DG-Flugzeugbau GmbH
Im Schollengarten 20
D-76646 Bruchsal

Technical Note
No. 301/18
No. 323/9
No. 826/34

Subject: Airbrake torque tube in the fuselage, airbrakes in the wings

Effectivity: All types and serial numbers: DG-100, DG-200, DG-400

Accomplishment: Instructions 1,2 and 5: Prior to next flight
Instruction 3: If necessary prior to next flight
Instruction 4: If necessary latest until 31.03.97

Reason: Due to free play between bellcrank and airbrake plate the airbrake cap might not flush with the wing surface at the outboard end. If this is corrected by increasing the locking forces the airbrake control system might be overloaded. This can result in failure at the operating lever of the airbrake torque tube in the fuselage.

Instructions:

1: Inspection of the airbrake torque tube in the fuselage according to working instruction no.2 for this TN.
2: Inspection of the airbrakes according to working instructions No. 1 for this TN.
3: Reinforcement of the welded joint between torque tube and lever according to working instructions No. 2 for this TN.
4: Modification of airbrake plates according to working instruction no.1 for this TN.
5: Manual amendments (dated oct. 1996):

DG-100:	„Flight handbook DG-100", page 2; „Service manual DG-100", page 23a
DG-100 G:	„Flight handbook DG-100 G", page 2; „Service manual DG-100 G", page 23a
DG-200:	„ DG-200 Manual", page 1 „Maintenance manual DG-200", page 0, 7c
DG-200/17:	„DG-200/17 Manual", page 17/1 „Maintenance manual DG-200/17", page 0, 7c
DG-200/17C:	„DG-200/17C Manual", page 1 „Maintenance manual DG-200/17C", page 0, 7c
DG-400:	„Maintenance manual DG-400", page 0.2, 1, 2, 2a, 26b

Material: Working instructions No.1 and No.2 for this TN

For instruction 3: If necessary:	1 pcs. Sheet steel 1St12/2, material 1.7734.4
	Welding wire material 1.7734.2
For instruction 4: If necessary:	2 pcs. U-bracket 1F12/2
	8 pcs. Pop-rivets Fero Ø 3x6,5 AlMg5, steel pin
	2 pcs. Self-locking nuts M6 DIN 985-8 zn

For instruction 5: Manual pages dated oct. 1996, see instruction 5

Weight and Balance: Influence neglibile

Remarks: Instructions No.1, 2, 4, 5 can be executed by the owner or another experienced person. Instruction 3 is to be executed only by a licensed workshop.
Accomplishment of all instructions must be entered into the aircraft logs by a licensed inspector.
Inspections according to instruction 1 and instruction 2 must be accomplished on every annual inspection.

Bruchsal, 04.11.96

Author: S. Lehner Sven Lehner

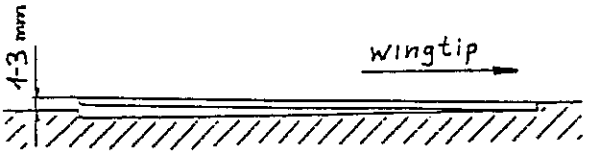
Type certification inspector: W. Dirks W. Dirks

LBA-approved:
The German original of this TN has been approved by the LBA under the date of 11. Nov. 1996
and is signed by Mr. Fendt. The translation into English has been done by best knowledge and judgement. In any case of doubt the German original is authoritative.

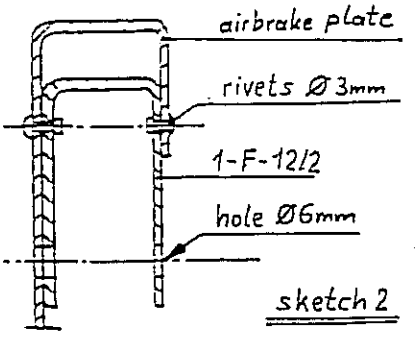
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D-76646 Bruchsal 4

Inspection and repair of the airbrakes (DG-100, DG-200, DG-400)

The airbrakes must retract at their outboard end first. When the airbrake cap is flush with the wing surface at the outboard end, the inboard end must be 1-3mm (0.039-0.118in) above the wing surface (s. sketch 1).



sketch 1

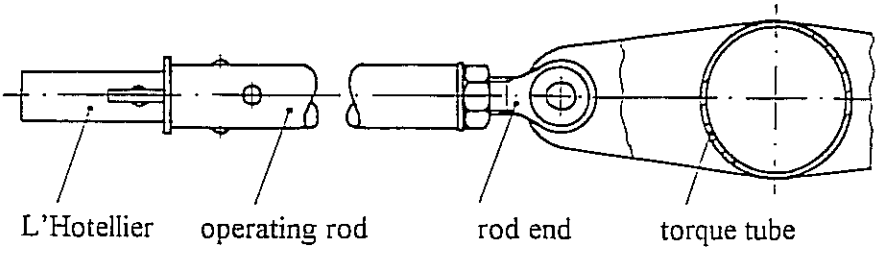


sketch 2

If not, modify as follows. With the modification a value of 1-3mm shall be adjusted.

