



GOVERNMENT OF INDIA

OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION

TECHNICAL CENTRE, OPP SAFDURJUNG AIRPORT, NEW DELHI

**CIVIL AVIATION REQUIREMENTS
SECTION 2 - AIRWORTHINESS
SERIES 'F', PART II
24TH APRIL, 1992**

EFFECTIVE: FORTHWITH

Subject : **Procedure For Issue/Revalidation of Type Certificate of Aircraft and its Engines/ Propeller.**

1. APPLICABILITY.

Aircraft Rule 49 empowers the DGCA to issue type certificate to aircraft and its engine/propellers manufactured in India and also revalidate the type certificate issued to aircraft by foreign airworthiness authorities. Normally the Type Certificate is issued/revalidated to Aircraft/ Engine when the same is to be manufactured in India. This part of the Civil Airworthiness Requirement lays down the procedure relating to the issue/revalidation of type certificate. It also lays down the rules/requirements to be followed by holders of the type certificate.

2. APPLICATION FOR TYPE CERTIFICATE.

Application for issue/revalidation of type certificate is to be submitted in the forms as per the following Annexures, in duplicate alongwith fees (as per Aircraft Rule 62) , to the DGCA (Directorate of Research & Development), Technical Centre, Opp. Safdarjung Airport, New Delhi-110003

Annexure I - Aircraft

Annexure II - Helicopter/Rotorcraft

3. REQUIREMENTS FOR ISSUANCE OF TYPE CERTIFICATE.

For issuance of type certificate of aircraft or its components, the DGCA should be satisfied on the following points:

I. The design has been approved by the DGCA.

II. The design conforms to approved airworthiness requirements/specifications of foreign airworthiness authorities and acceptable to DGCA.

III. The construction has been inspected and approved by the Airworthiness Directorate of the DGCA as required in CAR Series 'E'.

4. DESIGN SCOPE.

It is an essential condition of issue / revalidation of type certificate to an aircraft or its components that there

should be proof that it conforms with the relevant specifications and the Airworthiness requirements to which it has been designed. The DGCA has the responsibility to ensure that each aircraft, either manufactured in India or imported to India for which Certificate of Airworthiness is to be issued, conforms to the Type Design and is in condition for Safe Operation. Therefore, for issuance of Indian Certificate of Airworthiness, an aircraft must be Type Certificated by DGCA in accordance with Rule 49 or the Type Certificate issued by Foreign Airworthiness Authority be acceptable to DGCA. For this purpose, the DGCA has to be satisfied that the aircraft manufactured or imported meet the approved airworthiness standards, in respect of design, method of construction, equipment and performance. In this connection, the design code followed by USA (FAR 23 & 25) and European Airworthiness Consortium (BCAR 23 & JAR 25) are generally acceptable for light and transport aircraft. For Rotorcraft, Airworthiness Code followed by USA (FAR 27 & 29) are acceptable for light and heavy category rotorcrafts. For Aero Engines Airworthiness Code FAR 33 followed by USA is acceptable.

6. REQUIREMENTS FOR REVALIDATION OF TYPE CERTIFICATE.

DGCA is empowered vide Rule 49B to revalidate the type certificate, in respect of any aircraft or engine/propeller that may be imported, provided that

- (a) the airworthiness authorities of the country in which it is manufactured has issued the certificate of airworthiness, type certificate or similar document, in respect of that aircraft or components;
- (b) it meets the airworthiness requirements laid down by the DGCA.

The applicant shall furnish the following documents:

- (i) Type certificate,
- (ii) Type - design data sheet,
- (iii) Supplemental type data sheet, if applicable.
- (iv) Noise standard to which it has been certified,
- (v) The basis on ETOPS certification if applicable,
- (vi) All applicable Airworthiness Directives,
- (vii) Copies of aircraft engine, propellers, specifications, special conditions and/or exemption including the certification basis.
- (viii) Engineering description of the aircraft with required

illustrations.

