WASP

ASSEMBLY INSTRUCTIONS with Detail Sketches

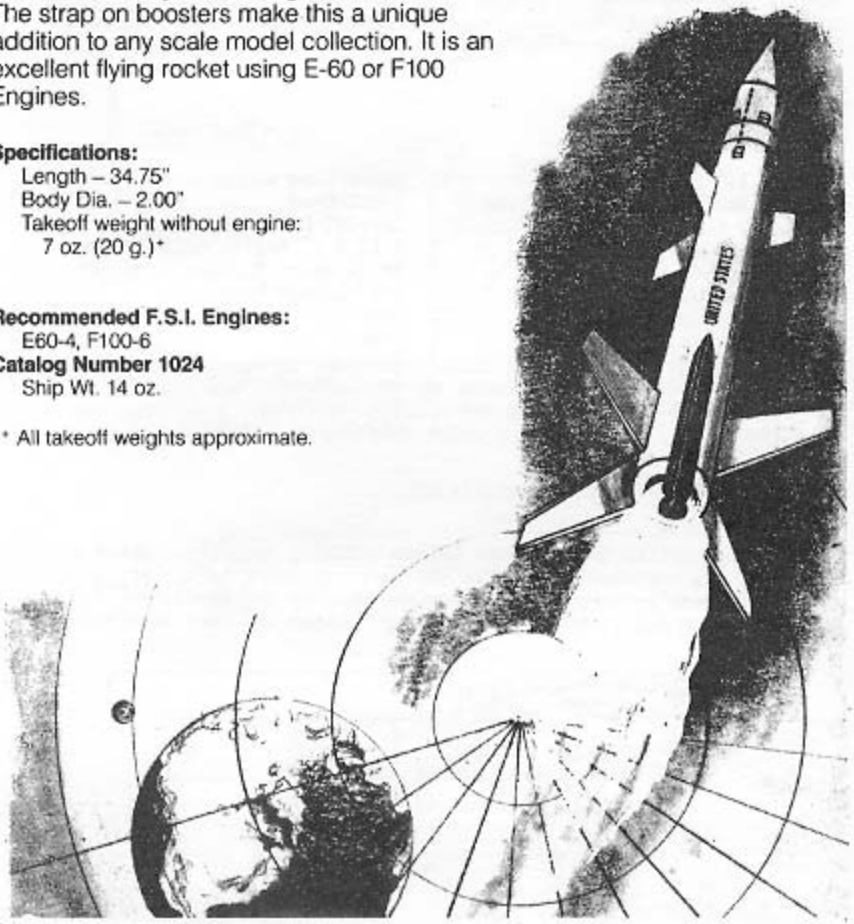
Skill Level 5

The Wasp is a beautiful 1/8 sport scale model of a NASA Fluid Dynamics Flight launched in 1966. The strap on boosters make this a unique addition to any scale model collection. It is an excellent flying rocket using E-60 or F100 Engines.

Specifications:
Length – 34.75"
Body Dia. – 2.00"
Takeoff weight without engine:
7 oz. (20 g.)*

Recommended F.S.I. Engines:
E60-4, F100-6
Catalog Number 1024
Ship Wt. 14 oz.

* All takeoff weights approximate.



FLIGHT SYSTEMS Inc.

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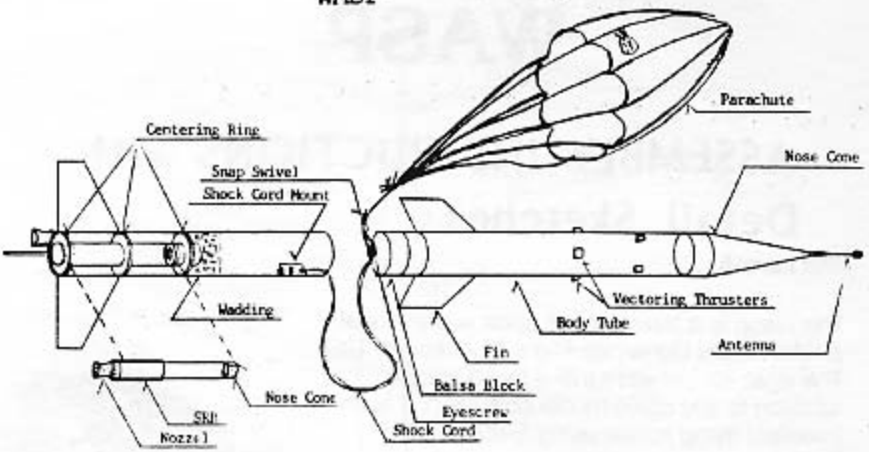
RAYTOWN, MISSOURI 64133
816-566-2011

