

**EFFECTIVE : FORTHWITH  
F No.11-690/CAR/O-VI/2006/AI (2)**

Subject: **Registration, Airworthiness and Operation of Powered Hang Gliders**

1. SCOPE:

This part of the Civil Airworthiness Requirements provides information and guidance for operation of powered hang gliders concerning their registration, airworthiness and operation.

2. APPLICABILITY:

For the purpose of the CAR, a powered hang glider is a vehicle that

- 2.1.1 is used or intended to be used for manual operation in the air by a single occupant/ double occupant.
- 2.1.2 is used or intended to be used for recreation, sport, or any other purpose approved by DGCA in writing.
- 2.1.3 has the maximum AUV less than 275 kgs.for a single seater.
- 2.1.4 has the maximum AUV less than 375 kgs. for a double seater.
- 2.1.5 is not capable of more than 70 knots calibrated air speed at full power in level flight, and
- 2.1.6 has a power-off stall speed which does not exceed 30 knots calibrated air speed.

3. DEFINITION :

- 3.1 "Acrobatic flight" means maneuvers intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude or abnormal variation in speed.
- 3.2 "Airport Control Towers" are established to provide Air Traffic Control (ATC) services to airport traffic.
- 3.3 "Air Traffic Control Clearance" means authorisation by an Air Traffic Control unit for an aircraft to proceed within controlled airspace under specified conditions.
- 3.4 "Controlled Airport" means an airport at which an Air Traffic Control unit is provided.
- 3.5 "Controlled airspace" means airspace of defined dimensions within which Air Traffic Control service is provided.

3.6 "Permit to Fly" in relation to powered hang glider means a document issued by the DGCA authorising the flight of a powered hang glider.

4. REGISTRATION :

4.1 All civil powered hang gliders imported into the country or manufactured in India shall be registered in the Civil Register and a Certificate of Registration in respect thereof shall be issued.

4.2 Application for registration of powered hang gliders should be made to the DGCA on the prescribed form CA-28 and shall be accompanied by document given in Annex III.

4.3 The registration marking as assigned be painted on the keel of the wing and also on the side of the strike, if possible.

If the powered hang glider does not permit prominent display of the registration marking, approval of DGCA to affix the registration markings else where on the structure shall be necessary.

4.4 The owner of the powered hang glider shall ensure that the registration markings are displayed in large and capital Roman letters without ornamentation in a colour in contrast with the background.

4.5 Each powered hang glider registered shall carry an identification stainless steel plate showing the registration markings, manufacturers name, glider serial number, and name and address of the registered owner. Such identification plate shall be affixed on the powered hang glider at a convenient place in order to afford readability when the powered hang glider is stationary.

5. DESIGN AND MANUFACTURE:

5.1 Certification of the design and manufacturing standards of powered hang gliders, or their parts and equipment are not required to meet the airworthiness standards specified for aircraft.

A type certificate thereof and consequently Certificate of Airworthiness shall not be issued in respect of powered hang gliders. Notwithstanding the above, the design requirements for powered hang gliders acceptable to DGCA may be followed for operators and manufacturers for safe operation. Organisations engaged in design of powered hang glider and located in India shall provide a design organisation procedure manual (Refer Annex VIII) to the Aircraft Engineering Directorate of DGCA for acceptance.

5.2 The prospective manufacturer shall intimate DGCA, the procedure he wishes to adopt for the manufacture.

5.3 For series production of powered hang glider, the manufacturer shall provide an Engineering Organisation Manual along with a documented production inspection system manual for acceptance by DGCA. Contents of the

Engineering Organisation Manual and Production Inspection System Manual shall minimum address the issues specified in the Annex IX to this CAR.

