

**EXEMPTION FROM SECTION 549.01 OF THE CANADIAN
AVIATION REGULATIONS AND CHAPTER 549 OF THE
AIRWORTHINESS MANUAL – AIRWORTHINESS STANDARDS -
AMATEUR-BUILT AIRCRAFT**

Pursuant to subsection 5.9(2) of the *Aeronautics Act*, and after taking into account that the exemption is in the public interest and is not likely to affect aviation safety, I hereby exempt **persons who apply for a special certificate of airworthiness in the amateur-built classification** from the requirements of section 549.01 of the *Canadian Aviation Regulations* (CARs) and Chapter 549 of the *Airworthiness Manual - Airworthiness Standards - Amateur-built Aircraft*, subject to the requirements set out in Appendix A of this exemption.

Section 549.01 of the CARs stipulates that a person who intends to construct an aircraft and obtain, under paragraph 507.03(b), a special certificate of airworthiness in the amateur-built classification in respect of the aircraft must

- (a) before starting construction,
 - (i) inform the Minister of the intention to construct the aircraft,
 - (ii) show that the aircraft design meets the standards specified in Chapter 549 of the *Airworthiness Manual*, and
 - (iii) show that the major portion of the aircraft will be constructed from raw material and assembled on a non-commercial, non-production basis for educational or recreational purposes; and
- (b) during construction and again before the first flight, make the aircraft available to the Minister for inspection.

Chapter 549 of the *Airworthiness Manual - Airworthiness Standards - Amateur-built Aircraft* sets out the design and construction standards, which an applicant shall meet to satisfy the Minister that the aircraft is amateur-built, and the requirements for inspections, equipment and instruments, and operating information necessary to obtain a Special Certificate of Airworthiness - Amateur-built.

PURPOSE

The purpose of this exemption is to permit **persons who apply for a special certificate of airworthiness in the amateur-built classification**:

- to contract for professional assistance in the construction or assembly of parts of the aircraft, provided the work is subject to the builder's overall control;
- to import, register and operate in Canada foreign-built amateur-aircraft, subject to a Transport Canada inspection of the aircraft; and
- to not have to comply with the maximum permissible take-off mass (weight) and the maximum number of passenger seats requirements.

APPLICATION

This exemption applies to **persons who apply for a special certificate of airworthiness in the amateur-built classification.**

CONDITION

This exemption is subject to the following condition:

Persons who apply for a special certificate of airworthiness in the amateur-built classification shall comply with the requirements of **Appendix A** to this exemption.

VALIDITY

This exemption is in effect until the earliest of the following:

- (a) the date on which an amendment to the appropriate provisions of the *Canadian Aviation Regulations* comes into effect;
- (b) the date on which the condition set out in this exemption is breached; or
- (c) the date on which this exemption is cancelled in writing by the Minister where he or she is of the opinion that it is no longer in the public interest, or is likely to affect aviation safety.

CANCELLATION

The exemption from section 549.01 of the Canadian Aviation Regulations and Chapter 549 of the Airworthiness Manual - Airworthiness Standards - Amateur-built aircraft, issued to persons who apply for a special certificate of airworthiness in the amateur-built classification, on August 30, 2006 at Ottawa, Ontario by the Director General Civil Aviation on behalf of the Minister of Transport, is hereby canceled because it is the opinion of the Minister that it is no longer in the public interest or is likely to affect aviation safety.

Dated at Ottawa, Ontario, Canada, this 2nd day of April, 2009,
on behalf of the Minister of Transport, Infrastructure and Communities.

Original copy signed by

Merlin Preuss
Director General
Civil Aviation

Appendix A

Standards of Design and Construction for Amateur-Built Aircraft

PART I - Procedures

Interpretation

(1) In this appendix:

“amateur-built aircraft” means an aircraft, the major portion of which is constructed or assembled individually as a unique project, either from raw materials or from a kit;

“major portion” means more than 50% of the total number of items constructed or assembled during the project;

“builder” means the individual or group of individuals who constructs or assembles an amateur-built aircraft, or who oversees the construction or assembly by other persons, of an amateur-built aircraft.

