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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2013-0695; Directorate Identifier 2011-NM-264-AD; Amendment 39-17726; AD 2014-01-03]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Saab AB, Saab Aerosystems Airplanes**

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

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Saab AB, Saab Aerosystems Model 340A (SAAB/SF340A) and SAAB 340B airplanes modified by Supplemental Type Certificate SA7971SW. This AD was prompted by reports of smoke, a burning odor, and possible fire in the flight deck and cabin of the airplane, which was caused by brushes wearing beyond their limits in the air conditioning motor. This AD requires an inspection to determine if a certain air compressor motor is installed, an inspection to determine the age of a certain compressor hour meter since new or overhauled, and repetitive replacement of the brushes on affected air conditioning compressor motor units. As an option to the replacement, this AD allows pulling the air conditioning circuit breaker and adding a placard. We are issuing this AD to detect and correct worn brushes contacting the commutator, which could result in a fire under the cabin floor with no means to detect or extinguish the fire.

**DATES:** This AD is effective April 3, 2014.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2013-0695; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Gregory Thiele, Aerospace Engineer, Special Certification Office, ASW-190, FAA, 2601 Meacham Boulevard, Fort Worth, TX 76137; phone: (817) 222-5229; fax: (817) 222-5785; email: gregory.thiele@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain Saab AB, Saab Aerosystems Model 340A (SAAB/SF340A) and SAAB 340B airplanes modified by Supplemental Type Certificate SA7971SW ([http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgstc.nsf/0/CE3676EDFD53938785256CC20058E501?OpenDocument&Highlight=sa7971sw](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgstc.nsf/0/CE3676EDFD53938785256CC20058E501?OpenDocument&Highlight=sa7971sw)). The NPRM published in the Federal Register on August 16, 2013 (78 FR 49982). The NPRM was prompted by reports of smoke, a burning odor, and possible fire in the flight deck and cabin of the airplane, which was caused by brushes wearing beyond their limits in the air conditioning motor. The NPRM proposed to require an inspection to determine if a certain air compressor motor is installed, an inspection to determine the age of a certain compressor hour meter since new or overhauled, and repetitive replacement of the brushes on affected air conditioning compressor motor units. As an option to the replacement, the NPRM proposed to allow pulling the air conditioning circuit breaker and adding a placard. We are issuing this AD to detect and correct worn brushes contacting the commutator, which could result in a fire under the cabin floor with no means to detect or extinguish the fire.

### **Comments**

We gave the public the opportunity to participate in developing this AD. We received no comments on the NPRM (78 FR 49982, August 16, 2013) or on the determination of the cost to the public.

### **Conclusion**

We reviewed the relevant data and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (78 FR 49982, August 16, 2013) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (78 FR 49982, August 16, 2013).

### **Interim Action**

We consider this AD interim action. The inspection reports required by this AD will enable us to obtain better insight into the nature, cause, and extent of the brush wear, and eventually to develop final action to address the unsafe condition. Once final action has been identified, we might consider further rulemaking.

### **Costs of Compliance**

We estimate that this AD affects 23 airplanes of U.S. registry.  
We estimate 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>
Inspection, drive motor assembly brush replacement; and parts return and report	11 work-hours × \$85 per hour = \$935 per replacement cycle	\$252 per replacement cycle	\$1,187 per replacement cycle	\$27,301 per replacement cycle.

**Paperwork Reduction Act**

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB control number. The control number for the collection of information required by this AD is 2120-0056. The paperwork cost associated with this AD has been detailed in the Costs of Compliance section of this document and includes time for reviewing instructions, as well as completing and reviewing the collection of information. Therefore, all reporting associated with this AD is mandatory. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at 800 Independence Ave. SW., Washington, DC 20591, ATTN: Information Collection Clearance Officer, AES-200.

**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.

We are 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,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) 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.

**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 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 (AD):



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**2014-01-03 Saab AB, Saab Aerosystems:** Amendment 39-17726; Docket No. FAA-2013-0695; Directorate Identifier 2011-NM-264-AD.

**(a) Effective Date**

This AD is effective April 3, 2014.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to Saab AB, Saab Aerosystems Model 340A (SAAB/SF340A) and SAAB 340B airplanes, certificated in any category, that have been modified as specified in Supplemental Type Certificate SA7971SW ([http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgstc.nsf/0/CE3676EDFD53938785256CC20058E501?OpenDocument&Highlight=sa7971sw](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgstc.nsf/0/CE3676EDFD53938785256CC20058E501?OpenDocument&Highlight=sa7971sw)).

**(d) Subject**

Air Transport Association (ATA) of America Code 21, Air Conditioning.