- (ix) Copies of flight tests report,
- (x) Copies of maintenance review board report and MMEL for aircraft type certificated in transport category,
- (xi) Weight and balance report, flight manual, Structural Repair manual etc.
- (xii) Any other documentation required by DGCA.

Note : See Annexure III.

If clarifications are to be sought about the complexities of design or any special design feature warrant, representative of the manufacturer may be requested to visit India to acquaint DGCA officers with the system and design of the aeroplane. Alternately, representatives of DGCA may visit the manufacturing sites to discuss specific design/ manufacturing issues with the representatives of the manufacturers, Designer and/or Airworthiness Authority of the country of manufacture.

Special conditions may be imposed on foreign type certificate and type data sheet by the DGCA in specific cases for safe operation of the aircraft in India. The special conditions so imposed will be communicated to the manufacturer and his Airworthiness Authorities by the DGCA.

On being satisfied that the basis of Type Certification of Aircraft and its engine/propeller is satisfactory, DGCA may revalidate the Type Certificate (with such exception as he may permit) issued by Airworthiness Authority of the country in which the aircraft was manufactured. Bilateral acceptance of Standards of India and other country will be the main criteria for revalidation.

6. TYPE CERTIFICATE OF AIRCRAFT MANUFACTURED IN INDIA.

It is essential that manufacturers of aircraft consult the DGCA prior to commencement of manufacturing to ensure that the design of aircraft or its engine/propeller he intends to manufacture conforms to approved airworthiness code of FAR or JAR code or to that design code approved by the DGCA. For this purpose, the applicant shall furnish the type design record, duly approved by the Chief Designer to prove that the design complies with the relevant specifications and airworthiness requirements prescribed by the DGCA. The information given in the type record shall be consistent with the evidence on which compliance with the Airworthiness Requirement is claimed and shall include the following information and such additional information the DGCA may require in a particular case.

- (i) General arrangement and all design drawings of the aircraft or its components
- (ii) complete list of drawings
- (iii) reports of static strength, its fatigue test, vibration test etc. or any other test that may be relevant to that aircraft component or part.
- (iv) details of materials of construction and process specification.
- (v) particulars of any deviation from the relevant airworthiness requirement.
- (vi) copies of such subsidiary type records as may have been prepared with respect to aircraft and components.
- (vii) compliance certificate by the Chief Designer with each applicable airworthiness requirement in respect of FAR/JAR having been complied with along with substantiation of the same.

Prior to carrying out the test to substantiate the design, the constructor shall submit to DGCA test schedule for scrutiny and approval. The DGCA may authorise his representatives to witness any of the test if he so desires. Necessary facilities for the same may be provided by the applicant. If the DGCA is not satisfied with the test results, he may require any or all of the tests to be repeated.

Certificate of design signed by the Chief Designer may be submitted by the applicant in respect of aircraft/component. The manufacture of aircraft/components shall be undertaken and certified only by approved/authorised persons in this behalf vide Aircraft Rule 53A.

7. CONSTRUCTION ASPECTS

The inspection during construction is an essential requirement to ensure that the airworthiness of the components is satisfactory in regard to the workmanship, materials used. The DGCA may station his representatives at the constructors works to carry out checks in regard to construction and inspection matters. The procedure or duplicate checks and inspection by the DGCA representatives will be laid down as may be found necessary from time to time.

- i) All materials used in the construction are in accordance with the specifications approved for the type design, and by suitable examination of sampling and testing by approved methods, that every batch of such materials complies with such specifications.

- ii) Every detail and part of the component/equipment has been examined by the applicant's inspection staff to the relevant approved detailed drawings and that they conform to the approved type design.
- iii) Each detailed part approved by the applicant's inspection staff is identified or stamped in such a way that the individual responsible for its inspection can subsequently be identified.
- iv) During the work of assembly, records of the progress of inspection for each component are maintained and the inspection record is certified by the inspector responsible.
- v) Operations and processes, such as heat treatment, corrosion protection, etc., are carried out by approved methods, and that the finished articles conform to approved drawings.
- vi) All components and items of equipments are given a serial number. This serial number shall be displayed in a prominent position on the completed component or assembly.
- vii) All components and parts obtained from sub-contractors or other firms have been inspected and approved in accordance with the approved conditions.

