



MACH-2

SKILL LEVEL 2 - Recommended for Intermediate Rocketeers.

TOOLS AND MATERIALS

In addition to the parts included in this kit you will need: Scissors, pencil, ruler, fine or extra-fine grit sandpaper, sanding sealer, a medium-size modeling paint brush, modeling knife with sharp blade, gloss orange and silver enamel spray paints, and household white glue or resin glue (Elmer's, Titebond, or similar). Other types of glue are not recommended.

For easy and positive alignment of the fins on your model, we recommend the use of Estes' Fin Alignment Guide, Part No. 2231.

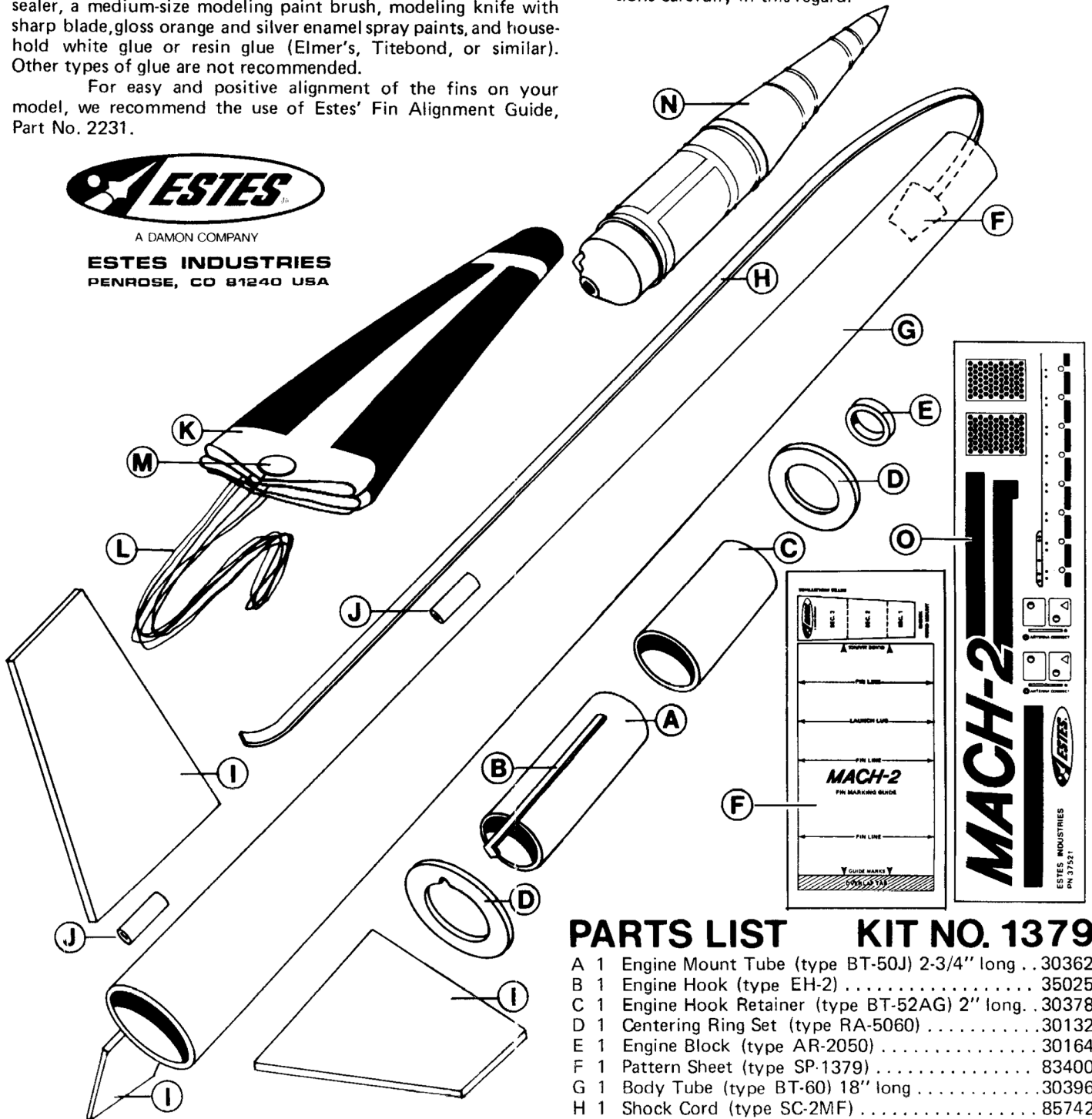


A DAMON COMPANY

ESTES INDUSTRIES
PENROSE, CO 81240 USA

BEFORE YOU START

Read each step and study the accompanying drawings before doing any of the work called for in that step. Make sure you have all parts and materials. Check off each step as you complete it. Always test-fit parts together before applying glue. It will sometimes be necessary to sand edges of rings, tubes, etc. to obtain a proper fit. If you are in doubt about the relative size or location of some parts, refer back to this exploded view drawing for clarification. Adequate glue joints are very important for a flying model rocket. Follow the instructions carefully in this regard.

