

Rules, regulations, instructions and practices  
Culture

Organisations  
Rescue services  
Maintenance organisation  
Aircraft type certificate holder

Aircrew  
Maintenance staff

Technology and conditions

Chain of events

As part of its safety management, the maintenance organisation makes safety assessments of e.g. maintenance instructions.

The maintenance instruction does not include landing gear functional test after maintenance

In accordance with applicable regulations, a double check is required for critical tasks.

Maintenance instruction was from 1985 and only based on good installation practice in many places. It also contained factual errors.

Maintenance organisation was able to identify shortcomings in the instructions.

Gear had been tested several times after installation, and it functioned normally.

Double check was not performed on the installation of the pivot pin.

Maintenance organisation was part of the small airline company operating the aircraft.

Crew took action as required in checklist for hydraulics fault.

Maintenance instruction does not draw attention to the possibility of error in pivot pin installation.

Removal of two landing gears had been identified as a critical maintenance task.

No actual rescue action was needed.

Two mechanics and a certifying staff member participated in the aircraft maintenance.

Similar malfunction may be caused by icing, insufficient lubrication or contamination in the uplock.

Procedure for hydraulic system malfunction was applied.

The mechanic who installed the right landing gear had no previous experience of gear installation. He had removed the same gear.

The pilot-in-command actively steered the aircraft and managed to control the situation.

Seemed like a hydraulics fault

Indication system is a typical technical solution in similar aircraft

Crew did not view the situation as an emergency that would require immediate landing.

It is possible to install the pivot pin and its securing pin incorrectly.

Gear failures due to incorrect pivot pin installation are known to have occurred.

Aircraft had undergone maintenance that required main landing gear removal. It was started on 30.9.2016 and finished on 3.10.2016. This was the first flight after maintenance.

Right main landing gear did not go into its uplock.

In fact, the downlock indication only tells that the gear actuator is in the selected position. It does not necessarily indicate a mechanical fault of the gear.

Forward pivot pin for the right landing gear was not locked in place and came loose.

**Flight**  
The aircraft departed for a routine cargo flight from Rovaniemi to Oulu on 3 October 2016 at 19:30. It had a two-pilot crew and transported cargo.

**Problem in landing gear retraction**  
When landing gear was retracted after take-off, the uplock warning light remained on. Gear was selected back down and three green lights indicated that it was locked down. The hydraulic system indicator light also went out.

**Actions and troubleshooting in flight**  
Co-pilot tried to solve the fault based on emergency checklists. Pilot-in-command decided to fly to Oulu with gear extended. The nature of the fault did not become clear.

**Landing gear failure**  
When braking was started at landing run, a banging noise was heard as the main landing gear failed. Pilot-in-command managed to keep the plane on the runway. The aircraft stopped about 80 m after the gear failed.

**Post-accident actions**  
The crew reported the incident to ATC and asked for a tow vehicle. The crew was not injured. ATC reported an air traffic accident and alerted rescue units. Oulu Airport was closed to other traffic for three hours due to clearance work.