

**Proposed Equivalent Safety Finding on CS/JAR/FAR 27 & 29, §601, §603, §605, §865
(including the applicable AC27/29.865) for Hoist Installation on Helicopters
Applicable to AgustaWestland, Airbus Helicopters and Airbus Helicopters Deutschland GmbH**

Issue 1 (although no public comments have been received, the text of the ESF has been revisited for clarity without changing the overall approach)

Introductory Note:

The hereby presented Equivalent Safety Finding has been classified as an important Equivalent Safety Finding and as such shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.), which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of issue :

AgustaWestland, Airbus Helicopters and Airbus Helicopters Deutschland GmbH have applied for installations of several hoists, all sharing the same overload clutch design.

For the design of hoist installations for Human External Cargo (HEC) compliance has to be demonstrated with CS/JAR/FAR 27 & 29.601, .603, .605, .865 (including the applicable AC27/29.865). This is intended to ensure that the parts and assemblies are appropriately designed, identified and traceable according to the criticality of their failure effect and therefore the external/HEC load shall not be lost unintentionally.

This encompasses the control of sub-suppliers by the system supplier and the management of Hoist Critical Parts¹ in general, including materials definition and fabrication methods. Furthermore, the definition of a suitable flight envelope and the definition of the necessary provisions aimed at guaranteeing stable and predictable in-service performance have to be provided.

The overload clutch of the hoists claimed for certification is subject to EASA AD 2013-0275R1 stemming from the investigation on an in-service event where a failure of the rescue hoist slip clutch resulted in the hoist cable to reel-out in an uncontrolled manner.

It has been determined that direct compliance with the requirements listed before is not possible.

Equivalency Safety Finding (ESF) Demonstration:

The hoists proposed for certification are grouped into 2 different populations in order to manage the configuration and manufacturing control:

- Population 1 includes all hoists that have not been produced in accordance with the set of drawings and manufacturing processes pursuant to adequate Hoist Critical Parts management².
- Population 2 includes hoists that have to be produced with Hoist Critical Parts according to Hoist Critical Parts management.

¹ Hoist Critical Parts are the certain hoist parts, the failure of which can lead to the loss of the load.

² The subject ESF relies on the concept of Hoist Critical Parts management which broadly follows the approach of the requirement Part 27/29.602 (and associated AC).

For these 2 hoist populations, it is proposed to demonstrate compliance with above listed requirements on an ESF basis established with the following compensating factors, as derived from the investigation for the EASA AD.

For all hoist installations:

1. Appropriate pass/fail criteria and periodicity for repetitive checks applicable to the overload clutch shall be included in the Rotorcraft Flight Manual and Aircraft Maintenance Manual ALS.
2. The use of a Field Load Check tool as defined in the overload clutch Service Bulletins for the EASA AD shall be introduced in the Aircraft Maintenance Manual.
3. Other Instructions for Continued Airworthiness (ICA) for adequate maintenance of the hoists shall be also provided. These instructions shall include
 - a. hoist overhaul intervals (defined, consistent with the EASA AD as calendar time and number of hoist cycles and lifts),
 - b. the maintenance work to be done and
 - c. identification of all hoist critical parts other than the overload clutch to be replaced by parts compliant with hoist population 2 design standard.
4. Appropriate operational limitations aiming at reducing the accelerations on the cable (e.g. max bank angle of 20° with a HEC load attached) shall be introduced in the RFM together with appropriate CAUTION and WARNING notes to manage abnormal behaviour.

Furthermore, for population 1 hoists:

1. A Service Life Limit, not to exceed 15 months, shall be introduced in the Airworthiness Limitations (ALS) for overload clutch replacement with design standard of population 2.
2. For hoist critical parts other than the overload clutch, it shall be demonstrated through an analysis of their service history that during their in-service use they have not been the cause of any unsafe condition. This consideration shall be applied to all hoist critical parts produced by different sub-suppliers

Furthermore, for population 2 hoists:

1. A Hoist Critical Parts Quality Management Plan will be deployed defining the actions undertaken for the control of key characteristics on hoist critical parts drawings, the management of manufacturing processes of sub-tiers suppliers, the inspection requirements to be carried out in production to guarantee the production surveillance of parts.
2. Concerning the overload clutch in particular, an improved ATP shall be put in place designed to stabilize the clutch behaviour before delivery. These clutches shall be identified with a new clutch P/N.
3. A Service Life Limit, not to exceed 3 years, shall be introduced in the ALS for overload clutch replacement.
