

Part 21 — CCAR-21



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FAR Part 21 ☐☐

FAR Part 21 — Certification Procedures for Products and Articles

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§ 21.1

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§ 21.1 Applicability and definitions.

- (a) This part prescribes—
 - (1) Procedural requirements for issuing and changing—
 - (i) Design approvals;
 - (ii) Production approvals;
 - (iii) Airworthiness certificates; and
 - (iv) Airworthiness approvals;

(2) Rules governing applicants for, and holders of, any approval or certificate specified in paragraph (a)(1) of this section; and

(3) Procedural requirements for the approval of articles.

(b) For the purposes of this part—

(1) Airworthiness approval means a document, issued by the FAA for an aircraft , aircraft engine , propeller , or article, which certifies that the aircraft , aircraft engine , propeller , or article conforms to its approved design and is in a condition for safe operation, unless otherwise specified;

(2) Article means a material, part, component, process, or appliance ;

(3) Commercial part means an article that is listed on an FAA -approved Commercial Parts List included in a design approval holder's Instructions for Continued Airworthiness required by § 21.50 ;

(4) Design approval means a type certificate (including amended and supplemental type certificates) or the approved design under a PMA , TSO authorization, letter of TSO design approval, or other approved design;

(5) Interface component means an article that serves as a functional interface between an aircraft and an aircraft engine , an aircraft engine and a propeller , or an aircraft and a propeller . An interface component is designated by the holder of the type certificate or the supplemental type certificate who controls the approved design data for that article;

(6) Product means an aircraft , aircraft engine , or propeller ;

(7) Production approval means a document issued by the FAA to a person that allows the production of a product or article in accordance with its approved design and approved quality system, and can take the form of a production certificate, a PMA , or a TSO authorization;

(8) State of Design means the country or jurisdiction having regulatory authority over the organization responsible for the design and continued airworthiness of a civil aeronautical product or article;

(9) State of Manufacture means the country or jurisdiction having regulatory authority over the organization responsible for the production and airworthiness of a civil aeronautical product or article.

(10) Supplier means a person at any tier in the supply chain who provides a product, article, or service that is used or consumed in the design or manufacture of, or installed on, a product or article.

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§ 21.3 Reporting of failures, malfunctions, and defects.

(a) The holder of a type certificate (including amended or supplemental type certificates), a PMA , or a TSO authorization, or the licensee of a type certificate must report any failure, malfunction, or defect in any product or article manufactured by it that it determines has resulted in any of the occurrences listed in paragraph (c) of this section.

(b) The holder of a type certificate (including amended or supplemental type certificates), a PMA , or a TSO authorization, or the licensee of a type certificate must report any defect in any product or article manufactured by it that has left its quality system and that it determines could result in any of the occurrences listed in paragraph (c) of this section.

(c) The following occurrences must be reported as provided in paragraphs (a) and (b) of this section:

- (1) Fires caused by a system or equipment failure, malfunction, or defect.
- (2) An engine exhaust system failure, malfunction, or defect which causes damage to the engine, adjacent aircraft structure, equipment, or components.
- (3) The accumulation or circulation of toxic or noxious gases in the crew compartment or passenger cabin.
- (4) A malfunction, failure, or defect of a propeller control system.
- (5) A propeller or rotorcraft hub or blade structural failure.
- (6) Flammable fluid leakage in areas where an ignition source normally exists.
- (7) A brake system failure caused by structural or material failure during operation.
- (8) A significant aircraft primary structural defect or failure caused by any autogenous condition (fatigue, understrength, corrosion, etc.).
- (9) Any abnormal vibration or buffeting caused by a structural or system malfunction, defect, or failure.
- (10) An engine failure.
- (11) Any structural or flight control system malfunction, defect, or failure which causes an interference with normal control of the aircraft for which derogates the flying qualities.
- (12) A complete loss of more than one electrical power generating system or hydraulic power system during a given operation of the aircraft .

(13) A failure or malfunction of more than one attitude, airspeed, or altitude instrument during a given operation of the aircraft .

(d) The requirements of paragraph (a) of this section do not apply to—

(1) Failures, malfunctions, or defects that the holder of a type certificate (including amended or supplemental type certificates), PMA , TSO authorization, or the licensee of a type certificate determines—

(i) Were caused by improper maintenance or use;

(ii) Were reported to the FAA by another person under this chapter; or

(iii) Were reported under the accident reporting provisions of 49 CFR part 830 of the regulations of the National Transportation Safety Board .

(2) Failures, malfunctions, or defects in products or articles—

(i) Manufactured by a foreign manufacturer under a U.S. type certificate issued under § 21.29 or under an approval issued under § 21.621 ; or

(ii) Exported to the United States under § 21.502 .

(e) Each report required by this section—

(1) Must be made to the FAA within 24 hours after it has determined that the failure, malfunction, or defect required to be reported has occurred. However, a report that is due on a Saturday or a Sunday may be delivered on the following Monday and one that is due on a holiday may be delivered on the next workday;

(2) Must be transmitted in a manner and form acceptable to the FAA and by the most expeditious method available; and

(3) Must include as much of the following information as is available and applicable:

(i) The applicable product and article identification information required by part 45 of this chapter;

(ii) Identification of the system involved; and

(iii) Nature of the failure, malfunction, or defect.

(f) If an accident investigation or service difficulty report shows that a product or article manufactured under this part is unsafe because of a manufacturing or design data defect, the holder of the production approval for that product or article must, upon request of the FAA , report to the FAA the results of its investigation and any action taken or proposed by the holder of that production approval to correct that defect. If action is required to correct the defect in an existing product or article, the holder of that production approval must send the data necessary for issuing

an appropriate airworthiness directive to the FAA .

[Amdt. 21-36, 35 FR 18187 , Nov. 28, 1970, as amended by Amdt. 21-37, 35 FR 18450 , Dec. 4, 1970; Amdt. 21-50, 45 FR 38346 , June 9, 1980; Amdt. 21-67, 54 FR 39291 , Sept. 25, 1989; Amdt. 21-92, 74 FR 53385 , Oct. 16, 2009; Doc. No. FAA -2018-0119, Amdt. 21-101, 83 FR 9169 , Mar. 5, 2018]

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§ 21.4 ETOPS reporting requirements.

(a) Early ETOPS: reporting, tracking, and resolving problems. The holder of a type certificate for an airplane -engine combination approved using the Early ETOPS method specified in part 25, Appendix K, of this chapter must use a system for reporting, tracking, and resolving each problem resulting in one of the occurrences specified in paragraph (a)(6) of this section.

(1) The system must identify how the type certificate holder will promptly identify problems, report them to the responsible Aircraft Certification Service office, and propose a solution to the FAA to resolve each problem. A proposed solution must consist of—

- (i) A change in the airplane or engine type design;
- (ii) A change in a manufacturing process;
- (iii) A change in an operating or maintenance procedure; or
- (iv) Any other solution acceptable to the FAA .

(2) For an airplane with more than two engines, the system must be in place for the first 250,000 world fleet engine-hours for the approved airplane -engine combination.

(3) For two-engine airplanes, the system must be in place for the first 250,000 world fleet engine-hours for the approved airplane -engine combination and after that until—

- (i) The world fleet 12-month rolling average IFSD rate is at or below the rate required by paragraph (b)(2) of this section; and
- (ii) The FAA determines that the rate is stable.

(4) For an airplane -engine combination that is a derivative of an airplane -engine combination previously approved for ETOPS , the system need only address those problems specified in the following table, provided the type certificate holder obtains prior authorization from the FAA:

If the change does not require a new airplane type certificate and . . .

Then the Problem Tracking and Resolution System must address . . .

(i) Requires a new engine type certificate

All problems applicable to the new engine installation, and for the remainder of the airplane, problems in changed systems only.

(ii) Does not require a new engine type certificate

Problems in changed systems only.

(5) The type certificate holder must identify the sources and content of data that it will use for its system. The data must be adequate to evaluate the specific cause of any in-service problem reportable under this section or § 21.3(c) that could affect the safety of ETOPS .

(6) In implementing this system, the type certificate holder must report the following occurrences:

(i) IFSDs , except planned IFSDs performed for flight training.

(ii) For two-engine airplanes, IFSD rates.

(iii) Inability to control an engine or obtain desired thrust or power.

(iv) Precautionary thrust or power reductions.

(v) Degraded ability to start an engine in flight.

(vi) Inadvertent fuel loss or unavailability, or uncorrectable fuel imbalance in flight.

(vii) Turn backs or diversions for failures, malfunctions, or defects associated with an ETOPS group 1 significant system.

(viii) Loss of any power source for an ETOPS group 1 significant system, including any power source designed to provide backup power for that system.

(ix) Any event that would jeopardize the safe flight and landing of the airplane on an ETOPS flight.

(x) Any unscheduled engine removal for a condition that could result in one of the reportable occurrences listed in this paragraph.

(b) Reliability of two-engine airplanes —(1) Reporting of two-engine airplane in-service reliability. The holder of a type certificate for an airplane approved for ETOPS and the holder of a type

certificate for an engine installed on an airplane approved for ETOPS must report monthly to their respective Aircraft Certification Service office on the reliability of the world fleet of those airplanes and engines. The report provided by both the airplane and engine type certificate holders must address each airplane -engine combination approved for ETOPS . The FAA may approve quarterly reporting if the airplane -engine combination demonstrates an IFSD rate at or below those specified in paragraph (b)(2) of this section for a period acceptable to the FAA . This reporting may be combined with the reporting required by § 21.3. The responsible type certificate holder must investigate any cause of an IFSD resulting from an occurrence attributable to the design of its product and report the results of that investigation to its responsible Aircraft Certification Service office. Reporting must include:

(i) Engine IFSDs , except planned IFSDs performed for flight training.

(ii) The world fleet 12-month rolling average IFSD rates for all causes, except planned IFSDs performed for flight training.

(iii) ETOPS fleet utilization, including a list of operators, their ETOPS diversion time authority, flight hours, and cycles.

(2) World fleet IFSD rate for two-engine airplanes. The holder of a type certificate for an airplane approved for ETOPS and the holder of a type certificate for an engine installed on an airplane approved for ETOPS must issue service information to the operators of those airplanes and engines, as appropriate, to maintain the world fleet 12-month rolling average IFSD rate at or below the following levels:

(i) A rate of 0.05 per 1,000 world-fleet engine-hours for an airplane -engine combination approved for up to and including 120-minute ETOPS . When all ETOPS operators have complied with the corrective actions required in the configuration, maintenance and procedures (CMP) document as a condition for ETOPS approval, the rate to be maintained is at or below 0.02 per 1,000 world-fleet engine-hours.

(ii) A rate of 0.02 per 1,000 world-fleet engine-hours for an airplane -engine combination approved for up to and including 180-minute ETOPS , including airplane -engine combinations approved for 207-minute ETOPS in the North Pacific operating area under appendix P, section I, paragraph (h), of part 121 of this chapter.

(iii) A rate of 0.01 per 1,000 world-fleet engine-hours for an airplane -engine combination approved for ETOPS beyond 180 minutes, excluding airplane -engine combinations approved for 207-minute ETOPS in the North Pacific operating area under appendix P, section I, paragraph (h), of part 121 of this chapter.

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§ 21.5 Airplane or Rotorcraft Flight Manual.

(a) With each airplane or rotorcraft not type certificated with an Airplane or Rotorcraft Flight Manual and having no flight time before March 1, 1979, the holder of a type certificate (including amended or supplemental type certificates) or the licensee of a type certificate must make available to the owner at the time of delivery of the aircraft a current approved Airplane or Rotorcraft Flight Manual.

(b) The Airplane or Rotorcraft Flight Manual required by paragraph (a) of this section must contain the following information:

(1) The operating limitations and information required to be furnished in an Airplane or Rotorcraft Flight Manual or in manual material, markings, and placards, by the applicable regulations under which the airplane or rotorcraft was type certificated.

(2) The maximum ambient atmospheric temperature for which engine cooling was demonstrated must be stated in the performance information section of the Flight Manual, if the applicable regulations under which the aircraft was type certificated do not require ambient temperature on engine cooling operating limitations in the Flight Manual.

(3) Documentation of compliance with part 38 of this chapter, in an FAA -approved section of any approved airplane flight manual. Such material must include the fuel efficiency metric value as calculated under § 38.11 of this chapter, and the specific paragraph of § 38.17 of this chapter with which compliance has been shown for that airplane .

[Amdt. 21-46, 43 FR 2316 , Jan. 16, 1978, as amended by Amdt. 21-92, 74 FR 53385 , Oct. 16, 2009; Admt. 21-107, 89 FR 12653 , Feb. 16, 2024]

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§ 21.6 Manufacture of new aircraft , aircraft engines, and propellers.

(a) Except as specified in paragraphs (b) and (c) of this section, no person may manufacture a new aircraft , aircraft engine , or propeller based on a type certificate unless the person—

(1) Is the holder of the type certificate or has a licensing agreement from the holder of the type certificate to manufacture the product; and

(2) Meets the requirements of subpart F or G of this part.

(b) A person may manufacture one new aircraft based on a type certificate without meeting the requirements of paragraph (a) of this section if that person can provide evidence acceptable to the FAA that the manufacture of the aircraft by that person began before August 5, 2004.

(c) The requirements of this section do not apply to—

(1) New aircraft imported under the provisions of §§ 21.183(c) , 21.184(b), or 21.185(c); and

(2) New aircraft engines or propellers imported under the provisions of § 21.500 .

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§ 21.7 Continued airworthiness and safety improvements for transport category airplanes.

(a) On or after December 10, 2007, the holder of a design approval and an applicant for a design approval must comply with the applicable continued airworthiness and safety improvement requirements of part 26 of this subchapter.

(b) For new transport category airplanes manufactured under the authority of the FAA , the holder or licensee of a type certificate must meet the applicable continued airworthiness and safety improvement requirements specified in part 26 of this subchapter for new production airplanes. Those requirements only apply if the FAA has jurisdiction over the organization responsible for final assembly of the airplane .

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§ 21.8 Approval of articles.

If an article is required to be approved under this chapter, it may be approved—

- (a) Under a PMA ;
- (b) Under a TSO ;
- (c) In conjunction with type certification procedures for a product; or
- (d) In any other manner approved by the FAA .

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§ 21.9 Replacement and modification articles.

(a) If a person knows, or should know, that a replacement or modification article is reasonably likely to be installed on a type-certificated product, the person may not produce that article unless it is—

- (1) Produced under a type certificate;
- (2) Produced under an FAA production approval;
- (3) A standard part (such as a nut or bolt) manufactured in compliance with a government or established industry specification;
- (4) A commercial part as defined in § 21.1 of this part;
- (5) Produced by an owner or operator for maintaining or altering that owner or operator's product;
- (6) Fabricated by an appropriately rated certificate holder with a quality system, and consumed in the repair or alteration of a product or article in accordance with part 43 of this chapter; or
- (7) Produced in any other manner approved by the FAA .

(b) Except as provided in paragraphs (a)(1) through (a)(2) of this section, a person who produces a replacement or modification article for sale may not represent that part as suitable for installation on a type-certificated product.

(c) Except as provided in paragraphs (a)(1) through (a)(2) of this section, a person may not sell or represent an article as suitable for installation on an aircraft type-certificated under §§ 21.25(a)(2) or 21.27 unless that article—

- (1) Was declared surplus by the U.S. Armed Forces , and

(2) Was intended for use on that aircraft model by the U.S. Armed Forces .

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§ 21.11 Applicability.

This subpart prescribes—

(a) Procedural requirements for the issue of type certificates for aircraft , aircraft engines, and propellers; and

(b) Rules governing the holders of those certificates.