WASP

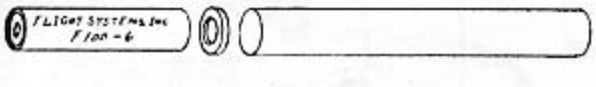


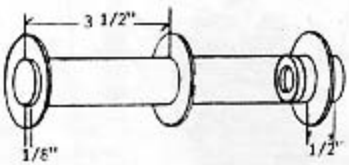
PARTS LIST:

1	2" X 14" Lower Body Tube	1	Shock Cord Anchor
1	2" X 14 7/16 Upper Body Tube	1	Shock Cord
1	NC-193 Nose Cone	3	CR-1019 Centering Rings
4	Large Lower Section Fins	1	1.13 X 7" Engine Holder Tube
4	Small Upper Section Fins	1	NP-22 Nylon Parachute
1	BB-19 Balsa Bulk Head	2	1/4" Launch Lugs
2	SRB Nose Cones	1	Eyescrew
2	SRB Nozzels	1	Snap Swivel
2	3/4" X 5 3/4 SRB Tubes	1	Wadding Packet
2	3/4" X 2 1/8 SRB Tubes	1	Decal Sheet
1	Vectoring Thruster Block	2	SRB Standoffs
1	Antenna	2	Launch Lug Standoffs

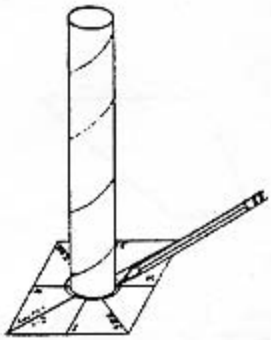
ASSEMBLY INSTRUCTIONS

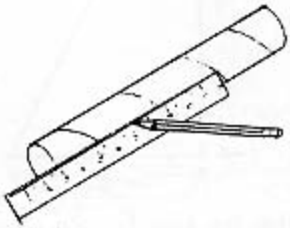
Important:
Read through entire instructions before starting assembly. Check to be sure all parts are included. Test fit the parts together before applying any glue. If a part doesn't fit properly, sand or build up for precision fit. Please read each step before starting that step. Check off each completed step.



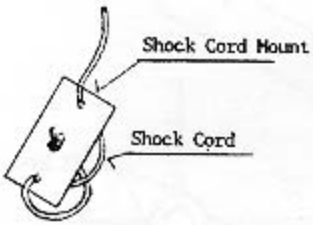


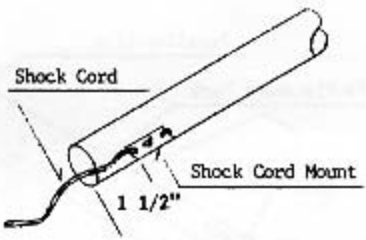
___ 1. First determine which size F.S.I. engine you intend to use in your Wasp rocket (E60-6 or F100-6 is recommended). Locate the TR-2 thrust ring (1.13 O.D. cardboard ring) and the 9" X 1.13 I.D. engine holder tube. Next put a ring of glue inside of one end of the engine mount tube. Now using a F.S.I. 27mm engine, push the thrust ring into the engine mount tube until the engine projects out of the tube 1/2". Remove the engine. Install rings as pictured and glue in place. Apply a fillet of glue on each side of ring. Set aside and allow to dry.



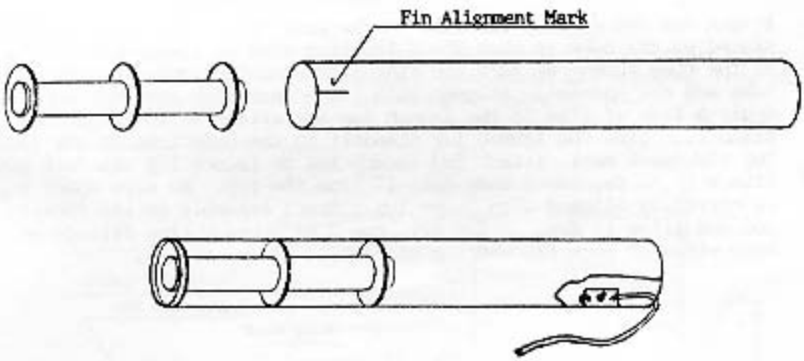


___ 2. Using fin placement guide mark lines on the 14" body tube for 4 fins as shown. Also mark lines for SRB placement and launch lug placement. Using a straight edge extend lines parallel to the body tube about 6".

