Customer Services

# Advisory Wire

REFERENCE NO: AW300-36-0387, Rev. 04

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| ATA: | 36-12 | EFFECTIVITY: | Challenger 300<br>Challenger 350 |
| **SUBJECT:** | **Bleed Air Leak Detection Loop Elements** | | |

1. REFERENCES:

   1.1. TC Airworthiness Directive AD CF-2023-09, Effective Date: 28 February 2023
   1.2. EASA Airworthiness Directive AD CF-2023-09, Effective Date: 28 February 2023
   1.3. FAA Airworthiness Directive AD 2023-26-02 Effective Date: 27 February 2024
   1.4. Global Alternative Method of Compliance (AMOC) to Airworthiness Directive 2023-26-02 (attached)
   1.5. Airplane Flight Manual (AFM) CSP 100-1, Revision 70 issued 27 September 2022, or later revision
   1.6. Airplane Flight Manual (AFM) CH 350, Revision 36 issued 27 September 2022, or later revision
   1.7. Dispatch Deviation Guide (DDG) associated with TC, FAA, or EASA
   1.8. Bombardier Service Bulletins (SB) 100-36-10 and 350-36-003

2. INTRODUCTION:

   Revision 4 of this AW is to inform operators of the newly released FAA AD (Ref 1.3) and Global Alternative Method of Compliance (AMOC) (Ref 1.4).

   The Transport Canada and EASA AD CF-2023-09 (Ref. 1.1 and 1.2) mandates revision 70 of the Challenger 300 AFM (Ref. 1.5) and revision 36 of the Challenger 350 AFM (Ref. 1.6) because these are the AFM revisions that introduced the corrective action.

   The FAA AD (Ref. 1.3) references revision 71 of the Challenger 300 AFM and revision 37 of the Challenger 350 AFM. The AFM revisions referenced in the FAA AD solely introduced clerical changes and have since been replaced and superseded by revision 73 and 39 respectively.

   Based on the above, Bombardier requested the FAA issue a global AMOC to allow Challenger 300 and Challenger 350 operators to use revision 70 and revision 36 of the AFM respectively or later approved revisions as reflected in the attached Global AMOC (Ref. 1.4). This also allows the operators to use the basic issue or revision 01 of SBs 100-36-10 and 350-36-003 as means to comply with FAA AD.

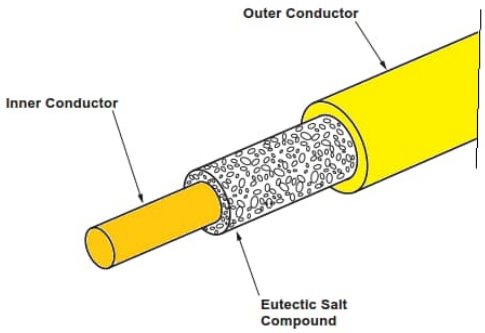
   This Advisory Wire (AW) is to inform Operators of potential non-conformant bleed air Leak Detection Loop (LDL) elements.

3. DESCRIPTION:

Bombardier was notified of a manufacturing defect affecting LDL elements manufactured by Kidde Aerospace & Defense, Collins Aerospace (Kidde). Approximately 1-2% of the LDL elements produced by Kidde between November 24, 2004 and January 31, 2021 are non-conforming.

This non-conformance impacts all aircraft Original Equipment Manufacturers (OEMs) that have Kidde LDL elements installed. Although, all Challenger 300 and 350 aircraft may be impacted by this issue, no in-service events related to the defect have been reported to date. Following the notification by the supplier, Bombardier has ensured that Challenger 350 aircraft Serial No. 20907 and subsequent, have been delivered with conforming LDL elements. In addition, Bombardier Spares have purged all non-conforming LDL elements held as inventory.

LDL elements contain thermo-resistive eutectic salt compounds embedded between an inner conductor and an outer casing. A local temperature increase causes the salt compound to become conductive resulting in a resistance drop between the inner conductor and outer casing which subsequently sets off the appropriate cockpit warnings.




Due to a manufacturing process error, some LDL elements may not be fully filled with eutectic salt compound, and this would result in the LDL elements being unable to detect a hot bleed air leakage.

On some segments of the monitored bleed air ducts, the LDL elements are installed in pairs (aka: dual-loop installation). In this type of installation, both LDL elements must sense an increase in temperature at the same time for the appropriate bleed air leak Warning CAS message to be posted. The bleed air leak Warning CAS messages associated with the dual loop installations are:

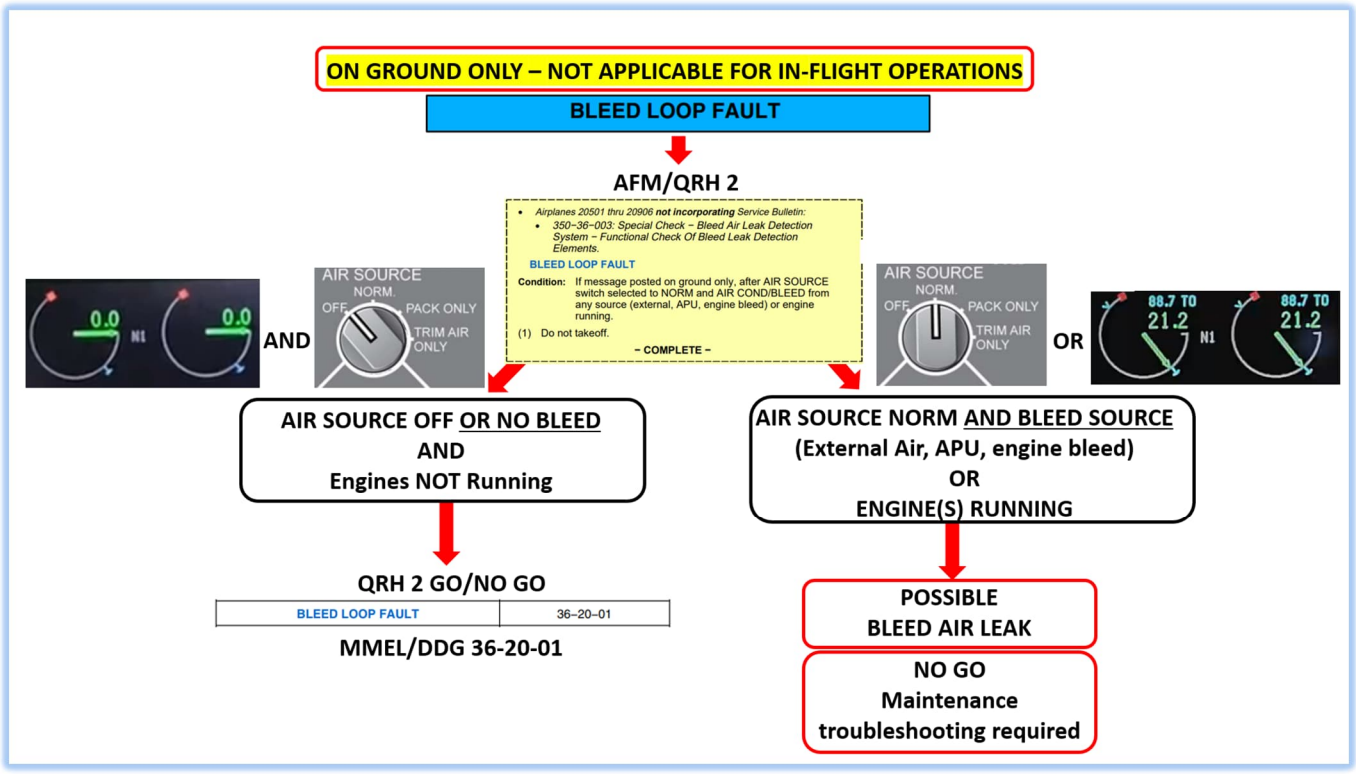
- L/R PYLON BLEED LEAK
- PACK LEAK
- WING ANTI-ICE LEAK

In a dual loop installation, if only one LDL element detects a leak, it will be considered faulty (shorted) and a BLEED LOOP FAULT Advisory CAS message will be posted instead of a Warning CAS message.

Aircraft dispatch with a BLEED LOOP FAULT Advisory CAS message and a potential non-conforming LDL element may result in an undetected bleed air leak. To prevent this condition, the AFM revisions (Ref. 1.5 and 1.6) adds the BLEED LOOP FAULT Advisory CAS message in the Non-Normal Procedures of Section 05-42, to prohibit takeoff if a BLEED LOOP FAULT Advisory CAS message is displayed on the ground when bleed air is present in the corresponding duct. In this case, maintenance action is required to troubleshoot the CAS message.

If it can be confirmed that the BLEED LOOP FAULT Advisory CAS message is not related to an actual bleed air leak, then relief for dispatch can be provided by complying with the instructions in Section 36-20-01 (Leak Detection Loops) of the applicable DDG (Ref. 1.7). The message may appear due to an open or shorted loop sensing element without the presence of bleed air in the corresponding duct.

The following summarizes both scenarios when a BLEED LOOP FAULT Advisory CAS message can occur:



4. ACTION:

Bombardier recommends operators to familiarize themselves with the content of this AW and the ADs (Ref. 1.1, 1.2 and 1.3) and AMOC (Ref 1.4) which mandates the incorporation of the AFM revisions (Ref. 1.5 and 1.6) into the applicable AFM.

It is very important that operators follow the specific instructions in the applicable AFM revisions (Ref. 1.5 or 1.6) and the applicable DDG (Ref. 1.7) when dispatching the aircraft with a BLEED LOOP FAULT advisory CAS message. These steps are required to confirm that the message is not related to an air leak event that could result in subsequent damage the aircraft.

Bombardier released SBs (Ref. 1.8) to test and replace any defective LDL elements on the affected aircraft. These SBs are also mandated by the ADs (Ref. 1.1, 1.2 and 1.3) within 7500 flight-hours or 96 months, whichever comes first from the effective dates as referenced in the respective AD. When possible, the incorporation of the SB should be planned during a scheduled maintenance event.

Bombardier will update this AW as new information becomes available.

Should you have any questions pertaining to this AW or require additional information, please contact your Bombardier Field Service Representative (FSR) or the Customer Response Center (CRC 24/7) team.