



सत्यमेव जयते

GOVERNMENT OF INDIA

OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
TECHNICAL CENTRE, OPPOSITE SAFDARJUNG AIRPORT, NEW DELHI

CIVIL AVIATION REQUIREMENTS
SECTION 6 – DESIGN STANDARDS
& TYPE CERTIFICATION
SERIES 'A' PART III
DATED 2ND NOVEMBER 2017

EFFECTIVE: FORTHWITH

F. No. 7-17/2017-AED

Subject: Requirements for design, build/manufacture, registration, operation and maintenance of amateur built aircraft.

1. Introduction

1.1 Rule 49I of the Aircraft Rules, 1937 states that notwithstanding anything contained in rules 49A to 49G, the Director General may accept the design of an aircraft after evaluation against minimum standards laid down under these rules and on being satisfied that it is in a condition for safe operation.

1.2 This CAR is issued under the provisions of Rule 133A of the Aircraft Rules, 1937, and lays down the requirements for the design, build/manufacture, registration, operation and maintenance of an amateur built aircraft.

2. Definitions

2.1 *Amateur built Aircraft* means an aircraft, the major portion (51%) of which has been fabricated and assembled by person or persons who undertook the construction project solely for their own education, research & development, sports or recreation.

2.2 For the purpose of this CAR, a '*builder*' means an individual, or a group of individuals, or an operator/institution/organization. They alone are recognized to be aircraft builders and not the kit manufacturers.

2.3 *Special Flight Permit* enables the builder/operator to carryout flights for testing purpose.

2.4 *Special Certificate of Airworthiness* enables regular use of amateur built aircraft for the following purposes:

- | | |
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| a) Research and development including equipment qualification and experimental purpose | e) Market survey |
| b) Crew training | f) Operating amateur built aircraft |
| c) Exhibition | g) Operating primary kit-built aircraft |
| d) Air racing | h) Operating contemporary/ vintage/ classic aircraft in amateur built category. |

3. Applicability

3.1 The provision of this CAR shall apply to design, build/ manufacture, registration, operation and maintenance of an amateur built aircraft in India.

3.2 This CAR shall not be applicable for aircraft designed and developed for the purpose of carrying passengers, mail, and cargo (for hire and reward) or for any other commercial purpose.

3.3 The amateur built aircraft shall not be eligible for issue of Type Certificate.

4. Certification and Operation of Amateur Built Aircraft

For the purpose of certification, continued airworthiness and operation of amateur built aircraft, following steps shall be followed:

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| <p>Applicant Visit to Regional office of DGCA or the website of DGCA (www.dgca.nic.in) for guidance and information necessary to ensure that the applicant understands DGCA regulations for the project (recommended)</p> <p>Understanding of design aspects between the applicant and DGCA (Refer Paragraph 6)</p> |
| <p>Applicant Design and construct the aircraft (Refer Paragraph 6)</p> |
| <p>Applicant Register the aircraft using applicable Form (Refer Paragraph 7)</p> |
| <p>Applicant Security clearance, ADC/FIC clearance, ATC clearance, etc. as applicable (Refer Paragraph 7)</p> |
| <p>Applicant Identify and mark the aircraft (Refer Paragraph 8)</p> |
| <p>Applicant</p> |

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|---|
| Submit formal application for issue of Special Flight Permit and approval of flight test plan (Refer Paragraph 9) |
| DGCA |
| Inspection of aircraft and Issue of Special Flight Permit after reviewing flight conditions (Refer Paragraph 10, 11) |
| Applicant |
| Flight test of aircraft (Refer Paragraph 11) |
| DGCA |
| Issue of Special Certificate of Airworthiness (Refer Paragraph 12) |
| Applicant and DGCA |
| Maintenance requirements (Refer Paragraph 13) |
| Applicant |
| Continued operations (Refer Paragraph 14) |

5. Responsibility/Liability

5.1 It shall be the sole responsibility of the applicant for design, construction and safe operation of the amateur built aircraft.