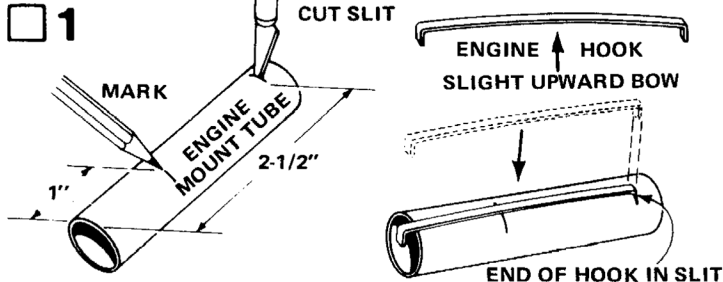


RECOMMENDED ENGINE: D12-5

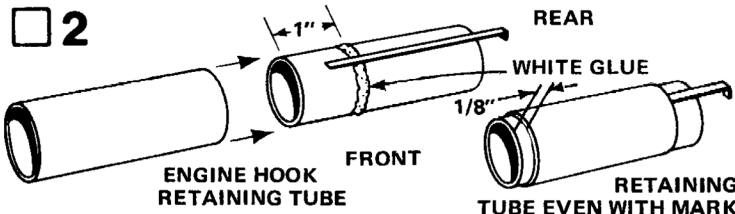
PARTS LIST KIT NO. 1379

A	1	Engine Mount Tube (type BT-50J) 2-3/4" long ..	30362
B	1	Engine Hook (type EH-2)	35025
C	1	Engine Hook Retainer (type BT-52AG) 2" long ..	30378
D	1	Centering Ring Set (type RA-5060)	30132
E	1	Engine Block (type AR-2050)	30164
F	1	Pattern Sheet (type SP-1379)	83400
G	1	Body Tube (type BT-60) 18" long	30396
H	1	Shock Cord (type SC-2MF)	85742
I	1	Die-cut Balsa Fin (type BF-1331)	32333
J	1	Launch Lug (type LL-2A)	38175
K	1	Parachute (type PK-18A)	85566
L	1	Shroud Line (type SLT-108)	38239
M	1	Tape Discs (type TD-3F)	38406
N	1	Nose Cone (type PNC-60B)	71015
O	1	Decal (type KD-1379)	37521

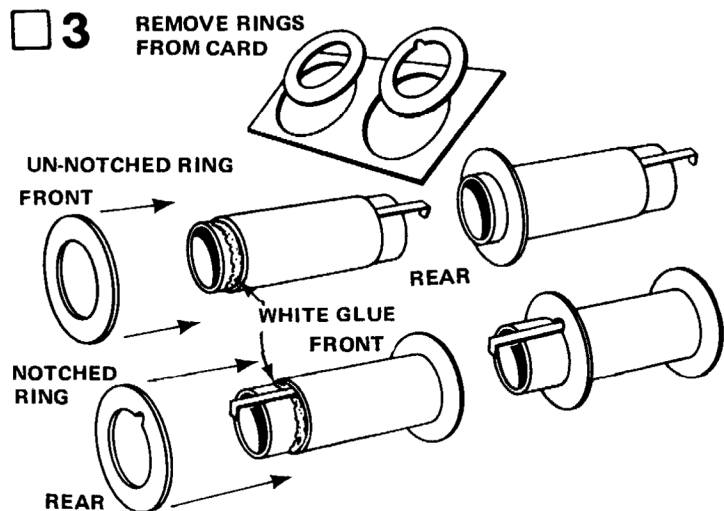
ASSEMBLY INSTRUCTIONS



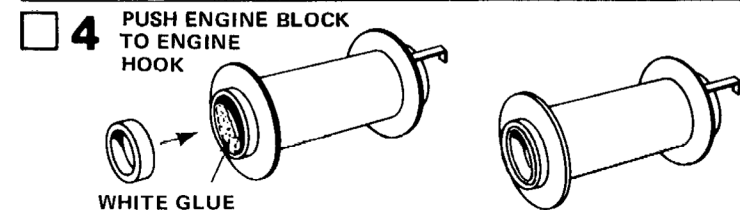
Mark the engine mount tube (part A) at 1" and 2-1/2" from one end. Cut a 1/8" long slit at the 2-1/2" mark. Gently bend the engine hook (part B) so that it bows upward very slightly in the middle. (Study the drawing — Don't bend the wrong way.) Insert one end of the engine hook into the slit in the tube.



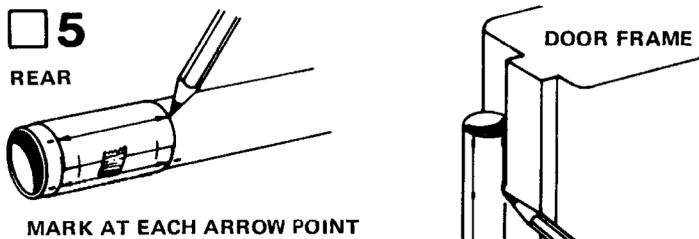
Apply a line of glue around the engine mount tube about 1" from the front end. Slide the engine hook retaining tube (part C) over the forward end of the engine mount tube. Push the engine hook retaining tube down until its forward end is 1/8" from forward end of engine mount tube.



