

SERIOUS INCIDENT

Aircraft Type and Registration:	Rockwell Commander 112TC, G-BLTK	
No & Type of Engines:	1 Lycoming TO-360-C1A6D piston engine	
Year of Manufacture:	1976	
Date & Time (UTC):	19 August 2009 at 1046 hrs	
Location:	Blackbushe Airport, Surrey	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to propeller and possible engine shock-loading	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	53 years	
Commander's Flying Experience:	805 hours (of which 136 were on type) Last 90 days - 0 hours Last 28 days - 0 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

Synopsis

While returning to land the pilot discovered that the nose gear leg would not extend. He carried out a series of manoeuvres to try and free the nose gear leg, but the nose gear remained retracted. After declaring an emergency the pilot carried out a landing and held the nose of the aircraft off as long as possible until the propeller finally struck the ground and the aircraft came to rest. The fault was attributed to the right nose gear door jamming on its hinge.

the pilot noticed that the two green 'down and locked' lights for the main landing gear legs were illuminated, but that the green light for the nose gear leg was not. The bulb was checked and found to be operational. The pilot informed the Blackbushe AFIS(O) of the problem and then carried out a low approach past the control tower. The AFIS(O) reported that the main gear legs were extended, but the nose gear leg was retracted and the nose gear doors were closed.

History of the flight

Following a local flight the aircraft returned to the circuit. While joining crosswind the landing gear was selected down at about 110 kt. During the downwind checks

The pilot departed the circuit and then carried out a series of manoeuvres, at varying levels of 'g', to try and force the nose gear leg to extend. These manoeuvres were attempted while cycling the gear

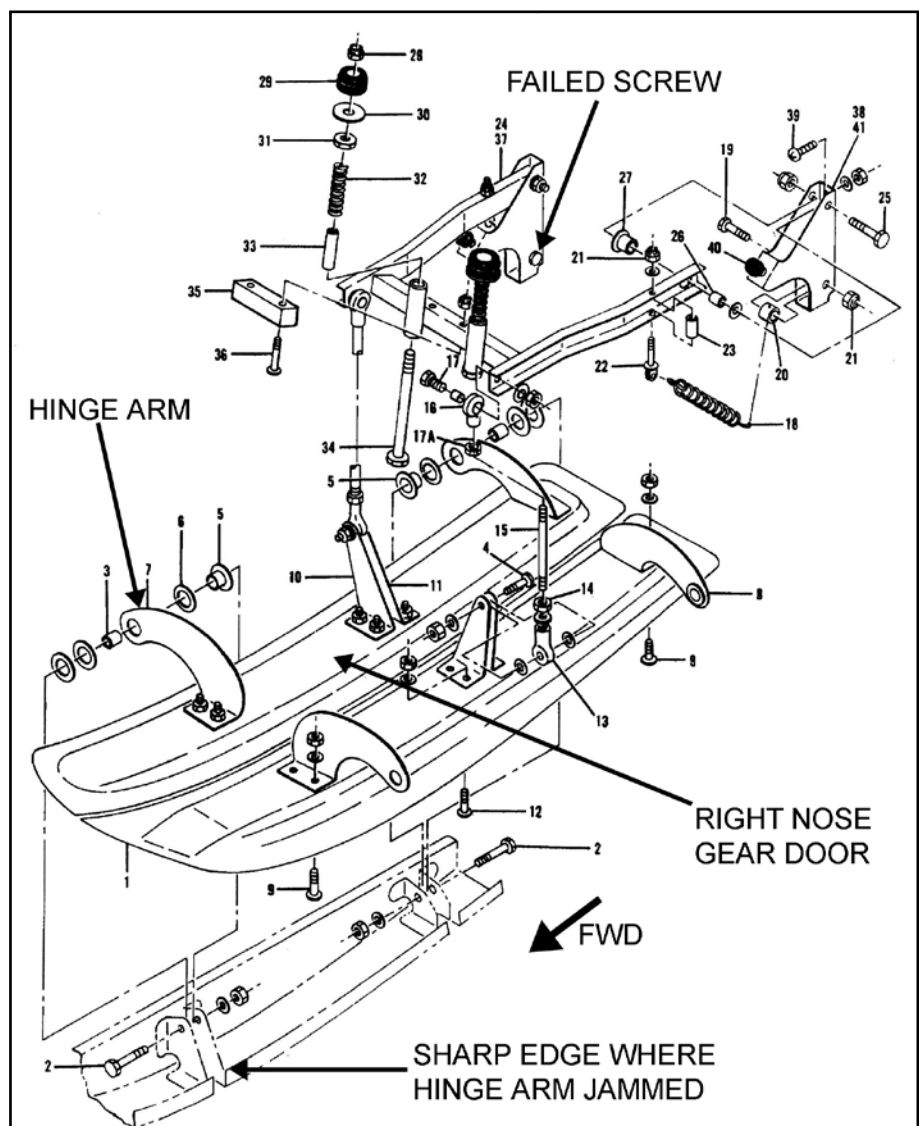
using both the normal hydraulic extension system and the manual gravity drop system. A second fly-past of the Blackbushe tower was carried out, but this confirmed that the nose gear leg was still retracted. The pilot declared a MAYDAY and then planned for his emergency landing while waiting for the emergency services to position themselves.