5.2 Applicant is recommended to draw parallels from available design/manufacturing/ inspection/operational standards available worldwide for components/system/type of aircraft and adopt the same in order to satisfy safety concerns.

5.3 Any person flying an amateur built aircraft must be fully aware of the risks involved. Marking and placards should be put at appropriate places on the aircraft.

6. Design and Construction

6.1 Builders can develop their own designs or build from existing designs. Understanding on the design aspects shall be reached between the applicant and DGCA, prior to the start of the project. Application in this regard shall be submitted to DGCA in a prescribed Form as given at Annex-I to this CAR.

6.2 The owner of an amateur built aircraft must describe the aircraft by class (airplane, rotorcraft, glider, or balloon), serial number (if applicable), type of engines installed (make, model, and serial number of each engine installed) and must state whether the aircraft is built for land and/or water operations.

6.3 Materials tested for their strength and quality shall be used in the construction of an amateur built aircraft. Materials, whose identity and traceability cannot be established, should not be used.

6.4 Any choice of engines and propellers may be used in the construction of the aircraft. However, it is recommended that engines and propellers approved by a Civil

Aviation Authority (CAA) and having a valid Type Certificate and TCDS may be used. In case type certified engine/propeller are not used, the applicant will ensure that such engine/ propeller combination is safe for operation.

6.5 Any choice of components such as tyres, actuators, indicators/display systems, brakes, filter, fuel pump, electronic hardware and associated software, etc. may be used in the construction of the aircraft. However, it is recommended that approved components may be used.

6.6 The design of the aircraft should avoid, or provide for padding on sharp corners or edges, protrusions, knobs and similar objects which may cause injury to the pilots or passengers in the event of an accident.

6.7 The engine installation should be such that adequate fuel supply is available to the engine in all anticipated flight attitudes.

6.8 Use of salvaged assemblies (for example, landing gear, horizontal stabilizer, engine and engine mount) from type-certificated aircraft is permitted, as long as they are in a condition for safe operation. Applicant should inform DGCA prior to using such parts/assemblies to ascertain their condition for safe operation.

6.9 To cater to the builder who wishes to build from kits, the 'FAA listing of amateur-built aircraft kits'/ICAO contracting states shall be considered. The role of DGCA is only to evaluate the kits solely for the purpose of determining if an aircraft built from the kit meets the major portion criteria (51% rule). In case of kit built aircraft, kits may include assembly, fixtures, templates, raw stocks, tubing, extrusions, etc.

6.10 Applicants intending to manufacture their aircraft using the kits must provide the aircraft kit documentation to the DGCA in coordination with the kit manufacturer. Documentation must be submitted in English and reflect the nature and scope of the aircraft design and include the following:

- a) The aircraft's construction, weight and balance information.
- b) The exact configuration as sold.
- c) Photographs, drawings, detailed parts listings, builder instructions, and other design, fabrication, and assembly information.
- d) Any requirements for special tooling, processes, etc.

6.11 Design and fabrication including inspection processes must be recorded and maintained in safe custody. The builders should document the construction using photographs taken at appropriate times prior to covering. The photographs should clearly show methods of construction and quality of workmanship.

6.12 Aircraft should be equipped with appropriate instruments and/or equipment for the purpose of safe flight.

6.13 For new design, the applicant should develop a procedure manual comprising of systematic approach adopted during design, fabrication, test, assembly and ground & flight tests.

7. Registration of Amateur Built Aircraft

7.1 The builders/operator shall apply for registration of amateur built aircraft before finishing construction work, as per the provisions of CAR, Section 2, Series F, Part I.

7.2 Upon receiving application in the prescribed Form, amateur built aircraft will be registered in the name of the applicant.

7.3 The registration fee shall be payable in accordance with Rule 35 of the Aircraft Rules, 1937.

7.4 All amateur built aircraft in India shall be registered in the National Aircraft Register in accordance with the Aircraft Rules, 1937.

