



# Notification of a Proposal to issue an Airworthiness Directive

**PAD No.: 22-048**

**Issued: 26 April 2022**

Note: This Proposed Airworthiness Directive (PAD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance of an EASA Airworthiness Directive (AD), applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated.

**Design Approval Holder's Name:**

AIRBUS

**Type/Model designation(s):**

A380 aeroplanes

**Effective Date:** [TBD - standard: 14 days after AD issue date]

**TCDS Number(s):** EASA.A.110

**Foreign AD:** Not applicable

**Supersedure:** This AD supersedes EASA AD 2019-0251 dated 09 October 2019.

## ATA 36 – Pneumatic – Air Conditioning / Engine Bleed Air System – Software Update

## ATA – Airplane Flight Manual / Master Minimum Equipment List – Air Conditioning / Engine Bleed Air System – Amendment

## ATA 36 – Pneumatic – Engine Bleed Air Supply Over-pressure Valve – Replacement

## ATA 30 – Ice and Rain Protection – Anti-ice Control Unit – Replacement

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**Manufacturer(s):**

Airbus

**Applicability:**

Airbus A380-841, A380-842 and A380-861 aeroplanes, all manufacturer serial numbers (MSN).

**Definitions:**

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

**Aeroplane date of manufacture:** The date of transfer of title (ownership) at the time of first delivery to an operator, which is referenced in Airbus documentation.



**The AFM TR:** Airbus A380 Airplane Flight Manual (AFM) Temporary Revision (TR) 206 issue 1 dated 19 February 2019.

**The SB:** Airbus Service Bulletin (SB) A380-36-8062.

**The AOT:** Airbus Alert Operators Transmission (AOT) A36R002-19.

**The ALS:** Airbus A380 Airworthiness Limitations Section (ALS) Part 3 Revision 06.

**Affected SW:** Pneumatic air distribution system (PADS) software (SW) standard 6.4, and engine bleed air system (EBAS) SW standard 6.4, and earlier standards.

**The applicable SB:** Airbus SB A380-36-8061 (replacement of overpressure valves (OPV) with new improved OPV); and SB A380-30-8008 (installation of anti-ice control unit (AICU) standard P12 for bleed pressure lock up).

**The component SB:** Liebherr Aerospace Toulouse SAS (F1958) SB 6746-36-01, which contains instructions to modify an affected OPV and re-identify that part (P/N change) as serviceable OPV; and SAFRAN Aerotechnics (F0553) SB 733474-30-002, which contains instructions to modify an affected AICU and re-identify that part (P/N change) as serviceable AICU; as applicable.

**Affected OPV:** OPV, having Part Number (P/N) 6746A010000.

**Serviceable OPV:** OPV, having P/N 6746B010000.

**Affected AICU:** AICU, having P/N 733474-3-5.

**Serviceable AICU:** AICU standard P12, having P/N 733474-3-6, or later approved standard (and P/N).

#### Groups:

- Group 1 aeroplanes are those that have affected SW installed.
- Group 2 aeroplanes are those that do not have affected SW installed. An aeroplane on which Airbus modification (mod) 78065 and mod 78305 have been embodied in production is a Group 2 aeroplane, provided the aeroplane remains in that configuration.
- Group 3 aeroplanes are those that have an affected OPV installed.
- Group 4 aeroplanes are those that do not have an affected OPV installed. An aeroplane on which Airbus mod 78067 (new OPV hardware) was embodied in production is a Group 4 aeroplane, provided the aeroplane remains in that configuration.
- Group 5 aeroplanes those that have an affected AICU installed.
- Group 6 aeroplanes are those that do not have an affected AICU installed. An aeroplane on which Airbus mod 78012 (AICU standard P12) was embodied in production is a Group 6 aeroplane, provided the aeroplane remains in that configuration.

Note that for different required actions, an aeroplane may be in more than one Group.