- 5.4 After determining that the production facility is satisfactory, approval to manufacture the powered hang glider or its components may be granted by the Regional Airworthiness office.
  - 5.5 The DGCA may examine the manufacturing process and subject the product (Powered Hang glider) to such ground and flight tests as may be considered necessary.
  - 5.6 After manufacture, each powered hang glider shall be weighed. A weight report shall be prepared and delivered with each powered hang glider.
  - 5.7 Before delivery each powered hang glider shall be tested on ground and in flight. A flight test schedule/report covering ground and flight tests to which the powered hang glider has been subjected shall be prepared by the manufacturer and delivered with each powered hang glider produced.
  - 5.8 Users' manual and maintenance manual shall be prepared by the manufacturer and copies of the same shall be submitted to the DGCA alongwith application for approval of the firm. (Annex IV)
  - 5.9 The manufacturer shall deliver with each powered hang glider a Certificate of Compliance as per Annex VI that the powered hang glider has been produced using standard aeronautical processes. Such Compliance Certificate shall certify that the powered hang glider is safe for its intended operations. Production of Certificate of Compliance shall be a pre-requisite for the issue of a Permit to Fly for the powered hang glider.
  - 5.10 The manufacturer shall maintain a complete record for all powered hang gliders produced and file particulars of these, to whom sold and shall produce the record on request for scrutiny by the DGCA.
  - 5.11 A permanent placard should be affixed on the powered hang gliders in full view of the occupants and should be worded as : "The powered hang glider has not been certificated to an international airworthiness requirement."
  - 5.12 The operator shall maintain the General log-books and documents for engines and airframe of powered hang gliders.
6. PERMIT TO FLY :
- 6.1 Pursuant to provision of Rule 15 and Rule 49 of the Aircraft Rules, 1937, DGCA may issue a "Permit To Fly" in respect of the powered hang glider in lieu of Type Certificate and Certificate of Airworthiness. Such permit shall authorise the operator to fly the specified powered hang glider within the Union Territory of India without Certificate of Airworthiness subject to conditions given therein.

- 6.2 The "Permit to Fly" shall be valid for one year unless canceled or withdrawn by the DGCA. The permit may be renewed for a further period of one year at a time, by the DGCA representatives on the recommendation of a licenced AME or by a person authorised by DGCA.
- 6.3 Non-conformity of the conditions of the permit or of the instructions specified in the Users manual shall lead to suspension of the validity of the permit.
- 6.4 The application of the "Permit to Fly" shall be made in the prescribed proforma given in the Annex I.
7. MAINTENANCE :
- 7.1 The manufacturer shall develop a satisfactory maintenance program to ensure continued airworthiness of the powered hang glider and deliver the same with every powered hang glider produced.
- 7.2 The manufacturer shall 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 powered hang glider 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.
- 7.3 The routine maintenance of the powered hang glider 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.
- 7.4 The pilot shall be responsible for carrying out the pre-flight inspections and the next higher inspections upto the 50 hour schedule, and not fly the powered hang glider 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 powered hang glider is safe to undertake the flight.
- 7.5 The higher than 50 hours inspection schedules and overhaul of the powered hang glider, engine and its components shall be carried out by a mechanical stream AME or persons authorized by the DGCA. All such persons shall be trained at the manufacturer site prior to the issue of authorization.
- 7.6 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 powered hang glider. All columns of the log book should be filled up by the pilot and signed by him after every flight.

7.7 Notwithstanding the above it is the responsibility of the operator to maintain his powered hang glider in a satisfactory manner so as to see that no unsafe condition exists therein.

8. SECURITY ASPECTS :

8.1 The powered hang glider shall not be sold or disposed off in any way to any person or firm without production of a certificate from DGCA. The certificate shall be granted by DGCA after verifying the antecedents of the prospective buyers through the local police authorities.

8.2 Before registration of powered hang glider in the name of any person or firm full particulars thereof shall be obtained in the prescribed proforma and security vetting thereof shall be completed.

8.3 One time security clearance of the manufacturer, owner, operator shall be obtained from the local police authorities before initial commencement of the operations.

8.4 The powered hang glider shall not be flown over the entire air space over the territory of Delhi, Jammu & Kashmir and areas falling within 50 Km from international borders. (The sea coast line will be considered as Indian International border in addition to geographical international border). The powered hang glider shall also not be flown over an assembly of persons or over congested areas or restricted areas including cantonment areas, defence installations etc., unless prior permission in writing is obtained from appropriate authorities. The restricted areas shall be notified by the DGCA from time to time in consultation with the Ministry of Home Affairs.

8.5 The owner/operator shall be responsible for the safe custody, security and access control of the powered hang glider.

8.6 Normal security measures shall be ensured at the place of operation before each flight.

8.7 No remote sensing appurtenances except those required for the safe operation of the powered hang glider shall be carried in the powered hang glider.

8.8 The powered hang glider shall be parked at the registered address at places where the owner wishes to fly.

8.9 Severe penalties/ action will be taken against the defaulters.

The proforma for furnishing particulars for the security clearance of the applicants is given in Annex II.

