Safety Information Bulletin

Airworthiness

SIB No.: 2022-05

Issued: 24 June 2022

Subject: **Rotorcraft Flight Manual Update related to Servo Control Transparency**

Ref. Publications:

- Airbus Helicopters (AH) AS 350 Service Letter (SL) 1648-29-03 dated 04 December 2003.
- AH EC 120 B SL 1649-29-03 dated 04 December 2003.
- Federal Aviation Administration (FAA) Special Airworthiness Information Bulletin (SAIB) SW-04-35 dated 19 December 2003.
- Civil Aviation Safety Authority (CASA) Australia Airworthiness Bulletin (AWB) 27-008 dated 14 May 2007.
- AH AS 350 B3 Rotorcraft Flight Manual (RFM) amendment Normal Revision 12, date code (21-07).
- AH Service Information Notice (SIN) 3287-S-67 Revision 1, “Rotor Flight Controls servo control transparency”, dated 18 February 2022.

Applicability:

AS 350 helicopters, all models, all serial numbers (s/n), except AS 350 B3 helicopters fitted with dual hydraulic system; AS 355 E helicopters, all s/n; and EC 120 B helicopters, all s/n.

Description:

Several occurrences of untimely flight control load increase, leading to unexpected flight path deviation, have been reported over the last years where a servo transparency phenomenon was identified as one of the potential contributing factors, affecting helicopters equipped with single hydraulic system. This phenomenon is known variously as *“servo transparency”*, *“servo reversibility”* or *“jack stall”*, but it is referred to as servo control transparency in this SIB.

Servo control transparency occurs when the aerodynamic loads exceed the capability of the hydraulic actuators of the main rotor, thus giving the impression of temporary jamming of the pilot controls. On AS 350 helicopters, the most loaded actuator is the right hand (RH) actuator. The factors that affect servo control transparency are high airspeed, high collective pitch, high gross weight, high "G"-loads, and high-density altitude.

Further explanations about servo control transparency can be found in the SLs referenced above, published by AH to initially address the phenomenon. Consequently, the FAA and CASA Australia respectively issued SAIB SW-04-35 and AWB 27-008.

Although this phenomenon, in most cases, occurs smoothly and can be managed provided the pilot reacts properly, it can, under specific circumstances, lead to a rapid loss of altitude,

particularly during a RH turn, or lead to a major deviation of flight path. Servo control transparency can also occur suddenly, e.g. in case of a rapid onset of flight parameters (i.e. rapid change in wind speed/direction).

Prompted by an additional recent event related to servo control transparency, AH issued, for AS 350 B3 helicopters equipped with an ARRIEL 2B1 engine, RFM amendment Normal Revision 12, date code (21-07). This RFM amendment provides a special warning for the risk associated to entering into servo control transparency during a RH turn close to ground/obstacles. Similar RFM amendments are expected to be published by AH for AS 350 B3 helicopters equipped with an ARRIEL 2B or ARRIEL 2D engine, as well as for AS 350 B, AS 350 BA, AS 350 BB, AS 350 B1, AS 350 B2, AS 350 D, AS 355 E and EC 120 B helicopters.

AH also published SIN 3287-S-67 Revision 1, addressing this subject for pilot/operator awareness.

This SIB is published to further address the risks associated to servo control transparency, and it recommends endorsement of these RFM amendments.

At this time, the safety concern described in this SIB is not considered to be an unsafe condition that would warrant Airworthiness Directive (AD) action under Regulation (EU) 748/2012, Part 21.A.3B.

Recommendation(s):

EASA recommends owners and operators to amend the applicable RFM by incorporating the RFM amendment related to servo control transparency, to inform all flight crews, and, thereafter, operate the helicopter accordingly.

Contact(s):

For further information contact the EASA Safety Information Section, Certification Directorate.
E-mail: ADs@easa.europa.eu.