PEAK OF FLIGHT

NEWSLETTER

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Prepping Kit Parts Before Assembly

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APOGEE COMPONENTS

Prepping Kit Parts Before Assembly

By Chris Michielssen

Right out of the kit bag, most kit parts are pretty good and will assemble into a flying model rocket. But there are some steps you can take before assembly that will make for a better fit and a stronger model.

Figure 1: Comparing couplers.

Some Red and Brown couplers are way too tight. You'll find tight red couplers in some Estes kits. Newer formula "Now Stronger" glue formulas are thinner than the older glues. Many builders have had the couplers freeze in the wrong position when using the new thinner glues. On the left is a too tight coupler, straight out of the kit bag. On the right is a better fit coupler after some aggressive sanding (**Figure 1**).

Figure 2: Sanding the coupler for a better fit.

In **Figure 2** the coupler's outside diameter is being reduced with 220 grit on a sanding block. Almost all the red paper layer is being removed. Also round the edge for easier insertion.

Figure 3: Comparing tube end joints.

Body tube ends aren't always flat and square. A small vendor might be cutting tubes by hand. On the left are two tubes dry fitted with an interior coupler. The tube end joint isn't clean. On the right is the 'after" picture with a tighter joint (**Figure 3**).

Figure 4: Sanding the tube end joints.

Square and flatten tube joints by using a sanding block with 220 grit sandpaper (**Figure 4**). This will make the joint filling easier.

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Figure 5: Fixing a lifted piece of spiral wrapping.

Check the cut tube ends. Sometimes a interior spiral wrap might be lifting. If you don't take care of this it could get bigger every time the nose cone is inserted. Apply a small amount of white or yellow glue under the lifted corner and roll a dowel over it to set it down (**Figure 5**). TIP: Glue down a lifted tube corner with white glue before strengthening the tube ends with CA glue. Super Glues will seal the tube and white glue won't stick or be absorbed in a treated tube.

Figure 6: Medium Super Glue.

You can strengthen and seal tube ends with medium Super Glues. I buy mine at Dollar Tree stores, two small bottles for $1.00. This tube end hardening treatment won't stop a Kevlar zipper, but your tube ends will show less wear after many flights. Squeeze out a drop or two on some scrap cardboard (**Figure 6**).

Figure 7: Strengthening tube ends with Super Glue.

Use a Q-tip applicator to apply the glue around the inside end of a tube (**Figure 7**). Use your fingers along the top of the tube as a depth guide. You don't have to go too deep and never coat the entire inside surface if you are gluing in an engine mount. As mentioned before, the CA glue seals the tube. No white or yellow glue will absorb after a CA glue is applied.

Lightly sand and smooth the inside of the tube with 400 grit. (**Figure 8**)

Figure 8: Sanding the inside of the tube.

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Many don't realize that balsa parts cut with a laser do not have perfectly squared edges. Depending on the laser settings and density of the wood, the laser cuts are a wedge shape. The cut is sharper and narrower at the top and wider at the bottom where the beam is slightly diffused. The picture shows the burnt edge after a sanding block was used at a 90 degree angle. If you were to simply punch out a laser cut fin and glue it to a body tube, the rough cut fin could be glued at a slight angle. Always square up the fin edges, just sanding off the dark burnt edges. Be sure to keep your sanding block at a 90 degree angle while sanding (**Figure 9**).

Figure 9: Squaring off balsa fin edges with sandpaper.

Figure 10: Rounding off the shoulder of a nose-cone.

The shoulders on a balsa nose cone can sometimes be rounded off. **Figure 10** shows the before and after. Use the body tube edge to sharpen and "cut" a square shoulder lip.

Rough up the body tube end with 220 grit on a block. Inset the nose cone and turn it against the rough tube end. This "sands" the round shoulder square. You'll notice a difference in the fit, especially after the paint is applied (**Figure 11**).

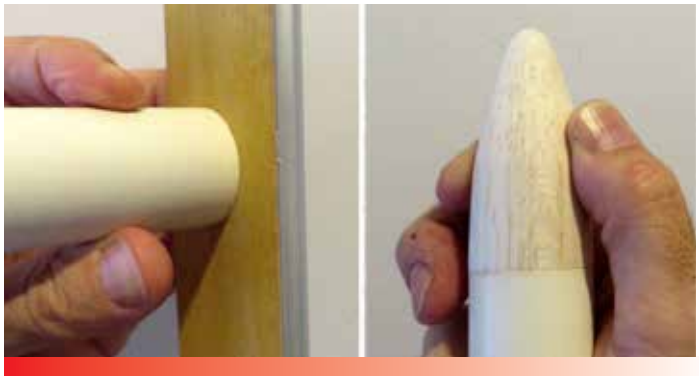

Figure 11: Using the rough edge of the body tube to "sand" the round shoulder square.

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Figure 12: Smooth the edges of the tie down lug with a small fine saw.

Check the tie down lug on a molded plastic nose cone. The older the mold, the rougher the seams can be. On the left side is some rough flashing that could actually wear and cut through a shock cord over time. Use a small fine saw to smooth off any rough edges (**Figure 12**).

Figure 13: Smooth down the molding seams on your plastic nose cones.

Most all plastic (injection and blow molded) nose cones will have molding seams. Again, the older the plastic mold, the deeper the seams. First, sand down the high seam lines with 220 grit on a sanding block (**Figure 13**).

Figure 14: Seal the seam furrows with Super Glue.

