



Gorham Technical Associates, Inc.

The 15th Annual Gorham PMA- DER Conference PMA Parts Training

DERS Group Svc LLC

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Regulations - RGL.FAA.GOV

Search: Go

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- Code of Federal Regulations
 - Current CFR
 - By Part
 - By Subpart
 - Historical CFR
 - By Part
 - By Subpart
 - By Section
 - By Amendment
 - Future Effective CFR
 - By Part
 - Current SFAR
 - By Number
 - By CFR Part
 - Historical SFAR
 - By Number
- [Aircraft Certification Homepage](#)
- [Related Links](#)
- [FAA Section 508 Helpdesk](#)
- [Help](#)

Current CFR by SubPart

[Search](#)
[Previous](#)
[Next](#)
[Expand All](#)
[Collapse All](#)
[Print View](#)

- ▶ Part 14 - RULES IMPLEMENTING THE EQUAL ACCESS TO JUSTICE ACT OF 1980
- ▶ Part 15 - ADMINISTRATIVE CLAIMS UNDER FEDERAL TORT CLAIMS ACT
- ▶ Part 16 - RULES OF PRACTICE FOR FEDERALLY-ASSISTED AIRPORT ENFORCEMENT PROCEEDINGS
- ▶ Part 17 - PROCEDURES FOR PROTESTS AND CONTRACTS DISPUTES
- ▶ Part 21 - CERTIFICATION PROCEDURES FOR PRODUCTS, ARTICLES, AND PARTS
 - ▶ Subpart A--General
 - ▶ Subpart B--Type Certificates
 - ▶ Subpart C--Provisional Type Certificates
 - ▶ Subpart D--Changes to Type Certificates
 - ▶ Subpart E--Supplemental Type Certificates
 - ▶ Subpart F--Production Under Type Certificate
 - ▶ Subpart G--Production Certificates
 - ▶ Subpart H--Airworthiness Certificates
 - ▶ Subpart I--Provisional Airworthiness Certificates
 - ▶ Subpart J--[Removed and Reserved]
 - ▶ **Subpart K--Parts Manufacturer Approvals**
 - ▶ Subpart L--Export Airworthiness Approvals
 - ▶ Subpart M--[Removed and Reserved]
 - ▶ Subpart N--Acceptance of Aircraft Engines, Propellers, and Articles for Import
 - ▶ Subpart O--Technical Standard Order Approvals
 - ▶ Subpart P--Special Federal Aviation Regulations
- ▶ Part 23 - AIRWORTHINESS STANDARDS: NORMAL, UTILITY, ACROBATIC, AND COMMUTER CATEGORY AIRPLANES
- ▶ Part 25 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES
- ▶ Part 26 - CONTINUED AIRWORTHINESS AND SAFETY IMPROVEMENTS FOR TRANSPORT CATEGORY AIRPLANES
- ▶ Part 27 - AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT
- ▶ Part 29 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT
- ▶ Part 31 - AIRWORTHINESS STANDARDS: MANNED FREE BALLOONS
- ▶ Part 33 - AIRWORTHINESS STANDARDS: AIRCRAFT ENGINES
- ▶ Part 34 - FUEL VENTING AND EXHAUST EMISSION REQUIREMENTS FOR TURBINE ENGINE POWERED AIRPLANES

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The FAA has amended Certification Procedures and Identification Requirements

The amendments:

- Standardize quality system requirements for all Production Approval Holders (PAHs),
- Require PAHs, including those producing under Type Certificate, to mark all articles, including sub-assemblies and components,
- Require PAHs to issue airworthiness approvals for aircraft engines, propellers, and other aviation articles,
- Require PAHs to create a certifying staff to issue those approvals,
- Revise export airworthiness approval requirements to facilitate global manufacturing.
- Move all part marking requirements from part 21 to part 45 and amend the identification requirements for products and .

The intent of these changes is to continue to promote safety by ensuring that aircraft, and products and articles designed specifically for use in aircraft, wherever manufactured, meet appropriate minimum standards for design and construction. As a result of this action, the FAA's regulations now better reflect the current global aircraft and aircraft products and articles manufacturing environment.