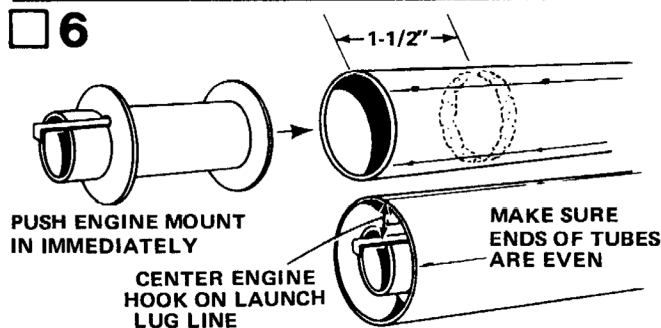
Remove the two centering rings from the die-cut card (part D). Apply a line of glue around the outside of the engine mount tube just in front of the engine hook retaining tube. Slide the un-notched centering ring onto the forward end of the engine mount tube and up against the engine retaining tube. Apply another line of glue around the engine mount tube just behind the rear edge of the engine retaining tube. Slide the notched centering ring onto the rear of the engine mount assembly and up against the rear of the engine hook retaining tube.



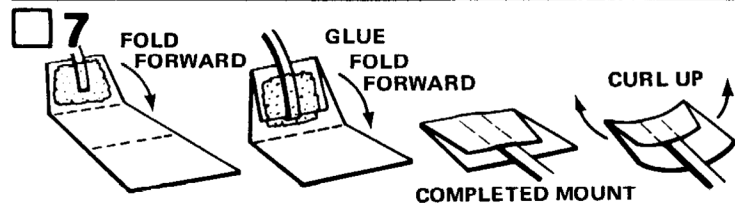
Apply a line of glue all around the inside of the forward end of the engine mount assembly. Push the engine block (part E) into the engine mount tube until it stops at the engine hook. Apply additional glue around the forward edge of the engine block where it touches the inside of the tube.



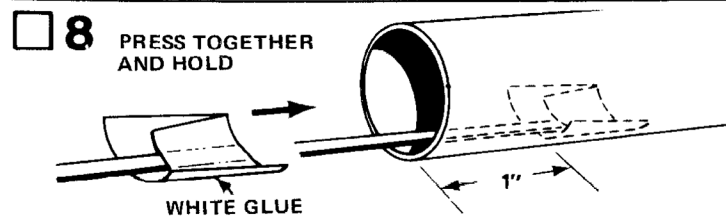
Cut out the body marking guide from the pattern sheet (part F). Wrap it around one end of the rocket body tube (part G). Match the printed guide marks and tape guide in place. Mark the tube at each arrow point. Remove the guide. Place the body tube against the inside edge of a door frame as shown. Draw a line about 3" long from the tube end through each pair of fin line marks. Draw a line about 11" long through the launch lug marks. Mark this line at 10" from rear of body tube. Label the launch lug line. You may use a ruler to connect the tube marks and draw the alignment lines.



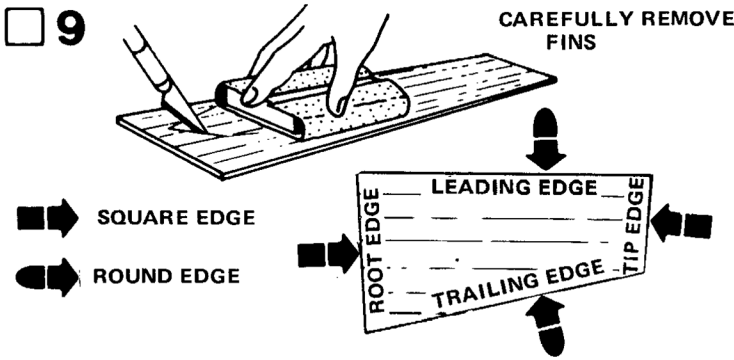
The engine mount unit will be pushed into place so that the rear of the engine mount unit (end with engine hook projecting) is even with the rear of the body tube. Test-fit the engine mount unit several times by smoothly inserting and removing it. Once this can be smoothly and easily done, remove the engine mount unit. Apply a ring of glue around the inside of the rear of the main body tube (part G) about 1-1/2" from the end of the tube. Make certain that the engine hook is to the rear and insert the engine mount unit with one smooth motion. Do not pause, or the glue may "lock" with the engine mount unit in the wrong place. Position the engine mount so that the engine hook is centered on the launch lug alignment line. Place line of glue around main body tube and rear centering ring joint.



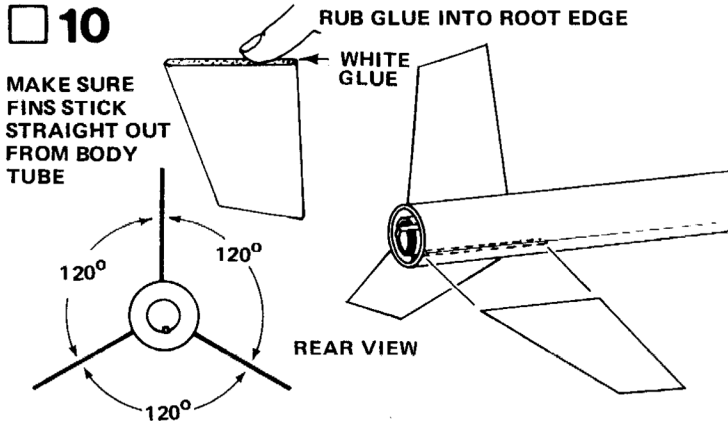
Cut out the shock cord mount from the pattern sheet. Fold on dotted lines, then unfold and apply glue to Section 1. Lay the end of the shock cord (part H) in the glue. Fold over and apply glue to the back of Section 1 and the exposed portion of Section 2. Fold again to complete the mount. Curl the edges of the mount up so it will match the contour of the body tube and hold with your fingers until the glue sets.