7.5 Upon issuance of Certificate of Registration and prior to carrying out of test flight, the builder must obtain Aero-mobile Station Licence for the radio equipment from Ministry of Communications, if applicable. In such cases, the person operating the radio equipment should possess at least a valid Flight Radio Telephone Operator's Licence (Restricted).

7.6 It is the obligation of the builder to seek security clearance, ADC/FIC clearance, ATC clearance, etc. as applicable. In order to obtain security clearance, the builder shall apply to Ministry of Home Affairs (MHA) through DGCA and comply with the relevant requirements specified by MHA.

8. Identification and Marking of Amateur Built Aircraft

8.1 If the aircraft is built from the builder's own design, the builder may use its own serial number. If the aircraft is built from a kit, the identification information as provided by kit manufacturer may be used.

8.2 The letters used for nationality and registration marks shall be as per the provisions of CAR Section 2, Series F, Part I.

9. Application for Issue of Special Flight Permit

9.1 Application shall be submitted for issue of Special Flight Permit along with the applicable fees to DGCA in a prescribed Form (Refer Annex-II).

9.2 The applicant seeking special flight permit for amateur built aircraft should submit the complete information on flight conditions along with details of pilot, who will be conducting test flights.

10. DGCA Inspection

10.1 The inspections of amateur built aircraft will be conducted by DGCA in two stages:

a) First inspection will be "pre-cover" inspection before external covering is applied. During this inspection, DGCA shall verify/determine:

- i) All required markings and placards, including the warning for occupants on the amateur built aircraft.
- ii) Whether the aircraft is built from a kit and to ensure that major portion requirement is met.
- iii) To the extent feasible the fabrication, workmanship methods, techniques and practices.

b) The second inspection will be a generic airworthiness inspection conducted after the aircraft is ready for flight. This inspection shall be carried out before issuing the Special Flight Permit. Following guidelines will be followed for the inspection:

- i) Verify the aircraft registration.
- ii) Verify that all required markings and placards are in place, including the warning for occupants as given in Para 14.2 of this CAR.

10.2 Structural integrity of the amateur built aircraft is the sole responsibility of its builder. The builder must gain necessary experience to ascertain that all construction details are accomplished in an acceptable manner.

10.3 Final inspection will be carried out by the DGCA after the written request of the builder prior to flight testing. The builder must carry out his own inspection prior to the visit of the DGCA officer. The flight release inspection for initial issue of Special Flight Permit must be carried out by the builder/pilot or by an AME licensed in appropriate category.

10.4 Aircraft's power-plant installation should undergo at least one hour of ground operation at various RPM from idle to full power, to determine and ensure that all systems are operating properly.

10.5 The builder may carry out low speed taxi runs of the aircraft prior to DGCA inspection and before conduct of test flights to ensure satisfactory operation of various systems.

11. Issue of Special Flight Permit and Operating Limitations

11.1 After satisfactory inspection by DGCA that the aircraft is in a condition for safe flight, DGCA will issue Special Flight Permit specifying operating limitations for the aircraft.

11.2 The requirements for test pilot are as follows:

- a) Upto 1500 kg All Up Weight: PPL (open rating)
- b) More than 1500 kg and upto 5700 kg: CPL (open rating)

It is the responsibility of the pilot to conduct all test flights in accordance with the operating limitations.

11.3 The aircraft shall be flown over sparsely populated areas with light traffic/dedicated flight test areas.

11.4 The applicant shall show that the aircraft is controllable throughout its normal speeds and manoeuvres and that the aircraft has no hazardous characteristics or design features.