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§ 21.13 Eligibility.

Any interested person may apply for a type certificate.

[Amdt. 21-25, 34 FR 14068 , Sept. 5, 1969]

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§ 21.15 Application for type certificate.

- (a) An application for a type certificate is made on a form and in a manner prescribed by the FAA .
- (b) An application for an aircraft type certificate must be accompanied by a three-view drawing of that aircraft and available preliminary basic data.
- (c) An application for an aircraft engine type certificate must be accompanied by a description of the engine design features, the engine operating characteristics, and the proposed engine operating limitations.

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§ 21.16 Special conditions.

If the FAA finds that the airworthiness regulations of this subchapter do not contain adequate or appropriate safety standards for an aircraft , aircraft engine , or propeller because of a novel or unusual design feature of the aircraft , aircraft engine or propeller , he prescribes special conditions and amendments thereto for the product. The special conditions are issued in accordance with Part 11 of this chapter and contain such safety standards for the aircraft , aircraft engine or propeller as the FAA finds necessary to establish a level of safety equivalent to that established in the regulations.

[Amdt. 21-19, 32 FR 17851 , Dec. 13, 1967, as amended by Amdt. 21-51, 45 FR 60170 , Sept. 11, 1980]

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§ 21.17 Designation of applicable regulations.

- (a) Except as provided in §§ 25.2 , 27.2 , and 29.2 of this subchapter, and in parts 26, 34, 36, and 38 of this subchapter, an applicant for a type certificate must show that the aircraft , aircraft engine , or propeller concerned meets—

(1) The applicable requirements of this subchapter that are effective on the date of application for that certificate unless—

(i) Otherwise specified by the FAA ; or

(ii) Compliance with later effective amendments is elected or required under this section; and

(2) Any special conditions prescribed by the FAA .

(b) For special classes of aircraft , including the engines and propellers installed thereon (e.g., gliders, airships, and other nonconventional aircraft), for which airworthiness standards have not been issued under this subchapter, the applicable requirements will be the portions of those other airworthiness requirements contained in Parts 23, 25, 27, 29, 31, 33, and 35 found by the FAA to be appropriate for the aircraft and applicable to a specific type design, or such airworthiness criteria as the FAA may find provide an equivalent level of safety to those parts.

(c) An application for type certification of a transport category aircraft is effective for 5 years and an application for any other type certificate is effective for 3 years, unless an applicant shows at the time of application that his product requires a longer period of time for design, development, and testing, and the FAA approves a longer period.

(d) In a case where a type certificate has not been issued, or it is clear that a type certificate will not be issued, within the time limit established under paragraph (c) of this section, the applicant may—

(1) File a new application for a type certificate and comply with all the provisions of paragraph (a) of this section applicable to an original application; or

(2) File for an extension of the original application and comply with the applicable airworthiness requirements of this subchapter that were effective on a date, to be selected by the applicant, not earlier than the date which precedes the date of issue of the type certificate by the time limit established under paragraph (c) of this section for the original application.

(e) If an applicant elects to comply with an amendment to this subchapter that is effective after the filing of the application for a type certificate, he must also comply with any other amendment that the FAA finds is directly related.

(f) For primary category aircraft , the requirements are:

(1) The applicable airworthiness requirements contained in parts 23, 27, 31, 33, and 35 of this subchapter, or such other airworthiness criteria as the FAA may find appropriate and applicable to the specific design and intended use and provide a level of safety acceptable to the FAA .

(2) The noise standards of part 36 applicable to primary category aircraft .

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§ 21.19 Changes requiring a new type certificate.

Each person who proposes to change a product must apply for a new type certificate if the FAA finds that the proposed change in design, power, thrust, or weight is so extensive that a substantially complete investigation of compliance with the applicable regulations is required.

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§ 21.20 Compliance with applicable requirements.

The applicant for a type certificate, including an amended or supplemental type certificate, must—

- (a) Show compliance with all applicable requirements and must provide the FAA the means by which such compliance has been shown; and
- (b) Provide a statement certifying that the applicant has complied with the applicable requirements.

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§ 21.21 Issue of type certificate: normal, utility, acrobatic, commuter, and transport category aircraft ; manned free balloons; special classes of aircraft ; aircraft engines; propellers.

An applicant is entitled to a type certificate for an aircraft in the normal, utility, acrobatic, commuter, or transport category, or for a manned free balloon , special class of aircraft , or an aircraft engine or propeller , if—

(a) The product qualifies under § 21.27 ; or

(b) The applicant submits the type design, test reports, and computations necessary to show that the product to be certificated meets the applicable airworthiness, aircraft noise, fuel venting, exhaust emission, and fuel efficiency requirements of this subchapter and any special conditions prescribed by the FAA , and the FAA finds—

(1) Upon examination of the type design, and after completing all tests and inspections, that the type design and the product meet the applicable noise, fuel venting, emissions, and fuel efficiency requirements of this subchapter, and further finds that they meet the applicable airworthiness requirements of this subchapter or that any airworthiness provisions not complied with are compensated for by factors that provide an equivalent level of safety; and

(2) For an aircraft , that no feature or characteristic makes it unsafe for the category in which certification is requested.

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§ 21.24 Issuance of type certificate: primary category aircraft .

(a) The applicant is entitled to a type certificate for an aircraft in the primary category if—

(1) The aircraft—

(i) Is unpowered; is an airplane powered by a single, naturally aspirated engine with a 61-knot or less V so stall speed as determined under part 23 of this chapter; or is a rotorcraft with a 6-pound per square foot main rotor disc loading limitation, under sea level standard day conditions;

(ii) Weighs not more than 2,700 pounds; or, for seaplanes, not more than 3,375 pounds;

(iii) Has a maximum seating capacity of not more than four persons, including the pilot; and

(iv) Has an unpressurized cabin.

(2) The applicant has submitted—

(i) Except as provided by paragraph (c) of this section, a statement, in a form and manner acceptable to the FAA , certifying that: the applicant has completed the engineering analysis necessary to demonstrate compliance with the applicable airworthiness requirements; the applicant has conducted appropriate flight, structural, propulsion, and systems tests necessary to show that the aircraft , its components, and its equipment are reliable and function properly; the type design complies with the airworthiness standards and noise requirements established for the

aircraft under § 21.17(f); and no feature or characteristic makes it unsafe for its intended use;

(ii) The flight manual required by § 21.5(b) , including any information required to be furnished by the applicable airworthiness standards;

(iii) Instructions for continued airworthiness in accordance with § 21.50(b) ; and

(iv) A report that: summarizes how compliance with each provision of the type certification basis was determined; lists the specific documents in which the type certification data information is provided; lists all necessary drawings and documents used to define the type design; and lists all the engineering reports on tests and computations that the applicant must retain and make available under § 21.49 to substantiate compliance with the applicable airworthiness standards.

(3) The FAA finds that—

(i) The aircraft complies with those applicable airworthiness requirements approved under § 21.17(f) of this part; and

(ii) The aircraft has no feature or characteristic that makes it unsafe for its intended use.

(b) An applicant may include a special inspection and preventive maintenance program as part of the aircraft 's type design or supplemental type design.

(c) For aircraft manufactured outside of the United States in a country with which the United States has a bilateral airworthiness agreement for the acceptance of these aircraft , and from which the aircraft is to be imported into the United States—

(1) The statement required by paragraph (a)(2)(i) of this section must be made by the civil airworthiness authority of the exporting country; and

(2) The required manuals, placards, listings, instrument markings, and documents required by paragraphs (a) and (b) of this section must be submitted in English.

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§ 21.25 Issue of type certificate: restricted category aircraft .

(a) An applicant is entitled to a type certificate for an aircraft in the restricted category for special purpose operations if the applicant shows compliance with the applicable noise requirements of part 36 of this chapter, and if the applicant shows that no feature or characteristic of the aircraft makes it unsafe when it is operated under the limitations prescribed for its intended use, and that

aircraft—

(1) Meets the airworthiness requirements of an aircraft category, other than primary category or light-sport category, except those requirements that the FAA finds inappropriate for the special purpose operation for which the aircraft is to be used; or

(2) Is of a type that—

(i) Has been manufactured in accordance with the requirements of, and accepted for use by, the U.S. Armed Forces ;

(ii) Has a service history with the U.S. Armed Forces acceptable to the FAA ; and

(iii) Has been found capable by the FAA of performing, or has been modified to perform, the special purpose operation for which the aircraft is to be used.

(b) Restricted category aircraft can be approved for:

(1) Agricultural use, for one or more of the following special purpose operations, including—

(i) Spraying, dusting, and seeding;

(ii) Livestock and predatory animal control;

(iii) Insect control;

(iv) Dust control; or

(v) Fruit drying and frost control.

(2) Forest and wildlife conservation, for one or more of the following special purpose operations, including—

(i) Aerial dispensing of firefighting materials;

(ii) Fish spotting;

(iii) Wild animal survey; or

(iv) Oil spill response.

(3) Aerial surveying, for one or more of the following special purpose operations, including—

(i) Aerial imaging and mapping;

(ii) Oil, gas, and mineral exploration;

(iii) Atmospheric survey and research;

(iv) Geophysical and electromagnetic survey;

(v) Oceanic survey; or

(vi) Airborne measurement of navigation signals.

(4) Patrolling, for one or more of the following special purpose operations, including—

(i) Pipelines;

(ii) Powerlines;

(iii) Data transmission lines and towers;

(iv) Railroads;

(v) Canals; or

(vi) Harbors.

(5) Weather control, including the special purpose operation of cloud seeding.

(6) Aerial advertising, for one or more of the following special purpose operations, including—

(i) Skywriting;

(ii) Banner towing;

(iii) Displaying airborne signs; or

(iv) Public address systems.

(7) Other special purpose operations, including—

(i) Rotorcraft external-load operations conducted under part 133 of this chapter;

(ii) Carriage of cargo incidental to the owner's or operator's business;

(iii) Target towing;

(iv) Search and rescue operations;

(v) Glider towing;

(vi) Alaskan fuel hauling;

(vii) Alaskan fixed-wing external load operations;

(viii) Space vehicle launch; or

(ix) Any other special purpose operation specified by the FAA .

[Docket No. FAA -2023-1377, Amdt. No. 21-109, 90 FR 35204 , July 24, 2025]

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§ 21.27 Issue of type certificate: surplus aircraft of the Armed Forces .

(a) Except as provided in paragraph (b) of this section an applicant is entitled to a type certificate for an aircraft in the normal, utility, acrobatic, commuter, or transport category that was designed and constructed in the United States , accepted for operational use, and declared surplus by, an Armed Force of the United States , and that is shown to comply with the applicable certification requirements in paragraph (f) of this section.

(b) An applicant is entitled to a type certificate for a surplus aircraft of the Armed Forces of the United States that is a counterpart of a previously type certificated civil aircraft , if he shows compliance with the regulations governing the original civil aircraft type certificate.

(c) Aircraft engines, propellers, and their related accessories installed in surplus Armed Forces aircraft , for which a type certificate is sought under this section, will be approved for use on those aircraft if the applicant shows that on the basis of the previous military qualifications, acceptance, and service record, the product provides substantially the same level of airworthiness as would be provided if the engines or propellers were type certificated under Part 33 or 35 of this subchapter.

(d) The FAA may relieve an applicant from strict compliance with a specific provision of the applicable requirements in paragraph (f) of this section, if the FAA finds that the method of compliance proposed by the applicant provides substantially the same level of airworthiness and that strict compliance with those regulations would impose a severe burden on the applicant. The FAA may use experience that was satisfactory to an Armed Force of the United States in making such a determination.

(e) The FAA may require an applicant to comply with special conditions and later requirements than those in paragraphs (c) and (f) of this section, if the FAA finds that compliance with the listed regulations would not ensure an adequate level of airworthiness for the aircraft .

(f) Except as provided in paragraphs (b) through (e) of this section, an applicant for a type certificate under this section must comply with the appropriate regulations listed in the following table:

Type of aircraft

Date accepted for operational use by the Armed Forces

of the United States

Regulations that apply

1

Small reciprocating-engine powered airplanes

Before May 16, 1956

After May 15, 1956

CAR Part 3, as effective May 15, 1956.

CAR Part 3, or 14 CFR Part 23 .

Small turbine engine-powered airplanes

Before Oct. 2, 1959

After Oct. 1, 1959

CAR Part 3, as effective Oct. 1, 1959.

CAR Part 3 or 14 CFR Part 23 .

Commuter category airplanes

After (Feb. 17, 1987)

FAR Part 23 as of (Feb. 17, 1987).

Large reciprocating-engine powered airplanes

Before Aug. 26, 1955

After Aug. 25, 1955

CAR Part 4b, as effective Aug. 25, 1955.

CAR Part 4b or 14 CFR Part 25 .

Large turbine engine-powered airplanes

Before Oct. 2, 1959

After Oct. 1, 1959

CAR Part 4b, as effective Oct. 1, 1959.

CAR Part 4b or 14 CFR Part 25 .

Rotorcraft with maximum certificated takeoff weight of:

6,000 pounds or less

Before Oct. 2, 1959

After Oct. 1, 1959

CAR Part 6, as effective Oct. 1, 1959.

CAR Part 6, or 14 CFR Part 27 .

Over 6,000 pounds

Before Oct. 2, 1959

After Oct. 1, 1959

CAR Part 7, as effective Oct. 1, 1959.

CAR Part 7, or 14 CFR Part 29 .

1 Where no specific date is listed, the applicable regulations are those in effect on the date that the first aircraft of the particular model was accepted for operational use by the Armed Forces.

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§ 21.29 Issue of type certificate: import products.

(a) The FAA may issue a type certificate for a product that is manufactured in a foreign country or jurisdiction with which the United States has an agreement for the acceptance of these products for export and import and that is to be imported into the United States if—

(1) The applicable State of Design certifies that the product has been examined, tested, and found to meet—

(i) The applicable aircraft noise, fuel venting, exhaust emissions, and fuel efficiency requirements of this subchapter as designated in § 21.17 , or the applicable aircraft noise, fuel venting, exhaust emissions, and fuel efficiency requirements of the State of Design, and any other requirements the FAA may prescribe to provide noise, fuel venting, exhaust emission, and fuel efficiency levels no greater than those provided by the applicable aircraft noise, fuel venting, exhaust emissions, and fuel efficiency requirements of this subchapter as designated in § 21.17 ; and

(ii) The applicable airworthiness requirements of this subchapter as designated in § 21.17 , or the applicable airworthiness requirements of the State of Design and any other requirements the FAA may prescribe to provide a level of safety equivalent to that provided by the applicable airworthiness requirements of this subchapter as designated in § 21.17 ;

(2) The applicant has provided technical data to show the product meets the requirements of paragraph (a)(1) of this section; and

(3) The manuals, placards, listings, and instrument markings required by the applicable airworthiness (and noise, where applicable) requirements are presented in the English language.

(b) A product type certificated under this section is determined to be compliant with the fuel venting and exhaust emission standards of part 34 of this subchapter, the noise standards of part 36 of this subchapter, and the fuel efficiency requirements of part 38 of this subchapter. Compliance with parts 34, 36, and 38 of this subchapter is certified under paragraph (a)(1)(i) of this section, and the applicable airworthiness standards of this subchapter, or an equivalent level of safety, with which compliance is certified under paragraph (a)(1)(ii) of this section.

[Amdt. 21-92, 74 FR 53386 , Oct. 16, 2009, as amended by Amdt. No. 21-107, 89 FR 12653 , Feb. 16, 2024]

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§ 21.31 Type design.

