



GOVERNMENT OF INDIA

OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPPOSITE SAFDARJUNG AIRPORT, NEW DELHI - 110 003

CIVIL AVIATION REQUIREMENT
SECTION 2 – AIRWORTHINESS
SERIES, F PART - XXIV
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F. No. XXXXX

Subject: **Manufacture, Registration and Operation of Gyro Plane**

1. INTRODUCTION

Rule 15 of the Aircraft Rules, 1937 provides for operation of a Gyro Plane aircraft (specifically a type of rotorcraft) without a valid Certificate of Airworthiness. The rule also specifies that the Gyro Plane aircraft (specifically a type of rotorcraft) shall be registered and shall meet the minimum design requirements stipulated by the Director General. The Gyro Plane aircraft (specifically a type of rotorcraft) shall be fitted with instruments and equipment in such a manner provided in Rule 57 of the Aircraft Rules, 1937 and have Special Certificate of Airworthiness (Special C of A) issued by the Director General.

This CAR specifies the minimum requirements a manufacturer or an owner / operator of Gyro Plane aircraft (specifically a type of rotorcraft) must comply to manufacture / assemble, register, maintain, operate a Gyro Plane aircraft (specifically a type of rotorcraft) and such other additional conditions specified by the Ministry of Home Affairs relating to security / operation of the aircraft.

2. ABBREVIATIONS

C_N	Aerodynamic normal force coefficient.
EAS	Equivalent airspeed True airspeed $\times (1/P_0)^{1/2}$ where P is the Air Density and P_0 the air density in standard sea-level conditions.
IAS	Indicated airspeed. The readings of the pitot-static airspeed indicator as installed in the rotorcraft, corrected only for instrument error.
ISA	International Standard Atmosphere.
V_D	The Maximum Design Speed, EAS.
V_{DF}	The Maximum Demonstrated Flight Speed, EAS. This

	must not exceed V_D .
V_H	Maximum speed in level flight with the engine at maximum continuous power, IAS.
VMC	Visual Meteorological Conditions.
V_{MC} (power-off)	The minimum power-off control airspeed (IAS) at which control of the aircraft is assured in all axes following failure of the engine, including transient effects experienced at the point of failure.
V_{MC} (power-on)	The minimum power-on control airspeed (IAS) at which control of the aircraft is assured in all axes with the engine producing the power required to maintain the flight condition.
V_{MIN}	Minimum Level Flight Speed, IAS, limited by either power or controllability considerations.
V_{NE}	The Never Exceed Speed, IAS.
V_Y	Best Rate of Climb Speed, IAS.]

3. DEFINITIONS

3.1 Fireproof

'Fireproof' with respect to materials, components and equipment, means the capability to withstand the application of heat by a flame, for a period of 15 minutes without any failure that would create a hazard to the aircraft.

Compliance with the criteria for fireproof materials or components should be shown as follows:

- 1) The flame to which the materials or components are subjected should be $1100^{\circ}\text{C} \pm 80^{\circ}\text{C}$.
- 2) Sheet materials approximately 64 cm^2 should be subjected to the flame from a suitable burner.
- 3) The flame must be large enough to maintain the required test temperature over an area approximately 13 mm^2 .

For example, materials which are considered fireproof without being subjected to fire tests include:

- a) stainless steel sheet 0.4 mm (0.016 in) thick;
- b) mild steel sheet protected against corrosion 0.45 mm (0.018 in) thick; and
- c) titanium sheet 0.45 mm (0.018 in) thick.

3.2 Fire-resistant

'Fire-resistant' with respect to materials, components and equipment means the capability to withstand the application of heat by a flame, as defined for 'Fireproof', for a period of 5 minutes without any failure that would create a hazard to the aircraft.

For materials this may be considered to be equivalent to the capability of withstanding a fire at least as well as aluminium alloy, in dimensions appropriate for the purposes for which they are used.

3.3 Primary Structure

Those parts of the structure, the failure of which would endanger the gyroplane.

4. Applicability

a) This Section states requirements applicable to gyroplanes having:

1. not more than two occupants;
2. a maximum all-up (take-off) weight not exceeding 600 kg; and
3. restricted to day VMC.

For the purpose of airworthiness requirements, such gyroplanes are referred to as 'light' gyroplanes.

b) A gyroplane is defined as a rotorcraft with a non-power-driven rotor rotating about an axis which is vertical or nearly so, when the aircraft is in horizontal flight.

c) These requirements apply to light gyroplanes of orthodox design. Aircraft having the following basic features will be so regarded:

1. Single teetering two-bladed rotor of fixed pitch.;
2. Single reciprocating engine which may be normally-aspirated, turbo-supercharged or supercharged and [driving a fixed or variable pitch] propeller; and
3. One nose wheel and/or tail wheel, and non-retractable two-main-wheel undercarriage;
4. Pusher or tractor configuration.

d) If an aerodynamic pitch control system, (other than by the rotor), which is operable in flight is fitted, then the gyroplane will not be considered to be of orthodox design.

e) Where it can be shown that a particular feature is similar in all significant respects to one which is part of a previously accepted design, and can be considered as a separate entity in terms of its function, the CAA will take this into account when assessing the acceptability of the feature, and it may then not be necessary to test or otherwise substantiate to the level set out in the appropriate requirement.

f) Where these requirements are inappropriate to particular design and construction features, it will be necessary to reconsider the validity of the requirements for each particular case and the CAA must be consulted as to the applicable requirements.

a) Permitted Operations.