1. Remove the bolt fixing the airbrake plate to the outboard bellcrank.
2. Drill out the 4 rivets which fasten the U-bracket 1F12/2 to the airbrake plate and remove bracket (s. sketch 2). Use a Ø3mm (0.118 in) drill.
3. Enlarge the Ø6mm hole at which the outboard bellrank was screwed to the airbrake plate to Ø7mm (0.276in).
4. Insert a new bracket 1F12/2 into the airbrake plate and screw it together with the airbrake plate and the bellcrank. Press bracket and bellcrank outboard when tightening the screw.
5. Retract the airbrake and measure the distance of the inboad edge of the airbrake cap to the wing surface. If the desired value of 1-3mm is not reached, you must repeat items 3 and 4. Enlarge the hole in steps from Ø7mm to max. Ø8mm (0.314in).
6. Drill rivet holes Ø3mm (0.118in) through the existing holes in the airbrake plate into new bracket 1F12/2. Fasten 1F12/2 with 4 aluminium poprivets type Fero Ø3×6.5mm AlMg5 with steel pin to the airbrake plate.
7. Screw together airbrake plate and outboard bellcrank using new self locking nuts M6 DIN 985-8 zn.
8. Now finally check if the airbrakes retract simultaneously. To measure retract the airbrakes so far, that the first cap is flush with the wing surface at the outboard end. Hold the airbrake handle in this position and measure how high the outboard end of the other airbrake is above the wing surface. Allowance 2mm (0.078in).
9. Also check handle forces to unlock the airbrakes (min.15daN, max.20daN resp. min.33lbs, max.44lbs). If handle force is below allowance elongate the operating rod of the airbrake retracting last by adjusting the rod end (s. sketch 3 below). If handle force is above allowance shorten the operating rod of the airbrake retracting first by adjusting the rod end. When adjustment of the airbrakes is finished don't forget to safety rod ends again by tightening the counter nut.

sketch 3:



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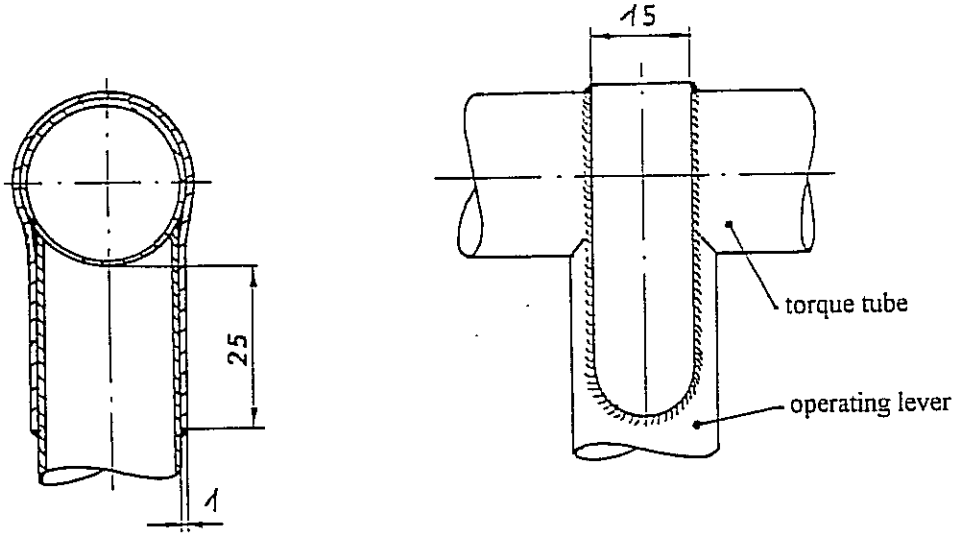
Author: S. Lehner

DG-Flugzeugbau GmbH
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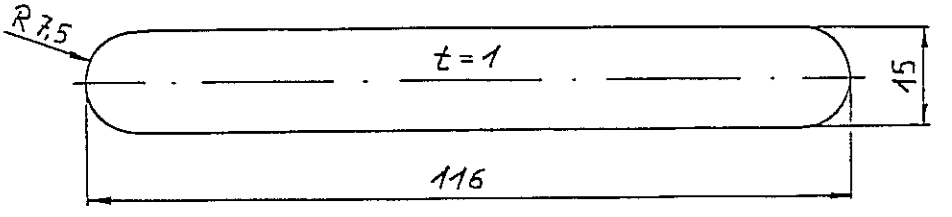
Inspection and reinforcement of the airbrake torque tube (DG-100, DG-200, DG-400)

Prior to the next flight the airbrake torque tube in the fuselage must be inspected. Check the welded joint to the operating lever on cracks or deformation when locking and unlocking the airbrakes on the rigged airplane. The airbrake torque tube can be reached through the inspection hole in the fuselage. For inspection of the welding joint use a mirror and a magnifying glass (magnification min. 5×). In case of doubt remove torque tube for closer inspection.
If there are no defects flying operation can be continued until next inspection. If there is even a minor damage suspected instructions 3 must be accomplished prior to next flight.

If necessary the welded joint of torque tube and operating lever must be reinforced by welding an additional steel sheet 1-St-12/2 made of material 1.7734.4 (s. sketch). Visible cracks or other defects of the original joint must be repaired first. All welding must be done with the TIG-welding system (tungsten inert gas) using welding wire 1.7734.2. Where welding is to be done cadmium plating or painting must be removed first by sandblasting.
If the torque tube is damaged by deep cracks and due to this corrosion inside the torque tube or the lever is suspected, the complete part 1St12 must be exchanged.
After welding all metal surfaces must be protected against corrosion. This can be done by painting with suitable primer and paint.



Sheet metal 1St12/2
Thickness: 1mm
Material: 1.7734.4



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