Information note:

In this appendix, measurements and formulae are presented in SI (metric) units, with the equivalent imperial data in parenthesis.

Inspection requirements

(2) A person who intends to construct an amateur-built aircraft shall, before starting construction:

- a) inform the Minister of the intention to construct the aircraft;
- b) identify himself or herself as the builder of the aircraft;
- c) show that the aircraft design meets the requirements of this standard; and
- d) confirm that the major portion of the aircraft will be constructed or assembled individually, as a unique project.

(3) Prior to issuance of a flight authority, an amateur-built aircraft shall be inspected in accordance with a schedule acceptable to the Minister:

- a) to verify the workmanship and general serviceability;
- b) to detect apparent and obvious unsafe features; and
- c) to provide reasonable confidence of safe operation.

(4) The builder of an amateur-built aircraft shall make the aircraft available to the Minister for inspection:

- a) during construction, for inspection of enclosed areas that will not be accessible after final assembly; and
- b) when the aircraft is fully assembled and equipped, but before the first flight, at the site of the planned test flight.

Information note:

Prefabricated parts that were fully enclosed by the parts (kit) manufacturer

at the time of delivery, need not be subject to the internal inspection required by (4)(a).

- (5) Except as provided in (6) or (7) an amateur-built aircraft must be assembled in Canada.

Construction outside of Canada

(6) A Special Certificate of Airworthiness — Amateur-built may be issued in respect of an amateur-built aircraft constructed outside Canada where:

- a) the builder is a Canadian citizen living abroad and intending to resume permanent residence in Canada, who provides advanced notice of the intention to construct the aircraft outside Canada;
- b) the builder makes arrangements to have the aircraft inspected during construction, and after final assembly, by a person acceptable to the Minister; and
- c) the builder shows that the aircraft design meets the requirements of these standards.

Information notes:

(i) The Director, Standards, or a person designated by the Director, will make an official request, on behalf of the builder, for inspection of the amateur-built aircraft, and will provide the necessary inspection and observation reports forms to the person who will perform the inspection.

(ii) All documents pertaining to inspections shall be returned to the office of the Director, Standards, or the person designated by the Director, upon completion of each inspection.

Importation of foreign-built amateur aircraft

(7) A Special C of A — Amateur-built may be issued in respect of an amateur-built aircraft constructed outside Canada, where:

- a) the aircraft was constructed in accordance with standards of the State of construction, and the Minister finds them to be equivalent to these standards;
- b) the aircraft was issued a permanent flight authority pursuant to the regulations of the State of construction, and has subsequently completed not less than 100 hours air time; and
- c) the aircraft undergoes a complete inspection for compliance with these standards.

PART II - Construction Standards

General

(8) The builder shall be responsible for ensuring that the materials and methods of construction of the aircraft are adequate for the purpose.

(9) The methods of construction and assembly, and the workmanship employed, shall be appropriate to the aircraft design and shall conform to accepted aviation standard practices.

(10) Materials shall be appropriate to the aircraft design and should conform to aviation quality specifications.

(11) The builder shall personally construct or assemble, or personally oversee the construction or assembly, of the major portion of the aircraft.

(12) The aircraft shall be constructed as a unique and individual project.

(13) The aircraft shall not be constructed under a mass production system.

Information note:

For the purpose of compliance with these standards, "mass production" means the simultaneous construction, by the same builder, of more than one amateur-built aeroplane, glider, rotorcraft, manned free balloon or airship, of the same type and model.

(14) Mass produced parts such as engine(s), propeller(s), rotor blades and precision hub components, accessories, wheels and brakes, standard aircraft hardware, heat treated or welded assemblies and components from other aircraft may be used, provided the major portion of the entire assembly is constructed or assembled individually.

(15) The builder may contract for professional assistance in the construction or assembly of parts of the aircraft, provided the work is subject to the builder's overall control.

Information note:

Any materials may be used in the construction of an amateur-built aircraft, provided they are adequate for the purpose. 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 by the builder.

PART III - Design Standards

General

(16) All amateur-built aircraft shall comply with the design standards of this Part, in addition to the standards contained in Part IV, V or VI of this appendix, as appropriate.

