

The A&P's Guide to Mounting Action Cameras

This guide is intended to provide a simple process to help A&P mechanics determine if they can install action cameras. All steps in this process are backed up by FAA documentation. This guide is simply the opinion of Nflight Technology LLC. This document is not to be construed as an official FAA document.

The first thing to be done is to determine if the camera installation will fall under a major or minor alteration. This can be done by answering the following questions that come directly from [AC43-210A pages 14 and 15](#).

Can you answer the following questions?

- 1. Is this a repair or alteration?** A camera installation will be an alteration.
- 2. Is the scope of the alteration sufficient to process as a major change in type design?**

We asked the FAA to clarify the difference in a minor and major alteration in regard to camera mounting. They responded with a memo stating that the determination of a minor or major alteration must be considered on a case-by-case basis, but if the installing mechanic can determine that the camera installation does not have an appreciable effect on weight, balance, structural strength, reliability, operational characteristics, or other qualities affecting the airworthiness of the product, then it **CAN** be considered a minor alteration. Please see attached memo.

14CFR 21.93(a) 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.

If you can determine that the installation meets the definition of a minor alteration, then you can proceed through the flow chart on [Figure 3-1](#) by answering "NO" to [3.2.2.3](#). Then move on to [Figure 3-2](#).

3. Is the installation listed in the product's specifications? They are referring to the aircraft's specifications, and, as far as we know, no aircraft has specifications that specifically reference action camera mounting. This means we answer "NO" to this question.

4. Could the repair have an appreciable effect on: [AC43-210A pg 15 Figure 3-2](#)

- A. Weight?**
- B. Balance?**
- C. Structural Strength?**
- D. Performance?**
- E. Powerplant operation?**
- F. Flight Characteristics?**
- G. Other qualities affecting airworthiness?**

(If you can answer "NO" to the above, you can proceed to the next question.)

5. Can the alteration be accomplished with accepted practices or elementary operations?

Elementary operations are considered simple operations that require basic tools such as a screw driver. If you can answer "YES" to this, you can consider the installation a minor alteration and return the aircraft to service by documenting it in the maintenance records. [Figure 3-1, 3.2.2.1](#)

SAMPLE Logbook entry:

Installed NFlightCam Ball-Head Mount PN: 535 on left wing-tip with a #10 machine screw. I have determined that this installation is considered a minor alteration per AC43-210A Figures 3-1 and 3-2.



Federal Aviation Administration

Memorandum

Date: **MAR 13 2014**

To: James E. Gardner, Manager, Flight Standards Great Lakes Region, AGL-200

From: Steven W. Douglas, Manager, Aircraft Maintenance Division, AFS-300 *SWD*

Subject: Request for Clarification: External Camera Mounts;
AGL-200 Memo of 01/23/14

M360-8000.1-F-1403-0047

In reference to the Subject memo, the Aircraft Maintenance Division, in coordination with the Small Airplane Directorate, ACE-100, has reviewed your request for information and provides the following responses:

QUESTION 1: Has AFS determined whether or not the installation of external camera mounts, such as the “GoPro” or “NFlight” cameras, can be considered a minor alteration as defined by Title 14 Code of Federal Regulations (14 CFR) part 43 Appendix A?

RESPONSE: The Appendix A, titled “Major Alterations, Major Repairs, and Preventive Maintenance”, provides a broad spectrum of alterations that are typically considered major. This Appendix does not encompass the numerous possible alterations that could be accomplished to an aircraft and therefore relies heavily on the definitions of major and minor alterations, contained in 14 CFR part 1.

Because of the varying installation possibilities of this equipment, the major vs. minor determination is done on a case-by-case basis and made by the installer. Major alterations are those that have an appreciable effect on the weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness. If the installation did affect one of the above listed variables, then the installation would be considered major and would require approved technical data prior to returning the aircraft to service.

Another consideration, in the case of this type of equipment, is the applicability of the term “alteration”. FAA Order 8110.37E, defines an alteration as “*a modification of an aircraft from one sound state to another sound state*”. The use of suction cups, or other temporary methods of attachment (not including permanent mechanical attachments to the aircraft), would not be considered a modification to the aircraft. These temporary attachments would not be subject to the regulatory purview of 14 CFR part 43.

The use of these type attachments however are not supported by the FAA, and may (in the case of an in-flight detachment) lead to “careless operations” as provided for in 14 CFR sections 91.13 and 91.15.

QUESTION 2: The focus of your second question pertains to the determination of whether or not the installation of this type of equipment could be considered a Minor Change to Type Design” as defined in 14 CFR section 21.93.