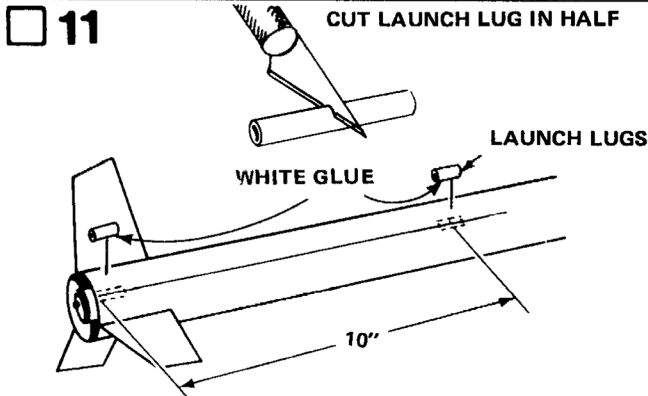
Use a finger or stick to apply glue to the inside of the front of the body tube, 1" to 2" from the front of the tube. Press the shock cord mount firmly into position in glue far enough from the front edge of the tube to allow clearance for the nose cone to fit into place. To insure a good bond use a stick or your finger to smear a film of glue over the mount and surrounding area in the body tube.



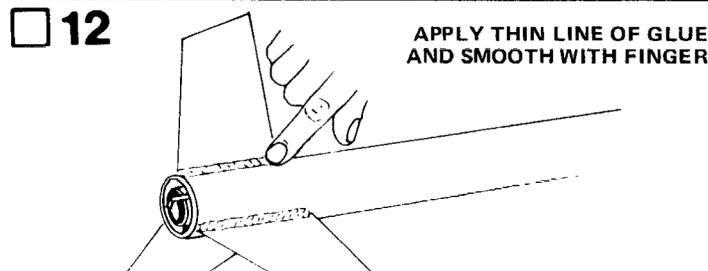
Fine sand both sides of the balsa sheet (part i). Carefully remove the fins from the sheet using a sharp knife. Sand the leading edges and trailing edges round. The root edge (the edge which glues to the rocket body) of each fin must be left square.



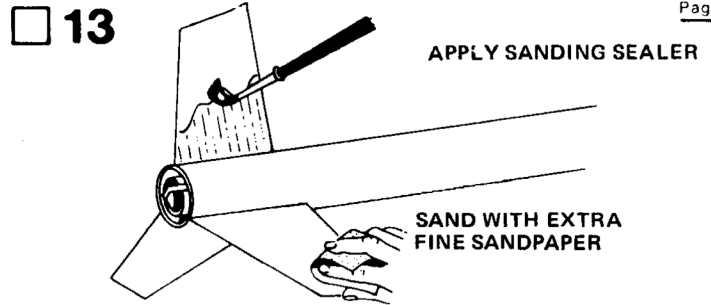
Rub a line of glue into the root edge of each fin and allow glue to dry. Apply glue to the fins again. Position the fins to the body on the alignment lines. The rear of each fin should be even with the rear of the body tube. Adjust the fins so they stick straight out from the body. Do not set the rocket on its fins while the glue is drying.



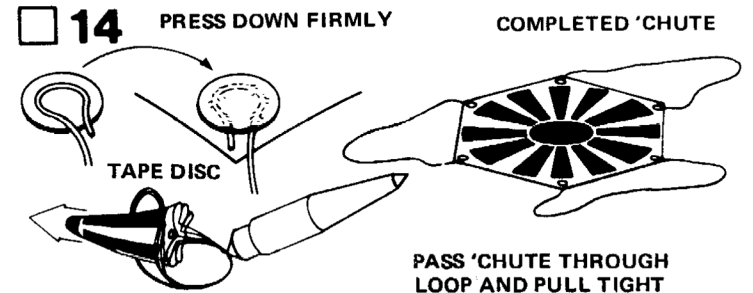
Cut the launch lug (part J) into two equal parts. Glue one launch lug even with the rear of the body tube. Glue the remaining launch lug centered on the alignment line 10" from the rear of the body tube.



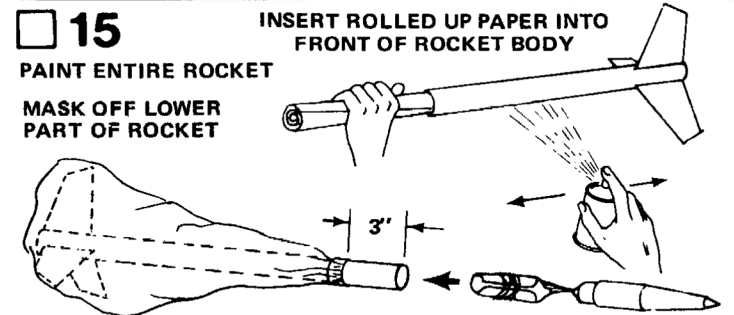
When the fin joints have dried, apply glue reinforcements to each joint. Holding the model level, apply a narrow line of glue to both sides of each fin joint. Smooth out the glue with your finger. **IMPORTANT** - Keep the model level until the glue dries.