(17) Every amateur-built aircraft is unique, whether it is an individual design, constructed from plans, or assembled from a kit.

(18) The builder is responsible for evaluating and accepting the original aircraft design, and any changes incorporated into the design during construction, to ensure that they are adequate, appropriate, and in conformity with these standards.

(19) The inspections of the aircraft during construction and before first flight do not constitute, and are not to be construed as, evaluations or acceptance of the aircraft design.

Powerplant

(20) The builder is responsible for evaluating and accepting the powerplant chosen to ensure that it is adequate and appropriate to the overall design.

(21) The powerplant may employ propeller, fan, or reaction jet propulsion, but not solid or liquid fuelled rockets.

(22) Propeller driven aircraft may incorporate conventional 2 or 4 cycle piston engines, rotary (e.g., Wankel) engines, gas turbines, other internal combustion engines or battery powered electrical motors.

(23) Jet propelled aircraft may incorporate turbojet or turbofan engines.

(24) Each enclosed engine compartment shall be isolated from the remainder of the aircraft by a firewall, which shall be made of fireproof material.

(25) Engines equipped with carburettors shall have means to minimise the likelihood of carburettor icing, unless this can be shown to be unnecessary, either by actual test or by documentation from the kit manufacturer, engine manufacturer or aircraft designer.

Information notes:

(i) Builders are urged to be particularly aware of the risks associated with used engines, propellers and accessories whose history cannot be verified or that may have been involved in accidents or have undergone unapproved repairs or modifications.

(ii) Amateur-built aircraft are not required to comply with the noise standards of Chapter 516 of the Airworthiness Manual. However, builders are reminded that aircraft noise is a sensitive environmental issue, and every effort should be made to reduce noise emissions.

Equipment and Instruments

(26) Unless otherwise indicated in an applicable part of this appendix, amateur-built aircraft shall have the following minimum equipment and instruments:

- a) a safety belt for each seat, including shoulder harness for each pilot seat and each front seat adjacent to a pilot seat, securely anchored so that the loads are transmitted to the primary structure;

Information note:

Builders are cautioned against the use of automotive-type safety belts; it may not be possible to release some kinds of automotive belts if the aircraft is inverted.

- b) a portable fire extinguisher;

- c) an airspeed indicator;
- d) an altimeter;
- e) a magnetic compass;
- f) a tachometer for each engine;
- g) an oil pressure indicator for each engine that uses a pressure lubricating system;
- h) a temperature indicator for each engine (displaying the temperature of the cylinder heads, lubricating oil, coolant or exhaust gas, as applicable to the type of engine);
- i) a fuel quantity indicating system for each main fuel tank;
- j) a gascolator located at the lowest point in the fuel system; and
- k) a manifold pressure indicator for each supercharged engine, and for each engine equipped with a variable pitch propeller.

Placards

(27) Unless otherwise required in the applicable section, each amateur-built aircraft shall display the following placard:

- a) one containing the following statement readily legible from each passenger station, or displayed on the side of the fuselage:

YOUFLY IN THIS AIRCRAFT AT YOUR OWN RISK.

THIS AIRCRAFT DOES NOT COMPLY WITH INTERNATIONALLY

RECOGNIZED STANDARDS.

VOUS VOLEZ À BORD DE CET AÉRONEF À VOS PROPRES RISQUES.

CET AÉRONEF N'EST PAS CONFORME AUX

NORMES RECONNUES À L'ÉCHELLE INTERNATIONALE.

- b) if the placard required by 27(a) is displayed on the side of the fuselage, it shall be in a position that is readily legible to persons entering the aircraft, in letters at least 10 mm (3/8 in.) high and of a color contrasting with the background;
- c) in any area of an aircraft designated for the carriage of passengers, other than an area beside the pilot, a placard showing the maximum permissible load for that compartment or area:

MAXIMUM PASSENGER AND/OR BAGGAGE LOAD:KG (LB)

or

CHARGE MAXIMALE, PASSAGERS/BAGAGES:KG (LB)

Aircraft Identification Plate

(28) In accordance with the requirements of CAR 201.01, a fireproof plate that identifies the aircraft shall be attached to a non-removable part of the structure in a prominent location:

- a) in the case of an aircraft other than a balloon, to the structure of the aircraft in a place where it is visible to a person on the ground or to a person at the main entrance or rearmost entrance door;
- b) in the case of a balloon, to the lower or upper girdle of the envelope in a place where it is readily visible prior to inflation.

