



CHAPTER 16

**REQUIREMENTS FOR HELICOPTER
SLING LOAD OPERATIONS**

1. GENERAL

- 1.1 An helicopter pilot prior to commencing carriage of Sling loads, shall have received an authorization from the DG, CAAN.
- 1.2 The helicopter pilot shall have undertaken a Sling Operation Training Program as mentioned in Section 2 of this Chapter. The training program shall be a part of the Flight Crew Training Program.
- 1.3 The helicopter pilot shall have successfully demonstrated to the Instructor and the DG, CAAN of his ability to safely conduct such an operation.
- 1.4 The air operator shall, in addition to the training program for the pilot, also develop and conduct a Training program for the Marshaller engaged in Sling Operations.
- 1.5 Permission must be acquired from the DG, CAAN prior to the initiation of any Sling Operation.

2. TRAINING

2.1 *Aim of training course*

The aim of the training course is to train a candidate to the level of proficiency required for the issue of a helicopter sling load rating, and to provide the training necessary to act as pilot-in-command of a helicopter engaged in sling load operations.

2.2. *Contents and requirements of training course*

- 2.2.1 The candidate must have completed not less than 300 hours of flight time as pilot-in-command of a helicopter. The course must be conducted by the holder of an Aviation Training Organization approval.



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2.2.2 The course comprises –

- (a) a theoretical knowledge course; and
- (b) a practical training course.

2.3. Theoretical knowledge course

The theoretical knowledge course must comprise instruction on the following –

- (a) the significance of operations within and outside ground effect, and the correct use of the relevant performance charts;
- (b) the possible fore and aft C of G changes when picking up and releasing sling loads;
- (c) the pre-flight checking and correct operation of the helicopter cargo hook equipment, including the emergency release;
- (d) the importance of a full and correct briefing for all flight and ground crew members participating in the operation as regards to –
 - (i) pick-up and drop-off points;
 - (ii) load preparation and flight characteristics of different loads;
 - (ii) oscillation characteristics and their control;
- (e) the care, selection, preparation and correct use of lifting equipment, including strops of various lengths, swivels, shackles, nets, and safety harnesses for cabin crew, as applicable;
- (f) responsibilities and duties of cabin crew;
- (g) aircraft-generated static, use of the static discharge pole and the correct procedure in this regard;
- (h) marshalling signals;
- (i) correct radio procedures and terminology for intercom communications between the pilot and cabin crew;
- (j) pick-up and release procedures;
- (k) safety and other equipment, including hand-held transceivers, hard hats, safety goggles, durable gloves, overalls and whistles;
- (l) emergency procedures, including engine failure in the hover, strops getting fouled either with the helicopter or with other items, loads becoming difficult or impossible to control in flight, and jettisoning of loads; the effects of buildings and obstruction on prevailing winds, escape routes in the event of downdrafts, turbulence and engine failure;
- (m) the pre-flight briefing which is given just before each flight, and which consists of a brief summary of the principal parts of the theoretical knowledge course, together with any particular points of airmanship, air traffic control, and meteorology pertaining to the flight; and
- (n) the relevant air law aspects.



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2.4. Practical training course

2.4.1 In-flight instruction

A full briefing must be given during flight, covering the following:

(a) Airmanship –

- (i) The suitability of pick-up and drop areas in respect of size, shape, surface, slope, approach and take-off paths and obstructions;
- (ii) Helicopter operation with due regard to such matters as power in the hover, power limitations, hovering into the wind, position of ground crew, and obstructions;
- (iii) The limits for the relevant conditions;
- (iv) Good lookout at all times;
- (v) Built-up areas and gatherings of people must be avoided when a load is suspended below the helicopter, provided that where the operation is to be conducted within a built-up area, safe flight routes must be established and approved by the DG, CAAN;
- (vi) Cabin crew, if used, must be safely secured to the helicopter at all times by means of a safety harness or seat belt.