The type design consists of—

- (a) The drawings and specifications, and a listing of those drawings and specifications, necessary to define the configuration and the design features of the product shown to comply with the requirements of that part of this subchapter applicable to the product;
- (b) Information on dimensions, materials, and processes necessary to define the structural strength of the product;
- (c) The Airworthiness Limitations section of the Instructions for Continued Airworthiness as required by parts 23, 25, 26, 27, 29, 31, 33 and 35 of this subchapter, or as otherwise required by the FAA ; and as specified in the applicable airworthiness criteria for special classes of aircraft defined in § 21.17(b) ; and
- (d) For primary category aircraft , if desired, a special inspection and preventive maintenance program designed to be accomplished by an appropriately rated and trained pilot-owner.
- (e) Any other data necessary to allow, by comparison, the determination of the airworthiness, noise characteristics, fuel efficiency, fuel venting, and exhaust emissions (where applicable) of later products of the same type.

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§ 21.33 Inspection and tests.

- (a) Each applicant must allow the FAA to make any inspection and any flight and ground test necessary to determine compliance with the applicable requirements of this subchapter. However, unless otherwise authorized by the FAA—
 - (1) No aircraft , aircraft engine , propeller , or part thereof may be presented to the FAA for test unless compliance with paragraphs (b)(2) through (b)(4) of this section has been shown for that aircraft , aircraft engine , propeller , or part thereof; and
 - (2) No change may be made to an aircraft , aircraft engine , propeller , or part thereof between the time that compliance with paragraphs (b)(2) through (b)(4) of this section is shown for that aircraft , aircraft engine , propeller , or part thereof and the time that it is presented to the FAA for test.
- (b) Each applicant must make all inspections and tests necessary to determine—

- (1) Compliance with the applicable airworthiness, aircraft noise, fuel venting, and exhaust emission requirements;
- (2) That materials and products conform to the specifications in the type design;
- (3) That parts of the products conform to the drawings in the type design; and
- (4) That the manufacturing processes, construction and assembly conform to those specified in the type design.

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§ 21.35 Flight tests.

(a) Each applicant for an aircraft type certificate (other than under §§ 21.24 through 21.29) must make the tests listed in paragraph (b) of this section. Before making the tests the applicant must show—

- (1) Compliance with the applicable structural requirements of this subchapter;
- (2) Completion of necessary ground inspections and tests;
- (3) That the aircraft conforms with the type design; and
- (4) That the FAA received a flight test report from the applicant (signed, in the case of aircraft to be certificated under Part 25 [New] of this chapter, by the applicant's test pilot) containing the results of his tests.

(b) Upon showing compliance with paragraph (a) of this section, the applicant must make all flight tests that the FAA finds necessary—

- (1) To determine compliance with the applicable requirements of this subchapter; and
 - (2) For aircraft to be certificated under this subchapter, except gliders and low-speed, certification level 1 or 2 airplanes, as defined in part 23 of this chapter, to determine whether there is reasonable assurance that the aircraft, its components, and its equipment are reliable and function properly.
- (c) Each applicant must, if practicable, make the tests prescribed in paragraph (b)(2) of this section upon the aircraft that was used to show compliance with—

(1) Paragraph (b)(1) of this section; and

(2) For rotorcraft , the rotor drive endurance tests prescribed in § 27.923 or § 29.923 of this chapter, as applicable.

(d) Each applicant must show for each flight test (except in a glider or a manned free balloon) that adequate provision is made for the flight test crew for emergency egress and the use of parachutes.

(e) Except in gliders and manned free balloons, an applicant must discontinue flight tests under this section until he shows that corrective action has been taken, whenever—

(1) The applicant's test pilot is unable or unwilling to make any of the required flight tests; or

(2) Items of noncompliance with requirements are found that may make additional test data meaningless or that would make further testing unduly hazardous.

(f) The flight tests prescribed in paragraph (b)(2) of this section must include—

(1) For aircraft incorporating turbine engines of a type not previously used in a type certificated aircraft , at least 300 hours of operation with a full complement of engines that conform to a type certificate; and

(2) For all other aircraft , at least 150 hours of operation.

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§ 21.37 Flight test pilot.

Each applicant for a normal, utility, acrobatic, commuter, or transport category aircraft type certificate must provide a person holding an appropriate pilot certificate to make the flight tests required by this part.

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§ 21.41 Type certificate.

Each type certificate is considered to include the type design, the operating limitations, the certificate data sheet, the applicable regulations of this subchapter with which the FAA records compliance, and any other conditions or limitations prescribed for the product in this subchapter.

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§ 21.43 Location of manufacturing facilities.

Except as provided in § 21.29 , the FAA does not issue a type certificate if the manufacturing facilities for the product are located outside of the United States , unless the FAA finds that the location of the manufacturer's facilities places no undue burden on the FAA in administering applicable airworthiness requirements.

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§ 21.47 Transferability.

(a) A holder of a type certificate may transfer it or make it available to other persons by licensing agreements.

(b) For a type certificate transfer in which the State of Design will remain the same, each transferor must, before such a transfer, notify the FAA in writing. This notification must include the applicable type certificate number, the name and address of the transferee, and the anticipated date of the transfer.

(c) For a type certificate transfer in which the State of Design is changing, a type certificate may only be transferred to or from a person subject to the authority of another State of Design if the United States has an agreement with that State of Design for the acceptance of the affected

product for export and import. Each transferor must notify the FAA before such a transfer in a form and manner acceptable to the FAA . This notification must include the applicable type certificate number; the name, address, and country of residence of the transferee; and the anticipated date of the transfer.

(d) Before executing or terminating a licensing agreement that makes a type certificate available to another person , the type certificate holder must notify the FAA in writing. This notification must include the type certificate number addressed by the licensing agreement, the name and address of the licensee, the extent of authority granted the licensee, and the anticipated date of the agreement.

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§ 21.49 Availability.

The holder of a type certificate must make the certificate available for examination upon the request of the FAA or the National Transportation Safety Board .

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§ 21.50 Instructions for continued airworthiness and manufacturer's maintenance manuals having airworthiness limitations sections.

(a) The holder of a type certificate for a rotorcraft for which a Rotorcraft Maintenance Manual containing an “Airworthiness Limitations” section has been issued under § 27.1529 (a)(2) or § 29.1529 (a)(2) of this chapter, and who obtains approval of changes to any replacement time, inspection interval, or related procedure in that section of the manual, must make those changes available upon request to any operator of the same type of rotorcraft .

(b) The holder of a design approval, including either a type certificate or supplemental type certificate for an aircraft , aircraft engine , or propeller for which application was made after January 28, 1981, must furnish at least one set of complete Instructions for Continued Airworthiness to the owner of each type aircraft , aircraft engine , or propeller upon its delivery, or

upon issuance of the first standard airworthiness certificate for the affected aircraft , whichever occurs later. The Instructions for Continued Airworthiness must be prepared in accordance with §§ 23.1529 , 25.1529, 25.1729, 27.1529, 29.1529, 31.82, 33.4, 35.4, or part 26 of this subchapter, or as specified in the applicable airworthiness criteria for special classes of aircraft defined in § 21.17(b), as applicable. If the holder of a design approval chooses to designate parts as commercial, it must include in the Instructions for Continued Airworthiness a list of commercial parts submitted in accordance with the provisions of paragraph (c) of this section. Thereafter, the holder of a design approval must make those instructions available to any other person required by this chapter to comply with any of the terms of those instructions. In addition, changes to the Instructions for Continued Airworthiness shall be made available to any person required by this chapter to comply with any of those instructions.

(c) To designate commercial parts, the holder of a design approval, in a manner acceptable to the FAA , must submit:

(1) A Commercial Parts List;

(2) Data for each part on the List showing that:

(i) The failure of the commercial part , as installed in the product, would not degrade the level of safety of the product; and

(ii) The part is produced only under the commercial part manufacturer's specification and marked only with the commercial part manufacturer's markings; and

(3) Any other data necessary for the FAA to approve the List.

[Amdt. 21-23, 33 FR 14105 , Sept. 18, 1968, as amended by Amdt. 21-51, 45 FR 60170 , Sept. 11, 1980; Amdt. 21-60, 52 FR 8042 , Mar. 13, 1987; Amdt. 21-90, 72 FR 63404 , Nov. 8, 2007; Amdt. 21-92, 74 FR 53386 , Oct. 16, 2009; Doc. No. FAA -2015-1621, Amdt. 21-100, 81 FR 96689 , Dec. 30, 2016]

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§ 21.51 Duration.

A type certificate is effective until surrendered, suspended, revoked, or a termination date is otherwise established by the FAA .

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§ 21.53 Statement of conformity.

(a) Each applicant must provide, in a form and manner acceptable to the FAA , a statement that each aircraft engine or propeller presented for type certification conforms to its type design.

(b) Each applicant must submit a statement of conformity to the FAA for each aircraft or part thereof presented to the FAA for tests. This statement of conformity must include a statement that the applicant has complied with § 21.33(a) (unless otherwise authorized under that paragraph).

[Amdt. 21-17, 32 FR 14926 , Oct. 28, 1967, as amended by Amdt. 21-92, 74 FR 53386 , Oct. 16, 2009]

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§ 21.55 Responsibilities of type certificate holders who license the type certificate.

A type certificate holder who allows a person to use the type certificate to manufacture a new aircraft , aircraft engine , or propeller must meet the applicable requirements of part 5 of this chapter and provide that person with a written licensing agreement acceptable to the FAA .

[Docket No. FAA -2021-0419, Amdt. No. 21-108, 89 FR 33108 , Apr. 26, 2024]

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§ 21.71 Applicability.

This subpart prescribes—

- (a) Procedural requirements for the issue of provisional type certificates, amendments to provisional type certificates, and provisional amendments to type certificates; and
- (b) Rules governing the holders of those certificates.

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§ 21.73 Eligibility.

- (a) Any manufacturer of aircraft manufactured within the United States who is a United States citizen may apply for Class I or Class II provisional type certificates, for amendments to provisional type certificates held by him, and for provisional amendments to type certificates held by him.
- (b) Any manufacturer of aircraft in a State of Manufacture subject to the provisions of an agreement with the United States for the acceptance of those aircraft for export and import may apply for a Class II provisional type certificate, for amendments to provisional type certificates held by him, and for provisional amendments to type certificates held by him.
- (c) An aircraft engine manufacturer who is a United States citizen and who has altered a type certificated aircraft by installing different type certificated aircraft engines manufactured by him within the United States may apply for a Class I provisional type certificate for the aircraft , and for amendments to Class I provisional type certificates held by him, if the basic aircraft , before alteration, was type certificated in the normal, utility, acrobatic, commuter, or transport category.

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§ 21.75 Application.

Each applicant for a provisional type certificate, for an amendment thereto, or for a provisional amendment to a type certificate must apply to the FAA and provide the information required by this subpart.

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§ 21.77 Duration.

- (a) Unless sooner surrendered, superseded, revoked, or otherwise terminated, provisional type certificates and amendments thereto are effective for the periods specified in this section.
- (b) A Class I provisional type certificate is effective for 24 months after the date of issue.
- (c) A Class II provisional type certificate is effective for twelve months after the date of issue.
- (d) An amendment to a Class I or Class II provisional type certificate is effective for the duration of the amended certificate.
- (e) A provisional amendment to a type certificate is effective for six months after its approval or until the amendment of the type certificate is approved, whichever is first.

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§ 21.79 Transferability.

Provisional type certificates are not transferable.

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§ 21.81 Requirements for issue and amendment of Class I provisional type certificates.

(a) An applicant is entitled to the issue or amendment of a Class I provisional type certificate if he shows compliance with this section and the FAA finds that there is no feature, characteristic, or condition that would make the aircraft unsafe when operated in accordance with the limitations established in paragraph (e) of this section and in § 91.317 of this chapter.

(b) The applicant must apply for the issue of a type or supplemental type certificate for the aircraft .

(c) The applicant must certify that—

(1) The aircraft has been designed and constructed in accordance with the airworthiness requirements applicable to the issue of the type or supplemental type certificate applied for;

(2) The aircraft substantially meets the applicable flight characteristic requirements for the type or supplemental type certificate applied for; and

(3) The aircraft can be operated safely under the appropriate operating limitations specified in paragraph (a) of this section.

(d) The applicant must submit a report showing that the aircraft had been flown in all maneuvers necessary to show compliance with the flight requirements for the issue of the type or supplemental type certificate applied for, and to establish that the aircraft can be operated safely in accordance with the limitations contained in this subchapter.

(e) The applicant must establish all limitations required for the issue of the type or supplemental type certificate applied for, including limitations on weights, speeds, flight maneuvers, loading, and operation of controls and equipment unless, for each limitation not so established, appropriate operating restrictions are established for the aircraft .

(f) The applicant must establish an inspection and maintenance program for the continued airworthiness of the aircraft .

(g) The applicant must show that a prototype aircraft has been flown for at least 50 hours under an experimental certificate issued under §§ 21.191 through 21.195, or under the auspices of an Armed Force of the United States . However, in the case of an amendment to a provisional type certificate, the FAA may reduce the number of required flight hours.

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§ 21.83 Requirements for issue and amendment of Class II provisional type certificates.

- (a) An applicant who manufactures aircraft within the United States is entitled to the issue or amendment of a Class II provisional type certificate if he shows compliance with this section and the FAA finds that there is no feature, characteristic, or condition that would make the aircraft unsafe when operated in accordance with the limitations in paragraph (h) of this section, and §§ 91.317 and 121.207 of this chapter.
- (b) An applicant who manufactures aircraft in a country with which the United States has an agreement for the acceptance of those aircraft for export and import is entitled to the issue or amendment of a Class II provisional type certificate if the country in which the aircraft was manufactured certifies that the applicant has shown compliance with this section, that the aircraft meets the requirements of paragraph (f) of this section and that there is no feature, characteristic, or condition that would make the aircraft unsafe when operated in accordance with the limitations in paragraph (h) of this section and §§ 91.317 and 121.207 of this chapter.
- (c) The applicant must apply for a type certificate, in the transport category, for the aircraft .
- (d) The applicant must hold a U.S. type certificate for at least one other aircraft in the same transport category as the subject aircraft .
- (e) The FAA 's official flight test program or the flight test program conducted by the authorities of the country in which the aircraft was manufactured, with respect to the issue of a type certificate for that aircraft , must be in progress.
- (f) The applicant or, in the case of a foreign manufactured aircraft , the country in which the aircraft was manufactured, must certify that—
 - (1) The aircraft has been designed and constructed in accordance with the airworthiness requirements applicable to the issue of the type certificate applied for;
 - (2) The aircraft substantially complies with the applicable flight characteristic requirements for the type certificate applied for; and
 - (3) The aircraft can be operated safely under the appropriate operating limitations in this subchapter.
- (g) The applicant must submit a report showing that the aircraft has been flown in all maneuvers necessary to show compliance with the flight requirements for the issue of the type certificate and to establish that the aircraft can be operated safely in accordance with the limitations in this subchapter.

(h) The applicant must prepare a provisional aircraft flight manual containing all limitations required for the issue of the type certificate applied for, including limitations on weights, speeds, flight maneuvers, loading, and operation of controls and equipment unless, for each limitation not so established, appropriate operating restrictions are established for the aircraft .

(i) The applicant must establish an inspection and maintenance program for the continued airworthiness of the aircraft .

(j) The applicant must show that a prototype aircraft has been flown for at least 100 hours. In the case of an amendment to a provisional type certificate, the FAA may reduce the number of required flight hours.

