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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0161; Product Identifier 2017-NM-088-AD; Amendment 39-19450; AD 2018-20-16]

RIN 2120-AA64

Airworthiness Directives; Bombardier, Inc., Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: We are superseding Airworthiness Directive (AD) 2013-11-12, which applied to certain Bombardier, Inc., Model BD-100-1A10 airplanes. AD 2013-11-12 required inspecting for the correct serial number of a certain hydraulic system accumulator, and replacing affected hydraulic system accumulators with new or serviceable accumulators. This AD expands the applicability and requires modifying or replacing certain hydraulic brake system accumulators. This AD also requires revising the maintenance or inspection program to add life limits for the accumulators. This AD was prompted by a determination that certain other hydraulic system accumulators must be modified or replaced and life limits must be added. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective November 23, 2018.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of November 23, 2018.

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of July 9, 2013 (78 FR 33206, June 4, 2013).

ADDRESSES: For service information identified in this final rule, contact Bombardier, Inc., 400 Côte-Vertu Road West, Dorval, Québec H4S 1Y9, Canada; telephone 514-855-5000; fax 514-855-7401; email thd.crj@aero.bombardier.com; internet <http://www.bombardier.com>. You may view this referenced service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0161.

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-2018-0161; 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, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is 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: Cesar Gomez, Aerospace Engineer, Airframe and Mechanical Systems Section, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7318; fax 516-794-5531.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2013-11-12, Amendment 39-17472 (78 FR 33206, June 4, 2013) (“AD 2013-11-12”). AD 2013-11-12 applied to certain Bombardier, Inc., Model BD-100-1A10 airplanes. The NPRM published in the Federal Register on March 9, 2018 (83 FR 10415). The NPRM was prompted by a determination that certain other hydraulic system accumulators must be modified or replaced and life limits must be added. The NPRM proposed to continue to require inspecting for the correct serial number of a certain hydraulic system accumulator, and replacing affected hydraulic system accumulators with new or serviceable accumulators. The NPRM also proposed to expand the applicability and require modifying or replacing certain hydraulic brake system accumulators. The NPRM also proposed to require revising the maintenance or inspection program to add life limits for the accumulators. We are issuing this AD to prevent failure of a screw cap or end cap and loss of the related hydraulic system, which could result in damage to airplane structure and consequent reduced controllability of the airplane.

Transport Canada Civil Aviation (TCCA), which is the aviation authority for Canada, has issued Canadian Airworthiness Directive CF-2011-41R1, dated March 27, 2017 (referred to after this as the Mandatory Continuing Airworthiness Information, or “the MCAI”), to correct an unsafe condition for certain Bombardier, Inc. Model BD-100-1A10 airplanes. The MCAI states:

Seven cases of on-ground hydraulic accumulator screw cap/end cap failure have been experienced on CL-600-2B19 aeroplanes, resulting in loss of the associated hydraulic system and high-energy impact damage to adjacent systems and structure. To date, the lowest number of flight cycles accumulated at the time of failure has been 6991.

Although there have been no failures to date on any BD-100-1A10 aeroplanes, accumulators similar to those installed on the CL-600-2B19 are installed on the BD-100-1A10. The affected part numbers (P/Ns) of the accumulators installed on BD-100-1A10 are 900095-1 (Auxiliary Hydraulic System accumulator), 33-155500 (Inboard Brake accumulator), and 33-147500 (Outboard Brake accumulator).

A detailed analysis of the calculated line of trajectory of a failed screw cap/end cap for the accumulators has been conducted, resulting in the identification of areas where systems and/or structural components could potentially be damaged. Although all of the failures on the CL-600-2B19 to date have occurred on the ground, an in-flight

failure affecting such components could potentially have an adverse effect on the controllability of the aeroplane.

Revision 1 of this [Canadian] AD is issued to mandate the [inspection and] replacement [of] Brake System Hydraulic accumulators that are not identified by the letter “E” or “NAE” after the serial number on the identification plate. Revision 1 also mandates the re-orientation of the brake accumulators P/N 33-147500 and P/N 33-155500 and the insertion of three discard tasks in the Challenger 300 Time Limits/Maintenance Checks (TLMC) Manual.

You may examine the MCAI in the AD docket on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0161.

Comments

We gave the public the opportunity to participate in developing this final rule. The following presents the comment received on the NPRM and the FAA's response.

Request To Add Maintenance Manual

NetJets Aviation stated that paragraph (n) of the proposed AD, which requires revising the maintenance or inspection program to incorporate certain life limit tasks, does not reference the Bombardier Challenger 350 Time Limits/Maintenance Check (TLMC) Manual. NetJets Aviation noted that only the Bombardier Challenger 300 TLMC Manual is referenced.