(29) The aircraft identification plate shall include the following information:

- a) the name of the builder;
- b) the aircraft model designation;
- c) the aircraft serial number

PART IV - Design Standards - Fixed-Wing Aircraft

General

(30) This part contains design standards additional to those outlined in Part III, which are applicable to:

- a) aeroplanes;
- b) gliders; and
- c) powered gliders.

Seats

(31) For the purpose of determining the maximum empty mass, only one aircraft seat shall be designated as a pilot's seat.

(32) All seats other than the pilot's seat, shall be designated as passenger seats.

Maximum Empty Mass

(33) To ensure that an adequate minimum useful load, including fuel, can be carried within the maximum permissible take-off mass authorised for the aircraft, the maximum empty mass (weight) M_{Emax} (W_{Emax}) of an aeroplane or a powered glider should not be greater than that determined by the following equation:

$$M_{Emax} = M_{TOMax} - (80 + 80\sqrt{a} + 0.3P) \text{ (kg)}$$
$$((W_{Emax}) = (W_{TOMax}) - (175 + 175\sqrt{a} + 0.5P) \text{ (lb)})$$

where:

- M_{TOMax} (W_{TOMax}) = maximum permissible take-off mass (weight) selected by the application in kg (lb);
- a = the number of passenger seats; and
- P = the rated power of all engine(s) in kW (BHP).

Minimum Rated Engine Power

(34) The minimum permissible rated engine power of propeller driven aeroplanes and powered gliders shall be determined by the following equation:

$$P_{\min} = 0.0263M + \frac{C\sqrt{M^3}}{b} \text{ (kW)}$$

$$(P_{\min} = 0.016W + \frac{C\sqrt{W^3}}{b} \text{ (BHP)})$$

where

P_{\min} = total rated power of all engines in kW (BHP);

b = wing span in metres (ft);

$M(W)$ = declared maximum TO mass (weight) in kg (lb);

$C = 0.01339$ (0.018 where foot, pound, second units are used) for monoplanes (including tandem and canard wings);

or

$C = 0.01711$ (0.023 where foot, pound, second units are used) for biplanes or triplanes.

(35) The minimum permissible rated engine power of jet propelled aeroplanes shall be determined by the builder, who shall ensure that the engine power is adequate and appropriate for the aircraft design.

Rate of Climb

(36) In standard sea-level atmospheric conditions at the maximum approved weight, the aircraft shall demonstrate the following climb performance:

- a) aeroplanes: 360 m (1180 ft) in 3 minutes.
- b) powered gliders: 300 m (984 ft) in 4 minutes.

Information note:

Tests conducted in other than standard sea-level atmospheric conditions shall be corrected for the difference in atmospheric conditions by means acceptable to the Minister.

Wing Loading

(37) Wing loading is given by the equation:

$$M/S \text{ (kg/m}^2\text{)} \text{ (W/S (lb/ft}^2\text{))}$$

where:

$M(W)$ = the maximum permissible take-off mass (weight); and

S = the total wing area.

Information note:

The total wing area is taken as the total planform area of all wings (including canard wings) that provide positive lift in the landing configuration (obtained by extending the wing leading and trailing edges through nacelles and

fuselage to the aircraft centre line) and includes the areas of ailerons, wing strakes, and flaps in the retracted position.

(38) Amateur-built aeroplanes without flaps, having a wing-loading exceeding 65 kg/m² (13.3 lb/ft²), or with flaps, having a wing loading exceeding 100 kg/m² (20.4 lb/ft²), are classified as high performance aeroplanes.

Information note:

CAR 401 requires pilots of high performance aeroplanes to hold a licence with a rating for the specific aircraft type. Pilots should consult STD 421 for the applicable type ratings standards.