[Amdt. 21-12, 31 FR 13386 , Oct. 15, 1966, as amended by Amdt. 21-66, 54 FR 34329 , Aug. 18, 1989]

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§ 21.91 Applicability.

This subpart prescribes procedural requirements for the approval of changes to type certificates.

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§ 21.93 Classification of changes in type design.

(a) In addition to changes in type design specified in paragraph (b) of this section, changes in type design are classified as minor and major. A “minor change” is one that has no appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product. All other changes are “major changes” (except as provided in paragraph (b) of this section).

(b) For the purpose of complying with Part 36 of this chapter, and except as provided in paragraphs (b)(2), (b)(3), and (b)(4) of this section, any voluntary change in the type design of an aircraft that may increase the noise levels of that aircraft is an “acoustical change” (in addition to being a minor or major change as classified in paragraph (a) of this section) for the following aircraft:

(1) Transport category large airplanes.

(2) Jet (Turbojet powered) airplanes (regardless of category). For airplanes to which this paragraph applies, “acoustical changes” do not include changes in type design that are limited to one of the following—

(i) Gear down flight with one or more retractable landing gear down during the entire flight, or

(ii) Spare engine and nacelle carriage external to the skin of the airplane (and return of the pylon or other external mount), or

(iii) Time-limited engine and/or nacelle changes, where the change in type design specifies that the airplane may not be operated for a period of more than 90 days unless compliance with the applicable acoustical change provisions of Part 36 of this chapter is shown for that change in type design.

(3) Propeller driven commuter category and small airplanes in the primary, normal, utility, acrobatic, transport, and restricted categories, except for airplanes that are:

(i) Designated for “agricultural aircraft operations” (as defined in § 137.3 of this chapter, effective January 1, 1966) to which § 36.1583 of this chapter does not apply, or

(ii) Designated for dispensing fire fighting materials to which § 36.1583 of this chapter does not apply, or

(iii) U.S. registered, and that had flight time prior to January 1, 1955 or

(iv) Land configured aircraft reconfigured with floats or skis. This reconfiguration does not permit further exception from the requirements of this section upon any acoustical change not enumerated in § 21.93(b) .

(4) Helicopters except:

(i) Those helicopters that are designated exclusively:

(A) For “agricultural aircraft operations”, as defined in § 137.3 of this chapter, as effective on January 1, 1966;

(B) For dispensing fire fighting materials; or

(C) For carrying external loads, as defined in § 133.1(b) of this chapter, as effective on December 20, 1976.

(ii) Those helicopters modified by installation or removal of external equipment. For purposes of this paragraph, “external equipment” means any instrument , mechanism, part, apparatus, appurtenance, or accessory that is attached to, or extends from, the helicopter exterior but is not used nor is intended to be used in operating or controlling a helicopter in flight and is not part of an airframe or engine. An “acoustical change” does not include:

(A) Addition or removal of external equipment;

(B) Changes in the airframe made to accommodate the addition or removal of external equipment, to provide for an external load attaching means, to facilitate the use of external equipment or external loads , or to facilitate the safe operation of the helicopter with external equipment mounted to, or external loads carried by, the helicopter ;

(C) Reconfiguration of the helicopter by the addition or removal of floats and skis;

(D) Flight with one or more doors and/or windows removed or in an open position; or

(E) Any changes in the operational limitations placed on the helicopter as a consequence of the addition or removal of external equipment, floats, and skis, or flight operations with doors and/or windows removed or in an open position.

(5) Tiltrotors.

(c) For purposes of complying with part 34 of this chapter, any voluntary change in the type design of the airplane or engine which may increase fuel venting or exhaust emissions is an “emissions change.”

(d) For the purpose of maintaining compliance with part 38 of this chapter, any voluntary change in the type design of an airplane that may increase the fuel efficiency metric value or the MTOM of that airplane is a “fuel efficiency change”, in addition to being a minor or major change as classified in paragraph (a) of this section.

[Amdt. 21-27, 34 FR 18363 , Nov. 18, 1969]

Editorial Note:

For Federal Register citations affecting § 21.93 , see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.govinfo.gov.

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§ 21.95 Approval of minor changes in type design.

Minor changes in a type design may be approved under a method acceptable to the FAA before submitting to the FAA any substantiating or descriptive data.

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§ 21.97 Approval of major changes in type design.

(a) An applicant for approval of a major change in type design must—

- (1) Provide substantiating data and necessary descriptive data for inclusion in the type design;
- (2) Show that the change and areas affected by the change comply with the applicable requirements of this subchapter, and provide the FAA the means by which such compliance has been shown; and
- (3) Provide a statement certifying that the applicant has complied with the applicable requirements.

(b) Approval of a major change in the type design of an aircraft engine is limited to the specific engine configuration upon which the change is made unless the applicant identifies in the necessary descriptive data for inclusion in the type design the other configurations of the same engine type for which approval is requested and shows that the change is compatible with the other configurations.

[Amdt. 21-40, 39 FR 35459 , Oct. 1, 1974, as amended by Amdt. 21-92, 74 FR 53387 , Oct. 16, 2009; Amdt. 21-96, 77 FR 71695 , Dec. 4, 2012]

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§ 21.99 Required design changes.

(a) When an Airworthiness Directive is issued under Part 39 the holder of the type certificate for the product concerned must—

(1) If the FAA finds that design changes are necessary to correct the unsafe condition of the product, and upon his request, submit appropriate design changes for approval; and

(2) Upon approval of the design changes, make available the descriptive data covering the changes to all operators of products previously certificated under the type certificate.

(b) In a case where there are no current unsafe conditions, but the FAA or the holder of the type certificate finds through service experience that changes in type design will contribute to the safety of the product, the holder of the type certificate may submit appropriate design changes for approval. Upon approval of the changes, the manufacturer must make information on the design changes available to all operators of the same type of product.

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§ 21.101 Designation of applicable regulations.

(a) An applicant for a change to a type certificate must show that the change and areas affected by the change comply with the airworthiness requirements applicable to the category of the product in effect on the date of the application for the change and with parts 34, 36, and 38 of this chapter. Exceptions are detailed in paragraphs (b) and (c) of this section.

(b) Except as provided in paragraph (g) of this section, if paragraphs (b)(1), (2), or (3) of this section apply, an applicant may show that the change and areas affected by the change comply with an earlier amendment of a regulation required by paragraph (a) of this section, and of any other regulation the FAA finds is directly related. However, the earlier amended regulation may not precede either the corresponding regulation included by reference in the type certificate, or any regulation in §§ 25.2 , 27.2 , or 29.2 of this chapter that is related to the change. The applicant may show compliance with an earlier amendment of a regulation for any of the following:

(1) A change that the FAA finds not to be significant. In determining whether a specific change is significant, the FAA considers the change in context with all previous relevant design changes and all related revisions to the applicable regulations incorporated in the type certificate for the product. Changes that meet one of the following criteria are automatically considered significant:

(i) The general configuration or the principles of construction are not retained.

(ii) The assumptions used for certification of the product to be changed do not remain valid.

(2) Each area, system, component, equipment, or appliance that the FAA finds is not affected by the change.

(3) Each area, system, component, equipment, or appliance that is affected by the change, for which the FAA finds that compliance with a regulation described in paragraph (a) of this section would not contribute materially to the level of safety of the product or would be impractical.

(c) An applicant for a change to an aircraft (other than a rotorcraft) of 6,000 pounds or less maximum weight, to a non-turbine rotorcraft of 3,000 pounds or less maximum weight, to a level 1 low-speed airplane, or to a level 2 low-speed airplane may show that the change and areas affected by the change comply with the regulations included in the type certificate. However, if the FAA finds that the change is significant in an area, the FAA may designate compliance with an amendment to the regulation incorporated by reference in the type certificate that applies to the change and any regulation that the FAA finds is directly related, unless the FAA also finds that compliance with that amendment or regulation would not contribute materially to the level of safety of the product or would be impractical.

(d) If the FAA finds that the regulations in effect on the date of the application for the change do not provide adequate standards with respect to the proposed change because of a novel or unusual design feature, the applicant must also comply with special conditions, and amendments to those special conditions, prescribed under the provisions of § 21.16, to provide a level of safety equal to that established by the regulations in effect on the date of the application for the change.

(e) An application for a change to a type certificate for a transport category aircraft is effective for 5 years, and an application for a change to any other type certificate is effective for 3 years. If the change has not been approved, or if it is clear that it will not be approved under the time limit established under this paragraph, the applicant may do either of the following:

(1) File a new application for a change to the type certificate and comply with all the provisions of paragraph (a) of this section applicable to an original application for a change.

(2) File for an extension of the original application and comply with the provisions of paragraph (a) of this section. The applicant must then select a new application date. The new application date may not precede the date the change is approved by more than the time period established under this paragraph (e).

(f) For aircraft certificated under §§ 21.17(b), 21.24, 21.25, and 21.27 the airworthiness requirements applicable to the category of the product in effect on the date of the application for the change include each airworthiness requirement that the FAA finds to be appropriate for the type certification of the aircraft in accordance with those sections.

(g) Notwithstanding paragraph (b) of this section, for transport category airplanes, the applicant must show compliance with each applicable provision of part 26 of this chapter, unless the applicant has elected or was required to comply with a corresponding amendment to part 25 of this chapter that was issued on or after the date of the applicable part 26 provision.

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§ 21.111 Applicability.

This subpart prescribes procedural requirements for the issue of supplemental type certificates.

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§ 21.115 Applicable requirements.

(a) Each applicant for a supplemental type certificate must show that the altered product meets applicable requirements specified in § 21.101 and—

(1) In the case of an acoustical change described in § 21.93(b) , show compliance with the applicable noise requirements of part 36 of this chapter;

(2) In the case of an emissions change described in § 21.93(c) , show compliance with the applicable fuel venting and exhaust emissions requirements of part 34 of this chapter; and

(3) In the case of a fuel efficiency change described in § 21.93(d) , show compliance with the applicable fuel efficiency requirements of part 38 of this chapter.

(b) Each applicant for a supplemental type certificate must meet §§ 21.33 and 21.53 with respect to each change in the type design.

[Amdt. 21-17, 32 FR 14927 , Oct. 28, 1967, as amended by Amdt. 21-42, 40 FR 1033 , Jan. 6, 1975; Amdt. 21-52A, 45 FR 79009 , Nov. 28, 1980; Amdt. 21-61, 53 FR 3540 , Feb. 5, 1988; Amdt. 21-68, 55 FR 32860 , Aug. 10, 1990; Amdt. 21-71, 57 FR 42854 , Sept. 16, 1992; Amdt. 21-77, 65 FR 36266 , June 7, 2000; Amdt. No. 21-107, 89 FR 12653 , Feb. 16, 2024]

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§ 21.117 Issue of supplemental type certificates.

(a) An applicant is entitled to a supplemental type certificate if the FAA finds that the applicant meets the requirements of §§ 21.113 and 21.115.

(b) A supplemental type certificate consists of—

- (1) The approval by the FAA of a change in the type design of the product; and
- (2) The type certificate previously issued for the product.

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§ 21.119 Privileges.

The holder of a supplemental type certificate may—

- (a) In the case of aircraft , obtain airworthiness certificates;
- (b) In the case of other products, obtain approval for installation on certificated aircraft ; and
- (c) Obtain a production certificate in accordance with the requirements of subpart G of this part for the change in the type design approved by the supplemental type certificate.

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§ 21.120 Responsibility of supplemental type certificate holders to provide written permission for alterations.

A supplemental type certificate holder who allows a person to use the supplemental type certificate to alter an aircraft , aircraft engine , or propeller must provide that person with written permission acceptable to the FAA .

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§ 21.121 Applicability.

This subpart prescribes rules for production under a type certificate.

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§ 21.122 Location of or change to manufacturing facilities.

(a) A type certificate holder may utilize manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The type certificate holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The type certificate holder must immediately notify the FAA , in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its product or article.

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§ 21.123 Production under type certificate.

Each manufacturer of a product being manufactured under a type certificate must—

- (a) Maintain at the place of manufacture all information and data specified in §§ 21.31 and 21.41;
- (b) Make each product and article thereof available for inspection by the FAA ;
- (c) Maintain records of the completion of all inspections and tests required by §§ 21.127 , 21.128, and 21.129 for at least 5 years for the products and articles thereof manufactured under the approval and at least 10 years for critical components identified under § 45.15(c) of this chapter;
- (d) Allow the FAA to make any inspection or test, including any inspection or test at a supplier facility, necessary to determine compliance with this subchapter;
- (e) Mark the product in accordance with part 45 of this chapter, including any critical parts;
- (f) Identify any portion of that product (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA -approved manufacturer's identification; and
- (g) Except as otherwise authorized by the FAA , obtain a production certificate for that product in accordance with subpart G of this part within 6 months after the date of issuance of the type certificate.

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§ 21.127 Tests: aircraft .

- (a) Each person manufacturing aircraft under a type certificate must establish an approved production flight test procedure and flight check-off form, and in accordance with that form, flight test each aircraft produced.
- (b) Each production flight test procedure must include the following:
 - (1) An operational check of the trim, controllability, or other flight characteristics to establish that the production aircraft has the same range and degree of control as the prototype aircraft .

(2) An operational check of each part or system operated by the crew while in flight to establish that, during flight, instrument readings are within normal range.

(3) A determination that all instruments are properly marked, and that all placards and required flight manuals are installed after flight test.

(4) A check of the operational characteristics of the aircraft on the ground.

(5) A check on any other items peculiar to the aircraft being tested that can best be done during the ground or flight operation of the aircraft .

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§ 21.128 Tests: aircraft engines.

(a) Each person manufacturing aircraft engines under a type certificate must subject each engine (except rocket engines for which the manufacturer must establish a sampling technique) to an acceptable test run that includes the following:

(1) Break-in runs that include a determination of fuel and oil consumption and a determination of power characteristics at rated maximum continuous power or thrust and, if applicable, at rated takeoff power or thrust.

(2) At least five hours of operation at rated maximum continuous power or thrust. For engines having a rated takeoff power or thrust higher than rated maximum continuous power or thrust, the five-hour run must include 30 minutes at rated takeoff power or thrust.

(b) The test runs required by paragraph (a) of this section may be made with the engine appropriately mounted and using current types of power and thrust measuring equipment.

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§ 21.129 Tests: propellers.

Each person manufacturing propellers under a type certificate must give each variable pitch propeller an acceptable functional test to determine if it operates properly throughout the normal range of operation.

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§ 21.130 Statement of conformity.

Each holder or licensee of a type certificate who manufactures a product under this subpart must provide, in a form and manner acceptable to the FAA , a statement that the product for which the type certificate has been issued conforms to its type certificate and is in a condition for safe operation.

§ 21.131



§ 21.131 Applicability.

This subpart prescribes—

- (a) Procedural requirements for issuing production certificates; and
- (b) Rules governing holders of those certificates.

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§ 21.132 Eligibility.

Any person may apply for a production certificate if that person holds, for the product concerned—

- (a) A current type certificate,
- (b) A supplemental type certificate, or
- (c) Rights to the benefits of that type certificate or supplemental type certificate under a licensing agreement.

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§ 21.135 Organization.

(a) Each applicant for or holder of a production certificate must provide the FAA with a document—

- (1) Describing how its organization will ensure compliance with the provisions of this subpart;
- (2) Describing assigned responsibilities, delegated authorities, and the functional relationship of those responsible for quality to management and other organizational components; and
- (3) Identifying an accountable manager.

