

GFA AD 615
(ISSUE 1)

GFA AIRWORTHINESS DIRECTIVE

- TYPE AFFECTED:** DG-800B Serial no.s: All up to 8-260 except 8-247 & 8-258.
DG-505MB Serial no.s: All up to 5E220B15 except 5E190B5
- SUBJECT:** Failure of Starter ring gear plate attachment bolts.
- BACKGROUND:** Instances have occurred where the bolts which attach the ring gear to the lower drive belt pulley adaptor have failed. The sheared off heads have been found in the engine compartment.
- DOCUMENTATION:** The LBA have issued AD D-2004-347, effective 02 July 2004. DG Flugzeugbau GmbH has issued Technical Notes 873/30, 843/22 and Working Instruction No 1 dated 09 June 2004, which are attached and form part of this AD. Note: The content of both Tech Notes is identical. The three number prefix denotes the German Type Certificate to which the Tech Note applies.
- ACTION REQUIRED:** **ACTION 1.** Prior to and after each flight, inspect the engine compartment for sheared off bolt heads. Should any be found, or if damage is suspected, the engine is not to be used until modifications are carried out according to ACTION 2.
ACTION 2. Modify the connection in accordance with the Technical Note and Working instruction. The work must be certified & entered in the aircraft's logbook by the holder of a G1109 Airworthiness Authority with a Section 2 Certificate endorsed for engine accessory replacement, or higher maintenance authority.
- WEIGHT AND BALANCE:** Nil
- IMPLEMENTATION:** Action 2 is to be completed by 31 December 2004.
- COMPLIANCE:** The requirements of this GFA Airworthiness Directive are mandatory. This Directive is issued pursuant to the Rules and Regulations of the Gliding Federation of Australia.

SIGNED:

John G King



CHIEF TECHNICAL OFFICER AIRWORTHINESS

For and on behalf of:

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OF AUSTRALIA

DG Flugzeugbau GmbH
76646 Bruchsal

Technical Note

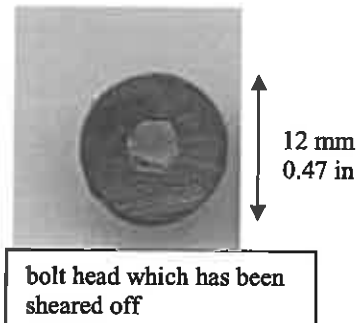
No. 873/30

No. 843/22

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- Subject** : Connection of the starter ring gear to the adaptor for the lower drive belt pulley
- Effectivity** : DG-800B all serial No.'s up to 8-260 except for 8-247 and 8-258
DG 500MB all serial No.'s up to 5E220B15 except for 5E190B5
- Accomplishment** : Instruction 1: With every daily inspection until instruction 2 has been executed.
Instruction 2: If damage of the connection is suspected, e.g. a bolt head found in the engine compartment, latest Dec. 31. 2004.

- Reason** : In some cases the bolts which connect the starter ring gear to the lower drive belt pulley adaptor failed. The sheared off bolt heads have been found in the engine compartment, see photo.
A method is given herewith to repair the existing part for a durable connection.



- Instructions** : 1. Search for bolt heads prior to and after each flight. If a bolt head is found, the engine should not be used any more to prevent from further damage.
2. a) Modify the connection according to working instruction No. 1 for this TN.
b) If the aircraft logs prove that the modification has already been executed (according to DG service info 48/02) the repair has to be inspected and entered in the aircraft logs by a licensed inspector

- Material** : - Working instruction No. 1 for TN 873/30
- 1 box Araldite AV119 (100g)
- grinding paper 60 grit
- 5 bolts M6x12 DIN7991-10.9 DAC
- Acetone
tools: various
+ to pull off the lower drive belt pulley
1 flange bolt (incl. in SOLO tool kit)
1 puller assembly W40 (drawing encl. to the maintenance manual) with
1 bolt M 12 x 90 DIN 933-8.8 and
4 bolts M5 x 20 DIN 912-10.9

- Weight and balance** : influence negligible

- Remarks** : Instruction 2 may be executed by the owner if he is experienced with this type of work, otherwise they are to be executed by the manufacturer or by a licensed workshop.
All instructions have to be inspected and entered in the aircraft logs by a licensed inspector with the next annual inspection.

Author:
Dipl. Ing. Wilhelm Dirks

The German original of this TN has been approved by the LBA under the date of and is signed by Mr. Blume.

