

MANDATORY SERVICE BULLETIN

MSB 42-120/3

SUPERSEDES MSB 42-120/2

I TECHNICAL DETAILS

I.1 Category

Mandatory.

I.2 Airplanes affected

Type: DA 42, DA 42 M
Serial numbers: 42.004 through 42.427
42.AC001 through 42.AC151
42.M001 through 42.M027

Only airplanes with a TAE 125-02-99 or TAE 125-02-114 engine with exhaust pipe DAI P/N D60-9078-06-01 / Technify P/Ns 52-7810-H0001 02, 52-7810-H0001 03 or 52-7810-H0001 04 installed are affected.

I.3 Date of effectivity

Original: 10-Nov-2016
For MSB 42-120/2: 12-Jun-2017
For MSB 42-120/3: 02-Jan-2018

I.4 Time of Compliance

For exhaust pipes with directly attached heat shields DAI P/N D60-9078-06-01 / Technify P/Ns 52-7810-H0001 02, 52-7810-H0001 03 or 52-7810-H0001 04 with

- less than 1300 hours TSN (time since new) at the original date of effectivity: before exceeding 1500 hours TSN,
- more than 1300 hours TSN at the original date of effectivity: within 200 flight hours or within 1 year from the date of effectivity, whichever is reached first,

install additional exhaust clamp in accordance with WI-Action 2.

For exhaust clamps installed in accordance with WI-Action 2 or DAI OSB 42-131 carry out inspection for cracks in accordance with WI-Action 3:

- Clamps with more than 40 hours TSN (time since new) at the date of effectivity for MSB 42-120/2: within next 10 flight hours and every 50 flight hours thereafter,
- Clamps with less than 40 hours TSN at the date of effectivity for MSB 42-120/2 and clamps installed per DAI OSB 42-131: before exceeding 50 flight hours and every 50 flight hours thereafter.

For exhaust pipes with directly attached heat shields DAI P/N D60-9078-06-01 / Technify P/Ns 52-7810-H0001 02, 52-7810-H0001 03 or 52-7810-H0001 04 when

- already installed and with less than 1300 hours TSN (time since new) at the date of effectivity for MSB 42-120/3: before exceeding 1500 hours TSN and every 500 flight hours thereafter,
- already installed and with more than 1300 hours TSN at the date of effectivity for MSB 42-120/3: within 200 flight hours or within 1 year from the date of effectivity, whichever is reached first, and every 500 flight hours thereafter
- installed per OSB 42-131, after the date of effectivity for MSB 42-120/3: before exceeding 1500 hours TSN and every 500 flight hours thereafter

inspect exhaust pipes in accordance with WI-Action 4.

I.5 Subject

Installation of an additional exhaust bracket.

ATA-Code: 78-00

I.6 Reason

The initial design of the exhaust pipe has a permanently installed heat shield which does not allow inspection for cracks in some relevant areas. There have been two cases where initiating cracks remained undetected and led to a complete fracture of the pipe. Subsequently the hot exhaust gases were deflected within the cowling and caused the failure of the propeller regulating valve due to overheat leading to an inflight engine shutdown.

An additional exhaust clamp was designed to hold the exhaust in place in case of a pipe fracture.

This Service Bulletin prescribes the installation of the additional exhaust clamp as an interim measure. The additional exhaust clamp is subject to repetitive inspection.

NOTE: The noise values and noise certification is not affected by the installation the new exhaust pipe.

NOTE: The exhaust pipe without directly attached integral heat shield as mentioned in previous issues of this Service Bulletin proved not to have the desired durability and is therefore no longer supplied.

I.7 Concurrent Documents

None.

I.8 Approval

The technical information or instructions contained in this document relate to the Design Change Advisories No. MÄM 42-911, OÄM 42-252/d and MÄM 42-943, which have been approved under the authority of EASA Design Organization Approval ref. EASA.21J.052.

The technical content of this document has been approved under the authority of DOA ref. EASA.21J.052.

I.9 Accomplishments / Instructions

Comply with WI-MSB 42-120, latest effective issue.

I.10 Mass (Weight) and CG

The change in mass and CG is negligible.

II PLANNING INFORMATION**II.1 Material and Availability**

See WI-MSB 42-120, latest effective issue.

Materials including drawings are available from Diamond Aircraft Industries.

II.2 Special Tools

None.

II.3 Labour Effort

Action 1: approx. 4 hours

Action 2: approx. 1 hour

II.4 Credit

None.