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OLD Rules:

The an

- Star 21.301 Applicability
- Req 21.303 Replacement and modification parts.
- inclu 21.305 Approval of materials, parts, processes, and
- Req appliances.
- avia 21.307 [Deleted.]
- Require PAHs to create a certifying staff to issue those approvals,
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Subpart K – Parts Manufacturer Approvals

▼ Subpart K--Parts Manufacturer Approvals

OLD Rules:

21.301 Applicability

21.303 Replacement and modification parts.

21.305 Approval of materials, parts, processes, and appliances.

21.307 [Deleted.]

NEW Rules:

Sec. 21.301	Applicability.	21-92	04/16/2011
Sec. 21.303	Application	21-92	04/16/2011
Sec. 21.305	Organization	21-92	04/16/2011
Sec. 21.307	Quality system	21-92	04/16/2011
Sec. 21.308	Quality manual	21-92	04/16/2011
Sec. 21.309	Location of or change to manufacturing facilities	21-92	04/16/2011
Sec. 21.310	Inspections and tests	21-92	04/16/2011
Sec. 21.311	Issuance	21-92	04/16/2011
Sec. 21.313	Duration	21-92	04/16/2011
Sec. 21.314	Transferability	21-92	04/16/2011
Sec. 21.316	Responsibility of holder.	21-92	04/16/2011
Sec. 21.319	Design changes	21-92	04/16/2011
Sec. 21.320	Changes in quality system	21-92	04/16/2011

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- ▶ [Subpart M--\(Removed and Reserved\)](#)
- ▶ [Subpart N--Acceptance of Aircraft Engines, Propellers, and Articles for Import](#)
- ▶ [Subpart O--Technical Standard Order Approvals](#)
- ▶ [Subpart P--Special Federal Aviation Regulations](#)

- ▶ [Part 23 - AIRWORTHINESS STANDARDS: NORMAL, UTILITY, ACROBATIC, AND COMMUTER CATEGORY AIRPLANES](#)
- ▶ [Part 25 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES](#)
- ▶ [Part 26 - CONTINUED AIRWORTHINESS AND SAFETY IMPROVEMENTS FOR TRANSPORT CATEGORY AIRPLANES](#)
- ▶ [Part 27 - AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT](#)
- ▶ [Part 29 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT](#)

[Sec. 21.521](#)

Changes in quality system

21-92

04/16/2011

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- Part 14 - RULES IMPLEMENTING THE EQUAL ACCESS TO JUSTICE ACT OF 1980
- Part 15 - ADMINISTRATIVE CLAIMS UNDER FEDERAL TORT CLAIMS ACT
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 - Subpart B--Type Certificates
 - Subpart C--Provisional Type Certificates
 - Subpart D--Changes to Type Certificates
 - Subpart E--Supplemental Type Certificates
 - Subpart F--Production Under Type Certificate
 - Subpart G--Production Certificates** (highlighted in red)
 - Subpart H--Airworthiness Certificates
 - Subpart I--Provisional Airworthiness Certificates
 - Subpart J--[Removed and Reserved]
 - Subpart K--Parts Manufacturer Approvals
 - Subpart L--Export Airworthiness Approvals
 - Subpart M--[Removed and Reserved]
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 - Subpart O--Technical Standard Order Approvals
 - Subpart P--Special Federal Aviation Regulations
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- Part 25 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES
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- Part 33 - AIRWORTHINESS STANDARDS: AIRCRAFT ENGINES
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▼ Subpart G--Production Certificates

PAH and QMS

Sec. 21.131	Applicability.	21-92	04/16/2011
Sec. 21.132	Eligibility.	21-92	04/16/2011
Sec. 21.133	Application	21-92	04/16/2011
Sec. 21.135	Organization	21-92	04/16/2011
Sec. 21.137	Quality system	21-92	04/16/2011
Sec. 21.138	Quality manual	21-92	04/16/2011
Sec. 21.139	Location of or change to manufacturing facilities.	21-92	04/16/2011
Sec. 21.140	Inspections and tests	21-92	04/16/2011
Sec. 21.141	Issuance	21-92	04/16/2011
Sec. 21.142	Production limitation record	21-92	04/16/2011
Sec. 21.143	Duration	21-92	04/16/2011
Sec. 21.144	Transferability	21-92	04/16/2011
Sec. 21.145	Privileges	21-92	04/16/2011
Sec. 21.146	Responsibility of holder	21-92	04/16/2011
Sec. 21.147	Amendment of production certificates	21-92	04/16/2011
Sec. 21.149	[Removed]	21-92	04/16/2011
Sec. 21.150	Changes in quality system.	21-92	04/16/2011
Sec. 21.151	Production limitation record.		02/01/1965
Sec. 21.153	[Removed]	21-92	04/16/2011
Sec. 21.155	Transferability.		02/01/1965
Sec. 21.157	[Removed]	21-92	04/16/2011
Sec. 21.159	[Removed]	21-92	04/16/2011
Sec. 21.161	[Removed]	21-92	04/16/2011
Sec. 21.163	[Removed]	21-92	04/16/2011
Sec. 21.165	[Removed]	21-92	04/16/2011