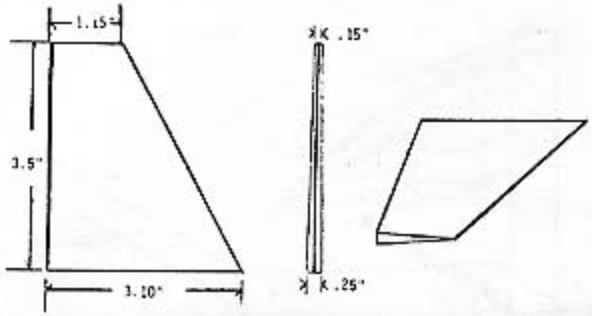




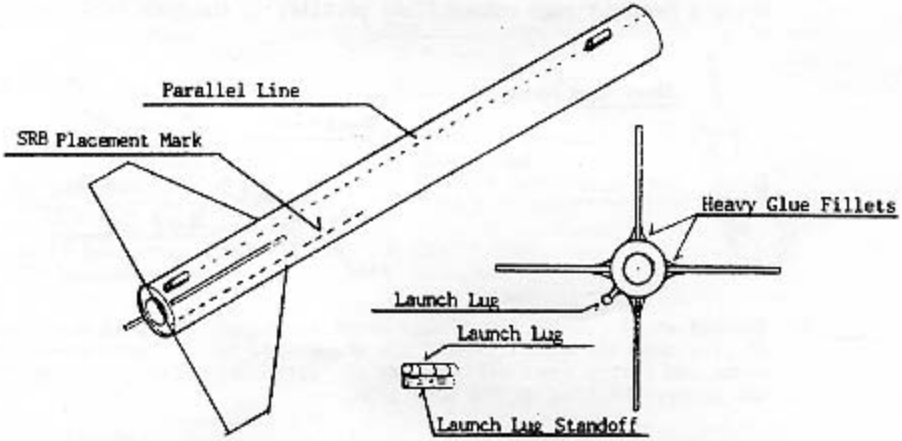
___ 3. Install shock cord in shock cord mount as shown. Spread a heavy layer of glue over the side opposite the shock cord knot. Curve shock cord mount and insert into end opposite fin alignment marks. Drawing shows the proper position in the body tube.



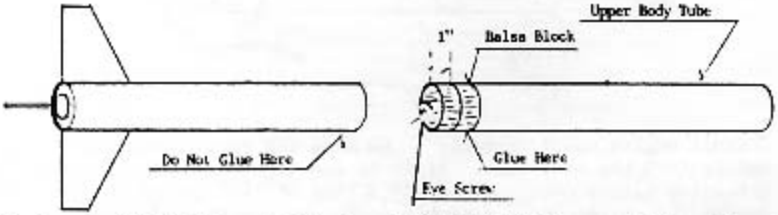
___ 4. Install engine mount assembly . Be sure the engine mount will slide easily into the body tube. If it is too tight sand the ring until a precision fit is obtained. Apply a ring of glue inside the body tube. Insert the engine mount assembly using one smooth motion until it is flush with the back of the body tube. DO NOT STOP pushing engine mount until it is in position or it will stick in the position in which you stopped. Also be sure to insert engine mount in end of tube that you have previously marked for fin alignment.



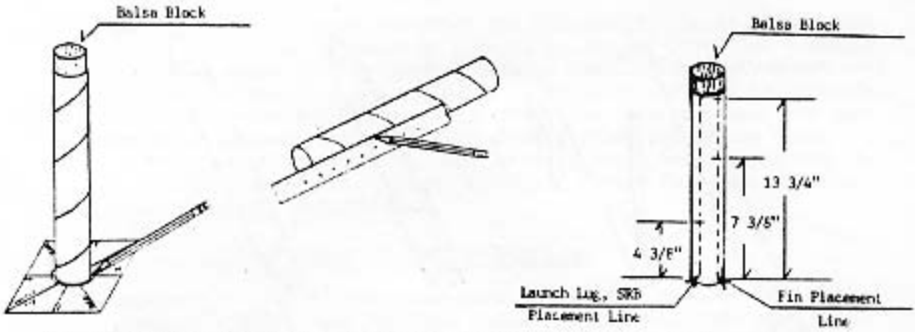
___ 5. Sanding the fins for the booster section: If you are building your model to scale sand and shape fins as shown in the detailed drawing. For sport flying you may want to simply round the edges of the fins. If so round all edges except the red one. The red edge attaches to body tube.



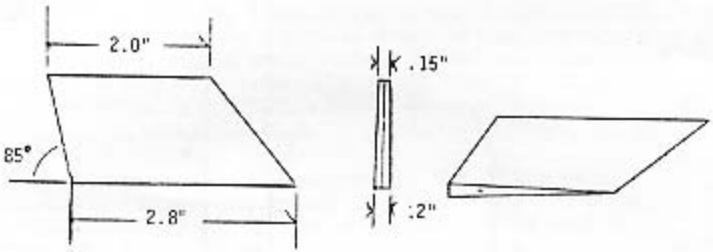
___ 6. Attach the red edge of the fins to the body tube. The fins should be placed or the tube so that their trailing edge is flush with the back of the body tube. Be sure the fins stick straight out from the body tube and are carefully aligned with lines marked on the body tube. Apply a line of glue to the launch lug and attach it to launch lug standoff. Glue the launch lug standoff to the body tube on the launch lug placement mark. Attach 2nd launch lug to launch lug standoff and attach it to the lower body tube 1" from the top. Be sure upper lug is carefully aligned with lower lug. Stand assembly on its forward end and allow to dry. After dry, run 2 or 3 heavy glue fillets on both sides of each fin and lug standoffs. Allow to dry.



