

- (1) The design selected, identified by type, model and the designer's name and address.
- (2) For fixed-wing aircraft, the wing geometry, the estimated wing loading, and where flaps are to be installed, the flaps geometry.

[(Ref. Chapter 549, section 549.103, Appendix A).]

- (3) For helicopters and gyroplanes, the rotor(s) geometry and estimated disc loading referred to the total disc area.

(Ref. Chapter 549, section 549.203 (a)).

- (4) For all powered aircraft, the engine type, model and power output and whether the engine output meets the applicable minimum rated engine power requirements of Chapter 549. Where applicable, the applicant may use the graphs provided in Appendix A of this AMA.

- (5) The empty and take-off design mass (weights) of the aircraft compared with the applicable limitations specified in Chapter 549, (sections 549.103, 549.107, 549.203, 549.207 or 549.307.)

- (6) The components and parts which will be of an amateur construction and those which will be prefabricated or procured from commercial or other sources. For details, refer to section 5 of this AMA.

- (7) A schedule of inspections during fabrication which provides for the inspection of enclosed areas before covering or closure, as required by Chapter 549, subsection 549.19(a).

- (8) Any additional information required by the Regional Director, Airworthiness.

5. Design and Construction

(Ref. Chapter 549, section 549.5).

(a) *General*

(1) Any choice of engines, propellers, wheels, and other components, and any choice of materials may be used in the construction of an amateur-built aircraft. However, it is recommended that established aircraft quality material and components be used, especially in fabricating primary structure parts, such as wing spars, critical attachment fittings, and fuselage structural members. Non-aircraft materials, or materials whose identity cannot be established, should only be used after careful evaluation.

(2) Builders are urged to be particularly aware of the risks associated with the operation of used engines, propellers and associated accessories whose history cannot be verified or which may have been involved in accidents and/or subjected to unapproved repairs or modifications. Such items are often advertised as "suitable for homebuilts" because they can no longer meet standards of airworthiness for normal (approved) aircraft. In such cases, the potential for catastrophic failure should be kept in mind by the builder and advice from competent authority sought.

(3) An engine installation shall be such that adequate fuel is constantly supplied to the engine in all flight attitudes. Also, suitable means should be provided to reduce fire hazard wherever possible, including a firewall between the engine compartment and the fuselage, if applicable. Where applicable, a system providing for carburettor heat should also be installed to minimise the possibility of carburettor icing.

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

(5) Information and guidance concerning acceptable fabrication and assembly methods, techniques and practices are provided in the U.S. FAA Advisory Circular (AC) No. 43.13-1A, "Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair," and AC No. 43.13-2A, "Acceptable Methods, Techniques and Practices - Aircraft Alterations." These publications are accepted by the Minister.

(b) *Built Aircraft Kit*

An aircraft built from a kit may be eligible for the issue of a special C of A provided that the major portion (more than 50 percent) has been fabricated and assembled by the amateur builder. Procedures to determine compliance with the "Major Portion" requirement may be found in AMA 549.5.

6. Equipment and Instruments

(Ref. AMA 549.13/1).

(a) *Equipment*

- (1) Carburettor Icing Prevention is addressed in AMA 549.13/2.
- (2) Portable fire extinguishers are addressed in AMA 500C/4A.

(b) *Instruments*

- (1) for twin engined aircraft single instruments with dual readouts are acceptable to provide engine speed (r.p.m.) indications.
- (2) the temperature indication for each engine may be one of the following, as applicable to the type of engine:
 - (i) oil temperature, for air-cooled four-stroke engines;
 - (ii) water temperature, for liquid-cooled four-stroke engines; or
 - (iii) cylinder-head or exhaust gas temperature, for two or four-stroke engines.

(c) *Instrument Markings.* Since amateur-built aircraft are not required to have flight manuals, each instrument should be clearly marked with the minimum and maximum range limits for the particular installation. This should reduce the possibility of hazardous operation by a pilot who is not completely familiar with the aircraft.

7. Inspections

(Ref. Chapter 549, section 549.19).

