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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [61 FR 51357 NO. 192 10/02/96]

Docket No. 95-CE-83-AD; Amendment 39-9773; AD 96-20-07

RIN 2120-AA64

Airworthiness Directives; JanAero Devices B-Series Combustion Heaters, Models B1500, B2030, B3040, and B4050 (formerly owned by Janitrol, C&D, FL Aerospace, and Midland-Ross Corporation)

AGENCY: Federal Aviation Administration, DOT

ACTION: Final rule.

SUMMARY: This amendment supersedes Airworthiness Directive (AD) 82-07-03, which currently requires repetitively testing (pressure decay) the combustion tube of JanAero Devices B-Series combustion heaters, Models B1500, B2030, B3040, and B4050, that are installed on aircraft, and overhauling any heater that does not pass one of these pressure decay tests. This action retains the pressure decay test and possible heater overhaul requirements of AD 82-07-03; and requires repetitive operational testing of the combustion air pressure switch, and replacing any combustion pressure switch that does not pass one of these tests. Two occurrences of failure of the affected heaters prompted this action. In one case, an explosion resulted and the baggage compartment door was blown off the airplane. In the other case, a fire occurred in the baggage compartment while the airplane was in flight. The actions specified by this AD are intended to prevent an airplane fire or explosion caused by failure of the heater combustion tube assembly or combustion air pressure switch.

DATES: Effective November 14, 1996.
The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of November 14, 1996.

ADDRESSES: Service information that applies to this AD may be obtained from JanAero Devices, Airport Complex, P.O. Box 273, Fort Deposit, Alabama 36032; telephone (334) 227-8306; facsimile (334) 227-8596. This information may also be examined at the Federal Aviation Administration (FAA), Central Region, Office of the Assistant Chief Counsel, Attention: Rules Docket 95-CE-83-AD, Room 1558, 601 E. 12th Street, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Ms. Linda Haynes, Aerospace Engineer, FAA, Atlanta Aircraft Certification Office, Campus Building, 1701 Columbia Avenue, suite 2-160, College Park, Georgia 30337-2748; telephone (404) 305 -7377; facsimile (404) 305-7348.

SUPPLEMENTARY INFORMATION:

Events Leading to This AD

A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to JanAero Devices B-Series combustion heaters, Models B1500, B2030, B3040, and B4050, that are installed on aircraft was published in the **Federal Register** on March 15, 1996 (61 FR 10703). The action proposed to supersede AD 82-07-03 with a new AD that would (1) retain the requirements of repetitively testing (pressure decay) the combustion tubes of the heaters, and overhauling any heater that does not pass one of these pressure decay tests; (2) require repetitive operational testing of the combustion air pressure switch, and replacing any combustion pressure switch that does not pass one of these tests; and (3) provide the option of installing a combustion air pressure switch of improved design as terminating action for the repetitive operational tests. Accomplishment of the proposed actions as specified in the notice of proposed rulemaking (NPRM) are as follows:

- the pressure decay tests, combustion air pressure switch operational tests, and possible heater overhaul in accordance with the Overhaul and Maintenance Manual; and

- the improved design combustion air pressure switch installation in accordance with JanAero Devices Service Bulletin (SB) # A-102, dated September 1994.

The proposal was the result of two occurrences of heater failure. In one case, an explosion resulted and the baggage compartment door was blown off the airplane. In the other case, a fire occurred in the baggage compartment while the airplane was in flight.

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Comment Issue No. 1: New Ceramic Coated Combustion Tubes Should Require Pressure Decay Tests

Four commenters state that the new ceramic coated combustion tubes, when installed, should still require repetitive pressure decay tests. These commenters feel that more failures occur in the areas of the cross-over passages, exhaust or outermost layer, end cap, and the third layer; the cross-over passage, exhaust layer, and end cap failing because of cracks or metal fatigue separation, and the third layer because of cracks caused by heat warping. These commenters further state that the JanAero ceramic coated tube does not reduce failures in these areas in that an improved fourth layer and inner cone does not increase the longevity of a combustion tube.

The FAA does not concur that repetitive pressure decay tests should be required on the new ceramic coated combustion tubes. The FAA approved the ceramic combustion tube based on the coating being able to withstand high temperatures and because testing results of the heater assembly exceed FAA Technical Standard Order (TSO) requirements. The FAA believes that, with proper maintenance as specified within the Janitrol Maintenance and Overhaul Manual, the ceramic coated combustion tube will operate safely without a repetitive inspection requirement. No changes to the AD have been made as a result of these comments.

