BULLETIN CORRECTION

AAIB File:	**Ref: EW/C2004/02/06**
Aircraft Type and Registration:	Cessna F177RG Cardinal, G-TOTO
Date & Time (UTC):	9 February 2004 at 1205 hrs
Location:	Meppershall Airfield, Shefford, Bedfordshire
Information Source:	AAIB Field Investigation

AAIB Bulletin No 6/2005 page 32 refers

Figure 1, Diagram of the landing gear hydraulic and electrical system, is a very simplistic diagram and omits some very important electrical components and circuit wiring. As a result part of the second paragraph in the section headed '**The landing gear system'** is incorrect. Below is the amended paragraph with the corrected areas highlighted.

> Mounted in the instrument panel are two landing gear position indicator lights. A single amber light illuminates when the landing gear is up and locked; a single green light illuminates when it is down and locked. Each of the three landing gears has a downlock microswitch and all three microswitches have to be made to complete the electrical circuit to illuminate the green DOWN AND LOCKED light in the cockpit. In addition to illuminating the green indicator light, the making of all three downlock microswitches opens the electrical circuit to the hydraulic pump. Mechanically connected to the main landing gear downlock mechanisms are two unlock solenoids on the back of which are mounted sequence switches. These solenoids are mounted on pivots which allow them to pivot through approximately 7º. **The function of the sequence switches is to close the electrical circuit to the hydraulic pump after the main landing gear downlocks have unlocked during the retraction sequence. All three downlock microswitches have to be operated before electrical power to the hydraulic pump is switched off during the landing gear extension sequence.** When the hydraulic pump switches off, the pressure in the down lines slowly dissipates over a period of time which is dependant upon the seal leak rates in the landing gear actuators. **The hydraulic pump will switch on when any of the downlock microswitches break, which, providing the landing gear selector is in the DOWN position, will pressurise the down lines.** When a correctly adjusted landing gear is in the DOWN AND LOCKED position no hydraulic pressure is required to maintain it in that condition. During the landing gear retraction sequence, only the sequence switches, the pressure switch and the landing gear selector in the cockpit have a controlling function of the electrical power to the hydraulic pump.

Following the aircraft's return to service the operator found that two identical items, one from each main landing gear, had not been fitted. These items, part

number 2041030-6 are described as a shell and liner. Their purpose is to react the weight of the aircraft between the airframe and the main landing gears when the aircraft is on the ground. Without these items fitted the downlock latch pivot pin would react some of these forces for which it was not designed. It is possible that if these shells and liners were not fitted prior to the accident that the forces placed on the downlock pivot pins caused the initiation and propagation of the fatigue failures that were found.