

## CUSTOM ROCKET PLAN NO. 172



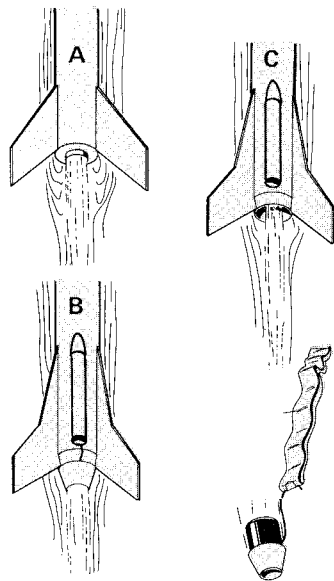
# BUILDING THE UNI-BIRD

A UNIQUE TWO STAGE ROCKET WITH A FINLESS "DROP-AWAY" ENGINE POD

The UNI-BIRD is a new breed . . . a large efficient multi-stage rocket that employs UNIBODY STAGING. This new development from the Centuri R&D staff is based on this principle: The first stage section does not need fins if the upper stage fins are swept back.

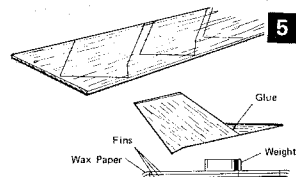
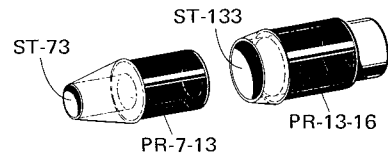
The UNI-BIRD is recommended for rocketeers who have built and flown standard multi-stage kits and are ready to move on to a new challenge. It is easily assembled from Centuri parts and also includes an ejection baffle system that eliminates the need for chute wadding.

The first stage engine is positioned in a finless booster pod which tucks into the upper stage. A small recovery streamer is attached to the booster pod and inserted into the streamer storage pod. In flight, the booster pod will return safely via its streamer while the large second stage climbs upward to apogee.

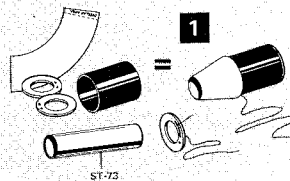


Conventional rockets, lacking a tapered section at the rear of the body tube (called a "boat tail") cause the airstream to become turbulent. This turbulence decreases efficiency and in turn decreases its altitude. (Fig. A)

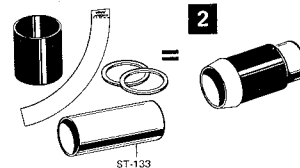
The UNI-BIRD on the other hand, has a double "boat tail" (Fig. B), and allows the airstream to mix with the engine exhaust during the first stage liftoff . . . and continue to mix during the second stage on its upward flight to apogee (Fig. C). This "mixing" offers less resistance and will allow the rocket to attain higher altitudes.



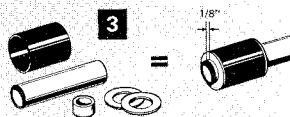
5. Trace the fin pattern outline and transfer to the 3/32" balsa sheet. Cut out carefully - sand if necessary - and glue the fin leaders to the main fins. Place the fins between wax paper. Put a weight on top. Allow to dry.



1. Using the ST-73 tube, assemble the PR-7-13 paper reducer per the package instructions, with one exception, i.e. . . . add the streamer line as shown above. Allow to dry.



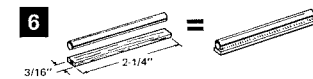
2. Using the ST-133 tube, assemble the PR-13-16 paper reducer per the package instructions. Allow to dry.



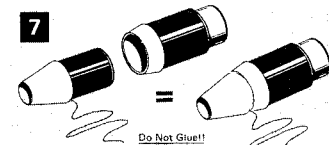
3. Assemble the EM-13 Engine mount per package instructions . . . making sure that the end opposite the thrust ring projects 1/8" as shown.



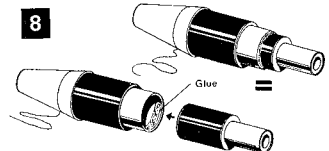
4. Assemble the EB-16 Ejection baffle per package instructions. Allow to dry.



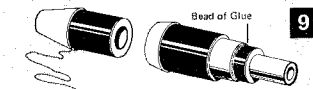
6. Using scrap Balsa - make two standoffs and glue to the LL-2 launch lugs as shown. Allow to dry.



