

Cabin Air Extractor  
09/2008

Introduction

In a Trigear aircraft, flight with the NACA vents installed results in little flow through the vents at speeds below 100 knots. Cabin air pressure is slightly above outside air pressure restricting the flow. Above 100 knots the ram air pressure exceeds cabin pressure and a reasonable flow is obtained.

In my Trigear there is no significant draft round the throttle which is exposed to baggage bay pressure. Providing a vent from the cabin to the baggage bay does further reduce the flow through the vent. The air pressure behind the baggage bay is higher than the cabin pressure. This appears to be due to the flap slots.

I have not managed to determine exactly where the excess cabin air is vented, it must go somewhere. Owners have complained of doors bulging out but this appears to apply only to early kits.

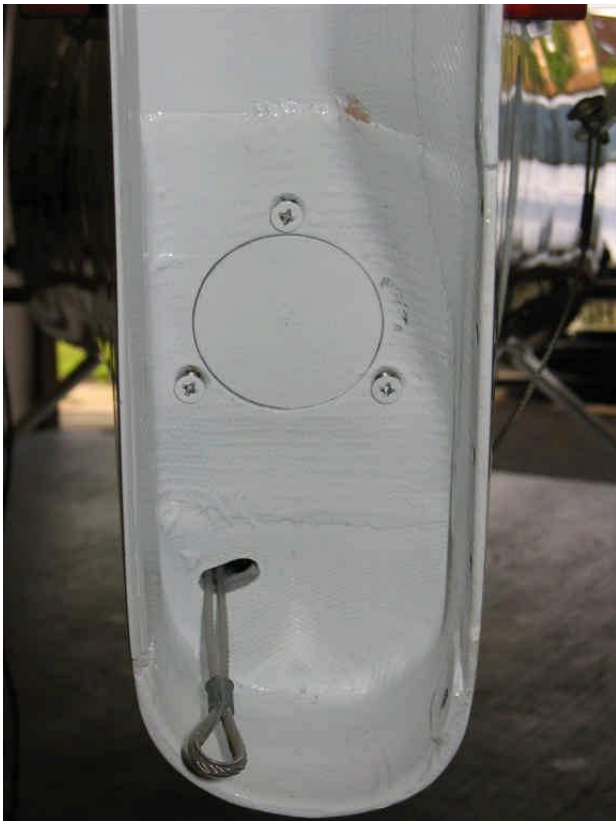
There are two options for improving the flow through the vents:-

- 1) Increase the input ram air pressure and accept the increased drag ( or worry where it goes).
- 2) Decrease the cabin air pressure by venting it to a low pressure area. This is approach used in G-IANI.

The problem then is finding a suitable low pressure area. This can be done with a reversed scoop almost anywhere but at considerable cost in drag. After much thought and discussions with Andy Draper we concluded that the best low pressure area was in the stern post just forward of the rudder. The logic being that the airflow across the fin/rudder gap would provide the extraction by the venturi effect.

Description

I had already installed an access port in the stern post (Picture 1) as this is essential if you ever need to remove the pitch tube in a Trigear. By making the adaptors (Picture 2) and adding 2.5 meters of 100mm tube the result



Picture 1

Can be seen in Pictures 3 – 5.

This mod is installed on both G-IANI and G-IRON. It does appear to work, increasing the flow through the vents. So far I have not had time to do any detailed pressure and flow measurements to assess how well.

It will be interesting to experiment further. One lesson learnt is to make the cabin opening in the bulkhead, rather than the “D” panel. This saves removing the tube when the “D” panel is removed.



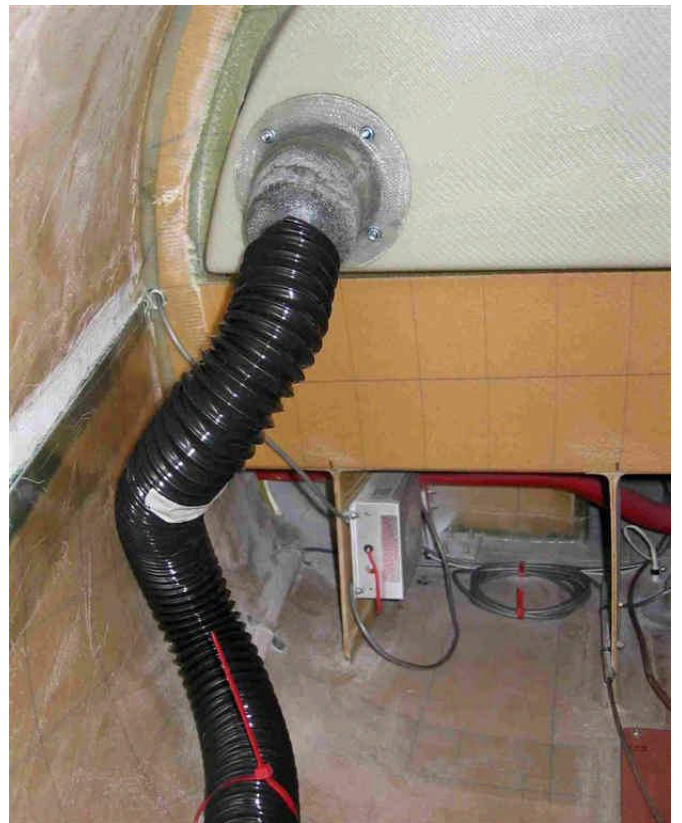
Picture 2



Picture 3



Picture 4



Picture 5