Piper PA-28RT-201 Cherokee Arrow IV, G-GHRW

AAIB Bulletin No: 5/2003	**Ref: EW/G2002/12/06**	**Category: 1.3**
Aircraft Type and Registration:	Piper PA-28RT-201 Cherokee Arrow IV, G-GHRW	
No & Type of Engines:	1 Lycoming IO-360-C1C6 piston engine	
Year of Manufacture:	1979	
Date & Time (UTC):	18 December 2002 at 1108 hrs	
Location:	Cranfield Airport, Bedfordshire	
Type of Flight:	Training	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Damage to left wing including wing tip, pitot probe, aileron and flap	
Commander's Licence:	Commercial Pilot's Licence with Instrument Rating and Instructor's Rating	
Commander's Age:	41 years	
Commander's Flying Experience:	1,444 hours (of which 95 were on type)	
	Last 90 days - 89 hours	
	Last 28 days - 17 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

History of the flight

The purpose of the flight was Commercial Pilot's Licence training and this was to include general handling and circuit practice. The instructor and student collected the aircraft from the maintenance hangar, where it was parked, as the aircraft had been under investigation due to an ongoing, intermittent problem of the 'gear unsafe' light remaining on after gear retraction. However, nothing specific was found by the maintenance organisation which could account for the defect.

After completing the 'first flight of the day' pre-flight check ('A' Check), the aircraft was taxied for a departure on Runway 04, with the student handling. All indications had been normal up to this point. The takeoff itself was normal but, on retracting the landing gear, the red 'gear unsafe' light remained on. When the instructor moved the landing gear lever back to the down position, the left main gear then failed to indicate locked down. The student flew the aircraft in the circuit whilst the instructor cycled the gear lever up and down several times. Each time the same abnormal indications were obtained with the gear unsafe light remaining on after gear up selection, and only two green lights showing the nose and right main gear to be locked down after gear down selection. On the downwind leg the instructor attempted to lower the gear using the alternate system but the left main gear still failed to indicate locked down. A flypast of the tower was made and ATC reported that the landing gear appeared to be down and locked. On the subsequent downwind leg, the instructor interchanged the gear 'down and locked' indicator bulbs, but the same abnormal indications persisted. The

instructor then assumed control for the landing, which was made from a normal approach, as he considered that the problem was most likely an indication fault. After touchdown the aircraft settled with the left wing slightly low and, as it slowed, the left main gear began gradually to collapse. The engine was shut down during the landing roll and the left wing contacted the runway at a speed of between 20 kt and 30 kt, causing the aircraft to slowly depart the left side of the runway.

Engineering investigation

After the left wing had been lifted during the recovery operation, it was found that the left main gear could be pulled into the down and locked position by hand, albeit with some difficulty. Landing gear retractions were subsequently performed in the hangar, with no reported problems. When the left main landing gear linkages were disconnected for inspection, some of the joints were found to be somewhat stiff, but no specific reason could be found as to why the left gear should have failed to lock down. During repairs to the aircraft, the left main gear was removed and various bushes were replaced, as a precaution.

Following completion of this work and reinstallation of the left main gear, the aircraft was flight tested and the landing gear was found to operate satisfactorily, including the operation of the alternate lowering system. No further problems have been reported with the operation of the landing gear since this event.