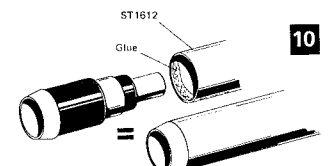
7. Now that the paper reducers are dry, slip the small reducer into the large one. **DO NOT GLUE!!!**



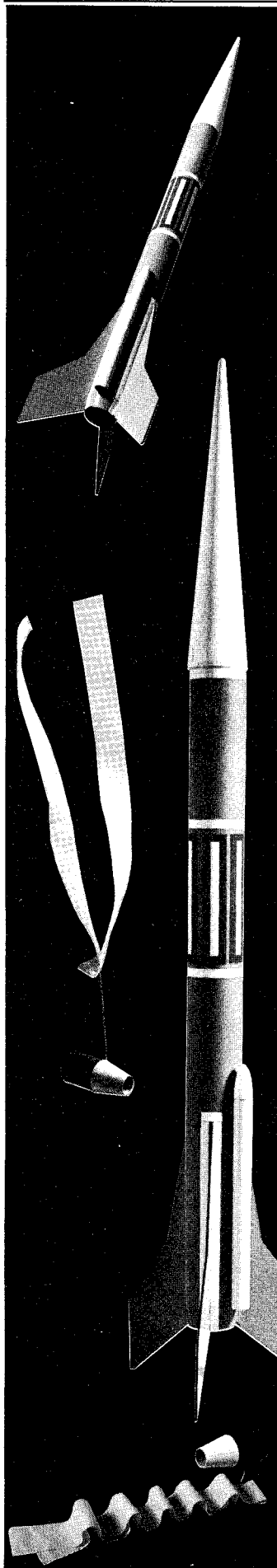
8. Apply the glue to the inside of the large end of the paper reducer and insert the engine mount as far as it will go.

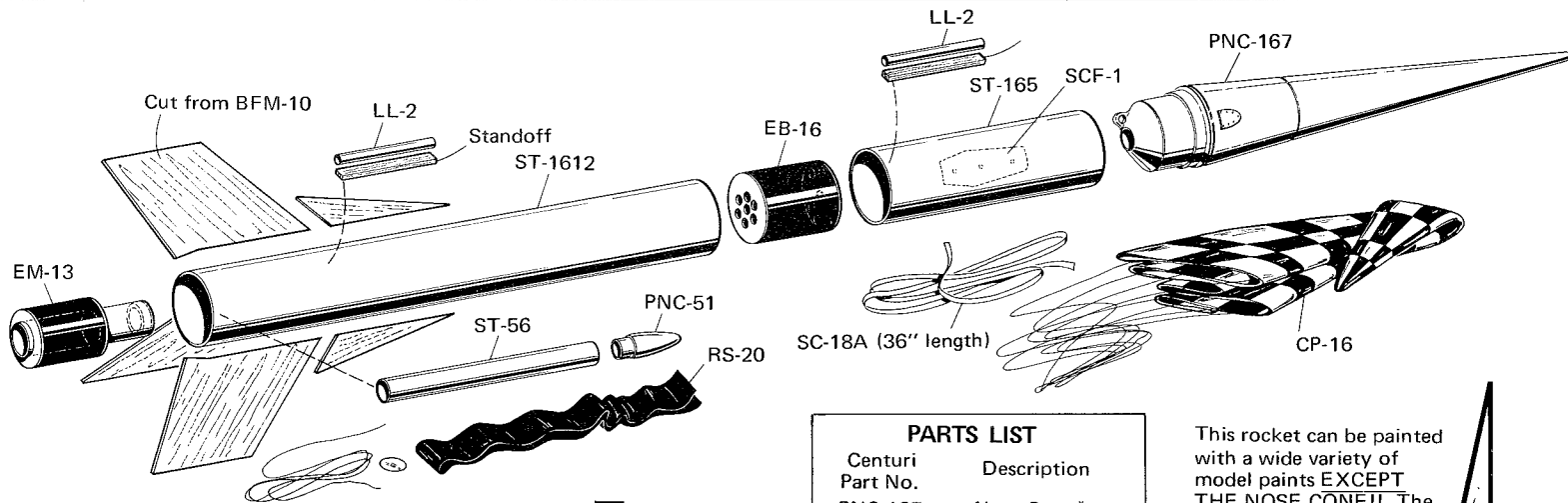


9. Remove the small reducer. Apply a bead of glue around the exposed part of the engine mount.



10. Glue the assembled reducer/engine mount into the long body tube with a generous amount of glue.





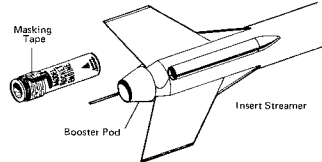
**PARTS LIST**

Centuri Part No.	Description
PNC-167	Nose Cone*
ST-165	Body Tube
ST-1612	Body Tube
ST-73	Body Tube
ST-133	Body Tube
PR-7-13	Paper Reducer
PR-13-16	Paper Reducer
EM-13	Engine Mount
BFM-10	Balsa Sheet (2)
LL-2	Launch Lugs (2)
ST-56	Body Tube
PNC-51	Nose Cone
RS-20	Streamer
CP-16	Parachute
EB-16	Ejection Baffle
SC-12A	Shock Cord
SCF-1	Shock Cord Fastener

This rocket can be painted with a wide variety of model paints EXCEPT THE NOSE CONE!! The special plastic material will not accept paint successfully. Trimming the finished rocket with Centuri custom decals always adds exciting eye appeal. PRO-STRIFE is also useful for interesting detail. (See photo at left).

