



## Airworthiness Directive

**AD No.:** 2017-0120

**Issued:** 13 July 2017

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 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 (EC) 216/2008, Article 14(4) exemption].

### Design Approval Holder's Name:

DIAMOND AIRCRAFT INDUSTRIES GmbH

### Type/Model designation(s):

DA 42 and DA 42 M aeroplanes

**Effective Date:** 27 July 2017

**TCDS Number(s):** EASA.A.005 and EASA.A.513

**Foreign AD:** Not applicable

**Supersedure:** This AD supersedes EASA AD 2017-0090 dated 17 May 2017.

## ATA 78 – Engine Exhaust – Exhaust Pipes – Modification / Inspection

### Manufacturer(s):

Diamond Aircraft Industries GmbH (Austria), Diamond Aircraft Industries Inc. (Canada)

### Applicability:

DA 42 and DA 42 M (both Normal and Restricted category) aeroplanes, manufacturer serial numbers 42.004 to 42.427 inclusive, 42.AC001 to 42.AC151 inclusive, 42.M001 to 42.M027 inclusive, if equipped with TAE 125-02-99 engines (modification MÄM 42-198 or Optional Service Bulletin (OSB) 42-046) or TAE 125-02-114 engines (modification OÄM 42-252 or OSB 42-107).

### Reason:

Two cases were reported of uncommanded engine in-flight shutdown (IFSD) on DA 42 aeroplanes. Subsequent investigations identified that these occurrences were due to failure of the propeller regulating valve, caused by hot exhaust gases coming from fractured engine exhaust pipes. The initiating cracks on the exhaust pipes were not detected during previous inspections, since those exhaust pipes are equipped with non-removable heat shields that do not allow inspection for certain sections of the exhaust pipe.

This condition, if not corrected, could lead to further cases of IFSD or overheat damage, possibly resulting in a forced landing, with consequent damage to the aeroplane and injury to occupants.

To address this potential unsafe condition, Diamond Aircraft Industries (DAI) developed an exhaust pipe without a directly attached integral heat shield that allows visual inspection over the entire



exhaust pipe length. DAI issued Mandatory Service Bulletin (MSB) 42-120 and relevant Working Instruction (WI) WI-MSB 42-120, providing instructions to install the modified exhaust pipes. As an interim measure, an additional bracket was designed to hold the exhaust pipe in place in case of a pipe fracture. EASA issued AD 2016-0156 (later revised), requiring replacement of the exhaust pipes with pipes having the new design, or installation of the additional brackets.

After EASA AD 2016-0156R1 was issued, cracks were found during inspection on modified exhaust pipes. Further investigation determined that, with the modified exhaust pipe design, vibration leads to cracking. Consequently, DAI published MSB 42-129, providing instructions for inspection of modified exhaust pipes, and EASA issued AD 2017-0090, retaining the requirements of EASA AD 2016-0156R1, which was superseded, and additionally requiring repetitive inspections of modified exhaust pipes and, depending on findings, repair or replacement.

Since EASA AD 2017-0090 was issued, cracks were found on additional brackets, as previously installed per DAI WI-MSB 42-120. Prompted by these findings, DAI revised MSB 42-120 and the relevant part of WI-MSB 42-120 (now at Revision 3), providing improved instructions for the installation of brackets, and additional instructions to inspect those brackets.

For the reasons described above, this AD retains the requirements of EASA AD 2017-0090, which is superseded, and requires those same actions for the additional brackets. This AD also requires reinstallation of the additional brackets in accordance with improved instructions.

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

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

Required as indicated, unless accomplished previously:

Note 1: DAI Part Number (P/N) D60-9078-06-01, Technify P/N 52-7810-H0001 02, Technify P/N 52-7810-H0001 03, and Technify P/N 52-7810-H0001 04 exhaust pipes are hereafter collectively referred to as “affected exhaust pipe” in this AD.

Note 2: DAI P/N D60-9078-06-01\_01 and Technify P/N 52-7810-H0014 01 exhaust pipes are hereafter collectively referred to as “modified exhaust pipe” in this AD.

#### **Modification(s):**

Note 3: The modification specified in paragraph (1) of this AD is required for aeroplanes having the affected exhaust pipe installed.

(1) For all aeroplanes, except those modified in accordance with the instructions of DAI WI-MSB 42-120: Within the compliance time as identified in Table 1 of this AD, accomplish the actions as required by paragraph (1.1) or (1.2) of this AD.

(1.1) Install additional brackets on each affected exhaust pipe in accordance with the instructions of Section III.2 of DAI WI-MSB 42-120 Revision 3.



