

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2003-CE-16-AD; Amendment 39-13427; AD 2004-01-13]

RIN 2120-AA64

Airworthiness Directives; Raytheon Aircraft Company Model 1900, 1900C, and 1900D Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA supersedes Airworthiness Directive (AD) 97-22-16, which applies to certain Raytheon Model 1900, 1900C, and 1900D airplanes. AD 97-22-16 currently requires you to replace the bearings on the vent blower assemblies with improved design bearings and install a thermal protection device for the vent blowers. That AD resulted from reports of vent blower assembly bearings seizing and locking the blower motor on several of the affected airplanes. This AD retains the actions required in AD 97-22-16 for certain vent blower assemblies and requires you to incorporate further product improvement modifications on all affected vent blower assemblies. This AD is the result of reports that vent blower assemblies modified in accordance with AD 97-22-16 are still malfunctioning. We are issuing this AD to prevent smoke from entering the cockpit and cabin due to the current configuration of vent blower assemblies, which could result in the pilot becoming incapacitated or impairing her/his judgment. Such a condition could lead to the pilot not being able to make critical flight safety decisions and result in loss of control of the airplane.

DATES: This AD becomes effective on February 19, 2004.

As of February 19, 2004, the Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulation.

ADDRESSES: You may get the service information identified in this AD from Raytheon Aircraft Company, 9709 E. Central, Wichita, Kansas 67201-0085; telephone: (800) 429-5372 or (316) 676-3140.

You may view the AD docket at FAA, Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 2003-CE-16-AD, 901 Locust, Room 506, Kansas City, Missouri 64106. Office hours are 8 a.m. to 4 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Dan Withers, Aerospace Engineer, Wichita Aircraft Certification Office, FAA, 1801 Airport Road, Wichita, Kansas 67209; telephone: (316) 946-4196; facsimile: (316) 946-4107.

SUPPLEMENTARY INFORMATION:

Discussion

What events have caused this AD? Reports of the vent blower assembly bearings seizing and locking the blower motor on several Raytheon Model 1900, 1900C, and 1900D airplanes caused us to issue AD 97-22-16, Amendment 39-10187 (62 FR 58894, October 31, 1997. AD 97-22-16 currently requires the following on certain Raytheon Model 1900, 1900C, and 1900D airplanes:

- Incorporating a modification to replace the bearings in the vent blower assemblies with improved design bearings (Electromech Technologies Kit No. EM630-201-1 or EM630-201-2 (as appropriate for the blower serial number)); and
- Installing a thermal protection for the vent blowers (Electromech Technologies Kit No. EM630-201-1 or EM630-201-2 or Advanced Industries Kit No. BC80A905 (as appropriate for the blower serial number)).

What has happened since AD 97-22-16 to initiate this action? The FAA has received reports that vent blower assemblies modified in accordance with AD 97-22-16 are still malfunctioning.

What is the potential impact if FAA took no action? If not corrected, smoke could enter the cockpit and cabin, which could result in the pilot becoming incapacitated or impairing her/his judgment. This condition could lead to the pilot not being able to make critical flight safety decisions and result in loss of control of the airplane.

Has FAA taken any action to this point? We issued a proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to certain Raytheon Model 1900, 1900C, and 1900D airplanes. This proposal was published in the Federal Register as a notice of proposed rulemaking (NPRM) on June 4, 2003 (68 FR 33420). The NPRM proposed to supersede AD 97-22-16 with a new AD that would retain the actions required in AD 97-22-16 for certain vent blower assemblies and require you to incorporate further product improvement modifications for all affected vent blower assemblies.

Comments

Was the public invited to comment? We provided the public the opportunity to participate in the development of this AD. The following presents the comments received on the proposal and FAA's response to each comment:

Comment Issue: The Proposed AD Does Not Solve the Problem of Smoke in the Cockpit/Cabin

What is the commenter's concern? The commenter states that the proposed AD focuses on the vent blower low speed resistors and does not consider the motor as a source of smoke. Since the cooling air for the motor is drawn through the motor by the blower intake and then is exhausted into the cabin, any motor failure that generates smoke and fumes is blown directly into the cabin.