11.5 Carrying of other crew members will not be permitted unless they are necessary to the conduct of the flight test.

11.6 The number of flight test hours shall be as indicated below:

| Aircraft Characteristics | Required Flight Testing |
|---|-------------------------|
| Aircraft built from approved kits | 10 hours |
| Aircraft designed and fabricated by the builder and using type certified engine/propeller combination | 25 hours |
| Aircraft designed and fabricated by the builder and using non-type certified engine/propeller combination | 40 hours |

11.7 Flight test procedures as indicated in FAA AC 90-89 is acceptable to DGCA.

11.8 Initial flight tests of the amateur built aircraft should be within a restricted flight envelope. This should be expanded gradually until the full envelope is cleared.

11.9 Based on satisfactory documentation and completion of satisfactory flight tests, DGCA will issue design acceptance.

12. Issue of Special Certificate of Airworthiness under Amateur Built Aircraft Category

12.1 Upon design acceptance of the aircraft, the applicant shall submit the application to DGCA for issue of Special Certificate of Airworthiness as per the relevant CAR in the appropriate amateur built aircraft category (for the purposes as indicated in Para 2.4 of this CAR).

12.2 Applicant is required to display the Special Certificate of Airworthiness in the cabin or the cockpit so that it is visible to the crew at all times during aircraft operations.

12.3 The Special Certificate of Airworthiness will be valid as long as the aircraft is maintained in a safe condition.

13. Maintenance Requirements

13.1 Maintenance program as recommended by kit manufacturer should be followed or else DGCA shall accept the maintenance program developed by the builder.

13.2 The builder/operator may inspect and maintain the aircraft. If the operator wishes to maintain the aircraft through any other person who is not a licensed AME, prior approval by the DGCA is mandatory.

13.3 The builder/operator shall ensure that component replacement/overhaul is done as per the kit manufacturer recommended intervals or as per DGCA approved maintenance schedule.

13.4 The builder/operator may carry out minor modifications, installations and design improvements provided such modifications do not significantly affect the flying characteristics or structural integrity of the aircraft. However, the builder/operator shall inform DGCA about such modifications.

13.5 Major modification should be carried out after approval of DGCA and appropriate flight testing.

13.6 The builder/operator shall be responsible for maintenance of appropriate logbooks for airframe, engine and propeller. It is essential that all maintenance activities are recorded in these logbooks, including modifications, installations, inspection schedules, snags and rectification, failures, etc.

14. Continued Operation of Amateur Built Aircraft

14.1 The aircraft shall not be operated without the Special C of A and operating limitations on-board. Builder/operator shall be responsible for maintenance and record keeping of the aircraft.

14.2 The operator shall ensure availability of the following:

- a) Updated flight manual/pilot notes.
- b) Markings and placards necessary for safe operation and handling of aircraft displayed conspicuously.
- c) Typical placards to emphasise features such as fuel system or landing gear operation. If retractable landing gear is installed, indicator should be installed so that the pilot can ascertain that the wheels are locked in the up and down position.
- d) Any emergency controls installed should be marked red with the method of operation.
- e) Baggage compartments, if provided, should indicate limitations on contents, including weight.
- f) Fuel filler openings should be marked at or near the filler cover with the word "fuel" with the type and the minimum fuel grade.
- g) Following placard must be displayed in a readily visible location in the cabin or cockpit, unless the aircraft has only one seat:

WARNING: THIS AIRCRAFT IS AMATEUR BUILT AND DOES NOT COMPLY WITH DGCA/INTERNATIONAL SAFETY REGULATIONS AS APPLICABLE FOR STANDARD AIRCRAFT

14.3 Following safety precautions should be strictly adhered to:

- a) The pilot should thoroughly familiarise himself with the ground handling characteristics of the aircraft by conducting low and high speed taxi tests before attempting flight operations.
- b) The pilot should take precautions to ensure that adequate emergency equipment and competent personnel are readily available in the event of an accident.
- c) Aerobatic manoeuvres should not be attempted unless the aircraft is designed for aerobatics and the pilot is qualified for the same.