W. Dirks

The translation into English has been done by best knowledge and judgement.

Type certification
inspector:
Dipl. Ing. Swen Lehner

EASA approved on _____ under Approval No. _____

Swen Lehner

Modification of the connection of the starter ring gear to the adapter for the lower drive belt pulley

A) Disassembly

1. It is not necessary to remove the powerplant from the glider to remove the starter ring gear.
The following work has to be done according to the maintenance manual instructions:
Remove the engine doors see sect. 4.17. Place a wooden plate over the engine bay on which the engine may rest.
Disconnect the spindle drive from the engine see sect. 4.16.1 item II) 11) (page 66) (It is not necessary to disconnect the gas strut).
Remove the proximity switch with its mounting plate, mark its position on the propellermount prior to removal.
Loosen the drive belt according to sect. 4.11. a) (it is not necessary to remove the propeller).
Remove the complete assembly of starter ring gear with adapter and lower pulley see sect. 4.16.2 item 3).
2. Remove all 5 bolts which connect the starter ring gear to the adapter for the lower drive belt pulley

B) Assembly of the starter ring gear to the adapter

1. Remove any remains of the red paint from the contact areas at the starter ring rear to the adapter and from the countersink bores for the bolts, paint can be dissolved with Acetone. Check the adapter too. Correct any deformations or burrs so that the contact areas are flush.
2. Mark the contact area at both parts and grind the contact areas with grinding paper 60 grit see drawing 1. Remove any dust and clean and degrease the contact areas with Acetone.
3. Apply the adhesive Araldite AV119 with a small brush to the contact areas and into the threads. Press both parts together and screw in the bolts until there is a gap of approx. 1mm between the bolt head and the countersink bores. Fill the gaps with Araldite AV119 and tighten the bolts crosswise with a torque of 12 Nm (9 ft lb).
4. Cure the whole assembly for 1 hour at $150^{\circ}\text{C} \pm 10^{\circ}\text{C}$ ($230^{\circ}\text{F} \pm 18^{\circ}\text{F}$) for example in a baking oven. Allow the part to cool down slowly, e.g. let it in the oven until the oven has cooled down.
5. When the part is cooled down file or grind off the excess bolt ends until they are flush with the flange. If you use a power grinder be careful not to heat up the part. Grind several short times and allow the part to cool down in-between.

