



# renegade

KIT NO. 1271

## ASSEMBLY INSTRUCTIONS

match lines

FIN CENTER

SP-71 RENEGADE FIN SPACING GUIDE

FIN CENTER

LAUNCH LUG CENTER

FIN CENTER

match lines

A

I

O

P

N

A

B

L

Q

C

K

L

K

K

H

D

F

E

H

R

ESTES renegade

### PARTS LIST

A	1	Fin Spacing Guide SP-71 (on back of bag panel) .....	83163
B	1	Body Tube BT-60 (18" long) .....	30396
C	1	Body Tube BT-60HE (8-1/2" long) .....	30410
D	1	Body Tube BT-50KE (15" long) .....	30364
E	1	Body Tube BT-52AG .....	30378
F	1	Engine Block AR-2050 .....	30164
G	1	Engine Hook EH-2 .....	35025
H	1	Ring Set TA-71 .....	30053
I	1	Plastic Nose Cone (PNC-60AH) .....	71043
J	1	Shock Cord SC-2MF (36" long) .....	85742
K	1	Die Cut Balsa Fin Sheet BF-71 .....	32237
L	2	Launch Lug LL-2AM .....	38176
M	1	Decal Sheet KD-71 (Water Transfer) ...	37071
N	1	Parachute PK-18A .....	85566
O	1	Shroud Line SLT-108 .....	38239
P	1	Set of 6 Tape Discs TD-3F .....	38406
Q	1	Stage Coupler JT-60C .....	30266
R	1	Engine Block Spacer EC-6 .....	35012

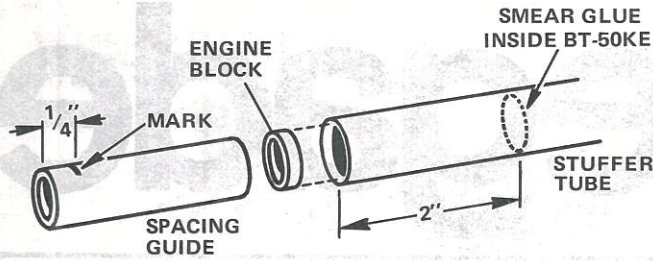
In addition to the materials included in this kit, you will need: White glue; model knife or single edge razor blade; pencil; ruler; sandpaper; paints; and masking tape.

### IMPORTANT:

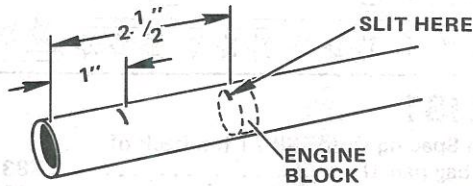
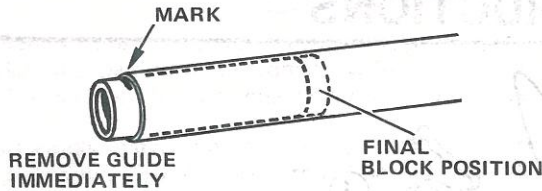
Read all instructions before beginning work on your Renegade. When you are thoroughly familiar with the construction sequence, begin construction. Check off each step as you complete it. Use white glue for all glue joints.

**ESTES INDUSTRIES**  
A SUBSIDIARY OF DAMON  
PENROSE, COLO. 81240

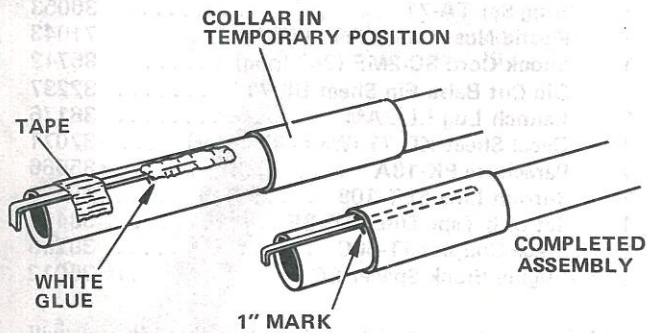




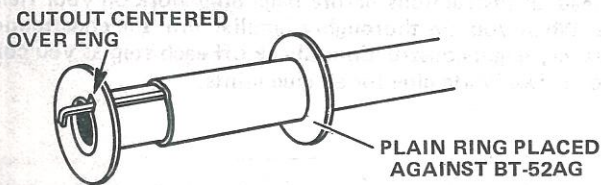
**1** Mark engine block spacer (part R) 1/4" from one end. Use your finger or a stick to smear a band of glue inside stuffer tube (part D) about 2" from one end. Insert engine block (part F) into this end and use spacer to push engine block into place (with mark on spacer even with end of tube) with one smooth movement. Remove guide immediately.



