

**Commission Regulation (EU) No 965/2012
on air operations**

**and related EASA Decisions
(AMC&GM and CS-FTL.1)**

**Third Edition
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SECTION 2
Human external cargo operations (HEC)

SPO.SPEC.HEC.100 Standard operating procedures

The standard operating procedures for HEC shall specify:

- (a) the equipment to be carried, including its operating limitations and appropriate entries in the MEL, as applicable;
- (b) crew composition and experience requirements of crew members and task specialists;
- (c) the relevant training for crew members and task specialists to perform their task and the qualification and nomination of persons providing such training to the crew members and task specialists;
- (d) responsibilities and duties of crew members and task specialists;
- (e) performance criteria necessary to be met to conduct HEC operations;
- (f) normal, abnormal and emergency procedures.

AMC1 SPO.SPEC.HEC.100 Standard operating procedures

STANDARD OPERATING PROCEDURES

- (a) Before conducting any HEC operations, the operator should develop its SOPs taking into account the elements below.
- (b) Nature and complexity of the activity
 - (1) Nature of the activity and exposure:
 - (i) Helicopter operations for the purpose of transporting humans as external loads from/to aerodromes and/or operating sites. The operations are performed as low level flights.
 - (ii) The operator should only carry task specialists to a site if the level of danger would be too high for them to go there with another mean of transport or where no other means of transport exists. HEC flights should always be conducted with the minimum time of exposure for the task specialists.
 - (2) Complexity of the activity:
 - (i) The complexity of the activity varies with the length of the rope and characteristics of the pick-up and drop-off zones, etc.

Table 1: HEC levels

HEC 1:	Sling less or equal to 25 m Altitude is less or equal to 3 000 m
HEC 2:	Sling less or equal to 50 m Altitude is less or equal to 3 500 m

HEC 3:	Cable length is unrestricted Altitude is unrestricted
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(3) Operational environment and geographical area:

HEC may be performed over any geographical area. Special attention should ~~not~~ be given to:

- (i) hostile congested and non-congested environment;
- (ii) mountains;
- (iii) sea;
- (iv) jungle;
- (v) desert;
- (vi) arctic;
- (vii) lakes and river canyons; and
- (viii) environmentally sensitive areas (e.g. national parks, noise sensitive areas).

(c) Equipment

(1) The helicopter may be equipped with:

- (i) additional mirror(s);
- (ii) a bubble window;
- (iii) supplementary hook(s) or multi-hook device(s); and
- (iv) load data recorder (lifts, weights, torques, power, forces, shocks and electrical activities).

(2) Non-assisted vertical reference operations should require additional engine monitoring in the pilot line of vision or an audio warning system.

(3) All additional equipment used, e.g. ropes, cables, mechanical hooks, swivel hooks, nets, buckets, baskets, containers, should be manufactured according to officially recognised standards. The operator is responsible for maintaining the serviceability of this equipment.

(4) Adequate radio communication equipment (e.g. VHF, UHF, FM) should be installed in the helicopter for co-ordination with the task specialist involved in the operation.

(5) Task specialists involved in the operation should be equipped with hand-held communication equipment, protective helmets with integrated earphones and microphones as well as personal protective equipment.

(d) Crew members

(1) Crew composition:

- (i) The minimum flight crew is stated in the approved AFM. For operational or training purposes, an additional qualified crew member may assist the PIC in a single-pilot operation.

- (ii) For safety and/or operational purposes, a task specialist may be required by the operator to fulfil the task (e.g. to establish vertical reference or to operate the release safety device for the belly rope).
- (2) Pilot initial training:
- Before acting as PIC, the pilot should demonstrate to the operator that he/she has the required skills and knowledge, as follows:
- (i) Theoretical knowledge:
 - (A) load rigging techniques;
 - (B) external load procedures;
 - (C) site organisation and safety measures;
 - (D) short line, long line, construction, wire stringing or cable laying flying techniques, as required for the operation.
 - (ii) Pilot experience prior to commencing the training:
 - (A) 1 000 hours helicopter flight experience as PIC, of which 500h should be gained in mountainous areas for training in mountain operations;
 - (B) 10 hours flight experience on the helicopter type;
 - (C) type rating completed;
 - (D) HESLO type 1 or 2 completed;
 - (E) relevant experience in the field of operation;
 - (G) training in human factor principles; and
 - (F) ground instruction completed (marshaller syllabus).
- (3) Pilot recurrent training and checking at least every two years:
- (i) review of the sling technique;
 - (ii) external load procedures;
 - (iii) training in human factor principles; and
 - (iv) review of the applicable flying techniques.
- (4) Conditions of HEC instruction:
- (i) Maximum sling length according to the level applicable:
 - (A) 1 task specialist (with radio) at pickup point;
 - (B) 1 task specialist (with radio) at drop off point/on the line;
 - (C) helicopter fitted with cargo mirror/bubble window;
 - (D) flight instruction DC/: Cycles DC/minimum 10 cycles which of 5 Human Cargo Sling; and
 - (E) flight instruction solo with onsite supervision/Cycles solo/minimum 10 cycles.
 - (ii) HEC instructor:

The HEC instructor should be assigned by the operator on the basis of the following:

- (A) the HEC instructor for pilots should hold or have held flight instructor rating and should have a minimum experience of 100 cycles in HEC operations in the appropriate HEC level on which instruction is to be provided;
- (B) the HEC instructor for task specialists should be suitably qualified as determined by the operator and have at least 2 years of experience in HEC operations as a task specialist.

