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KITFOX SERVICE LETTER #25
March 12, 1993

SUBJECT: Lift Strut Attachment

TO: Kitfox Owners, All Models

FROM: SkyStar Aircraft Corporation

Recent experience with creation of the Kitfox XL manual has allowed us to rethink the way we answer two commonly asked questions:

1. How do I make sure my dihedral is set correctly?
2. What should I do if I find a need to force (lift with pressure) the forward or aft lift struts, to make them fit the spar mounted Lift Strut Brackets?

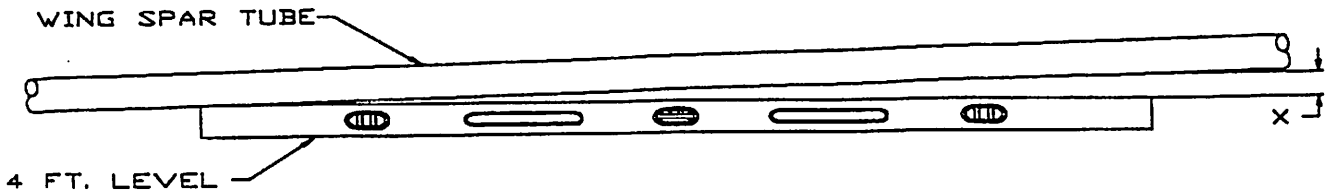
DIHEDRAL

The first question, regarding dihedral, is easy to answer through the use of a 4 ft. carpenter's level. Your first step is to follow the existing directions by positioning the Lift Strut Bracket onto the spars, so that the center of the Strut Bracket bolt hole is 96.75 inches from the root end of the spar for Model IV and XL aircraft. For the Speedster, use an initial starting point of 97.75 inches from the root end of the spar. The Lift Strut Brackets should be temporarily held in place with hose clamps. Follow existing instructions for temporarily installing both wings, making sure you DO NOT drill the rear spar bottom hole, or either top or bottom front spar holes, until a final dihedral check is made.

The final dihedral check is made only after making sure the fuselage is leveled both laterally and longitudinally. Once the fuselage is leveled, with the wings, struts and Lift Strut Brackets temporarily assembled, simply hold your 4 ft. carpenter's level up to the bottom of the leading edge spar at a mid span location. Because of the dihedral, the bubble will not be centered if the level is held firmly against the spar. Simply lower the "wing tip" end of the level until the bubble is centered. The following distance should exist between the "wing tip" end of the level and the spar:

WING DIHEDRAL CHECK

LEVEL THE AIRPLANE LATERALLY. PLACE A 4 FOOT LEVEL ALONG THE WING SPAR TUBE NEAR THE MID SPAN. CENTER THE BUBBLES IN THE LEVEL. OBTAIN MEASUREMENT 'X' (SEE BELOW). 'X' SHOULD BE WITHIN SPECIFIED RANGES.



Front Spar Model IV and XL = 1.1 - 1.4"
Front Spar Speedster = .31 - .35"

You can further increase dihedral accuracy by also checking the rear spar. After checking the front spar, simply multiply the value you measured (let's say it was 1.1") by 1.137. In this example, 1.1" x 1.137" = 1.25", meaning the top edge of your 4 ft. level should be 1.25" below the rear spar.

If these distances are not present, simply loosen the clamps holding the Lift Strut Bracket and move the brackets inboard to increase dihedral, or outboard to decrease dihedral. Once you are satisfied with overall wing alignment, complete the wing installation, as indicated in your Builders Manual.

STRUT FIT

In some cases, a gremlin called "weld warp" causes carefully jigged, welded parts to fit incorrectly when installed on an airframe. This "warping" results from unevenly heated surfaces acting upon surrounding metal in a fashion which distorts the intended shape. Fortunately, the flexibility of 4130 steel tubing permits such warping to be resolved, in many cases, by applying pressure on the part, to rectify the warped condition. The elevator to stabilizer fit is often subject to such warpage, and requires the builder to "nudge" parts until a pleasant fit is obtained.

Recently, we have seen some wing lift struts exhibit an alignment issue wherein, after attaching the forward strut to the front spar attach bracket, the rear strut hangs below the rear spar attach bracket. In some cases, a good deal of force must be applied to move the rear strut into place. Can anything be done about this.....you bet!

By clamping the "fuselage" end of the strut into a vise (with boards on each side to prevent scoring), a twisting force can be applied to the "wing" end of the struts, thereby correcting the misalignment. The diagram below shows the proper placement of clamps and force. The strut must be nudged past the actual point of adjustment required to allow for the natural springback. This process may be repeated several times until a tension free fit is secured. Absolutely no harm is caused to the struts, and you will have ensured a custom fit to your specific wing dimensions. Please feel free to contact Builder Support if you have any questions.