(b) The accountable manager specified in paragraph (a) of this section must be responsible within the applicant's or production approval holder's organization for, and have authority over, all production operations conducted under this part. The accountable manager must confirm that the procedures described in the quality manual required by § 21.138 are in place and that the production approval holder satisfies the requirements of the applicable regulations of subchapter C, Aircraft . The accountable manager must serve as the primary contact with the FAA .

(c) Each applicant for or holder of a production certificate, except those based only on a supplemental type certificate or on the rights to the benefits of a supplemental type certificate under a licensing agreement, must meet the applicable requirements of part 5 of this chapter.

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§ 21.137 Quality system.

Each applicant for or holder of a production certificate must establish and describe in writing a quality system that ensures that each product and article conforms to its approved design and is in a condition for safe operation. This quality system must include:

(a) Design data control. Procedures for controlling design data and subsequent changes to ensure that only current, correct, and approved data is used.

(b) Document control. Procedures for controlling quality system documents and data and subsequent changes to ensure that only current, correct, and approved documents and data are used.

(c) Supplier control. Procedures that—

(1) Ensure that each supplier-provided product, article, or service conforms to the production approval holder's requirements; and

(2) Establish a supplier-reporting process for products, articles, or services that have been released from or provided by the supplier and subsequently found not to conform to the production approval holder's requirements.

(d) Manufacturing process control. Procedures for controlling manufacturing processes to ensure that each product and article conforms to its approved design.

(e) Inspecting and testing. Procedures for inspections and tests used to ensure that each product and article conforms to its approved design. These procedures must include the following, as applicable:

(1) A flight test of each aircraft produced unless that aircraft will be exported as an unassembled aircraft .

(2) A functional test of each aircraft engine and each propeller produced.

(f) Inspection, measuring, and test equipment control. Procedures to ensure calibration and control of all inspection, measuring, and test equipment used in determining conformity of each product and article to its approved design. Each calibration standard must be traceable to a standard acceptable to the FAA .

(g) Inspection and test status. Procedures for documenting the inspection and test status of products and articles supplied or manufactured to the approved design.

(h) Nonconforming product and article control.

(1) Procedures to ensure that only products or articles that conform to their approved design are installed on a type-certificated product. These procedures must provide for the identification, documentation, evaluation, segregation, and disposition of nonconforming products and articles. Only authorized individuals may make disposition determinations.

(2) Procedures to ensure that discarded articles are rendered unusable.

(i) Corrective and preventive actions. Procedures for implementing corrective and preventive actions to eliminate the causes of an actual or potential nonconformity to the approved design or noncompliance with the approved quality system.

(j) Handling and storage. Procedures to prevent damage and deterioration of each product and article during handling, storage, preservation, and packaging.

(k) Control of quality records. Procedures for identifying, storing, protecting, retrieving, and retaining quality records. A production approval holder must retain these records for at least 5 years for the products and articles manufactured under the approval and at least 10 years for critical components identified under § 45.15(c) of this chapter.

(l) Internal audits. Procedures for planning, conducting, and documenting internal audits to ensure compliance with the approved quality system. The procedures must include reporting results of internal audits to the manager responsible for implementing corrective and preventive actions.

(m) In-service feedback. Procedures for receiving and processing feedback on in-service failures, malfunctions, and defects. These procedures must include a process for assisting the design approval holder to—

(1) Address any in-service problem involving design changes; and

(2) Determine if any changes to the Instructions for Continued Airworthiness are necessary.

(n) Quality escapes. Procedures for identifying, analyzing, and initiating appropriate corrective action for products or articles that have been released from the quality system and that do not conform to the applicable design data or quality system requirements.

(o) Issuing authorized release documents. Procedures for issuing authorized release documents for aircraft engines, propellers, and articles if the production approval holder intends to issue those documents. These procedures must provide for the selection, appointment, training, management, and removal of individuals authorized by the production approval holder to issue authorized release documents. Authorized release documents may be issued for new aircraft engines, propellers, and articles manufactured by the production approval holder; and for used aircraft engines, propellers, and articles when rebuilt, or altered, in accordance with § 43.3(j) of this

chapter. When a production approval holder issues an authorized release document for the purpose of export, the production approval holder must comply with the procedures applicable to the export of new and used aircraft engines, propellers, and articles specified in § 21.331 and the responsibilities of exporters specified in § 21.335.

[Docket No. FAA -2006-25877, Amdt. 21-92, 74 FR 53387 , Oct. 16, 2009, as amended by Doc. No. FAA -2013-0933, Amdt. 21-98, 80 FR 59031 , Oct. 1, 2015; Amdt. 21-98A, 80 FR 59031 , Dec. 17, 2015]

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§ 21.138 Quality manual.

Each applicant for or holder of a production certificate must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA .

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§ 21.139 Location of or change to manufacturing facilities.

(a) An applicant may obtain a production certificate for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The production certificate holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The production certificate holder must immediately notify the FAA , in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its

product or article.

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§ 21.141 Issuance.

The FAA issues a production certificate after finding that the applicant complies with the requirements of this subpart.

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§ 21.142 Production limitation record.

The FAA issues a production limitation record as part of a production certificate. The record lists the type certificate number and model of every product that the production certificate holder is authorized to manufacture, and identifies every interface component that the production certificate holder is authorized to manufacture and install under this part.

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§ 21.143 Duration.

A production certificate is effective until surrendered, suspended, revoked, or the FAA otherwise establishes a termination date.

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§ 21.144 Transferability.

The holder of a production certificate may not transfer the production certificate.

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§ 21.145 Privileges.

(a) The holder of a production certificate may—

(1) Obtain an aircraft airworthiness certificate without further showing, except that the FAA may inspect the aircraft for conformity with the type design; or

(2) In the case of other products, obtain approval from the FAA for installation on type-certificated aircraft .

(b) Notwithstanding the provisions of § 147.3 of this chapter, the holder of a production certificate for a primary category aircraft , or for a normal, utility, or acrobatic category aircraft of a type design that is eligible for a special airworthiness certificate in the primary category under § 21.184(c), may—

(1) Conduct training for persons in the performance of a special inspection and preventive maintenance program approved as a part of the aircraft 's type design under § 21.24(b) , provided a person holding a mechanic certificate with appropriate airframe and powerplant ratings issued under part 65 of this chapter gives the training; and

(2) Issue a certificate of competency to persons successfully completing the approved training program, provided the certificate specifies the aircraft make and model to which the certificate applies.

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§ 21.146 Responsibility of holder.

The holder of a production certificate must—

- (a) Amend the document required by § 21.135 as necessary to reflect changes in the organization and provide these amendments to the FAA .
- (b) Maintain the quality system in compliance with the data and procedures approved for the production certificate;
- (c) Ensure that each completed product or article for which a production certificate has been issued, including primary category aircraft assembled under a production certificate by another person from a kit provided by the holder of the production certificate, presented for airworthiness certification or approval conforms to its approved design and is in a condition for safe operation;
- (d) Mark the product or article for which a certificate or approval has been issued. Marking must be in accordance with part 45 of this chapter, including any critical parts;
- (e) Identify any portion of the product or article (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;
- (f) Have access to type design data necessary to determine conformity and airworthiness for each product and article produced under the production certificate;
- (g) Retain its production certificate and make it available to the FAA upon request; and
- (h) Make available to the FAA information regarding all delegation of authority to suppliers.

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§ 21.147 Amendment of production certificates.

(a) A holder of a production certificate must apply for an amendment to a production certificate in a form and manner prescribed by the FAA .

(b) An applicant for an amendment to a production certificate to add a type certificate or model, or both, must comply with §§ 21.135(c) , 21.137, 21.138, and 21.150.

(c) An applicant may apply to amend its production limitation record to allow the manufacture and installation of an interface component , provided—

(1) The applicant owns or has a license to use the design and installation data for the interface component and makes that data available to the FAA upon request;

(2) The applicant manufactures the interface component ;

(3) The applicant's product conforms to its approved type design and the interface component conforms to its approved type design;

(4) The assembled product with the installed interface component is in a condition for safe operation; and

(5) The applicant complies with any other conditions and limitations the FAA considers necessary.

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§ 21.150 Changes in quality system.

After the issuance of a production certificate—

(a) Each change to the quality system is subject to review by the FAA ; and

(b) The holder of a production certificate must immediately notify the FAA , in writing, of any change that may affect the inspection, conformity, or airworthiness of its product or article.

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§ 21.171 Applicability.

This subpart prescribes procedural requirements for the issue of airworthiness certificates.

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§ 21.173 Eligibility.

Any registered owner of a U.S.-registered aircraft (or the agent of the owner) may apply for an airworthiness certificate for that aircraft . An application for an airworthiness certificate must be made in a form and manner acceptable to the FAA , and may be submitted to any FAA office.

[Amdt. 21-26, 34 FR 15244 , Sept. 30, 1969]

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§ 21.175 Airworthiness certificates: classification.

(a) Standard airworthiness certificates are airworthiness certificates issued for aircraft type certificated:

(1) In the normal, utility, acrobatic, commuter, or transport category;

(2) As manned free balloons; or

(3) As special classes of aircraft .

(b) Special airworthiness certificates are airworthiness certificates issued for:

(1) Aircraft type-certificated in the primary, restricted, provisional, or limited category;

(2) Aircraft certificated in the light-sport category;

(3) Aircraft operating for an experimental purpose; or

(4) Aircraft operating under a special flight permit.

[Docket No. FAA -2023-1377, Amdt. 21-109, 90 FR 35205 , July 24, 2025]

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§ 21.179 Transferability.

An airworthiness certificate is transferred with the aircraft .

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§ 21.181 Duration.

Link to an amendment published at 90 FR 35205 , July 24, 2025.

(a) Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the FAA , airworthiness certificates are effective as long as the aircraft is registered in the United States and as follows:

(1) Standard airworthiness certificates and special airworthiness certificates issued for aircraft certificated in the primary, restricted, or limited category are effective as long as the maintenance , preventive maintenance , and alterations are performed in accordance with parts 43 and 91 of this chapter.

(2) A special flight permit is effective for the period of time specified in the permit.

(3) A special airworthiness certificate in the light-sport category is effective as long as—

(i) The aircraft meets the definition of a light-sport aircraft ;

(ii) The aircraft conforms to its original configuration, except for those alterations performed in accordance with an applicable consensus standard and authorized by the aircraft 's manufacturer or a person acceptable to the FAA ; and

(iii) The aircraft has no unsafe condition and is not likely to develop an unsafe condition.

(4) The duration of an experimental airworthiness certificate issued for research and development, showing compliance with regulations, crew training, or market survey is effective for 3 years from the date of issue or renewal unless the FAA prescribes a shorter period.

(5) The duration of an experimental airworthiness certificate issued for exhibition, air-racing, operating amateur-built aircraft , operating primary kit-built aircraft , operating light-sport aircraft , operating light-sport category kit-built aircraft , operating former light-sport category aircraft is unlimited, unless the FAA establishes a specific period for good cause.

(b) The owner, operator, or bailee of the aircraft must, upon request, make it available for inspection by the FAA .

(c) Upon suspension, revocation, or termination by order of the FAA of an airworthiness certificate, the owner, operator, or bailee of an aircraft must, upon request, surrender the certificate to the FAA .

[Amdt. 21-21, 33 FR 6858 , May 7, 1968, as amended by Amdt. 21-49, 44 FR 46781 , Aug. 9, 1979; Amdt. 21-70, 57 FR 41368 , Sept. 9, 1992; Amdt. 21-85, 69 FR 44861 , July 27, 2004; Amdt. 21-109, 90 FR 35205 , July 24, 2025]

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§ 21.182 Aircraft identification.

Link to an amendment published at 90 FR 35206 , July 24, 2025.

(a) Except as provided in paragraph (b) of this section, each applicant for an airworthiness certificate under this subpart must show that his aircraft is identified as prescribed in § 45.11.

(b) Paragraph (a) of this section does not apply to applicants for the following:

(1) A special flight permit.

(2) An experimental certificate for an aircraft not issued for the purpose of operating amateur-built aircraft , operating primary kit-built aircraft , or operating light-sport aircraft .

(3) A change from one airworthiness classification to another, for an aircraft already identified as prescribed in § 45.11 .

[Amdt. 21-13, 32 FR 188 , Jan. 10, 1967, as amended by Amdt. 21-51, 45 FR 60170 , Sept. 11, 1980; Amdt. 21-70, 57 FR 41368 , Sept. 9, 1992; Amdt. 21-85, 69 FR 44862 , July 27, 2004]

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§ 21.183 Issue of standard airworthiness certificates for normal, utility, acrobatic, commuter, and transport category aircraft ; manned free balloons; and special classes of aircraft .

(a) New aircraft manufactured under a production certificate. An applicant for a standard airworthiness certificate for a new aircraft manufactured under a production certificate is entitled to a standard airworthiness certificate without further showing, except that the FAA may inspect the aircraft to determine conformity to the type design and condition for safe operation.

(b) New aircraft manufactured under type certificate. An applicant for a standard airworthiness certificate for a new aircraft manufactured under a type certificate is entitled to a standard airworthiness certificate upon presentation, by the holder or licensee of the type certificate, of the statement of conformity prescribed in § 21.130 if the FAA finds after inspection that the aircraft conforms to the type design and is in condition for safe operation.

(c) Import aircraft. An applicant for a standard airworthiness certificate for an import aircraft is entitled to that certificate if—

(1) The aircraft is type certificated in accordance with § 21.21 or § 21.29 and produced under the authority of another State of Manufacture;

(2) The State of Manufacture certifies, in accordance with the export provisions of an agreement with the United States for import of that aircraft , that the aircraft conforms to the type design and is in condition for safe operation; and

(3) The FAA finds that the aircraft conforms to the type design and is in condition for safe operation.

(d) Used aircraft and surplus aircraft of the U.S. Armed Forces. An applicant for a standard airworthiness certificate for a used aircraft or surplus aircraft of the U.S. Armed Forces is entitled to a standard airworthiness certificate if—

(1) The applicant presents evidence to the FAA that the aircraft conforms to a type design approved under a type certificate or a supplemental type certificate and to applicable Airworthiness Directives;

(2) The aircraft (except an experimentally certificated aircraft that previously had been issued a different airworthiness certificate under this section) has been inspected in accordance with the performance rules for 100-hour inspections set forth in § 43.15 of this chapter, or an equivalent performance standard acceptable to the FAA , and found airworthy by—

(i) The manufacturer;

(ii) The holder of a repair station certificate as provided in Part 145 of this chapter;

(iii) The holder of a mechanic certificate as authorized in Part 65 of this chapter;

(iv) The holder of a certificate issued under part 121 of this chapter, and having a maintenance and inspection organization appropriate to the aircraft type; or

(v) A foreign maintenance organization appropriately certificated by an exporting authority with whose country the United States has a bilateral agreement that includes acceptance of this aircraft category by the United States for import. An acceptable inspection must have been completed while the aircraft was operated on the registry of the exporting authority and within 60 days of submitting the application for a United States airworthiness certificate;

(3) The FAA finds after inspection, that the aircraft conforms to the type design, and is in condition for safe operation.

(e) Noise requirements. Notwithstanding all other provisions of this section, the following must be complied with for the original issuance of a standard airworthiness certificate:

(1) For transport category large airplanes and jet (turbojet powered) airplanes that have not had any flight time before the dates specified in § 36.1(d) , no standard airworthiness certificate is originally issued under this section unless the FAA finds that the type design complies with the noise requirements in § 36.1(d) in addition to the applicable airworthiness requirements in this section. For import airplanes , compliance with this paragraph is shown if the country in which the airplane was manufactured certifies, and the FAA finds, that § 36.1(d) (or the applicable airplane noise requirements of the country in which the airplane was manufactured and any other requirements the FAA may prescribe to provide noise levels no greater than those provided by compliance with § 36.1(d)) and paragraph (c) of this section are complied with.