These requirements apply to light gyroplanes designed for non-aerobatic operation.

h) For the purpose of this CAR, Gyro Plane is a vehicle that -

- 1) is used or intended to be used for manual operation in the air by a single occupant/ double occupant.
- 2) is used or intended to be used for recreation, sport or any other purpose approved by DGCA in writing.
- 3) has the maximum AUW less than 600 kgs for a double seater.
- 4) has the Maximum Engine Power 160 horsepower (hp)
- 5) has the Rotor Diameter 7-11 meters
- 6) has the Rotor RPM (typical Operating) 300-500 revolution per minute
- 7) has the Maximum Speed (V_{ne} never exceed speed) 120-160 Km/h
- 8) has the Cruise Speed 80-140 Km/h
- 9) has the Take off distance 50-150 meter
- 10) has the Landing distance 30-100 meter
- 11) has the Landing distance 30-100 meter
- 12) has the Maximum Load Factor (Limit Load Factor) +3.5 to +4.5 g
- 13) has the Maximum operating Altitude 4000 m

5. Type acceptance / Approval

- 5.1 An applicant for 'Type Approval' or 'Type Acceptance' of a Gyro Plane aircraft (specifically a type of rotorcraft) shall submit compliance statement pertaining to BCAR Section "T" or any other standard acceptable to DGCA and associated documents to DGCA.
- 5.2 Request for issue of 'Type Approval' or 'Type Acceptance' shall be addressed to Director (AED), DGCA Hqrs along with the following enclosures:-
- (i) Type Approval / Acceptance application (Annexure – I).
 - (ii) Type Approval issued by the Regulatory Authority of State of design where applicable.
 - (iii) Compliance Statement with BCAR Section "S" or other acceptable standards, and associated evaluation & test reports.
 - (iv) Aircraft build standard and Drawings of components, sub-assemblies and assemblies.
 - (v) Organization's Procedure Manual as per Annexure –II

Note: An applicant need not obtain design organization approval. However, procedure manual detailing procedure followed by applicant for the design and development of Gyro Plane aircraft (specifically a type of rotorcraft) should be made available. Guidance material for preparing procedure manual is given in Annexure - II.

6. MANUFACTURE

- 6.1 Applications for issue of approval to manufacture or assemble a Gyro Plane aircraft (specifically a type of rotorcraft) from imported kits shall be made to the regional airworthiness office concerned on a form prescribed at Annexure– III to this CAR.
- 6.2 For series production of Gyro Plane aircraft (specifically a type of rotorcraft), the manufacturer shall provide an Engineering Organization Manual along with a documented production inspection system for acceptance by DGCA. Contents of the Engineering Organization Manual and Production Inspection System shall minimum address the issues specified in Annexure - IV to this CAR.
- 6.3 Approval to manufacture a Gyro Plane aircraft (specifically a type of rotorcraft) shall be granted after determining that the,
 - (i) design had been type approved / accepted by the AED.
 - (ii) established production facilities and documented process are suitable for manufacture / assemble the Gyro Plane aircraft (specifically a type of rotorcraft).
 - (iii) security clearance of the registered manufacturer / owner had been issued by the Ministry of Home Affairs.
- 6.4 The aircraft shall be manufactured adopting manufacturing techniques recommended by the designer / design organization and in its absence standard aeronautical engineering practices. The Gyro Plane aircraft (specifically a type of rotorcraft) shall be fitted with such communication and navigation equipment prescribed by the Ministry of Home Affairs at Annexure - XII.
- 6.5 Records of manufacturing including ground and flight testing, materials used and their source shall be maintained.
- 6.6 Each aircraft shall be weighed and its center of gravity established. A weight and balance report shall be prepared and delivered with each aircraft.
- 6.7 Prior to delivery, each aircraft shall be tested on ground and in flight (Annexure - V). Copy of test schedule covering ground and flight tests to which the aircraft was subjected shall be delivered with the aircraft.
- 6.8 User's manual (Annexure - VI) and Maintenance manual shall be prepared by the manufacturer and copies of the same shall be submitted to the DGCA along with the application for approval of the firm.

- 6.9 The designer / principal manufacturer shall provide a maintenance program and also specify the overhaul life (TBO) of the engine, propeller, instruments and advise the operators about the organizations which may be approached for the overhaul or other major maintenance. The manufacturer shall also be responsible for issuance of any modifications to the aircraft to improve its safety of operations. For this purpose the manufacturer may provide kits and drawings so that the operators can carry out the modifications.
- 6.10 The manufacturer shall deliver with each aircraft produced, a certificate of compliance (Annexure - VII) stating that the aircraft had been manufactured adopting the techniques recommended by the designer / design organization/ standard aeronautical engineering practices and the aircraft is safe for the intended operations.
- 6.11 The manufacturer shall maintain records of Gyro Plane aircraft (specifically a type of rotorcraft) produced and details of person / personnel to whom the aircraft is sold and provide it to the DGCA when required.
- 6.12 A permanent placard shall be affixed on the Gyro Plane aircraft (specifically a type of rotorcraft) in full view of the occupants and should be worded as: **“THE AIRCRAFT HAS NOT BEEN CERTIFICATED TO AN INTERNATIONAL AIRWORTHINESS REQUIREMENT.”**
- 6.13 Operating limitations of the aircraft as prescribed by the designer/ manufacturer shall be placarded in the cockpit.

7. REGISTRATION

- 7.1 All civil Gyro Plane aircraft (specifically a type of rotorcraft) imported into the country or manufactured in India shall be registered in the Civil Aircraft Register and a Certificate of Registration in respect thereof shall be issued by the DGCA.
- 7.2 Applications for registration of Gyro Plane aircraft (specifically a type of rotorcraft) should be made to the DGCA on the prescribed form (CA 28) and should be accompanied by documents specified at Annexure – VIII.
- 7.3 The Nationality and Registration marks shall be painted on the aircraft or shall be affixed thereto by any other means ensuring a similar degree of permanence. Guidelines for fixation of nationality and registration markings detailed in CAR, Section 2 Series F Part I.
- 7.4 Each Gyro Plane aircraft (specifically a type of rotorcraft) registered shall carry an identification plate showing the registration markings, manufacturer's name, aircraft serial number and the name and address of the registered owner of the aircraft. The plate shall be made of fireproof metal or other fireproof material of suitable physical properties. It shall be secured to the aircraft in a prominent position and at a convenient place in order to afford readability when the aircraft is stationary

8. SPECIAL CERTIFICATE OF AIRWORTHINESS

Pursuant to provisions of Rule 50 of the Aircraft Rules, 1937; DGCA shall issue a Special C of A in respect of the Gyro Plane aircraft (specifically a type of rotorcraft). Special C of A shall enable the operator to fly the Gyro Plane aircraft (specifically a type of rotorcraft) within the specified area of operation (Annexure –XIII) subject to the conditions given therein and in this CAR. Requirements for issue of Special C of A are detailed in CAR, Section – 2, Series – F, Part – XXIII.

