



News from the Hill

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Fabrication of Parts: Can You Produce and Sell Them?

You've come up with your latest great idea — a mounting bracket for use inside the cockpit. You've made a few and installed them for customers — and the pilots love them. In fact, they love them so much other AEA-member repair stations around the country are calling to ask you to sell a few of the mounting brackets to them.

Now what? Can you just produce them and sell them? Or are there legal restrictions that apply to the production of these items? This article explains what the FAA's rules are for producing parts, and also discusses the newest advisory guidance issued by the FAA concerning fabrication of parts by maintenance personnel.

What Do the Regulations Say About Parts?

The best place to start our analysis is with the FAA's own legal language governing the production of aircraft parts. The FAA's parts production regulations are found in Title 49, Part 21, subpart K of the FAA's regulations. These are the parts manufacturer approval regulations, or PMA.

The FAA's parts production regulations — the PMA regulations — apply whenever you produce a part intended to be offered “for sale for installation in a type-certificated product.” Parts covered by the PMA rules can only be produced under a PMA issued by

the FAA unless one of the exceptions or exclusions applies to the production activity in question.

There are both exceptions and exclusions that provide “loopholes” to these regulations — the sort of loopholes lawyers just love.

The Exclusions

The exclusions are the things not regulated because they do not fit within the scope of the regulation. Generally, these are the parts excluded from the plain language of the regulations, or from the general scope of the United States law.

The FAA's parts production regulations specifically apply only to items made for type-certificated products. This means parts made solely for use on non-type-certificated experimental aircraft are excluded from the PMA requirement. It also means parts made for non-aviation use are excluded from the regulations.

For example, a light bulb made for use in the dashboard of a tractor, but which also happens to serve as a perfect replacement for a cockpit indicator light in an aircraft, is not required to be made under a PMA because the manufacturer did not intend for the light bulb to be installed.

Aircraft parts produced under a foreign authority may be considered acceptable for use in the U.S. despite the fact they may not have been pro-

duced in accordance with the terms of the PMA rule based on other rules under Part 21 (the FAA manufacturing rules). Part 21 of the FAA's regulations permit acceptance of foreign-produced parts in accordance with the terms of a bilateral agreement between the United States and the country of export.

Therefore, an article manufactured under a foreign production approval in a country with a bilateral airworthiness safety agreement (BASA) with the U.S. may be acceptable in the U.S. if it meets the requirements of the BASA.

The Exceptions

The exceptions are the things not regulated because the regulation specifically says they do not fit within the scope of what is regulated.

Parts produced under a type or production certificate reflect an exception from the PMA rules because such parts are subject to a different FAA design and production approval. This means a company like Cessna can produce replacement and modification parts for its own aircraft under its existing production certificate without obtaining a separate PMA for those parts.

Parts produced under an FAA technical standard order authorization (TSOA) also are excepted from the PMA rules. As with parts made under a production certificate, TSOA parts

are manufactured under a different FAA design-and-production approval, which is why they are excepted from the requirement to obtain a PMA. Most avionics are manufactured under TSOA authority.

Parts produced by an owner or operator for maintaining or altering his own product reflect an exception from the PMA rules as well. This exception allows private owners to make their own parts for maintaining their own aircraft. It also allows air carriers to make parts for maintaining the aircraft in their fleet.

There are a number of policy reasons for allowing this provision. First, there is an assumption that anyone who makes a part for their own aircraft is going to pay attention to their own personal safety (and, in the case of an air carrier, its own pecuniary interests), so they will apply due care to the fabrication of such a part to ensure it is safe.

Second, and more important, this exception applies to the manufacturing rules but does not affect the maintenance/installation rules found under Part 43. The Part 43 maintenance/installation rules still apply fully to the installation of an owner/operator-produced part.

The FAA has published guidance in the form of memoranda discussing the owner/operator-produced part exception. This guidance explains the owner/operator must control the design of the part, the production quality of the part, or both. This means the owner/operator may:

- design the part himself and have someone else make it for him (because it is an owner/operator-produced part, the non-owner manufacturer is insulated from the PMA rules), or
- use someone else's design (assuming it is obtained legally and its use is otherwise permitted) so long as he

controls the quality of the part (meaning the in-process, final inspections and any other elements of the production quality assurance program).

The corollary to this is that an owner/operator who merely orders a part, without further participation in the design or production quality process, is not producing an owner/operator-produced part, and such ordered parts will not be excepted from the regulations.