- (a) The Regional Director Airworthiness shall require inspection(s) during fabrication, according to a schedule as referenced in paragraph 4(b)(7) of this AMA, and after final assembly to determine:
 - (1) compliance with the applicable requirements of Chapter 549;
 - (2) workmanship and general serviceability; and

(3) disposition of unsafe features.

(b) Any unsafe feature shall be re-worked, or otherwise changed so as to be acceptable to the Regional Director Airworthiness prior to issuance of a special C of A for amateur-built aircraft.

(c) The final inspection after completion shall be made when the aircraft is equipped and ready for flight at a site suitable for the proposed test flight prior to the issuance of a special C of A for amateur-built aircraft. The applicant should inform the Regional Director Airworthiness when the aircraft is ready for inspection.

8. Procedure For Obtaining A Special Certificate Of Airworthiness- Amateur Built

(Ref. Chapter 507 of the Airworthiness Manual, sections 507.325 and Chapter 549, sections 549.3 subsection (b) and 549.21).]

At the time of application for a special C of A for amateur-built aircraft, the applicant shall provide:

(a) information required in form No. 24-0079, Initial Application for a Special Certificate of Airworthiness for Amateur-Built Aircraft, available from Transport Canada Regional and District offices; and

(b) except for balloons, a Weight and Balance Report using the appropriate form that meets the requirements of Chapter 571 of the Airworthiness Manual, section 571.211.

9. Climb Test

Chapter 549, section 549.111 requires powered fixed wing aircraft to demonstrate climb capabilities in standard sea-level atmospheric conditions, but usually the tests are performed in atmospheric conditions that considerably differ from those prescribed by the requirements. Therefore, for aeroplanes, to determine the minimum required gain in altitude for the ground level pressure altitude and air temperature conditions at the time of the tests, the applicant can use the applicable graph provided in Appendix B of this AMA. For powered gliders appropriate charts are being developed.

The take-off mass should equal, but not exceed, the maximum permissible weight stated in the Special C of A, otherwise the latter will be reduced to the value of the take-off mass used in the test.

10. Log Books And Maintenance Records

(Ref. Chapter 549, section 549.25).

(a) *Construction Log:* It is strongly recommended that the aircraft owner/builder keep a construction log with daily notes of construction, photographs taken as major components are completed, bills of sales or other shipping documents, etc. This log book may be maintained in a three-ring binder, and divided in three separate parts for aircraft, engine and propeller, if convenient. The information contained in this log-book will be helpful to preclude problems and answer questions concerning sources or specifications of material, parts, etc., used in fabricating the aircraft. This Log Book should be retained for historical reference, and will be helpful to substantiate that the builder constructed the "Major Portion" of the aircraft, as required in Chapter 549, section 549.5.

(b) *Journey Log:* The Journey Log shall be maintained in accordance with ANO VIII, No. 2. The Journey Log must be carried on board the aircraft during flight. It is used to record the aircraft's flight history. The nature and duration of each flight should be documented. If the aircraft has had its aerobatic limitation removed, the documented aerobatic manoeuvres should be recorded in the Journey Log. This log book is needed at the time of application for operation under "modified operating conditions" to substantiate the completion of the minimum period of flight time required for the aircraft (refer to Chapter 507).

(c) *Technical Log(s):* An Aircraft Technical Log Book shall be maintained in accordance with the Air Navigation Order (ANO) Series VIII, No. 3. The log(s) shall contain particulars of any repair to, modification of, defect of, airframe, engine, propeller, or any component, as applicable for the type of aircraft.

(d) All Log Books shall be maintained and passed on to subsequent owners of the aircraft. *(Ref. Chapter 575 of the Airworthiness Manual).*

11. Changes And Major Repairs After Registration

(Ref. Chapter 549, section 549.23)

A major change or repair affecting structural integrity, performance (e.g. C. of G. limits), geometry and maximum take-off mass (weight) will invalidate the Special C of A for amateur-built aircraft and may require an inspection by a Transport Canada representative:

(a) Changes which will invalidate the Special C of A for amateur-built aircraft, and require a new Weight and Balance Report and Climb Test include:

- (1) A change in the type or model of the engine. This does not include engine changes within the same series.
- (2) A change resulting in a mass (weight) exceeding the maximum permissible stated on the special C of A for amateur-built aircraft.
- (3) A change in landing gear from wheels/skiis to floats or floats to wheels/skiis.