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(QMS)

Sec. 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-furnished product or article conforms to its approved design; and
 - (2) Require each supplier to report to the production approval holder if a product or article has been released from that supplier and subsequently found not to conform to the applicable design data.
- (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 Sec. 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.]

Amdt 21-92 Eff 4/16/2011

14 CFR 21.137

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.
- (b) Document control.
- (c) Supplier control.
- (d) Manufacturing process control.
- (e) Inspecting and testing.
- (f) Inspection, measuring, and test equipment control.
- (g) Inspection and test status.
- (h) Nonconforming product and article control
- (i) Corrective and preventive actions.
- (j) Handling and storage.
- (k) Control of quality records.
- (l) Internal audits.
- (m) In-service feedback.
- (n) Quality escapes

What is a PMA ?

- A Modification and Replacement Part or (Parts Manufacturer Approval) is one of the eleven (11) ways the FAA uses to control and approve replacement or modification parts manufactured for and installed on a Type Certificated Product following its initial Airworthiness Approval.
- 14 CFR 21.303 QMS changes see Reference AC 21-42, &
- AC 21-43 Production under Subpart .
- 14 CFR 21 Amendment 21-92 has radically changed 21 rules.

A PMA is a specific way to obtain FAA approval to install a replacement or modified part on a TC product.

There are two (2) fundamental ways to apply for a PMA.

- Identity [Which has three (3) subsets]
 - Identity by License Agreement
 - Identity by Design without a License agreement
 - Identity by Associative Means [OCM evidence]
- Test & Computation Method [Which has three (3) subsets]
 - Comparative Analysis Method
 - General Analysis Method
 - Testing

There are two types of PMA's by Rule and by Order

MAJOR PMA

- Developed from an STC. Invoked under 14 CFR Part 21.95, & 21.97, and guidance given under Order 8110.4C (Type Certification). This PMA which is developed from a STC is a Major Change Designed Component. When this STC-PMA is installed you should follow 43 Appendix B, and issue to the TC product a Form 337, and the 8130-3 should be annotated in Box 13, that it is a Major Design Change Component, in some Bi-laterals this statement is mandatory.

MINOR PMA

- Developed from a TC or TSO sub-component which does not go beyond 14 CFR Part 21.93, and is considered under Order 8110.42C as a minor change to the original TC or TSO. With the exception of LLP's most Bi-laterals allow the use of these types of PMA's without restrictions or re-validations.
- Only requires an 8130-3 be executed upon installation to a TC product.
- **Note:** Licensed PMA on LLP's are normally accepted without restriction in most Bi-laterals.

Acceptable methods to obtaining a PMA

PMA

PMA License

PMA ID
Design

PMA ID by Ass

Sec. 21.301	Applicability.	21-92	04/16/2011
Sec. 21.303	Application	21-92	04/16/2011
Sec. 21.305	Organization	21-92	04/16/2011
Sec. 21.307	Quality system	21-92	04/16/2011
Sec. 21.308	Quality manual	21-92	04/16/2011
Sec. 21.310			04/16/2011
Sec. 21.311			04/16/2011
Sec. 21.312			04/16/2011
Sec. 21.314	Transferability	21-92	04/16/2011
Sec. 21.316	Responsibility of holder.	21-92	04/16/2011
Sec. 21.319	Design changes	21-92	04/16/2011
Sec. 21.320	Changes in quality system	21-92	04/16/2011

None of these rules tell you how to obtain a PMA. They just tell you what the requirements are for having one!