14.4 No person may operate amateur built aircraft for purpose other than for which the certificate was issued.

14.5 Amateur built aircraft shall be flown only by pilot(s) who have a valid basic pilot's licence issued by the DGCA as applicable for the class and category of aircraft.

15. Amateur Built Aircraft constructed in ICAO contracting state

15.1 The following documents shall be submitted to DGCA when an Indian citizen/applicant/operator/organisation intends to bring amateur built aircraft to India, which is constructed in any other ICAO contracting state:

- a) Record of all annual inspections performed on the aircraft/engine/propellers and the associated records/log books.
- b) Details of accidents and incidents of the aircraft
- c) Details of modifications and repairs carried out on the aircraft.

15.2 Upon satisfactory examination of the above stated documents and inspection by DGCA, applicant shall apply for Registration and Special Flight Permit prior to issuance of Special Certificate of Airworthiness.

16. Cancellation/Revoking the Special Certificate of Airworthiness

16.1 Violation of the conditions on the basis of which the Special Certificate of Airworthiness was issued will lead to automatic cancellation or revoking the Special Certificate of Airworthiness.



(B.S. Bhullar)
Director General of Civil Aviation

| APPLICATION FOR ISSUE OF DESIGN ACCEPTANCE OF AMATEUR BUILT AIRCRAFT | | |
|---|---------------------------------------|---------------------------------------|
| 1. Applicant | | |
| 2. Aircraft owner | | |
| 3. Aircraft model name/designation | | |
| 4. Compliance with amateur built aircraft definition | | |
| 5. Description of the aircraft | | |
| 6. Three view sketch, photographs, drawings of the proposed aircraft | <input type="checkbox"/> Attached | <input type="checkbox"/> Not attached |
| 7. Maximum Take-Off Weight | | |
| 8. Number of Seats | | |
| 9. Engine | | |
| a) Model/Type | | |
| b) Thrust/power rating | | |
| c) Whether engine model is Type certified by any CAA | | |
| 10. Propeller | | |
| a) Model/Type | | |
| b) Fixed/variable pitch | | |
| c) Whether propeller model is Type certified by any CAA | | |
| 11. Whether the applicant intends to build the aircraft using any of the 'FAA/ICAO contracting states listing of amateur-built aircraft kits' | | |
| 12. Applicant's declaration | | |
| I confirm that the information contained herein is correct and complete. I shall be solely responsible for design, construction and safe operation of the aircraft. | | |
| 13. Signature: | | |
| | Name of the Authorised Representative | |
| Date | | Signature |
| This Application should be sent to: | | |
| Director (Aircraft Engineering Directorate), Directorate General of Civil Aviation, Opposite Safdarjung Airport, New Delhi- 110 003, India, Telephone: 91-11-24623211 | | |

| APPLICATION FOR SPECIAL FLIGHT PERMIT | |
|---|---|
| 1. Applicant | <i>[Name of applicant]</i> |
| 2. Aircraft nationality and identification marks | |
| 3. Details of aircraft owner/operator/pilot | |
| 4. Aircraft manufacturer/type | 5. Serial number |
| 6. Purpose of flight <i>[Use terminology of Para 3 and add any additional information for accurate description of the purpose, e.g. place, itinerary, duration...]</i> <i>[For an application due to a change of purpose, reference to initial request and description of new purpose]</i> | |
| 7. Expected target date(s) for the flight(s) and duration | |
| 8. Aircraft configuration as relevant for the special flight permit 8.1 The above aircraft for which a special flight permit is requested is defined in <i>[add reference to the document(s) identifying the configuration of the aircraft]</i> . 8.2 The aircraft is in the following situation related to its maintenance schedule: <i>[Describe status]</i> | |
| 9. Approval of flight conditions <i>[if not available at the time of application, indicate reference of request for approval]</i> <i>[Reference to: DGCA approval]</i> | |
| 10. Date | 11. Name and signature <i>[Authorised signatory]</i> |