\* This part is not listed in current catalog but is available at your dealer.

C. Insert the booster pod. Insert the tightly rolled streamer in the streamer tube. Wrap masking tape on the nozzle end of the booster engine (first stage) and insert engine. It should fit snugly. The rocket is now ready to launch. For best results . . . use "sure-shot" igniters.

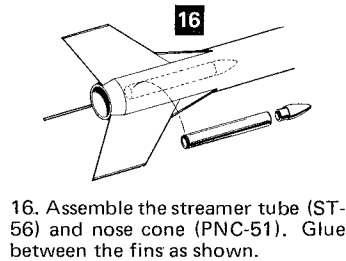


**RECOMMENDED ENGINES**

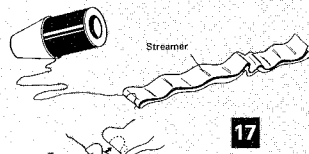
Booster Pod	Sustainer
B14-0	B6-6
C6-0	C6-7

**SPECIFICATIONS:**

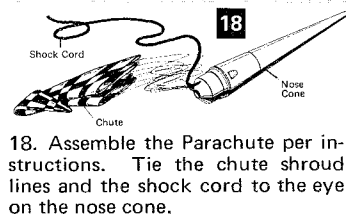
Length..... 28.75"  
 Diameter..... 1.64"  
 Weight..... 4.1 oz.



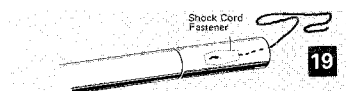
16. Assemble the streamer tube (ST-56) and nose cone (PNC-51). Glue between the fins as shown.



17. Fasten the streamer (RS-20) to the streamer line.



18. Assemble the Parachute per instructions. Tie the chute shroud lines and the shock cord to the eye on the nose cone.

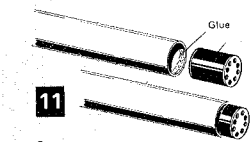
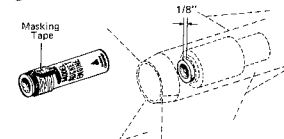


19. Fasten the shock cord to the shock cord fastener (SCF-1). Firmly press the pressure sensitive fastener about finger depth into the body tube.

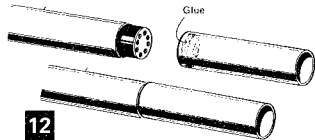
**FLYING INSTRUCTIONS:**

A. Carefully pack the Parachute into the body tube. Chute wadding is not needed in this rocket since it utilizes the ejection baffle system. You may wish to sprinkle chute (PDR-17) on your parachute for lubrication and tracking. Insert the nose cone.

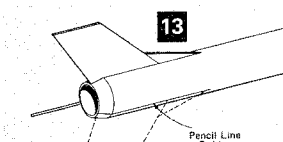
B. Wrap masking tape on nozzle end of the sustainer (upper-stage) engine and insert into engine mount. It should project 1/8" out of the engine mount.



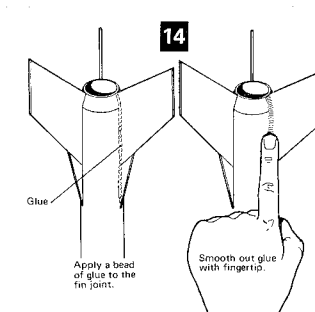
11. Apply a generous amount of glue inside the other end of the long body tube and insert the ejection baffle halfway in . . . making sure that the small cluster of holes points toward the engine end.



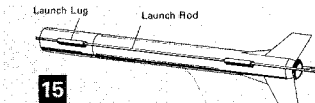
12. Again apply a generous amount of glue inside one end of the short body tube and slip over the exposed end of the ejection baffle.



13. Apply fillercoat to the fins - sand smooth and glue to the body tube using the fin guide shown with the fin templates at right.



14. After the fins are dry, apply a fillet of glue on both sides of each fin.



15. Glue the launch lugs on the body tube - aligning carefully with your launch rod. Remove rod - allow to dry.