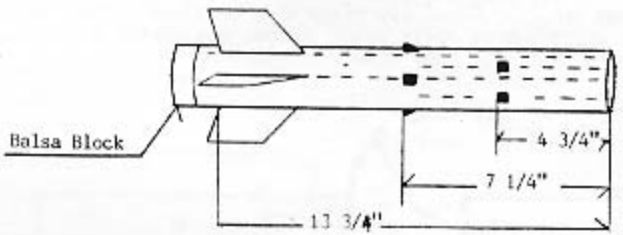
___ 7. Locate BB-19 Balsa Bulkhead and 2" X 14 7/16" upper body tube. Place ring of glue inside one end of this body tube. Then slide balsa bulkhead into tube until it protrudes 1" out of the tube. Then slide the lower body tube over the protruding end (DO NOT GLUE). Make sure the tubes are properly aligned. Let dry. Separate tubes and twist eye-screw in place in center of BB-19.



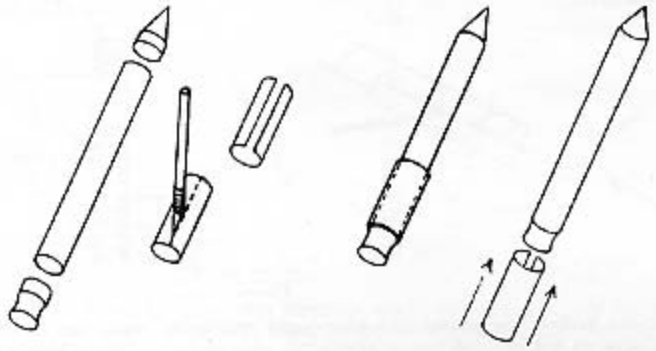
___ 8. Mark upper body tube using fin placement guide so that you have 8 evenly spaced marks. Using a straight edge extend these lines the full length of the upper body tube. They must be parallel to the tube. On lines indicated for fin placement on guide make perpendicular lines at 7 3/16" and 13 3/4" from top of tube. On lines indicated for lug placement and SRB placement make perpendicular lines at 4 3/4".



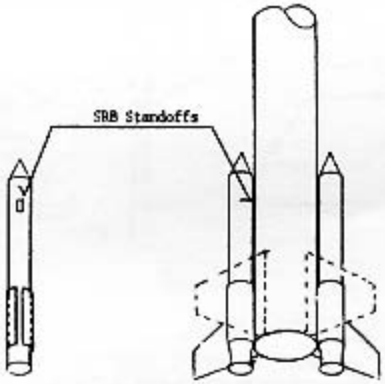
___ 9. Sanding upper fins: For scale sand and shape fins as shown in the detailed drawing. For sport flying just round all edges of fins except the red one. The red edge attaches to the body tube.



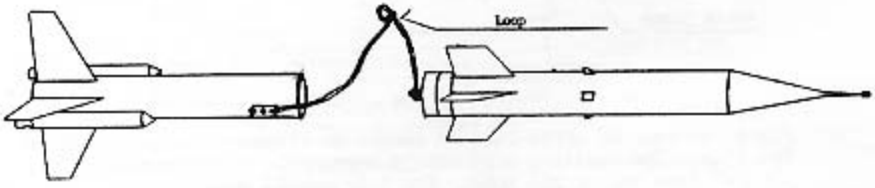
___10. Place red edge of upper fins on rocket on alignment marks indicated for fins. The trailing edge should correspond to perpendicular lines 13 3/4" from top of the tube. The fins should stick straight out from the body tube and should be carefully aligned with parallel lines on tube. Stand assembly on it's forward end and allow to dry. Cut out vectoring thrusters and sand to shape as shown above. When dry, run 2 or 3 heavy glue fillets on both sides of fins for added strength. Next glue vectoring thrusters to the other 8 perpendicular lines you made in step 8. The row of thrusters nearest the fins (on the same alignment marks) should be centered with leading edge of the fins. The other row should be centered between the lower row of thrusters as shown. Set aside to dry.



__11. Locate the two 3/4" X 5 3/4" SRB tubes, 2 SRB cones, and 2 SRB nozzels. Shape nozzels as shown. Glue the SRB cones in one end of each tube. Glue nozzel in other end. Locate the two 3/4" X 2 1/8" SRB tubes. Using an X-acto knife slit a straight line the length of each of these tubes. Wrap these tubes around the 5 3/4" tubes. One end of the tube should be flush with the nozzel end of the tube as shown. Glue in place.



