

MANDATORY SERVICE BULLETIN

NO. MSB-42-031/1

SUPERSEDES MSB-42-031

I TECHNICAL DETAILS

I.1 Category

Mandatory.

I.2 Airplanes Affected

Type: DA 42

Serial Numbers: 42.004 through 42.060, 42.062 through 42.092, 42.094 through 42.115, 42.117 through 42.128, 42.131, 42.132, 42.135 through 42.156, 42.158 through 42.163, 42.165 through 42.170, 42.174, 42.175, 42.177, 42.178, 42.180
42.AC001 through 42.AC008, 42.AC010

I.3 Date of Effectivity

S/N 42.004 through 42.039: 5-Apr-2007
All other serial numbers: 08-Jan-2007:

I.4 Time of Compliance

S/N 42.004 through 42.039: At next maintenance action, but not later than 17-May-2007
All other serial numbers: At next maintenance action but not later than 19-Feb-2007.

I.5 Subject

Inspection and repair of MLG brace rib.

I.6 Reason

Some MLG brace ribs have been found to be improperly bonded to the upper shell of the center wing section thus excessive outboard load during a hard crosswind landing may strip the rib off.

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 42-220/a and RÄM 42-041, which have been approved under the authority of EASA Design Organization Approval No. EASA.21J.052.

The technical content of this document has been approved und the authority of DOA No. EASA.21J.052.

I.9 Accomplishment/Instructions

Comply with WI-MSB-42-031, latest effective revision.

I.10 Mass (Weight) and CG

Negligible.

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

See WI-MSB-42-031, latest effective revision.

II.2 Special Tools

None.

II.3 Labor Effort

Approx. 3 hours of work for inspection only.
Approx. 6.5 hours of work for inspection and repair.
Approx. 50 hours (2 ¼ days) aircraft's ground time.

II.4 Credit

- 3 hours of work if the ribs were found to be bonded properly.
- 6.5 hours of work and full parts credit if the one rib's bonding is faulty.
- To qualify for credit a warranty application, the work report and the execution report must be filed to the warranty department not later than 31-Mar-2007.

II.5 Reference Documents

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

III REMARKS

1. All measures must be carried out by the manufacturer, a certified aircraft station or a certified aircraft mechanic.
2. Accomplishment of the measures must be confirmed in the log book.
3. In case of any doubt, contact Diamond Aircraft Industries.

EXECUTION REPORT

for MSB 42-031/1

AIRPLANE DATA

Airplane Serial Number: _____

Airplane Registration: _____

Airplane Operator: _____

Hours of operation of airplane: _____

No. of landings: _____

Hours of operation-engine LH: _____

RH: _____

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

Date, Name, Sign

Please fax the completed form to Fax No. **43-2622-26700-369 or e-mail to
airworthiness@diamond-air.at

NOTE: This is not an order form for spare parts!

WORK INSTRUCTION

WI-MSB-42-031

„INSPECTION AND REPAIR OF MLG BRACE RIB“

I GENERAL INFORMATION

I.1 Subject:

Inspection of the adhesive bonding quality of the MLG brace ribs' upper flange center wing shell.

If required the bonding area gets enlarged by installation of additional repair ribs.

I.2 Reference Documents:

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

I.3 Remarks:

- a) The work must be carried out by a certified aircraft service station or a certified aircraft maintenance mechanic. In case of doubt, contact Diamond Aircraft.
- b) All works, particular those that are not especially described in this work instruction, must be carried out in accordance with the referenced maintenance manual.