The following summarizes the commenter's concerns:

- The insulation on the lead-wire can hang up on the brush holder if the brush lead-wire is pushed down to clear the metal brush inspection cover. The installation instructions provided with Modification Kit BC80A-901-3, which incorporates the replacement brushes with the lead-wire insulation, do not clarify where the lead-wires should be formed;

- When a brush lead-wire gets hung up on the brush holder (caused by improper lead-wire forming), there is little to no force from the spring to hold the brush against the commutator. Lack of force to hold the brush against the commutator can cause arcing between the brush and commutator surface, which produces tremendous heat and accelerated brush wear. This will ultimately lead to excess heat that will cause the grease to boil out of the bearings and result in bearing failure;
- The hard anodized coating on the metal brush inspection cover provided with Modification Kit No. 630-203-1 is a poor insulator and is easily scratched during assembly and disassembly. Once scratched, the coating offers no insulation, which creates the possibility for a short circuit to the brush shunt; and
- The low speed power resistors are considered undersized for the application.

The commenter recommends the following:

- Installing thermal fuse(s) on the motor to interrupt the current in the event of the motor overheating;
- Controlling how the brush lead-wires are formed to prevent shorting to metal inspection screen or any other adjacent conductor; and
- Increasing the power rating of the low speed resistors to improve the safety margin.

The commenter requests these changes based on personal repair history as well as analysis of the design.

What is FAA's response to the concern? We do not agree. Although the commenter raises many pertinent concerns, we consider the requested changes a product improvement or a way to increase the reliability of the motor.

The proposed AD is intended to address smoke in the cabin/cockpit that is specifically caused by the vent blower assembly. Investigation by Raytheon engineering concluded that all incidents involving smoke in the cockpit/cabin were caused by overheating of the vent blower low speed resistors while operating the blower on low speed.

AD 97-22-16 required incorporating the applicable modification kit as specified in Raytheon Service Bulletin No. 2721, Issued: January, 1997. Raytheon Service Bulletin No. 2721 added a 216°C thermal cutout to the resistor assembly to interrupt power to the resistors and prevent overheating.

Further field experience revealed that the 216°C cutout may not open soon enough to prevent overheating in all instances. As a result, Raytheon issued Mandatory Service Bulletin SB 21-3448, Issued: October, 2002, to decrease the thermal cutout set point to 152°C. New tests verified that this value cutout to the resistor assembly provides adequate protection against resistor overheating while avoiding nuisance trips during normal operation.

The addition of an insulating sleeve over the brush lead-wires and hard anodizing of the brush inspection cover required by Raytheon Mandatory Service Bulletin SB 21-3448, Issued: October, 2002, was done to offer an additional measure of protection. The additions are not meant to substitute proper brush lead-wire routing.

The thermal cutout on the resistors and the aircraft's blower circuit current limiter are the primary methods of protection. If a brush lead-wire was shorted to the housing and the vent blower was operated in the low speed mode, the increased current flow would cause the resistor temperature to increase until the thermal cutout opens and interrupts power to the resistors. If a brush lead-wire was shorted to the housing and the vent blower was operated in the high speed mode, the increased current flow would cause the aircraft's current limiter to open and interrupt power.

A brush lead-wire could possibly get hung up with or without the sleeving. If the brush lead-wire gets hung up, this would result in arcing between the brush and commutator resulting in increased heat and accelerated brush wear until the blower no longer continues to operate. At this time, the manufacturer has not received any field reports of smoke related to "hung brushes."

The power dissipation in the low speed circuit does appear to be above the rated value for the resistors. However, this does not account for the large amount of cooling airflow that passes over the area to which the resistors are mounted. Service history shows that the resistor rating is adequate under normal operations. If the resistors start to overheat because of vent blower failure, then the thermal cutout will open and interrupt power to the resistor assembly.

Since none of the recommendations specifically address an unsafe condition, we have determined that we are not changing the final rule AD based on these comments.