__12. Glue SRB standoff to side of SRB tube with exposed split just below the cone as shown. Place a line of glue in the split and a drop of glue on the standoff and attach them to lines indicated for SRB placement from step 2. Carefully align them on these lines. Run 2 or 3 fillets at bottom by split tube. (Note: Bottom SRB tube should be flush with bottom of body tube as shown.)



__13. Tie a loop in the center of the shock cord. Then tie the free end to the eyscrew . Roll the shock cord up and push into lower body tube. Slide (DO NOT GLUE) lower transition section into lower body tube.

___14. The rocket is now ready to paint and add decals. It is recommended that a light coat of paint be sprayed on and let dry. Add a couple more mist coats lightly sanding between them. Then apply a wet coat (gloss just appears) and set aside to dry. After model is completely dry, apply decals. Cut one decal at a time from the sheet and submerge in lukewarm water until decal will slide off of the paper (usually about 20 seconds). Gently slide decal onto rocket and carefully align and smooth out any wrinkles. Refer to back cover for scale detailing information.

FLIGHT PREPARATION

___ 1. Separate lower body tube from lower transition section. Tamp a piece of wadding down into the inside of the lower body tube until it comes in contact with the top of the engine holder tube.

___ 2. Bring shroud lines of 22" nylon parachute together and tie into knot about 1" from shroud line ends. Leave 1 shroud line intact and cut the others off 1/4" below the knot. Now put a couple of drops of glue on the knot to insure it does not come loose during ejection. Tie snap swivel to shroud line that you left 1" long. Attach swivel to loop in shock cord from assembly step 13 as shown in cutaway view. Fold parachute. Insert shock cord first and then the parachute into upper end of lower body tube. Rejoin mid and lower sections.

___ 3. Install engine using friction fit several wraps of masking tape are placed around the engine as shown to hold the engine in place. Insert F.S.I. engine until contact is made with the thrust ring. Be sure that engine fits tight enough that it will not come out of engine holder tube during ejection phase of flight.

___ 4. Flight trim model for proper stability as follows.

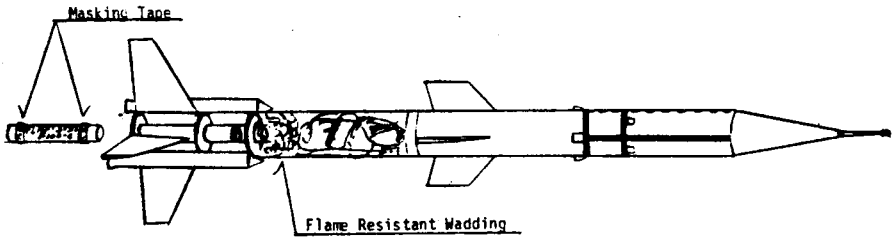
Step A: Take an 8 to 10 foot string. Tie a loop in end of string. Place loop around rocket body tube and slide until a blance point (CG) is established. Tape loop to body tube at this point.

Step B: Swing rocket overhead in a circular motion. A very stable rocket will point forward. It may be necessary to start rocket forward by hand if so questionable stability exists. Slide string back until a rocket nose tilts down at about 10° repeat test. If rocket proves unstable, this condition can usually be corrected by moving the CG forward by adding weight to the nose

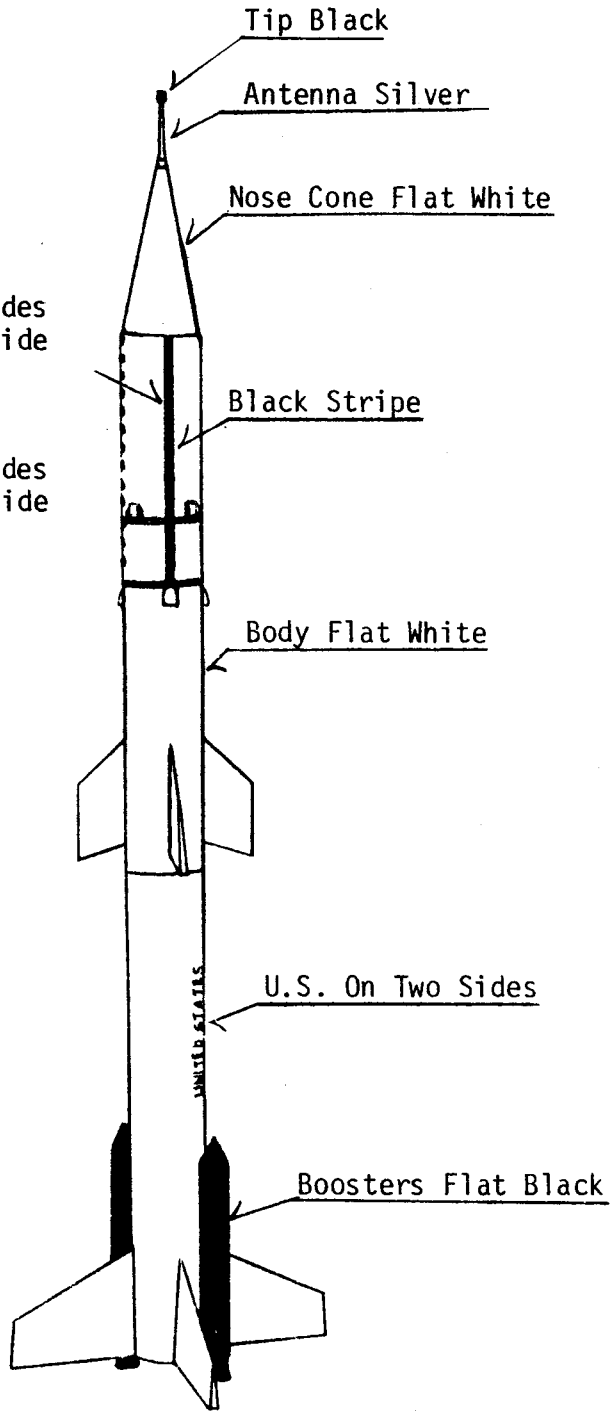
___ 5. Place rocket on the launcher insert the F.S.I. ignitor and attach the firing clips as shown in engine instructions.

