

Groppo Trail

Strut to Wing - Attachment Bolt Life

The Groppo Trail is a high wing strut braced monoplane of all metal construction, seating two in an enclosed cockpit with tandem seating, the aircraft, designed by Nando Groppo and marketed by Sprite Aviation of Dover, is designed to be sold either as a completed aircraft or in kit form for assembly by amateurs.

The wings are designed to fold for storage, without the use of tools, being fitted with swivels so that withdrawal of the root pins allows the wings to be rotated 90 degrees to the leading edge down position and then rotated 90 degrees back to lie alongside the fuselage.

This wing fold-back option requires the top wing connection to be able to pivot in two dimensions; this design creates an unusual load path through one of the strut to wing attachment bolts.



Fig 2. The wing strut to wing connection; an LAA Initial Acceptance Requirement (IAR-372-020) requires that the upper and lower wing strut fixings have their nyloc nuts replaced with castle nuts.

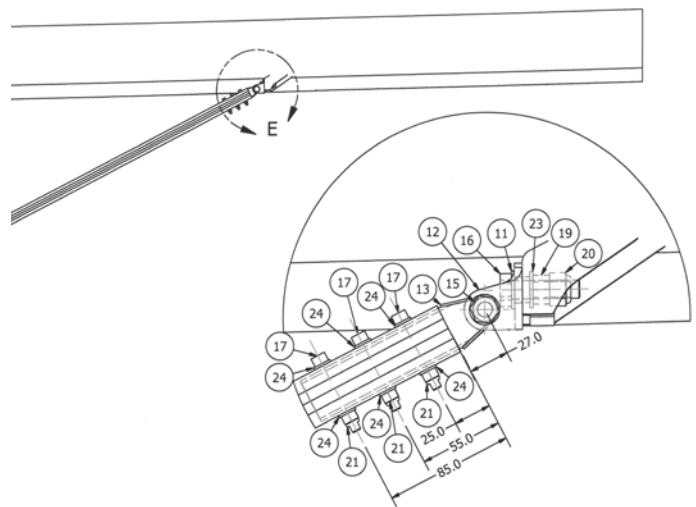


Fig. 1 Drawing showing the position of the strut to wing connection and close up of the cone connection. The 'lifer' bolt is item 16 in the close up.

For this reason, at the time the Trail was first cleared by the LAA, this bolt was given a very conservative in-service life of one operational year, simply as a means of allaying any concerns in this area and allowing the type acceptance process not to be delayed.

Now, after a number of years in service, further consideration has been given to this bolt so, with a sensible safety factor, this bolt's life has now been re-defined as 200 flight hours (subject to a special check at the initiation of this life that the bolt is new and has been properly installed).

In addition to this hours-based life, an annual 'close inspection' check of this connection has been mandated – both the bolt life and the required annual inspection checks will be detailed in an LAA Airworthiness Information Leaflet which will be published shortly.