



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2024-0760; Project Identifier AD-2024-00175-E; Amendment 39-22714; AD 2024-06-09]**

**RIN 2120-AA64**

#### **Airworthiness Directives; CFM International, S.A. Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule; request for comments.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain CFM International, S.A. (CFM) Model CFM56-2, CFM56-3, CFM56-5, CFM56-5B, CFM56-5C, and CFM56-7B engines. This AD was prompted by a report of electrical arcing on certain life-limited critical parts. This AD requires replacing certain compressor discharge pressure (CDP) seals, high-pressure compressor (HPC) stage 3 disks, and high-pressure turbine (HPT) rear shafts. This AD also prohibits installation of certain CDP seals, HPC stage 3 disks, and HPT rear shafts on any engine, and prohibits installation of any engine with certain CDP seals, HPC stage 3 disks, and HPT rear shafts installed on any airplane. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 2 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FAA must receive comments on this 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) under Docket No. FAA-2024-0760; 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 final rule, any comments received, and other information. The street address for Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Sungmo Cho, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7241; email: [sungmo.d.cho@faa.gov](mailto:sungmo.d.cho@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “FAA-2024-0760; Project Identifier AD-2024-00175-E” at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, 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 final rule 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](https://www.regulations.gov), including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

**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 AD 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 AD, 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 AD. Submissions containing CBI should be sent to Sungmo Cho, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### **Background**

On March 7, 2024, the FAA received a report of electrical arcing on certain life-limited critical parts for CFM Model CFM56-2, CFM56-3, CFM56-5, CFM56-5B, CFM56-5C, and CFM56-7B engines. A maintenance facility reported evidence of electrical arcing and identified the root cause as the use of a certain induction heater during maintenance, which resulted in unintended electrical arcing to those parts. The manufacturer determined that certain CDP seals, HPC stage 3 disks, and HPT rear shafts were subject to the same induction heater during maintenance and may also have electrical arcing damage. This condition, if not addressed, could result in premature fracture of certain CDP seals, HPC stage 3 disks, and HPT rear shafts, with consequent uncontained part release, damage to the engine, damage to the airplane, and loss of the airplane. The FAA is issuing this AD to address the unsafe condition on these products.

### **FAA's Determination**

The FAA is issuing this AD because the agency has determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **AD Requirements**

This AD requires replacing certain CDP seals, HPC stage 3 disks, and HPT rear shafts. This AD also prohibits installation of certain CDP seals, HPC stage 3 disks, and

HPT rear shafts on any engine, and prohibits installation of any engine with certain CDP seals, HPC stage 3 disks, and HPT rear shafts installed on any airplane.

### **Justification for Immediate Adoption and Determination of the Effective Date**

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for “good cause,” finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies forgoing notice and comment prior to adoption of this rule due to maintenance anomalies that could result in premature fracture of certain life-limited critical parts, with consequent uncontained part release, damage to the engine, damage to the airplane, and loss of the airplane. The compliance time for replacement of these parts is before further flight after the effective date of this AD. The longer these parts remain in service, the higher the probability of failure. Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B).

In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forgo notice and comment.

### **Regulatory Flexibility Act**

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

## **Costs of Compliance**

The FAA estimates that this AD affects 3 engines installed on airplanes of U.S. registry. The FAA estimates that three engines installed on airplanes of U.S. registry require replacement of the CDP seal. The FAA estimates that two engines installed on airplanes of U.S. registry require replacement of the HPC stage 3 disk and HPT rear shaft.

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

### **Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Replace CDP seal	8 work-hours x \$85 per hour = \$680	\$131,200	\$131,880	\$395,640
Replace HPC stage 3 disk	8 work-hours x \$85 per hour = \$680	\$95,930	\$96,610	\$193,220
Replace HPT rear shaft	8 work-hours x \$85 per hour = \$680	\$187,900	\$188,580	\$377,160

## **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**

This AD will not have federalism implications under Executive Order 13132. This AD will 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 that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866, and
- (2) Will not affect intrastate aviation in Alaska.