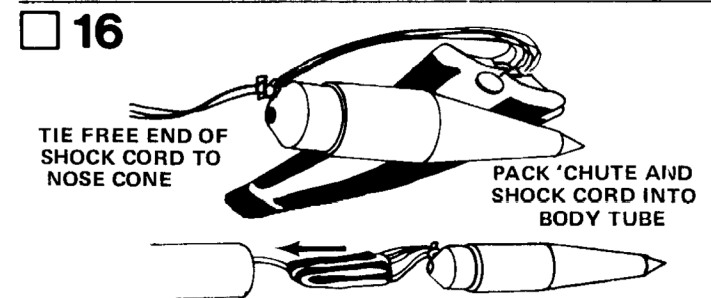
When all glue on the outside of the body is dry, prepare the balsa parts of the model for painting. Apply at least two coats of sanding sealer to all exposed balsa surfaces. Let dry and sand thoroughly with extra-fine sandpaper after each coat. Do this until the tiny holes in the wood are filled and everything looks and feels smooth.



Cut out the parachute (part K) on its edge lines. Cut the shroud line (part L) into three equal lengths. Form a small loop in one end of a shroud line. Holding loop, gently center loop inside tape disc (part M) on the sticky side. Then carefully press tape disc onto its proper place on the top of the parachute. Firmly press the tape disc into place until both tape disc and parachute are molded around the shroud line loop. Repeat for other shroud line ends and tape discs. Pass the center of the shroud line loops through the "eye" of the nose cone (part N). Pass the 'chute through loop and pull tight.



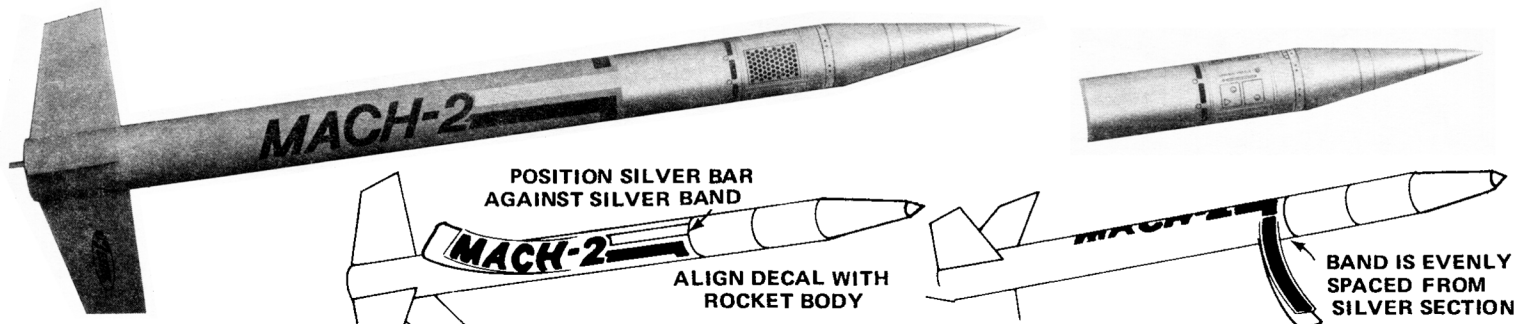
When all glue on the outside of the body is dry, insert a sheet of rolled-up newspaper or heavy paper into front of rocket body as shown. The paper must fit tightly. Apply two or three light coats of gloss orange spray enamel to the fins and entire body section. Allow each coat of paint to dry completely. When paint is dry, mask off the front 3" of the rocket as shown and pack parachute into rocket body and slide nose cone into place. Apply at least two coats of silver spray paint to the front of the rocket, allowing each coat to dry completely. Remove masking tape after paint is thoroughly dry.



Tie the free end of the shock cord to the "eye" on the nose cone. Fold the 'chute, pack 'chute and shock cord into parachute compartment tube, and socket nose cone in place.

17 DECAL PLACEMENT

NOSE CONE SHOWN ROTATED 90°



Apply decals (part O) in positions shown in the photograph above and on the color panel. To apply decals cut only one decal at a time from the sheet. Submerge decal in water for 15 to 30 seconds (until decal slides on backing sheet). Gently slide decal from backing sheet and onto the model. Move decal into exact position and carefully blot away excess water with a soft cloth. If the decal "sticks"

before you have it in position, apply water over the decal with a brush. This will permit the decal to be moved. Smooth out all wrinkles and air bubbles before the decal dries. We recommend that the completed model be sprayed with either Testor's "Dull Cote" or "Gloss Cote". This will protect the model's finish.

LAUNCHING COMPONENTS

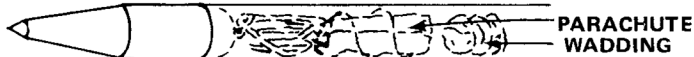
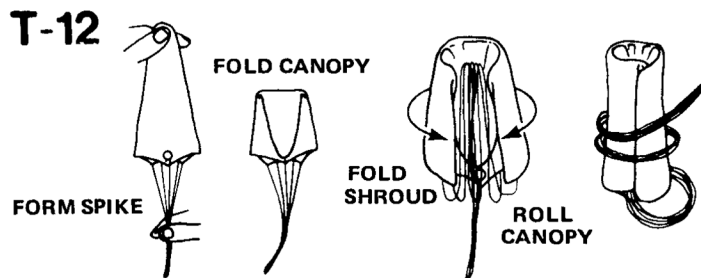
To launch your rocket you will need the following items:
 An Estes model rocket launch system
 Parachute recovery wadding (Estes Cat. No. 2274)
 Recommended Engines: D12-5

Be sure to follow the HIAA-NAR* Model Rocket Safety Code when carrying out your model rocket activities.

