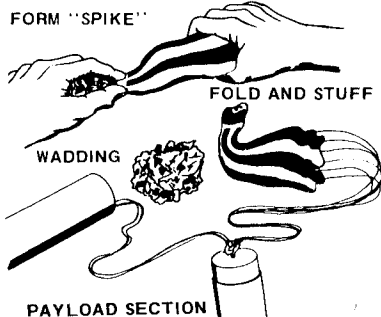




14 Apply two or more coats of sanding sealer to all balsa surfaces. Sand lightly with extra fine sandpaper between coats. Repeat until all pores are filled and the surfaces smooth. Give the rocket a spray base coat of white and follow with your choice of colors.

COUNTDOWN CHECKLIST

12 Pack two squares of recovery wadding into body tube. Fold parachute in half and pack chute, shroud lines and shock cord neatly into body tube. Slide payload section into place.



11 Select an engine and install an igniter as directed in the engine instructions. Insert engine into rocket.

10 Disarm the launch panel.

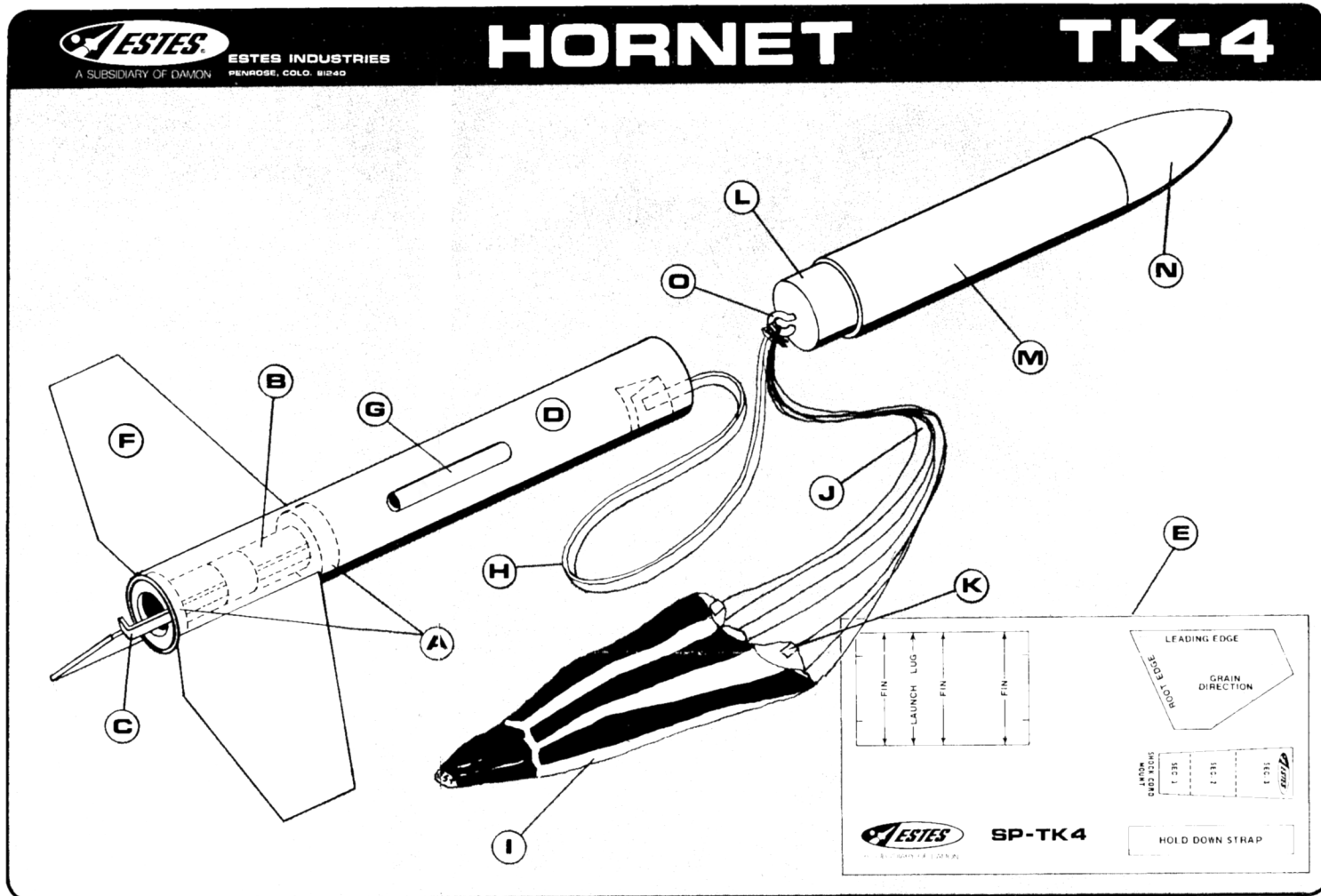
9 Place rocket on launcher. Clean the micro-clips and attach them to the igniter.

