



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2023-1990; Project Identifier AD-2023-00734-A]

RIN 2120-AA64

Airworthiness Directives; Various Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for various airplanes modified with a certain configuration of the Garmin GFC 500 Autopilot System installed per Supplemental Type Certificate (STC) No. SA01866WI. This proposed AD was prompted by a report of an un-commanded automatic pitch trim runaway when the autopilot was first engaged. This proposed AD would require updating the applicable Garmin GFC 500 Autopilot System software for your airplane and would prohibit installing earlier versions of that software. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to [regulations.gov](https://www.regulations.gov). Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) by searching for and

locating Docket No. FAA-2023-1990; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Christopher Withers, Aviation Safety Engineer, FAA, 1801 S Airport Road, Wichita, KS 67209; phone: (316) 946-4190; email: christopher.d.withers@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2023-1990; Project Identifier AD-2023-00734-A” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public

docket of this NPRM. Submissions containing CBI should be sent to Christopher Withers, Aviation Safety Engineer, FAA, 1801 S Airport Road, Wichita, KS 67209. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA received a report of an incident involving a Textron Aviation Inc. (type certificate previously held by Beech Aircraft Corporation, Raytheon Aircraft Company, Hawker Beechcraft Corporation, and Beechcraft Corporation) Model F33A Bonanza airplane having an un-commanded automatic pitch trim runaway when the autopilot was first engaged. The airplane was equipped with a Garmin GFC 500 Autopilot System that included an optional GSA 28 pitch trim servo. The affected Garmin GFC 500 Autopilot System includes G5, G3X Touch, or GI 275 software and was installed per STC No. SA01866WI using Master Drawing List 005-01264-00, Revisions 1 through 76.

The affected autopilot system software does not properly handle certain hardware failures of the pitch trim servo. This could result in an automatic un-commanded pitch trim runaway, and loss of control of the airplane.

An investigation by Garmin International and the National Transportation Safety Board (NTSB) determined this condition could exist on various Textron Aviation, Inc., Piper Aircraft, Inc., Commander Aircraft Corporation, Mooney International Corporation, and DAHER AEROSPACE airplane models equipped with a Garmin GFC 500 Autopilot System that includes an optional GSA 28 pitch trim servo.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Proposed AD Requirements in this NPRM

This proposed AD would require updating the applicable Garmin GFC 500 Autopilot System software for your airplane and would prohibit installing earlier versions of that software.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 5,900 airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Update autopilot software	1 work-hour x \$85 per hour = \$85	\$0	\$85	\$501,500

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

Various Airplanes: Docket No. FAA-2023-1990; Project Identifier AD-2023-00734-A.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all airplane models specified in Table 1 to paragraph (c) of this AD, certificated in any category, having a Garmin GFC 500 Autopilot System that includes an optional GSA 28 pitch trim servo installed per Supplemental Type Certificate No. SA01866WI using Master Drawing List 005-01264-00, Revisions 1 through 76.

Table 1 to paragraph (c) – Applicable Airplane Models

Type certificate holder	Airplane model
Commander Aircraft Corporation	112 and 114
DAHER AEROSPACE	TB 20 and TB 21

Type certificate holder	Airplane model
Mooney International Corporation	M20
Piper Aircraft, Inc.	PA-24
Piper Aircraft, Inc.	PA-28-150, PA-28-151, PA-28-160, PA-28-161, PA-28-235, PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT-201, and PA-28RT-201T
Piper Aircraft, Inc.	PA-32-260, PA-32-300, PA-32-301, PA-32-301FT, PA-32-301T, PA-32-301XTC, PA-32R-300, PA-32RT-300, PA-32RT-300T, PA-32R-301 (HP), PA-32R-301 (SP), and PA-32R-301T
Textron Aviation Inc. (type certificate previously held by Beech Aircraft Corporation, Raytheon Aircraft Company, Hawker Beechcraft Corporation, and Beechcraft Corporation)	B19, B23, and B24R
Textron Aviation Inc. (type certificate previously held by Beech Aircraft Corporation, Raytheon Aircraft Company, Hawker Beechcraft Corporation, and Beechcraft Corporation)	C35, D35, E35, F35, and G35
Textron Aviation Inc. (type certificate previously held by Beech Aircraft Corporation, Raytheon Aircraft Company, Hawker Beechcraft Corporation, and Beechcraft Corporation)	F33A, H35, J35, K35, M35, N35, P35, S35, V35, 36, A36, and B36TC
Textron Aviation Inc. (type certificate previously held by Cessna Aircraft Company)	172
Textron Aviation Inc. (type certificate previously held by Cessna Aircraft Company)	172RG
Textron Aviation Inc. (type certificate previously held by Cessna Aircraft Company)	177
Textron Aviation Inc.	182, 182G, and 182R

Type certificate holder	Airplane model
(type certificate previously held by Cessna Aircraft Company)	
Textron Aviation Inc. (type certificate previously held by Cessna Aircraft Company)	206
Textron Aviation Inc. (type certificate previously held by Cessna Aircraft Company)	210

(d) Subject

Joint Aircraft System Component (JASC) Code 2210, Autopilot System.

(e) Unsafe Condition

This AD was prompted by a report of an un-commanded automatic pitch trim runaway when the autopilot was first engaged. The FAA is issuing this AD to address autopilot software that does not properly handle certain hardware failures of the pitch trim servo. The unsafe condition, if not addressed, could result in un-commanded automatic pitch trim runaway and loss of control of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Action

Within 12 months after the effective date of this AD, update the Garmin GFC 500 Autopilot System software applicable to your airplane to a version that is not 8.01 or earlier for the G5, not version 9.01 or earlier for the G3X Touch, and not version 2.59 or earlier for the GI 275.

(h) Installation Prohibition

As of the effective date of this AD, do not install Garmin GFC 500 Autopilot System Software that is version 8.01 or earlier for the G5, version 9.01 or earlier for the G3X Touch, or version 2.59 or earlier for the GI 275, on any airplane.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Central Certification Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In

accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the Central Certification Branch, send it to the attention of the person identified in paragraph (j) of this AD. Information may be emailed to wichita-cos@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact Christopher Withers, Aviation Safety Engineer, FAA, 1801 S Airport Road, Wichita, KS 67209; phone: (316) 946-4190; email: christopher.d.withers@faa.gov.

(k) Material Incorporated by Reference

None.

Issued on October 3, 2023.

Victor Wicklund, Deputy Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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