# SAFETY INFORMATION NOTICE

**SUBJECT:** GENERAL

External load operations

For the attention of

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In line with our constant commitment to improving the safety of helicopter operations, Airbus Helicopters would like to share information about some recent accidents which have occurred during sling load operations. Sling load operation represents a large part of helicopter activity, and is recognized as a difficult mission that requires good pilot skills and stringent procedures, as the accident risk is higher than for other missions due to its demanding nature. The average rate on the worldwide Airbus Helicopters fleet is close to one accident per month.

The purpose of this Safety Information Notice is not to instruct pilots and ground teams on sling load operations, but to share with them some lessons learned from analysis of accidents. This Safety Information Notice replaces Service Letter No.1727-25-05 published on March 26, 2006.

Airbus Helicopters is not admitting the existence of any duty and/or any liability concerning these accidents but wishes that observance of the recommendations listed below leads to a decrease in the risks.
RECOMMENDATIONS

- Respect limitations published in the Flight Manual including those related to STC in SUP approved Part.

- Apply the procedure and respect the limitation provided by sling load items manufacturers and providers.

- Strictly adhere to established Standard Operational Procedures (SOP), respect speed limitations with and without the load.

- Be aware that a metallic cable has not the same behavior in flight than a synthetic/textile long line.

- Each unloaded sling is a potential hazard for the operation. Experience has shown that unloaded slings should be ballasted at the bottom of the line. The ballast at the bottom of the line must be so heavy, that the unloaded sling cannot, according to flight limits and regulations, endanger the helicopter or operation. Minimum weight of 15 kg is recommended, or more depending on the equipment used and the specificity of the operation.

- With unloaded slings, avoid descending at airspeeds above Vy, and avoid load factors less than 0.5 g. Maintain visual control on your line (mirror or equivalent).

- Use only bags or nets in a good condition, and reinforce them with strong straps, if necessary. Do not take off with an empty bag or net.

- Brief systematically with ground team and helpers before conducting the operation.

- When using long slings, assistance of a person on the ground equipped with a radio, is highly recommended.

- Do not operate with only marginal fuel content.

- Always depart vertically with your sling / load to avoid entanglements.

- On SA315 LAMA helicopters, comply with the pitch limits. Check for correct calibration. If components other than Airbus Helicopters components (blades, etc.) are installed, check the control rigging and use only the permitted corresponding pitch settings.
1. Accidents reported over the last 16 years

![AH Accidents repartition by main causes](chart.png)

2. Recommendations

a. External load

**Ballast slings.** An unloaded sling is a potential hazard (tail rotor strike) and all slings should be adapted with ballast. The effect is obvious in stabilized flight. During descents at airspeeds above Vy, it is possible for the sling to move upward, even with ballast, at load factors less than 0.5 g. This phenomenon can be prevented by conducting descents at airspeeds below Vy. Be aware of the sling you use (steel or textile). Textile slings can fly very high towards tail rotor with high speed. On the ground, take particular care of the textile line as it can more easily get caught in the tail rotor due to its characteristics. Whenever possible, land the sling in front of the helicopter so that the line is visible and under the control of the pilot. It is highly recommended to fit a swivel bottom on the rope in any case.

**Failure of a bag** can prove to be dangerous given the significant aerodynamic drag to which the empty bag is exposed. Even with no load factor, the sling and bag can move upward toward the tail rotor. You must use very solid bags which are in a good condition, reinforced with solid straps, if necessary.

**Note:**
Some bags are for single usage only and it is difficult for the crew to get this information. Consideration should be given to the use of nets rather than bags if the load allows this alternative.
b. Collisions

Most of the accidents are caused by the collision with cables or antennas in the vicinity of the sling area or by the collision of the main or tail rotor with obstacles.
A proper recognition of the area before performing the approach is highly recommended.
Some of the collisions with obstacles during the lifting are also caused by a loss of situation awareness, the left side of the aircraft being “forgotten” by the pilot seated in the right seat.

c. Environment/Weather related

Weather conditions can change very rapidly, particularly in mountainous areas. A particular focus should be done during the flight preparation, and a GO/NO GO decision should be made with the ground team before the flight. Do not hesitate to abort an operation when reaching marginal weather conditions such as stormy weather.

Real time performance can be very different from the expected performance calculated during the flight preparation. A variation in atmospheric pressure, outside temperature or wind can have a high impact on the performance of the aircraft.

Sling Work is often carried out with a relatively low fuel state (with a remaining fuel quantity of less than 10%). LAMA helicopters are fitted with a very-low-fuel-level option.
This option is not available on AS350 helicopters. For helicopter versions up to version B2 inclusive, when the fuel probe indicator has reached “0”, there are only 2 minutes of flying left, and when the fuel pressure drops to zero, there are only 10 seconds left, until engine flame-out occurs.
On H125 and H130 helicopters, these 10 seconds are reduced to zero. Due to the shape of the tanks and the technology of the fuel probes installed on H125 helicopters, the equipment proves to be accurate since capacitance probes were introduced to service in 1992. However, be more careful with resistance probes.
Get used to checking that the indications are consistent with the partial top-ups, and do not wait until there are only a few liters of fuel left.
This technical information is provided to help identifying imminent fuel starvation condition. A safe fuel management should always prevent reaching this state of fuel.

d. Human Factors

This is maybe the most difficult cause to address. A lot of accidents are caused by a lack of coordination and communication between the aircrew and the ground team: helpers injured by debris projected by the rotor downwash, by the movement of the load when lifting or caught on the net on the load, etc.
It is mandatory to brief the operation with the whole team, to review the sequence of operations, to check the radio-communication (use and frequency) and to brief how to react in case of emergency.

