eurocopter
an EADS Company

Service à la Clientèle
Direction Technique Support

13725 Marignane Cedex - France
Tél .+ 33 (0) 4 .42.85.85.85 - Fax. + 33 (0) 4.42.85.99.66
Télex HELIC 420506
Télégramme : EUROCOPTER Marignane

DIFFUSION/ISSUE
AUSGABE/PUBLICATION

Q	G

Lettre-Service
No. 1727-25-05

Marignane, 30.03.2006

SUBJECT:

EQUIPMENT AND FURNISHINGS: Sling Work

Important: The information contained in this Service-Letter is intended mainly for pilots.

332	B	B1	M	M1	F1	C	C1	L	L1	L2
532	UL	AL	SC	AC	UC	A2	U2	UE		
EC225	LP									
EC725	AP									

350	D	B	B1	B2	B3	BA	BB	L1
550	U2	C2	C3	A2				
355	E	F	F1	F2	N			
555	MN	UN	SN	UF	AF	AN		
EC130	B4							

360	C											
365	C	C1	C2	C3	N	N1	N2	N3	K	F	Fs	Fi
366	G1	Ga										
565	SA	SB	UB	MA	MB	AA						
EC155	B	B1										

EC120	B

321	Ja	Ga	Gb	Gc

330	Sm	Ba	Ea	C	Ca	H	L	F	G	J	S1	JM	B

341	B	C	D	E	F	G	H
342	J	K	L	L1	M	M1	

AL II	3130	313B		
AL II ASTAZOU	3180	318B	318C	
AL III	3160	316B	316C	319B
LAMA	315B			

Dear Customer,

Sling Work represents a large part of helicopter activity, and is recognized as a difficult mission that requires good pilot skills and procedures, as the accident risk is higher than that of other missions due to its demanding nature.

The purpose of this Service-Letter is not to instruct pilots in sling load operations, but to remind them of some lessons learned from analysis of accidents. EUROCOPTER is not admitting the existence of any duty and/or any liability concerning these accidents, but wishes that observance of the lessons learned leads to a decrease in the risks.

Lessons Learned

Do not take off with an empty bag or net.

Use only bags or nets in a good condition, and reinforce them with strong straps, if necessary.

Unloaded slings, especially, short slings (5 to 10 m), should be ballasted with at least 15 kg at the cargo hook.

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

Do not operate with only marginal fuel content.

With unloaded slings, avoid descending at airspeeds above Vy, and avoid load factors less than .5g.

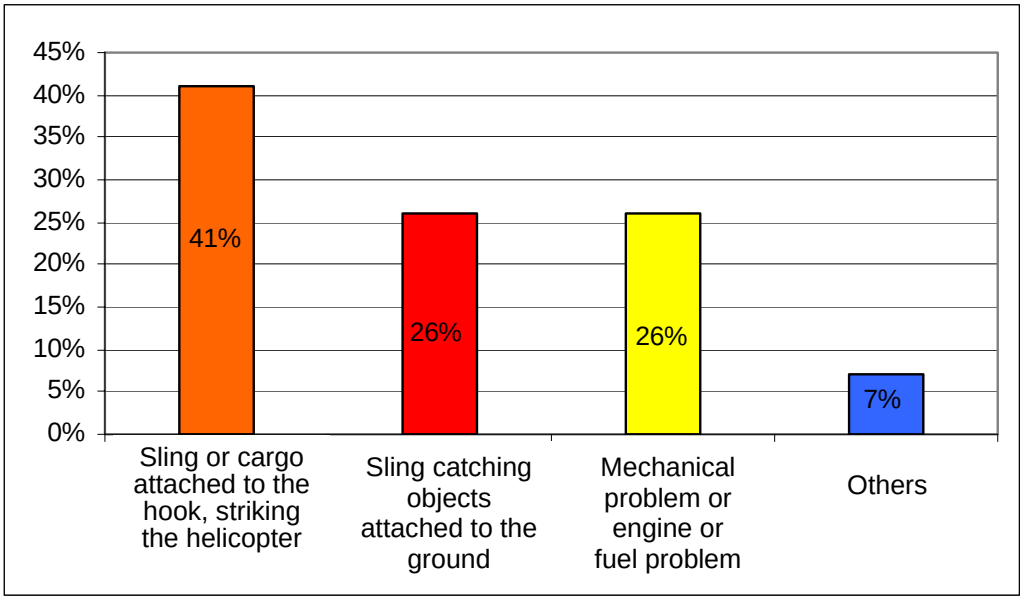
On SA315 LAMA helicopters, comply with the pitch limits. Check for correct calibration, and if components other than EUROCOPTER components (blades, etc.) are installed, check the control rigging and use only the permitted corresponding pitch settings.