You'll probably be left with some seam furrows. These can be filled with medium CA. Apply a bead of glue over the ruts. It will take the bead of CA glue a few minutes to dry. Set the nose cone on its side so the glue won't run. After the glue dries it'll be like glass and can be sanded to surface with 220 grit. After that smooth out with 400 grit (**Figure 14**).

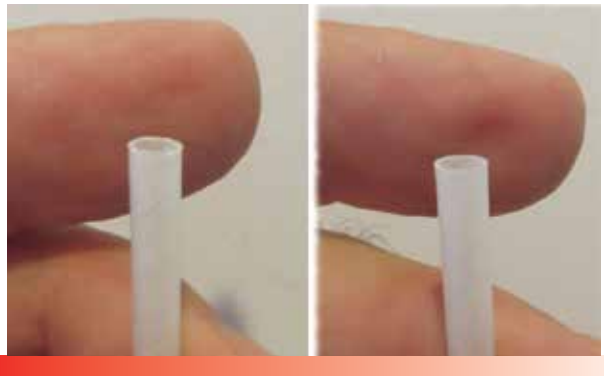

Figure 15: Sanding your launch lugs.

Check the cut ends of the launch lugs to make sure the are no burrs. A lifted lug edge could hang your rocket up on a launch rod at ignition. Sand the lug ends with 400 grit on a sanding block (**Figure 15**).

Figure 16: Use a sharpened dowel to finish cleaning out the launch lug.

Check the ends with a sharpened dowel. Lift out and sand off any rolled under Mylar skin. Round out the lug with the tapered dowel (**Figure 16**).

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Figure 17: You may need to replace the paper rings on your parachute if they are easily tearable.

Many kits have pre-assembled parachutes. Give the shroud lines a good pull and check their strength. You might find the shroud lines break very easily. These lines probably wouldn't last through a few strong ejections. Pre-made chutes don't use shroud lines made from strong Button and Rug Thread anymore. The shroud lines might have to be replaced. Also take a look at the reinforcement disks. If there is a tear started they are probably made of paper, not plastic. I removed a disk and it easily tore. It was just glossy paper, not offering any extra strength to the plastic parachute (**FIgure 17**). If you can, find some permanent Avery disks, #5279 for a stronger replacement.

About the author:

Chris Michielssen is an avid builder and flyer of low power model rockets. He produces Odd'l Rockets and accessories, available from Apogee Rockets. His building blog:

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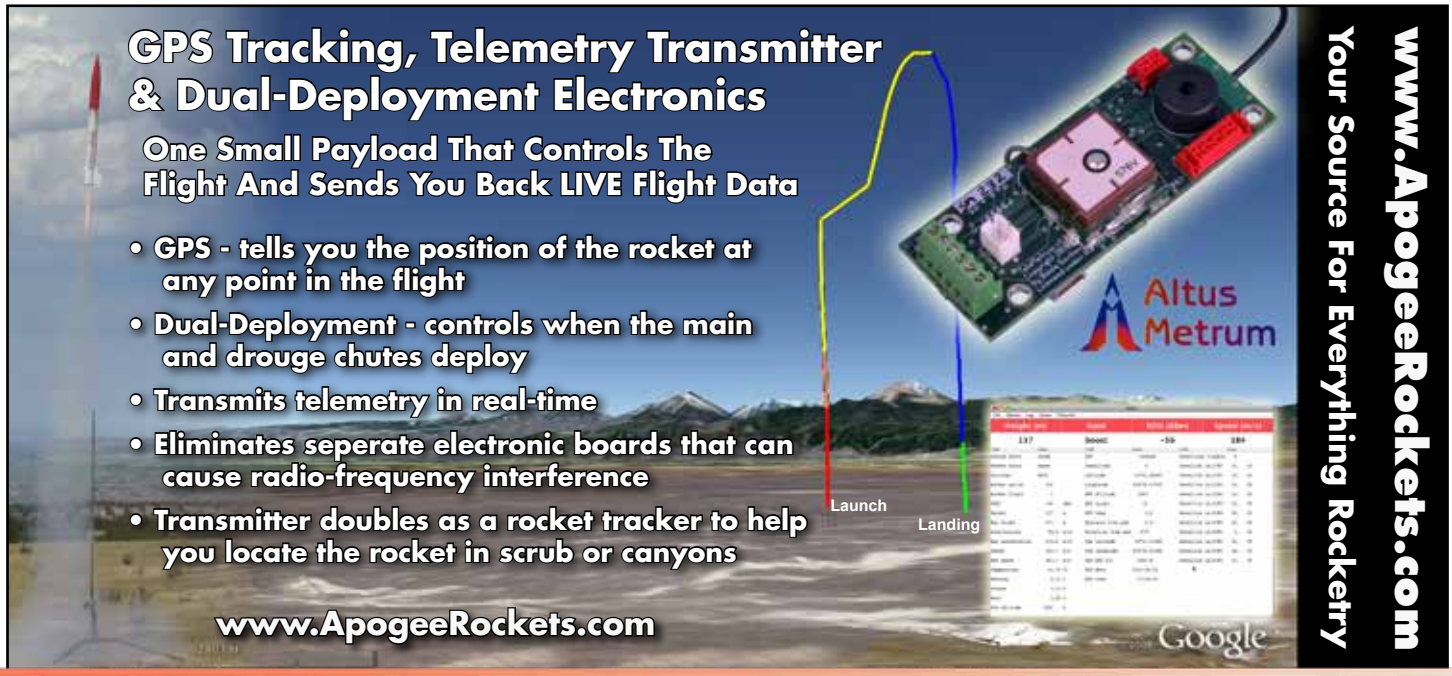
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