Thirteen (13) Applicable Rules addressing PMA:

GUIDANCE

DESIGN

SERVICE
HISTORY

ITY

Subpart K - Parts Manufacturer Approvals 14 CFR 21.303

Application

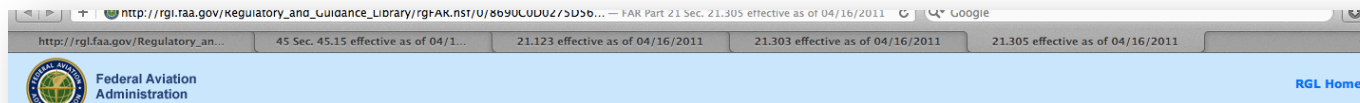
- (a) The applicant for a PMA must apply in a form and manner prescribed by the FAA, and include the following:
 - (1) The identity of the product on which the article is to be installed.
 - (2) The name and address of the manufacturing facilities at which these articles are to be manufactured.
 - (3) 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.

Subpart K - Parts Manufacturer Approvals 14 CFR 21.303

Application

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

14 CFR 21.305 Organization



Organization

[Each applicant for or holder of a PMA must provide the FAA with a document describing how its organization will ensure compliance with the provisions of this subpart. At a minimum, the document must describe assigned responsibilities and delegated authority, and the functional relationship of those responsible for quality to management and other organizational components.]

Subpart K—Parts Manufacturer Approvals

Sec. 21.305

Organization

[Each applicant for or holder of a PMA must provide the FAA with a document describing how its organization will ensure compliance with the provisions of this subpart. At a minimum, the document must describe assigned responsibilities and delegated authority, and the functional relationship of those responsible for quality to management and other organizational components.]

Amdt. 21-92, Eff. 4/16/2011

► **Comments**

▼ **Document History**

Notice of Proposed Rulemaking Actions:

Notice of Proposed Rulemaking. Notice No. [79-15](#); Issued on 09/21/79.

Final Rule Actions:

Final Rule. Docket No. [19589](#); Issued on 06/02/80.

Final rule. Docket No. [FAA-2006-25877](#); Issued on 10/6/2009

Final rule; correction. Docket No. [FAA-2006-25877](#); Issued on 2/24/2010

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14 CFR 21.310 Inspections and Tests

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rg+AK.nst/U/114E1E9AFEB88... — FAR Part 21 Sec. 21.310 effective as of 04/16/2011

Part 21 CERTIFICATION PROCEDURES FOR PRODUCTS, ARTICLES, AND PARTS

Subpart K—Parts Manufacturer Approvals

Sec. 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 Sec. 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 Sec. 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.]

Amdt. 21-92, Eff. 4/16/2011

► Comments

▼ Document History

Notice of Proposed Rulemaking Actions:
Not Applicable.

Final Rule Actions:

Final rule. Docket No. [FAA-2006-25877](#); Issued on 10/6/2009

Final rule; correction. Docket No. [FAA-2006-25877](#); Issued on 2/24/2010

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14 CFR 21.316 Responsibilities of Holder

Sec. 21.316

Responsibility of holder.

Each holder of a PMA must—

- (a) Amend the document required by Sec. 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.

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.

AMdt. 21-92, Eff. 4/16/2011

► Comments

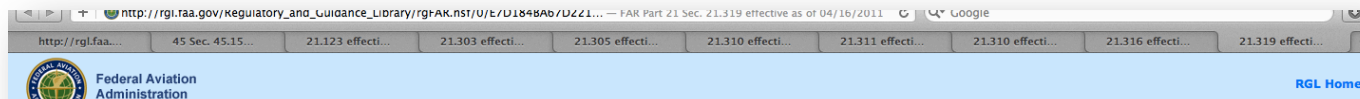
▼ Document History

Notice of Proposed Rulemaking Actions:
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Final rule. Docket No. [FAA-2006-25877](#); Issued on 10/6/2009
 Final rule; correction. Docket No. [FAA-2006-25877](#); Issued on 2/24/2010

14 CFR 21.319 Design Changes



Sec. 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.]

- (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.]

Amdt. 21-92, Eff. 4/16/2011

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14 CFR 21.320 Changes in quality system

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45 Sec. 45.1... 21.123 effec... 21.303 effec... 21.305 effec... 21.310 effec... 21.311 effec... 21.310 effe... 21.316 effe... 21.319 effe... 21.320 effe...

 Federal Aviation Administration RGL Home

Sec. 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.]