(b) Hook-up and transition –

- (i) Demonstrate the positioning of the helicopter accurately above the load using the techniques of marshalling either by radio, visual signals, mirror or cabin crew intercom;

Note: When a cabin crew member is used for marshalling, the pilot must strictly obey his or her instructions at all times, except if the helicopter and its occupants would be placed in jeopardy by doing so;

- (ii) Demonstrate the pick-up and the transition to forward flight when at a safe height;
- (iii) The appropriate cruise speed should take into account the load's flight characteristics, the environment, level of turbulence and engine power available;
- (iv) Demonstrate control of the load during flight and procedure to be followed if the load becomes difficult or impossible to control. For example, if the load starts oscillating, the pilot should reduce power and enter a gentle turn left or right, or bring the helicopter to a stationary hover; this generally will alleviate the condition. The load should only be jettisoned in extreme cases when the helicopter or its occupants are at risk and then only over uninhabited areas.



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- (c) Approach and drop-off –
- (i) The approach should be cautious and fairly shallow, taking into account the distance the load is beneath the aircraft and above the surface;
 - (ii) The transition to the hover should be made high, to ensure adequate clearance between the load and the surface or ground obstacles;
 - (iii) Directional information should be provided by the radio, visual signals or cabin crew during the final stages of the approach;
 - (iv) Demonstrate positioning the load over the drop-off point and lowering it to the surface or its position, using the techniques of marshalling either by radio, visual signals, mirror or cabin crew intercom;
 - (v) Demonstrate releasing the load, using the normal release method and the emergency release method.
- (d) Common faults –
- (i) Lack of precision when hovering inside ground effect or outside ground effect;
 - (ii) Lack of appreciation for ground clearance with an underslung load;
 - (iii) Vertical drift when lifting and lowering the load;
 - (iv) Horizontal drift when lifting and lowering the load;
 - (v) Jerky pick-up and drop-off;
 - (vi) Pilot-induced oscillations due to over-controlling on the cyclic;
 - (vii) The effects of trying to counter oscillations in flight using cyclic instead of power and speed.

2.4.2 Air exercises

Exercise 1: Hook-up procedure

- (a) Approach the hook-up area using –
- (i) ground marshaller;
 - (ii) radio;
 - (iii) cabin crew intercom; and
 - (iv) helicopter mirror.



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- (b) Establish a steady hover using –
 - (i) short stop;
 - (ii) long stop.
- (c) Once the load has been hooked up, take up the slack while monitoring the power required to hover before lifting the helicopter vertically until the load is well clear of the surface or obstacles, as communicated/established by each of the methods listed under paragraph (a) above.
- (d) Once the load is clear, transit to forward flight.

Exercise 2: In-flight

- (a) Observe V_{ne} as established from the flight manual or dictated by the load, while handling the controls as smoothly as possible;
- (b) Reduce power and enter a gentle turn to either left or right, or bring the helicopter to a stationary hover, to demonstrate the technique for bringing an oscillating load under control;
- (c) Avoid any built-up or inhabited areas during flight with a sling load.

Exercise 3: Drop-off procedure

- (a) Approach the drop-off area at a shallow angle using –
 - (i) ground marshaller;
 - (ii) radio;
 - (iii) cabin crew intercom; and
 - (iv) helicopter mirror;
- (b) Terminate the approach in a high hover with the load well clear of the surface or ground obstacles as communicated/established by each of the methods listed under paragraph (a) above;
- (c) Maintain a steady inside ground effect hover or outside ground effect hover while monitoring the power required to hover;
- (d) Position the load over the drop-off point;
- (e) Once in position, lower the load vertically until it contacts the surface and then jettison it using –
 - (i) the normal release system; or



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(ii) the emergency release system.

Note: Both normal and emergency release methods are to be practised.

2.4.3 Post-flight discussion

The post-flight discussion reviews the exercise and can be used to amplify or clarify any particular point or difficulty, thus consolidating the exercise as a whole.

2.5. Skills test

The applicant shall *demonstrate* competency in the aspects of subparagraph 4.2. The operator shall develop such a form for the use of the skill test.
