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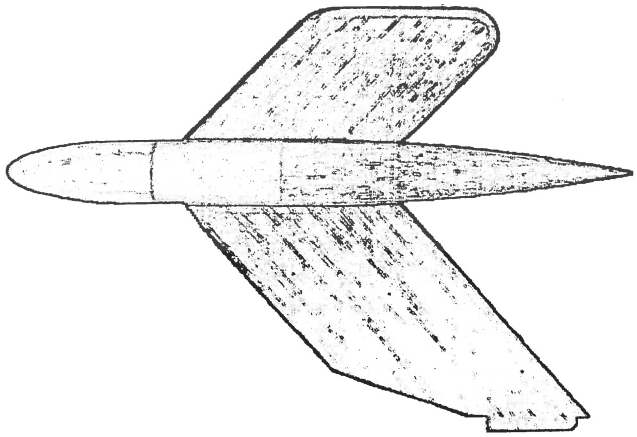
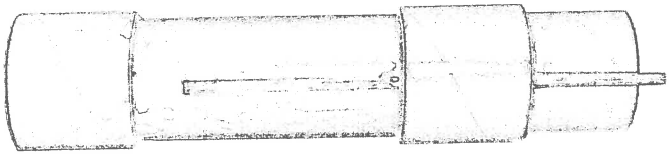
☐ Repeat with other two pods. Below shows how it should look when finished.



☐ Side view.

☐ Rear view.

☐ Set aside to dry.



☐ Assemble SEMROC Engine Mount as per Semroc instructions. Part # K

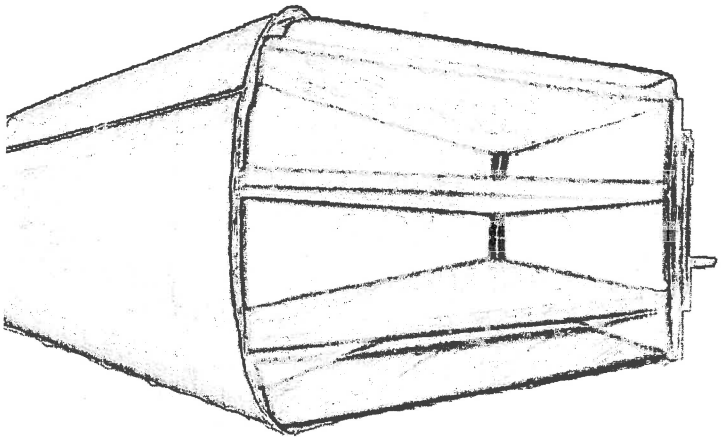
☐ Set aside to dry

SMS Page 19 Radiator Fins

☐ Test fit the radiator fins - part #M on the lines of the medium and small shrouds.

☐ Some gentle sanding may be needed for proper fit.

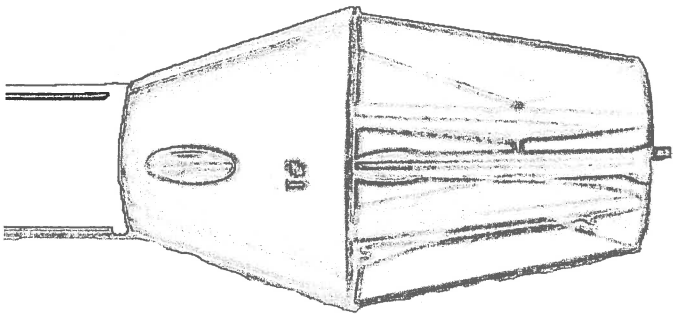
☐ Once you have a proper fit apply glue to the edge and put into place on the shroud lines.

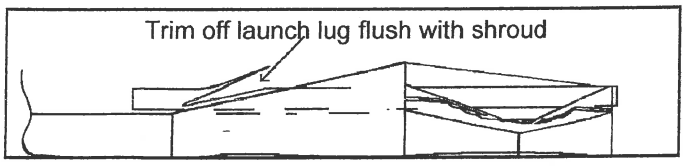


☐ Using cotton swab or similar item reach into the launch lug hole in the shroud and apply glue to the launch lug hole in the large centering ring.

☐ Add glue to where the launch lug passes through the shrouds

☐ Install the launch lug assuring that it is even with the bottom of the engine mount tube and though the hole on the large shroud. When dry trim as shown below.