___ 6. Go back to launch control and clear the area. Arm the launch control by inserting the phone jack attached to the firing line.

___ 7. Give count down 5-4-3-2-1, ignition.

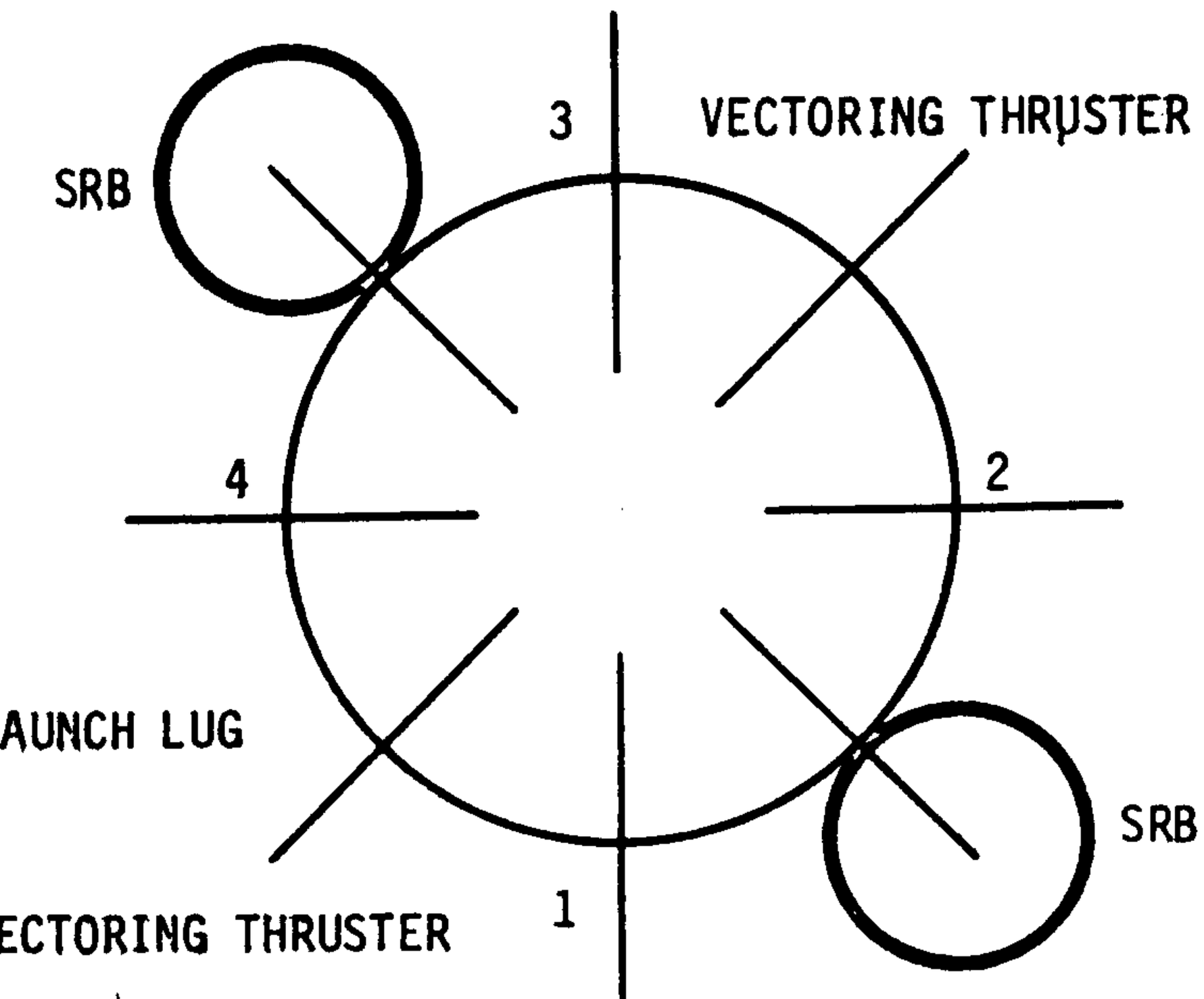


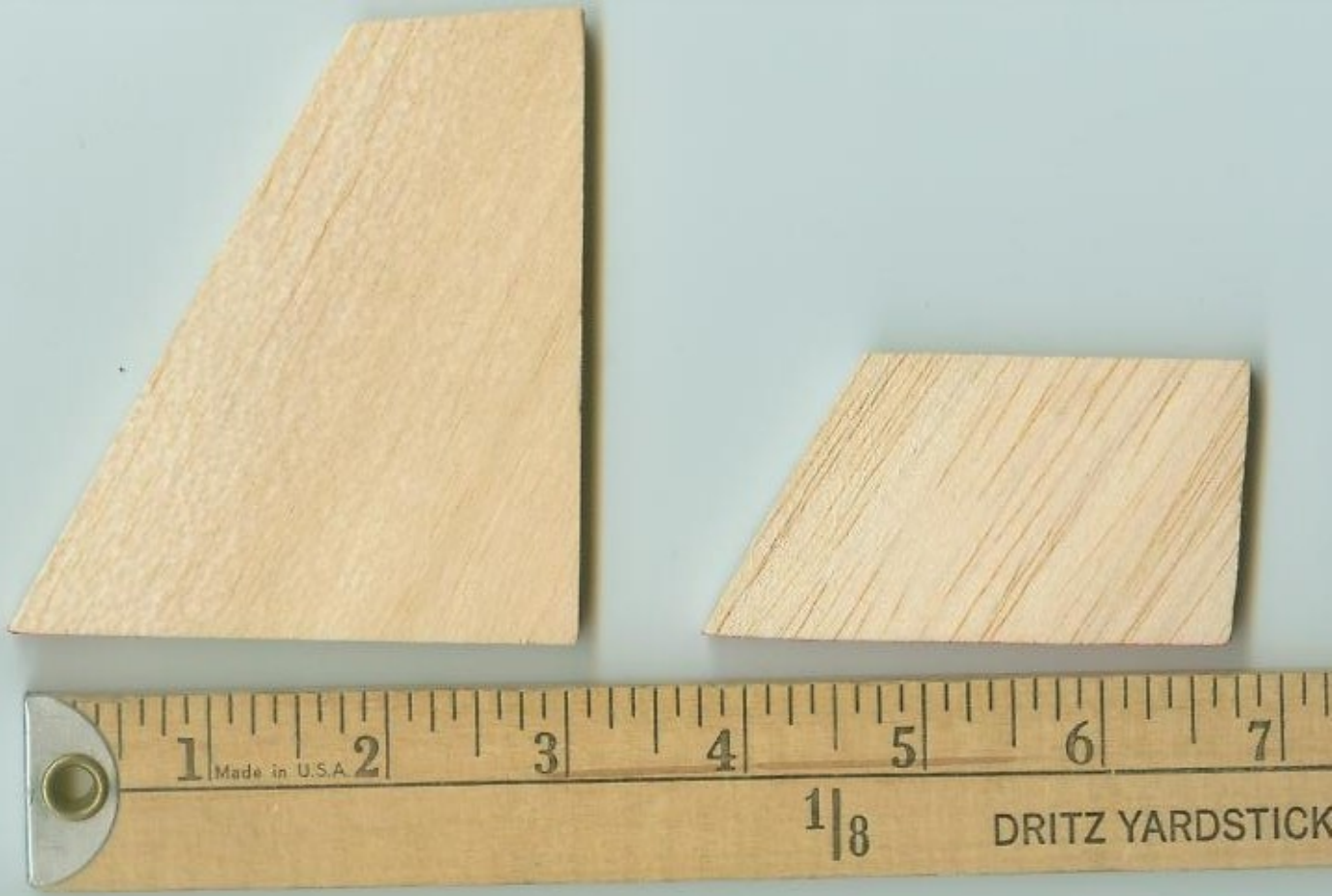
Be sure to follow the *HIA-NAR Model Rocket Safety Code when carrying out your model rocket activities.
*HIA- Hobby Industry of America
NAR- National Association of Rocketry


Tip Black
Antenna Silver
Nose Cone Flat White
Stripe on two sides flush with rt. side of thruster.
Black Stripe
Checks on two sides flush with rt. side of thruster.
Body Flat White
U.S. On Two Sides
UNITED STATES
Boosters Flat Black

