

# TRUST THE TUCK METHOD

**Prevent snagging and poking from loose cotter pin ends**

BY CAROL AND BRIAN CARPENTER

Cotter pins have been commonplace in aviation as far back as the Wright brothers. This also appears to have been the same time frame that the last update was made in regard to the subject of cotter pins. Even FAA Advisory Circular (AC) 43.13-1B is unchanged from its original version and dedicates only two paragraphs to the subject: “Cotter pins are used to secure such items as bolts, screws, pins, and shafts. Their use is favored because they can be removed and installed quickly. The diameter of the cotter pins selected for any application should be the largest size that will fit consistent with the diameter of the cotter pin hole and/or the slots in the nut. Cotter pins should not be reused on aircraft.” (Part 7-127 a.)

This information is followed by a brief, one sentence paragraph that reads, “To prevent injury during and after pin installation, the end of the cotter pin can be rolled and tucked.” (Part 7-127 b.) In this article, we will reference Part 7-127 b. to justify a different method for installation of the venerable cotter pin.

Even as far back as the 1970s, a dilemma concerning cotter pins was encountered by the hang gliding community. For the hang glider pilots, nearly every day of flying involved “bagging” and “unbagging” the wing. This was a process by which the hang glider wing, fabric, tubing, cables, and every other part was folded up and tucked together inside of a long tubular fabric bag that was zipped together. The purpose, of

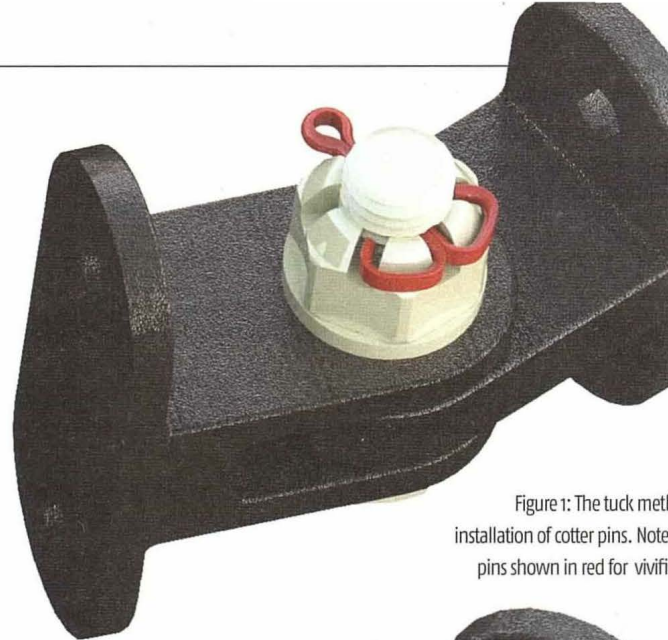


Figure 1: The tuck method installation of cotter pins. Note pins shown in red for vivification.



Figure 2: The standard cotter pin installation method. AC 43.13-1B Figure 2-1.



Figure 3: The alternate cotter pin installation method. AC 43.13-1B Figure 2-2.

was for protecting and transporting the hang glider on vehicle to and from the gliding site. of the most disheartening, yet common occurrences during the unbagging or setup process. As the forming spars were unfolded and spread out into the typical configuration, the sharp, cutoff end of a cotter pin would cut on the fabric causing a tear. Over the years, and out of necessity, many different methods were developed and used to protect the fabric from these little cutoff cotter pin ends. But one method rose to the top and became commonplace in the hang glider community subsequently has become standard practice in the light industry

today. We refer to this as the tuck method of installing a cotter pin. (Figure 1)

In AC 43.13-1B Chapter 7 Part 127, there are two acceptable methods. The first is the standard method (Figure 2), and the second is the alternate method (Figure 3). The tuck method is simply a variation on the alternate method, and paragraph b provides justification for the tuck method as acceptable practice.

If you have never used this method before, there are a couple of tricks that will make the installation simple, easy, and clean.

