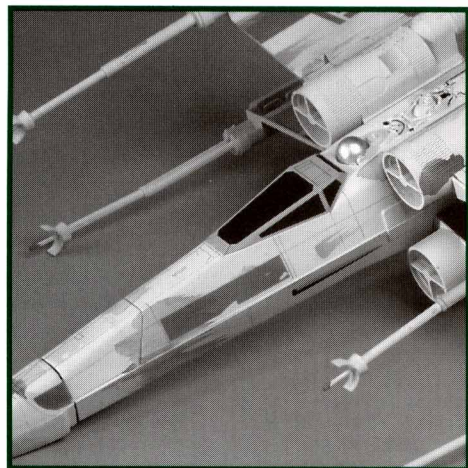


application dry thoroughly, then go back and apply a second wash to areas that need more definition. At this point, the model may look terrible, but don't worry about it. Areas to concentrate on the X-wing fighter include the ion engines, the top and bottoms of the wings, the nose area, and the aft end of the kit.



When the paint has dried for 24 hours, the time has come to remove the excess. Using a clean, lint free cloth, apply a couple of drops of thinner to the rag, and wipe over the surface. Wipe off the wash in the direction of the airflow to give the effect a directional look. Don't rub too long or hard in any one area, and don't rub in circles.

For those areas difficult to reach, apply a drop of thinner with a small brush and use it to wipe away the excess wash. Again, a Q-tip or a toothpick may also come in useful. Don't go too far and remove the clear gloss. If you do, let the area dry, then lightly sand the area until it blends in with the surrounding area. Repaint, re-gloss and re-wash the area.

If you can't get the wash off an area and it looks ugly, you'll have to mask the area off and re-paint it with the base color. Then re-gloss the area.

DRY BRUSHING:

You can dry brush detailing in as well. This technique can accentuate high points and adds depth to detailing in low spots. To use this technique, you can get a hobby "weathering" kit, or you can make your own by sanding an artist's charcoal marker and collecting the dust.

Using a paint brush, gently brush the charcoal onto the areas you want to accentuate. (The brush you use will no longer be usable for painting.) On the X-wing, the aft end of

the engines should receive this treatment. Be careful, as a little bit goes a long way. Once you have applied the charcoal, carefully blow the model clean to remove any loose particles, and then clear coat the parts.

You can also dry brush silver to highlight and give the look of worn metal. Using an old paint brush, dip the brush into silver paint, get most of it out, then use the brush to apply silver to high points. This gives the effect of wear and bare metal where the paint and primer has worn through.

FINAL TOUCHES

Adding detail to R2-D2 tops off the perfect model. Be sure to paint the dome silver and the exposed parts of his legs white. If you're really into detailing, you can add blue highlights with paint or a decal.

Getting the paint to look just right, on an X-wing can be tricky. Use a fine brush, and take your time, and the results should be stunning!

PHOTO CONTEST!

We're holding a photo contest to get "the best" photos for upcoming issues of the *Model Rocket News!* If you have a great shot of an Estes product, please send it to us! You could turn that photo into hundreds of dollars worth of exciting Estes merchandise! Just send it in!

Grand Prize: \$200 in merchandise certificates
 First Runner Up: \$100 in merchandise certificates
 Second Runner Up: \$75 in merchandise certificates
 Third Runner Up: \$50 in merchandise certificates
 Any other photo selected for use : \$25 per photo in merchandise certificates

Rules:

- 1 Winning photos will be selected for clarity, composition, and subject matter. The decision of the judges is final.
- 2 All entries must be postmarked by January 15 and received by January 30, 1998 to be eligible.
- 3 Prints (either black and white or color) must be 3" x 3" or larger. Please include negatives with prints if at all possible. Slides (mounted) or transparencies are also accepted.
- 4 Include your name, address, phone number, and a caption on the back of or with each photo.
- 5 All entries become the property of Estes Industries.
- 6 Entry in the contest constitutes permission to use the photograph(s) for promotional purposes.
- 7 Photos can not be returned. Sorry!
- 8 Send all entries to:
Estes Photo Contest
Estes Industries
1295 H Street
Penrose, CO 81240.
- 9 Employees of Estes Industries and their immediate families are not eligible.
- 10 You may enter as many times as you like.
- 11 Winners will be announced in a future issue of *Model Rocket News.*

CONTRIBUTORS NEEDED!

