

**Subject:** Rotorcraft Cargo Hook Installations – Impact on Sling Load Operations

**Ref. Publications:**

Commission Regulation (EU) [965/2012](#) dated 05 October 2012.

**Applicability:**

All rotorcraft performing helicopter external sling load operations (HESLO).

**Description:**

Rotorcraft provide a vital role in bringing heavy loads swiftly to locations which would be otherwise hard to access, for example for construction, supply or firefighting.

This SIB is intended to raise awareness of the design assumptions, and the related reliability of the systems and certain risks and issues pertaining to underslung (sling) load operations.

EASA have become aware of accidents and serious incidents related (but not limited) to:

- Inadvertent loss of load, including over operational employees, or overpopulated areas.
- Hook impact/entanglement on ground/foilage/fixed structure/power lines. Inadvertent dipping of “Bambi” bucket into water.
- Line entangled with the rotorcraft structure and/or rotor(s), with and without load attached.
- Impact of sling hook arrangement with rotorcraft structure and/or rotor(s), with or without load attached.
- Attempted take-off with line over the landing skid, leading to immediate aircraft instability.
- Contact with high-voltage electricity lines.

The design approval of a Non-Human External Cargo Hook (N-HEC Hook) installation is limited to the cargo hook with its mechanical fixation to the helicopter (sometimes termed “upper hook”), the primary/backup release mechanisms and the related maintenance. It follows that typically anything below the cargo hook (e.g. long-line, “Bambi” bucket, aerial saw, heli-logging grapple, etc.) is not part of the rotorcraft design approval.

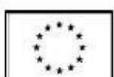
EASA recognise that rotorcraft design approval holders have periodically issued documents providing advice specific to the hook installation designs for which they are responsible.

For existing designs, the likelihood for an inadvertent loss of a load due to a cargo hook unscheduled opening is usually expected with a probability of  $10E^{-5}$ /Flight Hour (FH), equalling one occurrence every 100 000 FH of an aircraft fleet. This is under consideration for future designs.

Such a probabilistic design target is not typically sufficient to address an unsafe condition, and assumes that the operational risk assessment leads to adequate precautionary measures to

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consider the possible harm to persons on the ground. In particular the hazards linked to a potential loss of the external load as well as other potential hazards like engine failures (necessitating an immediate dropping of the load) should be considered. Any such commercial activity that would be considered 'high risk' may require a High Risk Authorisation in accordance with Commission Regulation (EU) 965/2012 (Air Operations) Article 1(4).

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, nor Safety Directive (SD) action under Regulation (EU) [965/2012](#), Annex II, ARO.GEN.135(c).

### Recommendation(s):

EASA recommends that the operators of the affected rotorcraft and inspectors of competent authorities consider the above-listed risks, when conducting or inspecting external sling load rotorcraft operations in order to avoid serious or fatal injuries. Member States may require additional permissions or approvals for certain operations in areas likely to involve third parties.

The following non-exhaustive list provides considerations for precautionary measures to reduce the risk to persons on the ground:

- Plan the operations and flight movements as if the load could drop at any point during the flight.
- Consider the consequences of aircraft emergencies on the need to jettison the load and plan the flight operations accordingly.
- Protect third parties from injury due to the aforementioned hazards when operating over streets, hiking paths, cable cars, railways, etc. Seek the necessary overflight approvals and manage the risks.
- Protect the ground support staff of the operations, e.g. by using auxiliary constructions that allow assembly of elements without the need for direct interference by ground support staff.

Additionally, operators of the affected rotorcraft and competent authority inspectors are reminded that as per Commission Regulation (EU) No 965/2012 (Air Operations), Annex VII, SubPart E, Section 2 and Annex VIII, SubPart E, Section 1 (HESLO):

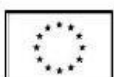
- A checklist, training and Standard Operating Procedures (SOPs) are to be developed for performing sling load operations.
- The above-referenced risks should be taken into account when developing such checklists, training and SOPs.
- For commercial specialized operations HESLO, in addition to compliance with Annex III, ORO.SPO.100, a High Risk Authorisation under ORO.SPO.110 may be required.

### Contact(s):

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

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