

# Cessna 320D, N4173T, 16 June 1996

**AAIB Bulletin No: 12/1996**

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<b>Aircraft Type and Registration:</b>	Cessna 320D, N4173T
<b>No &amp; Type of Engines:</b>	2 Continental TS10-520-B piston engines
<b>Year of Manufacture:</b>	1966
<b>Date &amp; Time (UTC):</b>	16 June 1996 at 1434 hrs
<b>Location:</b>	Cranfield Airport, Bedford
<b>Type of Flight:</b>	Private
<b>Persons on Board:</b>	Crew - 1- Passengers - 4
<b>Injuries:</b>	Crew - None - Passengers - None
<b>Nature of Damage:</b>	Minor damage to the left wing tip tank fairing, left aileron and left main landing gear mechanism
<b>Commander's Licence:</b>	Commercial Pilot's Licence
<b>Commander's Age:</b>	55 years
<b>Commander's Flying Experience:</b>	1,865 hours (of which 150 were on type) Last 90 days - 16 hours Last 28 days - 9 hours
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot

The aircraft departed Cranfield on a flight to Exeter and landing gear retraction was observed to be normal. However, upon arrival at Exeter when the gear was selected 'down', the single green light which indicates that all three legs are locked down did not illuminate. Having verified the integrity of the filament, recycling the gear failed to get the light to illuminate although visual inspection during a fly-past of the control tower at Exeter did not indicate a problem.

The pilot elected to perform a touch-and-go during which he felt that the left main gear leg appeared to shimmy. He then operated the emergency lowering handle which went solid after two turns. A further touch-and-go brought a comment from the tower that the left leg was moving from what had appeared to be the fully down position. The pilot decided to retract the gear, which operated and indicated normally, and return to Cranfield. During this sector the left tip tank was emptied of fuel.

During the approach to Cranfield Runway 04, the landing gear was extended using the emergency procedure, the left engine was feathered and secured and the cabin door unlocked on short finals. The aircraft rolled for some 500 metres before the left gear folded at about 25 kt and it slewed to the left side of the runway, coming to rest on the grass. There was no fire and the pilot and passenger evacuated the aircraft without problems or injury.

The company which recovered and repaired the aircraft reports that the left main landing gear failed to lock down because the main drive tube (see diagram) had been deformed. This meant that full travel of the actuator was not transmitted to the downlock mechanism, which over-centres as full travel is achieved. The company also stated that the tube had probably been bent because two bolts (indicated on the diagram) were very stiff due to lack of lubrication and that the tube bore signs of repeated rubbing on adjacent structure, indicating that the deformation had not been due to once-off loading as the gear collapsed. They acknowledged that routine inspection of the main drive tube is very difficult although the bolts are reasonably accessible.

Interrogation of the CAA database back to 1979 revealed some eight previous cases of collapsed main landing gears on Cessna 300/400 series aircraft which were attributed to lack of lubrication. In 3 of these cases the resulting stiffness had led to component fatigue failures. The CAA had issued an Additional Airworthiness Directive (AAD), number Cessna 008-01-89, which required repeat removal/inspection/lubrication of the downlock bellcrank pivot (see diagram, item 16) although it appears that lack of lubrication in many of the articulating joints can lead to a lack of downlock. It should also be noted that such an AAD would not be mandatory on aircraft operating on the US register. Two of the 8 cases mentioned above involved US registered aircraft.