9. OPERATIONS

- 9.1 This aircraft shall be flown in accordance with the operating requirements laid down in the Aircraft Rules, 1937 instructions issued by the DGCA and the manufacturer from time to time.
- 9.2 The aircraft shall be operated only by the owner in whose name the aircraft is registered and specified on the C of R. However, in case of approved flying training organizations, the aircraft may be operated as authorized by the chief flight instructor.
- 9.3 The aircraft shall not be used for public transport or aerial work or any commercial activity.
- 9.4 The aircraft shall be flown by appropriately licensed pilots as per Section IB of Schedule II of Aircraft Rule 1937, within the specified area only.
- 9.5 The details of flight plan and flying shall be notified by the pilot to the nearby aerodrome, defense establishment and district local authorities concerned as applicable and obtain necessary clearance.
- 9.6 Details of approved owners / operators along with copy of Special C of A should be made available to local district authorities i.e. District Magistrate and Superintendent of Police by regional office to ensure that no breach is done by them.
- 9.7 Copy of Special Certificate of Airworthiness shall be provided to AAI by operator for monitoring the flying activities in their area and carried on board.
- 9.8 The Gyro Plane aircraft (specifically a type of rotorcraft) shall be operated within the specified area as per Annexure – XIII in compliance with the conditions of Special Certificate of Airworthiness, operational restrictions and other conditions stipulated by the Ministry of Home Affairs in Annexure – XII.
- 9.9 Gyro Plane aircraft (specifically a type of rotorcraft) shall be operated in accordance with Visual Flight Rules (VFR).
- 9.10 Gyro Plane aircraft (specifically a type of rotorcraft) shall not be operated in night.

10. MAINTENANCE

- 10.1 The routine maintenance of the aircraft in accordance with the manufacturer's instructions shall be the responsibility of the operator. The operator shall also be responsible for embodiment of modifications in accordance with the plan prescribed by the manufacturer. If the manufacturer is not existing, the modifications desired by the user shall be approved by the DGCA.
- 10.2 The pilot shall be responsible for carrying out the pre-flight inspections and the next higher inspections up to the 10 hour schedule, and not fly the aircraft in case any abnormality is noticed. After every flight the pilot shall record in the log book any defects noticed during the flight. Before undertaking any flight the pilot shall ensure that the defects recorded in the log book have been attended to and rectified and that the aircraft is safe to undertake the flight.
- 10.3 The higher than 10 hours inspection schedules and overhaul of the aircraft, engine and its components shall be carried out by an aircraft maintenance engineer holding a license in Category 'A' or Category 'B1' or Category 'B3' or Category 'L' or a person specially authorized by the Director General.

Note: For the authorisation of personal to carry out higher than 10 hours inspection schedules and overhaul of the Gyro Plane, DAW –RAOs will constitute a team of officers for their oral exam to evaluate theoretical and practical knowledge, after clearing the oral exam applicant will get authorisation.

- 10.4 A log book shall be maintained by the operator in order to keep a record of the flying, modifications and repair work carried out on the aircraft. All columns of the log book should be filled up by the pilot and signed by him after every flight.

11. SECURITY

- 11.1 The aircraft shall not be sold or disposed of in any way to any person or firm without production of a certificate issued by DGCA. The certificate shall be granted by the DGCA after verifying the antecedents and clearance of the prospective buyers from the Ministry of Home Affairs.
- 11.2 Any person or firm intending to acquire/manufacture or register a Gyro Plane aircraft (specifically a type of rotorcraft) is required to obtain security clearance from Ministry of Home Affairs (MHA) through DGCA and comply with the requirements specified by MHA. The security and operational requirements of MHA are detailed in Annexure - XII to this CAR.
- 11.3 The prospective manufacturer / owner of Gyro Plane aircraft (specifically a type of rotorcraft) shall submit duly filled Proforma as specified at Annexure - XI to this CAR to DGCA HQRS (Directorate of Airworthiness). The request of the applicant for security clearance shall be forwarded to MHA after ensuring that the application is complete in all respect. Receipt of security clearance of the applicant from MHA will be informed by the DGCA.

Note: If applicant is holding valid security clearance for prospective manufacturer / owner of Glider / Hot Air Ballon / Microlight aircraft, then he need not to apply afresh for the prospective manufacturer / owner of Gyro Plane aircraft.

- 11.4 Notwithstanding to the above owner / operator of Gyro Plane aircraft (specifically a type of rotorcraft) shall comply with the security related directives issued by the Ministry of Home Affairs from time to time.

(Faiz Ahmed Kidwai)
Director General (Civil Aviation)

ANNEXURE – I

**APPLICATION FOR ISSUE OF DESIGN APPROVAL / ACCEPTANCE OF
GYRO PLANE AIRCRAFT**

(1)	Manufacturer	-
(2)	Certification Basis	-
(3)	Definition of basic standard	-
(4)	Compliance with the Gyro Plane Definition	-
(a)	MTOW	-
(b)	No. of Seats	-
(c)	Maximum Wing Loading	-
(d)	Permitted range of pilot weights	-
(e)	Typical empty weight	-
(f)	ZFW + 172 kg crew + 1hr Kg. fuel	-
(g)	ZFW + 86 kg pilot + full fuel (45 liters, 32 kg)	-
(h)	Max allowed ZFW at initial permit issue	-
(5)	Power Plant	-
(a)	Designation	-
(b)	Engine Type	-
(c)	Reduction Gear	-
(d)	Exhaust System	-
(e)	Intake system	-
(f)	Propeller Type	-
(g)	Propeller Dia x Pitch	-
(h)	Noise Type Cert. No.	-
(6)	Mandatory Limitations	-
(a)	Maximum Take-Off Weight	-
(b)	Cockpit Loadings	-
	Min-	-
	Max-	-
(c)	Never Exceed Speed	-
(d)	Maneuvering Speed	-
(e)	Permitted Maneuvers	-
(f)	Fuel contents (max usable)	-
(g)	Power Plant	-
(7)	Engine	-
(a)	Max RPM	-
(b)	Max CHT	-
(c)	Max EGT	-
(d)	Fuel Spec	-
(e)	Engine Oil Spec	-
(f)	Gearbox Oil Spec	-
(g)	Fuel / Oil Mix	-
(h)	Max Coolant Temp	-
(i)	Max Oil Pressure	-
(j)	Min Oil Pressure	-

