

Sikorsky Safety Advisory

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System: Landing gear
Affected Aircraft: 269A thru C versions including TH-55
Subject: Ground Resonance events

1. Introduction

There have been occasional occurrences of ground resonance in the subject aircraft. The common factor for all ground resonance events is the inability of landing gear dampers to dampen (attenuate) the rocking motion of the airframe. Airframe rocking can often be precipitated by a MR imbalance, which may be caused by out of phase MR blades or can also be caused by an initial “sharp” or pronounced ground contact on one skid, caused by a rough touchdown that sends the initial vibration back through the airframe and into the rotor system. The FAA Rotorcraft Flying Handbook (FAA-H-8083-21) also has an explanation of ground resonance.

There are two designs for landing gear dampers; the 269A, TH55 and 269B aircraft utilize the 269A3110 early series dampers. The 269C and 269C-1 utilize the later 269A3150 series dampers.

The landing gear dampers act to slow the airframe rocking motion by forcing fluid through internal orifices during compression and extension. Incorrect fluid level or pressures in these dampers can change the damping rate and consequently the capability to attenuate the airframe rocking.

WARNING

**Ground Resonance can occur in the 269 series aircraft when landing gear dampers do not meet design specifications.
Always maintain the aircraft in accordance with Current Maintenance Manuals for the particular model**

Ground Resonance can be a destructive phenomenon and can destroy an aircraft, cause injuries to personnel and/or fire resulting from fuel spills.

2. Corrective Action

PILOTS:

Prior to flight:

Read and understand all WARNINGS in the Pilots Flight Manuals .
Perform the required preflight inspections and have discrepancies corrected by maintenance staff.

During flight / landing:

If a rapidly increasing ground rock condition is experienced at or near normal MR operating RPM, pickup the helicopter to a hover and let vibrations subside. Attempt a landing on a different surface (grass/sod) if possible. Pay attention to ground rock during touchdown. If a landing with power cannot be safely achieved, a hovering autorotation may be performed. After touchdown, DO NOT increase the MR RPM to flight range. Have maintenance performed on dampers prior to next flight.

TECHNICIANS:

Read and understand all WARNINGS in the flight manuals and maintenance manuals (Handbook of Maintenance Instructions).

During periodic inspections:

Check the stance of the aircraft and measure damper extension in accordance with manuals.

During maintenance or overhaul:

Remove discrepant dampers and perform servicing in accordance with proper HMI section.

Use the correct HMI section and correct paragraph for the type and part number of dampers being serviced.

For additional information or questions, contact your Sikorsky Commercial Product Support Manager, or contact the Customer Service Engineering Desk at 1-800 Winged-S, (203) 416-4299, or sikorskywcs@sikorsky.com