We infer that the commenter is asking that the Bombardier Challenger 350 TLMC Manual be added as another source of service information for accomplishing the actions required by paragraph (n) of this AD. We agree with the commenter's request and have changed paragraph (n) accordingly. Although the tasks identified in the Bombardier Challenger 300 TLMC Manual also apply to Bombardier Challenger 350 airplanes, we have included the Bombardier Challenger 350 TLMC in this AD for clarity.

Conclusion

We reviewed the relevant data, considered the comment received, and determined that air safety and the public interest require adopting this final rule with the change described previously and minor editorial changes. We have determined that these minor changes:

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

We also determined that this change will not increase the economic burden on any operator or increase the scope of this final rule.

Related Service Information Under 1 CFR Part 51

Bombardier has issued the following service information:

- Service Bulletin 100-32-20, Revision 02, dated April 14, 2015, which describes procedures for modifying (e.g., re-orienting) the installation of the hydraulic brake accumulators.
- Service Bulletin 100-32-21, dated May 24, 2012, which describes procedures for replacing the hydraulic brake system accumulators.
- Task 29-21-13-101 Discard the Auxiliary Hydraulic System Accumulator, Part No. 900095-1, of Section 5-10-11 of Part 2, “Airworthiness Limitations,” of Bombardier Challenger 300

BD-100 Time Limits/Maintenance Checks Manual, Revision 17, dated December 15, 2016; and Bombardier Challenger 350, BD-100 Time Limits/Maintenance Checks Manual, Revision 9, dated December 18, 2017, which describes procedures for removal and installation of the hydraulic brake system accumulators. These tasks are distinct since they apply to different airplane models.

- Task 32-43-37-101 Discard the Brake Accumulator, Part No. 33-147500, of Section 5-10-11 of Part 2, “Airworthiness Limitations,” of Bombardier Challenger 300 BD-100 Time Limits/Maintenance Checks Manual, Revision 17, dated December 15, 2016; and Bombardier Challenger 350, BD-100 Time Limits/Maintenance Checks Manual, Revision 9, dated December 18, 2017, which describes procedures for removal and installation of the brake accumulators. These tasks are distinct since they apply to different airplane models.
- Task 32-44-05-101 Discard the Emergency/Parking Brake Accumulator, Part No. 33-155500, of Section 5-10-11 of Part 2, “Airworthiness Limitations,” of Bombardier Challenger 300 BD-100 Time Limits/Maintenance Checks Manual, Revision 17, dated December 15, 2016; and Bombardier Challenger 350, BD-100 Time Limits/Maintenance Checks Manual, Revision 9, dated December 18, 2017, which describes procedures for removal and installation of the emergency parking brake accumulators. These tasks are distinct since they apply to different airplane models.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

We estimate that this AD affects 187 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Estimated Costs				
Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection to determine part numbers (retained actions from AD 2013-11-12)	1 work-hour × \$85 per hour = \$85	\$0	\$85	\$15,895.
Modifying or replacing hydraulic brake system accumulators (new actions)	58 work-hours × \$85 per hour = \$4,930	Up to \$31,500	Up to \$36,430	Up to \$6,812,410.

We have determined that revising the maintenance or inspection program takes an average of 90 work-hours per operator, although we recognize that this number may vary from operator to operator. In the past, we have estimated that this action takes 1 work-hour per airplane. Since operators incorporate maintenance or inspection program changes for their affected fleet(s), we have determined that a per-operator estimate is more accurate than a per-airplane estimate. Therefore, we estimate the total cost per operator to be \$7,650 (90 work-hours x \$85 per work-hour).

We estimate the following costs to do any necessary replacements that will be required based on the results of the inspection. We have no way of determining the number of aircraft that might need these replacements.

On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Hydraulic accumulator replacement	5 work-hours × \$85 per hour = \$340	\$4,510	\$4,850

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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes to the Director of the System Oversight Division.

Regulatory Findings

We 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.

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);
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 removing Airworthiness Directive (AD) 2013-11-12, Amendment 39-17472 (78FR 33206, June 4, 2013), and adding the following new AD:



FAA
Aviation Safety

AIRWORTHINESS DIRECTIVE

www.faa.gov/aircraft/safety/alerts/
www.gpoaccess.gov/fr/advanced.html

2018-20-16 Bombardier, Inc.: Amendment 39-19450; Docket No. FAA-2018-0161; Product Identifier 2017-NM-088-AD.

(a) Effective Date

This AD is effective November 23, 2018.