Attempts to take off with the sling caught on the ground can be prevented if a person, in radio-contact with the pilot, monitors the operation from the ground. This is vital when the cargo hook is not clearly visible either directly or in the mirror. In addition, it is recommended to avoid aggressive take-offs, and to start with a vertical climb before transition to level flight. The pilot should thus become aware of a snag because of restricted climbing capability.
e. Maintenance

A lot of accidents are caused by errors during aircraft preparation or maintenance, mainly due to task interruption or operations that are conducted without following the OEM Technical instructions. A properly maintained and airworthy aircraft is mandatory to perform a safe and reliable flight.

f. Suitability of flight operations equipment, operator competence and expert knowledge

Choice and sourcing of equipment
The choice (procurement) of suitable lifting accessories and slinging equipment, their correct use and the adoption of appropriate techniques for the slinging of loads are fundamental safety criteria for helicopter external sling load operations (HESLO).

It is in the nature of things that the operation of helicopters is subject to particular requirements and involves special risks; therefore, it is crucial that users apply expert knowledge regarding the suitability and correct use of lifting accessories and slinging equipment.

In the EASA area, Operators are responsible for the sourcing of suitable lifting accessories and slinging equipment as well as for maintaining their serviceability. See ED Decision 2014/018/R, Annex VIII Part-SPO, AMC1 SPO.SPEC.HESLO.100 (c)(3)

When sourcing their equipment, users must inform the manufacturers or the distributors (retailers) of the special requirements the equipment must be able to fulfill.

All lifting accessories and slinging equipment must be state of the art and in conformity with legal prescriptions. Moreover, all work equipment must be assessed and tested with regard to its suitability (risk analysis). Instructions for use and maintenance (user guide) are an integral part of the product.

Training and occupational safety

All task specialists must undergo initial and recurrent training regarding the appropriate use of work equipment, the special requirements and the assessment criteria for its withdrawal from service. Maintenance procedures and permissible repairs must only be carried out by qualified persons (trained by the equipment manufacturer).

In the EASA area, the legal framework for initial and recurrent training is ED Decision 2014/018/R, Annex VIII Part-SPO, AMC1 SPO.SPEC.HESLO.100

Each user should comply with national law on occupational safety.
EU: Directive 2009/104/EC concerning the minimum safety and health requirements for the use of work equipment by workers at work.

Manufacturer/distributor

All manufacturers and/or distributors (retailers) must have expert knowledge of the particular requirements and risks to which lifting accessories and slinging equipment are exposed during helicopter external sling load operations. During the development, design and construction phase as well as when supplying equipment, the manufacturers/distributors must guarantee the suitability and the safe use of the latter.
Special attention must be paid to the choice of raw material and specific calculations (service strength, minimum breaking load, service life and life span in general). Compared to normal industrial use, the equipment employed during helicopter operations must be able to withstand different forces (such as bank angle, G-force, drag, shock loads, angles of inclination, downwash but also wear due to UV rays or heavy workload). All these factors must therefore be considered. When caused by inappropriate lifting accessories and/or slinging equipment, even the loss of one single part of an external load can entail considerable criminal proceedings for both the helicopter operator and the manufacturer.

In Europe, EC Machinery Directive 2006/42/EC is the standard for the manufacture of “lifting accessories” (art. 1.d, art. 2.d) (ropes, traverses), as well as “slings and their components” (art. 2.d) (round slings, lifting straps, slinging chains, multiple-leg slings, shackles, etc.).

Manufacturers should not rely on the assumption that safety factors 4 (steel), 5 (steel ropes) or 7 (textiles, see Machinery Directive 2006/42/EC, annex I, art. 4.1.2.5) are sufficient for the particular operational and material requirements of helicopter external load operations.

**Note:** the safety factors given in Machinery Directive 2006/42/EC, annex I, art. 4.1.2.5, are only reference values and the actual values may therefore be higher. It is the manufacturers’ duty to assess the actual requirements together with their customers and subsequently define the factors actually needed. The specifications for a sling which will only be used to transport a specific machine (and nothing else), for example, cannot be compared to the requirements of a Logging Long Line.

**Links**

**Miscellaneous publications**
- CH: Neuf règles vitales pour le personnel au sol des aires de manœuvre d'hélicoptères, SUVA 2014 (available in German, French, Italian) [https://www.suva.ch/de-ch/praevention/sicherheit-mit-system/lebenswichtige-regeln#uxlibrary-material=a13b1de0050fd3482b025df264d5c59c&uxlibrary-safetyrules=5d33fd5f7837496bbc436c2278138a80](https://www.suva.ch/de-ch/praevention/sicherheit-mit-system/lebenswichtige-regeln#uxlibrary-material=a13b1de0050fd3482b025df264d5c59c&uxlibrary-safetyrules=5d33fd5f7837496bbc436c2278138a80)
- DE: DGUV Information: 214/911 “Safe Helicopter External Load Operations” (available only in German) [www.bg-verkehr.de](http://www.bg-verkehr.de)

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