The policy regarding inspection of items made by sub-contractors must be laid down and approved by DGCA in regard to such policy.

Before submitting any aircraft/component/item of equipment for inspection to the Inspectors authorised by the Director General of Civil Aviation, the Inspector of the applicant shall satisfy himself that the particular a/c has been constructed, inspected and where necessary, tested in conformity with the specifications, drawings and instructions relating to the approved design. All relevant inspection records shall be made available to the inspector, and these shall be retained for a period of 10 years unless earlier disposal is authorised by the Director General of Civil Aviation. but in any case, no inspection records shall be destroyed without prior authorisation from the Director General of Civil Aviation.

Any modification considered necessary by the Director General of Civil Aviation as a result of the inspection/ performance tests carried out by the Officers of DRD/DAW of the Department, shall be incorporated before clearance for use on aircraft.

8. FLIGHT TRIAL:

Upon satisfactory completion of inspection of the aircraft/component/item of equipment and checking of the Type Record submitted by the applicant, the Director General of Civil Aviation shall require the applicant to carry out trials of an aircraft to conform compliance with the relevant Airworthiness Requirements in respect of performance etc. The tests shall be carried out in accordance with the flight test-schedules approved by the Director General of Civil Aviation. Where considered necessary, the Director General of Civil Aviation may nominate a pilot to carry out check test-flights. Results of flight tests will be compiled into a report and submitted for inclusion in the Type Record.

9. MANUALS

Except with the written consent of the Director General of Civil Aviation, the following Manuals in respect of a Type Component/item of equipment must be submitted for approval.

- i) Type Service Manual.
- ii) Flight Manual
- iii) Maintenance Manual
- iv) Structural Repair Manual
- v) Weight & Balance Record.

10. ISSUE OF TYPE CERTIFICATE

If the Director General of Civil Aviation is satisfied that the Type A/c or item of equipment conforms to the relevant acceptable standards in respect of design and performance (with such exceptions as he may permit), he may issue to the applicant a Type Certificate in respect of the aircraft. The type certificate shall refer only to the aircraft/component or item of equipment conforming, in detail with the documents specified on such approval.

11. MODIFICATIONS

The written approval of the Director General of Civil Aviation shall be obtained for a modification which has not been previously investigated and approved. At an early stage of the modification, brief particulars must be furnished to the Director General of Civil Aviation. The proposed modification must be such that the design of the aircraft/component/equipment, when modified, satisfies the requirements that were enforced at the time the type approval was originally granted, or such other requirements as the Director General of Civil Aviation may notify at that time.

Modifications should be classified as minor and major. A minor modification shall be one which has no appreciable effect on the weight & balance, structural strength, reliability, interchangeability, operational characteristics or other characteristics affecting the airworthiness of the component/item of equipment. A major modification shall be one not classified as minor modification. Minor modification in the Type design may be provisionally approved by the design organisation of the constructor pending formal approval from the Director General of Civil Aviation. For this purpose, the applicant shall submit all necessary data, test reports etc. in support of the proposal for inclusion in the Type record.

12. SERVICE EXPERIENCE CHANGE

Where the Director General of Civil Aviation finds, as a result of service experience or otherwise that an unsafe condition exists with respect to a design feature or characteristic of the type certificated aircraft, component/item of equipment, he may issue a directive specifying conditions and limitations including inspections for continued operation in aircraft or may altogether prohibit the use of the same till the unsafe condition has been corrected. When design changes are considered necessary, the holder of the Type Certificate shall submit appropriate design changes for approval of the Director General of Civil Aviation.