Bild 1
drawing 1

1. Vorbereitung zur Verklebung
Preparation for bonding

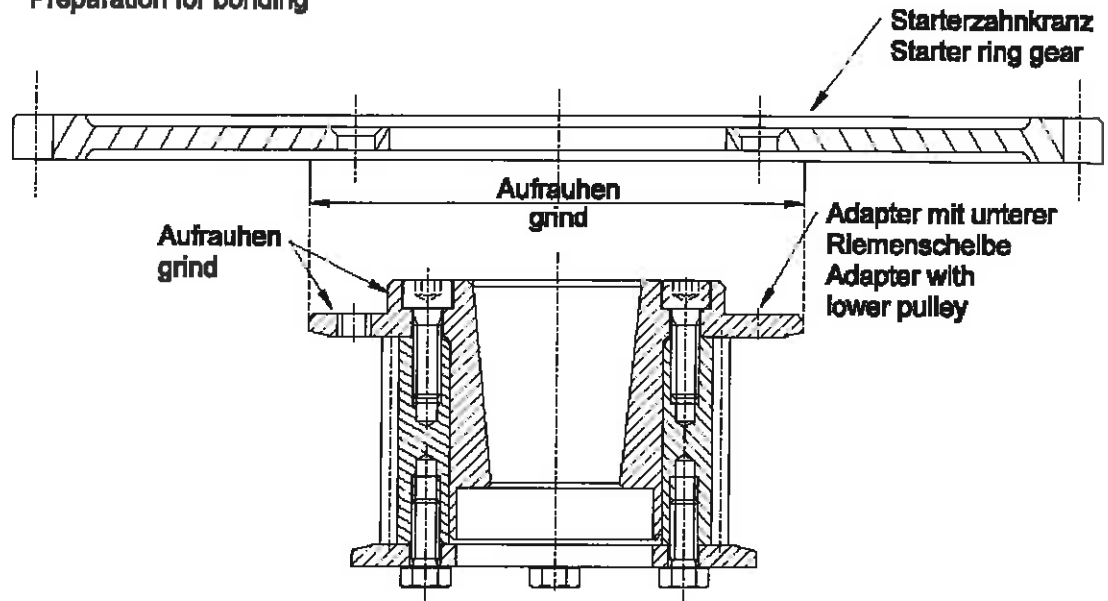
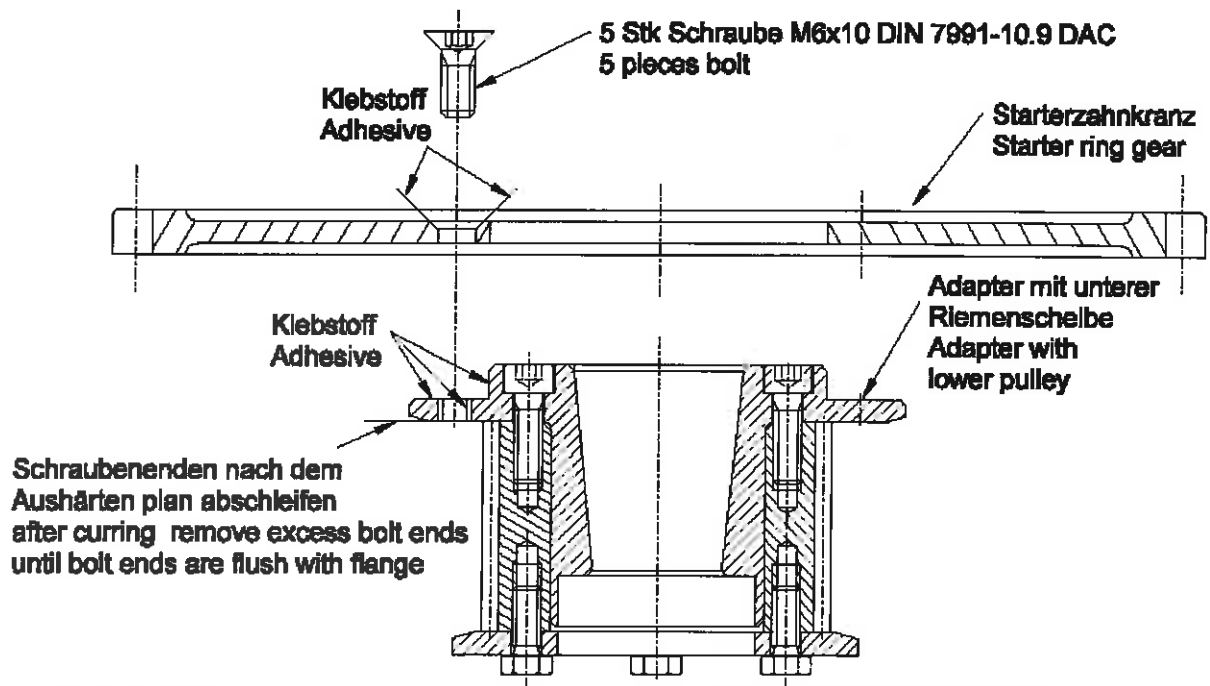


Bild 2
drawing 2

2. Klebstoffauftrag
Application of adhesive



C) Reinstallation

1. When reinstalling the starter ring gear adjust the propeller position versus the engine compression point according to sect. 1.11.4 via the drive belt.
2. Install the screw at the crankshaft without using Loctite and tighten with a torque of 100Nm (73 ft lb).
3. Tighten the drive belt according to sect. 4.11e).
4. Reinstall the proximity switch and check its adjustment according to sect. 1.14.15 and correct if necessary.
5. Reconnect the spindle drive.
6. Rig the wings to the fuselage and secure the glider. Start the engine, apply full throttle for a short while (max. 30 seconds) and stop the engine again.
7. Retorque the screw at the crankshaft with 100Nm, to accomplish this the spindle drive must be disconnected again.
8. Start the engine, apply full throttle for a short while (max. 30 seconds) and stop the engine again, retorque again. Repeat this procedure until the screw can't be turned any more with the same torque. Normally it is necessary to repeat the procedure 4 times. After the last retorque remove the screw, apply Loctite 243 and torque again with 100 Nm.
9. Install a new selflocking nut M10DIN985-8zn to the spindle drive bolt.
10. Check if the propeller position versus the engine compression point is still in the limits. If necessary correct according to sect. 4.11 f).