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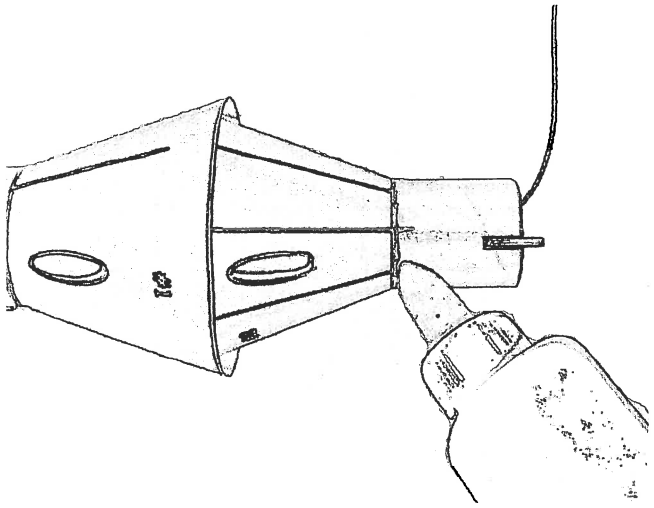
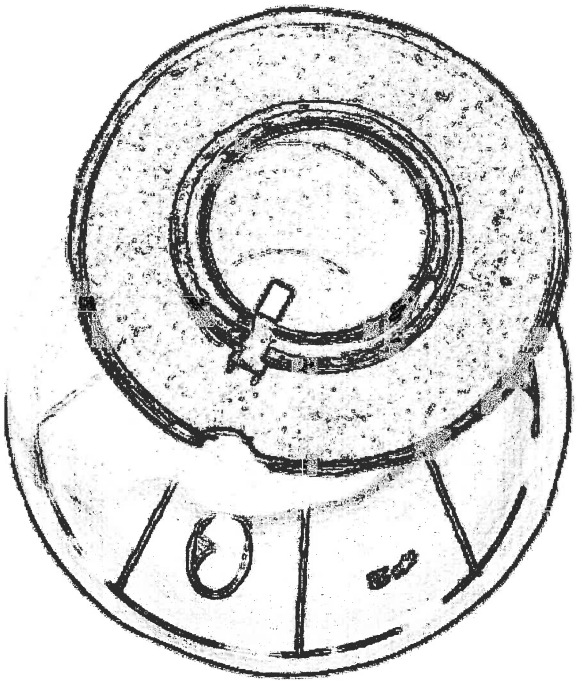
☐ Pull the kevler shock cord anchor up through the other end of the tube.

☐ Apply a ring of glue to the bottom edge of the medium shroud and install the small shroud. Make sure that the small indent on the edge of the shroud is lined up with the lunch lug holes on the other shrouds. The small ends of the shroud goes on first.



☐ Glue the medium centering ring on as shown below into the bottom of the small shroud. Make sure that the notch in the centering ring is aligned with the launch lug holes in the shrouds.



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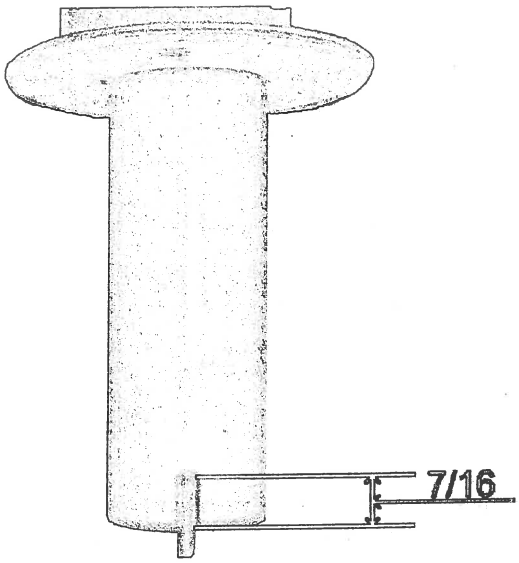
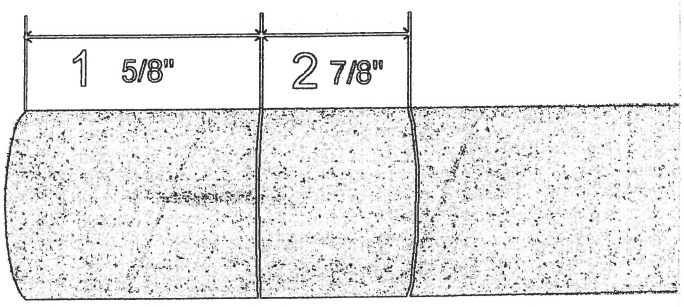
☐ When engine mount is dry install into the engine tube.
☐ Making sure the engine hook is in line with the launch lug hole. This is important for the final fit of the last centering ring.