(2) For normal, utility, acrobatic, commuter, or transport category propeller driven small airplanes (except for those airplanes that are designed for “agricultural aircraft operations” (as defined in § 137.3 of this chapter, as effective on January 1, 1966) or for dispensing fire fighting materials to which § 36.1583 of this chapter does not apply) that have not had any flight time before the applicable date specified in part 36 of this chapter, no standard airworthiness certificate is originally issued under this section unless the applicant shows that the type design complies with the applicable noise requirements of part 36 of this chapter in addition to the applicable airworthiness requirements in this section. For import airplanes , compliance with this paragraph is shown if the country in which the airplane was manufactured certifies, and the FAA finds, that the applicable requirements of part of this chapter (or the applicable airplane noise requirements of the country in which the airplane was manufactured and any other requirements the FAA may prescribe to provide noise levels no greater than those provided by compliance with the applicable requirements of part 36 of this chapter) and paragraph (c) of this section are complied with.

(f) Passenger emergency exit requirements. Notwithstanding all other provisions of this section, each applicant for issuance of a standard airworthiness certificate for a transport category airplane manufactured after October 16, 1987, must show that the airplane meets the requirements of § 25.807(c)(7) in effect on July 24, 1989. For the purposes of this paragraph, the date of manufacture of an airplane is the date the inspection acceptance records reflect that the airplane is complete and meets the FAA -approved type design data.

(g) Fuel venting and exhaust emission requirements. Notwithstanding all other provisions of this section, and irrespective of the date of application, no airworthiness certificate is issued, on and after the dates specified in part 34 for the airplanes specified therein, unless the airplane complies with the applicable requirements of that part.

(h) New aircraft manufactured under the provisions of § 21.6(b) . An applicant for a standard airworthiness certificate for a new aircraft manufactured under the provisions of § 21.6(b) is entitled to a standard airworthiness certificate if—

(1) The applicant presents evidence to the FAA that the aircraft conforms to a type design approved under a type certificate or supplemental type certificate and to applicable Airworthiness Directives;

(2) The aircraft has been inspected in accordance with the performance rules for a 100-hour inspections set forth in § 43.15 of this chapter and found airworthy by a person specified in paragraph (d)(2) of this section; and

(3) The FAA finds after inspection, that the aircraft conforms to the type design, and is in condition for safe operation.

(i) [Reserved]

(j) Fuel efficiency requirements. No original standard airworthiness certificate may be issued under this section unless the applicant has demonstrated that the type design complies with the applicable fuel efficiency requirements of part 38 of this chapter.

[Amdt. 21-17, 32 FR 14927 , Oct. 28, 1967]

Editorial Note:

For Federal Register citations affecting § 21.183 , see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.govinfo.gov.

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§ 21.184 Issue of special airworthiness certificates for primary category aircraft .

(a) New primary category aircraft manufactured under a production certificate. An applicant for an original, special airworthiness certificate-primary category for a new aircraft that meets the criteria of § 21.24(a)(1) , manufactured under a production certificate, including aircraft assembled by another person from a kit provided by the holder of the production certificate and under the supervision and quality control of that holder, is entitled to a special airworthiness certificate without further showing, except that the FAA may inspect the aircraft to determine conformity to the type design and condition for safe operation.

(b) Imported aircraft. An applicant for a special airworthiness certificate-primary category for an imported aircraft type certificated under § 21.29 is entitled to a special airworthiness certificate if

the civil airworthiness authority of the country in which the aircraft was manufactured certifies, and the FAA finds after inspection, that the aircraft conforms to an approved type design that meets the criteria of § 21.24(a)(1) and is in a condition for safe operation.

(c) Aircraft having a current standard airworthiness certificate. An applicant for a special airworthiness certificate-primary category, for an aircraft having a current standard airworthiness certificate that meets the criteria of § 21.24(a)(1) , may obtain the primary category certificate in exchange for its standard airworthiness certificate through the supplemental type certification process. For the purposes of this paragraph, a current standard airworthiness certificate means that the aircraft conforms to its approved normal, utility, or acrobatic type design, complies with all applicable airworthiness directives, has been inspected and found airworthy within the last 12 calendar months in accordance with § 91.409(a)(1) of this chapter, and is found to be in a condition for safe operation by the FAA .

(d) Other aircraft. An applicant for a special airworthiness certificate-primary category for an aircraft that meets the criteria of § 21.24(a)(1) , and is not covered by paragraph (a), (b), or (c) of this section, is entitled to a special airworthiness certificate if—

(1) The applicant presents evidence to the FAA that the aircraft conforms to an approved primary, normal, utility, or acrobatic type design, including compliance with all applicable airworthiness directives;

(2) The aircraft has been inspected and found airworthy within the past 12 calendar months in accordance with § 91.409(a)(1) of this chapter and;

(3) The aircraft is found by the FAA to conform to an approved type design and to be in a condition for safe operation.

(e) Multiple-category airworthiness certificates in the primary category and any other category will not be issued; a primary category aircraft may hold only one airworthiness certificate.

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§ 21.185 Issue of airworthiness certificates for restricted category aircraft .

(a) Aircraft manufactured under a production certificate or type certificate. An applicant for a restricted category airworthiness certificate for an aircraft type certificated in the restricted category, that was not previously type certificated in any other category, must comply with § 21.183(a) or (b), as applicable. A used aircraft must conform to its type certificate and be in a condition for safe operation.

(b) Other aircraft. An applicant for an airworthiness certificate in the restricted category is entitled to an airworthiness certificate if—

(1) The aircraft is type certificated for a special purpose operation in the restricted category;

(2) The aircraft was—

(i) Manufactured in accordance with the requirements of, and accepted for use by, the U.S. Armed Forces and has a service history with the U.S. Armed Forces acceptable to the FAA ; or

(ii) Previously type certificated in another category; and

(3) The aircraft has been inspected by the FAA and found by him to be in a good state of preservation and repair and in a condition for safe operation.

(c) Import aircraft. An applicant for the original issue of a special airworthiness certificate for a restricted category import aircraft is entitled to that certificate if—

(1) The aircraft is type-certificated in accordance with § 21.25 or § 21.29 and produced under the authority of another State of Manufacture;

(2) The State of Manufacture certifies, in accordance with the export provisions of an agreement with the United States for import of that aircraft that the aircraft conforms to the type design and is in condition for safe operation; and

(3) The FAA finds that the aircraft conforms to the type design and is in condition for safe operation.

(d) Noise requirements. For propeller -driven small airplanes (except airplanes designed for “agricultural aircraft operations,” as defined in § 137.3 of this chapter, as effective on January 1, 1966, or for dispensing fire fighting materials) that have not had any flight time before the applicable date specified in Part 36 of this chapter, and notwithstanding the other provisions of this section, no original restricted category airworthiness certificate is issued under this section unless the FAA finds that the type design complies with the applicable noise requirements of Part 36 of this chapter in addition to the applicable airworthiness requirements of this section. For import airplanes , compliance with this paragraph is shown if the country in which the airplane was manufactured certifies, and the FAA finds, that the applicable requirements of Part 36 of this chapter (or the applicable airplane noise requirements of the country in which the airplane was manufactured and any other requirements the FAA may prescribe to provide noise levels no greater than those provided by compliance with the applicable requirements of Part 36 of this chapter) and paragraph (c) of this section are complied with.

[Amdt. 21-10, 31 FR 9211 , July 6, 1966, as amended by Amdt. 21-32, 35 FR 10202 , June 23, 1970; Amdt. 21-42, 40 FR 1034 , Jan. 6, 1975; Amdt. 21-92, 74 FR 53389 , Oct. 16, 2009; Amdt. 21-92, 74 FR 53389 , Oct. 16, 2009; Amdt. 21-92A, 75 FR 9095 , Mar. 1, 2010; Amdt. 21-109, 90 FR 35206 , July 24, 2025]

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§ 21.187 Issue of multiple airworthiness certifications for restricted category aircraft .

(a) An applicant for an airworthiness certificate in the restricted category, and in one or more other categories except primary category, is entitled to the certificate, if—

(1) The applicant shows compliance with the requirements for each category, when the aircraft is in the configuration for that category;

(2) The applicant shows that the aircraft can be converted from one category to another by removing or adding equipment by simple mechanical means;

(3) The aircraft complies with the applicable requirements of part 34 of this subchapter; and

(4) The airplane complies with the applicable requirements of part 38 of this subchapter.

(b) The operator of an aircraft certificated under this section must have the aircraft inspected by the FAA , or by a certificated mechanic with an appropriate airframe rating , to determine airworthiness each time the aircraft is converted from the restricted category to another category for the carriage of passengers for compensation or hire, unless the FAA finds this unnecessary for safety in a particular case.

(c) The aircraft complies with the applicable requirements of part 34.

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§ 21.190 Issue of a special airworthiness certificate for a light-sport category aircraft .

[Link to an amendment published at 90 FR 35206 , July 24, 2025.](#)

(a) Purpose. The FAA issues a special airworthiness certificate in the light-sport category to operate a light-sport aircraft , other than a gyroplane .

(b) Eligibility. To be eligible for a special airworthiness certificate in the light-sport category:

(1) An applicant must provide the FAA with—

(i) The aircraft 's operating instructions;

(ii) The aircraft 's maintenance and inspection procedures;

(iii) The manufacturer's statement of compliance as described in paragraph (c) of this section; and

(iv) The aircraft 's flight training supplement.

(2) The aircraft must not have been previously issued a standard, primary, restricted, limited, or provisional airworthiness certificate, or an equivalent airworthiness certificate issued by a foreign civil aviation authority.

(3) The aircraft must be inspected by the FAA and found to be in a condition for safe operation.

(c) Manufacturer's statement of compliance for light-sport category aircraft. The manufacturer's statement of compliance required in paragraph (b)(1)(iii) of this section must—

(1) Identify the aircraft by make and model, serial number, class, date of manufacture, and consensus standard used;

(2) State that the aircraft meets the provisions of the identified consensus standard;

(3) State that the aircraft conforms to the manufacturer's design data, using the manufacturer's quality assurance system that meets the identified consensus standard;

(4) State that the manufacturer will make available to any interested person the following documents that meet the identified consensus standard:

(i) The aircraft 's operating instructions.

(ii) The aircraft 's maintenance and inspection procedures.

(iii) The aircraft 's flight training supplement.

(5) State that the manufacturer will monitor and correct safety-of-flight issues through the issuance of safety directives and a continued airworthiness system that meets the identified consensus standard;

(6) State that at the request of the FAA , the manufacturer will provide unrestricted access to its facilities; and

(7) State that the manufacturer, in accordance with a production acceptance test procedure that meets an applicable consensus standard has—

(i) Ground and flight tested the aircraft ;

(ii) Found the aircraft performance acceptable; and

(iii) Determined that the aircraft is in a condition for safe operation.

(d) Light-sport aircraft manufactured outside the United States. For aircraft manufactured outside of the United States to be eligible for a special airworthiness certificate in the light-sport category, an applicant must meet the requirements of paragraph (b) of this section and provide to the FAA evidence that—

(1) The aircraft was manufactured in a country with which the United States has a Bilateral Airworthiness Agreement concerning airplanes or Bilateral Aviation Safety Agreement with associated Implementation Procedures for Airworthiness concerning airplanes , or an equivalent airworthiness agreement; and

(2) The aircraft is eligible for an airworthiness certificate, flight authorization, or other similar certification in its country of manufacture.

[Amdt. 21-85, 69 FR 44862 , July 27, 2004]

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§ 21.191 Issue of experimental airworthiness certificates.

[Link to an amendment published at 90 FR 35207 , July 24, 2025.](#)

Experimental airworthiness certificates are issued for the following experimental purposes:

(a) Research and development. Testing new aircraft design concepts, new aircraft equipment, new aircraft installations, new aircraft operating techniques, or new uses for aircraft .

(b) Showing compliance with regulations. Conducting flight tests and other operations to show compliance with the airworthiness regulations including flights to show compliance for issuance of type and supplemental type certificates, flights to substantiate major design changes, and flights to show compliance with the function and reliability requirements of the regulations.

(c) Crew training. Training of the applicant's flight crews.

(d) Exhibition. Exhibiting the aircraft 's flight capabilities, performance, or unusual characteristics at air shows, motion picture, television, and similar productions, and the maintenance of exhibition flight proficiency, including (for persons exhibiting aircraft) flying to and from such air shows and productions.

(e) Air racing. Participating in air races, including (for such participants) practicing for such air races and flying to and from racing events.

(f) Market surveys. Use of aircraft for purposes of conducting market surveys, sales demonstrations, and customer crew training only as provided in § 21.195 .

(g) Operating amateur-built aircraft. Operating an aircraft the major portion of which has been fabricated and assembled by persons who undertook the construction project solely for their own education or recreation.

(h) Operating primary kit-built aircraft. Operating a primary category aircraft that meets the criteria of § 21.24(a)(1) that was assembled by a person from a kit manufactured by the holder of a production certificate for that kit, without the supervision and quality control of the production certificate holder under § 21.184(a) .

(i) Operating light-sport aircraft. Operating a light-sport aircraft that—

(1) Has not been issued a U.S. or foreign airworthiness certificate and does not meet the provisions of § 103.1 of this chapter. An experimental airworthiness certificate will not be issued under this paragraph (i) for these aircraft after January 31, 2008;

(2) Has been assembled—

(i) From an aircraft kit; and

(ii) In accordance with manufacturer's assembly instructions that meet an applicable consensus standard; and

(iii) An experimental airworthiness certificate will not be issued under this paragraph (i)(2) for these aircraft after October 22, 2025; or

(3) Has been previously issued a special airworthiness certificate in the light-sport category under § 21.190 . An experimental airworthiness certificate will not be issued under this paragraph for these aircraft after October 22, 2025.

(j) [Reserved]

(k) Operating light-sport category kit-built aircraft. Operating an aircraft of a type that has been certificated under § 21.190 and assembled from an aircraft kit in accordance with manufacturer's assembly instructions that meet an applicable FAA -accepted consensus standard.

(l) Operating former light-sport category aircraft. Operating an aircraft that previously has been issued a special airworthiness certificate in the light-sport category under § 21.190 .

[Amdt. 21-21, 38 FR 6858 , May 7, 1968, as amended by Amdt. 21-57, 49 FR 39651 , Oct. 9, 1984; Amdt. 21-70, 57 FR 41369 , Sept. 9, 1992; Amdt. 21-85, 69 FR 44862 , July 27, 2004; Amdt. 21-85, 69 FR 53336 , Sept. 1, 2004; Amdt. 21-109, 90 FR 35207 , July 24, 2025]

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§ 21.193 Experimental airworthiness certificates: General.

Link to an amendment published at 90 FR 35207 , July 24, 2025.

An applicant for an experimental certificate must submit the following information:

(a) A statement, in a form and manner prescribed by the FAA setting forth the purpose for which the aircraft is to be used.

(b) Enough data (such as photographs) to identify the aircraft .

(c) Upon inspection of the aircraft , any pertinent information found necessary by the FAA to safeguard the general public.

(d) In the case of an aircraft to be used for experimental purposes—

(1) The purpose of the experiment;

(2) The estimated time or number of flights required for the experiment;

(3) The areas over which the experiment will be conducted; and

(4) Except for aircraft converted from a previously certificated type without appreciable change in the external configuration, three-view drawings or three-view dimensioned photographs of the aircraft .