Step 1 (Figure 4): Insert the cotter pin horizontally and pull snug with a pair of needle nose pliers and wrap the cotter pin legs around the perimeter

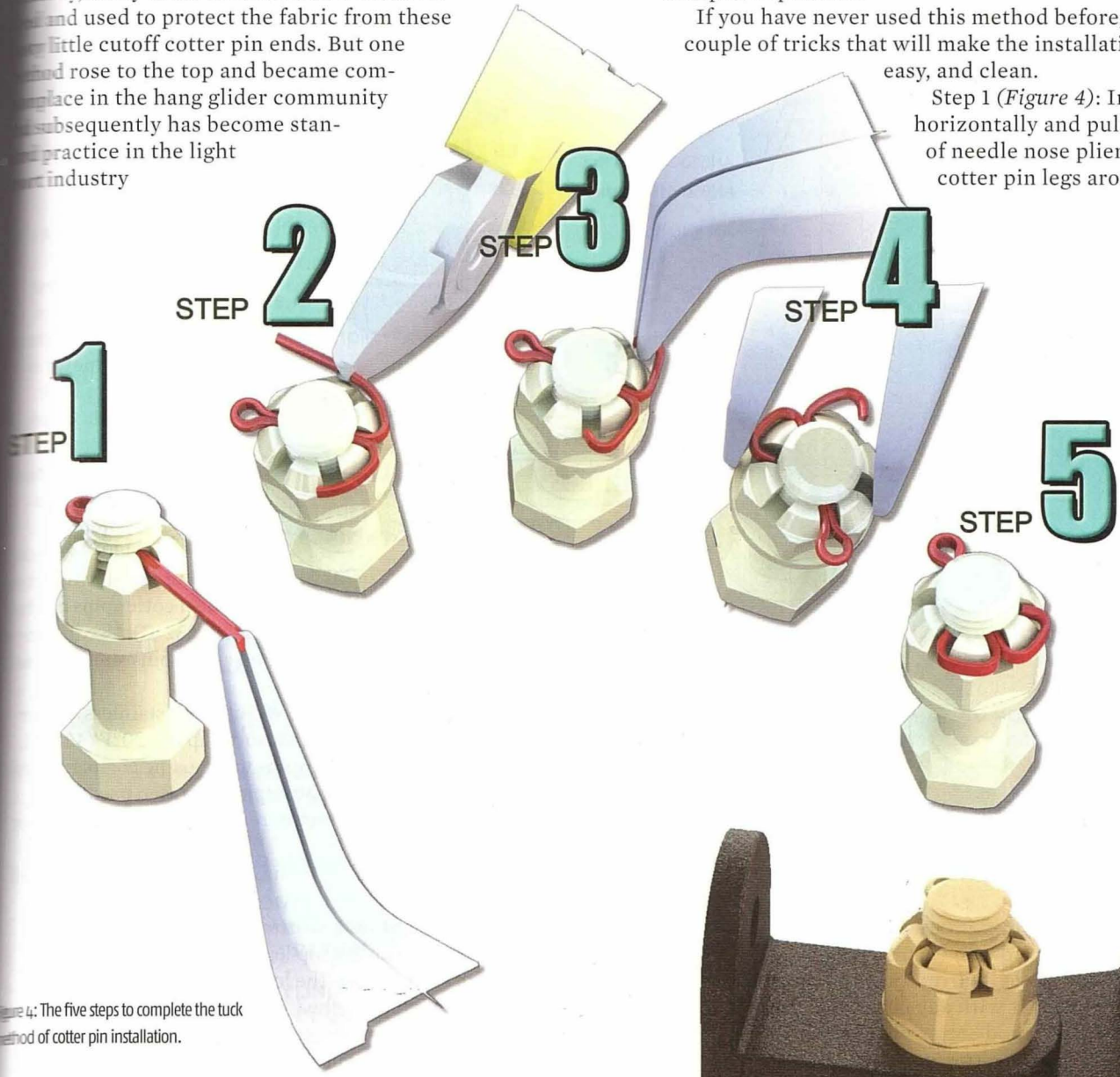


Figure 4: The five steps to complete the tuck method of cotter pin installation.



Figure 5: Use of a castle nut and cotter pin where the nut and bolt are subject to rotation.