Send us your rocket news, how-to articles, ideas, tips, and suggestions! Articles on model rocketry are welcome, especially those that deal with technical aspects of model rocketry, club activities, and just plain fun. Send your articles to:

Editor, *Model Rocket News*
 Estes Industries
 1295 H Street
 Penrose, CO 81240

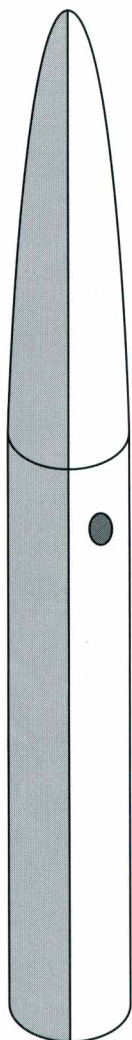
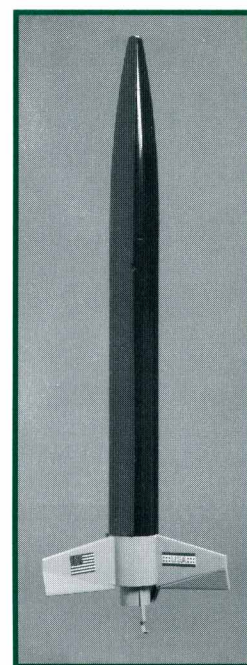
All submissions become the property of Estes Industries and will not be returned.

DESIGN OF THE QUARTER WINNER

Designed by Nathan Chronister (Kingston, NY)
Estes Rocket Plan #128

Published as a service to its customers by
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- **Challenging to build!**
- **FAST pre-flight prep!**
- **Extremely unique design and flight characteristics!**



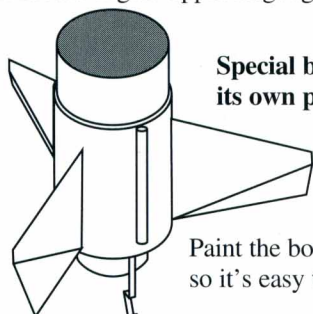
Finless, spin stabilized upper stage allows straighter flights to higher altitudes: The usual weathervaning of multistage rockets has been overcome!

Amazing color change illusion!

Half of the upper stage is painted red, the other half green, as shown in the picture at right. As soon as it takes off, the rocket begins to spin at a very high rate, causing the two colors to optically mix. The rocket appears to be yellow!

Rear ejection or, no recovery wadding needed. The parachute is ejected by a simple piston device. The piston does not separate from the rocket so recovery and preflight are even easier than in a typical model.

Instant stage-coupling requires no tape!
Uses proven nested-engine upper stage ignition.



Special booster has its own parachute!

Paint the booster a light color so it's easy to find.

Suggested Engines:
D12-0 booster, B6-6 upper stage.

Parts list:

