
GEN 1.5 - AIRCRAFT INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

1. General

1.1. Commercial air transport operating in India must adhere to the requirements as contained in the Civil Aviation Requirements Section 2 - Airworthiness Series 'O'.

Note: The regulations/requirements referred herein are subjected to amendment. Users should ensure that fully amended documents are used for reference purpose.

2. Instruments and Equipment, Communication and Navigation equipment to be carried

2.1. Aircraft Instruments and Equipment

2.1.1. In addition to the minimum equipment necessary for the issuance of a Certificate of Airworthiness, the instruments and equipment prescribed in the Civil Aviation Requirements Section 2 - Airworthiness Series 'I' Part II shall be installed or carried as appropriate, according to the aircraft used and the circumstances/operations under which the flight is to be conducted.

2.2. Aircraft Communication and Navigation Equipment

2.2.1. Communication equipment

2.2.1.1. All aeroplane shall be fitted with radio communication equipment capable of-

- i) Conducting two-way communication for aerodrome control purposes.
- ii) Receiving meteorological information at any time during flight, and
- iii) Conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the appropriate authority. All aircraft fitted with HF communication equipment shall be capable of operating on SSB mode.

2.2.1.2. The radio communication equipment shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

2.2.2. Navigation equipment for operations under IFR

2.2.2.1. All aeroplane shall be provided with navigation equipment, which will enable it to proceed:

- i) In accordance with its operational flight plan
- ii) In accordance with prescribed Required Navigation Performance (RNP) types
- iii) In accordance with the requirements of air traffic services;
- iv) Except when, if not so precluded by the appropriate authority, navigation for flights under the visual flight rules is accomplished by visual reference to landmarks.

2.2.2.2. For flight in defined portion of airspace where based on regional air navigation agreement minimum navigation performance specifications (MNPS) are prescribed, an aeroplane shall be provided with navigation equipment which:

- i) Continuously provides indications to the flight crew of adherences to or departures from track to the required degree of accuracy at any point along with the track; and
- ii) Has been authorised by DGCA for MNPS operations concerned.

2.2.2.3. For flight in defined portion of airspace where, based on regional air navigation agreement, a vertical separation minimum (VSM) of 1000 ft (300m) is applied above FL290, an aeroplane:

2.2.2.3.1. Shall be provided with equipment which is capable of:

- i) Indicating to the flight crew the flight level being flown;
- ii) Automatically maintaining a selected flight level;
- iii) Providing an alert to the flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed +/-300ft (90m); and
- iv) Automatically reporting pressure-altitude; and

2.2.2.3.2. Shall be authorised by DGCA for operation in the airspace concerned.

2.2.2.4. The aeroplane shall be sufficiently provided with the navigation equipment to ensure that in the event of failure of one item of equipment at any stage of flight, the remaining equipment will enable the aircraft to navigate in accordance with above paras.

2.2.2.5. On flights in which it is intended to land in Instrument Meteorological Condition (IMC) an aeroplane shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be affected. This equipment shall be capable

of providing such guidance at each aerodrome at which it is intended to land in instrument meteorological conditions and at any designated alternate aerodromes.

- 2.2.2.6. The equipment installation shall be such that the failure of any single unit required for either communication or navigation purposes or both will not result in the failure of another unit required for communication or navigation purposes.

3. Carriage of Pressure Altitude Reporting Transponder

- 3.1. All aeroplane having maximum certified take-off mass of 5700 Kg. and above and having maximum certified passenger seating configuration (excluding any pilot seats) of more than 30 seats or maximum payload capacity of more than 3 tonne, if flying in Indian airspace, shall be equipped with mode S transponder.
- 3.2. The requirements for installation of Pressure Altitude Reporting Transponder are laid down in the CAR Section 2 Series 'R' Part IV.

4. Carriage of Airborne Collision Avoidance System (ACAS)

- 4.1. Unless otherwise authorised by DGCA, no person shall operate in the Indian airspace, an aeroplane having a maximum certified passenger seating configuration of more than 30 or maximum payload capacity of more than 3 tonne:

4.1.1. After 31st December 1998, if it is not equipped with an approved TCAS II and

4.1.2. After 1st Jan 2003, if it is not equipped with an approved TCAS II with change 7 (equivalent to ACAS II)

- 4.2. All aeroplane having maximum certified passenger seating configuration of more than 30 or maximum payload capacity of more than 3 tonne, to be imported after 1st Jan. 2002 for the purpose of registration and operation within, to and from India shall be fitted with TCAS II with change 7 (equivalent to ACAS II). This requirement shall also apply to aeroplane taken on wet lease by Indian operators.

Note: The operators are strongly advised to install ACAS II if imported before 1st Jan 2002.

- 4.3. Unless otherwise authorised by DGCA, no person shall operate in the Indian airspace, from 1st Jan, 2005,

- i) An aeroplane having a maximum certified passenger seating configuration of 20 to 30 or a maximum certified take-off mass in excess of 5700 Kg, if such aeroplane is not equipped with an approved ACAS II.
- ii) An aeroplane having a maximum certified passenger seating configuration of 10 to 19 and a maximum certified take-off mass less than 5700 Kg, if such aeroplane is not equipped with an approved ACAS I.
- iii) A twin jet engine aeroplane having maximum certified passenger seating configuration of less than 10 and a maximum certified take-off mass less than 5700 Kg, if such aeroplane is not equipped with approved ACAS I.

- 4.4. Unless otherwise authorised by DGCA, no person shall acquire for the purpose of operation in Indian airspace, from 1st January, 2004;

- i) An aeroplane having a maximum certified passenger seating configuration of 20 to 30 or a maximum certified take-off mass in excess of 5700 Kg, if such aeroplane is not equipped with an approved ACAS II.
- ii) An aeroplane having a maximum certified passenger seating configuration of 10 to 19 and a maximum certified take-off mass less than 5700 Kg, if such aeroplane is not equipped with an approved ACAS I.
- iii) A twin jet engine aeroplane having maximum certified passenger seating configuration of less than 10 and a maximum certified take-off mass less than 5700 Kg, if such aeroplane is not equipped with approved ACAS I.

Note: The operators are strongly advised to install ACAS II on aeroplane covered under the provisions of para 4.3 ii) & iii) and 4.4 ii) & iii) above.

- 4.5. Detailed requirements for installation of Airborne Collision Avoidance System (ACAS) are laid down in the CAR Section 2 Series 'I' Part VIII.

5. Flight documents to be carried

- 5.1. The requirements for carriage of documents to be carried on board are laid down in the CAR Section 2 Series 'X' Part VI.