II DRAWINGS, SPECIAL TOOLS & MATERIALS

II.1 Drawings:

D60-5710-03-00RÄM

II.2 Special Tools:

None

II.3 Material:

Qty	Description	Part Number
1	Brace rib reinforcement inboard LH	D60-5710-33-00
1	Brace rib reinforcement inboard RH	D60-5710-34-00
1	Brace rib reinforcement outboard LH	D60-5710-37-00
1	Brace rib reinforcement outboard RH	D60-5710-38-00
A/R	Bonding paste (thickened resin)	Locally made
8	Tapping-Screw	DIN 7981 – 3.9x16-ZP
A/R	Washers fitting the tapping screws	N/A
A/R	Spacers 1.5 mm (0.059") made of metal, wood, ...	Locally made
A/R	5-Minute-Epoxy	N/A

III INSTRUCTIONS

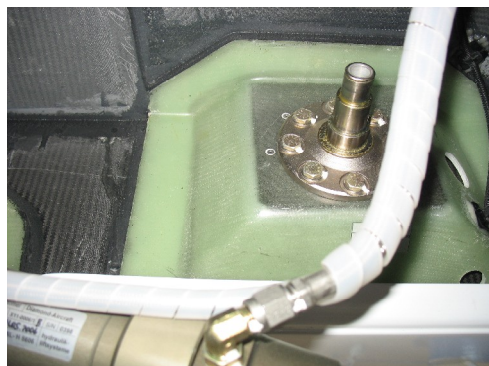
1.	Pull the GEAR circuit-breaker.
2.	Pull the PITOT HEAT and STALL WARNING HEAT circuit breaker.
3.	Raise the airplane on jacks and move the wing and rear fuselage trestles into position to support the airplane.
4.	Release the hydraulic pressure from the hydraulic system: <ul style="list-style-type: none">• Fold the rear passenger seat-backs forward. Refer to AMM Section 25-10.• Remove the rear baggage compartment lower access panel. Refer to AMM Section 25-60.• Operate the accumulator dump-valve at the hydraulic and control assembly.• Install the rear baggage compartment lower access panel. Refer to AMM Section 25-60
5.	Disconnect the main gear door from the main gear strut on both sides: <ul style="list-style-type: none">• Remove the nut, washer and spacer that attach the door connecting arm to the main gear leg.• Pull the connecting arm clear of the main gear strut attachment and secure to the door.• Move and hold the main gear door clear of the main gear strut.

6. Disconnect the folding stay (drag brace) at the joint on both sides.



7. Unhook the tension spring at the longitudinal pivot on both sides.
NOTE: To do so lift the MLG strut into the MLG bay.

8. Disconnect the folding stay strut and MLG actuator from the attachment pedestal to the rib on both sides.
Remove ty-wraps to release the wiring harness and to move the parts away from the working area on both sides.
Remove the ty-wrap base bonded to upper shell of the center wing shell on both sides.
CAUTION: Support all parts connected to wiring harness to prevent damage to the harness.



9. Cover unaffected area to keep it clean on both sides.



10. At the locations specified in the picture below (3 each side) carefully drill holes with a diameter of 4 mm (0.157", gauge 22 drill bit) and observe the following resistance behavior:

A) The drilling resistance develops as follows:

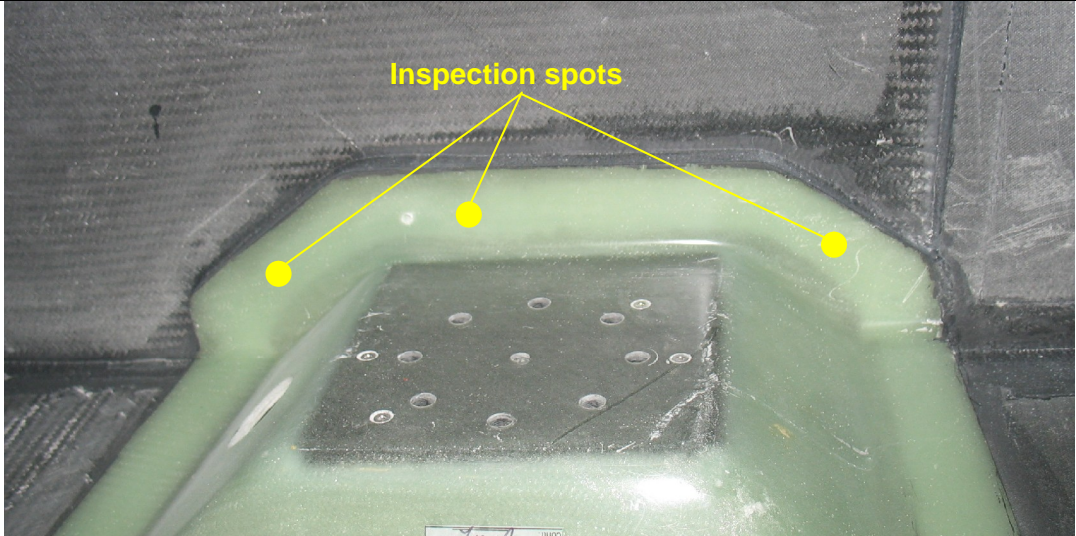
- a. The resistance is high due to the glass fiber laminate of the drag brace attachment rib.
- b. The resistance decreases due to the bonding paste.
- c. The resistance increases significantly due to the carbon fiber laminate of the upper shell of the center wing section.

CAUTION: Stop drilling immediately as soon as the resistance increases according to step c.

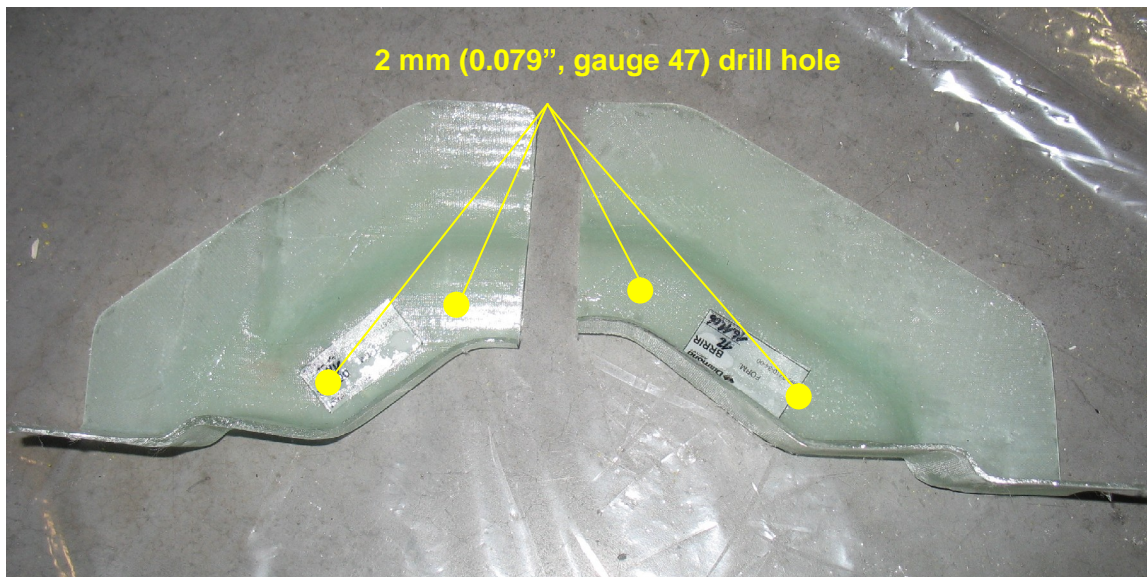
B) The drilling resistance develops as follows:

- a. The resistance is high due to the glass fiber laminate of the drag brace attachment rib
- b. The resistance decreases due to the bonding paste
- c. The resistance first decreases significantly and then the drill hits the hard surface of the upper shell of the center wing section.

CAUTION: Stop drilling immediately as soon as the resistance decreases significantly as described in step c.