## **List of Subjects in 14 CFR Part 39**

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

## **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 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:

**2024-06-09 CFM International, S.A.:** Amendment 39-22714; Docket No. FAA-2024-0760; Project Identifier AD-2024-00175-E.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 2 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to the following CFM International, S.A. Model engines:

- (1) CFM56-2, CFM56-2A, CFM56-2B, CFM56-3, CFM56-3B, and CFM56-3C engines;

(2) CFM56-5, CFM56-5-A1/F, CFM56-5A3, CFM56-5A4, CFM56-5A4/F, CFM56-5A5, and CFM56-5A5/F engines;

(3) CFM56-5B1, CFM56-5B1/2P, CFM56-5B1/3, CFM56-5B1/P, CFM56-5B2, CFM56-5B2/2P, CFM56-5B2/3, CFM56-5B2/P, CFM56-5B3/2P, CFM56-5B3/2P1, CFM56-5B3/3, CFM56-5B3/3B1, CFM56-5B3/P, CFM56-5B3/P1, CFM56-5B4, CFM56-5B4/2P, CFM56-5B4/2P1, CFM56-5B4/3, CFM56-5B4/3B1, CFM56-5B4/P, CFM56-5B4/P1, CFM56-5B5, CFM56-5B5/3, CFM56-5B5/P, CFM56-5B6, CFM56-5B6/2P, CFM56-5B6/3, CFM56-5B6/P, CFM56-5B7, CFM56-5B7/3, CFM56-5B7/P, CFM56-5B8/3, CFM56-5B8/P, CFM56-5B9/2P, CFM56-5B9/3, and CFM56-5B9/P engines;

(4) CFM56-5C2, CFM56-5C2/4, CFM56-5C2/F, CFM56-5C2/F4, CFM56-5C2/G, CFM56-5C2/G4, CFM56-5C2/P, CFM56-5C3/F, CFM56-5C3/F4, CFM56-5C3/G, CFM56-5C3/G4, CFM56-5C3/P, CFM56-5C4, CFM56-5C4/1, CFM56-5C4/1P, and CFM56-5C4/P engines; and

(5) CFM56-7B20, CFM56-7B20/2, CFM56-7B20/3, CFM56-7B20E, CFM56-7B22, CFM56-7B22/2, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/B1, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24, CFM56-7B24/2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B24/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26, CFM56-7B26/2, CFM56-7B26/3, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B26/3F, CFM56-7B26/B1, CFM56-7B26/B2, CFM56-7B26E, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B26E/F, CFM56-7B27, CFM56-7B27/2, CFM56-7B27/3, CFM56-7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B27/3F, CFM56-7B27/B1, CFM56-7B27/B3, CFM56-7B27A, CFM56-7B27A/3, CFM56-7B27AE, CFM56-7B27E, CFM56-7B27E/B1, CFM56-7B27E/B1F, and CFM56-7B27E/B3 engines.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7200, Engine (Turbine/Turboprop).

**(e) Unsafe Condition**

This AD was prompted by a report of evidence of electrical arcing on certain life-limited critical parts. The FAA is issuing this AD to prevent premature fracture of certain compressor discharge pressure (CDP) seals, high-pressure compressor (HPC) stage 3 disks, and high-pressure turbine (HPT) rear shafts. The unsafe condition, if not addressed, could lead to uncontained part release, damage to the engine, damage to the airplane, and loss of the airplane.

**(f) Compliance**

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

**(g) Required Actions**

Before further flight after the effective date of this AD, remove from service each CDP seal, HPC stage 3 disk, and HPT rear shaft having a part number (P/N) and serial number (S/N) specified in Table 1 to paragraph (g) of this AD and replace with a part eligible for installation.