(b) A change from wheels to skis *or skis to wheels* will only require an amendment to the Weight and Balance report.

(c) Changes which will require an inspection by a DOT representative include:

- (1) any change or major repair affecting structural integrity.
- (2) for aerobatic aeroplane: changes to control surfaces.

NOTE: Any change or major repair should be annotated in Aircraft Journey and Technical Logs.

12. Construction Outside Canada

(a) In certain circumstances and subject to the approval of the Director Airworthiness, a Canadian citizen living abroad and intending to resume permanent residence in Canada, can apply for the issuance of a special C of A for an amateur-built aircraft constructed outside Canada.

The applicant shall:

- (1) provide the Director Airworthiness with the information required by section 4 of this AMA; and
- (2) request that the inspections during fabrication to establish compliance with the relevant requirements of Chapter 549, be conducted by:
 - (i) a representative of the Airworthiness Authority of the country in which the aircraft is to be built under arrangements made by the Department with that Airworthiness Authority;

- (ii) an Airworthiness Inspector of the Department of Transport under arrangements acceptable to the Department, in which case the applicant shall be required to pay all expenses incurred by the Airworthiness Inspector in travelling outside Canada; or
 - (iii) other arrangements acceptable to Transport Canada.
 - (3) at time of application for the special C of A provide the Director Airworthiness with the following documentary evidence:
 - (i) a statement by the Airworthiness Authority of the country in which the aircraft was built, or by the Airworthiness Inspector of the Department of Transport who inspected the aircraft during fabrication, testifying as to the identity of the builder and giving the dates of the inspections carried out and the findings of these inspections; and
 - (ii) a Log Book recording the flights performed by the aircraft, if applicable.
 - (4) upon importation into Canada, an inspection by the Regional Director Airworthiness of the Region in which the aircraft is to be registered will be conducted to establish that the aircraft complies with all the requirements of this section.
- (b) If the person who applies for a special C of A for an amateur-built aircraft is a non-Canadian citizen with the status of "Permanent Resident" taking up or resuming residence in Canada, the procedures set forth in section 4 of this AMA, if applicable, shall be met.
- (c) Cases in which the procedures of this section are not complied with in full are referred to the Director Airworthiness who may authorise the appropriate Regional Director Airworthiness to issue a special C of A, where the Director is satisfied that the intent of the requirements are met.