II.5 Reference Documents

DA 42 Series Airplane Maintenance Manual, Doc. No. 7.02.01, latest effective issue.

III REMARKS

1. All work must be done by a certified aircraft service station or a certified aircraft maintenance mechanic.
2. All work, particular that which is not especially described in this Service Bulletin, must be done in accordance with the referenced Maintenance Manual.
3. Completion of all work must be recorded in the log book.
4. In case of doubt contact Diamond Aircraft Industries GmbH.

**EXECUTION REPORT TO
SERVICE BULLETIN
MSB 42-120/3**

AIRPLANE INFORMATION

Airplane Serial Number _____

Airplane Registration _____

Airplane Operator _____

Hours of operation of airplane _____

No. of landings _____

Hours of operation-engine _____

Typical operation of airplane private, club, training, other _____

Date, Name, SignPlease fax the completed form to Fax No. +43-2622-26700-1369 or e-mail to
airworthiness@diamond-air.at

WORK INSTRUCTION

WI-MSB 42-120

I GENERAL INFORMATION

I.1 Subject

Installation and inspection of an additional exhaust clamp.
Inspection of exhaust pipes.

NOTE: The exhaust pipe without directly attached integral heat shield as mentioned in previous revisions of this Work Instruction is no longer supplied.

I.2 Reference Documents

DA 42 Series Airplane Maintenance Manual, Doc. No. 7.02.01, latest effective issue.
Design Change Notice: OÄM 42-315 "Alternative Exhaust Clamp Sheet"

I.3 Remarks

- a) All work must be done by a certified aircraft service station or a certified aircraft maintenance mechanic.
- b) All work, in particular if not described in this work instruction, must be done in accordance with the referenced maintenance manual.
- c) For conversion factors between SI units and US/Imperial units refer to AMM Chapter 02.
- d) In case of doubt, contact Diamond Aircraft Industries GmbH.

II DRAWINGS, SPECIAL TOOLS & MATERIALS

II.1 Drawings

None.

II.2 Special Tools

None.

II.3 Material

A. Material for Action 1

Withdrawn.

B. Material for Action 2 – Installation Exhaust Clamp

Quantity	Part Number	Description
2	D60-7806-00-01	Exhaust Clamp 1 (pos. 4)
2	D60-7806-00-02	Exhaust Clamp 2 (pos. 5)
2	D60-7806-00-03	Exhaust Sheet (pos. 6)
4	DIN 912-M5x20-A2	Hexagon Socket Head Screw (pos. 7)
4	LN 9338-M5	K-Nut M5 (pos. 9)
8	DIN 125-A5.3-A2	Washer A2 (pos. 11)
2	LN 9037-06016	Hexagon Screw (pos. 8)
2	LN 9338-M6	K-Nut M6 (pos. 10)
8	BN 806-12x6,2x0,6	Spring Washer (pos. 12)
2	DIN 9021-B10.5-ZP	Washer (pos.13)

Material including drawing is available from Diamond Aircraft Industries.

