
Door Gas Strut Repositioning

Classification: Optional

Applicability: All Europas

Compliance: N/A

Introduction

In some cases, it has been noted that the rear, upper corner of the Europa door has been forced upwards relative to the surrounding fuselage. The cause is most likely due to the weight of the door, when in the open position, reacting against the strut, which is several centimetres offset from the hinge. The load on the door is much reduced when the door is closed, so this is not considered to be a significantly contributing factor.

Heating from sunlight could sufficiently soften the polyester resin that the door is made from to allow slight distortion that remains after cooling.

Repositioning the attachment lug for the gas strut is one method of avoiding this potential problem and this modification describes how it is done. A moulding with the new lug already attached is provided to make positioning and fitting it easy, but also to provide the necessary reinforcement to the door's rear member. Below are photographs showing the original and modified arrangements for the gas strut.



Fig 1. Original mounting of gas strut.



Fig 2. Revised mounting of gas strut.



Installation

If fitted, remove the doors from the aircraft and protect the windows against scratches. The mouldings with the lugs on them are to be bonded to the original doors (having removed the original lug first) so the bond area needs to be properly prepared first. If the doors have been painted, the paint in the bond area will need to be completely removed, until the grey gel-coat is revealed.

Saw off the original lug flush to the inner skin and position the new lug moulding. Mark out the edges onto the door and scuff sand the entire area – scuff sand also the inside of the lug moulding.

Apply an even amount (not too much) of epoxy (laminating resin or Araldite 420), that has been slightly thickened with flox, to the inside of the moulding and position it onto the door. Press it into place, scraping away the excess epoxy that oozes out. Ensure that the moulding stays in place by careful application of clamps and leave undisturbed until after cure.

Strut attachment to door

The position of the hole through the attachment lug is determined as shown in figure 3. Measure the 216mm (8.5") dimension using a flexible rule so that it follows around the curvature of the door inner skin.

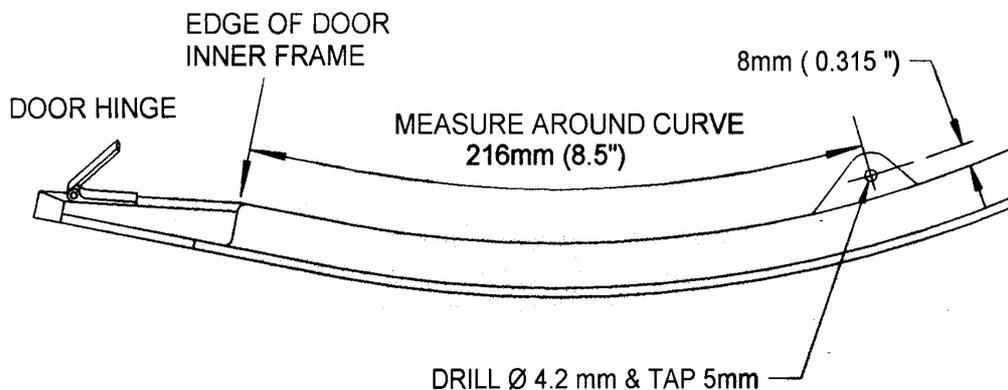


Fig 3. Determining hole position in lug.

Drill a 4.2mm hole on the centre of the cross then tap a 5mm thread for the ball end. Screw in the ball end, using Loctite 638 on the thread.

NOTE: It may be necessary to file off any thread that protrudes through the lug to ensure clearance with the door surround.

Strut attachment to door surround

To determine the position for the ball end fitting in the door surround, some careful measuring is required. The door needs to be fitted onto the fuselage for this operation.

Hold the door open such that the inside of the flange near the very bottom of the door is 990mm (39") above the door surround - see fig 4.