RESPONSE: We are aware of no design approval holder that has made a minor change in type design approved under 14 CFR 21.95 to incorporate such an installation. Nor are we aware of any person who has applied for approval of a major change in type design under 14 CFR 21.97 to do so. Therefore, the installation described is not a change in type design, and consequently 14 CFR 21.93 is not applicable. If such an installation were to be approved as a minor change in type design, it would have to be shown to have no appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product. This determination would be dependent upon the specific model type design in question and the details of the design change.

We appreciate the opportunity to assist you. If you have any additional questions regarding this memorandum, please contact Tim Shaver, Manager, Avionics Branch, AFS-360 at (202) 385-4292.

Figure 3-1. Field Approval Process

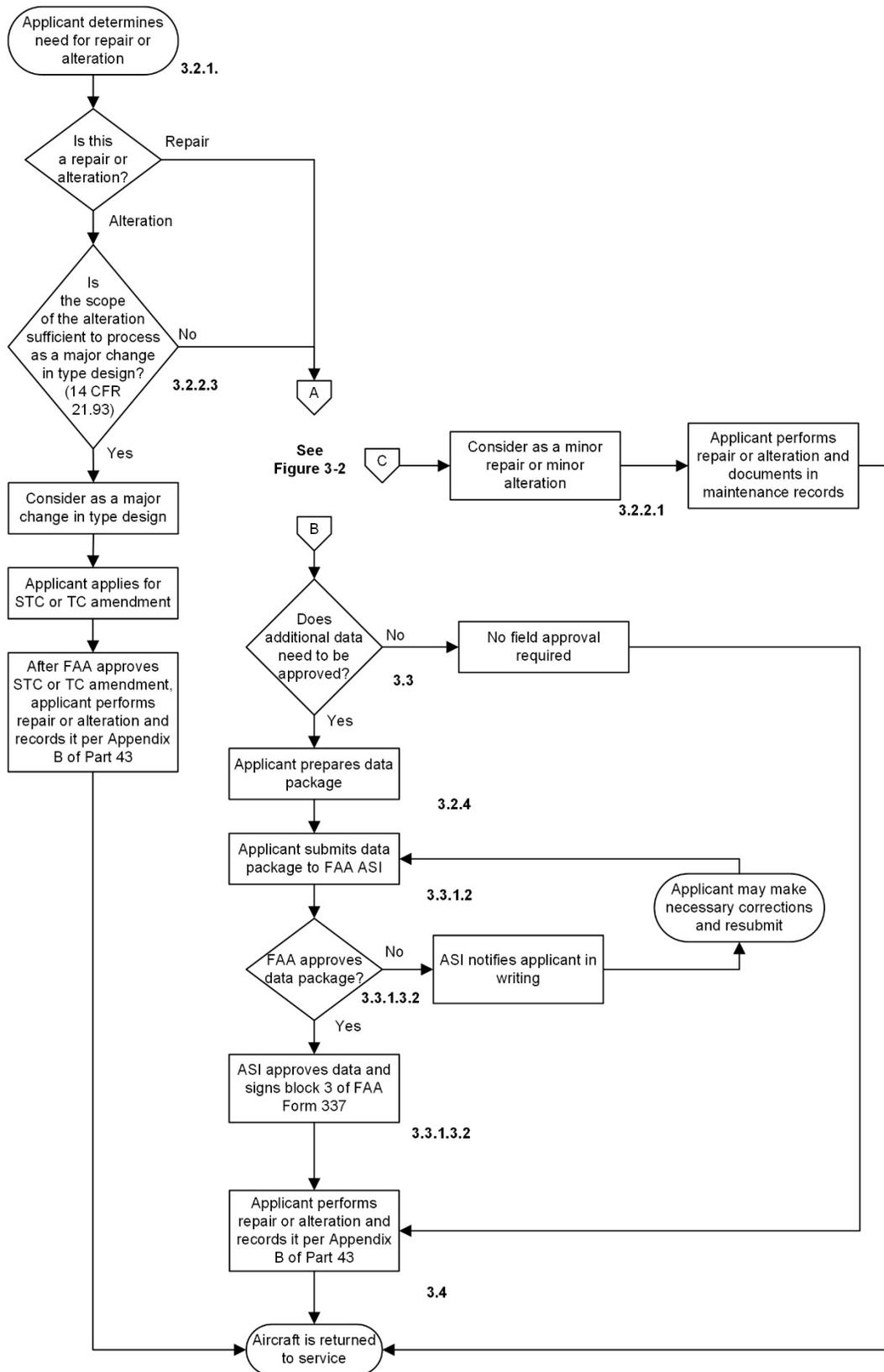


Figure 3-2. Determination of Major or Minor Alteration or Repair