**2** Cut a 1/8" slit in stuffer tube 2-1/2" from engine block end (even with rear edge of engine block). Mark stuffer tube 1" from this end. Temporarily tape engine hook (part G) in place.

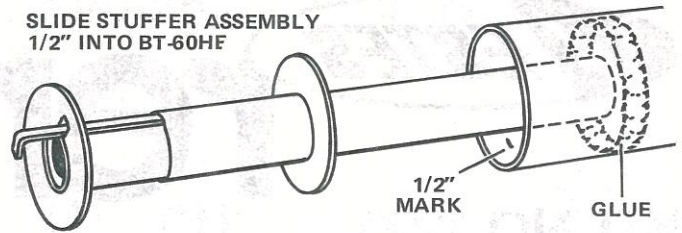


**3** Apply a heavy line of glue on engine hook from slit to 1" mark. Slip engine hook retainer (part E) onto forward end of stuffer tube and slide it back over engine hook to the 1" mark. Wipe away any excess glue and remove tape from engine hook.

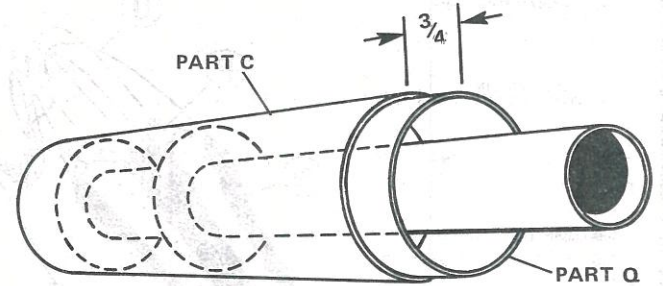


**4** Remove centering rings from ring set (part H) and glue two of the rings on stuffer tube as shown. One ring has a cutout for the engine hook and should be placed at engine hook end of tube. Place plain ring against engine hook retainer and glue. Save third ring (with 5/16" long slit) for later use.

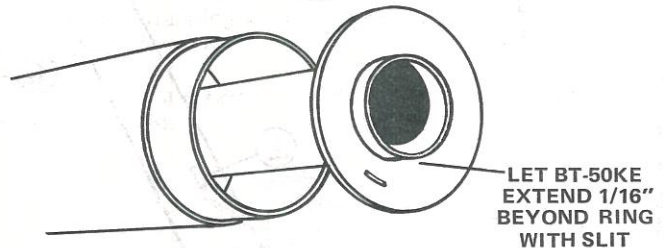
**SLIDE STUFFER ASSEMBLY  
1/2" INTO BT-60HF**



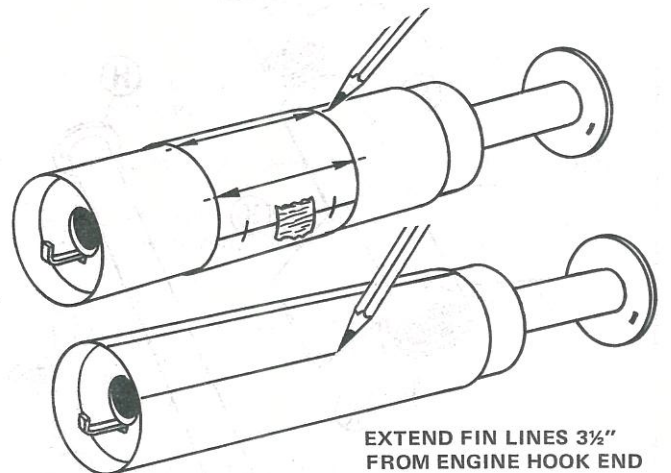
**5** Mark inside of body tube (part C) 1/2" from one end. Smear a band of glue inside part C about 2" from marked end. Insert assembly from step 4 into part C from marked end until rear centering ring is even with 1/2" mark. Apply glue to rear ring/tube joints. After glue is fully dry, apply a second coat of glue to ring/tube joints at each of the two ends.



**6** Glue stage coupler (part Q) into forward end of part C. Part Q should extend 3/4" beyond end of part C. Wipe off any glue on exposed portion of part Q.