**CIVIL AVIATION REQUIREMENT
SERIES F PART XXIV**

**SECTION 2 – AIRWORTHINESS
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- | | | |
|------|---|---|
| (k) | Oil Temperature | - |
| (8) | Instruments Required | - |
| (9) | Control Deflections | - |
| (10) | Pilots Notes, Maintenance Manuals,
References: | - |
| (11) | Mandatory Modifications/Service Bulletins/
Airworthiness Directives Etc... | - |
| (12) | Minimum Performance at Max Takeoff
weight | - |

(Authorized Signatory)

ANNEXURE – II

**Model Content of Procedure Manual for Organization involved with
Design and Development of Gyro Plane Aircraft**

Part 1: Organization

- 1.1 Objective of handbook and binding statement
- 1.2 Responsible person for administration of handbook
- 1.3 Amendment procedure
- 1.4 List of effective pages
- 1.5 Distribution list
- 1.6 Presentation of organization (including locations)
- 1.7 Scope of work (with identification of type and models of products)
- 1.8 Organization charts
- 1.9 Human resources
- 1.10 Management staff

Part 2: Procedures

- 2.1 Management of changes to type design and design of repairs
 - configuration control
 - approval of modification
- 2.2 Control of design subcontractors
- 2.3 Collecting/Investigating of failures, malfunctions and defects
- 2.4 Co-ordination with production
- 2.5 Documentation control
 - in relations with the changes and repairs
 - in relation with failures/malfunctions and defects (i.e. Service Bulletins)
- 2.6 Record keeping

ANNEXURE - III

**Application for Approval of an Organization for Manufacturing or
Assembly of Gyro Plane Aircraft**

1. Registered name and address of the organization:
2. Trade name (if different):
3. Locations for which the approval is applied for:
4. Brief summary of proposed activities at the item-3 addresses -
 - a) General:
 - b) Scope of approval:
 - c) Nature of privileges:
5. Description of organization:
6. Arrangements with design approval holder(s) / design organization(s) are different:
7. Approximate number of staff engaged or intended to be engaged in the activities:
8. Position and name of the accountable manager:
9. Details of Fee Paid:

(Signature of the Accountable Manager)

Dated:

Enclosure(s):

- i. Copy of company registration certificate
- ii. Engineering Organisation Manual
- iii. Fee for Initial Approval / Renewal of approval of Organisation for Manufacturing or Assembly of Gyro Plane aircraft (specifically a type of rotorcraft), will be charged as per Rule 133(C) of aircraft Rules, 1937

ANNEXURE - IV

**Contents of Engineering Organization Manual and
Production Inspection System Engineering Organization Manual**

1. A statement signed by the owner of the production organization confirming that the Engineering Organization and any associated manuals which define the approved organization's compliance with this CAR will be complied with at all times.
2. The title(s) and names of managers administering the manufacturing activity.
3. The duties and responsibilities of the manager overseeing the manufacturing activities.
4. An organizational chart showing associated chains of responsibility of the managers.
5. A list of certifying staff approved by the organization.
6. A general description of man-power resources.
7. A general description of the facilities.
8. A general description of the production organization's scope of work.
9. Description of production inspection system.
10. The procedure for the notification of organizational changes to DGCA.
11. Procedure for the amendment of Engineering organization manual.

Production Inspection System

- (i) Design and production document issue, approval, or change.
- (ii) Vendor and subcontractor assessment and control.
- (iii) Verification of incoming products, parts, materials, and equipment, including items supplied new or used by buyers of products, are as specified in the applicable design data.
- (iv) Manufacturing processes.
- (v) Inspection and testing, including production flight tests and certification.
- (vii) Non-conforming item control.
- (viii) Identification and traceability.
- (ix) Airworthiness coordination with the designer / design organization.
- (x) Records completion and retention.

- (xi) Calibration of tools, jigs, and test equipment.
- (xii) Personnel qualification and competence.
- (xiii) Handling, storage and packing.
- (xiv) Internal quality audits and resulting corrective actions.

ANNEXURE - V

GROUND TESTS AND FLYING TESTS

1. The components concerned with airworthiness and relevant to safety should be tested by a series of flying tests and ground tests. The program of tests should be mentioned in the test documents required for registration of the Gyro Plane aircraft (specifically a type of rotorcraft). The manufacturer should furnish these documents to the user.
2. The minimum test program should comprise of the following:
 - 2.1 Flying tests for determining -
 - a) Maximum weight performance described in the user's manual.
 - b) Maneuverability and stability of aircraft in relation to its weight during the following phases of flight:
 - take-off and landing (with and without power)
 - climb
 - level flying
 - dive
 - behavior of the Gyro Plane aircraft (specifically a type of rotorcraft) during vibrations
 - 2.2 Ground tests for determining the technical characteristics of materials used in bending, tension, torsion loads and the scatter factor/margins chosen for taking into account the variation in material characteristics.
 - 2.3 Flying tests or bench tests for determining the behavior of the engine determined for a fixed period of utilization.
3. The manufacturer shall be responsible for the execution of the test flight program. In case of a Gyro Plane aircraft (specifically a type of rotorcraft) imported into India, the owner shall be responsible for conducting the test flights by qualified pilots.
 - 3.1 All test results should be compiled in a statement stating the date and place of the tests carried out along with the parameters which influenced the results.