(e) Task specialists

Before acting as task specialists, they should demonstrate to the operator that they have been appropriately trained and have the required skills and knowledge including training on human factor principles.

(1) Task specialists should be trained to operate the system including:

- (i) montage and removal of system; and
- (ii) normal procedure.

(2) Briefings

Briefings on the organisation and coordination between flight crew and task specialist involved in the operation should take place prior to each operation. These briefings should include at least the following:

- (i) location and size of pick-up and drop-off site, operating altitude;
- (ii) location of refuelling site and procedures to be applied; and
- (iii) load sequence, danger areas, performance and limitations, emergency procedures.

(3) Recurrent training

- (i) The annual recurrent training should include the items listed in the initial training as described in (e)(1) above.
- (ii) The operator should establish a formal qualification list for each individual task specialist.
- (iii) The operator should establish a system of record keeping that allows adequate storage and reliable traceability of:
 - (A) the initial and recurrent training;
 - (B) qualifications (qualification list).

(f) Performance

HEC should be performed with the following power margins: the mass of the helicopter should not exceed the maximum mass specified in accordance with SPO.POL.146(c)(1).

(g) Normal procedures

(1) Operating procedures:

HEC should be performed in accordance with the AFM. Operating procedures should include, for each type of operation:

- (i) crew individual safety equipment (e.g. helmet, fire retardant suits);
- (ii) crew responsibilities;
- (iii) crew coordination and communication;

- (iv) selection and size of pick-up and drop-off sites;
 - (v) selection of flight routes;
 - (vi) fuel management in the air and on the ground;
 - (vii) task management; and
 - (viii) third party risk management.
- (2) Ground procedures:
- The operator should specify appropriate procedures, including:
- (i) use of ground equipment;
 - (ii) load rigging;
 - (iii) size and weight assessment of loads;
 - (iv) attachment of suitably prepared loads to the helicopter;
 - (v) two-way radio communication procedures;
 - (vi) selection of suitable pick-up and drop-off sites;
 - (vii) safety instructions for ground task specialists or other persons required for the safe conduct of the operation;
 - (viii) helicopter performances information;
 - (ix) fuel management on the ground;
 - (x) responsibility and organisation of the personnel on the ground involved in the operation;
 - (xi) task management of personnel on the ground involved in the operation;
 - (xii) third party risk management; and
 - (xiii) environmental protection.
- (h) Emergency procedures
- (1) Operating procedures:
- In addition to the emergency procedures published in the AFM or OM, the operator should ensure that the flight crew:
- (i) is familiar with the appropriate emergency procedures;
 - (ii) has appropriate knowledge of the emergency procedures for personnel on the ground involved in the operation; and
 - (iii) reports emergencies as specified in the AFM or OM.
- (2) Ground procedures:
- The operator should ensure that the task specialist on the ground involved in the operation:
- (i) is familiar with the appropriate emergency procedures;
 - (ii) has appropriate knowledge of the emergency procedures for personnel on the ground involved in the operation;
 - (iii) reports emergencies as specified in the AFM or OM; and
 - (iv) prevents, as far as possible, environmental pollution.

SPO.SPEC.HEC.105 Specific HEC equipment

- (a) The helicopter shall be equipped with:
- (1) hoist operations equipment or cargo hook;
 - (2) one cargo safety mirror or alternative means to see the hook; and
 - (3) one load meter, unless there is another method of determining the weight of the load.
- (b) The installation of all hoist and cargo hook equipment and any subsequent modifications shall have an airworthiness approval appropriate to the intended function.

AMC1 SPO.SPEC.HEC.105(b) Specific HEC equipment

AIRWORTHINESS APPROVAL FOR HEC EQUIPMENT

- (a) Hoist or cargo hook installations that have been certificated according to any of the following standards should be considered to satisfy the airworthiness criteria for HEC operations:
- (1) CS 27.865 or CS 29.865;
 - (2) JAR 27 Amendment 2 (27.865) or JAR 29 Amendment 2 (29.865) or later;
 - (3) FAR 27 Amendment 36 (27.865) or later — including compliance with CS 27.865(c)(6); or
 - (4) FAR 29 Amendment 43 (29.865) or later.
- (b) Hoist or cargo hook installations that have been certified prior to the issuance of the airworthiness criteria for HEC as defined in (a) may be considered as eligible for HEC provided that following a risk assessment either:
- (1) the service history of the hoist or cargo hook installation is found satisfactory to the competent authority; or
 - (2) for hoist or cargo hook installations with an unsatisfactory service history, additional substantiation to allow acceptance by the competent authority should be provided by the hoist or cargo hook installation certificate holder (type certificate (TC) or supplemental type certificate (STC)) on the basis of the following requirements:
 - (i) The hoist or cargo hook installation should withstand a force equal to a limit static load factor of 3.5, or some lower load factor, not less than 2.5, demonstrated to be the maximum load factor expected during hoist operations, multiplied by the maximum authorised external load.
 - (ii) The reliability of the primary and back up quick release systems at helicopter level should be established and failure mode and effect analysis at equipment level should be available. The assessment of the design of the primary and back up quick release systems should consider any failure that could be induced by a failure mode of any other electrical or mechanical rotorcraft system.
 - (iii) The appropriate manual should contain one-engine-inoperative (OEI) hover performance data or single engine failures procedures for the weights, altitudes, and temperatures throughout the flight envelope for which hoist or cargo hook operations are accepted.
 - (iv) Information concerning the inspection intervals and retirement life of the hoist or cargo hook cable should be provided in the instructions for continued airworthiness.