Comment Issue No. 2: New Part Number (P/N) 94E42 Series Combustion Air Pressure Switch Should Require Repetitive Checks

Four commenters state the "improved" JanAero Devices P/N 94E42 switch utilizes the exact same principle as the old switch; that is, the spring pressure regulates the air pressure required to close the micro switch. These commenters express the following:

This spring pressure can be adjusted during periodic maintenance. When power is supplied to the heater, both switches are closed (spring is in compression). In both of the switch operations, if the switch fails open, the heater will not operate. However, if the switch fails in the closed position, it would go undetected until the switch is properly inspected. If the defective switch then remained in service until the combustion air source failed, fuel and spark in the combustion tube (with no combustion air) could result in an explosion. Periodic adjustments to the switch is a necessity because of reduced spring constant. As the spring is compressed over time, less force is needed to close the circuit.

One of these four commenters went on to express the following:

The new air switch (P/N 94E42) is slightly more tamper-proof, but the internal construction is similar to the original and subject to the same failures; that is a microswitch against a diaphragm with an adjustment screw. The new switch can be field adjusted just like the old switch, with design the only major difference. The new switch cannot be adjusted to the point where it closes with no air pressure on the diaphragm. In time, the spring inside these pressure switches will sag under load, which will cause a decrease in the switch setting and result in the switch contacting at an earlier point than when new.

The FAA does not concur. The new air switch, P/N 94E42, is forward spring biased; that is, any extreme or over adjustments will cause the device to fail in a normal open position, thereby preventing any fuel introduction or ignition with an improperly adjusted switch. The adjusting screw housing is potted after factory adjustment to prevent accidental movement during field readjustment. The intent of this AD is to prevent failure of the switch. The FAA believes that, with proper maintenance as called forth in the Janitrol Maintenance and Overhaul Manual, the combustion air pressure switch will not fail and will operate safely. No changes to the AD have been made as a result of these comments.

Comment Issue No. 3: Change the AD Applicability to Include All Combustion Heaters
One commenter suggests the AD cover all combustion heaters because of aging and lack of maintenance or periodic checks. Another commenter states that, since all combustion heaters are subject to the same operation and conditions, all have the same failure capacity and subsequent failure results.

The FAA does not concur. AD actions provide corrective action for products where an unsafe condition has been identified, either through documented service problems or scientific testing, knowledge, etc. AD's are not used to mandate routine maintenance, in this case as outlined in the Janitrol Maintenance and Overhaul Manual. The FAA has no data for which to issue an AD against all combustion heaters; only for those that are affected by this action. The FAA will consider future rulemaking action against other combustion heaters if data indicates that an unsafe condition exists as a result of conditions other than aircraft owners/operators not accomplishing routine maintenance actions. No changes have been made to the AD as a result of these comments.

Comment Issue No. 4: Change the Applicability of the AD
One commenter suggests that the FAA clarify the AD by changing the Applicability section of the AD to read as follows:

Applicability: B-Series Combustion Heaters, Models B1500, B2030, B3040, and B4050, marked

as meeting the standards of TSO-320 and are installed on, but not limited to, the following aircraft (all serial numbers), certificated in any category:

Note: superseding new B-Series combustion heaters, Models 2500, B3500, and B4500 incorporate a ceramic coated combustion tube and new combustion air pressure switch, P/N 94E42, are exempt from the AD (see JanAero Devices Service Letter # A-101 for superseding data).

The FAA partially concurs. The only difference that the FAA has found between the wording currently in the proposal and what the commenter has suggested is the addition of the note to clarify that certain combustion heater models incorporate the P/N 94E42 combustion tube and air pressure switch and are exempt from the AD. The FAA will add a similar note to the AD for clarification purposes.

Comment Issue No. 5: Assure the Correct Service Bulletin is Called Out in the AD
One commenter states that in the preamble to the NPRM, reference to JanAero Devices SB # A-102 was incorrectly referenced as JanAero SB NZ A-102. The commenter requests that all subsequent references to the service bulletin accurately reflect the title.

