



Civil Aviation Authority
SAFETY NOTICE
Number: SN-2015/002



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Requirement For Post-Flight Engine Checks Schweizer 269C-1 Helicopters

This Safety Notice contains recommendations regarding operational safety.

Recipients must ensure that this Notice is copied to all members of their staff who need to take appropriate action or who may have an interest in the information (including any 'in-house' or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	Not primarily affected
Air Traffic:	Not primarily affected
Airspace:	Not primarily affected
Airworthiness:	All Owners and Operators of Schweizer 269C-1 Helicopters
Flight Operations:	All Owners and Operators of Schweizer 269C-1 Helicopters
Licensed/Unlicensed Personnel:	All Owners and Operators of Schweizer 269C-1 Helicopters All Training Organisations

1 Introduction

- 1.1 Following their investigation into a fatal accident involving a Schweizer 269C-1 helicopter, the Air Accidents Investigation Branch (AAIB) made [Safety Recommendation 2010-089](#) recommending that the CAA highlight to owners and operators of such helicopters the importance of performing the idle speed and idle mixture checks in section 4.14 of the Pilot's Flight Manual.
- 1.2 The purpose of this Safety Notice is to bring this information to the attention of all such owners and operators and supersedes SN-2011/001.

2 Background

- 2.1 On 22 September 2009, a Schweizer 269C-1 helicopter, which was on a training flight, suffered an in-flight emergency and subsequently crashed, fatally injuring both occupants. Examination of the wreckage revealed that the main rotor was turning at low speed on impact, but the reason for this could not be established. The investigation concluded that the most likely cause of the accident was a loss of control during an attempted forced landing. The helicopter was being flown downwind at 400 ft immediately prior to the emergency, which would have reduced the probability of a successful outcome.
- 2.2 During their investigation into possible causes for the accident, the AAIB investigated the engine and its maintenance history. They noted that the Schweizer 269C-1 Pilot's Flight

Manual (Revision 24 October 2002) contains a procedure in section 4.14 entitled '*Pilot's Check of Idle Mixture, Idle Speed, and (Helicopters with Fuel Injected Engine – HIO-360-G1A) Fuel Boost Pump*'.

The procedure states that:

'this check of idle mixture and idle speed shall be accomplished at the end of the last flight each day, prior to engine shutdown.'

- 2.3 The **idle mixture check** involves rapidly rotating the throttle to the closed (normal idle stop, not override) position, and then smoothly moving the mixture control towards the IDLE CUT-OFF position and noting the engine rpm, then moving it back to FULL RICH before the engine stops. The engine rpm should rise between 25 and 100 rpm, before dropping during this check. If the rpm rise is not within these limits then the idle mixture setting needs to be adjusted by maintenance personnel.
- 2.4 The **idle speed check** is then carried out during which the throttle is rapidly closed to the full override position, and the rpm checked to ensure that it does not drop below 1,400 rpm. A second check involving rapidly rotating the throttle to the normal idle stop should produce an engine rpm no greater than 1,600 rpm. If the engine idle speed is not within these required limits then it needs to be adjusted by maintenance personnel.
- 2.5 The checklist found in the aircraft did not contain either of these checks as part of the post-flight engine shutdown checks. Indeed, discussions with six different Schweizer 269C-1 flight instructors from different training organisations in the UK revealed that only one of them was aware of the idle mixture check. They all carried out some variation of the idle speed check as part of their pre-take-off checks, although some just checked for a needle split and that the engine did not stop, but did not check for a specific rpm. The aircraft manufacturer stated that it was important to carry out the idle speed check and idle mixture check because if either the idle speed or idle mixture were set incorrectly, it could lead to engine stoppage in flight if idle were selected. The manufacturer also stated that it was important to perform the idle speed check at the end of the flight, rather than only prior to flight, because the engine response was different when the engine was at normal operating temperature.

3 Action To Be Taken

- 3.1 Owners and operators of Schweizer 269C-1 helicopters should review the contents of their Helicopter Flight Manuals and ensure that they operate their aircraft in accordance with all aspects of the manual. Any flight checklist used to operate these aircraft should reflect fully the requirements of the relevant Flight Manual and in particular that a check of idle mixture and idle speed must be accomplished at the end of the last flight each day, prior to engine shutdown.

4 Queries

- 4.1 Any queries as a result of this Safety Notice should be addressed to the operator's Flight Operations Inspector (FOI), or for those who do not have an assigned FOI to the GA Unit at the following e-mail address: GA@caa.co.uk.

5 Cancellation

- 5.1 This Safety Notice shall remain in force until further notice.