M. Khouzam
Chief, Airworthiness Standards
Airworthiness Branch

Appendix A

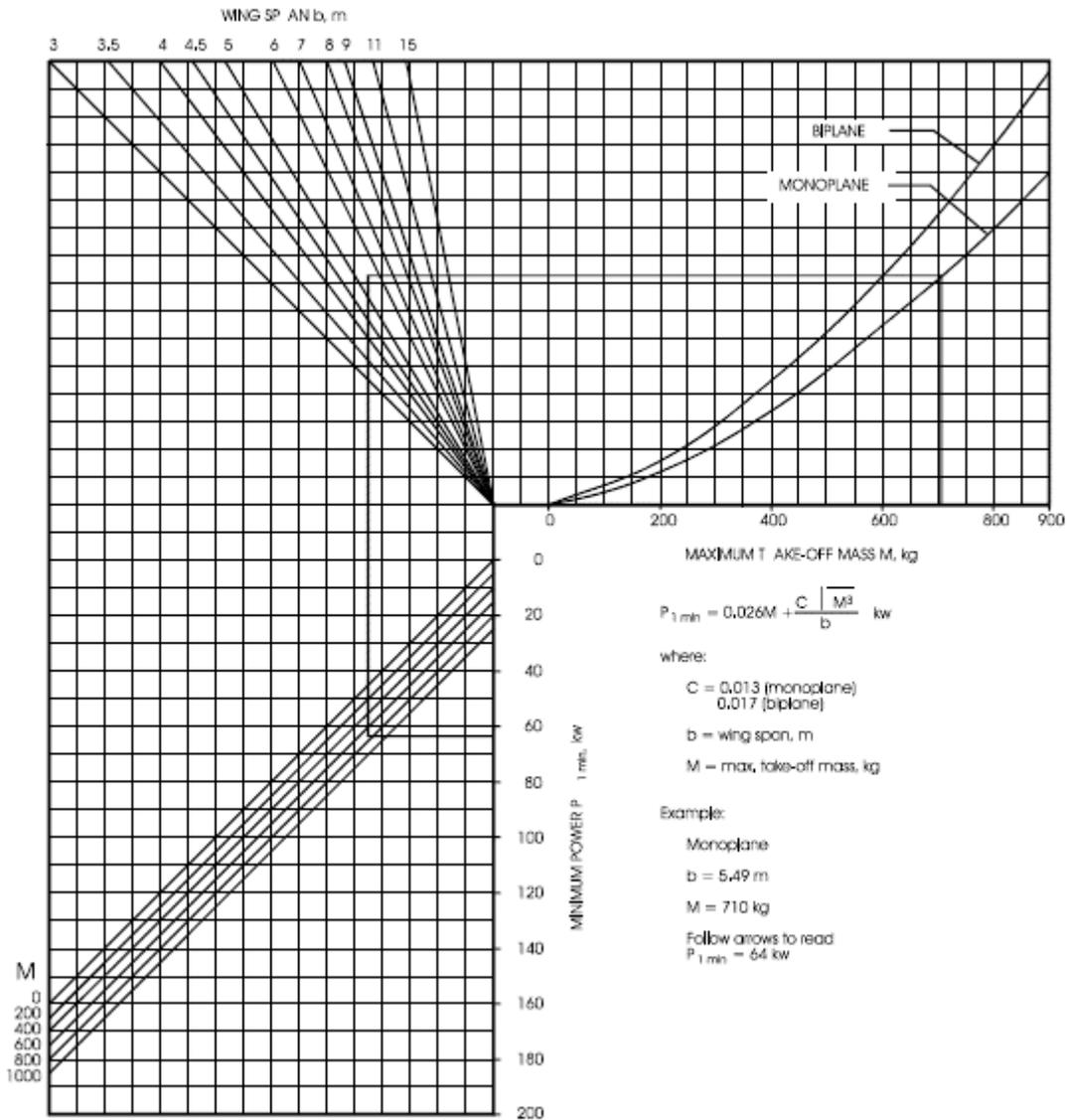


Figure A-i

Minimum rated engine power $P_{1\min}$ in kilowatts, for fixed-wing aircraft with maximum take-off mass of 900 kg

(Reference paragraph 4(b)(4))

Note: Due to inaccuracies in interpolating the above chart, the formula may be used for demonstrating compliance at maximum take-off masses below 500kg.