The FAA concurs that all reference to the service bulletin should reflect the correct title, and will assure that reference is correct in the final rule. In addition, JanAero Devices has superseded JanAero SB #A-102 with JanAero SB # A-103, dated September 1995. All reference to JanAero Devices SB # A-102 will be changed to JanAero Devices SB # A-103.

Comment Issue No. 6: Change the Wording of the AD for Clarification
One commenter requests that the FAA clarify the AD by combining and rewording paragraphs (a)(1) and (a)(2) of the AD to read as follows:

If any heater does not pass any of the repetitive combustion tube pressure decay tests required by this AD, prior to further flight, overhaul the heater and replace the combustion tube with a serviceable tube or replace the heater assembly and revert to the initial 500 hours accumulated time-in-service (TIS) to begin repetitive testing per this AD.

Note: replacement with a new or rebuilt superseding Heater Model (B2500, B3500, or B4500) that incorporates a ceramic coated combustion tube exempts the heater from this AD.

The FAA does not concur. The only difference that the FAA has found between the wording currently in the proposal and what the commenter has suggested is the addition of the note to clarify that certain combustion heater models incorporate the P/N 94E42 combustion tube and air pressure switch and are exempt from the AD. However, this note has already been added after the Applicability section of the AD so the only thing this note would add is duplication. No changes have been made to the AD as a result of this comment.

The FAA's Determination
After careful review of all available information related to the subject presented above, the FAA has determined that air safety and the public interest require the adoption of the rule as proposed except for the addition of the clarification note, the change in service information, and minor editorial corrections. The FAA has determined that the addition, change, and minor corrections will not change the meaning of the AD and will not add any additional burden upon the public than was already proposed.

Compliance Times of This Action
The compliance times of this AD are presented in both hours time-in-service and calendar time (with the prevalent one being whichever occurs first). The reason for the dual compliance time is that the affected combustion heaters are susceptible to corrosion (occurs regardless of whether the airplane is in flight or on the ground) as well as being affected by thermodynamic and pressure cycles accumulated through regular airplane usage.

Cost Impact
The FAA estimates that 25,700 airplanes in the U.S. registry will be affected by this AD, that it will take approximately 1 workhour per aircraft to accomplish the required initial inspection, and that the average labor rate is approximately $60 an hour. Based on these figures, the total cost impact of the AD on U.S. operators is estimated to be $1,542,000 or $60 per aircraft. This figure does not take into account the number of repetitive inspections each aircraft owner/operator will incur over the life of the aircraft, or the number of aircraft that have an improved design combustion air pressure switch installed. The FAA has no way of determining the number of repetitive inspection each owner/operator would incur over the life of the airplane. The FAA is not aware of any affected airplane owner/operator that has incorporated the new design parts as of the issuance of this AD.

AD 82-03-07 (typo...should be 82-07-03) currently requires the pressure decay tests on aircraft with the affected heaters installed. This action maintains these inspections; so the only cost impact of the required action is that of the combustion air pressure switch operational tests.

Regulatory Impact
The regulations adopted herein will not have substantial direct effects 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. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under 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. A copy of the final evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption "ADDRESSES".

List of Subjects in 14 CFR Part 39
Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment
Accordingly, pursuant to 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 USC 106(g), 40113, 44701.

Section 39.13 - [AMENDED]

2. Section 39.13 is amended by removing Airworthiness Directive (AD) 82-07-03, Amendment 39-4354, 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

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Federal Aviation Regulations, 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 FAR Subpart 39.3).

96-20-07 JANAERO DEVICES (formerly Janitrol, C&D, FL Aerospace, and Midland-Ross Corporation): Amendment 39-9773; Docket No. 95-CE-83-AD; Supersedes AD 82-07-03, Amendment 39-4354, which superseded 80-09-10 amendment 39-3766.

Applicability: B-Series combustion heaters, Models B1500, B2030, B3040, and B4050, marked as meeting the standards of TSO-C20, that do not incorporate a ceramic combustion tube and a part number (P/N) 94E42 combustion air pressure switch, and are installed on, but not limited to, the following aircraft (all serial numbers), certificated in any category:

Manufacturer	**Models and Series Model Airplanes**
Beech	Models 95-B55 Series, 58, 58TC, 58P, 60, A60, and 76.
Canadair	Models CL-215, CL-215T, and CLT-415.
Cessna	Models 208, 303, 310F, 310G, 310H, 310I, 310J, 310K, 310L, 310M, 310N, 310O, 310P, 320C, 320D, 320E, 320F, 337 series, 340 340A, 414, 414A, 421, 421A, 421B, and 421C.