ANNEXURE - VI

USER'S MANUAL (OPERATOR'S HAND BOOK)

The user's manual is mandatory for all Gyro Plane aircraft (specifically a type of rotorcraft) of series production. The manual should contain clear and precise instructions which should be clearly followed by the user. In general, the manual should contain description about the following –

1. All necessary details on the operation of the aircraft and its equipment and information regarding the performance, maneuverability and stability of the aircraft.
2. Specific operating conditions and the associated limits for the aircraft without giving consideration to the type or the runway to be used for the operation.
3. In general, the user's manual should contain paragraphs as per guidelines given below:

3.1 Weight Limitations:

- 3.1.1 Empty Weight: It is the weight of the aircraft structure excluding the weight of all removable equipment and usable fuel and oil quantities but including fuel and oil quantities both trapped and unusable.
- 3.1.2 Maximum All Up Weight: It is the maximum weight to which the aircraft has been subjected during flight tests and ground tests. The Max. AUW should be laid down in a way that it is higher than the aircraft empty weight together with full fuel and oil tanks and 75kgs for each occupant seat.

3.2 Maximum Weight Performance:

- 3.2.1 Stalling Speed: It is the minimum speed at which level flight can be maintained.

3.2.2 Take off

- Take off run
- Take off distance (to clear 15 m obstacle)

3.2.3 Climb

- Take off climb

3.2.4 Landing

- Landing distance (from 15 m obstacle)
- Landing roll

3.2.5 Speed associated with maximum aerodynamic efficiency.

3.3 Maneuverability and Stability:

3.3.1 Behavior of the aircraft with respect to weight

3.3.2 Specific headwind/crosswind limits for take-off and landing.

3.4 Structure:

3.4.1 Load factors

- negative
- positive

3.4.2 Maximum Load

- on the movable surface
- on the flying controls

3.5 Engine and Propeller:

- engine maximum power
- duration of maximum power
- propeller maximum power
- reduction type and ratio of reduction.

3.6 Assembly and Disassembly procedures.

3.7 List of controls and specific operating instructions for each item.

3.8 Fuel.

3.9 List of equipment and instruments including radio and specific instructions for the user on these items.

3.10 Optional equipment :

- List of optional equipment.
- Effect of assembly of optional equipment on the limitations indicated in the manual and associated instructions for use.

3.11 Emergency procedures.

ANNEXURE - VII

CERTIFICATE OF COMPLIANCE – GYRO PLANE AIRCRAFT

1. Registration Mark
2. Type of Gyro Plane aircraft
3. Manufacturer
4. Empty weight with equipment
5. Maximum all up weight
6. Accommodation (crew + passenger)
7. Engine Type and its serial No.
8. Manufacturer of the engine
9. Power rating
10. Wing Area
11. Span

I hereby certify that the above Gyro Plane aircraft (specifically a type of rotorcraft) has been manufactured in accordance with the accepted design standards adopting recommended / standard aeronautical engineering practices.

I also certify that the flying and ground testing of the aircraft has been carried out and the aircraft is declared safe for its intended operations.

Date:
Place:

(Authorized Signatory)
on behalf of the Manufacturer

ANNEXURE - VIII

DOCUMENTS REQUIRED FOR REGISTRATION OF GYRO PLANE AIRCRAFT

1. Duly filled Application for registration (CA form - 28).
2. Registration fee in accordance to Rule 35 of Aircraft Rules, 1937 in the mode as prescribed by Director General.
3. User's manual as per **ANNEXURE – VI**.
4. Maintenance manual.
5. An undertaking to the effect that the owner and operator shall be fully responsible for the safe custody, security and access control of the aircraft.
6. Test reports for flight and ground tests to which the aircraft conforms as per **ANNEXURE - V**.
7. Weight and balance report.
8. Certificate of Compliance as per **ANNEXURE -VII** - certifying that the aircraft has been manufactured following the standard aeronautical manufacturing processes (not required for experimental aircraft) and safe for intended operations.
9. Security Clearance certificate issued by DGCA on the basis of MHA clearance.
10. Para-wise compliance of CAR, Section-2, Series-F, Part-XVI.
11. Design approval /acceptance for airframe engine combination by AED-DGCA.
12. Manufacturing approval for airframe engine combination by DAW-DGCA (If Gyro Plane is manufactured in India).
13. Customs clearance certificate / bill of entry of the aircraft (if the Gyro Plane is imported)
14. An evidence to the effect that the Gyro Plane has been purchased or wholly owned by the applicant. For this purpose, a copy of invoice shall be accepted.
15. For Gyro Plane purchased from a previous owner, an affidavit as required.
16. A copy of the import license issued by Director General Foreign Trade or permission for import issued by the Ministry of Civil Aviation/DGCA. Where the

Gyro Plane is imported for private use, it will be registered in the name of the person or company to whom the import license has been issued.

ANNEXURE - IX

GOVERNMENT OF INDIA
DIRECTORATE GENERAL OF CIVIL AVIATION

C.A.-25A (ML)

**APPLICATION FOR SPECIAL CERTIFICATE OF AIRWORTHINESS
FOR GYRO PLANE AIRCRAFT**

1. Name and Address of owner			
2. Nationality			
3. Name and address of applicant (if other than the owner of aircraft)			
4. Name and address of manufacturer			
5. Date of manufacture			
6. State of design			
7. Registration Mark			
8. Description of aircraft			
(a) New or used		(f) Number of engines fitted	
(b) Type		(g) Type of propeller (where applicable)	
(c) Series		(h) Passenger seating capacity	
(d) Manufacturer's serial number		(i) Avionics installed.	
(e) Type of engine		(j) Minimum crew required (As per manufacturers document)	
9. Maximum take-off mass of aircraft (as given in manufacturers document)			
10. Total number of hours flown since manufacture:			
(a) Aircraft.....hours.....cycles (if applicable)		(b) Engine in hours/cycle Port.....(inboard)(outboard) Starboard.....(inboard)(outboard)	
11. Date of last inspection:			
12. Is the aircraft: (<i>Applicable for aircraft manufactured in India</i>) a) a prototype, b) Series aircraft			
13. (<i>Applicable for foreign manufactured aircraft</i>) (a) State of Origin of Special Certificate of Airworthiness presented (b) Serial Number of the Special Certificate of Airworthiness presented (c) Special C of A category:			