**Table 1 to Paragraph (g) – Affected Parts**

<b>Engine</b>	<b>Engine</b>	<b>CDP Seal</b>		<b>HPC Stage 3 Disk</b>		<b>HPT Rear Shaft</b>	
<b>S/N</b>	<b>Model</b>	<b>S/N</b>	<b>P/N</b>	<b>S/N</b>	<b>P/N</b>	<b>S/N</b>	<b>P/N</b>
779879	CFM56-5B	GFF5HR7H	2116M25P01	XAEH4524	1590M59P01	TMT3SB56	1864M90P05
575151	CFM56-5B	GFF5J2R0	1523M35P01	XAEW3896	1590M59P01	TMTA6584	1864M90P04
643313	CFM56-5B	GFF5LL3P	2116M25P01	XAE6377U	2116M23P01	TMT1RJ6T	1864M90P04
643308	CFM56-5B	GFF5LL5R	2116M25P01	XAE6416U	2116M23P01	TMT1T7KF	1864M90P04
643443	CFM56-5B	GFF5LN9K	2116M25P01	XAE6576U	2116M23P01	TMT1UCL8	1864M90P04
643384	CFM56-5B	GFF5LN29	2116M25P01	XAE6749U	2116M23P01	TMT1UDJN	1864M90P04
643383	CFM56-5B	GFF5LN7C	2116M25P01	XAE6883U	2116M23P01	TMT1UTL2	1864M90P04
960147	CFM56-7B	GFF5LC8G	2116M25P01	XAE6329U	2116M23P01	TMT1LPT5	1864M90P04
890800	CFM56-7B	GFF5GL4T	2116M25P01	XAEY9605	2116M23P01	TMTA3602	1864M90P04
960113	CFM56-7B	GFF5LLHK	2116M25P01	XAE6496U	2116M23P01	TMT1RJ6P	1864M90P04
960105	CFM56-7B	GFF5KTW1	2116M25P01	XAE6196U	2116M23P01	TMT1PM2N	1864M90P04
803767	CFM56-7B	GFF5LLJE	2116M25P01	XAE6497U	2116M23P01	TMT1PRR6	1864M90P04
962116	CFM56-7B	GFF5LM2F	2116M25P01	XAE6482U	2116M23P01	TMT1PRR4	1864M90P04
960999	CFM56-7B	GFF5LLK6	2116M25P01	XAE6502U	2116M23P01	TMT1PN56	1864M90P04
961787	CFM56-7B	GFF5LL4A	2116M25P01	XAE7292U	2116M23P01	TMT1U29H	1864M90P04
962504	CFM56-7B	GFF5LLH4	2116M25P01	XAE7324U	2116M23P01	TMT1LPJ6	1864M90P04
962491	CFM56-7B	GFF5LPKJ	2116M25P01	XAE7116U	2116M23P01	TMT1RJ6E	1864M90P04
575348	CFM56-5B	GFF5LH68	2116M25P01	XAE6017U	2116M23P01	TMT1NLFE	1864M90P04
575243	CFM56-5B	GFF5KN5K	2116M25P01	XAE5290U	2116M23P01	TMT1JHJ7	1864M90P04
577604	CFM56-5B	GFF5L936	2116M25P01	XAE4312U	2116M23P01	TMT1JKK8	1864M90P04
577255	CFM56-5B	GFF5ECKK	1523M35P01	XAEG0763	1590M59P01	TMT1M7UD	1864M90P04
645551	CFM56-5B	GFF5LH4H	2116M25P01	XAE5738U	2116M23P01	TMT1NLF0	1864M90P04
779544	CFM56-5B	GFF5ELT0	1523M35P01	XAEW3361	1590M59P01	TMT3SD14	1864M90P05
575840	CFM56-5B	GFF5J4R8	1523M35P01	N/A	N/A	TMTD4155	1864M90P04
960395	CFM56-7B	GFF5G2WC	2116M25P01	XAEV5927	2116M23P01	TMTA1872	1864M90P04