Equipment and Instruments

(39) In addition to the equipment and instruments required by section 26 of Part III, aerobatic aeroplanes shall be equipped with a peak recording accelerometer.

(40) Gliders need only have the items required by subsections 26(a), (c), (d), and (e) of Part III installed.

Placards

(41) In addition to the placards specified in section 27 of Part III, the following placards shall be displayed in the cockpit or cabin in full view of the pilot:

- a) where the aircraft flight authority contains the restriction "aerobatic manoeuvres prohibited:"

AEROBATIC MANOEUVRES PROHIBITED

or

ACROBATIES AÉRIENNES INTERDITES

- b) where the aircraft flight authority does not contain the restriction "aerobatic manoeuvres prohibited:"

THE FOLLOWING AEROBATIC MANOEUVRES

AND COMBINATIONS THEREOF,

MAY BE PERFORMED IN THIS AIRCRAFT:

1 -

2 -

3 -

or

LES MANOEUVRES D'ACROBATIES AÉRIENNES SUIVANTES
ET TOUTE COMBINAISON DE CELLES-CI PEUVENT ÊTRE
EXÉCUTÉES AU MOYEN DE CET AÉRONEF :

1 -

2 -

3 -

c) for high performance aeroplanes:

THIS AEROPLANE IS A HIGH PERFORMANCE AEROPLANE.

OPERATION REQUIRES A TYPE RATED PILOT LICENCE.

or

CET AVION EST UN AVION À HAUTES PERFORMANCES.

SON UTILISATION REQUIERT UNE LICENCE DE PILOTE

COMPORTANT UNE QUALIFICATION DE TYPE.

PART V - Design Standards - Rotary -Wing Aircraft

General

(42) This part contains standards of airworthiness for:

- a) helicopters;
- b) gyroplanes; and
- c) gyrogliders.

Number of Seats

(43) For the purpose of determining the maximum empty mass, only one aircraft seat shall be designated as a pilot's seat.

(44) All seats other than the pilot's seat, shall be designated as passenger seats.

Maximum Empty Mass

(45) To ensure that an adequate minimum useful load, including fuel, can be carried within the maximum permissible take-off mass authorised for the aircraft, the maximum empty mass (weight) MEmax (WEmax) of a helicopter or a gyroplane should not be greater than that determined by the following equation:

$$M_{E_{max}} = M_{T_{Omax}} - (80 + 80\sqrt{a} + 0.3P) \text{ (kg)}$$
$$((W_{E_{max}}) = (W_{T_{Omax}}) - (175 + 175\sqrt{a} + 0.5P) \text{ (lb)})$$

where:

$M_{T_{Omax}}$ ($W_{T_{Omax}}$) = maximum permissible take-off mass (weight) selected by the applicant in kg (lb);

a = number of passenger seats; and

P = rated power of engine(s) in kW (BHP).

Minimum Rated Engine Power

(46) It is the responsibility of the builder to evaluate the chosen powerplant to ensure that the minimum rated engine power is adequate and appropriate for the aircraft type.

Performance: Rate of Climb

(47) It is the responsibility of the builder to ensure that the rate of climb is adequate.

Equipment and Instruments

(48) In addition to the equipment and instruments specified in section 26 of Part III, a helicopter or gyroplane shall have a main rotor tachometer with rotor speed limits clearly identified.

(49) A gyroglider need only have the equipment and instruments specified in section 26 (a) and (c) of Part III.

Placards

(50) In addition to the placards required by section 27 of Part III, rotorcraft shall have a placard stating any ballast required, as obtained from the aircraft weight and balance report.

PART VI - Design Standards - Lighter-Than-Air Aircraft

General

(51) This part contains standards of airworthiness for manned free balloons and airships.

Lifting media

(52) The aircraft buoyancy shall be provided by heated air or captive non-flammable gas.

Number of Occupants

(53) Balloon: the number of occupants shall be established by the applicant so that pilot's operation of the balloon is not adversely affected during flight.

Power Plant (Airships)

(54) It is the responsibility of the builder to evaluate the chosen powerplant to ensure that the minimum rated engine power is adequate and appropriate.