13. REQUIREMENT FOR DESIGN ORGANISATION

The design organisation of the applicant should be sufficiently competent technically to undertake work on design of aircraft component/item of equipment, must be familiar with the relevant requirements and procedures and must maintain the highest standard as it may only be possible for the Director General of Civil Aviation to carry out percentage checks on reports and calculations submitted. The qualifications and experience of the senior staff of the design organisation shall be adequate to conduct the work involved in establishing the compliance with the requirements and ensure that good judgment is exercised with full appreciation of current aeronautical practice in design matters, whether specifically covered by the requirements or not. The design office shall be so organised that all calculations and drawings on which the airworthiness of the aircraft component/item of equipment depends are independently checked for numerical accuracy and validity of assumptions. Each design drawing shall bear a description title, drawing number, issue number and date of issue. All alterations to the design drawings shall be made in accordance with a drawing amendment system to ensure that the design records are suitably amended. If an alteration is made to a drawing, a new issue number and date shall

immediately be allocated to the drawing irrespective of whether the alteration is permanent or experimental. The applicant shall provide facilities of access to approved facilities or for making such tests as are necessary to establish compliance with the requirements. Design records shall be such that the proper correlation of drawings and maintenance with the design records is ensured. It is emphasized that the applicant is in a large measure, responsible for ensuring compliance with the requirements. The Director General of Civil Aviation would, however, exercise the right to check some or all technical reports including all points of doubt and to witness all important tests.

14. DGCA when issuing an approval for the design of a modification, of a repair or of a replacement part shall do so on the basis of satisfactory evidence that the aircraft continues to comply with the design aspects of the appropriate airworthiness requirements used for the type certification of that aircraft type or amended Type Certificate.

Note: The approval of the design of a modification to an aircraft, of a repair or of a replacement part which affects the Type Certificate conditions is indicated by issuance of supplemental type certificate or amended type certificate or an equivalent document.

15. EXCEPTIONS

Notwithstanding what has been stated in the preceding paragraphs, the Director General of Civil Aviation may waive/reject any of the requirements relating to design in respect of aircraft component/item of equipment type certificate in a foreign country but built under licence in India. For this purpose, the applicant shall submit to the Director General of Civil Aviation complete Type Record Documents and Manuals specified in paras 5 and 6.

16. CANCELLATION, SUSPENSION OF ENDORSEMENT ON TYPE CERTIFICATE.

If at any time, the DGCA is satisfied that there is a reasonable doubt to indicate that the safety of the aircraft is imperiled because of an unsafe condition in the aircraft, engine, component or item of equipment of that aircraft, he may cancel, suspend or endorse the certificate issued or validated for the aircraft, aircraft component or item of equipment or may require the incorporation of any modification as a condition of the Type Certificate remaining in force.

Sd/-
(N.Ramesh)
Deputy Director General of Civil Aviation
for Director General of Civil Aviation

