



AIRWORTHINESS DIRECTIVE

This Airworthiness Directive (AD) is issued pursuant to Canadian Aviation Regulation (CAR) 521.427. No person shall conduct a take-off or permit a take-off to be conducted in an aircraft that is in their legal custody and control, unless the requirements of CAR 605.84 pertaining to ADs are met. Standard 625 - Aircraft Equipment and Maintenance Standards Appendix H provides information concerning alternative means of compliance (AMOC) with ADs.

Number:

CF-2020-47

Effective Date:

2 December 2020

ATA:

73/36

Type Certificate:

A-234

Subject:

Engine – Fuel and Control – Airplane Flight Manual Limitations and Procedures – Engine Surge at Low Altitude under Certain Environmental Conditions

Applicability:

Bombardier Inc. model BD-100-1A10 aeroplanes, serial numbers 20003 through 20457.

Compliance:

Within 60 days from the effective date of this AD, unless already accomplished.

Background:

A number of low altitude engine surge incidents during takeoff have been reported on AS907-1-1A engines. In one of these incidents, both engines on the aeroplane experienced surges below 400 feet above ground level (AGL) resulting in 8-14% power loss during takeoff.

Under certain environmental conditions (e.g. temperature/thermal inversion), the existing engine control features can lead to engine surge, which can result in significant loss of engine thrust or even engine shutdown. As this is a common cause effect, it is possible that a low altitude surge can occur on both engines at the same time, a potentially hazardous condition that warrants mitigation.

The engine manufacturer, Honeywell International, is in the process of developing new engine control software which will address the problem of low altitude engine surges occurring under certain environmental conditions. Meanwhile, as an interim mitigating action, Bombardier has revised the Airplane Flight Manual (AFM) CSP 100-1 procedures to now require bleeds to be “ON” during takeoff, which will off-load the compressor and help increase the surge margin of the engines at low altitude.

Corrective Actions:

- A. Amend the applicable Transport Canada approved Challenger 300 AFM to add new Limitations and Procedures, in accordance with Table 1 below, or later revisions of these Limitations and/or Procedures approved by Transport Canada:

Table 1

Aeroplane Serial Number	AFM	Section	AFM Revision
Model BD-100-1A10 serial numbers 20003 through 20457	CSP 100-1 or CSP 100-1 (Metric)	Chapter 02 - Limitations – Systems Limitations – Air Conditioning and Pressurization	Revision 60, dated 1 July 2020
Model BD-100-1A10 serial numbers 20003 through 20457	CSP 100-1 or CSP 100-1 (Metric)	Chapter 04 – Normal Procedures – Taxi and Before Takeoff	Revision 60, dated 1 July 2020

- B. Advise all flight crews of the changes introduced by the approved Transport Canada AFM Revisions listed above.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Rémy Knoerr
Chief, Continuing Airworthiness
Issued on 18 November 2020

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