<i>(Refer Para 3 of the CAR, Section-2, Series-F, Part-XXIII for Categories of Special C of A)</i>	
14. Name and address of Organisation/ Licensed Aircraft Maintenance Personnel with whom aircraft is available for inspection	
15. Area of operation of Gyro Plane aircraft as per Annexure-XIII of this CAR	
16. Details of fees paid	
17. Certificate of Insurance	
18. DECLARATION I hereby declare that the particulars entered on this application and the appendix is true and correct to the best of my knowledge and belief. I am aware of the rules and regulations promulgated by the DGCA for the operation and maintenance of Gyro Plane aircraft and undertake to abide by them. Date: _____ Signature: _____ Name: _____	

Note: Documents which must accompany an application for the issue of a Special Certificate of Airworthiness for the Gyro Plane aircraft-

1. *Details of aircraft as per Appendix to C.A.-25A(ML).*
2. Certificate of Erection signed by an Aircraft Maintenance Engineer holding current Indian A.M.E. License in Category 'A' confirming that aircraft has been assembled as per manufacturer's instructions.
3. *Certificate of Flight Test* signed by a pilot holding a current C.P.L. and specially authorized by DGCA, quoting DGCA authorization number and date.
4. Document certifying the clearance of area of operation from AAI/appropriate ATC authority.
5. Operator's hand book or aircraft flight manual.
6. Security Program approved by BCAS for security oversight.
7. *Any other documents as required in CAR, Section 2, Series-F, Part-XIV and CAR, Section 2, Series-F, Part-XXIII, if applicable.*

APPENDIX TO CA25A(ML)

**DETAILS OF AIRCRAFT SYSTEMS, INSTRUMENTS AND EQUIPMENT
INSTALLED IN THE AIRCRAFT:**

1. Main batteries: a) Nickel/ Cadmium b) Lead/ Acid c) Number fitted	
2. Portable fire extinguishers	
3. Fuel quantity indicating system	
4. Anti-collision lighting a) Rotating beacons b) Strobe lights	
5. Type of Compass:	
6. OTHER INFORMATION	
7. State total fuel capacity kg	
8. Give details of equipment (other than that listed above) which has been introduced by modification action (state manufacturer and type)	
9. Give details of changes, if any, introduced in the Flight Operating Handbook a result of modification action	
<i>Note: All items should be completed as appropriate; in cases where items are not relevant, the words "Not applicable" should be entered.</i>	
Date: Signature: Designation:	

ANNEXURE - X

सं० / No.:

ना०वि०-२४ / C.A.-24



भारत / INDIA

**नागर विमानन महावनदेशालय / DIRECTORATE GENERAL OF CIVIL AVIATION
विवशष्ट उड़नयोग्यता प्रमाण पत्र / SPECIAL CERTIFICATE OF AIRWORTHINESS**

राष्ट्रीयता तथा पंजीकरण चिह्न / Nationality and Registration Mark	विमान का वनमाता तथा विमान वनमाता द्वारा विमान को ददया गया नाम / Manufacturer and Manufacturer's Designation of Aircraft	विमान क्रम संख्या / Aircraft Serial No.
VT -		
विभाग / Category		
न्यूनतम कमी दल / Minimum Crew Necessary		
प्राधिकृत अधिकतम कुल भार / Maximum All-Up-Weight Authorized		

इस विमान का परशिलन इस विमान के सम्बन्धि में जारी की गयी अनुमोदित उड़ान वनयमालिनी तथा उसमें दकये गए उत्तरिती संशोर्णों के अनुसार दकया जायेगा । िह उड़ान वनयमालिनी इस उड़नयोग्यता प्रमाण पत्र का एक भाग समझी जायेगी तथा विमान में जायेगी । / This aircraft is to be operated in accordance with the approved Flight Manual and its subsequent amendments, issued in respect of this aircraft. The Flight Manual shall form a part of this C of A and shall be carried on board.

यह उड़नयोग्यता प्रमाण पत्र, उपयुक्त विमान वजसे पूर्णोक्त शर्तों तथा सम्बद्ध परशिलन पररसीमाओं के अनुरूप सांिारत और प्रावलत दकये जाने पर उड़नयोग्य समझा जाता है; उसके वलए ०७ ददसंबर, १९४४ के अंतराष्ट्रीय नागर विमानन विषयक अवभसमय तथा समय-समय पर यथा संशोवित विमान वनयमालिनी, १९३७ के अनुसार जारी दकया जाता है। / This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated the 7th December, 1944 and the Aircraft Rules, 1937 as amended from time to time, in respect of the above mentioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent Operation Limitations.

ऊपर के अवतररक्त इस पर वनम्र प्रवतबन्ि लागू होते हैं / In addition to above the following restrictions apply – 1.

2.

3.

यदद उपरोक्त अवनिाया शर्तें पूरी कर दी गयी हैं तो यह प्रमाण पत्र इस पर दी गयी तारीख तक िैद्य रहेगा बशते दक उससे पूर्िा इसे िापस नहीं ले वलया जाता अथा वनलंबत नहीं कर ददया जाता । This certificate shall remain valid subjected to the above compulsory

conditions being fulfilled until the date shown, unless withdrawn, or suspended earlier.

जारी करने का ददनांक / Date of issue:

स्थान / Place: नई ददल्ली / NEW DELHI

हस्ताक्षर / Signature:

नाम / Name:

पदनाम/मुहर / Designation/Seal:

यह प्रमाण पत्र नीिे दी गयी अिवि के वलए िैद्य है / This Certificate is valid for the period shown below -		हस्ताक्षर, सरकारी मुहर तथा ददनांक Signature, Official Stamp and Date
से / From	तक / To	

A. CONDITIONS OF THE SPECIAL CERTIFICATE OF AIRWORTHINESS

1. This aircraft shall be flown in accordance with the operating requirements laid down in the aircraft Rules, 1937 and instructions issued by the DGCA from time to time.
2. The aircraft shall be operated only by the owner named overleaf. However, in case of approved flying training organizations, the aircraft may be operated as authorized by the chief flight instructor.
3. The aircraft shall not be used for public transport or aerial work or any commercial activity.
4. The aircraft shall be flown by appropriately licensed pilots only.
5. A placard shall be affixed to the aircraft in full view of the occupants and shall be worded as “This aircraft has not been certified to international airworthiness requirements”.
6. A Special Certificate of Airworthiness valid for one year and may be renewed for a further period of one year on the recommendation of an appropriately licensed AME/authorized person.