- (1.2) Replace each affected exhaust pipe with a modified exhaust pipe and modify the aeroplane by installing heat shielding in accordance with the instructions of Section III.1 of DAI WI-MSB 42-120.

Table 1 – Brackets Installation / Exhaust Pipe Replacement (see Note 4 of this AD)

<b>Flight Hours (FH) Accumulated</b>	<b>Compliance Time</b>
1 300 FH or less	Before the exhaust pipe exceeds 1 500 FH
More than 1 300 FH	<b>A or B, whichever occurs later</b>
	A) Within 200 FH or 12 months, whichever occurs first after 16 August 2016
	B) Within 10 FH after the effective date of this AD

Note 4: Unless specified otherwise, the FH in Table 1 of this AD are those accumulated on 16 August 2016 [the effective date of the original issue of EASA AD 2016-0156] by the affected exhaust pipe since first installation. If those FH are not known, the total time accumulated by the aeroplane since its first flight applies instead.

#### **Inspection(s):**

Note 5: The inspection and (re)installation specified in paragraph (2) of this AD are required for aeroplanes which have been modified, before the effective date of this AD, in accordance with the instructions of Section III.2 of DAI WI-MSB 42-120 at original issue, or Revision 1, or Revision 2.

- (2) Within the compliance time as identified in Table 2 of this AD, remove and inspect the additional brackets on each affected exhaust pipe in accordance with the instructions of Section III.2 of DAI WI-MSB 42-120 Revision 3. If no crack is found on an additional bracket, reinstall that bracket in accordance with the instructions of Section III.2 of DAI WI-MSB 42-120 Revision 3.

Table 2 – Inspection of Additional Brackets (see Note 6 of this AD)

<b>FH Accumulated</b>	<b>Compliance Time</b>
40 FH or more	Within 10 FH after the effective date of this AD
Less than 40 FH	Before the additional brackets exceed 50 FH

Note 6: Unless specified otherwise, the FH in Table 2 of this AD are those accumulated since installation of the additional brackets on the aeroplane.

Note 7: The inspections specified in paragraph (3) of this AD are required for aeroplanes which have been modified in accordance with Section III.1 of DAI WI-MSB 42-120 – see paragraph (1.2) of this AD.

- (3) Within the compliance time as identified in Table 3 of this AD and, thereafter, at intervals not to exceed 50 FH, inspect each modified exhaust pipe in accordance with the instructions of DAI MSB 42-129.



Table 3 – Initial Inspection of Modified Exhaust Pipes (see Note 8 of this AD)

FH Accumulated	Compliance Time
40 FH or more	Within 10 FH after 31 May 2017 [the effective date of EASA AD 2017-0090]
Less than 40 FH	Before the exhaust pipe exceeds 50 FH

Note 8: Unless specified otherwise, the FH in Table 3 of this AD are those accumulated since installation of modified exhaust pipes on an aeroplane as specified in paragraph (1.2) of this AD.

Note 9: The inspections specified in paragraph (4) of this AD are required for aeroplanes which have been modified in accordance with Section III.2 of DAI WI-MSB 42-120 Revision 3 (installation of additional brackets) – see paragraph (1.1) and (2) of this AD.

(4) Within 50 FH after the (re)installation of additional brackets as required by paragraph (1.1) or (2) of this AD, as applicable, and, thereafter, at intervals not to exceed 50 FH, inspect the additional brackets in accordance with the instructions of DAI WI 42-120, Revision 3.

**Corrective Action(s):**

(5) If, during any inspection as required by paragraph (3) of this AD, any crack is found on a modified exhaust pipe, before next flight, repair the exhaust pipe or replace it with a new exhaust pipe in accordance with the instructions of DAI MSB 42-129.

(6) If, during any inspection as required by paragraph (2) or (4) of this AD, any crack is found on an additional bracket, before next flight, replace that bracket with a new bracket in accordance with the instructions of DAI WI 42-120 Revision 3.

**Terminating Action:**

(7) None.

**Ref. Publications:**

DAI MSB 42-120 original issue dated 24 June 2016, or Revision 1 dated 10 November 2016, or Revision 2 dated 07 June 2017.

DAI WI-MSB 42-120 original issue dated 24 June 2016, or Revision 2 dated 07 June 2017, or Revision 3 dated 06 July 2017.

DAI MSB 42-129 original issue dated 17 May 2017.

The use of later approved revisions of these 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. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).
4. For any question concerning the technical content of the requirements in this AD, please contact: Diamond Aircraft Industries GmbH, Austria.  
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E-mail: [airworthiness@diamond-air.at](mailto:airworthiness@diamond-air.at).

