Europa XS, G-ROOV

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Aircraft Type and Registration:	Europa XS, G-ROOV
No & Type of Engines:	1 Rotax 914-UL piston engine
Year of Manufacture:	1999
Date & Time (UTC):	1 August 2000 at 1320 hrs
Location:	Kemble Airfield, Cirencester
Type of Flight:	Training
Persons on Board:	Crew - 1 - Passengers - 1
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Nose landing gear, propeller, spinner and lower engine cowl damaged
Commander's Licence:	Basic Commercial Pilot's Licence
Commander's Age:	73 years
Commander's Flying Experience:	13,302 hours (of which 130 were on type) Last 90 days - 44 hours Last 28 days - 18 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

History of the flight

The owner was undergoing conversion training following recent modification of the aircraft from the monowheel to the tricycle landing gear configuration. The training brief for the flight was circuit practice with the aircraft in various configurations. Runway 27 was in use and weather conditions were dry with good visibility and surface wind 265° at 12 kt.

The first three circuits were completed uneventfully. On the fourth circuit, a powered approach with flaps was made, with the instructor demonstrating a sideslip off an intentionally high approach. The owner took control of the aircraft for the landing and touched down normally, with the mainwheels contacting the runway first. The pilot lowered the nosewheel normally and almost immediately there was a loud 'bang' with the nose of the aircraft dropping suddenly. The nosewheel was seen to depart ahead of the aircraft. The instructor took control, raised the nose leg clear of the runway and steered towards the grass on the right hand side of the runway in an attempt to minimise the damage to the aircraft. As the airspeed decayed, the nose leg dropped back onto the runway and the aircraft travelled a further 30 metres or so with the nose leg scraping along the

tarmac surface. The aircraft finally came to rest on the right hand edge of the runway. The shutdown checks were completed and the aircraft was evacuated normally. The aircraft experienced damage to the nose landing gear, propeller, spinner and lower engine cowl, but there were no injuries to the occupants.

The aircraft had completed approximately twenty landings since undergoing conversion to the tricycle landing gear configuration.

Investigation

The aircraft was converted from the monowheel to the tricycle configuration by removing the monowheel assembly and replacing it with a new nose landing gear assembly which shares the same basic mounting structure used by the monowheel landing gear. The nose landing gear has a characteristic long, slender nose leg projecting forward, to which is attached a castoring nosewheel fork.

Inspection of the failed components showed that the nosewheel fork had detached from the nose leg due to an overload failure of the weld between the nose leg and the fork. Enquiries showed that there had been one other similar failure of a Europa nose landing gear. The nose landing gear leg assembly was supplied by the manufacturer with this joint pre-welded. The aircraft manufacturer conducted metallurgical tests on a new nose landing gear assembly, which revealed a problem of poor weld penetration of the joint. Based on this finding, the aircraft manufacturer modified the design of the joint to add gusset plates and additional weld beads to increase the strength of the joint. The aircraft manufacturer has since issued Modification Number 57 which contains instructions for incorporating these design changes to all existing tricycle gear Europas. The aircraft manufacturer considers it mandatory that owners accomplish this modification on their aircraft and recommends that it be completed within five flying hours. The modification does not have legal mandatory status, however, as this can only be conferred by the regulatory authority, the Civil Aviation Authority (CAA). The aircraft manufacturer has distributed copies of the modification to all affected Europa owners within the United Kingdom and abroad. The Popular Flying Association (PFA) has issued a caution letter to all owners of tricycle landing gear Europas within the United Kingdom, recommending that they do not fly the aircraft until Modification Number 57 has been accomplished. In addition, all PFA Inspectors have been notified of the modification so that they may verify its accomplishment on affected aircraft at the next annual airworthiness inspection.

Although neither of the nose landing gear failures to date had any serious consequences, it is believed that separation of the nosewheel fork during takeoff or landing on a rough runway surface (such as grass) could result in the aircraft nosing over, with the possibility of injuries to the occupants.

Safety recommendation

In view of these findings, the following Safety Recommendation has been made to the CAA and PFA:-

Recommendation 2000-47

In order to prevent loss of control of the aircraft on the ground and possible injury of the occupants due to separation of the nosewheel fork, it is recommended that the CAA, in conjunction with the PFA, should take appropriate action to ensure that Europa Modification 57 is expeditiously

accomplished on all affected aircraft. The CAA should also take further measures to formally advise airworthiness authorities of this action in countries outside the United Kingdom where tricycle gear Europa aircraft are operated.