Part	Prod. No.	Description	Cut to:	Qty.
A	30396	BT-60 body tube	9 3/8"	1
B	30176-5	JT-60C coupler	3/4"	1
C	30316	BT-20 body tube	8 5/8"	1
D	30128	RA-2060 ring		4
E	30162-2	EB-20A engine block		1
F	35021	Engine hook		2
G	38237	SLT-72 Shroud line	12"	3
H	71043	PNC-60AH nose cone		1
I	35820	PK-12 parachute		2
J	38265	Snap swivel		2
K	38237	SLT-72 Shroud line		2
L	30352	BT-50 body tube	2 5/8"	1
M *		Ring from 1/16" cardboard		1
N	30132	50-60 Ring Adapter		1
O	30174-5	JT-50C coupler	1/4"	1
P *	32116	BFS-40 1/8" balsa *		4
Q *	32116	BFS-40 1/8" balsa *		1
R *	32116	BFS-40 1/8" balsa *		1
S	30176-5	JT-60C coupler	1 1/8"	1
T	30396	BT-60 body tube	1 5/8"	1
U	32056	Dowel, 1/8" dia.	1/2"	2
V *		Indexcard .33"x	1 1/2"	2
W *	32116	BFS-40 1/8" balsa		3
X *	32116	BFS-40 1/8" balsa		3
Y		Toothpick (Round)	1 1/2"	6
Z	38178	LL 2B Launch lug	1 5/8"	1
AA		Tape Rings		2

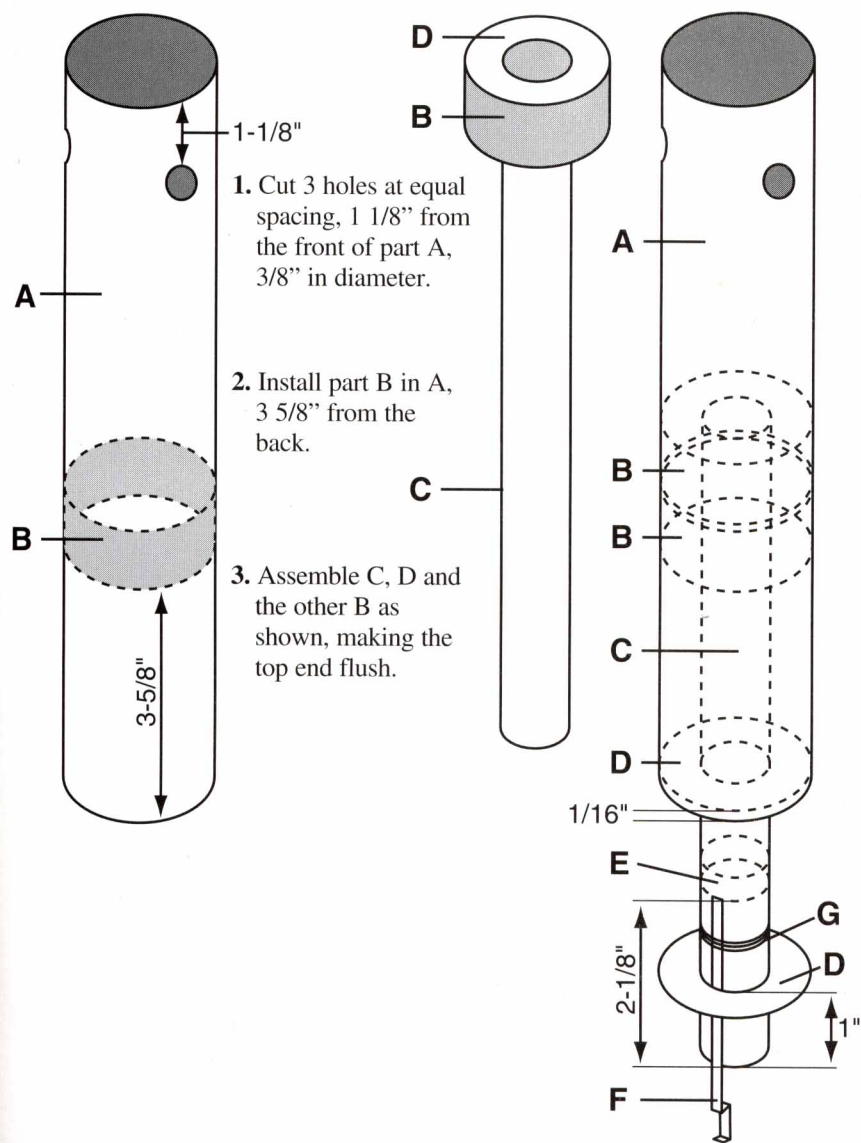
* = pattern on page 8

Only one sheet of BFS-40 and one 18" length of BT-60 are required.