**(e) Unsafe Condition**

This AD was prompted by reports of smoke, a burning odor, and possible fire in the flight deck and cabin of the airplane, which were caused by brushes wearing beyond their limits in the air conditioning motor. We are issuing this AD to detect and correct worn brushes contacting the commutator, which could result in a fire under the cabin floor with no means to detect or extinguish the fire.

**(f) Compliance**

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

**(g) Part Number (P/N) Inspection**

Within 30 days or 10 flight hours after the effective date of this AD, whichever occurs first: Inspect the air conditioner (A/C) compressor motor to determine if P/N 1134104-1 is installed. A review of airplane maintenance records is acceptable in lieu of this inspection if the part number of the A/C compressor motor can be conclusively determined from that review.

## **(h) Inspection of Compressor Hour Meter and Maintenance Records**

If, during the inspection required by paragraph (g) of this AD, any A/C compressor motor is found having P/N 1134104-1: Within 30 days or 10 flight hours after the effective date of this AD, whichever occurs first, determine the hour reading on the A/C compressor hour meter as specified in paragraphs (h)(1) and (h)(2) of this AD.

(1) Inspect the number of hours on the A/C compressor hour meter.

(2) Check the airplane logbook for any entry for replacing the A/C compressor motor brushes with new brushes, or for replacing the compressor motor or compressor condenser module assembly (pallet) with a motor or assembly that has new brushes.

(i) If the logbook contains an entry for replacement of parts as specified in paragraph (h)(2) of this AD, determine the number of hours on the A/C compressor motor brushes by comparing the number of hours on the compressor motor since replacement and use this number in lieu of the number determined in paragraph (h)(1) of this AD.

(ii) If, through the logbook check, the number of hours on the A/C compressor motor brushes cannot be positively determined as specified in paragraph (h)(2) of this AD, use the number of hours on the A/C compressor hour meter determined in paragraph (h)(1) of this AD, or assume the brushes have over 500 hours time-in-service.

## **(i) Replacement**

Except as provided by paragraph (k) of this AD: Using the hour reading on the A/C compressor hour meter determined in paragraph (h) of this AD, replace the A/C compressor motor brushes with new brushes at the later of the times specified in paragraphs (i)(1) and (i)(2) of this AD. Thereafter, repeat the replacement of the A/C compressor motor brushes at intervals not to exceed 500 hours time-in-service on the A/C compressor motor. Do the replacement in accordance with the actions specified in paragraph (j) of this AD.

(1) Before or when the A/C compressor motor reaches a total of 500 hours time-in-service.

(2) Before further flight after the inspection required by paragraph (h) of this AD.

## **(j) Motor Brush Replacement Instructions**

Do the actions specified in paragraphs (j)(1) through (j)(23) of this AD to replace the compressor motor brushes as required by paragraph (i) of this AD:

(1) New brushes may be installed by first level maintenance personnel only under the conditions listed in paragraphs (j)(1)(i) through (j)(1)(iv) of this AD. If these conditions are not met, deactivate the A/C in accordance with paragraph (k)(1) of this AD until the conditions listed in paragraphs (j)(1)(i) through (j)(1)(iv) of this AD are met, or the entire compressor motor is replaced.

(i) Motor was operating correctly prior to brush replacement.

(ii) The motor is tested to verify proper operation and does not show any defects that would require motor replacement.

(iii) Only approved vendor brushes are used (P/N 1251171).

(iv) Brushes are installed, seated, and tested in accordance with paragraphs (j)(2) through (j)(23) of this AD.

(2) Verify all electrical power is off to the system.

(3) Remove all access panels and exhaust ducts to gain access to the drive motor.

(4) Disconnect power leads from motor terminals (1/4-28). Tag the positive lead.

(5) Remove condenser support bracket to provide access to brush cover fasteners and remove motor cuff shroud.

(6) Loosen and unsnap brush cover assembly. Remove from the motor.

(7) Verify all power is off, and that all panels, shrouds, brackets, and fairings are removed.

(8) With a stiff wire hook or scribe, lift brush spring from holder and remove each worn brush set until all four sets are removed.

(9) Remove brush shunt wire terminal screw. Continue this step until all four screws are removed.

(10) With brushes removed and using shop air at 30-40 pounds per square inch gauge (psig) and nozzle, blow out as much carbon and/or copper dust as possible from the commutator, armature, and field windings. Purge from the commutator end of the motor.

(11) Install each new brush set by lifting brush springs, sliding brush into holder (with brush leading edge in direction of motor rotation) and lightly releasing the brush spring on the brush. (See Figure 1 to paragraph (m)(4)(vii) of this AD.) CAUTION: Do not allow brush spring to strike hard into place or damage to brush may result.