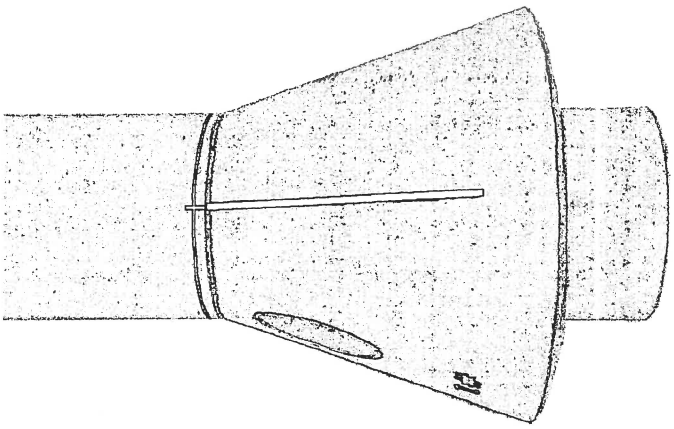
☐ Once installed cut a slot the width of the engine hook and 7/16" long. See photo above.

Fin Slots

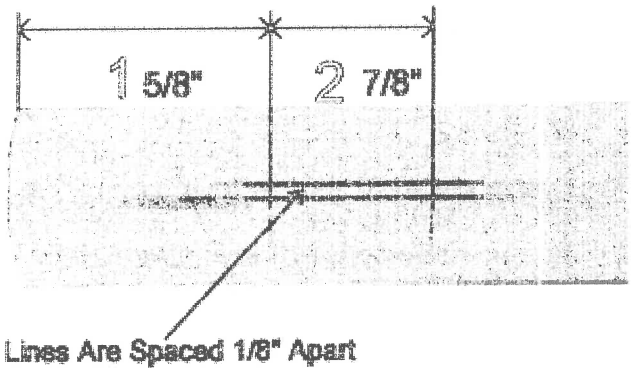
☐ From the end of the lower body tube mark a line @ 1 5/8 and 2 7/8. Mark on both sides (180 degrees) Wrap a piece of paper around the tube lining up the marks and extend the line all the way around the tube.



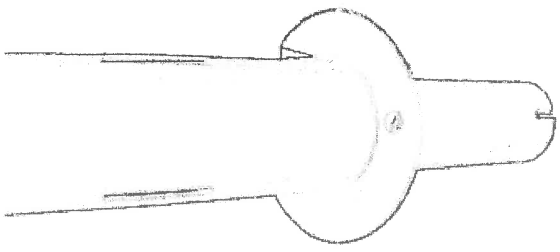
- ☐ Slide the large shroud onto the body tube - DO NOT glue at this time.
- ☐ Using the lines on the shroud mark a line for each position (3) on the tube.



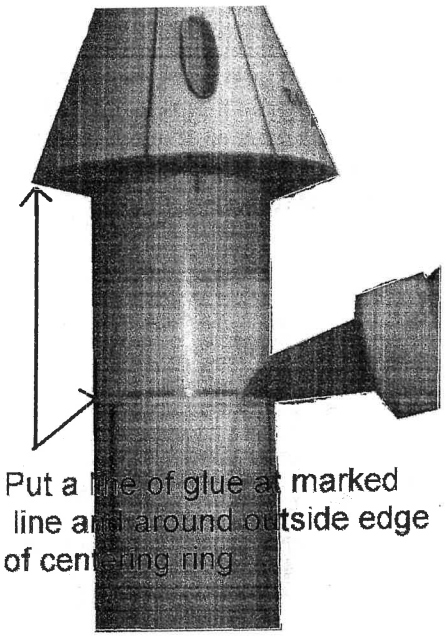
- ☐ Rotate shroud 1/8" and mark another set of lines.
- ☐ Remove the shroud.



- ☐ Using a door frame or making guide extend lines as shown above.
- ☐ Using a hobby knife carefully cut along the lines to remove the center for your fin slots.
- ☐ Make sure that your fin tabs fit the slots.
- ☐ Temporarily install the engine tube assembly into the bottom of the lower body tube (end with the slots).

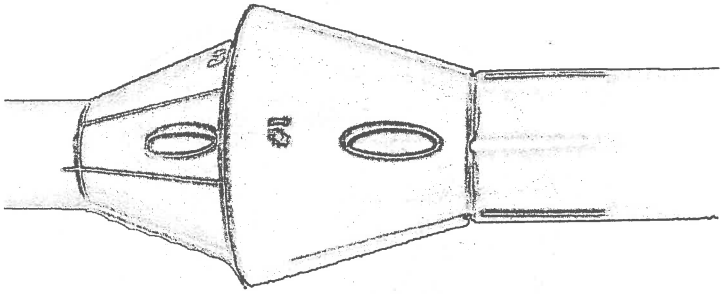


- ☐ Bottom End -Medium shroud



- ☐ Top (Front End)
- ☐ Put a line of glue at the marked line and around the outside edge of centering ring.