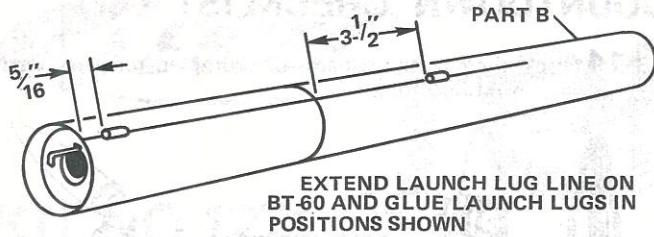


**7** Glue centering ring (with slit in it) onto end of stuffer tube as shown. This ring was saved in step 4.

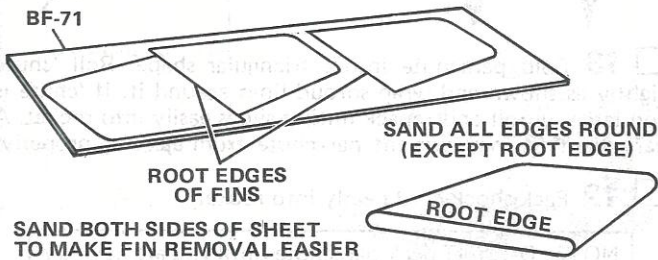


**8** Cut out fin spacing guide (part A). Wrap guide around the 8-1/2" long body tube (part C) and tape ends together with alignment marks matched. Mark body at each arrow point. Use a pencil because ink will show through paint. Remove spacing guide and connect each set of marks with a straight line. Fin lines should extend 3-1/2" from engine hook end of tube. The launch lug line should be extended to both ends of tube.

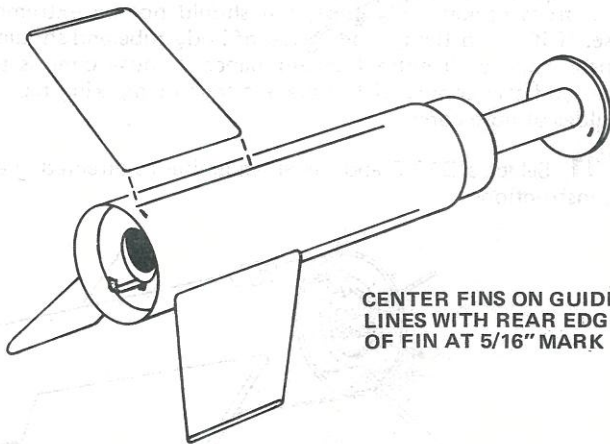




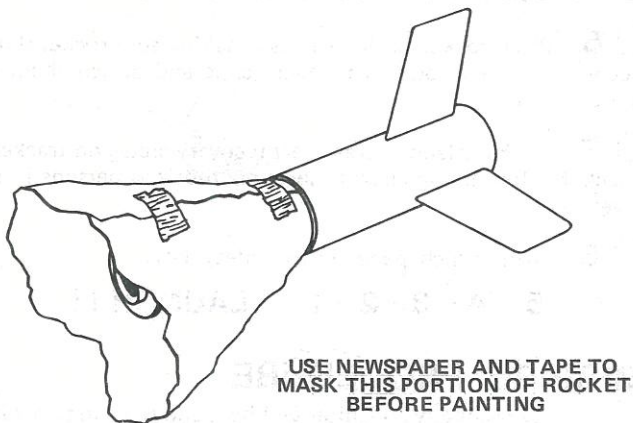
9 Temporarily slide part B over forward centering ring and stage coupler. Extend launch lug line as shown. Glue two launch lugs (part L) on launch lug line at illustrated locations. Remove part B and set aside temporarily.



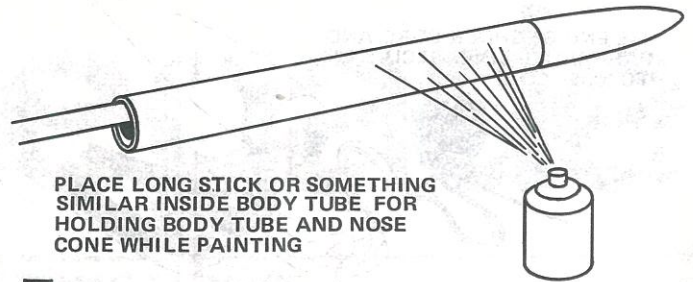
10 Lightly sand both sides of die-cut balsa fin sheet (part L) and remove fins. Gently sand all fin edges (except root edges) to airfoil shape shown.



