Airworthiness Directive

AD No.: 2019-0251

Issued: 09 October 2019

Note: This Airworthiness Directive (AD) 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.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:
AIRBUS

Type/Model designation(s):
A380 aeroplanes

Effective Date: 16 October 2019

TCDS Number(s): EASA.A.110

Foreign AD: Not applicable

Supersedure: This AD cancels EASA AD 2017-0135 dated 28 July 2017, EASA Emergency AD 2018-0171-E dated 06 August 2018, and supersedes EASA AD 2019-0205 dated 20 August 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

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Manufacturer(s):
Airbus

Applicability:
Airbus A380-841, A380-842 and A380-861 aeroplanes, all manufacturer serial numbers.

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.

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.

Reason:
During 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 accomplished on the affected nacelle and pylon determined that the left-hand (LH) forward hinge panel was missing and the LH aft hinge panel was damaged. Investigation results revealed that, during take-off phase of the flight, double and dependent failure of the high pressure valve (HPV) and pressure regulating valve (PRV) led to closure of the overpressure valve (OPV), as expected by the design. This event consequently led to 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 (OPC) 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).

Since 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 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, to prohibit take-off with both packs OFF configuration. The AFM TR replaces AFM TR 204, which has been 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. This makes these two ADs redundant.

For the reasons described above, this AD retains the requirements of EASA AD 2019-0205, which is superseded, cancels EASA AD 2017-0135 and Emergency AD 2018-0171-E, and requires installation of PADS SW 6.5 and EBAS SW 6.5.1, and incorporation of the TR, as defined in this AD, into the applicable AFM. This AD also requires 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 .

This AD is still considered to be an interim action and further AD action may follow.

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

Required as indicated, unless accomplished previously:

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**)	
A	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	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 the current ALS Part 3 at Revision 06, is no longer required.

Modification:

(4) For Group 1 aeroplanes: Within 3 months after the effective date of this AD, 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.

Table 2 – MMEL items to be removed from Operator MEL

MMEL item No.	MMEL item name
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

(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 Table 2 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 the effective date of this AD.

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.

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

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. This AD was published on 29 August 2019 as PAD 19-163 for consultation until 12 September 2019 and republished on 18 September 2019 as PAD 19-163R1 for additional consultation until 02 October 2019. The Comment Response Documents can be found in the EASA Safety Publications Tool, in the compressed (zipped) file attached to the record for this AD.

3. Enquiries regarding this AD should be referred to the EASA Programming and Continued Airworthiness Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the EU aviation safety reporting system.

5. For any question concerning the technical content of the requirements in this AD, please contact: AIRBUS SAS - EIANA (Airworthiness Office), Telephone : +33 562 110 253, Fax: +33 562 110 307, E-mail: account.airworth-A380@airbus.com.