6. COUNTRY OF CONSTRUCTION

7. YEAR OF CONSTRUCTION

8. SERIAL NUMBER ELIGIBLE

9. CERTIFICATION BASIS

10. PRODUCTION BASIS

11. AIRWORTHINESS AUTHORITY OF THE COUNTRY

12. TYPE CERTIFICATION IN OTHER COUNTRIES

13. REGISTRATION MARKS

14. DIMENSIONS

- WING SPAN
- WING ASPECT RATIO
- LENGTH OVERHAUL
- HEIGHT OVERHAUL
- WHEEL TRACK
- WHEEL BASE

- WING AREA

15. TYPE OF ENGINE

16. NUMBER OF ENGINES

17. ENGINE LIMITS

18. PROPELLER & PROPELLER LIMITS

19. FUEL

20. OIL

21. AIRSPEED LIMITS

MAXIMUM OPERATING SPEED

MANEUVERING SPEED

MAXIMUM FLAP EXTENDED SPEED

SINGLE ENGINE MINIMUM CONTROL SPEED

LANDING GEAR EXTENDED SPEED

DEMONSTRATED CROSS WIND COMPONENT

22. DATUM

23. LEVELING MEANS

24. C.G. RANGE

25. WEIGHTS

MAXIMUM TAKE-OFF WEIGHT

MAXIMUM LANDING WEIGHT

ZERO FUEL WEIGHT

MAXIMUM TAXIING WEIGHT

26. MINIMUM CREW

27. NUMBER OF SEATS

28. MAXIMUM BAGGAGE

29. FUEL CAPACITY

30. OIL CAPACITY

31. CONTROL SURFACE MOVEMENTS WING FLAPS, INNER AND OUTER

AILERONS

AILERON TAB

ELEVATOR

ELEVATOR TAB

RUDDER

RUDDER TAB

32. MAXIMUM OPERATING ALTITUDE

33. MAXIMUM OPERATING TEMPERATURE

34. IMPORT REQUIREMENTS

35. OPERATING MANUALS

36. AIRWORTHINESS LIMITATIONS

37. SERVICE INFORMATION & DOCUMENTS

38. EQUIPMENT

I hereby declare that the above particulars are true in every respect.

SIGNATURE OF APPLICANT _____

DESIGNATION _____

DATE _____

NOTE: THE FOLLOWING ITEMS SHOULD BE ENCLOSED

1. A THREE VIEW DRAWING OF THE AIRCRAFT.
2. THREE UNMOUNTED PHOTOGRAPHS OF THE AIRCRAFT. THE PHOTOGRAPHS SHOULD BE OF THE SIZE NOT LESS THAN 10 CM x 15 CM.
3. DESIGN AND TEST REPORTS OF THE AIRCRAFT REQUIRED BY THE DGCA.
4. ANY ADDITIONAL DATA REGARDING DESIGN, CALCULATIONS, REPORTS, ETC. THAT MAY BE REQUIRED BY THE DGCA.

6. COUNTRY OF CONSTRUCTION

7. YEAR OF CONSTRUCTION

8. SERIAL NUMBER ELIGIBLE

9. CERTIFICATION BASIS

10. PRODUCTION BASIS

11. AIRWORTHINESS AUTHORITY OF THE COUNTRY

12. TYPE CERTIFICATION IN OTHER COUNTRIES

13. REGISTRATION MARKS

14. DIMENSIONS

DIAMETER OF MAIN ROTOR

MAIN ROTOR BLADE CHORD

DIAMETER OF TAIL ROTOR

LENGTH OVERALL

LENGTH OF FUSELAGE

HEIGHT OVERALL

WHEEL TRACK

WHEEL BASE

15. TYPE OF ENGINE

16. NUMBER OF ENGINES

17. ENGINE OPERATING LIMITS ALL ENGINES OPERATING

ONE ENGINE INOPERATIVE LIMITS

18. ROTOR LIMITS POWER OFF POWER ON

19. FUEL

20. OIL

32. MAXIMUM OPERATING ALTITUDE

33. MAXIMUM OPERATING TEMPERATURE

34. IMPORT REQUIREMENTS

35. OPERATING MANUALS

36. AIRWORTHINESS LIMITATIONS

37. SERVICE INFORMATION & DOCUMENTS

38. EQUIPMENT

I hereby declare that the above particulars are true in every respect.

DATE _____

SIGNATURE OF APPLICANT _____

DESIGNATION _____

NOTE : THE FOLLOWING ITEMS SHOULD BE ENCLOSED

1. A THREE VIEW DRAWING OF THE ROTORCRAFT.

2. THREE UNMOUNTED PHOTOGRAPHS OF THE ROTORCRAFT. THE PHOTOGRAPHS SHOULD BE OF THE SIZE NOT LESS THAN 10 CM X 15 CM.
3. DESIGN AND TEST REPORTS OF THE ROTORCRAFT REQUIRED BY THE DGCA.
4. ANY ADDITIONAL DATA REGARDING DESIGN, CALCULATIONS, REPORTS, ETC. THAT MAY BE REQUIRED BY THE DGCA.