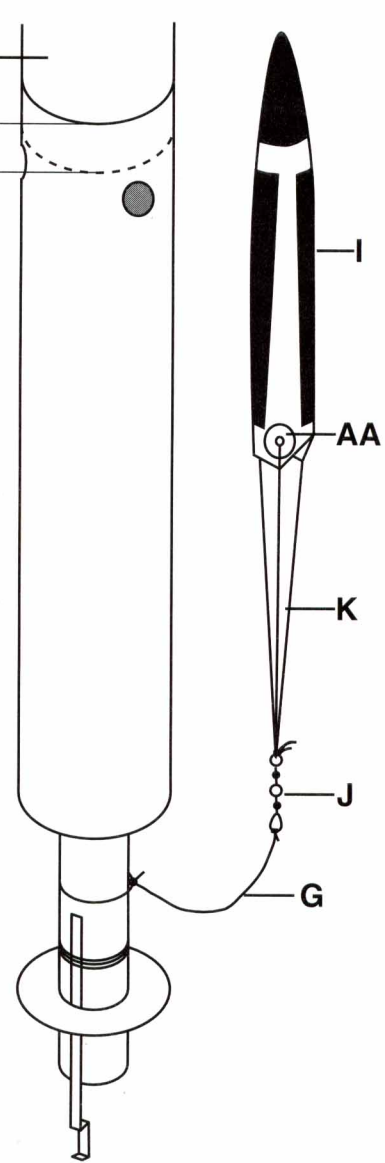
You will need two JT-60 couplers.

Construction:

Step-by-step instructions are found on the next pages. Before beginning, cut and label all parts. Because Tao is spin-stabilized and uses a sliding parachute ejector, it must be built extra-strong. Make thick fillets but be careful to avoid runs inside the body tube as they would prevent the ejection device from sliding properly. Allow glue to dry between steps. Yellow wood glue is to be used throughout, except as otherwise stated. Because Tao has a very unconventional structure, it is important to follow instructions carefully.



- DO NOT GLUE! Insert the free end of tube C into the front of tube A, and push it all the way down until parts B prevent further movement.
- Assemble the engine mount. Insert E using an engine casing to a depth of 2-1/8". Add part F, wrap G around the tube and coat with glue. Glue the centering rings D only to the inner tube, not the outer one! The first is placed 1/16" inside tube A, the other is 1" from the rear of tube C.
- WHEN DRY, THE C ASSEMBLY MUST SLIDE FREELY WITHIN "A". Saw H shoulder to 3/4" in length, and attach with epoxy.
- Tie a line G around tube and glue it. Make parachute (Parts I, J, K and AA). Attach J to G.