8 Clear the launch area, alert recovery crew and trackers.

7 Check for low flying aircraft and unauthorized persons in the recovery area.

6 Arm the launch panel.

5
4
3
2
1
LAUNCH!



PARTS LIST

A.	2 Adapter Rings.....	AR-520	I.	1 Parachute.....	PK-8A
B.	1 Engine Mount Tube.....	BT-5T	J.	1 Shroud Line.....	SLT-72
C.	1 Engine Hook.....	EH-3	K.	6 Tape Strips.....	TD-2F
D.	1 Body Tube.....	BT-30C	L.	1 Nose Block.....	NB-30
E.	1 Pattern Sheet.....	SP-TK4	M.	1 Payload Section Tube.....	BT-30J
F.	1 Balsa Fin Stock.....	BFS-20E	N.	1 Nose Cone.....	BNC-30D
G.	1 Launch Lug.....	LL-2A	O.	1 Screw Eye.....	SE-2
H.	1 Shock Cord.....	SC-1			

In addition to the parts included in this kit you will need scissors, white glue, a sharp model knife (or single edge razor blade), masking tape and paint or dope.

Check to be sure your kit is complete, then read the entire instructions before beginning to assemble your rocket. Check off each step as you complete it.

ASSEMBLY INSTRUCTIONS

1 Cut a 1/8" wide gap in one of the adapter rings. Glue the split ring on one end of the engine mount tube. Glue the remaining ring on the other end as shown.

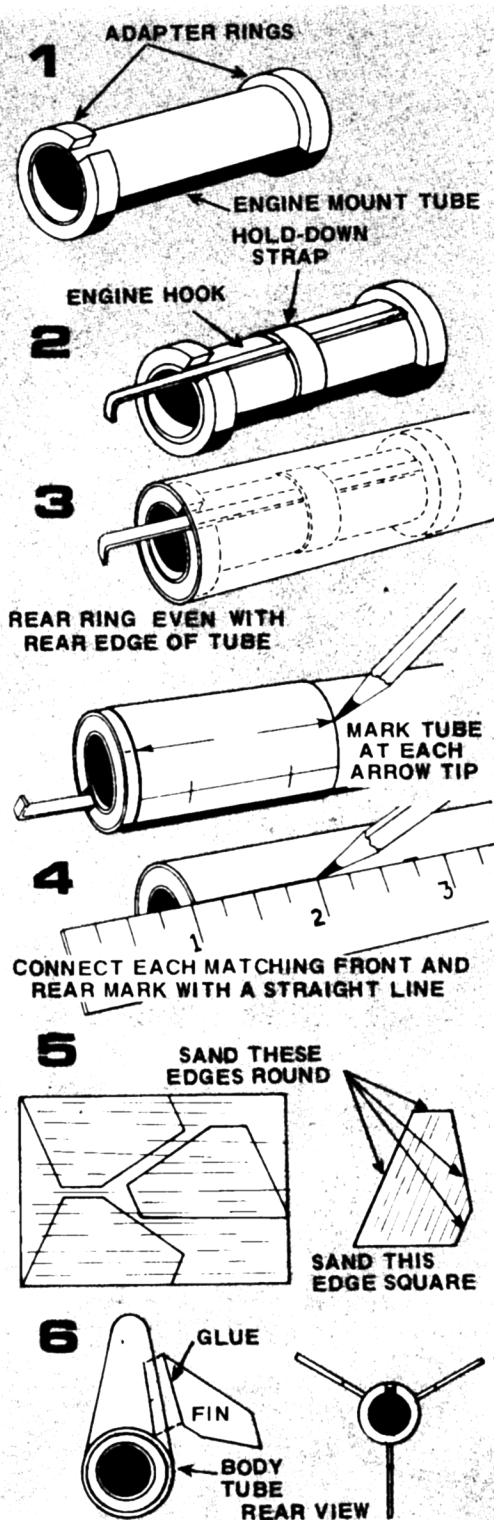
2 Make a 1/8" wide slit in the engine mount tube directly in line with the gap in the split ring and against the other ring. Insert one end of the engine hook into the slit. Lay the hook along the tube so it passes through the gap in the split ring. Cut out the hold-down strap from the pattern sheet, apply glue to one side, and wrap it tightly around the middle of the tube and hook as shown.