**Reason:**

An occurrence was reported where, during an in-service inspection, damage was detected on a right-hand wing canoe fairing, and a puncture mark in the skin, extensively exposing the fairing honeycomb core. Additional inspection of the affected nacelle and pylon revealed that the left-hand (LH) forward hinge panel was missing and the LH aft hinge panel was damaged. Further investigation results revealed that, during take-off phase of the flight, double and dependent failures of the high pressure valve and pressure regulating valve led to closure of the OPV, as expected by the design, resulting in an uncontrolled overpressure in the pneumatic system and a rupture of the bleed duct bellow of the engine pylon.

This condition, if not corrected, could lead to hot air leakage at critical locations and exposure of the surrounding structure to heat stress, possibly resulting in reduced structural integrity of the wings.

To initially address this potential unsafe condition, Airbus issued AFM TR 204 issue 1 to provide instructions applicable during take-off and climbing with cross-bleed selector in open position. In addition, as the leak isolation could be impaired by cross-bleed switch failure and the cross-bleed selector (and manual mode) might not be regularly checked when operating in normal conditions, it was necessary to check the correct functioning of the cross-bleed selector. Consequently, EASA issued Emergency AD 2016-0143-E to require amendment of the AFM, operating the aeroplane accordingly, and a one-time operational check of the cross-bleed selector in manual mode.

After that AD was issued, a new occurrence was reported of an engine bleed duct rupture during take-off phase, leading to structural damage in the pylon and flap track fairing. It was determined that EBAS SW standard 6.4, required to be installed by EASA AD 2017-0135, prevented overpressure and bleed duct rupture when taking off with bleed air supplied by the engines and when at least one pack is used. However, overpressure is not prevented when the aeroplane takes off with both packs 'OFF' or when bleed air is supplied by the auxiliary power unit (APU). Consequently, Airbus updated the AFM TR 204 to issue 2 accordingly, and EASA issued AD 2018-0171-E, superseding EASA AD 2016-0143-E, to require incorporation of AFM TR 204 issue 2 and operating the aeroplane accordingly.

After that AD was issued, it was identified that the interval of Certification Maintenance Requirements (CMR) task 361100-00001-1-C, as currently published in the ALS, needs to be amended and reduced from 12 500 flight hours (FH) to 9 000 FH. Consequently, EASA issued AD 2019-0205 to require repetitive inspections of the sense line of each pressure sensor of the engine bleed air system, repetitive functional tests of each sensor and repetitive inspections of the associated and adjacent Core Processing Input / Output Module wiring, up to the sensor electrical connectors, and, depending on findings, accomplishment of applicable corrective action(s).

After that AD was issued, Airbus developed SW standard 6.5 for PADS and SW standard 6.5.1 for EBAS, embodied in production through Airbus mod 78065 and mod 78305, respectively, and published the SB, as defined in this AD, to provide in-service modification instructions. This modification prevents overpressure and bleed duct rupture when the aeroplane takes off with bleed air supplied by the engines or APU bleed. However, the new SW does not prevent an overpressure scenario and bleed duct rupture when an aeroplane takes off with both packs 'OFF'. Consequently, Airbus issued the AFM TR, as defined in this AD, which prohibits take-off with both packs 'OFF' configuration. The AFM TR replaces AFM TR 204, which was confirmed as implemented



on all aeroplanes, as previously required by EASA AD 2018-0171-E. It was also established that all aeroplanes have installed SW standard 6.4 for EBAS, as previously required by EASA AD 2017-0135. That made these two ADs redundant.

Consequently, EASA issued AD 2019-0251, retaining the requirements of EASA AD 2019-0205, which was superseded, cancelled EASA AD 2017-0135 and Emergency AD 2018-0171-E, and required installation of PADS SW 6.5 and EBAS SW 6.5.1, incorporation of the AFM TR into the applicable AFM and implementation of certain changes to the Master Minimum Equipment List (MMEL), related to the introduction of PADS SW 6.5 and EBAS SW 6.5.1. That AD was considered to be an interim action.