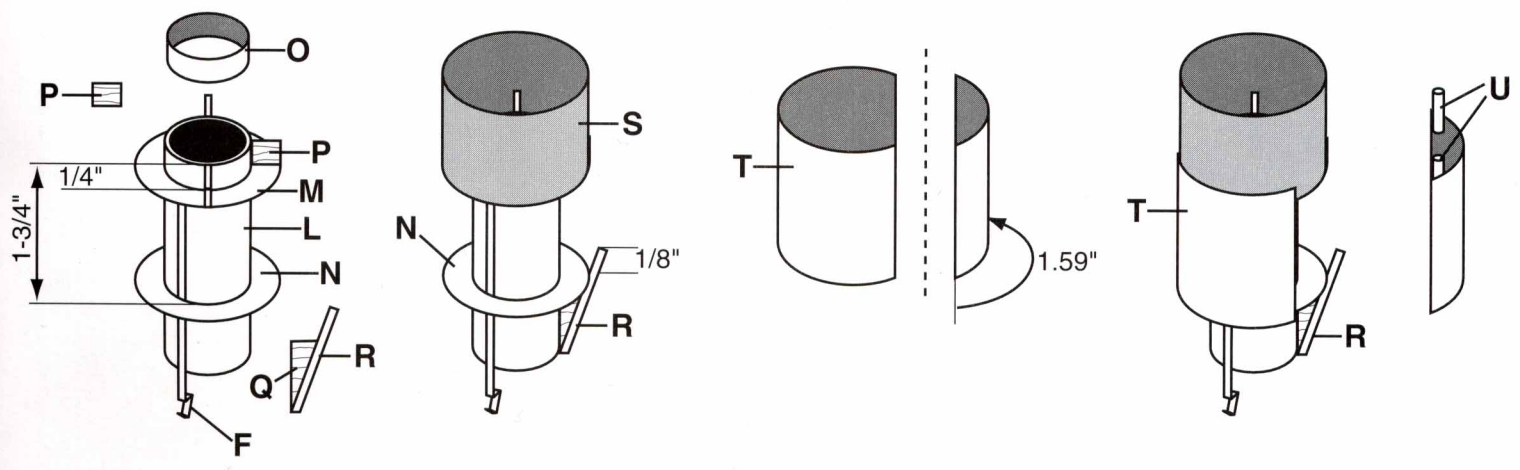


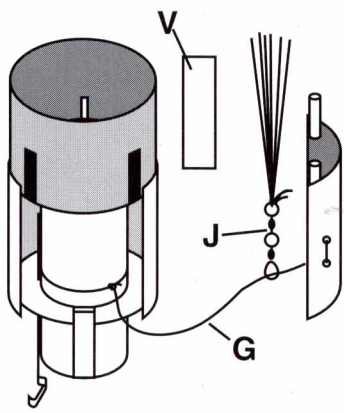
- Assemble booster engine mount as shown. Rings are at 1/4" and 1 3/4". The special ring M is the one in the front.

- Add the stage coupler S, so that it just covers ring M.
- Trim part R so that it protrudes 1/8" ahead of ring N.

- Measure exactly 1.59" along the circumference of tube T, draw parallel lines using a door-frame, and cut along the lines.

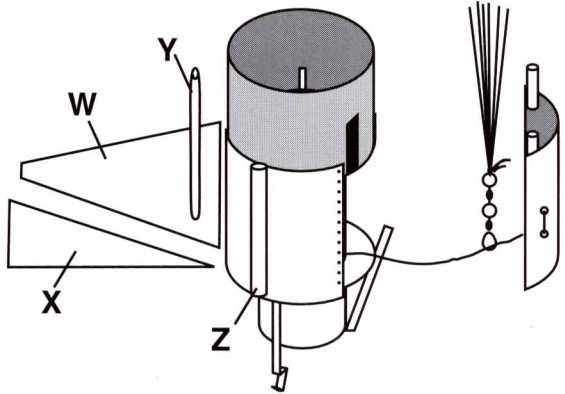
- Take the large section of tube T, and glue it to the booster directly opposite part R. Then glue parts U to the small section where shown to form the parachute hatch.



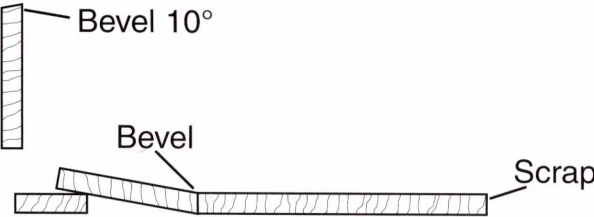


13. Mount the parachute hatch: Make two pinholes in the hatch approximately where shown. Tie one end of a line G through these holes and coat the area with glue. Tie a snap swivel J to line G where shown, and tie the other end of G tightly around tube L and glue the knot. Assemble another parachute using parts, I, K and AA. Parts V are used to cover the holes at either side of the parachute compartment.