Conclusion

What is FAA's final determination on this issue? We have carefully reviewed the available data and determined that air safety and the public interest require adopting the AD as proposed except for minor editorial corrections. We have determined that these minor corrections:

- Are consistent with the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

Changes to 14 CFR Part 39–Effect on the AD

How does the revision to 14 CFR part 39 affect this AD? On July 10, 2002, the FAA published a new version of 14 CFR part 39 (67 FR 47997, July 22, 2002), which governs the FAA's AD system. This regulation now includes material that relates to altered products, special flight permits, and alternative methods of compliance. This material previously was included in each individual AD. Since this material is included in 14 CFR part 39, we will not include it in future AD actions.

Costs of Compliance

How many airplanes does this AD impact? We estimate that this AD affects 300 airplanes in the U.S. registry.

What is the cost impact of this AD on owners/operators of the affected airplanes? We estimate the following costs to accomplish the modification:

Labor cost	Parts cost	Total cost per airplane	Total cost on U.S. operators
3 workhours x \$60 per hour = \$180	\$415 (for both the forward and aft ventilation blower assemblies).	\$595	\$595 x 300 = \$178,500.

Regulatory Findings

Will this AD impact various entities? We have determined that 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.

Will this AD involve a significant rule or regulatory action? For the reasons discussed above, I certify that this AD:

1. Is not a "significant regulatory action" under Executive Order 12866;
2. Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
3. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 2003-CE-16-AD" in your request.

List of Subjects in 14 CFR Part 39

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

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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. FAA amends § 39.13 by removing Airworthiness Directive (AD) 97-22-16, Amendment 39-10187 (62 FR 58894, October 31, 1997), and by adding a new AD to read as follows:

AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC



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

We post ADs on the internet at "www.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2004-01-13 Raytheon Aircraft Company: Amendment 39-13427; Docket No. 2003-CE-16-AD; Supersedes AD 97-22-16, Amendment 39-10187.

When Does This AD Become Effective?

- (a) This AD becomes effective on February 19, 2004.

What Other ADs Are Affected by This Action?

- (b) This AD supersedes AD 97-22-16, Amendment 39-10187 (62 FR 58894, October 31, 1997).

What Airplanes Are Affected by This AD?

- (c) This AD affects the following airplane models and serial numbers that are:
- (1) certificated in any category; and
 - (2) equipped with vent blower assembly, part number 114-380028-1, 114-380028-3, 114-380028-5, or 114-380028-7.

Model	Serial numbers
1900	UA-3.
1900C	UB-1 through UB-74 and UC-1 through UC-174.
1900 (C-12J)	UD-1 through UD-6.
1900D	UE-1 through UE-427.

What Is the Unsafe Condition Presented in This AD?

(d) This AD is the result of reports that vent blower assemblies modified in accordance with AD 97-22-16 are still malfunctioning. The actions specified in this AD are intended to prevent smoke from entering the cockpit and cabin due to the current configuration of vent blower assemblies, which could result in the pilot becoming incapacitated or impairing his/her judgment. This condition could lead to the pilot not being able to make critical flight safety decisions and result in loss of control of the airplane.

What Must I Do To Address This Problem?

- (e) To address this problem, you must do the following:

Actions	Compliance	Procedures
(1) Check the maintenance records to determine if a part number (P/N) 114-380028-1, 114-380028-3, 114-380028-5, or 114-380028-7 ventilation blower assembly is installed.	Within the next 800 hours time-in-service (TIS) after February 19, 2004 (the effective date of this AD), unless already done.	Follow Raytheon Aircraft Mandatory Service Bulletin SB 21-3448, Issued: October, 2002. The owner/operator holding at least a private pilot certificate as authorized by section 43.7 of the Federal Aviation Regulations (14 CFR 43.7) may perform this check.
(2) If, by checking the maintenance records, the owner/operator can definitely show that a P/N 114-380028-1, 114-380028-3, 114-380028-5, or 114-380028-7 ventilation blower assembly is not installed, no further action is required by this AD. Make an entry into the aircraft records showing compliance with this portion of the AD in accordance with section 43.9 of the Federal Aviation Regulations (14 CFR 43.9).	Prior to further flight after the maintenance records check required in paragraph (e)(1) of this AD.	The owner/operator holding at least a private pilot certificate as authorized by section 43.7 of the Federal Aviation Regulations (14 CFR 43.7) may make this entry.
(3) If, by checking the maintenance records, the owner/operator can definitely show that a P/N 114-380028-1, 114-380028-3, 114-380028-5, or 114-380028-7 ventilation blower assembly is installed, do the following for each P/N: (i) <i>P/N 114-380028-1</i> : modify following Raytheon Service Bulletin No. 2721, Issued: January, 1997, prior to incorporating Electromechanic Technologies Modification Kit No. P/N 630-203-01 and changing the P/N to 114-380028-11. (ii) <i>P/N 114-380028-3</i> : incorporate Advanced Industries Modification Kit No. P/N BC80A-901-3 and change the P/N to 114-380028-9. (iii) <i>P/N 114-380028-5 with a serial number (S/N) of 2162 or above or with a S/N of 2162 with an ‘A’ suffix</i> : no modification is required. Change the P/N to 114-380028-11 and make an entry into the aircraft records that shows compliance with this portion of the AD in accordance with section 43.9 of the Federal Aviation Regulations (14 CFR 43.9). (iv) <i>P/N 114-380028-5 with a S/N prior to 2162 without an ‘A’ suffix</i> : incorporate Electromechanic Technologies Modification Kit No. P/N 630-203-01 and change the P/N to 114-380028-11. (v) <i>P/N 114-380028-7</i> : incorporate Advanced Industries Modification Kit No. P/N BC80A-901-3 and change the P/N to 114-380028-9.	Do all modifications prior to further flight after the maintenance records check required in paragraph (e)(1) unless already done.	Following Raytheon Aircraft Mandatory Service Bulletin SB 21-3448, Issued: October, 2002, and Raytheon Service Bulletin No. 2721, Issued: January, 1997.

(4) If the owner/operator cannot definitely show that a P/ N 114-380028-1, 114-380028-3, 114-380028-5, or 114-380028-7 ventilation blower assembly is installed through the maintenance records check, an appropriately-rated mechanic must do an inspection to determine the P/N of the installed ventilation blower assembly and do the applicable modification required in paragraphs (e)(3)(i), (e)(3)(ii), (e)(3)(iii), (e)(3)(iv), and (e)(3)(v) of this AD.	Inspect within the next 800 hours TIS after February 19, 2004 (the effective date of this AD). Do all modifications prior to further flight.	Follow Raytheon Aircraft Mandatory Service Bulletin SB 21-3448, Issued: October, 2002, and Raytheon Service Bulletin No. 2721, Issued: January, 1997.
(5) Do not install any P/N 114-380028-1, 114-380028-3, 114-380028-5, or 114-380028-7 ventilation blower assembly, unless it has been modified as specified in paragraphs (e)(3)(i), (e)(3)(ii), (e)(3)(iii), (e)(3)(iv), and (e)(3)(v) of this AD.	As of February 19, 2004 (the effective date of this AD).	Follow Raytheon Aircraft Mandatory Service Bulletin SB 21-3448, Issued: October, 2002, and Raytheon Service Bulletin No. 2721, Issued: January, 1997.

May I Request an Alternative Method of Compliance?

(f) You may request a different method of compliance or a different compliance time for this AD by following the procedures in 14 CFR 39.13.

(1) Send your request to the Manager, Wichita Aircraft Certification Office (ACO), FAA. For information on any already approved alternative methods of compliance, contact Dan Withers, Aerospace Engineer, Wichita Aircraft Certification Office, FAA, 1801 Airport Road, Wichita, Kansas 67209; telephone: (316) 946-4196; facsimile: (316) 946-4107.

(2) Alternative methods of compliance approved in accordance with AD 97-22-16, which is superseded by this AD, are not approved as alternative methods of compliance with this AD.

Does This AD Incorporate Any Material by Reference?

(g) You must do the actions required by this AD following the instructions in Raytheon Aircraft Mandatory Service Bulletin SB 21-3448, Issued: October, 2002, and Raytheon Aircraft Mandatory Service Bulletin No. 2721, Issued: January, 1997. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may get a copy from Raytheon Aircraft Company, 9709 E. Central, Wichita, Kansas 67201-0085; telephone: (800) 429-5372 or (316) 676-3140. You may review copies at FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Issued in Kansas City, Missouri, on January 2, 2004.

David R. Showers,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 04-474 Filed 1-13-04; 8:45 am]

BILLING CODE 4910-13-P