

Aircraft Type and Registration: Falco F8L home build, G-MRCI

No & Type of Engines: 1 Lycoming IO-320 B1A piston engine

Year of Manufacture: 1991

Date & Time (UTC): 1 April 1993 at 1220 hrs

Location: Newcastle Airport

Type of Flight: Test Flight

Persons on Board: Crew - 2 Passengers - None

Injuries: Crew - None Passengers - N/A

Nature of Damage: Left hand flap broken off at inner pivot point

Commander's Licence: Basic Commercial Pilot's Licence with IMC and Night Ratings

Commander's Age: 45 years

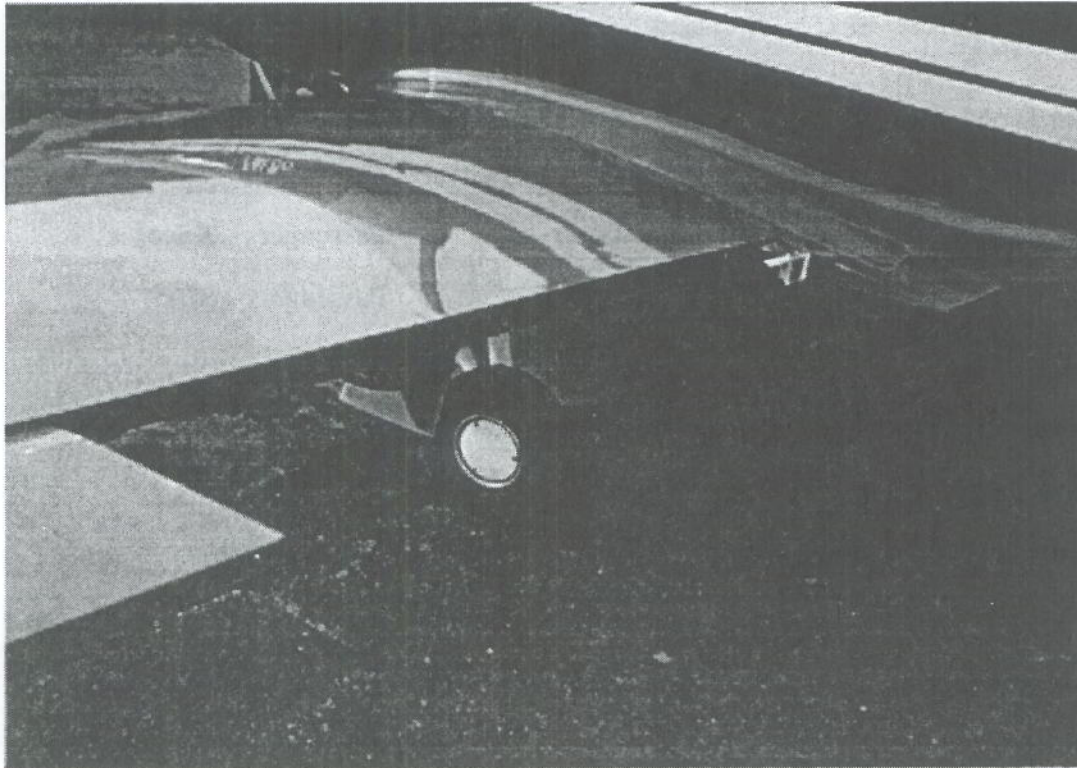
Commander's Flying Experience: 2,595 hours (of which 6 were on type)
Last 90 days - 52 hours
Last 28 days - 18 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

The aircraft had flown for a total of 177 hours, part of which had been on the U.S. Register, and at the time of the incident was 50 minutes into a PFA flight test schedule which had progressed to the standard V_{NE} checks. No adverse handling or performance characteristics were evident up to 190 kt, and the nose was lowered to approximately 30° in a 1g dive. At approximately 195 kt a very loud buzzing noise was heard, accompanied by airframe vibration, but with no vibration on the control stick. Power was reduced to idle and the aircraft eased out of the dive; the pilot then noticed that the complete left flap had broken off at the inner hinge actuating point and was missing. The incident had happened without warning and lasted for about two seconds.

After slowing the aircraft down, the pilot carried out as good a visual check as he was able and checked the controls for correct and safe flying qualities. No unusual behaviour was found and, as the aircraft was 8 nm north west of Newcastle, the pilot requested an immediate rejoin. Whilst transiting back to the circuit the pilot tested the landing gear operation and selected 'GEAR DOWN' several times without success, even though the landing gear circuit breaker had been reset. He then realised that because of the way the system worked, the flaps needed selecting before the gear would cycle down.

He slowly applied (asymmetric) flap and held off the ensuing roll with aileron, the gear was heard to cycle, but no green light was obtained; flap 'UP' was immediately selected to regain normal flight. A fly-past was carried out past Newcastle Tower to provide a visual check of the gear, and a green light was obtained as he turned downwind. A quick circuit was carried out and an uneventful flapless landing was made.



The left flap had pulled out of the pivot bolt hinge on the outer end near the aileron, and had broken at the inner wing root end. The mounting bracket was still attached to the operating rod/hinge along with approximately three inch square of broken splintered wood. A thorough check revealed excessive play in the right flap linkage and hinge.

This particular aircraft had the flaps set approximately 3° above the neutral position when selected fully up, and it had been normal practice to re-adjust the flaps to the neutral, level with the wing trailing edge, in normal flight. In this position the flaps were not held against a positive stop, but were retained in position by the actuating linkage. This was the position of the flaps during the V_{NE} test and the pilot is of the opinion that the lack of positive retention, plus the play in the linkage, caused the flap to vibrate/flutter.