The pilot carried out his approach using full flap at a speed slightly above the minimum approach speed. Prior to touchdown the fuel selector was turned off, the mixture was set to LEAN and the battery master switch was turned off. The aircraft touched down normally on the main gear legs with the propeller windmilling. The pilot gradually increased back pressure on the controls to keep the nose of the aircraft and propeller clear of the ground for as long as possible. The nose eventually dropped and the 3-bladed propeller hit the ground and stopped after a few rotations. The aircraft came to a stop with its nose resting on two of the propeller blades.

Aircraft examination

A Licensed Aircraft Engineer examined the aircraft and determined that the nose gear had failed to extend because the right nose gear door had jammed near its hinge. He also discovered that a screw which attached the right lower engine cowling to the nose gear structure had failed in shear

(see Figure 1). This would have caused the engine cowling to drop slightly and to move the right nose gear door. The door hinge operates in a narrow slot with sharp edges (see Figure 1) and a slight movement of the door could cause it to jam at the hinge. The engineer could not determine what had caused the screw to fail, but said that it was also possible that the screw had failed as a consequence of the door not opening, and the force of the nose gear actuator sheared the screw.

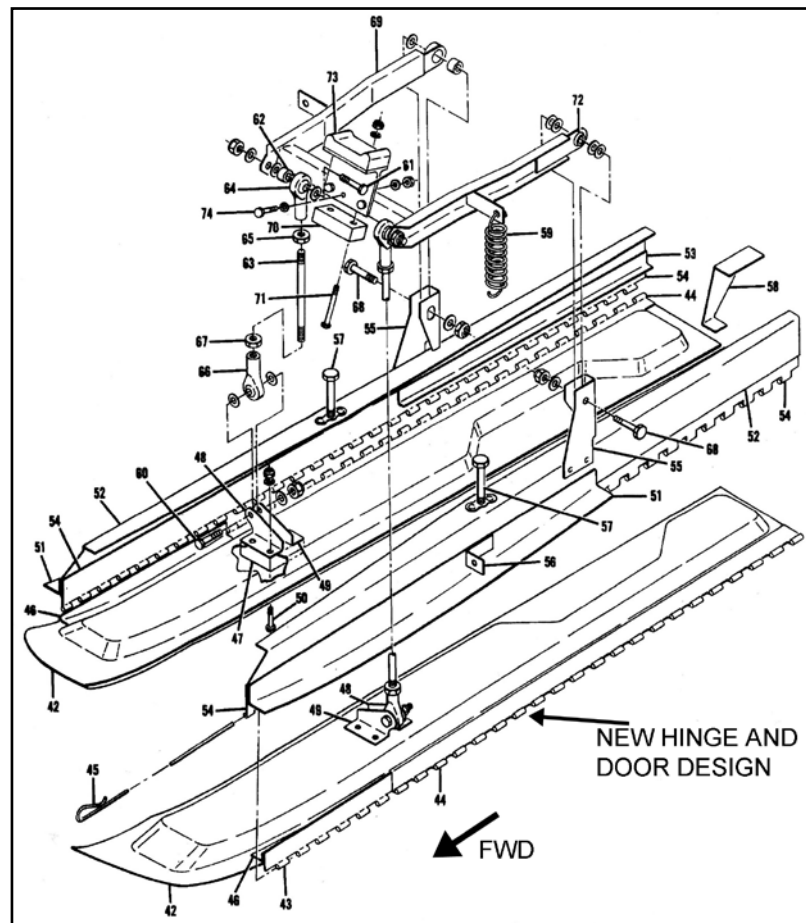


*Courtesy of
Commander Premier Aircraft*

Figure 1

Nose gear door installation on G-BLTK

Later models of the Rockwell Commander 112 were fitted with nose gear doors that had a ‘piano-wire’ hinge (see Figure 2). This type of hinge would not have jammed in the same manner as the original design.



*Courtesy of
Commander Premier Aircraft*

Figure 2

Modified Nose gear door installation fitted to Model 112B-500 and subsequent serial numbers and Model 112TCA-13150 and subsequent serial numbers