Standard parts, such as bolts and nuts, conforming to established industry or U.S. specifications also are not required to be manufactured under PMA. There are a few key specifics to note about this category.

First, acceptable standards include those published by the government (such as mil specs) and industry standards published by standard-setting bodies (such as ASTM, SAE or NAS). They do not include "proprietary" standards established by a single company. Parts made to such "proprietary" single-company standards are not excepted from the PMA rules.

Second, the parts must conform entirely to the applicable standards — a part that mostly looks like a standard part but has not been marked according to the standard, or has not been tested according to the requirements of the standard, is not a standard part.

Maintaining Safety

So, how does the FAA maintain safety with so many exceptions; how do we know the parts manufactured under an exception or exclusion are safe?

Part of the reason the public can trust in the safety of the parts installed on an aircraft is because the FAA's system of safety regulations includes adequate redundancies to ensure safety.

In particular, many of the excepted and excluded parts may be free of FAA-oversight at the manufacturing

end of the equation, but that does not mean they have escaped the notice of the regulations entirely. To the contrary, these parts are still subject to scrutiny under the system and subject to regulatory oversight by the FAA. The oversight, however, occurs at the installation stage rather than the production stage.

The FAA's regulations define the word "maintenance" to include replacement and installation of parts. As a consequence, the FAA's maintenance regulations always will apply when installing a part on a type-certificated aircraft (an aircraft falling within the United States aviation safety jurisdiction, that is).

Those regulations require that when a person installs a part on an aircraft, the installer must perform the installation in a particular manner and must use materials of a particular quality, such that the airworthiness condition of the aircraft will be at least equal to its original or properly altered condition when the installation is complete.

Therefore, the installer is under an affirmative obligation to know the part is a safe part. If the installer cannot rely on an FAA production approval as the basis for this determination, then the installer must generate his or her own data to be certain the installation renders the aircraft airworthy.

New Standards

Earlier this year, the FAA published new guidance to assist maintenance personnel who fabricate parts. The new guidance, known as FAA Advisory Circular 43-18, "Fabrication of Aircraft Parts by Maintenance Personnel," provides useful tips for those intending to fabricate their own parts to be consumed during a maintenance or alteration function.

Some of the (nonbinding) recom-

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recommendations include:

- A description of the types of designs, data, documents and drawings that are appropriate.
- Tips for distinguishing the levels of data substantiation necessary for different types of parts.
- A reminder about producing (and having a plan for distributing) instructions for continued airworthiness.
- Marking parts to indicate who made them.
- Recordkeeping recommendations.
- Using a fabrication quality assurance system comparable to what is required for PMA parts.

In addition, the new guidance clarifies some important issues. For example, it makes it clear the FAA's legal authority for approving data underlying the fabrication of aircraft parts lies under section 21.305(d) of the regulations. I like to refer to this section as the "anything they darn-well please rule" because it permits the FAA to approve any part, material or process using any procedure acceptable to the FAA.

The reference back to this section makes it clear that fabrication in the course of maintenance has a regulatory basis, and the FAA has the authority to approve data associated with such fabrication (often, such data approvals are issued following review by an FAA designated engineering representative).

What Are Your Options?

So, what are your options when it comes to that mounting bracket — or any other item you want to produce for installation in an aircraft?

First, you always can produce the article as a part to be consumed during your own maintenance operations. When you do so, as the installer, you will be responsible for ensuring the airworthiness of the aircraft after the

article has been installed (to the extent the airworthiness might be affected by the part in question).

If the article is part of a major repair or if it represents (in whole or in part) a major alteration, then the repair station is required to rely on approved data to support the work. Even if it is not part of a major repair or major alteration, the installer still should have made an affirmative determination concerning the airworthiness of the installation based on the data associated with the article being installed.

If your customer has produced the parts, then they may be owner/operator-produced parts. If they meet the owner/operator-produced parts requirements, then they can be installed, and the installer should rely on the data used by the owner/operator producer to determine airworthiness.

As with maintenance-produced parts, if the owner/operator-produced part is an element of a major repair, or if it represents (in whole or in part) a major alteration, then the repair station should confirm the underlying data has been approved.

If you want to produce the mounting bracket — or any similar item — for sale to owner/operators or to other repair stations, then you need to either obtain approval in the form of a PMA from the FAA, or you need to be certain the part fits into one of the exceptions.

For example, a standard part would fall into the standard parts exception and, therefore, the maker would not require a PMA. This PMA rule applies even to small and seemingly inconsequential parts. □

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