9. OPERATING RULES :

- 9.1 No person shall carry a passenger for hire and reward in a powered hang glider. However wherever there is a provision for two occupants, one person could be carried for purpose of training, or sports / recreation etc.
- 9.2 No person shall operate a powered hang glider except in accordance with Visual Flight Rules.
- 9.3 No person shall operate a powered hang glider at night.
- 9.4 A powered hang glider shall not enter any controlled airspace unless it is a control zone and the appropriate permission and clearance has been obtained. Except as authorized above no person shall operate a powered hang glider
- a) within five nautical miles from the center of any airport.
  - b) in controlled airspace.
- 9.5 A person may operate a powered hang glider
- a) only after getting requisite clearance from local ATC authorities who shall assign the area/ time of operation. However for cross-country flight the operator shall file the appropriate flight plan in writing to the ATC authorities.
- 9.6 No person shall operate powered hang glider unless each occupant is secured by a suitable restraining means attached to the primary structure of the powered hang glider to prevent accidental egress from the powered hang glider.
- 9.7 No person shall operate a powered hang glider unless the occupants are wearing a protective helmet.
- 9.8 No person shall fly a powered hang glider without being authorised by a DGCA approved examiner/ instructor. The examiner/ instructor shall be a person who has done 25 hours on powered hang glider and has atleast 10 hour on dual machine. Such approved examiner/ instructor shall check out and authorize other persons to fly.
- 9.9 Powered Hang Glider need not be equipped with an Emergency Locator Transmitter.
- 9.10 Powered Hang Gliders are exempt from any VFR instruments as specified in CAR Series 'I' Part II. However, it is suggested that altimeter, airspeed indicator, and RPM gauge may be installed for safe operation.
- 9.11 Powered Hang Glider pilots are not exempted from having RTR licence for operating radio telephony apparatus, if installed.

- 9.12 No powered hang glider shall be flown in any acrobatic flight, unless certified as such.
- 9.13 Person conducting test flights of a powered hang glider should
- a) conduct the test over an unpopulated area and in clear airspace.
  - b) keep a continuous lookout; and
  - c) stay well clear of cloud.
- 9.14 An ATC clearance is required to operate a powered hang glider within five nautical miles of a controlled airport or within associated control zone.
- 9.15 It is the responsibility of the pilot to ensure that prior to takeoff
- (a) the powered hang glider is safe for intended operation; and
  - (b) weight of the fully loaded powered hang glider is within limits.
10. After gaining sufficient experience and the number of Powered Hang Gliders increased, Director General of Civil Aviation may delegate the entire control of operation and registration etc. to a society of such powered hang glider operators. Details of such societies etc. will be intimated in due course. Operators are advised to form such a society with one or two AMEs or pilots as member. DGCA will encourage all such activities.

**Charan Dass**  
**Joint Director General**  
For Director General of Civil Aviation

**ANNEX I**

**APPLICATION FOR ISSUE OF PERMIT TO FLY FOR POWERED HANG GLIDER**

GOVERNMENT OF INDIA

This form when completed, should be forwarded to the Director General of Civil Aviation, DGCA Complex, Opp. Safdarjung Airport, New Delhi and must be accompanied by the documents specified below.

1. Name of owner :
2. Address (in full) :
3. Nationality :
4. Name and address of applicant :  
  
(To be completed in cases in which the applicant is not the owner of the powered hang glider).
5. Constructor of powered hang glider :
6. Nationality & Registration Marks:
7. Description of powered hang glider:
  - (a) Type (Name & Description)
  - (b) Constructor's No.
  - (c) Type of engine
  - (d) Maximum number of persons to be carried including crew
  - (e) Maximum All Up Weight (Kg.)

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(f) Wing Area (Sq. Meters)

8. Area of operation of powered hang glider as cleared by AAI/appropriate ATC authority:
9. Name and Licence No. of pilots who may fly this Powered hang glider :
  
10. Purpose for which the powered hang glider may fly :

I hereby declare that the above particulars are true in every respect. I am aware of the rules and regulations promulgated by the DGCA for the operation and maintenance of powered hang glider and undertake to abide by them.

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Date

Signature of the Applicant

Place

Documents which must accompany an application for the issue of a Permit to Fly for the powered hang glider.

1. Certificate of Erection signed by pilot or authorised person holding current Indian A.M.E. Licence in Category 'A' confirming that powered hang glider has been assembled as per manufacturer's instructions.
2. Certificate of Flying Test signed by a pilot specially authorised by DGCA, quoting DGCA authorization number and date.
3. Document certifying the clearance of area of operation from AAI/appropriate ATC authority.
4. Operator's hand book or powered hang glider flight manual.