(12) Verify that the brush seats flat on the commutator and that no binding in the holder is present. Align brush spring in center of brush groove.

(13) Install terminal screw and lock washer on brush shunt lead and other leads and tighten. Repeat this step for other brush sets. Torque to 15-20 in.-lbs. CAUTION: Do not cross thread or over torque brush lead screws or thread damage may result.

(14) Seat new brushes in accordance with paragraph (j)(15) of this AD. All new brushes must be seated to assure proper motor operation and/or performance.

(15) Brush Seating Procedure: Cut a 7 inch long by 1.5 inch wide (0.125 inch, both dimensions) strip of 400-500 grit sand paper and place, with rough side out, on commutator. Secure one end of the paper to the commutator with masking tape in a manner such that the taped end will lead in the direction of shaft rotation (counter-clockwise looking at fan end). The other end will remain loose and overlap the taped end. Raise each brush momentarily while rotating the shaft until the taped end passes under each brush. After the sand paper is properly located tight against the commutator and encompasses all brush surface areas, carefully rotate the armature, by hand, in the normal direction of rotation until a full seat is obtained on each new brush. Three or four rotations is usually adequate. Excessive seating is not advised. Brush life may be reduced.

(16) Remove sand paper and blow out all carbon dust from the commutator and brush area. CAUTION: Eye, nose, and throat protection must be worn during this procedure.

(17) Lay brush shunt leads in position carefully such as to prevent any shorting problems. Leads must be able to easily follow brush and spring movement as brush wear occurs.

(18) Replace brush cover and attach motor power cables, if required.

(19) Replace all bracketry and hardware removed to access motor.

(20) Assure that brackets are properly installed, cooling fan does not interfere with shroud, motor drive belt aligned/tensioned, and belt cover is installed.

(21) Test the motor to verify proper operation. Therefore, connect ground power source or verify aircraft power is on and turn system on.

(22) Run system for a minimum of 15 minutes to seat brushes and check motor operation.

(23) Turn system and aircraft power off. System is ready for use.

### **(k) Deactivation/Reactivation**

(1) In lieu of replacing the A/C compressor motor brushes as required by paragraphs (i) and (j) of this AD, before further flight, deactivate the A/C by doing the actions specified in paragraph (k)(1)(i) or (k)(1)(ii) of this AD, as applicable.

(i) Single System: Pull the compressor control circuit breaker (cockpit right-hand 10VU panel, "REAR AIR COND"); install a placard by the A/C selection switch (co-pilot's side panel) prohibiting use of the air conditioner; and document deactivation of the system in the airplane logbook referring to this AD as the reason for deactivation.

(ii) Dual System: Pull the compressor control circuit breakers (cockpit right-hand 10VU panel, "REAR AIR COND," and cockpit left-hand 9VU panel, "FWD AIR COND"); install a placard (or placards) by the A/C selection switches (co-pilot's side panel) prohibiting use of the air conditioners;

and document deactivation of the system in the airplane logbook referring to this AD as the reason for deactivation.

(2) If an operator chooses to deactivate the system and then later chooses to return the airplane to service: Before returning the A/C system to service and removing the placard(s), do the inspection specified in paragraph (g) of this AD, and, as applicable, the inspection specified in paragraph (h) of this AD, and the replacements specified in paragraph (i) of this AD at the times specified in paragraph (i) of this AD.