(b) Affected ADs

This AD replaces AD 2013-11-12, Amendment 39-17472 (78 FR 33206, June 4, 2013) ("AD 2013-11-12").

(c) Applicability

This AD applies to Bombardier, Inc., Model BD-100-1A10 airplanes, certificated in any category, having serial numbers 20003 through 20604 inclusive.

(d) Subject

Air Transport Association (ATA) of America Code 29, Hydraulic Power.

(e) Reason

This AD was prompted by reports of failure of a screw cap or end cap of the hydraulic system accumulator while on the ground, which resulted in loss of use of that hydraulic system and high-energy impact damage to adjacent systems and structures. We are issuing this AD to prevent failure of a screw cap or end cap and loss of the related hydraulic system, which could result in damage to airplane structure and consequent reduced controllability of the airplane.

(f) Compliance

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

(g) Retained Inspection With No Changes

This paragraph restates the requirements of paragraph (g) of AD 2013-11-12 with no changes. For airplanes having serial numbers 20003 through 20335 inclusive: At the applicable time specified in paragraph (g)(1), (g)(2), or (g)(3) of this AD: Inspect the identification plate on the hydraulic system accumulator having part number (P/N) 900095-1 to determine if an "E" is part of the suffix of the serial number stamped on the identification plate, as listed in paragraph 2.B. of the Accomplishment Instructions of Bombardier Service Bulletin 100-29-14, dated December 16, 2010. A review of airplane maintenance records is acceptable in lieu of this inspection if the suffix of the serial number can be conclusively determined from that review.

(1) For an accumulator that has accumulated more than 3,150 total flight cycles as of July 9, 2013 (the effective date of AD 2013-11-12), inspect that accumulator within 350 flight cycles after July 9, 2013.

(2) For an accumulator that has accumulated 3,150 or fewer total flight cycles as of July 9, 2013 (the effective date of AD 2013-11-12), inspect that accumulator before it has accumulated 3,500 total flight cycles.

(3) For an accumulator on which it is not possible to determine the total flight cycles accumulated as of July 9, 2013 (the effective date of AD 2013-11-12), inspect that accumulator within 350 flight cycles after July 9, 2013.

(h) Retained Replacement With No Changes

This paragraph restates the requirements of paragraph (h) of AD 2013-11-12 with no changes. If, during the inspection required by paragraph (g) of this AD, any accumulator having P/N 900095-1 is found on which the letter “E” is not part of the suffix of the serial number on the identification plate: Before further flight, replace the accumulator with a new or serviceable accumulator, in accordance with paragraph 2.C. of the Accomplishment Instructions of Bombardier Service Bulletin 100-29-14, dated December 16, 2010.

(i) Retained Parts Installation Prohibition With No Changes

This paragraph restates the requirements of paragraph (i) of AD 2013-11-12 with no changes. For airplanes having serial numbers 20003 through 20335 inclusive: As of July 9, 2013 (the effective date of AD 2013-11-12), no person may install on any airplane a hydraulic system accumulator having P/N 900095-1, on which the letter “E” is not part of the suffix of the serial number on the identification plate.

(j) New Requirement of This AD: Replacement of Brake System Hydraulic Accumulators

For airplanes having serial numbers 20003 through 20347 inclusive: At the applicable time specified in paragraph (j)(1), (j)(2), or (j)(3) of this AD, replace all brake system hydraulic accumulators having P/N 33-147500 or P/N 33-155500 that are not identified by the letter “E” or “NAE” after the serial number on the identification plate with an accumulator of the same part number that is identified by the letter “E” or “NAE” after the serial number. Do the replacement in accordance with the Accomplishment Instructions of Bombardier Service Bulletin 100-32-21, dated May 24, 2012.

(1) For an accumulator that has accumulated more than 4,700 total flight cycles as of the effective date of this AD, inspect that accumulator within 300 flight cycles after the effective date of this AD.

(2) For an accumulator that has accumulated 4,700 or fewer total flight cycles as of the effective date of this AD, inspect that accumulator before it has accumulated 5,000 total flight cycles.

(3) For an accumulator on which it is not possible to determine the total flight cycles accumulated as of the effective date of this AD, inspect that accumulator within 300 flight cycles after the effective date of this AD.

(k) New Requirement of This AD: Additional Parts Installation Prohibition

For airplanes having serial numbers 20003 through 20347 inclusive: As of the effective date of this AD, no person may install on any airplane a hydraulic system accumulator having P/N 33-147500 or P/N 33-155500, on which the letter “E” or “NAE” is not after the serial number on the identification plate.

