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# FLIGHT MANUAL

## SA 315 B LAMA

### SUPPLEMENT N°1

TRANSPORT OF EXTERNAL LOADS


P/N : 315A 73. 10. 100

This supplement shall be included in the Flight Manual when the installation mentioned above has been completed.  
The information contained herein supplements or cancels the information given in the Basic Flight Manual.

#### LIST OF EFFECTIVE PAGES

All pages of this supplement are listed below.  
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SUPP.1

# General

## 1 - GENERAL

NOTE : Only aircraft with high skid-type landing gear can use the "CARGO SWING" installation.

The load should be attached so that the vertical distance between the C.G. location of the load and the release unit hook is 3 metres (9 ft-10 in) min., and if possible not more than 8 metres (26 ft-3 in) (risk of swinging in forward flight).

Heavy load carrying is a difficult task due to the repercussions that swinging of the load may have on aircraft behaviour. Pilots are recommended to carry out cargo sling operation training with progressively increasing loads before attempting to carry heavy loads.

In order to facilitate the pilot's task, when carrying heavy loads, it is recommended that the load measuring system and the "TANK EMPTY" warning light be installed.

When using the "CARGO-SWING" (Fig. 1) the repercussion that swinging of the load has on helicopter behaviour is considerably reduced. This makes heavy load carrying less difficult and makes possible - if necessary - reduction below 3 m (9 ft-10 in) or extension above 8 m (26 ft-3 in) of the vertical length between load and hook.

## Section 1

### LIMITATIONS

The limitations specified in the Basic Manual and Supplements used remain applicable and are completed or modified by the following limitations :

#### 1 - MAXIMUM LOAD

Maximum permissible load suspended from release unit : 1000 kg (2200 lb)

CAUTION : THE MAXIMUM LOAD MAY ONLY BE INCREASED TO 1150 kg (2535 lb) IF THE REQUIREMENTS OF SERVICE-BULLETIN No. 0122 ARE MET.

#### 2 - MAXIMUM AIRCRAFT WEIGHT WITH EXTERNAL LOAD

The maximum permissible aircraft weight with an external load is the hover OGE weight (refer to Section 4 of the Basic Manual), and is limited in all cases to 2300 kg (5070 lb).

#### 3 - AIRCRAFT CONFIGURATION

The basic aircraft may be lightened by removing the following components :

- both doors (15 kg)
- the aft bench seat (11.4 kg)
- the copilot's low-back seat (7 kg)
- the copilot's high-back seat (11 kg)

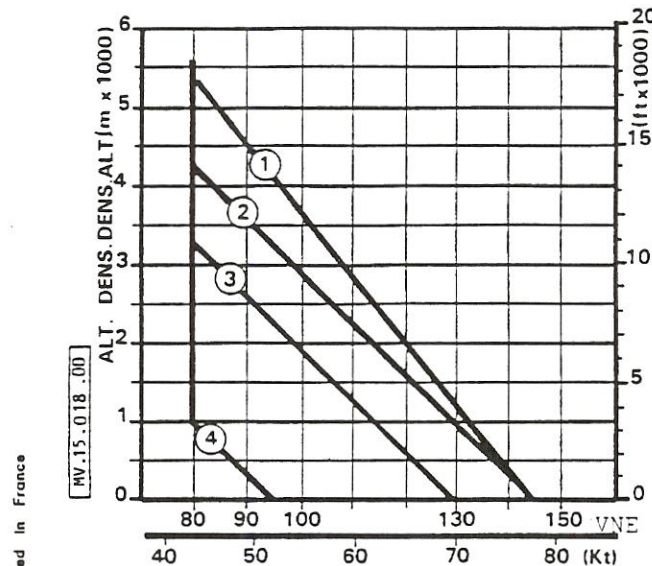
#### 4 - SLING LENGTH

Minimum sling length : 3 m (10 ft)

#### 5 - LONGITUDINAL BALANCE

Aft CG limit with external load :

3.09 m (121.6 in) from datum, irrespective of weight.

6 - VNE IN LEVEL FLIGHT, DESCENT AND TURNING (with compact external load)VNE for weight

- ① 1950 kg (4300 lb) maximum load
- ② Above 1950 kg (4300 lb) with load not exceeding 1000 kg (2200 lb)
- ③ Above 1950 kg (4300 lb) with load exceeding 1000 kg (2200 lb) in level flight
- ④ Above 1950 kg (4300 lb) with load exceeding 1000 kg (2200 lb) while maneuvering

7 - SERVICE CEILING

Determined by Figures 5 and 6 in Section 4 of the Flight Manual.