3 Smear glue around the inside of the body tube about 3/4" from one end. Immediately slide the engine mount unit into place so the end of the engine mount tube is even with the rear of the body and the engine hook projects from the tube. Do not pause during this operation or the glue may stick with the mount in the wrong place.

4 Cut out the body tube marking guide. Wrap it around the rear of the body so the ends of the guide are in line with the engine hook. Mark the tube at each arrow point. Remove the guide and draw a straight line connecting each matching front and rear mark. Draw the launch lug line so it reaches about four inches from the end of the tube.

5 Cut out the fin pattern. Trace three outlines on the balsa sheet as shown. Cut out the fins carefully and sand the edges as illustrated.

6 Rub a priming coat of glue into the root edge of each fin and allow to set. Glue the fins directly on the alignment lines at the rear of the tube. Align straight away from the tube and allow to set. Apply a glue fillet to both sides of each fin joint after the glue is completely dry.



7 Glue the launch lug to the body on the lug alignment line as shown, 2" from the rear of the tube. Make sure the lug is perfectly straight on the body.

8 Cut out the shock cord mount. Pre-fold it on the dotted lines. Apply glue to section 1 and lay the shock cord end into the glue. Fold this first section over. Spread glue over the back of the first section and the exposed part of section 2. Lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets.

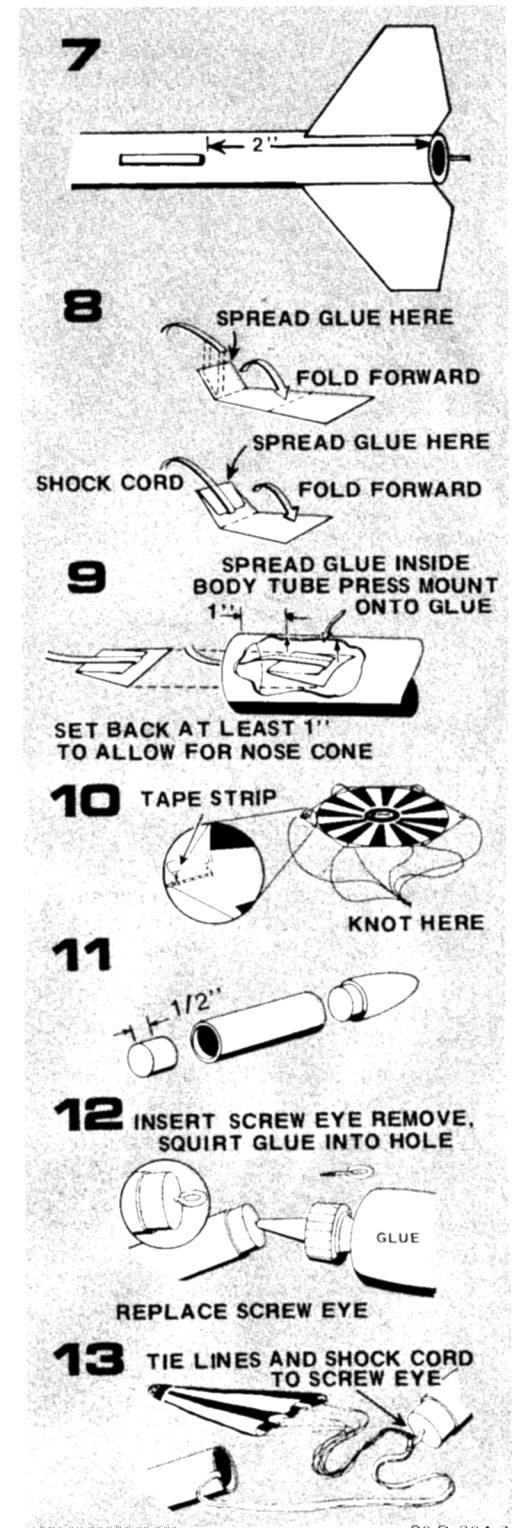
9 Apply glue to the inside of the body tube at the front over an area about 1" to 1-3/4" from the end. The glued area should be the same size as the shock cord mount. Press the mount into the glue and hold it until the glue sets.