**INFORMATION REQUIRED IN THE APPLICATION FOR ROTORCRAFT
TYPE CERTIFICATE**

1. FUEL :

Means the minimum fuel grade to be used in the basis engine.

2. OIL :

Means the minimum oil grade to be used in the basic engine.

3. AIRSPEED LIMITS :

All pertinent airspeed limits to be given in both Kmph and knots.

4. CENTRE OF GRAVITY (C.G.) RANGE

The C.G. approved for the extreme loading conditions of the aircraft will be given in centimeters from the datum.

5. DATUM :

The datum, designated by the applicant, must always be a definite, unmistakable and unchangeable point. It must be defined in such a manner that it may be readily identified.

6. LEVELING MEANS :

The description of the means provided for leveling the rotorcraft will be included with information as to its general location and accessibility.

7. MAXIMUM WEIGHT :

All pertinent maximum weights should be given.

8. MINIMUM CREW :

When established by regulation, the minimum crew required for normal operation will be included.

9. MAXIMUM BAGGAGE :

The minimum capacity and moment arm of each baggage compartment will be shown. The maximum capacity is the actual capacity of the compartment.

10. FUEL CAPACITY :

The total capacity of each fuel tank installed in the rotorcraft and its moment arm will be indicated. Where usable fuel in the tank differs from total fuel capacity, the usable fuel quantity will also be indicated.

11. OIL CAPACITY :

Same as fuel capacity.

12. ROTOR BLADES AND CONTROL MOVEMENTS :

The total one way travel in each direction of each movable control surface on the rotorcraft will be included.

13. SERIAL NUMBER ELIGIBLE :

The manufacturer's serial numbers for each rotorcraft under a particular model will be included.

14. IMPORT REQUIREMENTS :

For imported rotorcraft, describe the document to be used by the country of manufacture in certifying that individual rotorcraft conform to the type design and are in a condition for safe operation.

15. CERTIFICATION BASIS :

The certificate number, together with a statement regarding the requirements and/or special conditions with which the rotorcraft has been shown to comply and the effective date of the pertinent requirements will be included.

16. PRODUCTION BASIS :

If a production certificate has been issued to the type certificate holder, listing of the production certificate and number will be included.

If the above is not applicable, state whether the production certificate has been issued at any stage or is canceled.

17. AIRWORTHINESS LIMITATIONS :

Specify the document containing information on mandatory inspections and intervals and also mandatory replacement

times.

18. SERVICE INFORMATION AND DOCUMENTS :

Information on available service documents should be given.

19. EQUIPMENT :

The basic required equipment as prescribed in the applicable airworthiness regulations must be incorporated.

ANNEXURE III

DOCUMENTATION REQUIRED FOR THE PURPOSE OF TYPE CERTIFICATION

1. AIRFRAME :

- a) Type specification.
- b) Type design record containing aerodynamic loads, stress analysis, strength test, flight test, performance reports, etc.
- c) Fatigue test reports.
- d) Weight and balance report and permissible C.C. limits.
- e) Compliance statement with the applicable airworthiness requirements.
- f) Failure mode and effects analysis of various systems.
- g) Ground handling and flight handling characteristics.
- h) Flight Manual.
- i) Overhaul Manual.
- j) Maintenance Manual.
- k) Type Certificate.
- l) Type Data Sheets.
- m) Service Bulletins.
- n) Modification List.
- o) Safety Records.
- p) Airworthiness Directives.

II. ENGINE :

- a) Type specification.
- b) Fatigue test reports.
- c) Compliance statement with the applicable airworthiness requirements.

- d) Failure mode and effects analysis of various systems.
- e) Safety records.
- f) Vibration, endurance and operation tests.
- g) Service Bulletins.
- h) Airworthiness Directives.
- i) Type Certificate.
- j) Type Data Sheets.

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