8 - AIRCRAFT BANK ANGLE

The bank angle is limited to :

- 30° for a/c weights greater than 1950 kg with load lighter than 1000 kg
- 15° for a/c weights greater than 1950 kg with load heavier than 1000 kg

9 - LIMITATIONS PLATE

A plate on the instrument panel indicates the maximum authorized load on the sling :

Prior to embodiment of Service-Bulletin No. 0122

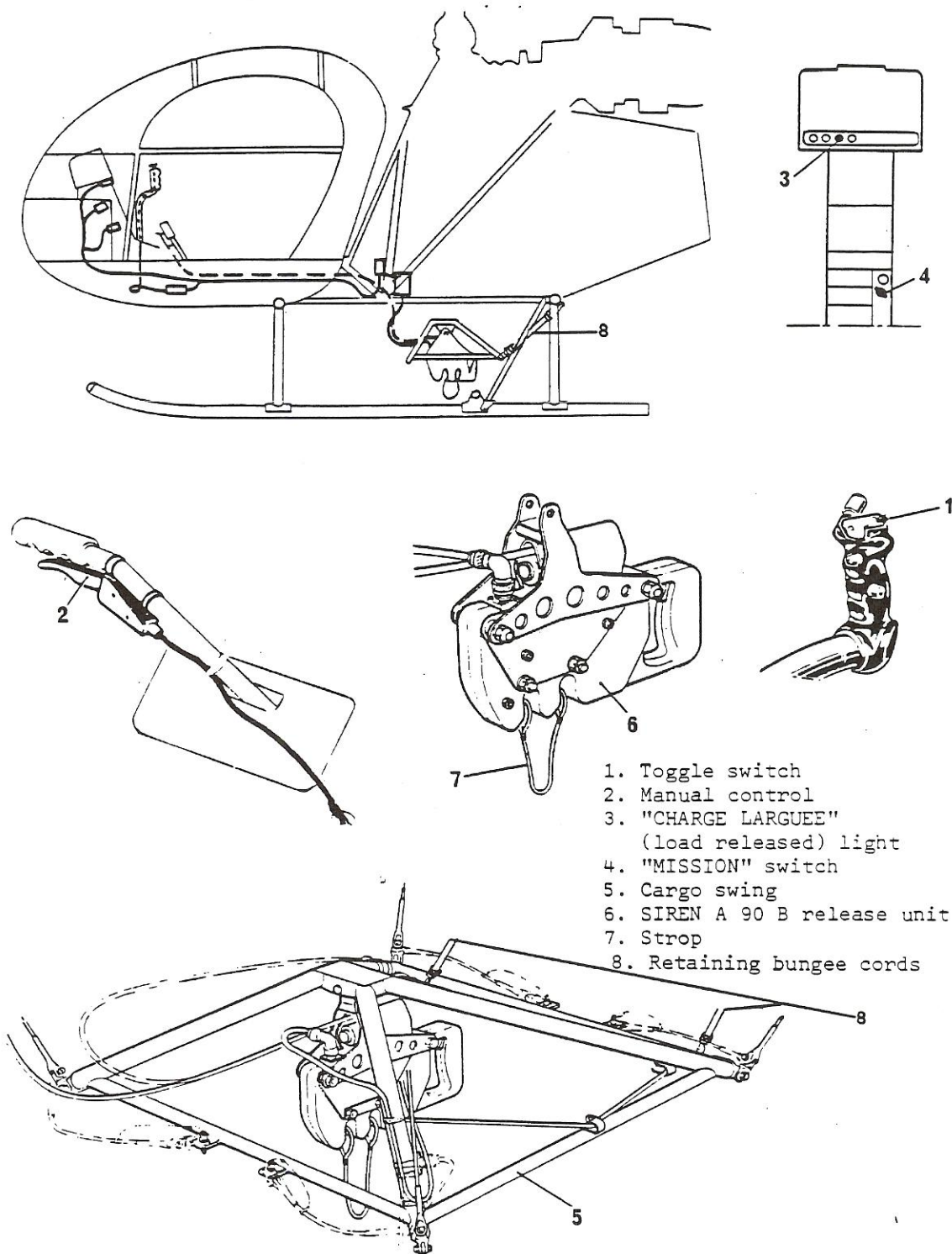
**MAX. SIREN SLING LOAD : 1000 Kg (2204 lb)**

After embodiment of Service-Bulletin No. 0122

**MAX. SIREN SLING LOAD : 1150 Kg (2535 lb)**



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"CARGO SWING" Freight Carrying Installation  
 Figure 1

SUPP. 1

# Section 2

## NORMAL PROCEDURES

The normal procedures specified in the Basic Manual and the Supplements used remain applicable and are completed or modified by the following normal procedures.