(l) New Requirement of This AD: Modification of the Inboard and Outboard Brake Accumulators

For airplanes having serial numbers 20003 through 20395 inclusive: Within 1,600 flight hours or 14 months after the effective date of this AD, whichever occurs first, modify (re-orient) the installation of the inboard and outboard brake accumulators, in accordance with the Accomplishment Instructions of Bombardier Service Bulletin 100-32-20, Revision 02, dated April 14, 2015.

(m) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraph (l) of this AD, if those actions were performed before the effective date of this AD using Bombardier Service Bulletin 100-32-20, dated February 25, 2013; or Revision 01, dated March 5, 2015.

(n) New Requirement of This AD: Maintenance or Inspection Program Revision

For airplanes having serial numbers 20003 through 20604 inclusive: Within 30 days after the effective date of this AD, revise the maintenance or inspection program, as applicable, to incorporate life limit tasks 29-21-13-101, 32-43-37-101, and 32-44-05-101 of Section 5-10-11 of Part 2, "Airworthiness Limitations", of Bombardier Challenger 300 BD-100 Time Limits/Maintenance Checks Manual, Revision 17, dated December 15, 2016; or Bombardier Challenger 350 BD-100 Time Limits/Maintenance Checks Manual, Revision 9, dated December 18, 2017, as applicable. The initial compliance time for the tasks is within the applicable time specified in that service information, or within 30 days after the effective date of this AD, whichever occurs later.

(o) No Alternative Actions and Intervals

After the maintenance or inspection program has been revised as required by paragraph (n) of this AD, no alternative actions (e.g., inspections) or intervals may be used unless the actions or intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (p)(1) of this AD.

(p) Other FAA AD Provisions

(1) Alternative Methods of Compliance (AMOCs): The Manager, New York ACO 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 certification office, send it to ATTN: Program Manager, Continuing Operational Safety, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone: 516-228-7300; fax: 516-794-5531. 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.

(2) Contacting the Manufacturer: For any requirement in this AD to obtain corrective actions from a manufacturer, the action must be accomplished using a method approved by the Manager, New York ACO Branch, FAA; or Transport Canada Civil Aviation (TCCA); or Bombardier, Inc.'s TCCA Design Approval Organization (DAO). If approved by the DAO, the approval must include the DAO-authorized signature.

(q) Related Information

(1) Refer to Mandatory Continuing Airworthiness Information (MCAI) Canadian Airworthiness Directive CF-2011-41R1, dated March 27, 2017, for related information. This MCAI may be found in the AD docket on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0161.

(2) For more information about this AD, contact Cesar Gomez, Aerospace Engineer, Airframe and Mechanical Systems Section, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone: 516-228-7318; fax: 516-794-5531.

(3) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (r)(5) and (r)(6) of this AD.

(r) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(3) The following service information was approved for IBR on November 23, 2018.

(i) Bombardier Service Bulletin 100-32-20, Revision 02, dated April 14, 2015.

(ii) Bombardier Service Bulletin 100-32-21, dated May 24, 2012.

(iii) Bombardier Challenger 300 BD-100 Time Limits/Maintenance Checks Manual, Revision 17, dated December 15, 2016, Part 2, Airworthiness Limitations, Section 5-10-11:

(A) Task 29-21-13-101 Discard the Auxiliary Hydraulic System Accumulator, Part No. 900095-1;

(B) Task 32-43-37-101 Discard the Brake Accumulator, Part No. 33-147500;

(C) Task 32-44-05-101 Discard the Emergency/Parking Brake Accumulator, Part No. 33-155500.

(iv) Bombardier Challenger 350 BD-100 Time Limits/Maintenance Checks Manual, Revision 9, dated December 18, 2017, Part 2, Airworthiness Limitations, Section 5-10-11:

(A) Task 29-21-13-101 Discard the Auxiliary Hydraulic System Accumulator, Part No. 900095-1;

(B) Task 32-43-37-101 Discard the Brake Accumulator, Part No. 33-147500;

(C) Task 32-44-05-101 Discard the Emergency/Parking Brake Accumulator, Part No. 33-155500.

(4) The following service information was approved for IBR on July 9, 2013 (78 FR 33206, June 4, 2013).

(i) Bombardier Service Bulletin 100-29-14, dated December 16, 2010.

(ii) Reserved.

(5) For service information identified in this AD, contact Bombardier, Inc., 400 Côte-Vertu Road West, Dorval, Québec H4S 1Y9, Canada; telephone 514-855-5000; fax 514-855-7401; email thd.crj@aero.bombardier.com; internet <http://www.bombardier.com>.

(6) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on September 25, 2018.

John P. Piccola,

Acting Director, System Oversight Division, Aircraft Certification Service.