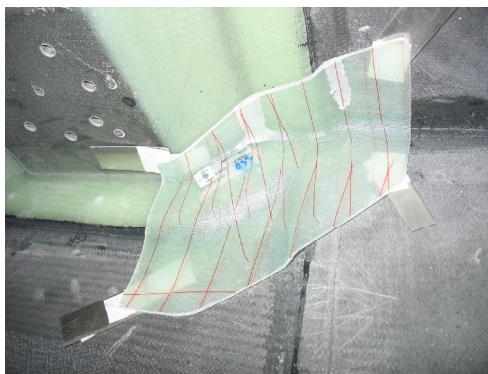
	 <p>Inspection spots</p> <p>LH side shown, RH side laterally reversed. (Brace pedestal not shown for clarity)</p>
11.	Remove the drill.
12.	<p>Inspect the hole and note one of the following conditions:</p> <p>A) The bottom of the drilled hole has the same color as the bonding paste</p> <p>B) The bottom of the drilled hole is black and glossy</p>
13.	<p>If in one of the inspection spots of items 10 and 12 the result B is detected proceed with item 14.</p> <p>Otherwise no repair is required. Fill inspection drill holes with bonding paste and proceed with item 21.</p>
14.	<p>Test fit repair ribs into place and mark out bonding area on both sides.</p> <p>Refer to drawing D60-5710-03-00RÄM and the labels on the repair brackets to identify the parts and the matching locations.</p>

15. Prepare the ribs:
Pre-drill ribs in marked locations with a 2 mm (0.079", gauge 47) drill.



RH ribs shown, LH ribs laterally reversed.

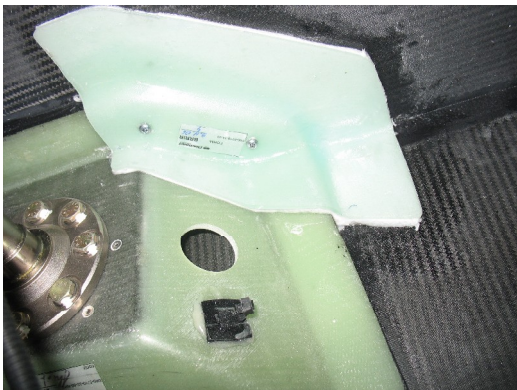

16. Drill a 2 mm (0.079", gauge 47) hole in the bonding flange of the faulty rib on both sides. Use the prepared repair ribs as a template. Use the 1.5 mm (0.059") spacers to account for the bonding paste (thickened resin) gap.




Picture for clarity only; do not extend the spacers too deep into bonding area

CAUTION: Measure thickness of the faulty bonding flange prior drilling of the holes. Do not damage the center wing shell sandwich!

17. Widen the drill holes of the repair ribs to a diameter of 4.5 mm (0.177", gauge 16 drill bit).

18.	<p>Preparation of Bonding:</p> <ul style="list-style-type: none"> • Sand bonding area of the aircraft (sandpaper grid 80) until the whole bonding area has an equal matt appearance. • Peel off peel ply of repair ribs. • Apply pure resin on bonding areas of the aircraft and the ribs. • Prepare bonding paste (thickened resin) in accordance with the AMM Chapter 51.
19.	<p>Bond in repair brackets into place using bonding paste (thickened resin) on both sides. Use 2 screws DIN 7981-3.9x16 and the required stack up of washers for each rib to keep them in place. Use prepared spacers to define an even bonding gap.</p> <div data-bbox="296 707 815 1095" data-label="Image">  </div> <div data-bbox="847 707 1361 1095" data-label="Image">  </div> <p>CAUTION: If the tapping screws are too long to prevent damage of the center wing shell sandwich, use the proper stack up of washers. Stack up = Thread length – faulty bonding flange thickness – repair rib thickness – bonding gap</p>
20.	<p>Cure and post cure in accordance with the AMM Chapter 51. NOTE: After pre-curing remove screws and fill the remaining hole with bonding paste (thickened resin).</p>
21.	<p>Reinstall ty-wrap base on the bonding flange of the inboard repair rib on both sides. Use 5-min-epoxy.</p>
22.	<p>Reconnect the folding stay strut and MLG actuator to the attachment pedestal on the rib on both sides.</p>
23.	<p>Hook the tension spring to the longitudinal pivot on both sides. NOTE: To do so lift the MLG leg into the MLG bay.</p>