### A - EXTERNAL CHECKS

Post-modification AM 1085, prior to any load carrying mission, ensure that the bungee cords retaining the cargo swing have been removed or secured. After the mission, the cargo swing must be attached to the body structure by means of the bungee cords.

### B - USE

Before attaching the load :

- Engage the circuit-breaker.
- Place the "MISSION" switch in "ELINGUE" (sling) position.
- Adjust stick friction to a value above minimum.
- The load may be attached while the aircraft is either on the ground or hovering.

CAUTION : IN RAINY WEATHER, IT IS RECOMMENDED TO WEAR THICK RUBBER GLOVES FOR HANDLING OPERATIONS : DISCHARGE STATIC ELECTRICITY FROM THE HOOK BY GROUNDING IT USING A TUBE OR A CONDUCTING CABLE.

Once the load is secured, apply collective pitch very smoothly while maintaining the aircraft above the load. Observe a short pause when the support cables are fully stretched.

Whenever possible, take off with nose into the wind, taking particular care to avoid a cross wind from the LH side.

Lift the load vertically, then assume forward flight and start to climb immediately.

On the climbing path the recommended speed will depend, amongst other factors, on a certain stabilizing effect brought about by the drag of the load being carried.

No precise rule may be laid down but the decision must be based on the experience of the pilot, who should be trained for sling work (it can be considered, for guidance, that 120 km/h (65 knots) is a suitable speed for a compact load). The behaviour may differ according to the loads.

Handle the aircraft gently : increase and decrease speed slowly ; bank angles should be kept to a minimum.

Establish zero forward speed sufficiently high to ensure that the load will not be dragged along the ground, then descend vertically until the load contacts the ground.

Release the load by operating the switch located on the cyclic stick (if this switch fails to operate, use the manual control lever on the collective pitch lever).

Make sure that the load has been released by looking at the indicator light or from the signals given by ground personnel.

If there is no one at the release point resume forward flight, taking the same precautions as when carrying the load, until the release point becomes visible.

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### C - SPECIAL RECOMMENDATIONS

When the lifted load is such that the maximum permissible weight is reached, the collective pitch required is very close to the theoretical maximum pitch permitted for the particular flying conditions (altitude - temperature).

Therefore, it is necessary to ensure more particularly that the load would not involve an overstepping of the maximum permissible weight. When this weight is maintained, possible slight overpitching shall be of short duration only and in any case lower than  $0.05^\circ$ .

The margin between the power corresponding to the maximum pitch and the capacity of transmission components protected by this maximum pitch allows for slight overpitching.

When the tail rotor clearance is minimal, the aircraft must takeoff nose into the wind or with a crosswind from the right.

The maximum airspeed depends essentially on the load carried and the meteorological conditions.

Bulky loads and high winds might well lead the pilot to reduce the airspeed.

## Section 3

### EMERGENCY PROCEDURES

The Emergency Procedures specified in the Basic Manual and the Supplements used remain applicable and are completed or modified by the following Emergency Procedures :

#### ENGINE FAILURE WITH EXTERNAL LOAD

In the event of engine failure in flight, establish autorotative flight and immediately jettison the load.

In the event of engine failure in hovering flight while the load is being attached, move off to the right and apply collective pitch : ground personnel should be forewarned that in such circumstances they are to move away to the left.

## Section 4

### PERFORMANCE

The performance characteristics specified in the Basic Manual remain applicable.





