

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Grob G115E, G-BYVZ	
<b>No &amp; Type of Engines:</b>	1 Lycoming AEIO-360-B1F piston engine	
<b>Year of Manufacture:</b>	2000	
<b>Date &amp; Time (UTC):</b>	3 November 2005 at 1400 hrs	
<b>Location:</b>	RAF Church Fenton, North Yorkshire	
<b>Type of Flight:</b>	Training	
<b>Persons on Board:</b>	Crew - 1	Passengers - 1
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	Propeller and nose wheel assembly damaged	
<b>Commander's Licence:</b>	RAF pilot's licence	
<b>Commander's Age:</b>	24 years	
<b>Commander's Flying Experience:</b>	289 hours (of which 116 were on type) Last 90 days - 41 hours Last 28 days - 21 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and company engineering investigation report	

**Synopsis**

The nose landing gear had been incorrectly assembled during a 150 hour maintenance activity with the result that on the aircraft's ninth landing following return to service, the nose leg collapsed and the aircraft skidded to a halt on the runway.

**History of the flight**

On the day of the accident the pilot had flown a number of air experience flights, all in the subject aircraft, each lasting approximately 25 minutes. At the end of the fourth sortie the pilot made a normal powered approach, in blustery conditions, to Runway 16 and following an uneventful touchdown on the main wheels he lowered the nose wheel onto the runway and commenced normal

braking action. However, as the aircraft decelerated the nose wheel slowly collapsed and the aircraft skidded to a halt. The emergency services responded and the pilot and passenger vacated the aircraft through the normal exit.

**Description of nose landing leg assembly**

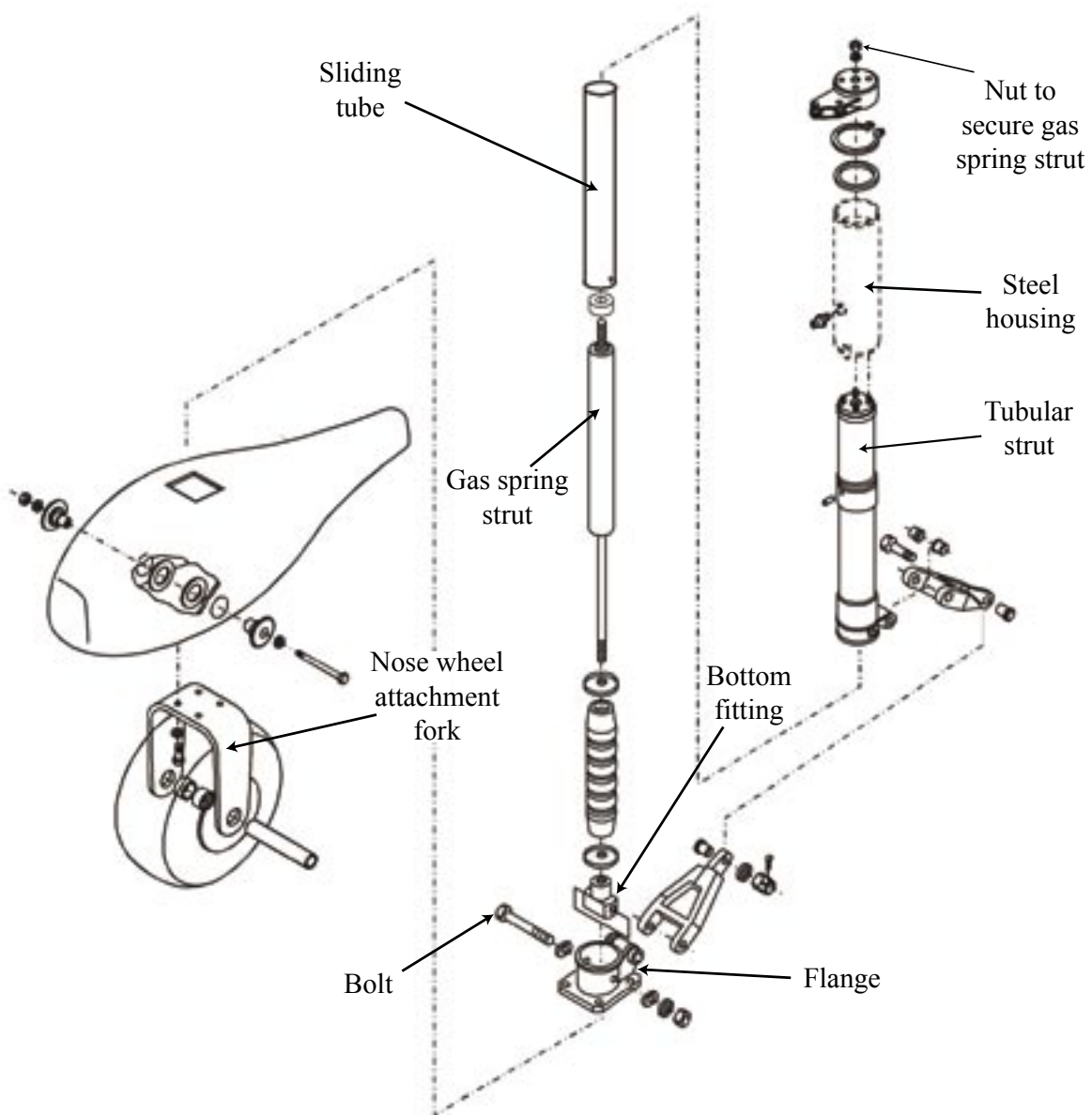
The nose landing leg is secured to the aircraft by a steel housing and consists of a tubular strut, sliding tube, gas spring strut and a flange which is mounted on to the nose wheel fork assembly. The top of the sliding tube is retained within the tubular strut and the bottom of the sliding tube is secured by a bolt to the flange. The top of the gas spring strut is secured to the steering actuator lever by a nut and washer arrangement and the bottom

of the gas spring strut is screwed into the bottom fitting, which is secured to the flange by a bolt. The same bolt is used to secure the sliding tube and gas spring strut to the flange. See Figure 1.

**Engineering investigation**

An investigation by the company’s maintenance organisation revealed that the bolt which secured the

nose landing gear sliding tube and gas spring strut bottom fitting to the flange had been incorrectly fitted such that the bolt only secured the bottom fitting to the flange. Consequently, when the aircraft landed, the weight on the nose wheel was sufficient to cause the failure of the bottom of the gas spring strut which resulted in the collapse of the nose wheel. See Figure 2.



**Figure 1**  
Nose landing leg assembly



**Figure 2**

Failure of gas spring strut

The nose landing gear was last refitted to the aircraft during the 150 hour maintenance activity and failure of the gas spring strut occurred 3.5 flying hours and 9 landings later.

#### **Remedial action**

A similar incident occurred in June 2002 which resulted in the maintenance organisation instigating a fleet check to determine if the bolts on any other aircraft had been incorrectly fitted. Believing this to be an isolated occurrence, the maintenance organisation introduced a cautionary note into the maintenance manual emphasising the need to ensure that the bolt passes through both the sliding tube and gas spring bottom fitting.

The maintenance organisation estimates that there are approximately 60 occurrences a year when the subject bolt in the nose landing leg is disturbed. Nevertheless, despite the relatively low frequency of the bolt being incorrectly fitted, the maintenance organisation has reclassified the assembly of the nose leg as a critical task and has introduced a Vital/Duplicate inspection to confirm that the nose wheel undercarriage flange assembly is correctly assembled prior to fitment of the nose wheel fork.