



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: USE OF AUTOMOBILE GASOLINE IN
AGRICULTURAL AIRCRAFT

Date: 8/24/84
Initiated by: AWS-200

AC No: 21-21
Change:

1. **PURPOSE.** This advisory circular (AC) sets forth acceptable conditions under which automobile gasoline (autogas) may be used in restricted category agricultural aircraft powered by Pratt and Whitney R-985 and R-1340 radial engines, and being used in agricultural operations under Federal Aviation Regulations (FAR) Part 137.
2. **CANCELLATION.** AC 21-8, Aircraft Airworthiness: Restricted Category: Certification of Aircraft with Uncertificated or Altered Engines or Propellers, dated May 21, 1969, is canceled.
3. **REFERENCES.** FAR 21.25; Civil Air Regulations (CAR) Part 8; Civil Aeronautics Manual (CAM) 8.10; and AC 20-33B, Technical Information Regarding Civil Aeronautics Manuals 1, 3, 4a, 4b, 5, 6, 7, 8, 9, 13, and 14.
4. **BACKGROUND.** Under current FAA policy in AC 20-33B and CAM 8.10-4(d)(2), it is permissible to use uncertificated engines in restricted category agricultural aircraft, under operating limitations in addition to those prescribed in FAR 91.39. The use of autogas in a type certificated engine, without FAA approval, would be an unapproved major alteration of the type design, rendering it, in effect, to be decertificated. This AC provides guidance and conditions acceptable to the FAA under which restricted category agricultural aircraft may be operated if autogas is to be used in certain type certificated engines that may be installed in such aircraft.
5. **APPLICABILITY.** The provisions of this AC apply only to restricted category aircraft equipped with Pratt and Whitney R-985 or R-1340 engines that are used in agricultural aircraft operations under FAR Part 137.
6. **PROCEDURES.** Any person operating an aircraft that meets the applicability provision of paragraph 5 of this AC may use autogas for operation of that aircraft under the following conditions:
 - a. An FAA Form 337, Major Repair and Alteration, must be completed for each aircraft, including identification of the powerplant in Item 4 of the form, and indicating "alteration" in Item 5.
 - b. On the reverse side of the FAA Form 337, in Item 8, the following entries must be made, with each of the blank spaces filled in as appropriate:

"The procedures and modifications covered by this FAA Form 337 have been found acceptable to the Administrator in Advisory Circular 21-21, Use of Automobile Gasoline in Agricultural Aircraft, for the purpose of compliance with FAR 43.13. The aircraft and engine identified in Items 1 and 4 on this form may be approved for return to service by a person authorized by FAR 43.7 when the following conditions have been met:

A. The following placard is displayed on the instrument panel:

NOTICE: THIS AIRCRAFT MAY BE OPERATED WITH AUTOMOTIVE FUEL OR MIXTURES OF AUTOMOTIVE AND AVIATION FUEL.

B. The following placards are displayed in the cockpit in clear view of the pilot:

THIS AIRCRAFT IS NOT ELIGIBLE FOR AN APPROVAL FOR OPERATION OVER CONGESTED AREAS UNDER FAR 137.51 OR FOR A WAIVER OF ANY LIMITATIONS IN FAR 91.39(d).

ENGINE SERIAL NUMBER _____ INSTALLED IN THIS AIRCRAFT AND OPERATED WITH AUTOMOTIVE TYPE FUEL IS NOT ELIGIBLE FOR INSTALLATION IN AN AIRCRAFT HAVING A STANDARD AIRWORTHINESS CERTIFICATE UNTIL IT HAS BEEN SUBJECTED TO A MAJOR OVERHAUL.

C. The following placard is permanently affixed in the specification section of the engine logbook(s):

THIS ENGINE, SERIAL NUMBER _____, HAS BEEN OPERATED WITH AUTOMOTIVE TYPE FUEL AND IS NOT ELIGIBLE FOR INSTALLATION IN A NORMAL CATEGORY AIRCRAFT HAVING A STANDARD AIRWORTHINESS CERTIFICATE UNTIL IT HAS BEEN SUBJECTED TO A MAJOR OVERHAUL.

D. A placard is added at or near the fuel filler cover to read:

AUTO FUEL - 87 OCTANE MINIMUM.

E. The automotive fuel used does not contain alcohol additives.

F. The following certification must be completed by a certificated pilot properly rated for the aircraft (reference FAR 137.19):

I certify this aircraft/engine combination has been flight checked through all anticipated agricultural type maneuvers using 87 octane (R+M/2 method) automotive fuel and the engine has performed without evidence of malfunctioning and within the limitations specified in the Type Certificate Data Sheets: Aircraft TC No. _____ ; Engine TC No. _____ ; Pilot Name _____ Certificate No. _____.

G. A copy of this FAA Form 337 must be affixed in a prominent place in the logbook for the aircraft and in the logbook for the engine, in addition to the maintenance record entries required by FAR 43.9.

H. This approval will be invalidated if the engine identified in Item 4 is removed from the aircraft and replaced with another engine. If the replacement engine is to be operated with autogas, conditions A through G must be met for the replacement engine and a new FAA Form 337 must be completed."

A handwritten signature in black ink, appearing to read 'M. C. Beard', with a stylized, flowing script.

M. C. Beard
Director of Airworthiness