# FLIGHT MANUAL

## SA 315B LAMA

### SUPPLEMENT N°1A

#### TRANSPORT OF EXTERNAL LOADS

#### E.R.C. "H" FRAME CARGO SLING

P/N 315A 73 10 200

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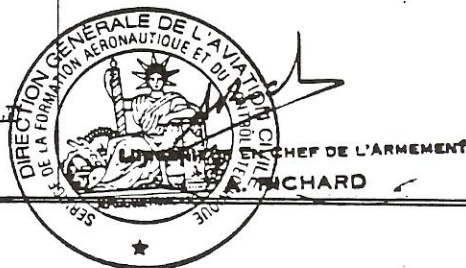
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APPROVED

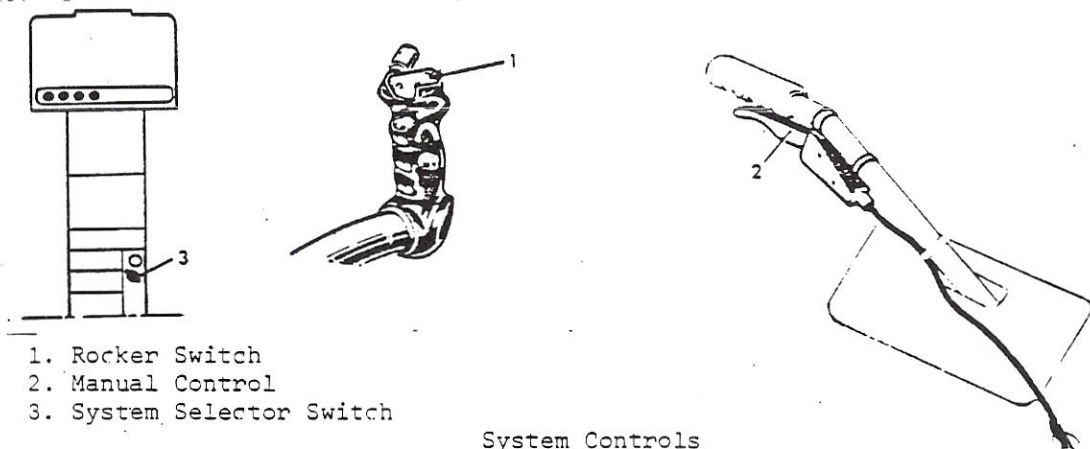
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# Général

The load should be attached so that the vertical distance between the C.G. location of the load and the release unit hook is 3 m (10 ft) min. and, if possible not more than 8 metres (26 ft. 3 in) (risk of swinging in forward flight).

Heavy load carrying is a difficult task due to the repercussions that swinging of the load may have on aircraft behaviour. Pilots are recommended to carry out cargo sling operation training with progressively increasing loads before attempting to carry heavy loads.



System Controls  
Figure 1

## Section 1 **LIMITATIONS**

The limitations specified in the Basic Manual and the Supplements used remain applicable and are completed or modified by the following limitations.

### 1. MAXIMUM LOAD

Maximum authorized load suspended from the release unit : 1134 kg (2500 lb).

### 2. MAXIMUM AIRCRAFT WEIGHT WITH EXTERNAL LOAD

The maximum authorized weight with an external load is that which enables hovering flight outside ground effect (Refer to the Basic Manual, Section 4). In all cases it is limited to 2300 kg (5070 lb).

### 3. AIRCRAFT CONFIGURATION

The standard aircraft may be lightened by removing the following components :

- . both doors (15 kg)
- . aft bench seat (11.4 kg)
- . Copilot's low bench seat (7 kg)
- . Copilot's high bench seat (11 kg).



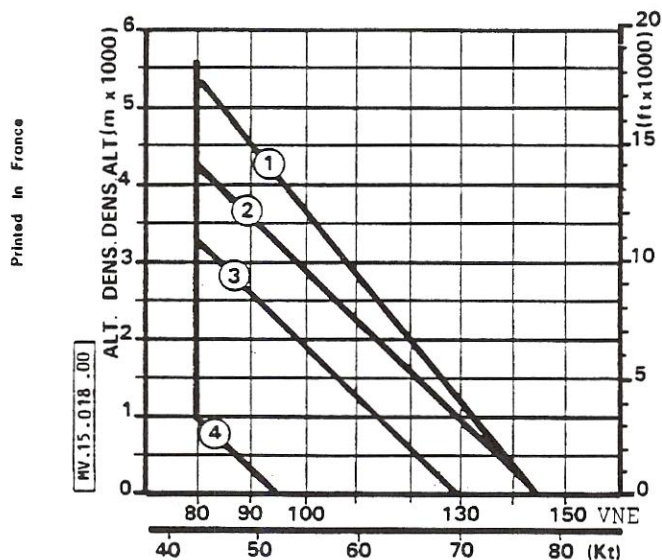
4. SLING LENGTH

Minimum sling length 3 m (10 ft)

5. LONGITUDINAL BALANCE

Rearward CG limit with external load :

3.09 m (121.6 in) from the datum, irrespective of the weight.