*HIAA – Hobby Industry Association of America
 NAR – National Association of Rocketry

COUNTDOWN CHECKLIST

T-13 Pack 4 or 5 squares of loosely crumpled recovery wadding into the body tube.

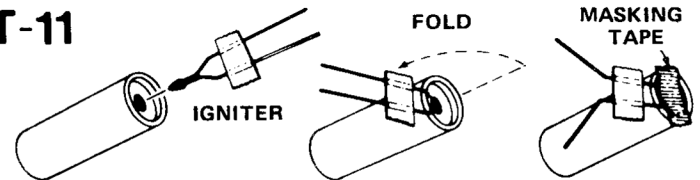


Hold the parachute at its center and pass the other hand down it to form a "spike" shape. Fold this spike in half. Fold shroud lines back along parachute and then back down to lower edge of parachute to reduce length of shroud line "left over". Roll parachute into tube shape to fit easily into body. Any remaining shroud line should be loosely wrapped around parachute. Pack 'chute into the body tube on top of the wadding. Pack the shroud lines and shock cord in on top of the parachute and slip the nose cone into place.

NOTE: DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in cold weather.

Nose cone should separate easily from rocket body tube, but should not be extremely loose. If fit is too tight, sand inside of body tube and shoulder of nose cone with fine sandpaper. If fit is too loose, add a wrapping of transparent tape or masking tape to the shoulder of the nose cone.

T-11

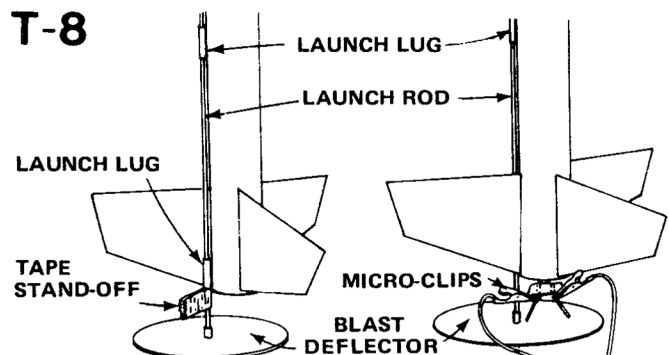


Select an engine and install an igniter as directed in the engine instructions. Use a D12-5 engine.

T-10 Insert engine into rocket engine mount. Engine hook must latch securely over end of the engine.

T-9 Disarm the launch panel – REMOVE SAFETY KEY!

T-8



Slide the launch lugs of rocket onto the launch rod. Make sure rocket slides freely on the launch rod. If the launch pad you are using does not have a rocket stand-off, place a piece of masking tape on rod as shown to keep rocket 1" above the deflector plate. Clean micro-clips. Attach them to the igniter wires as close to engine nozzle as possible. Arrange the clips so they do not touch each other or the metal blast deflector.

T-7 Clear the launch area, alert recovery crew and trackers. Check for low flying aircraft and unauthorized persons in the recovery area.

T-6 Arm the launch panel – INSERT SAFETY KEY!

-5-4-3-2-1-LAUNCH!!

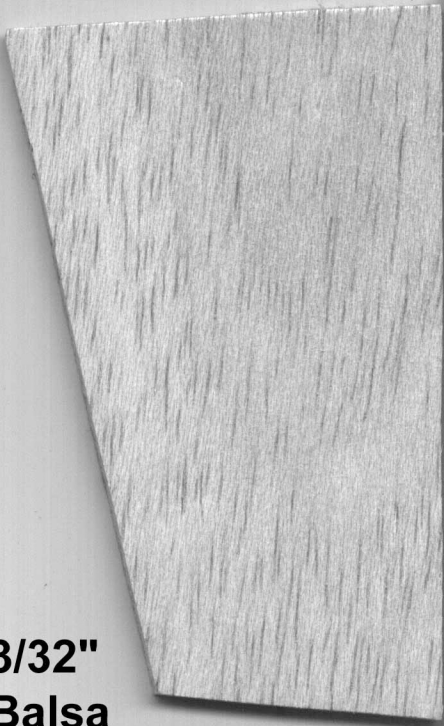
Repeat Countdown Checklist for each flight.

MISFIRE PROCEDURE

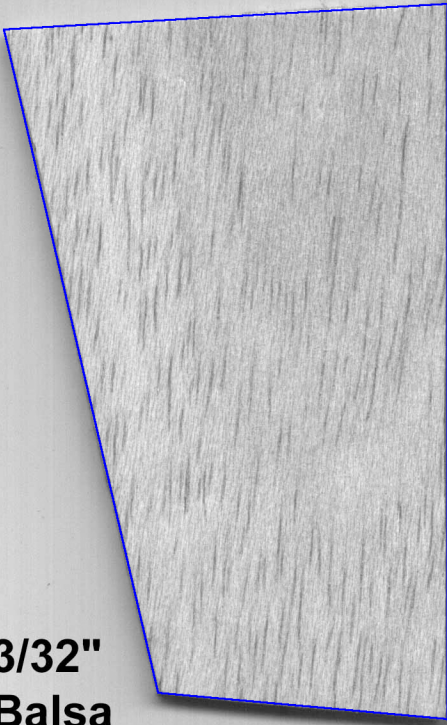
Disarm the launch panel. Wait one minute before approaching the rocket on the launch pad. Remove the rocket, clean the igniter residue from the nozzle of the engine, and carefully install a new igniter. Repeat the Countdown Checklist.

Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.

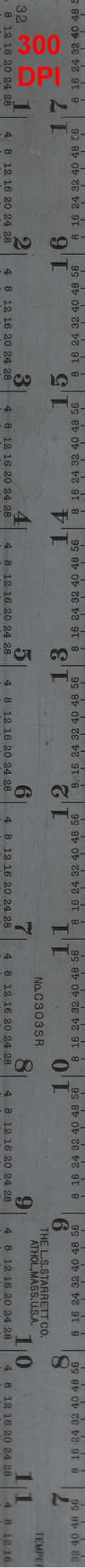
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3/32"
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3/32"
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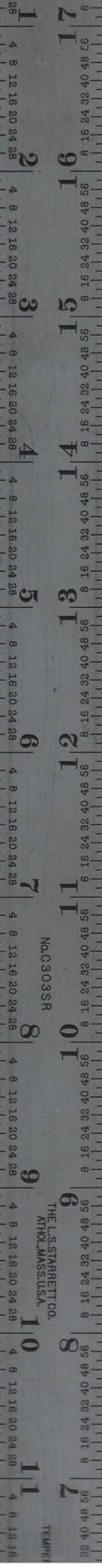
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TEMPER

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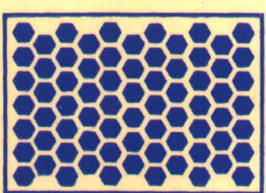
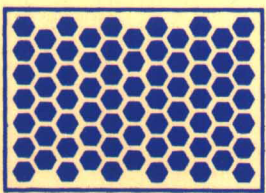
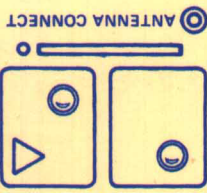
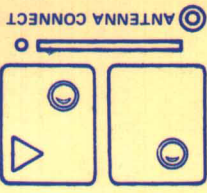
32 300 DPI



MACH-2



ESTES INDUSTRIES
PN 37521



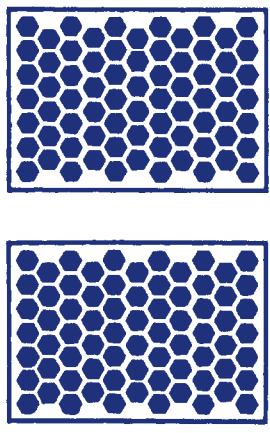
NO. C303SR

THE L.S. STARRETT CO.
ATHOL, MASS., U.S.A.

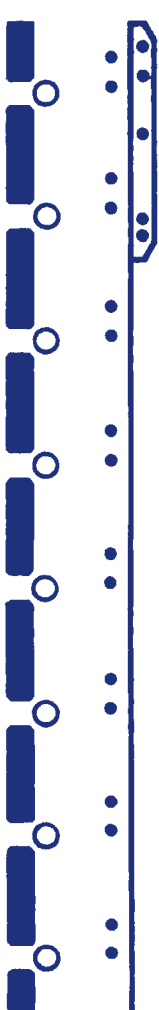
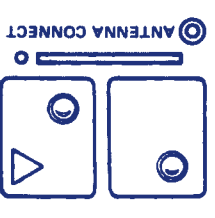
TEMPER

32 300 DPI
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TEMPER

MARCH 2



ESTES INDUSTRIES
PN 37521

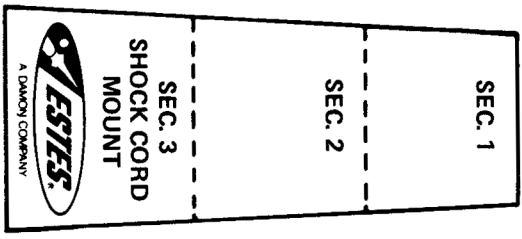
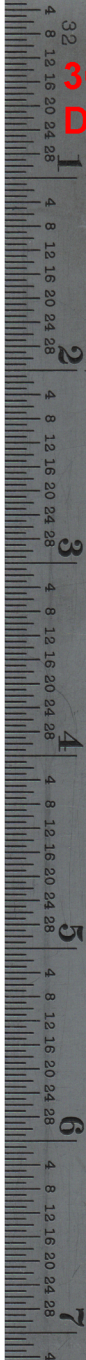