(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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14 CFR 45.15 Part marking for PMA articles

Sec. 45.15

[Marking requirements for PMA articles, TSO articles, and Critical parts.]

[(a) PMA articles. The manufacturer of a PMA article must permanently and legibly mark--

- (1) Each PMA article, with the PMA holder's name, trademark, symbol, or other FAA approved identification and part number; and
- (2) The letters "FAA-PMA".

(b) TSO articles. The manufacturer of a TSO article must permanently and legibly mark --

- (1) Each TSO article with the TSO holder's name, trademark, symbol, or other FAA approved identification and part number; and
- (2) Each TSO article, unless otherwise specified in the applicable TSO, with the TSO number and letter of designation, all markings specifically required by the applicable TSO, and the serial number or the date of manufacture of the article or both.

(c) Critical parts. Each person who manufactures a part for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness must

permanently and legibly mark that part with a serial number (or equivalent) unique to that part in addition to the other applicable requirements of this section.

(d) If the FAA finds a part or article is too small or otherwise impractical to mark with any of the information required by this part, the manufacturer must attach that information to the part or its container.]

(c) Critical parts. Each person who manufactures a part for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness must permanently and legibly mark that part with a serial number (or equivalent) unique to that part in addition to the other applicable requirements of this section.

(d) If the FAA finds a part or article is too small or otherwise impractical to mark with any of the information required by this part, the manufacturer must attach that information to the part or its container.]

Amdt. 45-26, Eff. 4/16/11

► **Comments**

▼ **Document History**

Notice of Proposed Rulemaking Actions:
Not Applicable.

Final Rule Actions:

Final rule. Docket No. [FAA-2006-25877](#); Issued on 10/6/2009

Final rule; correction. Docket No. [FAA-2006-25877](#); Issued on 2/24/2010

Summary of Changes



Advisory Circular

Subject: Transition Document for 14 CFR Parts 1, 21, 43, and 45

Date: 10/16/09
Initiated by: AIR-200

AC No: 21-42



Advisory Circular

Subject: Issuance of Export Airworthiness Approvals Under 14 CFR Part 21 Subpart L

Date: 10/16/2009
Initiated by: AIR-200

AC No: 21-44



Advisory Circular

Subject: Production Under 14 CFR Part 21, Subparts F, G, K, and O

Date: 10/16/2009
Initiated by: AIR-200

AC No: 21-43



**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
National Policy**

**ORDER
8120.17**

Effective Date:
1/14/2010

SUBJ: Implementation of Changes to the Revised 14 CFR Part 21

This order provides guidance to all Aircraft Certification Service personnel to assist in the implementation of the requirements pertaining to the quality system described in the revised Title 14, Code of Federal Regulations (14 CFR) part 21, Certification Procedures for Products, Articles, and Parts, published on 10/16/2009.

What makes up a good PMA Package?

- Section A - PORTFOLIO INTRODUCTION
- Section B - SAFETY CRITICALITY REPORT
- Section C - DESIGN DIFFICULTIES
- Section D - FAA AND DER DOCUMENTS
- Section E - OEM PART ELIGIBILITY
- Section F - UN-NUMBERED SUPPLEMENT
- Section G - FAA APPROVED DRAWINGS
- Section H - AIRWORTHINESS REPORT
- Section I - DESIGN DIFFICULTIES
- Section J - LIST OF DOCUMENTS
- Section K - P.M.A. PACKAGE CHECKLIST
- Section L - P.M.A. PROJECT SUMMARY

Plus a Project Specific
Certification Plan

QUESTIONS REGARDING THIS PRESENTATION



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References

- §21.137 QMS Quality System Production Certificates
- §21.303 Subpart K – Parts Manufacturer Approvals
- 8110-3 SUBJ: STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS (Form)
- ORDER 8120.2G SUBJ: Production Approval and Certificate Management Procedures
- Advisory Circular AC No: 21-42 Subject: Transition Document for 14 CFR Parts 1, 21, 43, and 45
- Advisory Circular AC No: 21-43 Subject: Production Under 14 CFR Part 21, Subparts F, G, K, and O
- Advisory Circular AC No: 23-21 Subject: AIRWORTHINESS COMPLIANCE CHECKLISTS USED TO SUBSTANTIATE MAJOR 3SAE AS9100C Quality Management Systems - Requirements for Aviation, Space and Defense Organizations