14. Cut slots in the stage coupler: The slots allow the hatch to be seated tightly against the booster by hiding parts U inside the coupler. Use the actual hatch as a guide to cutting the slots in the correct location and size. Test the hatch to make sure it works: Pack parachute in the usual way and put it into the compartment. The hatch should refuse to stay closed. Then lock the hatch by sliding the upperstage onto the booster. It should now remain securely in place.

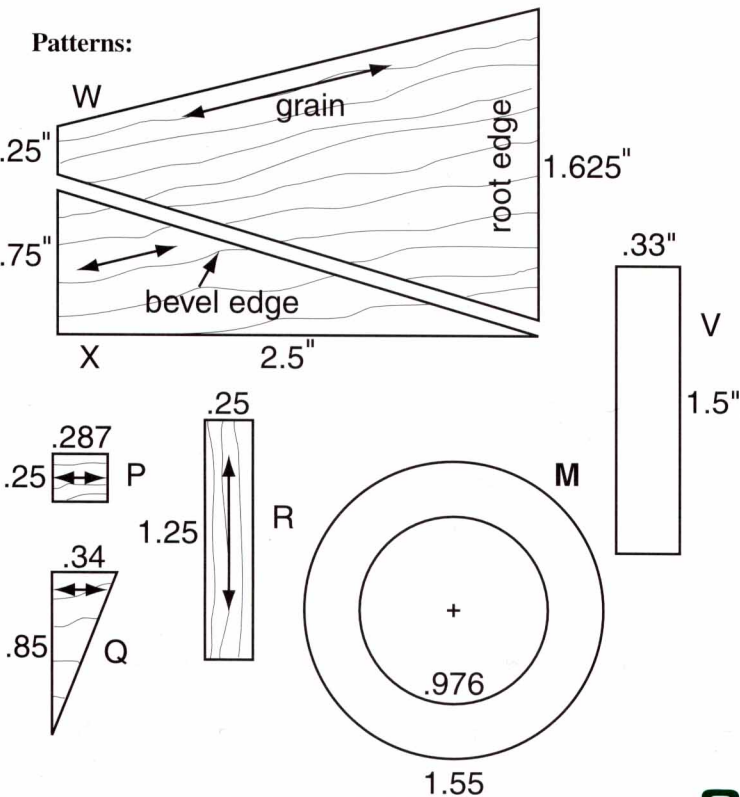


15. Assemble and mount the fins: The fins on this rocket have to make it spin, so they are a little more complicated than your basic fins. Cut the fins from the patterns below. Sand a bevel-edge onto the small fin part, at a 10 degree angle so that it will glue to the main fin part at the same angle. Glue them together, placing a scrap of balsa under the edge of the smaller part while it dries. The three fins you are making must be identical! The angles must be the same, and the small flap must go in the same direction on every fin! After the glue dries, coat the joint areas with 30 minute epoxy to strengthen them. Then sand the remaining fin edges, except for the root edge, round. All three fins are mounted to the large section of tube T. One goes in the middle, and one goes on each edge. Prepare the tube by making a row of pinholes along the joint surface and filling these with glue, to add strength, and then glue the fins on. Before adding the usual fillets, glue toothpicks along side each fin to give added resistance to side-to-side stresses.



16. Attach the launch lug where shown. Coat it with epoxy.

17. Paint as noted on first page of instructions.



Instructions for flight:
 Tao is easy to prep for flight but the procedure is a bit unusual.

- 1) Pack the upper stage parachute by wrapping it around tube C in the direction opposite the rocket's rotation. If you wrap it the wrong way it will tangle or rip loose.
- 2) Push the motor mount into the main body tube, making sure the parachute doesn't get pinched.
- 3) Put a B6-6 engine into the upper stage engine mount.
C engines have not been used and should not be!
- 4) Put a D12-0 engine in the booster.
- 5) Pack the booster parachute in the usual way, and put it in the hatch.
- 6) Holding the hatch shut, fit the two stages together. Note that the upper engine fits down into the casing of the booster engine, for very reliable staging.