Engine	Engine	CDP Seal		HPC Stage 3 Disk		HPT Rear Shaft	
S/N	Model	S/N	P/N	S/N	P/N	S/N	P/N
575806	CFM56-5B	GFF5LLHT	2116M25P01	XAEW3261	1590M59P01	TMTD1698	1864M90P04
699126	CFM56-5B	GFF5DNJG	2116M25P01	XAER4768	2116M23P01	TMTA5963	1864M90P04
699277	CFM56-5B	GFF5GWRJ	2116M25P01	XAEBS962	2116M23P01	TMT4E107	1864M90P04
697355	CFM56-5B	GFF59NHM	1523M35P01	GWN04DF4	1590M59P01	TMT3SA87	1864M90P05
577182	CFM56-5B	GFF5DG9W	1523M35P01	XAEH5166	1590M59P01	TMT3S111	1864M90P05
779990	CFM56-5B	GFF5K300	2116M25P01	N/A	N/A	N/A	N/A
697483	CFM56-5B	GFF5LGT2	2116M25P01	XAE5993U	2116M23P01	TMT1MMNL	1864M90P04
577181	CFM56-5B	GFF5J4DH	2116M25P01	XAEGD205	2116M23P01	TMTD1836	1864M90P04
569701	CFM56-5B	GFF5HTFW	2116M25P01	XAEDU465	2116M23P01	TMTA8863	1864M90P04
569702	CFM56-5B	GFF5HTWC	2116M25P01	XAECR455	2116M23P01	TMT1H3E3	1864M90P04
802219	CFM56-7B	GFF5LH8R	2116M25P01	XAE6050U	2116M23P01	TMT1MHCE	1864M90P04
643567	CFM56-5B	GFF5LMWK	2116M25P01	XAE6981U	2116M23P01	TMT1U28M	1864M90P04
573567	CFM56-5B	GFF5JARC	2116M25P01	N/A	N/A	N/A	N/A
643851	CFM56-5B	GFF5LN01	2116M25P01	XAE6899U	2116M23P01	TMT1U0J7	1864M90P04
699992	CFM56-5B	N/A	N/A	XAEHP389	2116M23P01	N/A	N/A
645978	CFM56-5B	GFF5KN5N	2116M25P01	XAE5574U	2116M23P01	TMT1JKJJ	1864M90P04
643446	CFM56-5B	GFF5L8K8	2116M25P01	XAE5761U	2116M23P01	TMT1M7UJ	1864M90P04
643447	CFM56-5B	GFF5L9PN	2116M25P01	XAE5757U	2116M23P01	TMT1MGNL	1864M90P04
699642	CFM56-5B	GFF5L9PR	2116M25P01	XAE6316U	2116M23P01	TMT1MNA8	1864M90P04
643470	CFM56-5B	GFF5LKEP	2116M25P01	XAE6406U	2116M23P01	TMT1RJ7P	1864M90P04
699283	CFM56-5B	GFF5L9P9	2116M25P01	XAE5741U	2116M23P01	TMT1JNTP	1864M90P04
643730	CFM56-5B	GFF5LL3W	2116M25P01	XAE6507U	2116M23P01	TMT1PN4H	1864M90P04
699279	CFM56-5B	GFF5LE8P	2116M25P01	XAE6282U	2116M23P01	TMT1L01A	1864M90P04
699644	CFM56-5B	GFF5LE41	2116M25P01	XAE6311U	2116M23P01	TMT1PG4N	1864M90P04
643479	CFM56-5B	GFF5LFDA	2116M25P01	XAE6892U	2116M23P01	TMT1JLU6	1864M90P04
643635	CFM56-5B	GFF5LN4R	2116M25P01	XAE6811U	2116M23P01	TMT1U0HR	1864M90P04
643633	CFM56-5B	GFF5LMJ9	2116M25P01	XAE6568U	2116M23P01	TMT1JKFH	1864M90P04

<b>Engine</b>	<b>Engine</b>	<b>CDP Seal</b>		<b>HPC Stage 3 Disk</b>		<b>HPT Rear Shaft</b>	
<b>S/N</b>	<b>Model</b>	<b>S/N</b>	<b>P/N</b>	<b>S/N</b>	<b>P/N</b>	<b>S/N</b>	<b>P/N</b>
699867	CFM56-5B	GFF5LN9E	2116M25P01	XAE6932U	2116M23P01	TMT1UNLM	1864M90P04
643267	CFM56-5B	GFF5MH2	2116M25P01	XAE7182U	2116M23P01	TMT1U296	1864M90P04
779533	CFM56-5B	GFF5J6MH	2116M25P01	XAEGD645	2116M23P01	TMTD2505	1864M90P04
643444	CFM56-5B	GFF5LN7D	2116M25P01	N/A	N/A	TMT1U9RJ	1864M90P04
699887	CFM56-5B	GFF5LKGP	2116M25P01	XAE6818U	2116M23P01	TMT1U0HU	1864M90P04

**Note 1 to paragraph (g):** Table 1 to paragraph (g) of this AD includes, for information only, the engine serial numbers (engine S/N) and engine models on which the affected parts were installed.

**(h) Installation Prohibition**

(1) After the effective date of this AD, do not install any CDP seal, HPC stage 3 disk, or HPT rear shaft having a P/N and S/N specified in Table 1 to paragraph (g) of this AD on any engine.

(2) After the effective date of this AD, do not install any engine having a CDP seal, HPC stage 3 disk, or HPT rear shaft having a P/N and S/N specified in Table 1 to paragraph (g) of this AD installed on any airplane.

**(i) Definition**

For the purposes of this AD, a part eligible for installation is any CDP seal, HPC stage 3 disk, or HPT rear shaft that does not have a P/N and S/N specified in Table 1 to paragraph (g) of this AD.

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, AIR-520 Continued Operational Safety 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 AIR-520 Continued Operational Safety Branch, send it to the attention of the person identified in paragraph (k) of this AD and email to: ANE-AD-AMOC@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.

**(k) Additional Information**

For more information about this AD, contact Sungmo Cho, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7241; email: sungmo.d.cho@faa.gov.

**(I) Material Incorporated by Reference**

None.

Issued on March 18, 2024.

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

[FR Doc. 2024-06080 Filed: 3/19/2024 11:15 am; Publication Date: 3/22/2024]