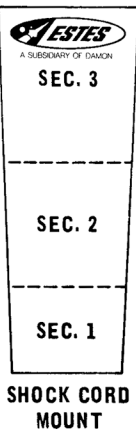
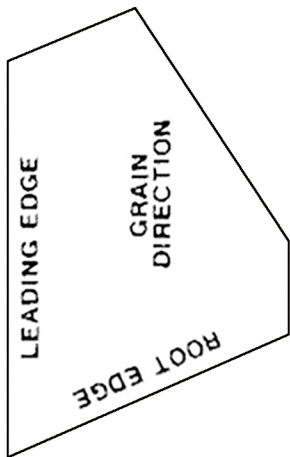
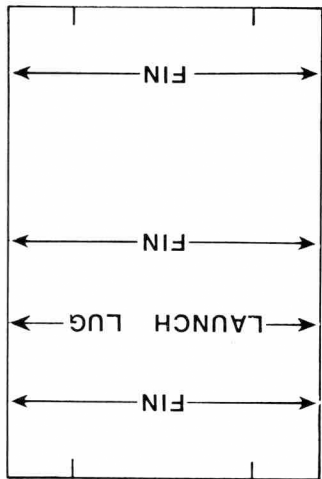
10 Cut out the parachute on the edge lines marked on the plastic. Cut six 8" lengths of shroud line and attach one to each corner of the 'chute with a tape strip as shown. Tie the free ends of the lines together.

11 Glue the nose block into the payload tube so that 1/2" of the block projects from the tube. Slide (do not glue) the nose cone into the other end of the tube.

12 Insert the screw eye into the base of the nose block. Remove and squirt a small amount of glue into the hole. Re-insert the eye into the hole.

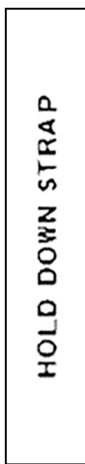
13 Tie the free end of the shock cord and the shroud lines to the screw eye.





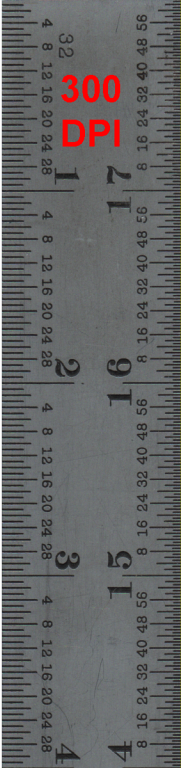
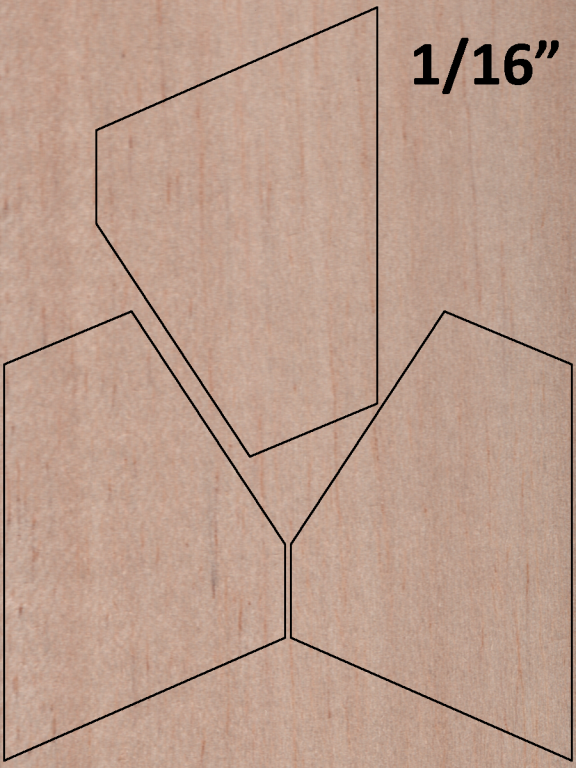
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SP-TK4



1/16"

**300
DPI**



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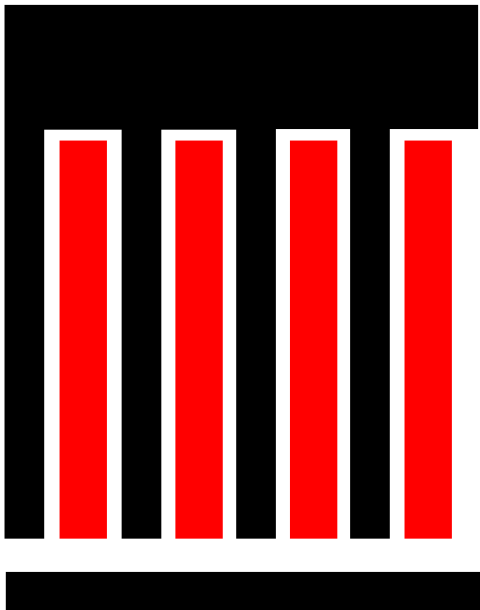
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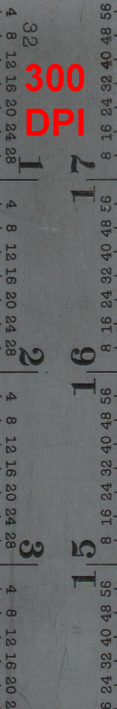
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6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
1 2 3 4 5 6 7 8 9 10