B. LIMITATIONS

1. The aircraft must be operated in compliance with the following operating limitation which shall be displayed in the pilot's cockpit by means of placards or instrument markings:
 - a) Aerobatics and intentional spinning is prohibited
 - b) Aerobatics Limitation
 - c) Loading Limitation
 - d) Maximum total weight authorized in kgs.
 - e) C.G. range limit inches to inches after the datum point
 - f) Maximum Engine RPM: Maximum Engine RPM for continuous engine operation
 - g) Airspeed Limitation
 - h) Maximum indicated airspeed MPH (knots)

C. OTHER LIMITATION

1. This aircraft shall be flown during day time under Visual Flight Rules only.
2. Smoking in the aircraft is prohibited.

D. SECURITY

1. Security measures approved by BCAS shall be adopted at the place of parking as well as at the place of operation before each flight by the owner / operator and ensure safe custody, security and access control of the aircraft.
2. The operator shall maintain Log Book relating to the operations and submit the same to the office of District Magistrate on quarterly basis.
3. The owner / operator shall not lease/ renting / lend the Gyro Plane aircraft to anyone.

4. No Gyro Plane aircraft shall carry any remote sensing appurtenances / weapon / photography/ video recording equipment without the express permission of MHA except those equipment required for the safe operation of the aircraft or specified in this CAR.
5. The Gyro Plane aircraft shall not be sold or disposed of in any way to any person or firm without production of a security clearance certificate issued by the DGCA on the basis of MHA clearance.

E. EQUIPMENT

1. The tracking and communication equipment fitted on the aircraft shall be serviceable during the operation.

F. OPERATIONAL RESTRICTIONS

1. The Gyro Plane aircraft shall be operated within the area specified in Annexure-XIII of this CAR and registered by the owner / operator with the local authorities.
2. The Gyro Plane aircraft shall be parked at the designated airports/ approved places only.

ANNEXURE – XI

APPLICATION FOR SECURITY CLEARENCE

WARNING: SUPPRESSION OF MATERIAL OR FACTUAL INFORMATION IN THIS FORM SHALL BE A DISQUALIFICATION.

1. (a) Name of Applicant in full (in block letters)

Surname

Name

Aliases, if any

- (b) Parentage :

Surname

Name

Aliases, if any

2. Present address in full, including Police Station:

3. (a) Permanent address in full, including Police Station:

(b) If originally a resident of a country other than India, address in that country and the date of migration to India:

4. Nationality :

5. Date and place of birth, with full address:

6. Profession/occupation after the age of 18 years :

7. Particulars of places, with full address, where the applicant has resided for more than a year during the preceding ten years:

8. (a) Particulars of relatives - Indian and non-Indians working in foreign Missions, foreign organizations including foreign concerns, with full details :

(b) Particulars of relatives living abroad with their full address:

9. Is the applicant or any of his relatives a member of social or cultural organization which is associated with or assisted by a foreign Mission or organization?

10. Has the applicant visited a foreign country recently if so, details thereof?
11. Has the applicant ever been arrested, prosecuted, kept under detention, or convicted by a court? Give details :
12. Security Clearance from Local Police Authority (Police Verification) :
13. Area of operation of Gyro Plane aircraft as per Annexure-XIII of this CAR:
14. The NOC from the owner of the coordinate as mentioned in point 13.

Certified that the information furnished in this proforma is correct and complete to the best of my knowledge and belief. I am aware that furnishing of wrong information or suppression of factual or material information will dis-entitle me from grant of the license/permit.

Date:

Place:

(Signature of the Applicant)

Note: *The application (4 sets in original) along with documentary proofs of items at S.No. 1, 2, 3, 4, 5, 12 and 14 are required to be submitted by the applicant.*

**APPLICATION FOR SECURITY CLEARANCE- FOR INCLUSION OF CO-
ORDINATES IN ANNEXURE XIII**

WARNING: SUPPRESSION OF MATERIAL OR FACTUAL INFORMATION IN THIS FORM SHALL BE A DISQUALIFICATION.

1. (a) Name of Applicant in full (in block letters)

Surname

Name

Aliases, if any

- (b) Parentage :

Surname

Name

Aliases, if any

2. Present address in full, including Police Station:

3. (a) Permanent address in full, including Police Station:

(b) If originally a resident of a country other than India, address in that country and the date of migration to India:

4. Nationality :

5. Date and place of birth, with full address:

6. Profession/occupation after the age of 18 years :

7. Particulars of places, with full address, where the applicant has resided for more than a year during the preceding ten years:

8. (a) Particulars of relatives - Indian and non-Indians working in foreign Missions, foreign organizations including foreign concerns, with full details :

(b) Particulars of relatives living abroad with their full address:

9. Is the applicant or any of his relatives a member of social or cultural organization which is associated with or assisted by a foreign Mission or organization?
10. Has the applicant visited a foreign country recently if so, details thereof?
11. Has the applicant ever been arrested, prosecuted, kept under detention, or convicted by a court? Give details :
12. Security Clearance from Local Police Authority (Police Verification):
13. Area of operation of Gyro Plane Aircraft as per Annexure-XIII of this CAR:
14. The NOC from the owner of the coordinate as mentioned in point 13.

Certified that the information furnished in this proforma is correct and complete to the best of my knowledge and belief. I am aware that furnishing of wrong information or suppression of factual or material information will dis-entitle me from grant of the license/permit.

Date:

Place:

(Signature of the Applicant)

Note: *The application (4 sets in original) along with documentary proofs of items at S.No. 1, 2, 3, 4, 5 ,12 and 14 are required to be submitted by the applicant.*

**DOCUMENTS REQUIRED FOR Inclusion of Coordinates in Annexure-XIII of this
CAR**

- i. NOC of the Co-ordinates from Airport Authority of India (AAI).
- ii. NOC of the Co-ordinates from Ministry of Defence (if there is any defence establishment nearby).
- iii. NOC of the Co-ordinates from the State Government/ Owner of land (as applicable).
- iv. NOC of the Co-ordinates from Forest and Animal Welfare Department (if there is any Reserve forest/National Park/ Bird Sanctuary nearby).
- v. Evidence (copy of land documents) as the property owned by applicant.