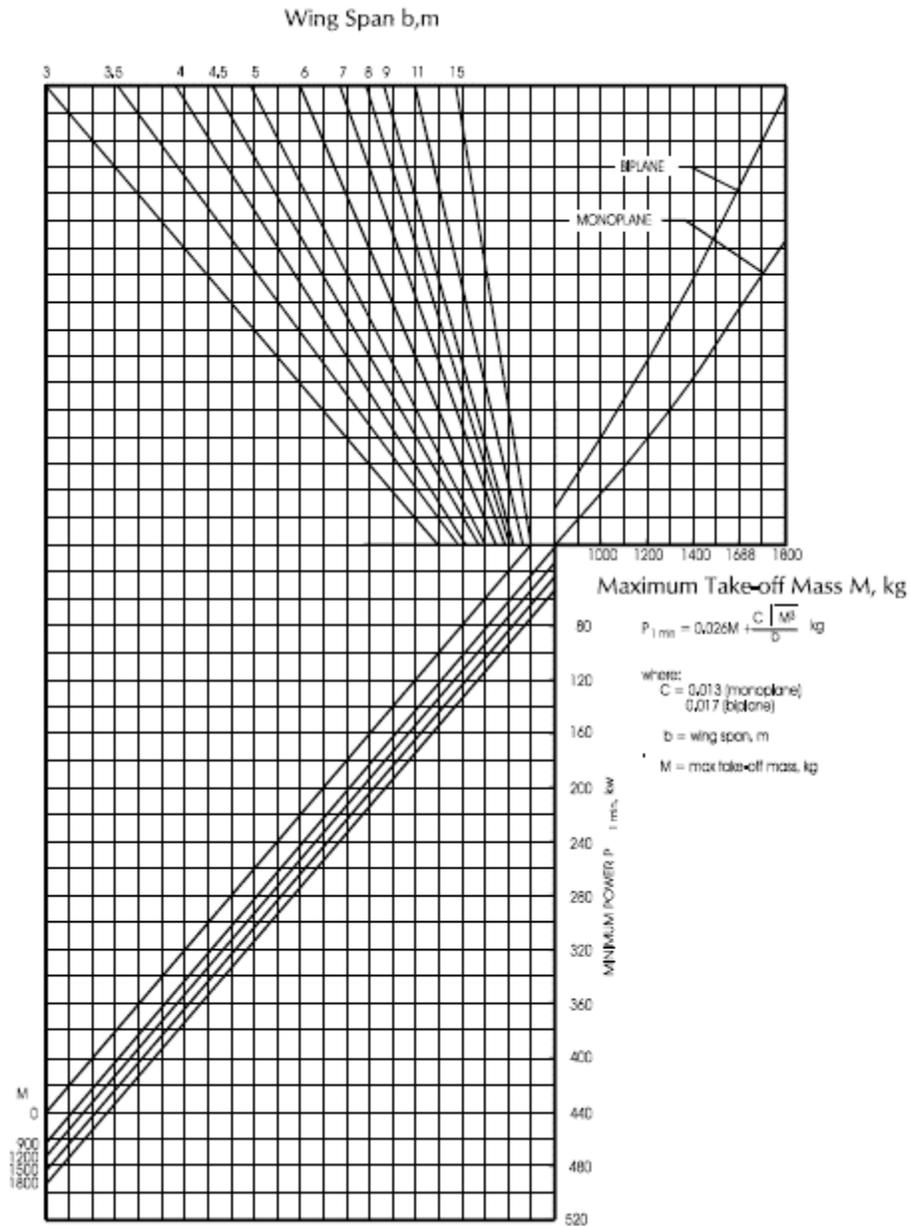


Figure A-ii
Minimum rated engine power P_{1min} in kilowatts, for fixed-wing aircraft with maximum take-off mass of 900 to 1800 kg (Reference paragraph 4(b)(4))