Since that AD was issued, Airbus developed AICU standard P12 wing anti ice system software and OPV hardware, which were embodied in production through Airbus mod 78012 and mod 78067, respectively, and published the applicable SB, as defined in this AD, to provide in-service modification instructions.

For the reasons described above, this AD retains the requirements of EASA AD 2019-0251, which is superseded, and requires, for certain MSN (Group 3), replacement of affected OPV. For certain other MSN (Group 5), this AD requires modification of affected AICU. This AD also prohibits (re)installation of affected OPV and affected AICU on any aeroplane.

#### Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

#### Retained Requirements from EASA AD 2019-0251:

#### Repetitive Inspections / Functional Tests:

- (1) For Group 1 aeroplanes: Within the compliance time as defined in Table 1 of this AD and, thereafter, at intervals not to exceed 9 000 FH, accomplish sub-tasks A, B, C and D as specified in section 4.2.2 of the AOT, concurrently and in sequence, in accordance with the instructions of the AOT.

Table 1 – Initial Inspection / Functional Test

| Compliance Time (whichever occurs later, A or B) |   |
|--|---|
| <b>A</b>   | For aeroplanes that have embodied mod 77078 in production: Before exceeding 9 000 FH since aeroplane date of manufacture.   |
|  | For aeroplanes that have <u>not</u> embodied mod 77078 in production: Within 9 000 FH after modification of the aeroplane in accordance with the instructions of Airbus SB A380-36-8037 or SB A380-36-8038 [as required by EASA AD 2017-0135], as applicable. |
| <b>B</b>   | Within 4 months after 01 September 2019 [the effective date of EASA AD 2019-0205].  |

- (2) If, during any inspection or functional test as required by paragraph (1) of this AD, discrepancies are detected as defined in the AOT, before next flight, accomplish the applicable corrective action(s) in accordance with the instructions of the AOT.



**Affected CMR Task:**

- (3) Following accomplishment of sub-tasks A, B, C and D as specified in section 4.2.2 of the AOT, as required by paragraph (1) of this AD, CMR task 361100-00001-1-C, as in ALS Part 3 at Revision 06, is no longer required.

**Modification:**

- (4) For Group 1 aeroplanes: Within 3 months after 16 October 2019 [the effective date of EASA AD 2019-0251], modify the aeroplane by installing PADS SW standard 6.5 and EBAS SW 6.5.1 in accordance with the instructions of the SB. Installing a later approved SW standard, using Airbus approved instructions, is an acceptable method to comply with this requirement.

**AFM Change:**

- (5) For Group 1 aeroplanes: Before next flight after modification of an aeroplane as required by paragraph (4) of this AD, amend the applicable AFM by removing TR 204 issue 2 (as previously required by EASA AD 2018-0171-E), and incorporating the AFM TR, inform all flight crews, and, thereafter, operate the aeroplane accordingly.
- (6) Amending the applicable AFM to incorporate a later AFM revision, which includes the AFM TR, as required by paragraph (5) of this AD, is acceptable to remain compliant with the requirements of paragraph (5) of this AD.

**MMEL Changes / Dispatch Restrictions:**

- (7) For Group 1 aeroplanes: Before next flight after modification of an aeroplane as required by paragraph (4) of this AD (see paragraph (8) of this AD), implement and apply the MMEL changes related to PADS SW 6.5 and EBAS SW 6.5.1, inform all flight crews, and, thereafter, operate the aeroplane accordingly.
- (8) Pending update of the operator MEL, implementing the MMEL amendment as required by paragraph (7) of this AD, the operator MEL items corresponding to the MMEL items as listed in Appendix 1 of this AD must be removed, which are therefore considered as 'NO GO' items.

**Terminating Action:**

- (9) Modification of an aeroplane as required by paragraph (4) of this AD and AFM Change as required by paragraph (5) of this AD constitutes terminating action for the repetitive inspections as required by paragraph (1) of this AD for that aeroplane.

