

SECTION 3

Mass and balance

CHAPTER 1

Motor-powered aircraft**CAT.POL.MAB.100 Mass and balance, loading**

- (a) During any phase of operation, the loading, mass and centre of gravity (CG) of the aircraft shall comply with the limitations specified in the AFM, or the operations manual if more restrictive.
- (b) The operator shall establish the mass and the CG of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals of four years if individual aircraft masses are used, or nine years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance shall be accounted for and properly documented. Aircraft shall be reweighed if the effect of modifications on the mass and balance is not accurately known.
- (c) The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.
- (d) The operator shall determine the mass of all operating items and crew members included in the aircraft dry operating mass by weighing or by using standard masses. The influence of their position on the aircraft's CG shall be determined.
- (e) The operator shall establish the mass of the traffic load, including any ballast, by actual weighing or by determining the mass of the traffic load in accordance with standard passenger and baggage masses.
- (f) In addition to standard masses for passengers and checked baggage, the operator can use standard masses for other load items, if it demonstrates to the competent authority that these items have the same mass or that their masses are within specified tolerances.
- (g) The operator shall determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the operations manual.
- (h) The operator shall ensure that the loading of:
 - (1) its aircraft is performed under the supervision of qualified personnel; and
 - (2) traffic load is consistent with the data used for the calculation of the aircraft mass and balance.
- (i) The operator shall comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment and the maximum seating limit. For helicopters, in addition, the operator shall take account of in-flight changes in loading.
- (j) The operator shall specify, in the operations manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements contained in (a) to (i). This system shall cover all types of intended operations.

CAT.POL.MAB.105 Mass and balance data and documentation

- (a) The operator shall establish mass and balance data and produce mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation shall enable the commander to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. The mass and balance documentation shall contain the following information:
 - (1) Aircraft registration and type;
 - (2) Flight identification, number and date;
 - (3) Name of the commander;
 - (4) Name of the person who prepared the document;

- (5) Dry operating mass and the corresponding CG of the aircraft:
 - (i) for performance class B aeroplanes and for helicopters the CG position may not need to be on the mass and balance documentation if, for example, the load distribution is in accordance with a pre-calculated balance table or if it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is;
- (6) Mass of the fuel at take-off and the mass of trip fuel;
- (7) Mass of consumables other than fuel, if applicable;
- (8) Load components including passengers, baggage, freight and ballast;
- (9) Take-off mass, landing mass and zero fuel mass;
- (10) Applicable aircraft CG positions; and
- (11) The limiting mass and CG values.

The information above shall be available in flight planning documents or mass and balance systems. Some of this information may be contained in other documents readily available for use.

- (b) Where mass and balance data and documentation is generated by a computerised mass and balance system, the operator shall verify the integrity of the output data.
- (c) The person supervising the loading of the aircraft shall confirm by hand signature or equivalent that the load and its distribution are in accordance with the mass and balance documentation given to the commander. The commander shall indicate his/her acceptance by hand signature or equivalent.
- (d) The operator shall specify procedures for last minute changes to the load to ensure that:
 - (1) any last minute change after the completion of the mass and balance documentation is brought to the attention of the commander and entered in the flight planning documents containing the mass and balance documentation;
 - (2) the maximum last minute change allowed in passenger numbers or hold load is specified; and
 - (3) new mass and balance documentation is prepared if this maximum number is exceeded.
- (e) The operator shall obtain approval by the competent authority if he/she wishes to use an onboard integrated mass and balance computer system or a stand-alone computerised mass and balance system as a primary source for dispatch. The operator shall demonstrate the accuracy and reliability of that system.

SUBPART D

INSTRUMENTS, DATA, EQUIPMENT

SECTION 1

Aeroplanes

CAT.IDEA.100 Instruments and equipment — general

- (a) Instruments and equipment required by this Subpart shall be approved in accordance with Regulation (EC) No 1702/2003, except for the following items:
 - (1) Spare fuses;
 - (2) Independent portable lights;
 - (3) An accurate time piece;
 - (4) Chart holder;