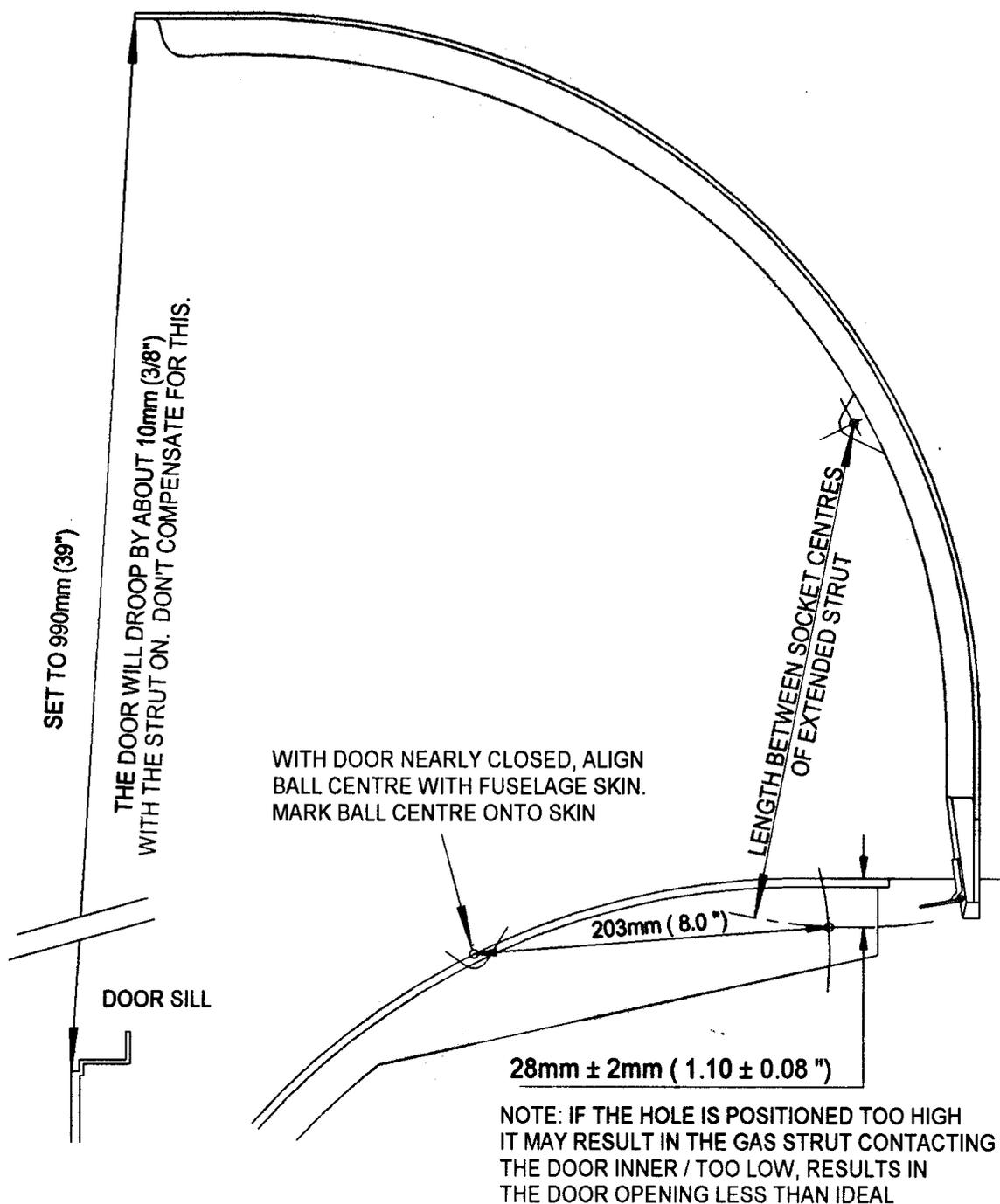


Fig 4. Determining the hole position in the door surround.

With the gas strut attached to the ball end in the door, mark an arc where the centre of the other end is onto the rear face of the door surround.

Remove the strut and, with the door nearly closed such that the centre of the lug's ball is in line with the fuselage skin, mark this centre onto the fuselage skin.



With the door open again, mark a line to cross the first arc line 203mm (8") from your mark on the fuselage. Where the two lines cross is the centre for the fuselage mounted ball end fitting, however, double check that the hole centre is within the dimensional tolerance as specified in the note in fig 4.

When you are happy that the centre is in the correct place, drill a 5mm hole through and install the ball end, fitting a EUR 003 washer each side of the door surround and using a 5mm nut to secure it in place. Use Loctite 243 on the thread.

***NOTE:** You may need to thin down the door surround from the inside to allow the nut to be fully threaded onto the ball fitting, but don't over do it.*

Attach the gas strut with the cylinder uppermost. This is important as the gas strut contains a small amount of oil that acts to dampen the strut's movement at the open end of the stroke. Check that the door closes fully without the gas strut end-fitting contacting the cylinder.