1) <u>Accidents reported over the last 6 years</u>:

Type of aircraft:

41%	SA315	LAMA
4%	SA316	ALOUETTE III
55%	AS350	ECUREUIL
0%		DAUPHIN - PUMA - SUPERPUMA

Types of accidents:



2) <u>The causes broken down into 4 categories</u>:

In most of the cases (41%), the sling contacts the tail rotor, which may cause the TGB and parts of the fin to be damaged. The two main reasons are either an abrupt dive maneuver or bursting of the bag which behaves like a parachute when empty. In both cases, the cable and its cargo are subject to airstream loads which prevail over the weight of the cable and cargo. Consequently, the sling or load follows the airstream into the tail rotor area.

The second category includes cases in which the sling becomes entangled with objects on the ground (26%). Most of these cases could have been avoided if there had been a person on the ground to warn the pilot, who cannot see the hook clearly due to the length of the cable. This category also includes cases of slings becoming entangled in aerial lines.

The third category mainly includes LAMA helicopters with several cases of excessive use of collective pitch which, in hot weather or at altitude, causes the engine to surge and can then lead to its destruction (single-shaft engine). In cold weather and at low altitude, repeated torque exceedance can cause damage to the drive train. One LAMA helicopter was involved in an accident due to lack of fuel.

The fourth category includes a dynamite explosion which occurred during a sling operation, and a case of suspected transient control jamming. This event is still under investigation.

3) Solutions

Ballast slings, especially those that are less than 10 m long. 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 .5g. This phenomenon can be avoided by conducting descents at airspeeds below Vy.

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. Consideration may be given to utilizing nets rather than bags when the load will allow this alternative.

REMARK:
In the event of tail rotor contact and loss of control consider the following procedure.
Depending on weight, damage, altitude and airspeed, the suggested procedure will be more or less effective, but may provide the best alternative for this circumstance.
The helicopter will start a quick leftward rotation (rotor rotating clockwise), and even if the pilot did not respond early enough, and the helicopter has already rotated several turns, proceed as follows:
- Select full low pitch.
- Shut down the engine completely
- If possible, establish a speed of 40 kt as soon as the helicopter stops rotating. In case of a loss of the tail fin, the decent will be vertical.
- Down to a height of approx. 200 m above the ground, the situation seems to have become normal, then the sensation of vertical speed will become more and more obvious.
- Start increasing the pitch at a height that is twice the usual height for an autorotation. The touchdown will be hard, but survivable. (High-energy absorbing seats increase the survivability considerably).

Attempts to take off with the sling caught on the ground can be avoided 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. Thus, the pilot should become aware of a snag because of the restricted climbing capability.

Sling Work is often carried out in 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 helicopter version B3 and EC130 B4 helicopters, these 10 seconds are reduced to zero. Due to the shape of the tanks and the technology of the fuel probes installed on AS350 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.

The single-shaft engine of the LAMA helicopter is an old design and has particular characteristics. Exceeding of thermal power limits may result in surging which subsequently might result in heavy damage of the engine. On engines of more recent design, e.g. ARRIEL engines, any thermal power exceedance just results in NG or T4 exceedance and is harmless if it does not last for more than 5 to 10 seconds and if the limits specified in the Flight Manual are not exceeded.

LAMA helicopters are not equipped with a torquemeter. Consequently, compliance with the power limits is ensured by accurate adjustment and correct determination of the pitch limit. On AS350 B3 helicopters, a pitch error of 0.5° equals 13% of torque. The sum of these errors (e.g. resulting from a pitch error of 0.5° plus an error of 0.5° made by the pilot) in addition to the installation of rotor blades from outside sources not recommended by EUROCOPTER, without taking the corresponding maximum pitch reduction into account may cause the torque limit to be exceeded in the magnitude of 30%,.
In cold weather, with the same pitch, the torque increases. The exceptional performances of the LAMA helicopter hide torque exceedances that may cause damage to the dynamic components.

4) <u>Flight Manual Familiarity</u>

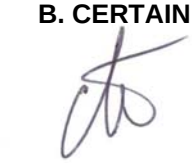
Most of the recommendations noted in this Service-Letter are specified in the various Flight Manuals. For example, refer to:

315 LAMA	SUPP 1
350 B2	SUPP 9.1
350 B3	SUPP 13
EC120 B	SUPP 10.1

We hope that this document assists you in operating your helicopter or fleet safely.

Yours sincerely,

B. CERTAIN



Consultant Expert

M. SOULHIARD

Technical Support
Operations Director