- ☐ Reinstall the large shroud the same way that you just installed the medium shroud. Make sure to get your alignment mark correct.



- ☐ Test fit small shroud

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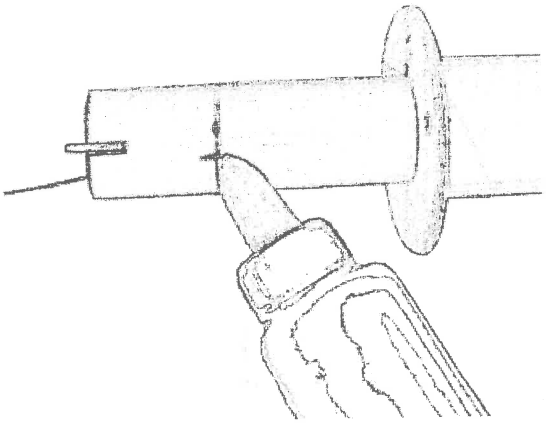
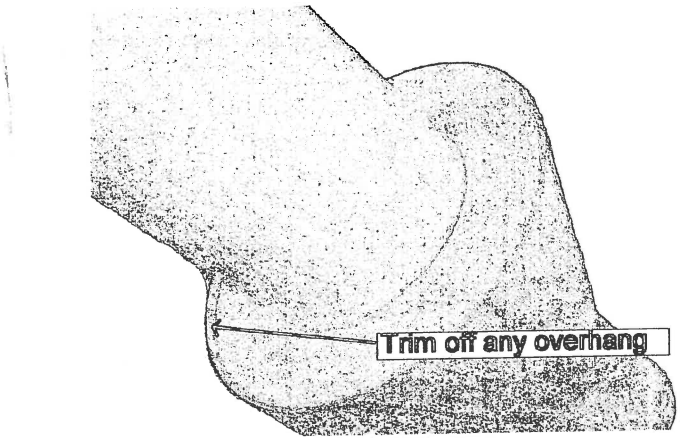
- ☐ Remove the launch lug and shroud.
- ☐ Apply glue to the edge of the large centering and on the line going around the engine tube that you just marked.



- ☐ Reinstall the medium shroud using the alignment marks you just made. Making sure that it is properly positioned so that the launch lug will fit.
- ☐ When dry trim off any excess over hang.



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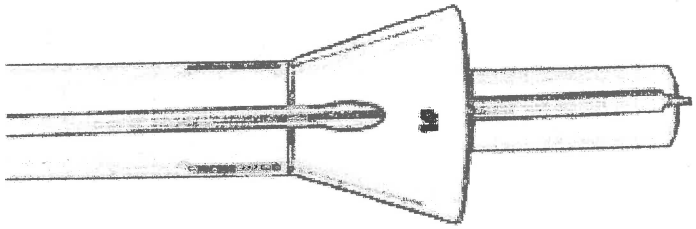
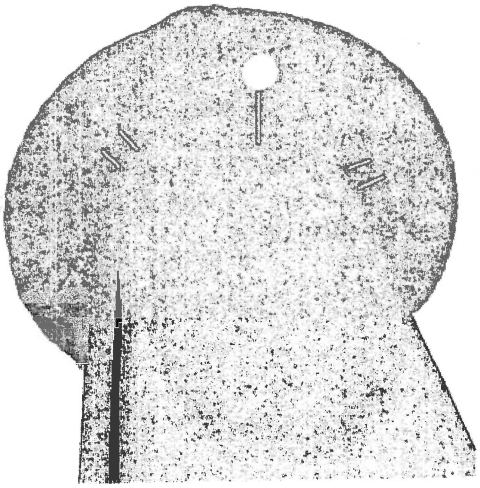
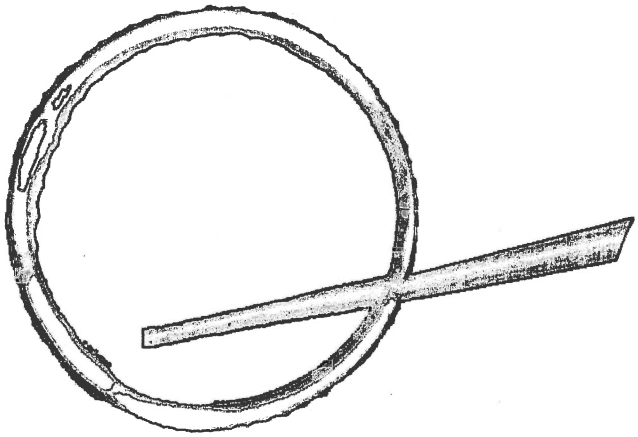
- ☐ Temporarily instal the large shroud and launch lug.
- ☐ Rotate engine mount and shroud together until fin alignment marks on the shroud are on center line with the fin slots. Mark the position and front edge of the shroud on the tube.