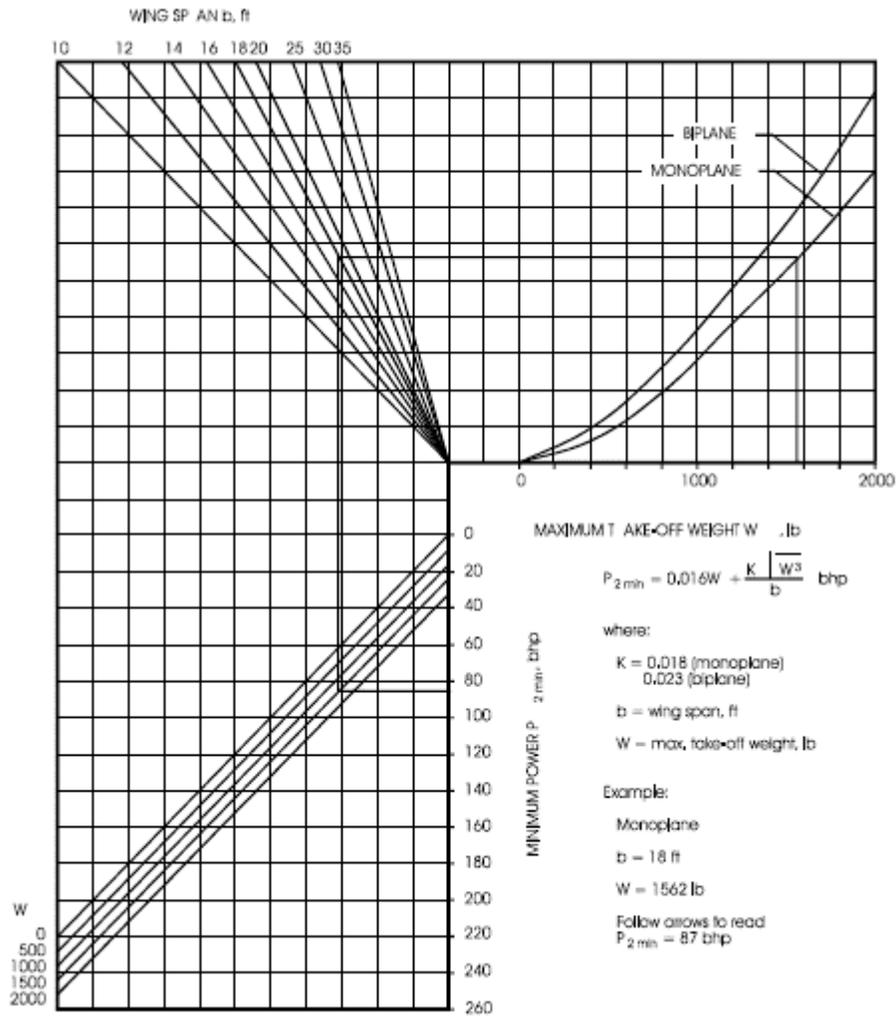


Figure A-iii

Minimum rated engine power p_{2min} in brake horsepower, for fixed-wing aircraft with maximum take-off mass of 0 to 2000 lb

(Reference paragraph 4(b)(4))

Note: Due to inaccuracies in interpolating the above chart, the formula may be used for demonstrating compliance at maximum take-off masses below 500kg

