



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-2021-51R1

Effective Date:

17 May 2023

ATA:

25

Type Certificate:

A-86

Subject:

Equipment/Furnishings – Water Bombing System – Un-commanded Water Door Opening

Revision:

Supersedes AD CF-2021-51, issued 21 December 2021.

Applicability:

Viking Air Ltd. (formerly Bombardier Inc.) aeroplanes model CL-215-1A10 (CL-215 variant) and model CL-215-6B11 (CL-215T variant), serial numbers 1001 through 1125.

Compliance:

As indicated below, unless already accomplished.

Background:

There have been several in-service reports of un-commanded opening of the water doors during flight and water scooping. An investigation has revealed that un-commanded opening of water doors can be caused by corrosion of microswitches fitted to the water door actuator, corrosion or contamination of the water door solenoid valve common grounds or lack of back electro-motive force (EMF) protection of the water door solenoid valves.

An un-commanded opening of the water doors at high speed during the take-off run, water pick-up run or landing run could cause serious damage to the aeroplane.

AD CF-87-08R1 mandated initial and repetitive inspections of the water door actuator microswitches, and replacement of the affected microswitches as an optional terminating action to the repetitive inspection.

Since the issuance of AD CF-87-08R1, Transport Canada had received in-service reports indicating that the corrective actions of that AD had not been effective at mitigating the risk of un-commanded opening of the water doors.

It was determined that the replacement and re-wiring of the left-hand (LH) and right-hand (RH) water door actuator microswitches as mandatory terminating action, in lieu of the previous repetitive inspections, would provide a more robust water door design that would better mitigate the risk of un-commanded water door opening. Bombardier (formerly Canadair) issued Service Bulletin (SB) 215-389 providing instructions for the replacement of the water door actuator microswitches, installation of a relay channel and two relays, and modified wiring to improve water door status annunciation in the cockpit. SB 215-389 was re-issued at Revision 2 by Viking Air Ltd., the current type certificate holder, to update its applicability to include the CL-215-6B11 model (CL-215T Variant).

In addition, it had been determined that the relocation and separation of the water door solenoid valve common grounds was necessary to mitigate the risk of corroded or contaminated electrical contact leading to a sneak path and subsequent un-commanded opening of the water doors. Bombardier issued SB 215-A497, providing instructions for the installation of two additional water door solenoid valve common grounds.

To address this unsafe condition, AD CF-2021-51 mandated the corrective actions of the above-mentioned SBs. AD CF-2021-51 also prohibited the installation of water door solenoid valves that do not have internal back EMF protection as a replacement part on affected aeroplanes.

Since then, Viking Air Ltd. has determined that the applicability of SB 215-389 was incorrectly updated to include the CL-215-6B11 model (CL-215T Variant), as that model already has the required modification incorporated which is equivalent to SB 215-389. TCCA has also issued Global AMOC AARDG-2022/A33 to authorize the use of an alternative modification which provides the required back-EMF protection to the water drop system, in lieu of using replacement valves of specific part numbers.

This AD revision, CF-2021-51R1, modifies the definitions for Group 1 aeroplanes and SB 215-389 to correct the error as noted above, and gives credit for the Global AMOC.

Corrective Actions:

For the purpose of this AD, the following definitions apply:

SB 215-389: Viking Air Ltd. (Viking) SB 215-389, Revision 3, dated 15 February 2023, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

SB 215-A497: Bombardier (formally Canadair) SB 215-A497, Original Issue, dated 16 November 1998, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Group 1 aeroplanes: model CL-215-1A10 (CL-215 variant), serial numbers 1001 through 1097, 1099, and 1110 through 1113.

Group 2 aeroplanes: model CL-215-1A10 (CL-215 variant) and model CL-215-6B11 (CL-215T variant), serial numbers 1001 through 1125.

Part I – Modification of Water Door Actuator Microswitches – Applicable to Group 1 Aeroplanes

Within 24 months from the effective date of AD CF-2021-51 (4 January 2022), replace the LH and RH water door actuator microswitches, install a relay channel and two relays, and modify related wiring in accordance with Section 2 of the Accomplishment Instructions of SB 215-389.

Aeroplanes that have incorporated all the modifications in accordance with Section 2 of the Accomplishment Instructions of SB 215-389, Revision 2, dated 21 September 2021, or SB 215-389, Revision 1, dated 30 September 1991, including retrospective action for aeroplanes modified in accordance with SB 215-389, Original Issue, dated 15 November 1988, prior to the effective date of this AD, meet the intent of Part I of this AD.

Part II – Modification of Water Door Solenoid Valve Common Grounds – Applicable to Group 2 Aeroplanes

Within 24 months from the effective date of AD CF-2021-51 (4 January 2022), modify the water door solenoid valve common grounds in accordance with Section 2 of the Accomplishment Instructions of SB 215-A497.

Part III – Parts Installation Prohibition – Applicable to Group 2 Aeroplanes

From the effective date of AD CF-2021-51 (4 January 2022), the water door solenoid valve – selector assembly – part number (P/N) 362-0377 is not eligible for installation as a replacement part on Group 2 aeroplanes. Water door solenoid valve – 4 way selector valve – P/N 20P16-2, specification control drawing (SCD) 215T92392-2, or superseding part with internal back EMF protection, must be used as a replacement part. The use of a replacement part and modification in accordance with TCCA Global AMOC AARDG-2022/A33 also meets the requirements of this paragraph.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Jenny Young
Chief, Continuing Airworthiness
Issued on 3 May 2023

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