- ☐ Carefully remove the launch lug and shroud.
- ☐ Mark position of the large centering ring to the body tube.



- ☐ Remove the engine tube assembly.
- ☐ Using a dowel or similar put a line of glue just above th fin slots and all the way around the inside of the tube.



- ☐ Smear glue around the out side of the of the coupler on the engine mount assembly. And install the assembly into the lower body tube and align your marks.
- ☐ Set aside.

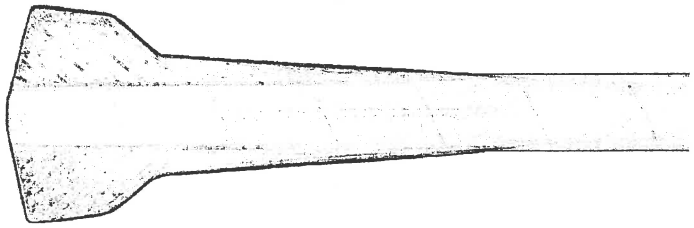
- ☐ Get upper fin parts. Glue them together assuring that the bottom is lined up.

- ☐ Repeat with the other 2 fins.
- ☐ Set aside to dry

- ☐ Get upper body tube - part # B.
- ☐ Cut out upper body tube marking guide
- ☐ Wrap guide around the body tube as shown and mark both ends at each of the lines.

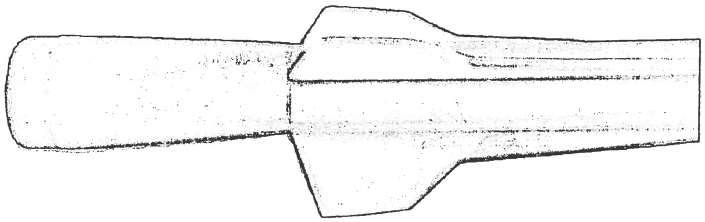
- ☐ Remove guide and extend the line connecting the two marks already made and extend up the tube 8" from the bottom.

- ☐ Sand fins to desired air foil shape.
- ☐ Apply glue and line the fin up on the line making sure that it is lined up perfectly.

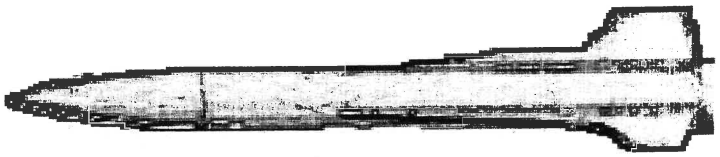


- ☐ Repeat with other 2 fins.

- ☐ Apply glue to the inside of the rear end of the upper body tube and to the top (small end) of the transition - part # D Insert into the bottom of the tube.

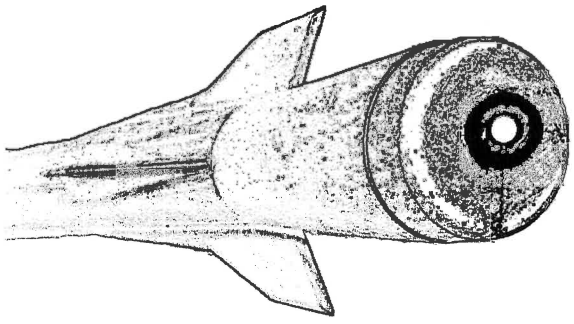


- ☐ Insert the nose cone - DO NOT glue as you will need to be able to remove this to adjust the balancing weights.



- ☐ Lightly sand both ends where the cones join the tube for a smooth transition to the tube.

- ☐ In the center of the bottom of the transition screw in the eye screw. Remove eye screw and apply glue in the hole. Reinsert the eye screw.
- ☐ Set aside



- ☐ Temporarily instal the medium shroud onto the engine tube assembly and instal the launch lug to line it up . Mark it's position on the tube and the bottom edge of the shroud.