(e) In the case of a light-sport aircraft assembled from a kit to be certificated in accordance with § 21.191(k) , an applicant must provide the following:

(1) Evidence that an aircraft of the same make and model was manufactured and assembled by the aircraft kit manufacturer and issued a special airworthiness certificate in the light-sport category.

(2) The aircraft 's operating instructions.

(3) The aircraft 's maintenance and inspection procedures.

(4) The manufacturer's statement of compliance for the aircraft kit used in the aircraft assembly that meets § 21.190(c) , except that instead of meeting § 21.190(c)(7) , the statement must identify assembly instructions for the aircraft that meet an applicable consensus standard.

(5) The aircraft 's flight training supplement.

(6) In addition to paragraphs (e)(1) through (e)(5) of this section, for an aircraft kit manufactured outside of the United States , evidence that the aircraft kit was manufactured in a country with which the United States has a Bilateral Airworthiness Agreement concerning airplanes or a Bilateral Aviation Safety Agreement with associated Implementation Procedures for Airworthiness concerning airplanes , or an equivalent airworthiness agreement.

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§ 21.195 Experimental airworthiness certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

(a) A manufacturer of aircraft manufactured within the United States may apply for an experimental airworthiness certificate for an aircraft that is to be used for market surveys, sales demonstrations, or customer crew training.

(b) A manufacturer of an aircraft engine manufactured by him within the United States , that has altered a type certificated aircraft by installing an engine it has manufactured, may apply for an experimental airworthiness certificate for that aircraft to be used for market surveys, sales demonstrations, or customer crew training, if the basic aircraft , before alteration, was type certificated in the normal, utility, acrobatic, commuter, transport, primary, or restricted category.

(c) A person who has altered the design of a type certificated aircraft may apply for an experimental airworthiness certificate for an altered aircraft to be used for market surveys, sales demonstrations, or customer crew training, if the basic aircraft , before alteration, was type certificated in the normal, utility, acrobatic, commuter, transport, primary, or restricted category.

(d) An applicant for an experimental airworthiness certificate under paragraph (a), (b), or (c) of this section is entitled to that certificate if, in addition to meeting the requirements of § 21.193 —

(1) He has established an inspection and maintenance program for the continued airworthiness of the aircraft ; and

(2) The applicant shows that the aircraft has been flown for at least 50 hours, or for at least 5 hours if it is a type certificated aircraft which has been altered. FAA may reduce these operational requirements if the applicant provides adequate justification.

[Docket No. FAA -2023-1377, Amdt. 21-109, 90 FR 35208 , July 24, 2025]

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§ 21.197 Special flight permits.

(a) A special flight permit may be issued for an aircraft that may not currently meet applicable airworthiness requirements but is capable of safe flight, for the following purposes:

(1) Flying the aircraft to a base where repairs, alterations, or maintenance are to be performed, or to a point of storage.

(2) Delivering or exporting the aircraft .

(3) Production flight testing new production aircraft .

(4) Evacuating aircraft from areas of impending danger.

(5) Conducting customer demonstration flights in new production aircraft that have satisfactorily completed production flight tests.

(b) A special flight permit may also be issued to authorize the operation of an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available. The excess weight that may be authorized under this paragraph is limited to the additional fuel, fuel-carrying facilities, and navigation equipment necessary for the flight.

(c) Upon application, as prescribed in §§ 91.1017 or 119.51 of this chapter, a special flight permit with a continuing authorization may be issued for aircraft that may not meet applicable

airworthiness requirements, but are capable of safe flight for the purpose of flying aircraft to a base where maintenance or alterations are to be performed. The permit issued under this paragraph is an authorization, including conditions and limitations for flight, which is set forth in the certificate holder's operations specifications. The permit issued under this paragraph may be issued to—

(1) Certificate holders authorized to conduct operations under part 119 of this chapter, that have an approved program for continuing flight authorization; or

(2) Management specification holders authorized to conduct operations under part 91, subpart K of this chapter for those aircraft they operate and maintain under a continuous airworthiness maintenance program prescribed by § 91.1411 of this chapter.

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§ 21.199 Issue of special flight permits.

(a) Except as provided in § 21.197(c) , an applicant for a special flight permit must submit a statement in a form and manner prescribed by the FAA , indicating—

(1) The purpose of the flight.

(2) The proposed itinerary.

(3) The crew required to operate the aircraft and its equipment, e.g., pilot, co-pilot, navigator, etc.

(4) The ways, if any, in which the aircraft does not comply with the applicable airworthiness requirements.

(5) Any restriction the applicant considers necessary for safe operation of the aircraft .

(6) Any other information considered necessary by the FAA for the purpose of prescribing operating limitations.

(b) The FAA may make, or require the applicant to make appropriate inspections or tests necessary for safety.

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§ 21.211 Applicability.

This subpart prescribes procedural requirements for the issue of provisional airworthiness certificates.

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§ 21.213 Eligibility.

- (a) A manufacturer who is a United States citizen may apply for a Class I or Class II provisional airworthiness certificate for aircraft manufactured by him within the U.S.
- (b) Any holder of an air carrier operating certificate under Part 121 of this chapter who is a United States citizen may apply for a Class II provisional airworthiness certificate for transport category aircraft that meet either of the following:
- (1) The aircraft has a current Class II provisional type certificate or an amendment thereto.
 - (2) The aircraft has a current provisional amendment to a type certificate that was preceded by a corresponding Class II provisional type certificate.
- (c) An aircraft engine manufacturer who is a United States citizen and who has altered a type certificated aircraft by installing different type certificated engines, manufactured by him within the United States , may apply for a Class I provisional airworthiness certificate for that aircraft , if the basic aircraft , before alteration, was type certificated in the normal, utility, acrobatic, commuter, or transport category.

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§ 21.215 Application.

Applications for provisional airworthiness certificates must be submitted to the FAA . The application must be accompanied by the pertinent information specified in this subpart.

[Amdt. 21-67, 54 FR 39291 , Sept. 25, 1989; 54 FR 52872 , Dec. 22, 1989; Doc. No. FAA -2018-0119, Amdt. 21-101, 83 FR 9169 , Mar. 5, 2018]

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§ 21.217 Duration.

Unless sooner surrendered, superseded, revoked, or otherwise terminated, provisional airworthiness certificates are effective for the duration of the corresponding provisional type certificate, amendment to a provisional type certificate, or provisional amendment to the type certificate.

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§ 21.219 Transferability.

Class I provisional airworthiness certificates are not transferable. Class II provisional airworthiness certificates may be transferred to an air carrier eligible to apply for a certificate under § 21.213(b) .

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§ 21.221 Class I provisional airworthiness certificates.

(a) Except as provided in § 21.225 , an applicant is entitled to a Class I provisional airworthiness certificate for an aircraft for which a Class I provisional type certificate has been issued if—

(1) He meets the eligibility requirements of § 21.213 and he complies with this section; and

(2) The FAA finds that there is no feature, characteristic or condition of the aircraft that would make the aircraft unsafe when operated in accordance with the limitations established in §§ 21.81(e) and 91.317 of this subchapter.

(b) The manufacturer must hold a provisional type certificate for the aircraft .

(c) The manufacturer must submit a statement that the aircraft conforms to the type design corresponding to the provisional type certificate and has been found by him to be in safe operating condition under all applicable limitations.

(d) The aircraft must be flown at least five hours by the manufacturer.

(e) The aircraft must be supplied with a provisional aircraft flight manual or other document and appropriate placards containing the limitations established by §§ 21.81(e) and 91.317.

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§ 21.223 Class II provisional airworthiness certificates.

(a) Except as provided in § 21.225 , an applicant is entitled to a Class II provisional airworthiness certificate for an aircraft for which a Class II provisional type certificate has been issued if—

(1) He meets the eligibility requirements of § 21.213 and he complies with this section; and

(2) The FAA finds that there is no feature, characteristic, or condition of the aircraft that would make the aircraft unsafe when operated in accordance with the limitations established in §§ 21.83(h) , 91.317 , and 121.207 of this chapter.

(b) The applicant must show that a Class II provisional type certificate for the aircraft has been issued to the manufacturer.

- (c) The applicant must submit a statement by the manufacturer that the aircraft has been manufactured under a quality system adequate to ensure that the aircraft conforms to the type design corresponding with the provisional type certificate.
- (d) The applicant must submit a statement that the aircraft has been found by him to be in a safe operating condition under the applicable limitations.
- (e) The aircraft must be flown at least five hours by the manufacturer.
- (f) The aircraft must be supplied with a provisional aircraft flight manual containing the limitations established by §§ 21.83(h) , 91.317 , and 121.207 of this chapter.

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§ 21.225 Provisional airworthiness certificates corresponding with provisional amendments to type certificates.

- (a) An applicant is entitled to a Class I or a Class II provisional airworthiness certificate, for an aircraft , for which a provisional amendment to the type certificate has been issued, if—
 - (1) He meets the eligibility requirements of § 21.213 and he complies with this section; and
 - (2) The FAA finds that there is no feature, characteristic, or condition of the aircraft , as modified in accordance with the provisionally amended type certificate, that would make the aircraft unsafe when operated in accordance with the applicable limitations established in §§ 21.85(g) , 91.317 , and 121.207 of this chapter.
- (b) The applicant must show that the modification was made under a quality system adequate to ensure that the modification conforms to the provisionally amended type certificate.
- (c) The applicant must submit a statement that the aircraft has been found by him to be in a safe operating condition under the applicable limitations.
- (d) The aircraft must be flown at least five hours by the manufacturer.
- (e) The aircraft must be supplied with a provisional aircraft flight manual or other document and appropriate placards containing the limitations required by §§ 21.85(g) , 91.317 , and 121.207 of this chapter.

§ 21.301



§ 21.301 Applicability.

This subpart prescribes—

- (a) Procedural requirements for issuing PMAs; and
- (b) Rules governing holders of PMAs.

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§ 21.303 Application.

(a) The applicant for a PMA must apply in a form and manner prescribed by the FAA , and include the following:

- (1) The identity of the product on which the article is to be installed.
- (2) The name and address of the manufacturing facilities at which these articles are to be manufactured.
- (3) The design of the article, which consists of—
 - (i) Drawings and specifications necessary to show the configuration of the article; and
 - (ii) Information on dimensions, materials, and processes necessary to define the structural strength of the article.
- (4) Test reports and computations necessary to show that the design of the article meets the airworthiness requirements of this subchapter. The test reports and computations must be applicable to the product on which the article is to be installed, unless the applicant shows that the design of the article is identical to the design of a article that is covered under a type certificate. If the design of the article was obtained by a licensing agreement, the applicant must provide evidence of that agreement.

(5) An applicant for a PMA based on test reports and computations must provide a statement certifying that the applicant has complied with the airworthiness requirements of this subchapter.

(b) Each applicant for a PMA must make all inspections and tests necessary to determine—

(1) Compliance with the applicable airworthiness requirements;

(2) That materials conform to the specifications in the design;

(3) That the article conforms to its approved design; and

(4) That the manufacturing processes, construction, and assembly conform to those specified in the design.

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§ 21.305 Organization.

(a) Each applicant for or holder of a PMA must provide the FAA with a document—

(1) Describing how its organization will ensure compliance with the provisions of this subpart;

(2) Describing assigned responsibilities, delegated authorities, and the functional relationship of those responsible for quality to management and other organizational components; and

(3) Identifying an accountable manager.

(b) The accountable manager specified in paragraph (a) of this section must be responsible within the applicant's or production approval holder's organization for, and have authority over, all production operations conducted under this part. The accountable manager must confirm that the procedures described in the quality manual required by § 21.308 are in place and that the production approval holder satisfies the requirements of the applicable regulations of subchapter C, Aircraft . The accountable manager must serve as the primary contact with the FAA .

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§ 21.307 Quality system.

Each applicant for or holder of a PMA must establish a quality system that meets the requirements of § 21.137 .

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§ 21.308 Quality manual.

Each applicant for or holder of a PMA must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA .

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§ 21.309 Location of or change to manufacturing facilities.

(a) An applicant may obtain a PMA for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The PMA holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The PMA holder must immediately notify the FAA , in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its PMA

article.

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§ 21.310 Inspections and tests.

(a) Each applicant for or holder of a PMA must allow the FAA to inspect its quality system, facilities, technical data, and any manufactured articles and witness any tests, including any inspections or tests at a supplier facility, necessary to determine compliance with this subchapter.

(b) Unless otherwise authorized by the FAA , the applicant or holder—

(1) May not present any article to the FAA for an inspection or test unless compliance with § 21.303(b)(2) through (4) has been shown for that article; and

(2) May not make any change to an article between the time that compliance with § 21.303(b)(2) through (4) is shown for that article and the time that the article is presented to the FAA for the inspection or test.

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§ 21.311 Issuance.

The FAA issues a PMA after finding that the applicant complies with the requirements of this subpart and the design complies with the requirements of this chapter applicable to the product on which the article is to be installed.

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§ 21.313 Duration.

A PMA is effective until surrendered, withdrawn, or the FAA otherwise terminates it.

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§ 21.314 Transferability.

The holder of a PMA may not transfer the PMA .

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§ 21.316 Responsibility of holder.

Each holder of a PMA must—

- (a) Amend the document required by § 21.305 as necessary to reflect changes in the organization and provide these amendments to the FAA ;
- (b) Maintain the quality system in compliance with the data and procedures approved for the PMA ;

- (c) Ensure that each PMA article conforms to its approved design and is in a condition for safe operation;
- (d) Mark the PMA article for which an approval has been issued. Marking must be in accordance with part 45 of this chapter, including any critical parts;
- (e) Identify any portion of the PMA article (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;
- (f) Have access to design data necessary to determine conformity and airworthiness for each article produced under the PMA ;
- (g) Retain each document granting PMA and make it available to the FAA upon request; and
- (h) Make available to the FAA information regarding all delegation of authority to suppliers.

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§ 21.319 Design changes.

(a) Classification of design changes.

(1) A “minor change” to the design of an article produced under a PMA is one that has no appreciable effect on the approval basis.

(2) A “major change” to the design of an article produced under a PMA is any change that is not minor.

(b) Approval of design changes.

(1) Minor changes to the basic design of a PMA may be approved using a method acceptable to the FAA .

(2) The PMA holder must obtain FAA approval of any major change before including it in the design of an article produced under a PMA .

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§ 21.320 Changes in quality system.

After the issuance of a PMA—

- (a) Each change to the quality system is subject to review by the FAA ; and
- (b) The holder of the PMA must immediately notify the FAA , in writing, of any change that may affect the inspection, conformity, or airworthiness of its article.

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§ 21.321



§ 21.321 Applicability.

This subpart prescribes—

- (a) Procedural requirements for issuing export airworthiness approvals; and
- (b) Rules governing the holders of those approvals.

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§ 21.325 Export airworthiness approvals.

(a) An export airworthiness approval for an aircraft is issued in the form of an export certificate of airworthiness. This certificate does not authorize operation of that aircraft .

(b) The FAA prescribes the form and manner in which an export airworthiness approval for an aircraft engine , propeller , or article is issued.

(c) If the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter, an export airworthiness approval may be issued for a product or article located outside of the United States .

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§ 21.327 Application.

(a) Any owner of a U.S.-registered aircraft (or the agent of the owner) may apply for an export certificate of airworthiness for that aircraft .

(b) Any person may apply for an export airworthiness approval for an aircraft engine , propeller , or article.

(c) Each applicant must apply in a form and manner prescribed by the FAA .

[Docket No. FAA -2023-1377, Amdt. 21-109, 90 FR 35208 , July 24, 2025]

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§ 21.329 Issuance of export certificates of airworthiness.