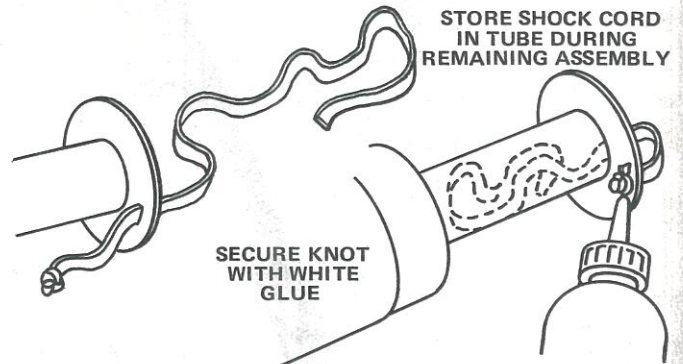
11 Mark each fin line 5/16" from rear of part C. Glue a fin on each fin line (centered on line) with rear edge of fin at 5/16" mark.



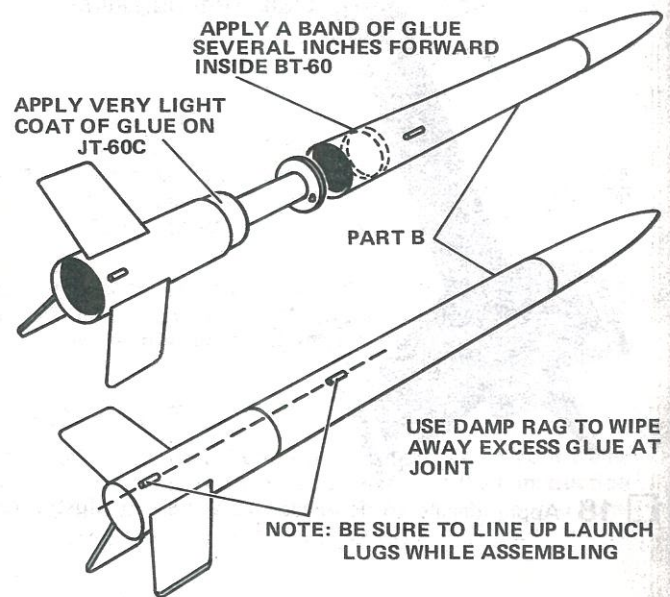
12 Use newspaper and masking tape to mask stage coupler and stuffer tube. Paint fin unit. Use Flat Black enamel spray for suggested paint pattern.



13 Use a long stick or similar object to hold main body (part B) and nose cone while painting. For best results, apply a white base coat first, then follow with Rocket Red fluorescent spray paint. The reason for painting rocket sections separately is to give a clean, crisp separation between colors. Be very careful if you use paints other than enamel spray paints; some paints may attack plastic. Try any untested paints on scrap plastic parts before using them on your rocket. Allow paint to dry thoroughly before proceeding to next step.



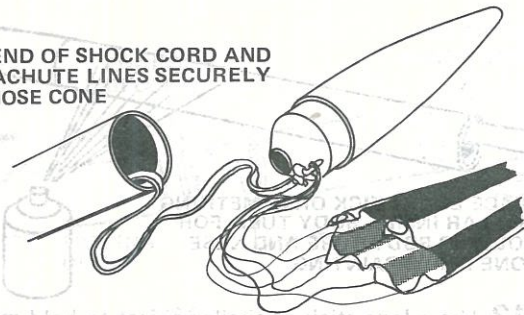
14 Tie a secure double knot at one end of shock cord (part J). Push unknotted end through slit in forward centering ring (from rear) and pull knot against ring. Apply a heavy coating of white glue over knot to hold it in place. Insert shock cord in stuffer tube to store it while continuing assembly.



15 Smear a band of glue inside part B as shown and apply a very light coat of glue on stage coupler. Being very careful to line up launch lugs on fin unit and forward tube, slide part B over centering ring and stage coupler. If glue squeezes from joint between body tubes, use a damp rag and wipe off excess glue immediately (be careful not to smear glue).

