Ted Gladstone's Door Strut Mod

This is an idea developed by Ted Gladstone and his partner to avoid the tendency of the door frame to rise proud of the fuselage where the gas strut attaches, after a period of time in service. This was explained in a posting of 02Mar03 and to quote Ted:

I think ours is the gas strut mechanism to which you are referring.

All Europa aircraft have doors which progressively bend up over time at the rear due to the constant force of the door gas strut mechanism. Our doors fit perfectly and we do not want that fit to deteriorate. With the standard strut mechanism It is also difficult to ensure that the rear shoot bolt is correctly engaged, due to the twisting force exerted on the door by the gas strut.

This modification changes the way in which the Europa provided gas strut holds the door open. The gas strut is enclosed within a pair of hinged aluminium levers as you describe.

We have made a prototype and the result is most satisfactory. The door is opened and no immediate opening effect is felt until the door is about twelve inches out. The strut then gently and progressively takes over to produce a slow and even opening speed until it reaches the stop at the top.

Advantages:-

1. The lever pivot point on the door is moved further away form the hinge line. Thus lower forces are involved in holding the door open.

2. The line of force exerted by the lever is almost in the same planeas the centre of gravity of the door

3. The gas strut is totally contained within the folding levers and exerts NO FORCE IN ANY DIRECTION on the door or fuselage when the door is in the closed position. The forces that distort other Europa doors are completely removed.

4. The force that the levers exert on the door increases progressively from zero, when the door is closed, to a maximum when the door is fully open.

5. The levers are designed to reach their fully open position at about 160 degrees and are held in this position by the force in the gas strut. As a result there is no necessity to unlatch the levers to close the door.

We are in the process of completing the paperwork for an application to the PFA for mod approval.

From another message,

- - - - - - We have been able to use the Europa supplied gas strut - - - - it's a tight squeeze but it can be made to fit in the recess.

We carried out all the development work on the bare door frame and we thought the supporting force would be more than adequate. We fitted the Perspex last week, however, and we suspect that a strong gust of wind could, possibly, blow the door down - - - - don't know if this could happen with the standard setup.

We have adjusted the extent to which the levers open - - - - which should improve matters - - - and it is possible to have the gas struts re-pressurised to a higher pressure if necessary. We believe, however, that the advantages more than compensate for this minor problem.