(a) A person may obtain from the FAA an export certificate of airworthiness for an aircraft if—

(1) A new or used aircraft manufactured under subpart F or G of this part meets the requirements under subpart H of this part for a—

(i) Standard airworthiness certificate; or

(ii) Special airworthiness certificate in either the “primary” or the “restricted” category; or

(2) A new or used aircraft not manufactured under subpart F or G of this part has a valid—

(i) Standard airworthiness certificate; or

(ii) Special airworthiness certificate in either the “primary” or the “restricted” category.

(b) An aircraft need not meet a requirement specified in paragraph (a) of this section, as applicable, if—

(1) The importing country or jurisdiction accepts, in a form and manner acceptable to the FAA , a deviation from that requirement; and

(2) The export certificate of airworthiness lists as an exception any difference between the aircraft to be exported and its type design.

[Docket No. FAA -2006-25877, Amdt. 21-92, 74 FR 53391 , Oct. 16, 2009, as amended by Amdt. 21-109, 90 FR 35208 , July 24, 2025]

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§ 21.331 Issuance of export airworthiness approvals for aircraft engines, propellers, and articles.

(a) A person may obtain from the FAA an export airworthiness approval to export a new aircraft engine , propeller , or article that is manufactured under this part if it conforms to its approved design and is in a condition for safe operation.

(b) A new aircraft engine , propeller , or article need not meet a requirement of paragraph (a) of this section if—

(1) The importing country or jurisdiction accepts, in a form and manner acceptable to the FAA , a deviation from that requirement; and

(2) The export airworthiness approval lists as an exception any difference between the aircraft engine , propeller , or article to be exported and its approved design.

(c) A person may obtain from the FAA an export airworthiness approval to export a used aircraft engine , propeller , or article if it conforms to its approved design and is in a condition for safe operation.

(d) A used aircraft engine or propeller need not meet a requirement of paragraph (c) of this section if—

(1) The importing country or jurisdiction accepts, in a form and manner acceptable to the FAA , a deviation from that requirement; and

(2) The export airworthiness approval lists as an exception any difference between the used aircraft engine or propeller to be exported and its approved design.

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§ 21.335 Responsibilities of exporters.

Unless otherwise agreed to by the importing country or jurisdiction, each exporter must—

(a) Forward to the importing country or jurisdiction all documents specified by that country or jurisdiction;

(b) Preserve and package products and articles as necessary to protect them against corrosion and damage during transit or storage and state the duration of effectiveness of such preservation and packaging;

(c) Remove or cause to be removed any temporary installation incorporated on an aircraft for the purpose of export delivery and restore the aircraft to the approved configuration upon completion of the delivery flight;

(d) Secure all proper foreign entry clearances from all the countries or jurisdictions involved when conducting sales demonstrations or delivery flights; and

(e) When title to an aircraft passes or has passed to a foreign purchaser—

- (1) Request cancellation of the U.S. registration and airworthiness certificates from the FAA , giving the date of transfer of title, and the name and address of the foreign owner;
- (2) Return the Registration and Airworthiness Certificates to the FAA ; and
- (3) Provide a statement to the FAA certifying that the U.S. identification and registration numbers have been removed from the aircraft in compliance with § 45.33 .

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§ 21.500



§ 21.500 Acceptance of aircraft engines and propellers.

An aircraft engine or propeller manufactured in a foreign country or jurisdiction meets the requirements for acceptance under this subchapter if—

- (a) That country or jurisdiction is subject to the provisions of an agreement with the United States for the acceptance of that product;
- (b) That product is marked in accordance with part 45 of this chapter; and
- (c) The holder or licensee of a U.S. type certificate for that product furnishes with each such aircraft engine or propeller imported into the United States , an export airworthiness approval issued in accordance with the provisions of that agreement certifying that the individual aircraft engine or propeller—
 - (1) Conforms to its U.S. type certificate and is in condition for safe operation; and
 - (2) Has been subjected by the manufacturer to a final operational check.

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§ 21.502 Acceptance of articles.

An article (including an article produced under a letter of TSO design approval) manufactured in a foreign country or jurisdiction meets the requirements for acceptance under this subchapter if—

- (a) That country or jurisdiction is subject to the provisions of an agreement with the United States for the acceptance of that article;
- (b) That article is marked in accordance with part 45 of this chapter; and
- (c) An export airworthiness approval has been issued in accordance with the provisions of that agreement for that article for import into the United States .

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§ 21.601



§ 21.601 Applicability and definitions.

(a) This subpart prescribes—

- (1) Procedural requirements for issuing TSO authorizations;
- (2) Rules governing the holders of TSO authorizations; and
- (3) Procedural requirements for issuing letters of TSO design approval.

(b) For the purposes of this subpart—

- (1) A TSO issued by the FAA is a minimum performance standard for specified articles used on civil aircraft ;
- (2) A TSO authorization is an FAA design and production approval issued to the manufacturer of an article that has been found to meet a specific TSO ;
- (3) A letter of TSO design approval is an FAA design approval for an article that has been found to meet a specific TSO in accordance with the procedures of § 21.621 ;
- (4) An article manufactured under a TSO authorization, an FAA letter of acceptance as described in § 21.613(b) , or an article manufactured under a letter of TSO design approval described in § 21.621 is an approved article for the purpose of meeting the regulations of this chapter that require the article to be approved; and
- (5) An article manufacturer is the person who controls the design and quality of the article produced (or to be produced, in the case of an application), including any related parts, processes,

or services procured from an outside source.

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§ 21.603 Application.

(a) An applicant for a TSO authorization must apply in the form and manner prescribed by the FAA . The applicant must include the following documents in the application:

(1) A statement of conformance certifying that the applicant has met the requirements of this subpart and that the article concerned meets the applicable TSO that is effective on the date of application for that article.

(2) One copy of the technical data required in the applicable TSO .

(b) If the applicant anticipates a series of minor changes in accordance with § 21.619 , the applicant may set forth in its application the basic model number of the article and the part number of the components with open brackets after it to denote that suffix change letters or numbers (or combinations of them) will be added from time to time.

(c) If the application is deficient, the applicant must, when requested by the FAA , provide any additional information necessary to show compliance with this part. If the applicant fails to provide the additional information within 30 days after the FAA 's request, the FAA denies the application and notifies the applicant.

[Docket No. FAA -2006-25877, Amdt. 21-92, 74 FR 53392 , Oct. 16, 2009, as amended by Doc. No. FAA -2018-0119, Amdt. 21-101, 83 FR 9169 , Mar. 5, 2018]

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§ 21.605 Organization.

(a) Each applicant for or holder of a TSO authorization must provide the FAA with a document—

- (1) Describing how its organization will ensure compliance with the provisions of this subpart;
- (2) Describing assigned responsibilities, delegated authorities, and the functional relationship of those responsible for quality to management and other organizational components; and
- (3) Identifying an accountable manager.

(b) The accountable manager specified in paragraph (a) of this section must be responsible within the applicant's or production approval holder's organization for, and have authority over, all production operations conducted under this part. The accountable manager must confirm that the procedures described in the quality manual required by § 21.608 are in place and that the production approval holder satisfies the requirements of the applicable regulations of subchapter C, Aircraft . The accountable manager must serve as the primary contact with the FAA .

§ 21.607



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§ 21.607 Quality system.

Each applicant for or holder of a TSO authorization must establish a quality system that meets the requirements of § 21.137 .

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§ 21.608 Quality manual.

Each applicant for or holder of a TSO authorization must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA .

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§ 21.609 Location of or change to manufacturing facilities.

(a) An applicant may obtain a TSO authorization for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The TSO authorization holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The TSO authorization holder must immediately notify the FAA , in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its product or article.

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§ 21.611 Issuance.

If the FAA finds that the applicant complies with the requirements of this subchapter, the FAA issues a TSO authorization to the applicant (including all TSO deviations granted to the applicant).

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§ 21.613 Duration.

(a) A TSO authorization or letter of TSO design approval is effective until surrendered, withdrawn, or otherwise terminated by the FAA .

(b) If a TSO is revised or canceled, the holder of an affected FAA letter of acceptance of a statement of conformance, TSO authorization, or letter of TSO design approval may continue to manufacture articles that meet the original TSO without obtaining a new acceptance, authorization, or approval but must comply with the requirements of this chapter.

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§ 21.614 Transferability.

The holder of a TSO authorization or letter of TSO design approval may not transfer the TSO authorization or letter of TSO design approval.

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§ 21.616



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§ 21.616 Responsibility of holder.

Each holder of a TSO authorization must—

(a) Amend the document required by § 21.605 as necessary to reflect changes in the organization and provide these amendments to the FAA .

(b) Maintain a quality system in compliance with the data and procedures approved for the TSO authorization;

(c) Ensure that each manufactured article conforms to its approved design, is in a condition for safe operation, and meets the applicable TSO ;

(d) Mark the TSO article for which an approval has been issued. Marking must be in accordance with part 45 of this chapter, including any critical parts;

(e) Identify any portion of the TSO article (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;

(f) Have access to design data necessary to determine conformity and airworthiness for each article produced under the TSO authorization. The manufacturer must retain this data until it no longer manufactures the article. At that time, copies of the data must be sent to the FAA ;

(g) Retain its TSO authorization and make it available to the FAA upon request; and

(h) Make available to the FAA information regarding all delegation of authority to suppliers.

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§ 21.618 Approval for deviation.

(a) Each manufacturer who requests approval to deviate from any performance standard of a TSO must show that factors or design features providing an equivalent level of safety compensate for the standards from which a deviation is requested.

(b) The manufacturer must send requests for approval to deviate, together with all pertinent data, to the FAA . If the article is manufactured under the authority of a foreign country or jurisdiction, the manufacturer must send requests for approval to deviate, together with all pertinent data, through the civil aviation authority of that country or jurisdiction to the FAA .

[Docket No. FAA -2006-25877, Amdt. 21-92, 74 FR 53392 , Oct. 16, 2009, as amended by Doc. No. FAA -2018-0119, Amdt. 21-101, 83 FR 9169 , Mar. 5, 2018]

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§ 21.619 Design changes.

(a) Minor changes by the manufacturer holding a TSO authorization. The manufacturer of an article under an authorization issued under this part may make minor design changes (any change other than a major change) without further approval by the FAA . In this case, the changed article keeps the original model number (part numbers may be used to identify minor changes) and the manufacturer must forward to the FAA , any revised data that are necessary for compliance with § 21.603(a) .

(b) Major changes by the manufacturer holding a TSO authorization. Any design change by the manufacturer extensive enough to require a substantially complete investigation to determine compliance with a TSO is a major change. Before making a major change, the manufacturer must assign a new type or model designation to the article and apply for an authorization under § 21.603 .

(c) Changes by persons other than the manufacturer. No design change by any person (other than the manufacturer who provided the statement of conformance for the article) is eligible for approval under this part unless the person seeking the approval is a manufacturer and applies under § 21.603(a) for a separate TSO authorization. Persons other than a manufacturer may obtain approval for design changes under part 43 or under the applicable airworthiness regulations of this chapter.

[Docket No. FAA -2006-25877, Amdt. 21-92, 74 FR 53392 , Oct. 16, 2009, as amended by Doc. No. FAA -2018-0119, Amdt. 21-101, 83 FR 9169 , Mar. 5, 2018; Doc. No. FAA -2022-1355, Amdt. 21-106, 87 FR 75710 , Dec. 9, 2022]

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§ 21.620 Changes in quality system.

After the issuance of a TSO authorization—

(a) Each change to the quality system is subject to review by the FAA ; and

(b) The holder of the TSO authorization must immediately notify the FAA , in writing, of any change that may affect the inspection, conformity, or airworthiness of its article.

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§ 21.621 Issue of letters of TSO design approval: Import articles.

(a) The FAA may issue a letter of TSO design approval for an article—

(1) Designed and manufactured in a foreign country or jurisdiction subject to the export provisions of an agreement with the United States for the acceptance of these articles for import; and

(2) For import into the United States if—

(i) The State of Design certifies that the article has been examined, tested, and found to meet the applicable TSO or the applicable performance standards of the State of Design and any other performance standards the FAA may prescribe to provide a level of safety equivalent to that provided by the TSO ; and

(ii) The manufacturer has provided to the FAA one copy of the technical data required in the applicable performance standard through its State of Design.

(b) The FAA issues the letter of TSO design approval that lists any deviation granted under § 21.618 .

§ 21.700



§ 21.700 SFAR No. 111—Lavatory Oxygen Systems.

The requirements of § 121.1500 of this chapter also apply to this part.

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2.2.3

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

3.4 XXXXXXX

4.4.2 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

4.4.3 XXXXXXX 2.2.3 3

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

[AAC-199]

XX

4.4.4

XXXXXXXXXXXX 2.2.3 4

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

[AAC-198]

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

[AAC-201] XXXXXXX

[AAC-018] XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

[AAC-171] 4.5 XX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

, XXX 2.2.4 3.5

XXXXXXXXXXXXXXXXXXXX

[AAC-023] XXXXXXXXXXXXXXX

[AAC-231] 4.6

XX XXXXXXXXXXXXXXX

30 XXXX

2.2.5 XXXXXXXXXXXXXXXXXXXXXXX

5. 5.1 (1) (2)

5.1.1 (1) [AAC-018] (2) (3)

5.1.2 5 (5.2)

(1) (2) (3) (4) 5.2.1

(1) (2) [AAC-018] (3)

(4) (

) (5)

(6)

(7) (8)

(9) 5.2.2

5.2.3 2.2.3

3.4, [AAC-018]

5.2.4 [AAC-018]

[AAC-171],

6. 6.1 6.1.1 (1) I

(2) II

I

CTSOA (3) III I

II

6.1.2 (1)

I (2)

II III 6.1.3 (1)

I II (2)

III (a) (b)

(c) (d) 6.1.4

(1) (2)

(3) (4)

(a)

(b) 6.2 I

6.2.1 (1)

(2) [AAC 233] (2) [AAC-

037] () (3)

CCAR-21 21.329

6.2.2

5

6.2.3

[AAC 234] ,

(1) (2)

6.2.4

[AAC 157] 6.3 II III 6.3.1

1

[AAC 233] 2

CCAR-21 21.329

6.3.2

5

6.3.3

[AAC

234]

1

1 2

6.3.4

[AAC 038]

6.4

6.4.1 1

[AAC 233] 2

6.4.2 5

6.4.3

1

2

3

6.4.4

[AAC 233]

[AAC

157]

7. 7.1 7.1.1

7.1.2

7.2

(1)

[AAC-081] (2)

(3)

(4)

(5)

7.3

5

7.4 [AAC 207]

7.5 [AAC-081]
[AAC-207]
[AAC-082] 7.6 30
(1) [AAC-081] (2)
[AAC-207] (3)
(4)
(5) 7.7
1 7.8 7
8. 8.1 1
2 CCAR-45 ,
3
8.2 (1)
(2)
(3) (4)
(5) (6)
(7) (8)
8.2.2 (1) (2)
(3) (4)
8.3 [AAC-083] (2) (3)
[AAC-037] (4) (5)
8.4 5
8.5 (1)
(a) (b)
(c)
(d)
(2)
[AAC-083]
[AAC-232]
8.6
[AAC-054] 8.7
(1) [AAC-083]; (2)
[AAC-054] (3) [AAC-232]
8.8 1
2 3

8.9

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10.4

20

(3)

□ 1

□ 1□

□ 2□

□ 3□

□ 4 □

13.3



14.2

AP-

The image shows two tens rods and one ten rod that has been partitioned into ten ones units. This represents the number 38.