**SW Installation Prohibition:**

- (10) Do not install affected SW on any aeroplane, as required by paragraph (10.1) or (10.2) of this AD, as applicable.
  - (10.1) For Group 1 aeroplanes: After modification of the aeroplane as required by paragraph (4) of this AD.
  - (10.2) For Group 2 aeroplanes: From 16 October 2019 [the effective date of EASA AD 2019-0251].



**New Requirements of this AD:****OPV Replacement:**

- (11) For Group 3 aeroplanes: Within 50 months after the effective date of this AD, replace affected OPV (see Note 1 of this AD) with serviceable OPV in accordance with the instructions of the applicable SB.

Note 1: There is no need to replace all affected OPV on an aeroplane during the same maintenance visit.

**AICU Modification:**

- (12) For Group 5 aeroplanes: Prior to OPV replacement on an aeroplane, as required by paragraph (11) of this AD, modify and re-identify the affected AICU on that aeroplane in accordance with the instructions of the applicable SB.

**Part(s) Installation:**

- (13) For Group 3 aeroplanes: After replacement of affected OPV on an aeroplane, as required by paragraph (11) of this AD, do not install an affected OPV on that aeroplane.
- (14) For Group 4 aeroplanes: From the effective date of this AD, do not install an affected OPV on any aeroplane.
- (15) For Group 5 aeroplanes: After modification of affected AICU on an aeroplane, as required by paragraph (12) of this AD, do not install an affected AICU on that aeroplane.
- (16) For Group 6 aeroplanes: From the effective date of this AD, do not install an affected AICU on any aeroplane.

**Ref. Publications:**

Airbus A380 AFM TR 206 issue 1 dated 19 February 2019.

Airbus SB A380-36-8062 original issue dated 23 August 2019.

Airbus AOT A36R002-19 original issue dated 26 June 2019.

Airbus SB A380-36-8061 original issued dated 17 November 2021.

Airbus SB A380-30-8008 original issued dated 25 September 2020, or Revision 01 dated 27 September 2021.

Liebherr Aerospace Toulouse SAS (F1958) SB 6746-36-01, original issue dated 08 November 2021.

SAFRAN Aerotechnics (F0553) SB 733474-30-002, original issue dated 19 August 2020.

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.



**Remarks:**

1. This Proposed AD will be closed for consultation on 24 May 2022.
2. Enquiries regarding this PAD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).
3. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this PAD, and which may occur, or have occurred on a product, part or appliance not affected by this PAD, can be reported to the [EU aviation safety reporting system](#). This may include reporting on the same or similar components, other than those covered by the design to which this PAD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.
4. For any question concerning the technical content of the requirements in this PAD, please contact: AIRBUS SAS - EIANA (Airworthiness Office), Telephone: +33 562 110 253, Fax: +33 562 110 307, E-mail: [account.airworth-A380@airbus.com](mailto:account.airworth-A380@airbus.com).



## Appendix 1 – MMEL items to be removed from Operator MEL

| <b>MMEL item No.</b> | <b>MMEL item name</b>                             |
|----------------------|---|
| 21-25-01             | Pack Bay Ventilation                              |
| 21-50-01             | Pack condition A and condition B                  |
| 21-50-02C            | Pack 1 Valve                                      |
| 21-50-03C            | Pack 2 Valve                                      |
| 21-50-06B            | Pack Temperature Regulation                       |
| 21-50-08B            | Pack Altitude Valve                               |
| 21-50-09B            | Pack Turbine Bypass Valve                         |
| 21-60-06             | Hot Air System                                    |
| 36-11-01A            | Engine Bleed System                               |
| 36-11-02A            | Engine Bleed Valve                                |
| 36-11-03A            | Engine Bleed Overpressure Valve                   |
| 36-21-01B            | Engine Bleed Pressure indication on BLEED SD page |
| 77-20-05B            | Engine Bleed Pressure indication on SD page       |