WASP

FIN PLACEMENT GUIDE

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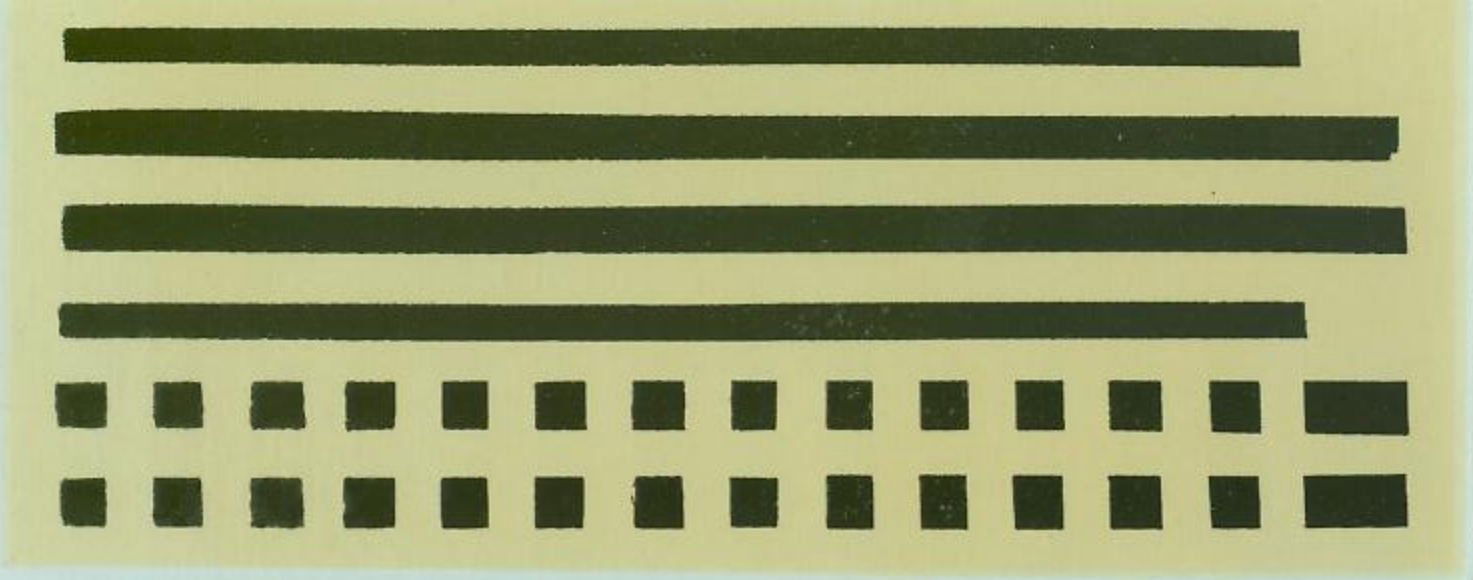

UNITED STATES

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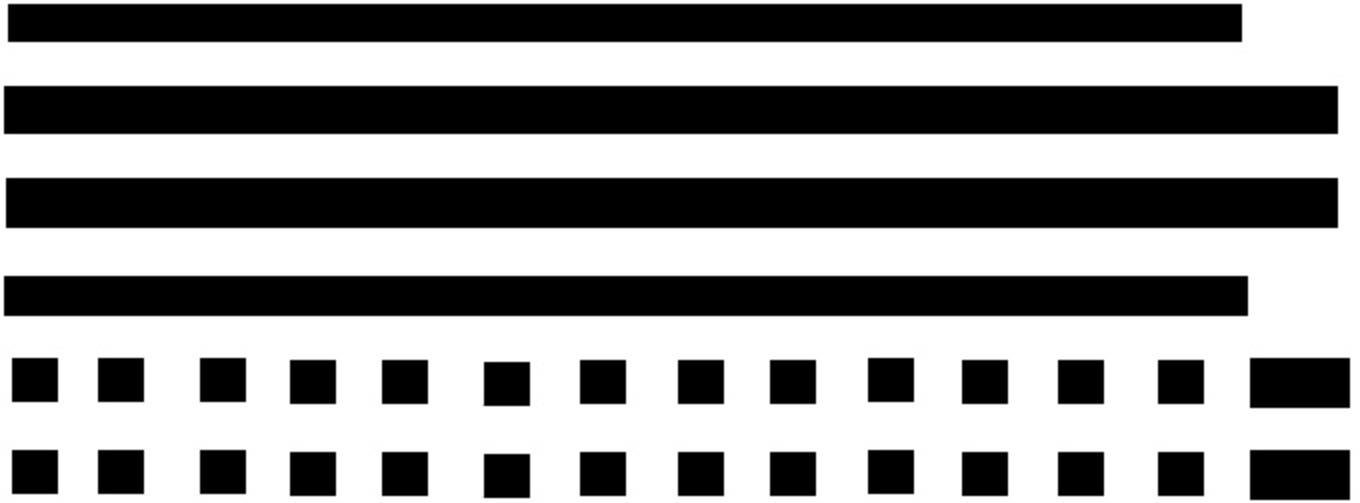

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