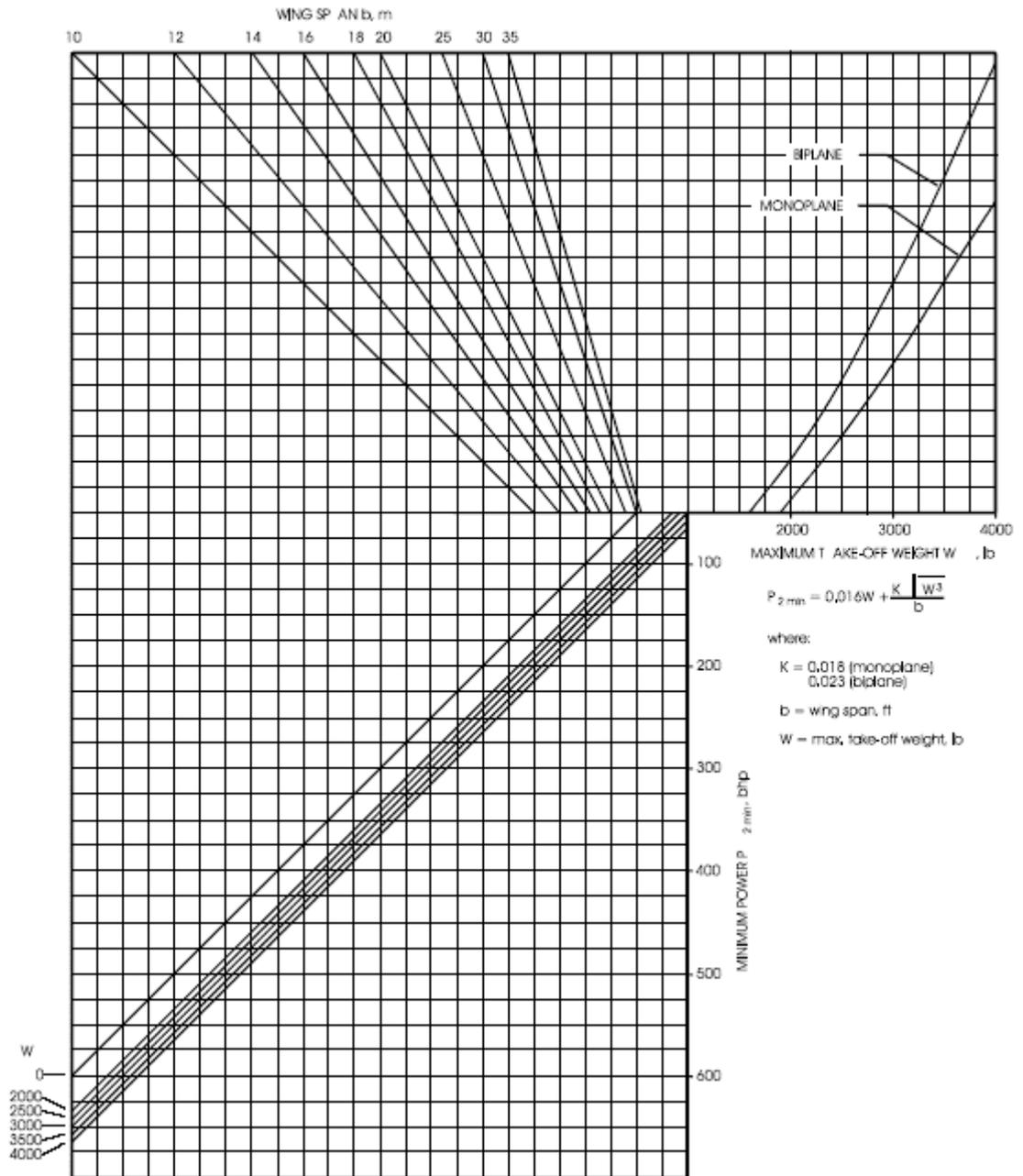


Figure A-iv
 Minimum rated engine power P_{1min} in brake horsepower, for fixed-wing aircraft with maximum take-off mass of 2000 to 4000 kg (Reference paragraph 4(a)(4))

