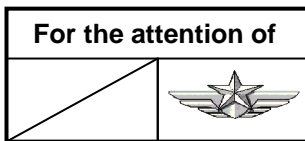


# SAFETY INFORMATION NOTICE

**SUBJECT: ROTOR FLIGHT CONTROLS**

**Servo-control transparency**  
ATA: 29



AIRCRAFT CONCERNED	Version(s)	
	Civil	Military
EC120	B	
AS350	B, BA, BB, B1, B2, B3, D	L1
AS550		A2, C2, C3, U2
AS355	E	

Airbus Helicopters is releasing a new revision of this Safety Information Notice in order to inform customers of the publication of a video illustrating the phenomenon of servo-control transparency.

**Revision 0:**

Airbus Helicopters took part in investigations following events on the "servo transparency/servo reversibility" or "jack stall" phenomenon.

These events occurred each time after forceful maneuvers while the aircraft was at high speed and weight. They were characterized by the appearance and the increase in the control load on the cyclic and collective which depend on maneuver intensity.

These events led Airbus Helicopters to remind you of the phenomenon described and explained in LS 1648-29-03\*\* (for Ecureuil aircraft) or LS 1649-29-03\*\* (for Colibri aircraft) and also by the FAA in SAIB SW-04-035\*\*. This phenomenon specific to aircraft equipped with a single hydraulic circuit can occur under certain conditions during maneuvers when the main rotor loads are increasing above the hydraulic system's capacity.

A combination of the contributing factors listed below possibly leads to servo-transparency:

- the load factor,
- the maneuver force (actions combined on the controls),
- high speed (refer to SIN No. [3093-S-00](#) rev 2 dated 18.02.2022),
- high weight,
- high collective pitch,
- a high density altitude (combination of altitude and temperature).

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To date, the phenomenon explanation and the description of all the different factors leading to its appearance are well described and explained in the Limitations chapter of the different Flight Manuals/RFM's (chapter "Maneuvering limitations") and/or in the Normal procedure chapter.

If nothing is done by the pilot to decrease the maneuver force and counter the gradual increase of the control load (tendency for nose-up and RH roll), this phenomenon can cause risks if it occurs while the aircraft is operated close to the ground.

#### Revision 1:

Airbus Helicopters would like to share with its customers the outcome of an investigation for a recent event involving the servo-transparency phenomenon.

The Aircraft was equipped with a data recorder (Helisafe) which made it possible to identify the phenomenon and to determine that it occurred without aggressive maneuvers, but that it was due to the aerology in a mountainous area. When the aircraft passed over a ridge, combined with a descent and a right turn, it entered into a servo-transparency phenomenon.

The change in aerology (wind direction / speed) and the turbulence phenomena due to a change in terrain shape, combined with the maneuver, led the aircraft to rapidly reach its airspeed limitation, thus significantly increasing the load on the main rotor.

The wind change induced an airspeed increase of about 25-30 kts, which was unexpected for the pilot.

The servo-transparency phenomenon was clearly identified by the pilot when the aircraft rolled right and the controls became stiff. The pilot immediately lowered the collective stick, leading to an overspeed of the main rotor while the aircraft subsequently escaped the phenomenon due to its trajectory / main rotor load.

Airbus Helicopters wanted to inform its customers of this event, of the hazard in mountainous areas due the aerology and the proximity of the terrain which can lead to rapidly reaching and exceeding the VNE (SIN 3093-S-00 rev 2 has been revised accordingly) and consequently to entering into a servo-transparency phenomenon possibly associated with a main rotor overspeed.

Airbus Helicopters would like also to inform its customers that the following warning will be added in the Limitations chapter of the different Flight Manuals/RFM's ("Maneuvering limitations" chapter):

#### **WARNING**

**Servo-transparency phenomenon could lead to a hazardous situation at low clearance from ground and particularly during right turn maneuver.**

Airbus Helicopters insists on the importance to comply with the limitations of the Flight Manual/RFM and prevent forceful or excessive maneuvers at all times moreover with a heavy aircraft at high speed and high density altitude; even more when aircraft is operated close to the ground.

In addition, Airbus Helicopters informs all the operators that the OSD FCD (EASA Operational Suitability Data - Flight Crew Data) for Ecureuil/Single Engine AS350/EC130 (Normal Revision 4 - Date 21-30) describes the specific task and the training methodology (TASE: Training Area of Special Emphasis) to perform the practical demonstration of this phenomenon during specific training on AS350 variants equipped with a single hydraulic circuit. As this specific task describes Mandatory ([M]), all the training centers in EASA field must comply with this within their training plans. As part of Airbus Helicopters training standard, all the training centers worldwide approved by AH must also comply with this. Moreover, Airbus Helicopters highly recommends all others training centers worldwide to comply with this as well. The OSD FCD is available for all operators on Airbus Helicopters technical documentation site (Technical Information Publication on Internet (T.I.P.I.)) at [www.airbushelicopters.com/techpub/](http://www.airbushelicopters.com/techpub/).

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\*\* Lettre Service (LS) 1648-29-03 (AS350 D, B, B1, B2, B3, BA, BB, L1), Lettre Service (LS) 1649-29-03 (EC120 B) available in T.I.P.I. ([www.airbushelicopters.com/techpub/](http://www.airbushelicopters.com/techpub/)). Special Airworthiness Information Bulletin (SAIB) SW-04-35 is available on the FAA website (<https://www.faa.gov/aircraft/safety/alerts/SAIB/>).

#### Revision 2:

In order to provide assistance for a better understanding of the servo-transparency and its consequences, Airbus Helicopters has created a video.

First, this video shows a pilot performing a maneuver in order to impress his passenger, but Airbus Helicopters would like to remind you that servo-transparency can also occur without aggressive maneuvers as explained in Revision 1 of the SIN, or when several contributing factors are combined as explained in Revision 0. Pilots should avoid cumulating several parameters such as high speed, high rate of descent, low altitude and pull-up/turn during maneuvers.

Second, the video shares explanations, risks and solutions associated with the phenomenon.

**This video is available via the following link.**

**Airbus Helicopters highly recommends watching this video, which can be used as an additional training tool during theoretical hydraulic system courses.**

#### Link to the video:

<https://airbus.keepeek.com/pm6thoS3ux>