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**ANNEX II**

**PROFORMA DETAILING PARTICULARS FOR VERIFICATION OF  
APPLICANT FOR MANUFACTURE, PURCHASE, REGISTRATION AND  
OPERATION OF POWERED HANG GLIDER**

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**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

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- (b) Parentage :

Surname                      Name                      Aliases, if any

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2. Present address in full, including Police Station:

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

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- (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:

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

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

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

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

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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?

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10. Has the applicant visited a foreign country recently? If so, details thereof:

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11. Has the applicant ever been arrested, prosecuted, kept under detention, or convicted by a court? Give details :

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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 disentitle me from grant of the licence/permit.

Date:

Signature of the Applicant.

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**ANNEX III**

**DOCUMENTS REQUIRED FOR REGISTRATION OF POWERED HANG GLIDER**

1. Registration fee of Rs.100 in the form of a bank draft or IPO payable to Central Pay and Accounts Office, DGCA, New Delhi.
2. Application for registration duly filled (form CA-28).
3. User's manual
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 powered hang glider.
6. Test reports for flight and ground tests to which the powered hang glider conforms.
7. Weight and balance report
8. Powered Hang Glider design evaluation and acceptance by the Aircraft Engineering Directorate of DGCA
9. Compliance certificate of the manufacturer certifying that the powered hang glider has been manufactured following the standard aeronautical manufacturing processes—

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**ANNEX IV**

**USER'S MANUAL (OPERATOR'S HAND-BOOK)**

The user's manual is mandatory for all powered hang glider 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 powered hang glider and its equipment and information regarding the performance, maneuverability and stability of the hang glider.
2. Specific operating conditions and the associated limits for the powered hang glider 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.

**3.2.1 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 85 kgs. 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 takeoff 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

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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.

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**ANNEX V**

**FLYING TESTS AND GROUND 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 powered hang glider. 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 powered hang glider in relation to its weight during the following phases of flight:

- take-off and landing
- climb
- level flying
- dive

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 chosen for a fixed period of utilization.

3. The manufacturer shall be responsible for the execution of the test flight program. In case of a powered hang glider 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 alongwith the parameters which influenced the results.

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**ANNEX VI**

**COMPLIANCE CERTIFICATE FOR POWERED HANG GLIDER**

REGN. MARKING VT-

1. Type of powered hang glider
2. Manufacturer
3. Empty weight with equipment
4. Maximum all up weight
5. Accommodation (crew + passenger)      ONE/TWO
6. Engine Type
7. Manufacturer of the engine
8. Power rating
9. Wing Area
10. Span

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I hereby certify that the above powered hang glider has been manufactured in accordance with the standards of airworthiness.

I also certify that the flying and ground testing of the powered hang glider has been carried out in accordance with Civil Aviation Requirements Section 2 Series 'O' Part VI and the powered hang glider is declared safe for its intended operations.

Authorised Signatory  
on behalf of the manufacturer

Date:

Place:

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**ANNEX VII**

**DIRECTOR GENERAL OF CIVIL AVIATION**

**PERMIT TO FLY**

PERMIT TO FLY NO.

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Nationality and  
Registration Marks

Manufacturer and  
Type of Aircraft

Aircraft serial No.  
(Constructor's No.)

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Classification : POWERED HANG GLIDER

Purpose for which  
the aircraft may fly : RECREATION AND SPORTS FLIGHTS

Documents associated  
with this permit : Operator's Hand Book

Owner of the aircraft :

Operator of the aircraft :

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Engine Type (for powered hang glider):  
Maximum number of occupants authorised  
to be carried (including crew) :

Under the powers delegated to me under the proviso to Rule 15 of the Aircraft rules, I hereby exempt the above mentioned powered hang glider to fly without the valid certificate of airworthiness being in force in respect thereof.

This permit is subject to the conditions shown overleaf and can be withdrawn at any time by the DGCA in the event of violation of the conditions of operation.

Dated

Authorised Signatory  
on behalf of the DGCA.

This permit is valid for the periods shown below :

Signature & official stamp.

**From**

**To**

**ANNEX – VIII**

Model content of procedure manual for organisation involved with design and development of powered hang glider.

**Part 1. Organisation**

- 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 organisation (including locations)
- 1.7 Scope of work (with identification of type and models of products)
- 1.8 Organisation 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

**ANNEX IX**

Contents of Engineering Organisation Manual and Production Inspection System Manual.

**Engineering Organisation Manual**

1. A statement signed by the owner of the production organisation confirming that the Engineering Organisation 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 organisation
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 organisation 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.
- (vi) Non conforming item control.
- (vii) Identification and traceability.
- (ix) Airworthiness coordination with the designer / design organisation.
- (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.

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