C. Material for Action 4: Inspection of Exhaust Pipe

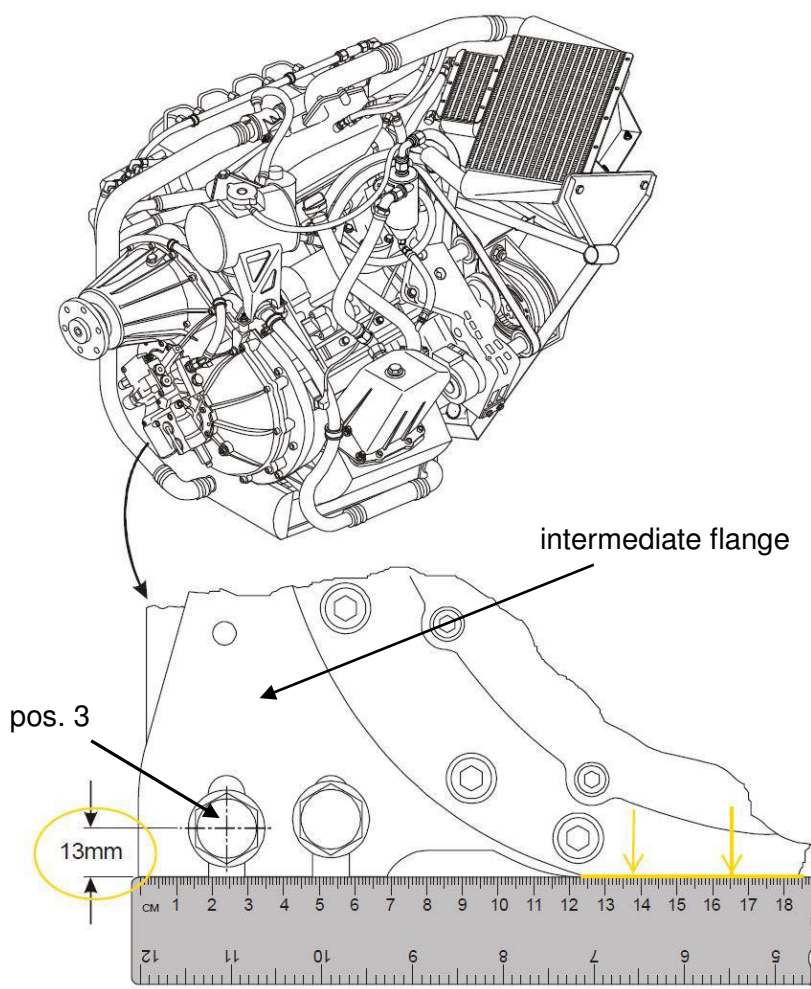
Refer to WI-OSB-42-131, latest effective issue.

III INSTRUCTIONS

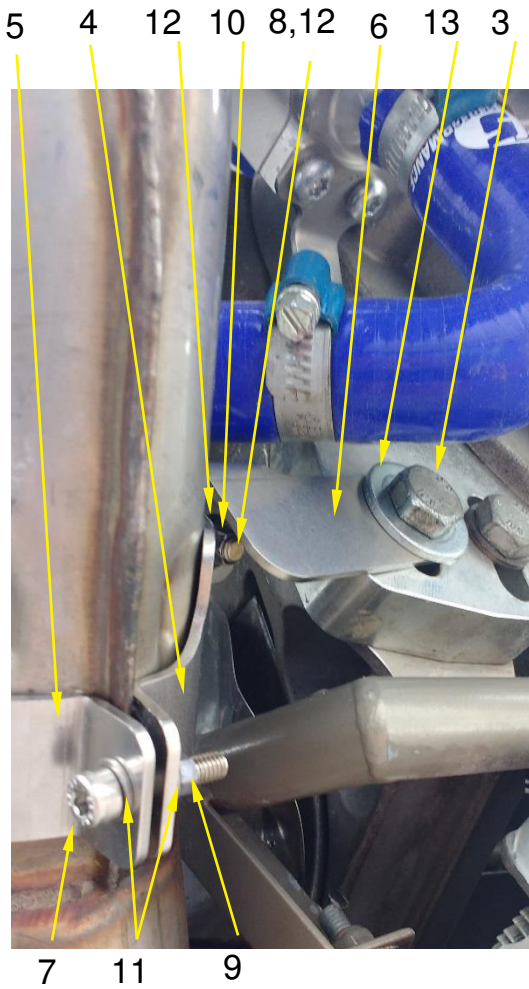
III.1 Action 1

Withdrawn.

III.2 Action 2 – installation of additional exhaust clamp

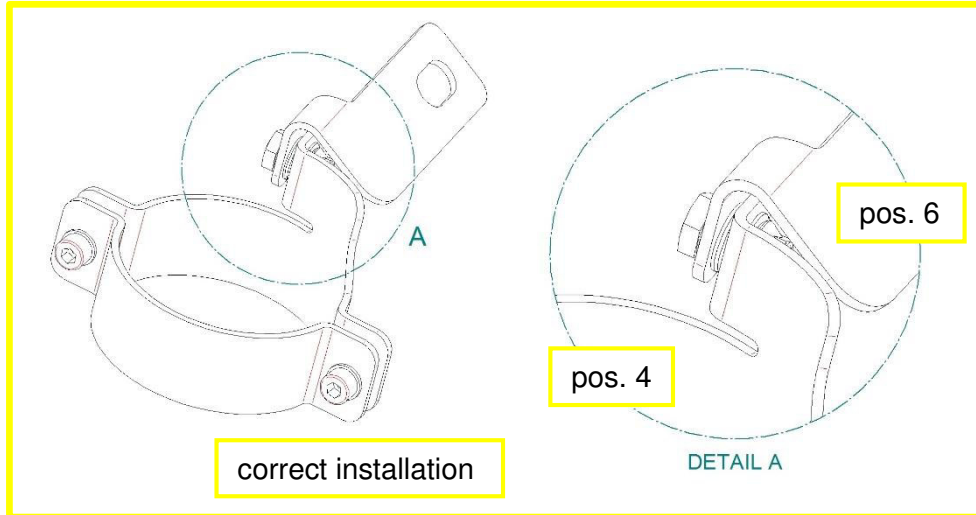
1	Remove engine cowlings in accordance with (i.a.w.) AMM section 71-10.
2	<p>Make sure that the intermediate flange of the engine is installed correctly to the forward engine shock mount. Align a ruler with the straight part of the bottom side of the intermediate flange as shown in the picture below. The distance between screw (pos. 3) and the ruler must be 13mm.</p> 
3	Remove the screw (pos. 3) from the front shock engine mount.