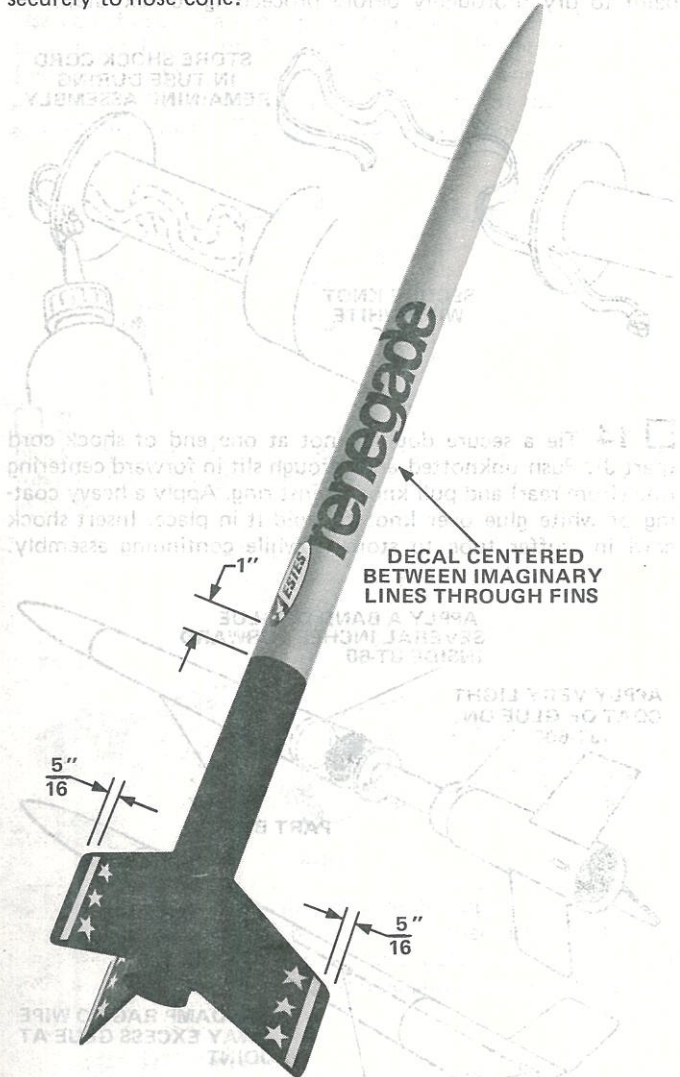


**TIE END OF SHOCK CORD AND PARACHUTE LINES SECURELY TO NOSE CONE**



**16** Remove nose cone from rocket and pull shock cord from stuffer tube (be sure that it comes out front end of tube). Tie end of shock cord to nose cone with a secure double knot.

**17** Assemble parachute (part N) according to instructions on parachute. You also use shroud line (part O) and tape discs (part P) for parachute assembly. Tie completed parachute securely to nose cone.



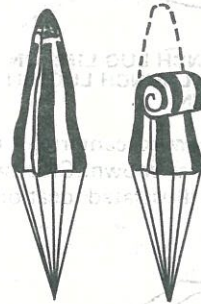
**18** Apply decals to Renegade as shown in illustration.

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

\*HIAA-NAR - Hobby Industry Association of America  
 - National Association of Rocketry

## COUNTDOWN CHECKLIST

**14** Pack eight to ten squares of crumpled recovery wadding loosely into body tube.



**FOLD AND WRAP SHROUD LINES AROUND PARACHUTE**

**INSERT AFTER WADDING**



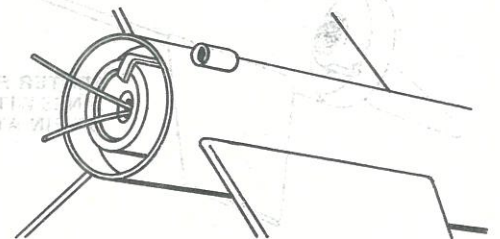
**13** Fold parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. If 'chute is too large, unroll and repack until it slides easily into rocket. A very tight fit may prevent parachute from ejecting properly.

**12** Pack shock cord neatly into rocket.

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

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

**11** Select a D12-5 and install an igniter as directed in engine instructions.



**10** Insert engine into rocket. Engine hook must latch securely over end of engine.

**9** Disarm launch panel--remove safety key.

**8** Place rocket on launch pad making sure rocket slides freely on launch rod. Clean micro-clips and attach them to igniter leads.

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

**6** Arm launch panel--insert safety key.

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

## MISFIRE PROCEDURE

Occasionally an igniter will heat and burn in two without igniting the engine. This is almost always caused by a failure to install it correctly. Disarm launch panel, remove the model, clean igniter residue from nozzle and install a new igniter. Follow launching procedure again.