NO. C303SR

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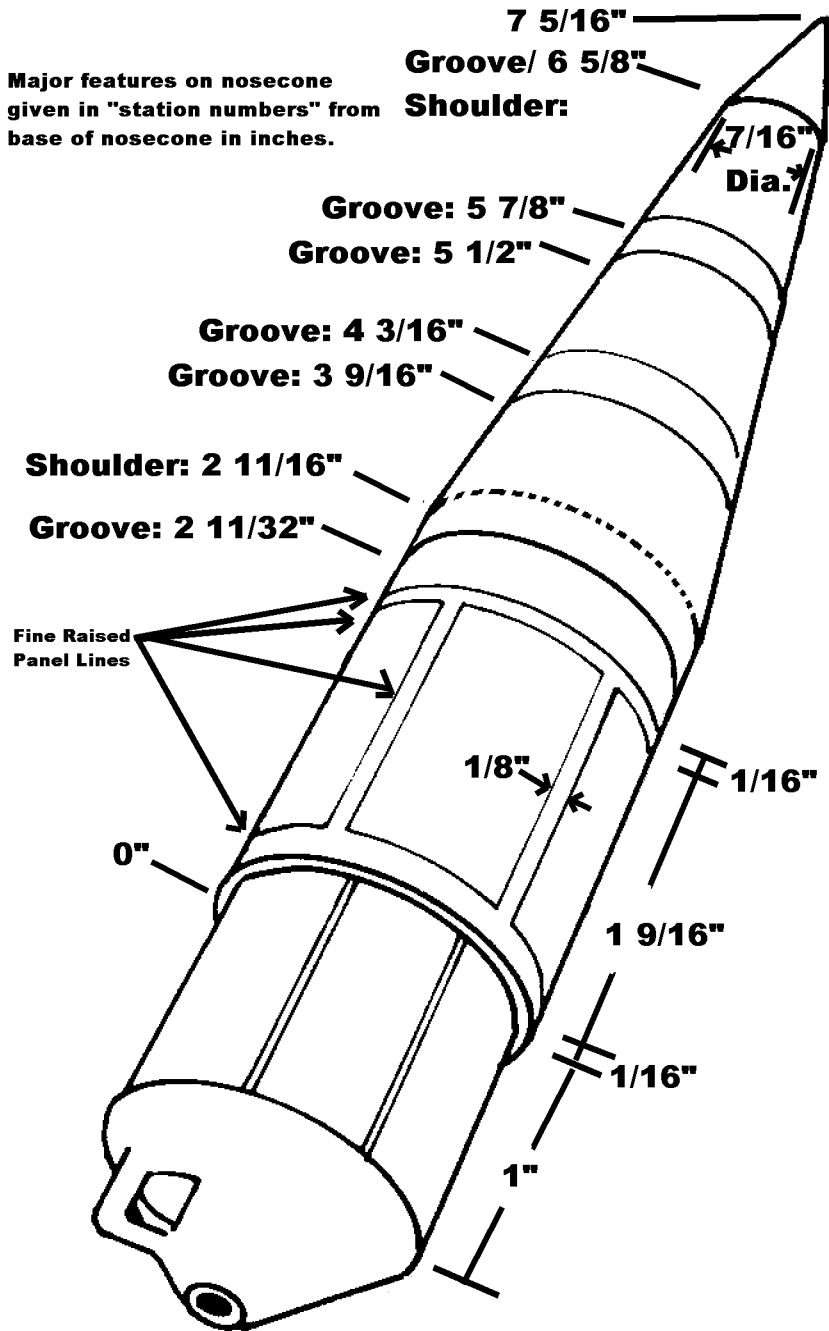


300
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ESTES INDUSTRIES
PN83400

Major features on nosecone given in "station numbers" from base of nosecone in inches.



Nose cone details for Estes Mach-2 #1379

Note: Shoulder at Sta 2 11/16 is not recessed or extruded.
Dotted line is for illustrative purposes only.

Prepared for JimZ's site by John Joseph July 1998.

PARTS LIST KIT NO. 1379 - Mach-2

Quantity	Description	Type	Number	Detail1	Detail2	Detail3	Detail4	Comment
1	PAPER BODY TUBE	BT-50J	30362	2.75" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	ENGINE HOLDER	EH-2	35025	2.8" long	.100" wide	.025" thick		Reg. & D
1	PAPER BODY TUBE	BT-52AG	30378	2" long	0.988" ID	1.114" OD	0.063" wall	Glassine
1	PAPER ADAPTER	RA-5060	30132	.977" ID	1.594" OD	.05" thick	One ring notched.	Set of 2
1	CENTERING RINGS	AR-2050	30164	0.25" long	0.737" ID	0.949" OD	0.106" wall	Green
1	Pattern Sheet	SP-1379	83400	3.5" wide	7.5" long	Index card	with SCM-50	Scan
1	PAPER BODY TUBE	BT-60	30396	18" long	1.595" ID	1.637" OD	0.021" wall	Glassine
1	Shock Cord	SC-2MF	85742	1/4" wide	24" long			Rubber
1	Die-cut Balsa Fin	BF-1331	32333	3" wide	12" long	3/32" thick	*BFS-30L #3170	Scan
1	LAUNCH LUG	LL-2A	38175	5/32" ID	1/8" rod	1.25" long		Mylar
1	Parachute	PK-18A	85566	18" dia.	18" x 6 Shrouds	LDPE plastic	Org/Wht	
1	Shroud Line	SLT-108	38239	108"	.020" diameter	Twisted cotton		
1	Tape Disc	TD-3F	38406	1/2" dia.	Paper	Self-Stick	WO/Center Hole	Set of 6
1	PLASTIC NOSE CONE	PNC-60B	71015	7 5/16" long	1.627" dia.	1" shoulder	Conical with details	Blow molded
1	Decal	KD-1379	37521	3" wide	12" long	Blu, Slvr	Waterslide	Scan
*	BALSA FIN STOCK	BFS-30L	3170	3" wide	12" long	3/32" thick	0.09375	