Install the exhaust clamp i.a.w. the pictures without tightening the bolts.



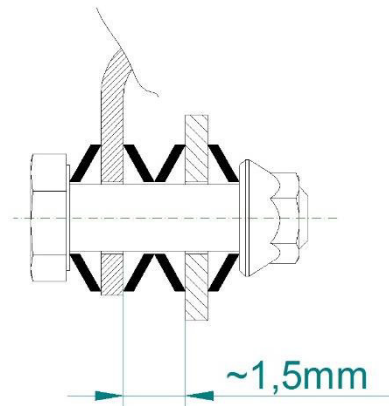
4

Make sure that exhaust clamp 1 (pos.4) and exhaust sheet (pos. 6) are arranged as shown in the following pictures:



5

Note: The correct order of arrangement is:
 hexagon screw (pos. 8) – spring washer (pos. 12) – exhaust sheet (pos. 6)
 – 2 x spring washer (pos. 12) – exhaust clamp (pos 4) – spring washer
 (pos 12) – K-nut M6 (pos 10)

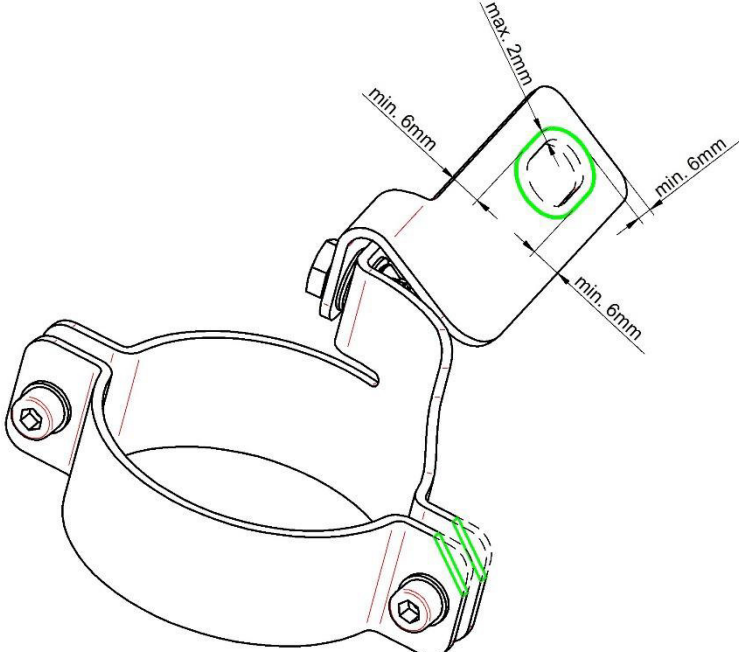
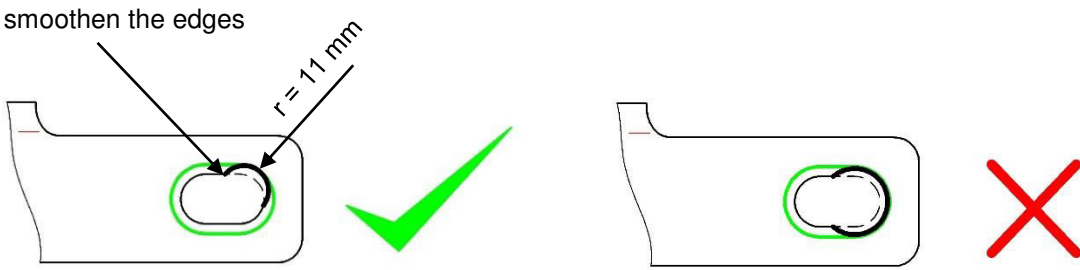


6

Tighten Hexagon Screw (pos. 8) until the spring washer pre-tension is 1.5 mm between the metal sheets.