NOTE 1: B-Series combustion heaters, Models 2500, B3500, and B4500, incorporate a ceramic-coated combustion tube and new combustion air pressure switch, P/N 94E42. This AD does not apply to this configuration.

NOTE 2: This AD applies to each aircraft identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as follows, as applicable:

- For aircraft with 450 or more heater hours time-in-service (TIS) (see NOTE 3 for information on how to determine heater hours TIS) accumulated on an installed heater since the last overhaul or new installation, within the next 50 heater hours TIS or 12 calendar months after the effective date of this AD, whichever occurs first, unless already accomplished, and thereafter at intervals not to exceed 100 heater hours TIS or 24 calendar months, whichever occurs first;

- For aircraft with less than 450 heater hours TIS accumulated on an installed heater since the last overhaul or new installation, upon accumulating 500 heater hours TIS on the new or overhauled heater or within the next 12 calendar months after the effective date of this AD, whichever occurs first, unless already accomplished, and thereafter at intervals not to exceed 100 heater hours TIS or 24 calendar months, whichever occurs first; and

- Upon installing one of the affected heaters, and thereafter at intervals not to exceed 100 heater hours TIS or 24 calendar months, whichever occurs first.

NOTE 3: A heater hour meter may be used to determine heater hours TIS. Also, aircraft hours TIS may be divided in half to come up with heater hours TIS.

To prevent an airplane fire or explosion caused by failure of the heater combustion tube assembly or combustion air pressure switch, accomplish the following:

(a) Test (pressure decay test) the combustion tube of the heater and conduct an operational test of the combustion air pressure switch in accordance with Section III, paragraph 3.3.1 through 3.3.13 (pressure decay test) and Section IV, paragraph 4.9c (operational switch test), of the Janitrol Maintenance and Overhaul Manual, part number (P/N) 24E25-1, dated October 1981.

(1) If any heater does not pass any of the repetitive combustion tube pressure decay tests required by this AD, prior to further flight, overhaul the heater and replace the combustion tube with a serviceable tube or replace the heater assembly. If the new or rebuilt heater assembly incorporates a ceramic combustion tube, then the repetitive pressure decay tests are no longer required.

(2) If any heater does not pass any of the repetitive combustion air pressure switch operational tests required by this AD, prior to further flight, replace the switch with one of the same design or with a P/N 94E42 switch in accordance with JanAero Devices Service Bulletin # A-103, dated September 1995. Replacing the combustion air pressure switch with a P/N 94E42 switch eliminates the repetitive operational testing requirement of this AD.

(b) As an alternative method of compliance to the requirements of this AD, the heater may be disabled by accomplishing the following:

(1) Cap the fuel supply line;
(2) Disconnect the electrical power and ensure that the connections are properly secured to reduce the possibility of electrical spark or structural damage;
(3) Inspect and test to ensure that the cabin heater system is disabled;
(4) Ensure that no other aircraft system is affected by this action;
(5) Ensure there are no fuel leaks; and

(6) Fabricate a placard with the words: "System Inoperative". Install this placard at the heater control valve within the pilot's clear view.

(c) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

(d) An alternative method of compliance or adjustment of the compliance time that provides an equivalent level of safety may be approved by the Manager, Atlanta Aircraft Certification Office (ACO), Campus Building, 1701 Columbia Avenue, suite 2-160, College Park, Georgia 30337-2748. The request shall be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Atlanta ACO. Alternative methods of compliance for the combustion tube repetitive inspections required by this AD that are approved in accordance with AD 82-07-03 (superseded by this action) are approved as alternative methods of compliance with the applicable portion of paragraph (a) of this AD.

NOTE 4: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Atlanta ACO.

(e) The possible switch replacement required by this AD shall be done in accordance with JanAero Devices Service Bulletin # A-103, dated September 1995. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from JanAero Devices, Airport Complex, P.O. Box 273, Fort Deposit, Alabama 36032. Copies may be inspected at the FAA, Central Region, Office of the Assistant Chief Counsel, Room 1558, 601 E. 12th Street, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(f) This amendment (39-9773) supersedes AD 82-07-03, Amendment 39-4354.

(g) This amendment becomes effective on November 14, 1996.