Appendix B

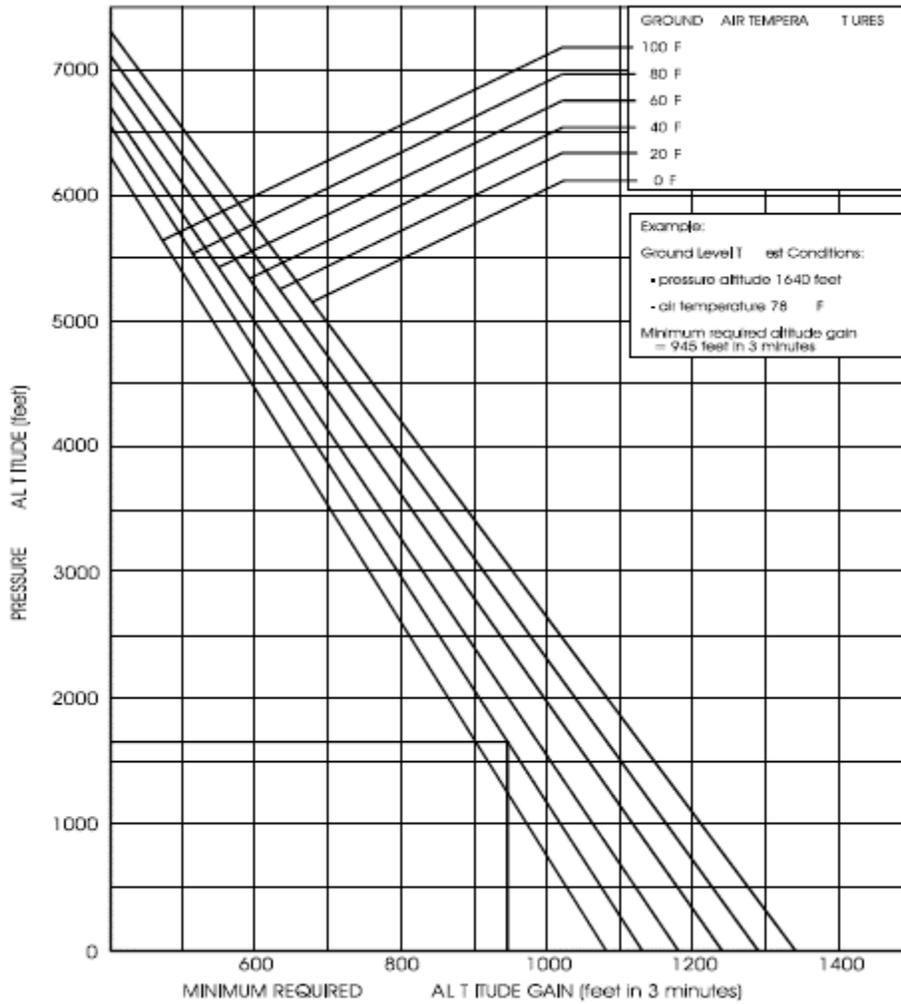


Figure B-i

Climb test graph to determine the minimum required altitude gain for the conditions of ground level pressure altitude and temperature at the time of the test

(refer to paragraph 9)

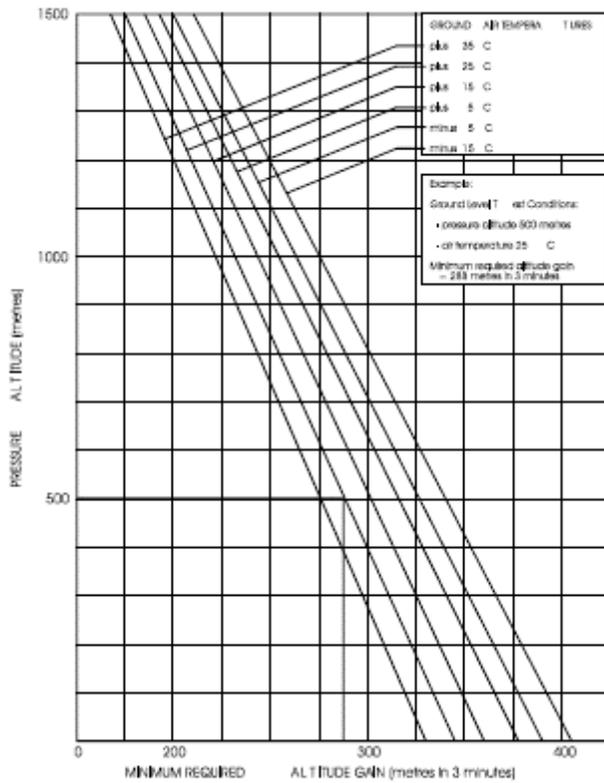


Figure B-ii

Climb test graph to determine the minimum required altitude gain for the conditions of ground level pressure altitude and temperature at the time of the test

(refer to paragraph 9

Appendix C

Organisations Affiliated With Amateur-Built Aircraft

[The following lists some organisations affiliated with amateur-built aircraft and may provide advice and information.

- (a) Recreational Aircraft Association Of Canada (RAA)
152 Harwood Ave. S.,
Ajax, Ontario. L1S 2H6

- (b) Canadian AeroSport Technical Committee (CASTC)
Suite 201,
15 Grenfell Cresc.,
Nepean, Ontario. K2G 0G3

- (c) EAA Canadian Council
2348 Garnet St.,
Regina, Saskatchewan. S4T 3A2

- (d) Experimental Aircraft Association
P.O. Box 3086
Oshkosh, Wisconsin. 54903]