7

Tighten Hexagon Socket Head Screws (pos. 7) equally on both sides with 5 NM (3.7 lbf.ft.).

8	<p>Check if the Hexagon Screw (pos. 3) can be installed without applying side force to the exhaust pipe.</p> <p>If the Hexagon Screw (pos. 3) cannot be installed without applying side force to the exhaust pipe:</p> <ul style="list-style-type: none"> - Loosen the exhaust assembly at the manifold and re-align the exhaust pipe with the lower cowling installed in order to keep the pipe centered in the lower cowling cut-out and with adequate clearance to surrounding components. Re-install the exhaust assembly i.a.w. AMM, section 78-00. - If necessary loosen Hexagon Socket Head Screws (pos. 7), re-align exhaust pipe clamp and tighten Hexagon Socket Head Screws (pos. 7) i.a.w. item 6.
9	<p>Check if the Hexagon Screw (pos. 3) can be installed without applying side force to the exhaust pipe.</p> <p>If the Hexagon Screw (pos. 3) cannot be installed without applying side force to the exhaust pipe:</p> <ul style="list-style-type: none"> - Modify the exhaust pipe bracket by re-working the hole for Hexagon Screw (pos. 3) as shown in the picture below so that the Hexagon Screw (pos. 3) can be installed without applying a side force to the exhaust pipe. Do not remove more material than is needed for tension free installation.  <p>smoothen the edges</p> 

10	<p>In case it is not possible to install the exhaust clamp without adequate clearance between exhaust pipe and cowling / surrounding components and without applying tension to the exhaust pipe, install an alternative exhaust sheet i.a.w. DAI OÄM 42-315.</p> <p>Note: The alternative exhaust sheet and corresponding installation instruction (OÄM 42-315) may be obtained through Diamond Aircraft Industries Austria (support@diamond-air.at).</p>
11	<p>After verification that the Hexagon Screw (pos. 3) can be installed without applying tension to the exhaust pipe and that there is adequate clearance between exhaust pipe and lower cowling cut-out / surrounding components, secure Hexagon Screw (pos. 3) with Loctite 272 and torque i.a.w. Technify Motors Repair Manual RM-02-02, Section 71-20.01.</p>
12	<p>Clean working areas, check for foreign objects.</p>
13	<p>Check all altered, replaced, repaired parts for proper function.</p>
14	<p>Perform an engine ground run-up. Check the exhaust pipe for leaks in case the exhaust assembly has been loosened.</p>
15	<p>Install lower engine cowlings i.a.w. AMM section 71-10.</p>
16	<p>Check clearance between exhaust pipe, exhaust clamp and cowling. Simulate engine suspension by shaking the engine assembly at the propeller blade roots.</p>
17	<p>Install upper cowlings i.a.w. AMM section 71-10.</p>
18	<p>Repeat items 1 to 11 on the other engine.</p>
19	<p>Make all necessary entries in the airplane logs.</p>

III.3 Action 3 – Inspection of exhaust clamp for cracks

1	<p>Remove engine cowlings in accordance with (i.a.w.) AMM section 71-10.</p>
2	<p>If the exhaust clamp is installed in i.a.w. WI MSB 42-120, Revision 1 (installation of exhaust clamp without spring washers) or WI MSB 42-120, Revision 2, re-install the exhaust clamp i.a.w. section III.2.</p>
3	<p>Inspect the exhaust clamp assembly for cracks and wear.</p>
4	<p>In case cracks or wear are found, replace subject part. Make sure the installation procedure of section III.2 is followed.</p>
5	<p>Install engine cowlings i.a.w. AMM section 71-10.</p>
6	<p>Make all necessary entries in the airplane logs.</p>

III.4 Action 4 - Inspection of exhaust pipe

1	Remove engine cowlings in accordance with (i.a.w.) AMM section 71-10.
2	Remove exhaust pipes i.a.w. AMM section 78-00.
3	Inspect exhaust pipes i.a.w. WI-OSB-42-131, Section III.2 (Re-Qualification of Exhaust Pipes), latest effective revision.
4	Install engine cowlings i.a.w. AMM section 71-10.