Equipment and Instruments

(55) In lieu of the equipment and instruments required by section 26 of Part III, all lighter-than-air aircraft are required to have the following:

- a) an altimeter;
- b) a rate of climb indicator; and
- c) for each occupant of a balloon that is not located in a basket or gondola, an appropriate means of restraint, securely anchored to the primary structure.

(56) Hot-air balloons: in addition to the equipment and instruments required by section 55 of this Part, hot-air balloons shall have the following:

- a) a fuel quantity gauge for each fuel tank;
- b) an envelope temperature indicator;
- c) unless found unnecessary by the Minister, shielding to protect the occupants and balloon parts from exposure to the burner flame.

(57) Captive gas balloons: in addition to the equipment and instruments required by section 55 of this Part, captive gas balloons shall have a compass.

(58) Airships: in addition to the equipment and instruments required by section 55 of this Part, airships shall have the applicable powerplant equipment and instruments required by section 26 of Part III.

Placards

(59) In lieu of the placard specified in subsection 27(c) of Part III, lighter-than-air aircraft shall display the following placard in a conspicuous position, readily visible to persons boarding the aircraft, showing the number of occupants allowed:

MAXIMUM NUMBER OF OCCUPANTS:

or

NOMBRE MAXIMUM D'OCCUPANTS:

(60) Hot air balloons: in addition to the placard specified in subsection 27(a) of Part III, hot air balloons shall display the maximum operational temperature permitted for the envelope on a placard attached to the envelope, in full view of the pilot, as follows:

MAXIMUM OPERATIONAL ENVELOPE

TEMPERATURE: °C (..... °F)

or

TEMPÉRATURE OPÉRATIONNELLE MAXIMALE

DEL'ENVELOPPE: °C (..... °F)

PART VII - Continuing Airworthiness

(61) Except where specifically stated to the contrary, amateur-built aircraft are subject to the same operating and maintenance regulations as type certified aircraft. Some of the applicable regulations, and their practical effects, are summarized in the following information notes.

Information notes:

- (i) The details of all maintenance and elementary work performed on an amateur-built aircraft must be entered in the aircraft's technical record.*
- (ii) All maintenance activities require a maintenance release.*
- (iii) The owner of an amateur-built aircraft may sign the release for the maintenance of his or her own aircraft.*
- (iv) Elementary work does not require a maintenance release; however, it must be recorded in the aircraft technical record, together with the signature of the person who performed the work.*
- (v) The maintenance schedule requirements detailed in STD 625 Appendix B are approved by the Minister for use with amateur-built aircraft, at intervals not exceeding 12 months. STD 625 specifies that Appendix B must be supplemented by the applicable requirements of STD 625 Appendix C, for out of phase tasks and equipment maintenance requirements.*
- (vi) All entries in respect of the technical records for the airframe, engine and propeller for an amateur-built aircraft may be kept in the journey log, provided the requirements with respect to technical records are met.*
- (vii) A weight and balance report is required for each aircraft configuration.*
- (viii) Amateur-built aircraft are not required to comply with airworthiness directives; however, operators are strongly encouraged to review applicable airworthiness directives to determine if they wish to comply voluntarily, in order to enhance the safety of the aircraft.*
- (ix) Repairs and modifications to amateur-built aircraft must conform to technical data acceptable to the Minister; sources of acceptable data include, but are not limited to:*

- a) drawings and methods recommended by the manufacturer of the aircraft kit, component, or appliance;*
 - b) Transport Canada advisory documents;*
 - c) FAA Advisory Circular 43.13-1 and -2, UK CAA Civil Aircraft Inspection Procedures (CAIP), JAA Advisory Circulars, (ACJ) and publications issued by recognized authorities on the subject matter concerned.*
- (x) Owners may devise their own data, which need not be approved, but must be subject to an appropriate level of review or analysis, or be shown to comply with recognized industry standards, or commonly accepted practice.*
- (xi) Changes that affect the structural strength, performance, power plant operation, or flight characteristics of an amateur built aircraft must be reported to the Minister before further flight of the aircraft; such changes may require re-evaluation to confirm that the aircraft continues to comply with the applicable standards.*
- (xii) The Minister is the final authority for determining the acceptability of data.*