

ACCIDENT

Aircraft Type and Registration:	Diamond DA42 Twin Star, G-CTCB	
No & Type of Engines:	2 Thielert TAE 125-02-99 piston engines	
Year of Manufacture:	2005 (Serial no: 42.083)	
Date & Time (UTC):	28 April 2016 at 1603 hrs	
Location:	Bournemouth Airport, Dorset	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Failure of left landing gear drag brace rib	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	32 years	
Commander's Flying Experience:	2,051 hours (of which 146 were on type) Last 90 days - 137 hours Last 28 days - 56 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

Synopsis

Following a practice asymmetric power approach and a normal but firm landing, the left main landing gear 'unsafe' light started flashing, with accompanying aural warning. After shutting down the aircraft on the nearest taxiway it was discovered that the left main landing gear leg had partially collapsed. The aircraft manufacturer determined that this was caused by an overload failure of the bonding between the composite drag brace rib and the composite centre wing section.

History of the flight

The accident occurred after landing at the end of a training flight. The student pilot was in control in the left seat and the instructor (commander) was in the right seat. Another student pilot was sitting in the back. The approach to Runway 26 was a practice asymmetric power approach with the left engine set to zero thrust (about 18% power). The wind was from 230° at 15 kt, providing a crosswind of 7.5 kt from the left. The instructor reported that the approach was stable and the speed well controlled by the student. A few feet before touchdown the student closed both power levers and corrected the drift using the rudder pedals. At touchdown the drift was almost fully corrected and the aircraft aligned with the runway. The instructor reported that the touchdown felt firm but not hard. The deceleration was normal and the aircraft maintained the runway centreline. At touchdown they heard a continuous beeping noise which they initially thought was the stall warner but then identified as the gear 'unsafe' warner. The left main gear green light was off and

the red 'unsafe' light was flashing. The instructor took control and, after reaching a safe speed, vacated the runway by the nearest taxiway. The aircraft was still controllable but with increasing difficulty. He stopped the aircraft on the side of the taxiway and shut down the engines in order to inspect the landing gear. After noticing that the left main landing gear had partially collapsed, he asked the student pilot and student passenger to vacate the aircraft carefully.

Aircraft examination

The composite drag brace rib, which secures the left main landing gear drag brace to the centre wing section, had detached (Figure 1), causing the left main landing gear leg to partially collapse. The aircraft manufacturer examined the aircraft and removed the failed rib for further detailed examination. They determined that the failure pattern was typical for an overload failure of the bonding between the composite rib and the composite centre wing section. They concluded that some damage had occurred during a previous hard sideslip landing and then the final failure occurred on the day of the accident.

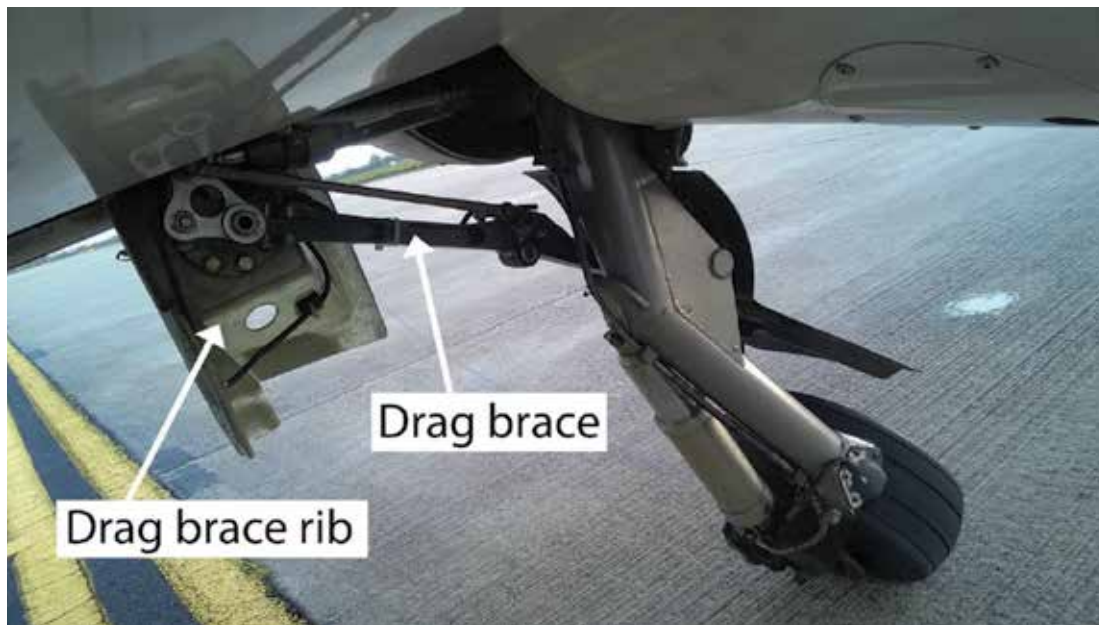


Figure 1

View of left main landing gear leg (looking aft) showing detached drag brace rib

Previous DA42 history of failures of the landing gear drag brace rib

The DA42 type has suffered a number of failures of the landing gear drag brace rib which were attributed to improper bonding of the rib to the centre wing section. This resulted in the aircraft manufacturer publishing a Mandatory Service Bulletin (MSB-42-031/1) in 2007 to perform an inspection of the bonding and carry out a repair if the bonding was inadequate. According to G-CTCB's airframe logbook this MSB had been carried out on 13 February 2007 and, according to the aircraft manufacturer, there was physical evidence that the MSB repair had been carried out correctly.

The aircraft manufacturer reported that since the MSB was issued they have received 11 reports of failures of the main landing gear drag brace rib. They determined that in four of these cases the MSB had not been carried out correctly and one was caused by a storm spinning the aircraft around while parked. The remaining cases were attributed to overload events.