6. VNE IN LEVEL FLIGHT, DESCENT AND TURNING (WITH COMPACT EXTERNAL LOAD)

VNE for weight

- ① 1950 kg (4300 lb) maximum
- ② above 1950 kg (4300 lb) with load not exceeding 1000 kg (2200 lb)
- ③ above 1950 kg (4300 lb) with load exceeding 1000 kg (2200 lb) in level flight
- ④ above 1950 kg (4300 lb) with load exceeding 1000 kg (2200 lb) during maneuvering.

7. SERVICE CEILING

Altitude limited to 2500 m if the weight is greater than 2250 kg.

8. AIRCRAFT BANK ANGLE

The bank angle is limited to :

- 30° for weights greater than 1950 kg with load lighter than 1000 kg.
- 15° for weights greater than 1950 kg with load heavier than 1000 kg.

## Section 2

### NORMAL PROCEDURES

The Normal Procedures specified in the Basic Manual and Supplements used remain applicable and are completed or modified by the following Normal Procedures :

#### A. USE OF THE CARGO HOOK

Before attaching the load :

- Engage the circuit breaker
- Set the overhead panel "mission" switch to "M" ("ON").
- Place the "mission" selector switch (3) in "ELINGUE" ("SLING") position.
- Adjust the stick friction clamp to obtain a convenient is on the ground or during hover.

CAUTION : IN RAINY WEATHER, IT IS RECOMMENDED TO WEAR THICK RUBBER GLOVES FOR HANDLING OPERATIONS : DISCHARGE STATIC ELECTRICITY FROM THE HOOK BY GROUNDING IT USING A TUBE OR A CONDUCTING CABLE.

Once the load is secured, apply collective pitch very smoothly while maintaining the aircraft above the load. Observe a short pause when the support cables are fully stretched.

Whenever possible takeoff with nose into the wind, taking particular care to avoid a cross wind from the LH side.

Lift the load vertically, then assume forward flight and start climbing immediately.

On the climbing path the recommended speed will depend, amongst other factors, on a certain stabilizing effect brought about by the drag of the load being carried.

No precise rule may be laid down but the decision must be based on the experience of the pilot who should be trained for sling work : requirements may vary according to the nature of the load.

Handle the aircraft gently increase and decrease speed slowly ; bank angles should be kept to a minimum.

Establish zero forward speed sufficiently high to ensure that the load will not be dragged along the ground, then descend vertically until the load contacts the ground.

Release the load by operating the switch located on the cyclic stick. If this switch fails to operate, use the manual control lever on the collective pitch lever.

Make sure that the load has been released, by observing the signals given by ground personnel.

If there is no one at the release point resume forward flight, taking the same precautions as when carrying the load until the release point becomes visible.

### B. SPECIAL RECOMMENDATIONS

If maximum gross weight is attained with a sling load, the collective pitch required will be very near to the maximum permissible design pitch setting for the particular flight (altitude/temperature) conditions.

It is important, therefore, that no attempt should be made to lift a load involving infringement of the maximum permissible gross weight, in which case a very slight - less than 0.05 - and transient overstepping of the collective pitch criterion may be considered.

This, necessarily limited, pitch bonus is taken on the sufficient margin allowed between the power demand corresponding to maximum permissible collective pitch and the power capacities of the transmission components which this margin protects.

Under these conditions, the tail rotor clearance is minimal. Therefore the aircraft must take off nose into wind or with a crosswind from the right.

The maximum airspeed depends essentially on the load carried and the meteorological conditions.

Bulky loads and high winds might well lead the pilot to reduce the airspeed.

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## Section 3

### EMERGENCY PROCEDURES

The Emergency Procedures specified in the Basic Manual and the supplements used remain applicable and are completed or modified by the following Emergency Procedures :

#### ENGINE FAILURE WITH EXTERNAL LOAD

In the event of engine failure in flight, establish autorotative flight and immediately jettison the load.

In the event of engine failure in hovering flight while the load is being attached, move off to the right and apply collective-pitch. Ground personnel should be forewarned that in such circumstances they are to move away to the left.

## Section 4

### PERFORMANCE

The performances characteristics specified in the Basic Manual remain applicable.

SUPP. 1A