### **(l) Parts Installation Limitation**

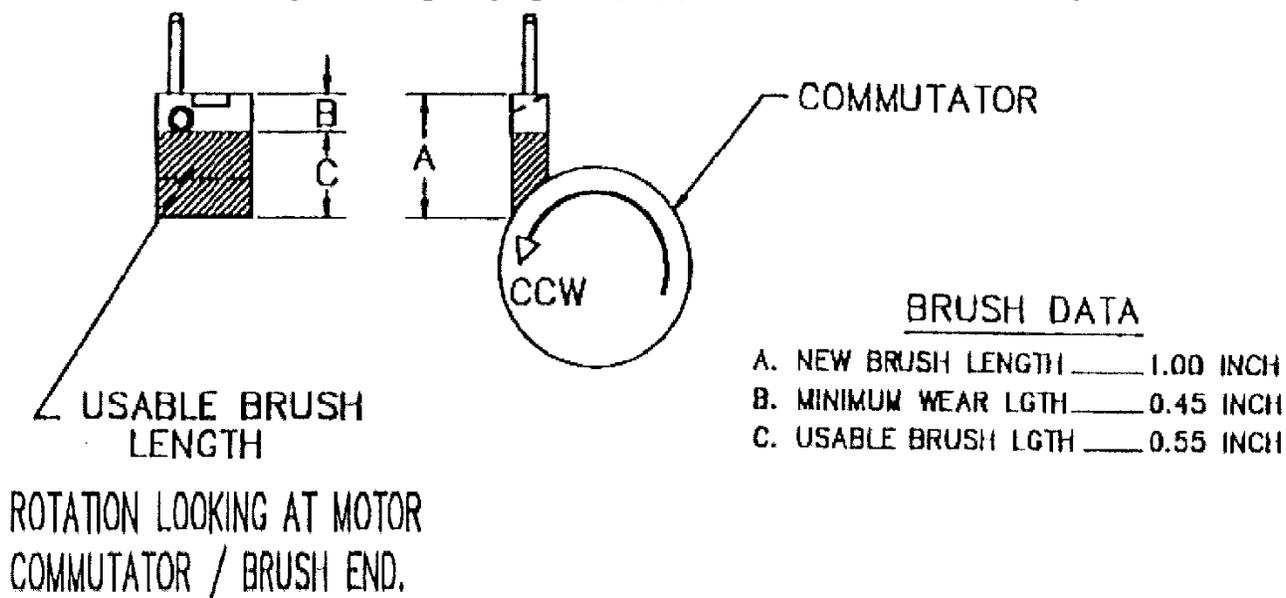
As of the effective date of this AD, no person may install an A/C compressor motor having P/N 1134104-1 on any airplane, unless the inspection specified in paragraph (h) of this AD has been done, and the replacements specified in paragraph (i) of this AD are done at the times specified in paragraph (i) of this AD.

### **(m) Reporting Requirement**

Submit a report of the results of the determination of hours required by paragraph (h) of this AD to the Special Certification Office, ASW-190, FAA, Attn: Gregory Thiele, Aerospace Engineer, 2601 Meacham Boulevard, Fort Worth, TX 76137; or email to: 9-ASW-190-COS@faa.gov. The report must include the information specified in paragraphs (m)(1) through (m)(4) of this AD.

- (1) The model and serial number of the airplane.
- (2) The elapsed amount of flight hours since the last brush/motor replacement, if known.
- (3) The amount of hours on the hour meter of the A/C compressor motor.
- (4) The amount of wear on the brushes (including overall length and total calculated wear), calculated as specified in paragraphs (m)(4)(i) through (m)(4)(ix) of this AD.
  - (i) Verify all electrical power is off to the system.
  - (ii) Remove all access panels and exhaust ducts to gain access to the drive motor.
  - (iii) Disconnect power leads from motor terminals (1/4-28). Tag positive lead.
  - (iv) Remove condenser support bracket to provide access to brush cover fasteners and remove motor cuff shroud.
  - (v) Loosen and unsnap brush cover assembly. Remove from motor.
  - (vi) Lift brush spring and remove brush with wire hook or scribe.
  - (vii) Measure each brush as shown in figure below and record values.

Figure 1 to paragraph (m)(4)(vii) of this AD – Measuring the Brush



(viii) Using the brush with the shortest measured length, calculate the wear by subtracting the measured value from 1.000 inch.

(ix) Replace brushes in accordance with the instructions specified in paragraphs (j)(9) through (j)(23) of this AD.

**(n) Compliance Time for Reporting**

Submit the report required by paragraph (m) of this AD at the applicable time specified in paragraph (n)(1) or (n)(2) of this AD.

(1) If the determination of hours was done on or after the effective date of this AD: Submit the report within 30 days after the inspection.

(2) If the determination of hours was done before the effective date of this AD: Submit the report within 30 days after the effective date of this AD.

**(o) Special Flight Permit**

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 an appropriately rated repair station, provided that the A/C is deactivated as specified in paragraph (k)(1) of this AD on airplanes on which the A/C has been operated for 500 hours or more, and replacement brushes are not available.

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

(1) The Manager, Special Certification Office, ASW-190, 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 Special Certification Office, send it to the attention of the person identified in paragraph (q) of this AD.

(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.

**(q) Related Information**

For more information about this AD, contact Gregory Thiele, Aerospace Engineer, Special Certification Office, ASW-190, FAA, 2601 Meacham Boulevard, Fort Worth, TX 76137; phone: (817) 222-5229; fax: (817) 222-5785; email: gregory.thiele@faa.gov.

**(r) Material Incorporated by Reference**

None.

Issued in Renton, Washington, on January 7, 2014.

Jeffrey E. Duven,  
Manager, Transport Airplane Directorate,  
Aircraft Certification Service.