ANNEXURE – XII

MINISTRY OF HOME AFFAIRS - REQUIREMENTS

A. SECURITY REQUIREMENTS:

1. Security program of the Gyro Plane aircraft owner / operator shall be submitted to BCAS and approved by BCAS for security oversight before issue of Special Certificate of Airworthiness
2. Security measures approved by BCAS shall be adopted at the place of parking as well as at the place of operation before each flight by the owner / operator and is responsible for the safe custody, security and access control of the aircraft.
3. The operator shall maintain Log Book relating to the operations and submit the same to the office of District Magistrate on quarterly basis.
4. Details of approved owners/operators along with copy of Special C of A should be made available to local district authorities by the respective regional office of DGCA i.e. District Magistrate and Superintendent of Police to monitor the activity.
5. The owner / operator shall not lease/ rent / lend the Gyro Plane aircraft to anyone.
6. No Gyro Plane aircraft shall carry any remote sensing appurtenances / weapon / photography/ video recording equipment without the express permission of MHA except those equipment required for the safe operation of the aircraft or specified in this CAR.
7. The aircraft shall not be sold or disposed of in any way to any person or firm without production of a security clearance certificate issued by the DGCA on the basis of MHA clearance.
8. Local Police shall ensure that no security breach has been committed by the operator.

B. EQUIPMENT REQUIREMENTS:

The Gyro Plane aircraft shall be fitted with a –

- (1) GPS system capable of transmitting its position at all time and facilitate the aircraft position tracking and monitoring.
- (2) Two way communication system capable of establishing communication with the local/district administrative authorities and aerodrome where applicable.

C. OPERATIONAL RESTRICTIONS:

1. The Gyro Plane aircraft shall be operated within the area specified in Annexure - XIII of this CAR , Annexure – VII of CAR Sec 2 Series O Part VI, Annexure – XIII of CAR Sec 2 Series F Part XIV and Annexure – II of CAR Sec 2 Series F Part XV only.

2. The maximum range of operations shall be restricted to Horizontal Range of 100 km from the permitted place of operation and Vertical Range of 5000 feet above the ground level.
3. The Gyro Plane aircraft shall be parked at the designated airports / approved places only.
4. Copy of Special Certificate of Airworthiness should be forwarded to the district administration and/or AAI for monitoring the flying activities in their area.
5. The Area of operation of Gyro Plane aircraft other than those mentioned in this CAR (as mentioned in point no. 1 of this para i.e. Annexure – VII of CAR Sec 2 Series O Part VI, Annexure – XIII of CAR Sec 2 Series F Part XIV and Annexure – II of CAR Sec 2 Series F Part XV require clearance from Local Administration and Police.

D. PENALTIES:

1. Breach of compliance to any of the requirements would attract penal action including imposition of penalties.
2. Breach if any is noticed by MHA/any Govt. Authority, the same shall be intimated to the Authority concerned for taking necessary action including imposition of penalties under the applicable statutory provisions.

ANNEXURE – XIII

LIST OF IDENTIFIED AREA FOR OPERATION OF GYRO PLANE AIRCRAFT

<u>NAME OF PLACE</u>	<u>AREA OF OPERATION</u>	<u>CO ORDINATES</u>
<u>NORTHERN INDIA</u>		
PUNJAB		
LUCKNOW		
SULTANPUR, UP		
UTTARAKHAND		
UTTARAKHAND		
UTTAR PRADESH		
<u>SOUTHERN INDIA</u>		
HYDERABAD		
TELENGANA		
BANGALORE, KARNATAKA		
COORG, KARNATAKA		
SALEM, TAMIL NADU		

<u>NAME OF PLACE</u>	<u>AREA OF OPERATION</u>	<u>CO ORDINATES</u>
KARNATAKA		
MUNNAR, KERALA		
KERALA		
ERODE, TAMILNADU		
MANDAKALI, MYSORE		
KARNATAKA		
COIMBATORE, TAMIL NADU		
VELLORE		
KARNATAKA		
<u>EASTERN AND NORTH-EASTERN INDIA</u>		
SONAPUR, ASSAM		
ASSAM		
ARUNACHAL PRADESH		
<u>WESTERN INDIA</u>		
GUJARAT		
MAHARASHTRA		
MAHARASHTRA		

MAHARASHTRA		
MAHARASHTRA		
MAHARASHTRA		
GUJARAT		
MAHARASHTRA		

Note: The above List of Identified Area for Operation of Gyro Plane aircraft excludes the restricted areas notified by various Government Agencies.

ANNEXURE – XIV

GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT

C.A.-25AA (ML)

**APPLICATION FOR RENEWAL OF SPECIAL CERTIFICATE OF
AIRWORTHINESS FOR GYRO PLANE AIRCRAFT**

Renewal of Special Certificate of Airworthiness in respect of "VT –"			
Special Certificate of Airworthiness No.		Special Certificate of Airworthiness expiry date	
Section 1: Particulars of Applicant			
Name of applicant (in full)			
Address			
Name of approved organization/licensed aircraft maintenance personnel with whom aircraft is available for inspection			
Address			
Section 2: Aircraft Specifications			
	Type	Serial No.	Total Hours
Aircraft			
	Type	Serial No.	Flight Hours since O/H
Components			Date of last O/H
Engine	1.		
	2.		
Propeller	1.		
	2.		
Section 3: Availability of Aircraft for Inspection			
We wish inspection of aircraft on one of the following dates:		1. 2. 3.	
Section 4: Fees			

I hereby declare that the particulars entered on this application is accurate in every respect and that all the requirements of the approved maintenance schedule, appropriate mandatory modifications/ Airworthiness Directives (or equivalent notices) and special inspections have been complied with.

Date of Application:

(Signature of Applicant)