PN 37302

MINI BERTHA



PARTS LIST KIT NO. 0804/TK-4 - Hornet								
Quantity	Description	Type	Number	Details1	Details2	Details3	Details4	Comment
2	CENTERING RINGS	AR-520	30162	.69" OD	.542" ID	0.25" long	BT-5 in BT-20	Green
1	PAPER BODY TUBE	BT-5T	30308	1.5" long	0.515" ID	0.541" OD	0.013" wall	Glassine
1	ENGINE HOLDER	EH-3	3143	1.8" long	.125" wide	.025" thick		Mini
1	PAPER BODY TUBE	BT-30C	30344	5.5" long	0.725" ID	0.765" OD	0.021" wall	Glassine
1	Pattern Sheet	SP-TK4	N/A	3.5" wide	6.5" long	Card Stock		Scan
1	BALSA FIN STOCK	BFS-20E	?	3" wide	4" long	1/16" thick	0.0625	Scan
1	LAUNCH LUG	LL-2A	2321	5/32" ID	1/8" rod	1.25" long		Mylar
1	Shock Cord	SC-1	38367	18" long	1/8" wide			Rubber
1	Parachute	PK-8A	2260	8" dia.	12" x 6 Shrouds	LDPE plastic	Red/Wht	Damon Logo
1	Shroud Line	SLT-72	38237	72"	.020" diameter	Twisted cotton	3 x 24" shrouds	
6	Tape Strip	TD-2F	2297	1/4" wide	3/4" long	Paper	Self-Stick	6x
1	BALSA NOSE BLOCK	NB-30	70156	.75" long	0.725" dia.			BT-30
1	PAPER BODY TUBE	BT-30J	30348	2.75" long	0.725" ID	0.765" OD	0.021" wall	Glassine
1	BALSA NOSE CONE	BNC-30D	70244	1.5" long	.767" dia.	.375" shoulder		
1	Screw Eye (Small)	SE-2	2283	3/4" long				
1	Decal	KD-0803	37302	3.5" wide	3.75" long	Red, Blk	Waterslide	Scan
Decal from Mini-Brute Bertha included since Hornet had no decal but face card shows mini-bug decal.								



Model Rocketry

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MINI-BRUTE
HORNET

Not available in catalog.



BONUS

TINY TIM
MOODY CENTER

HORNET

BONUS KIT TK-4

SPECIFICATIONS	RECOMMENDED ENGINES
Length 10.25 in.	1/4 A3-2T
Body Dia. ... 0.787 in.	A3-2T
Weight 0.501 oz.	A3-4T

PARACHUTE RECOVERY



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Flying Model Rocket

\$1.19

mini-BRUTE HORNET



- SLEEK DESIGN
- PAYLOAD SECTION
- GREAT PERFORMANCE

SKILL LEVEL 1

1-Beginner 2-Intermediate 3-Craftsman 4-Advanced 5-Expert

SPECIFICATIONS

Length 10.25" (26.1 cm.)	Weight 0.5 oz. (14 g.)
Body Dia. 0.767" (19.6 mm.)	Parachute Recovery

RECOMMENDED ENGINES

1/2A3-2T A3-2T A3-4T

Use 1/2A3-2T for first flights.

Engines and launcher not included.

TK-4
#0804

ESTES INDUSTRIES
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FLY Estes Model Rockets

ESTES INDUSTRIES
PENROSE, COLO. 81240

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

Nose Cone



mini- BROU HORNET



- SLEEK DESIGN
- PAYLOAD SECTION
- GREAT PERFORMANCE

SKILL LEVEL 1

1—Beginner 2—Intermediate 3—Craftsman 4—Advanced 5—Expert

SPECIFICATIONS

Length	10.25" (26.1 cm.)	Weight	0.5 oz. (14 g.)
Body Dia.	0.767" (19.6 mm.)	Parachute Recovery	

RECOMMENDED ENGINES

1/2A3-2T A3-2T A3-4T

Use 1/2A3-2T for first flights.

Engines and launcher not included.

TK-4
#0804

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