24.	Reconnect the folding stay (drag brace) at the joint on both sides.
	
25.	Reinstall the wiring harness tie wraps on both sides.
26.	Clean working area and check for foreign objects.
27.	Do a retraction test with the main landing gear door disconnected. Refer to AMM Section 32-40.
28.	Connect the main gear door to the main gear strut: <ul style="list-style-type: none"> • Move and hold the main gear door in position at the main gear strut. • Move the connecting arm of the main gear door into position on the main gear strut. • Install the bolt, washer and nut that attach the connecting arm to the main gear strut.
29.	Do a retraction test with the main gear door(s) connected.
30.	Perform an operational check of the landing gear indication system.
31.	Lower the airplane with the jacks. Refer to AMM Section 07-10. CAUTION: Make sure that the area around the airplane is clear of equipment.
32.	Check the strut extension. Refer to AMM Section 32-10.
33.	Make appropriate entries in aircraft documents.

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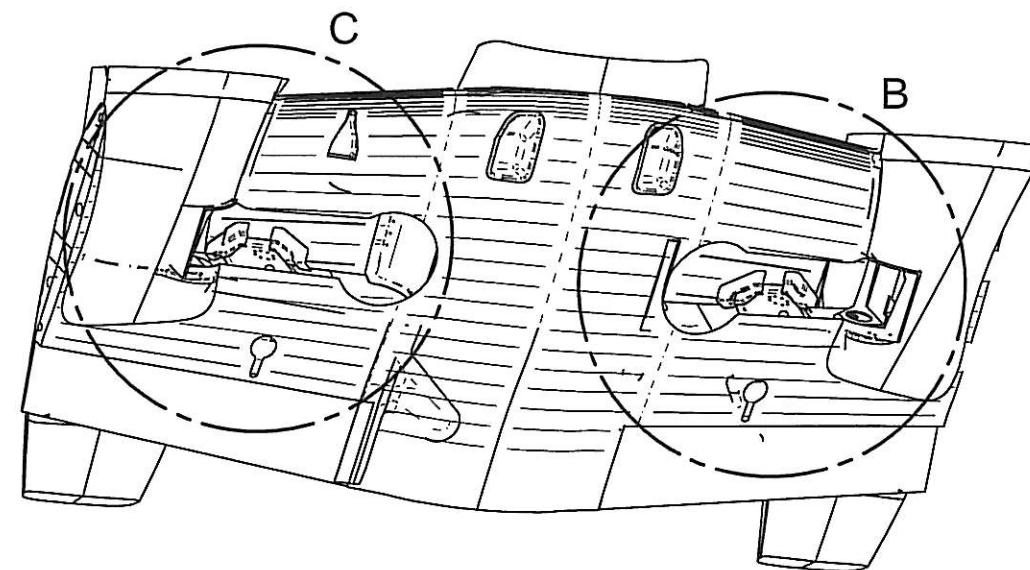
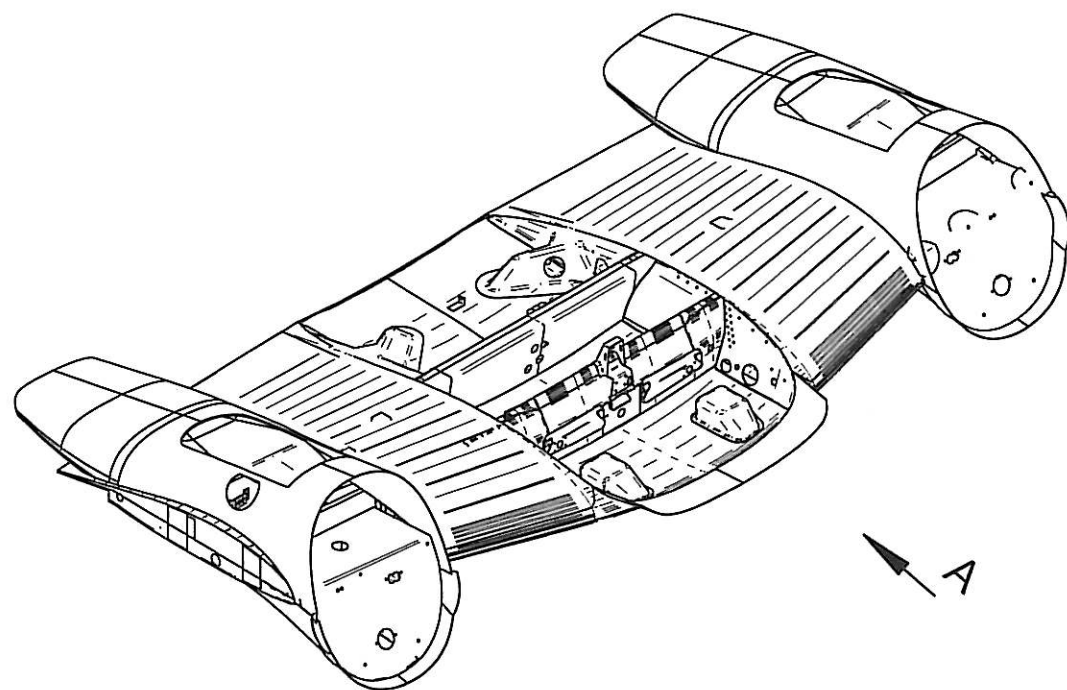
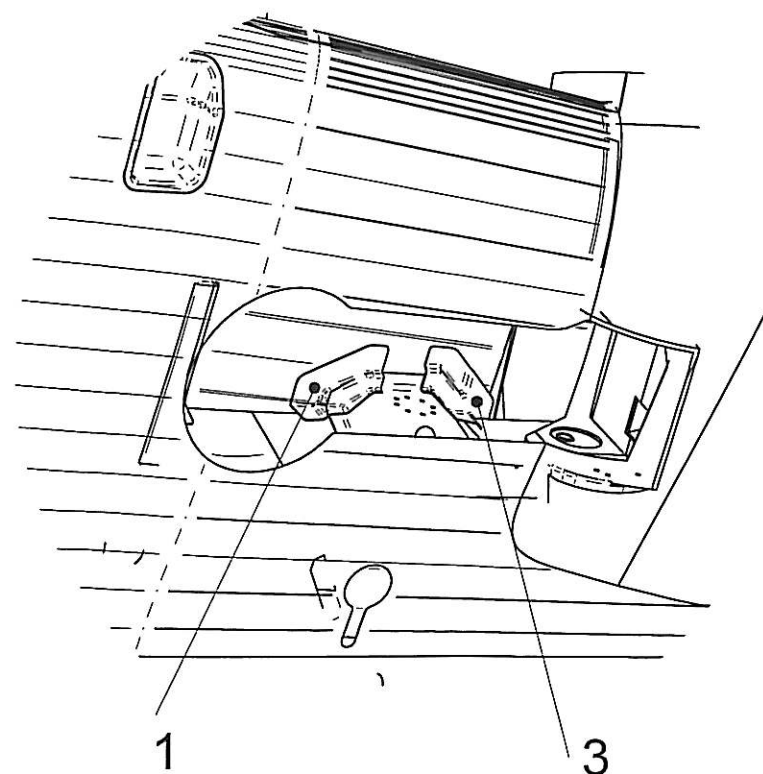
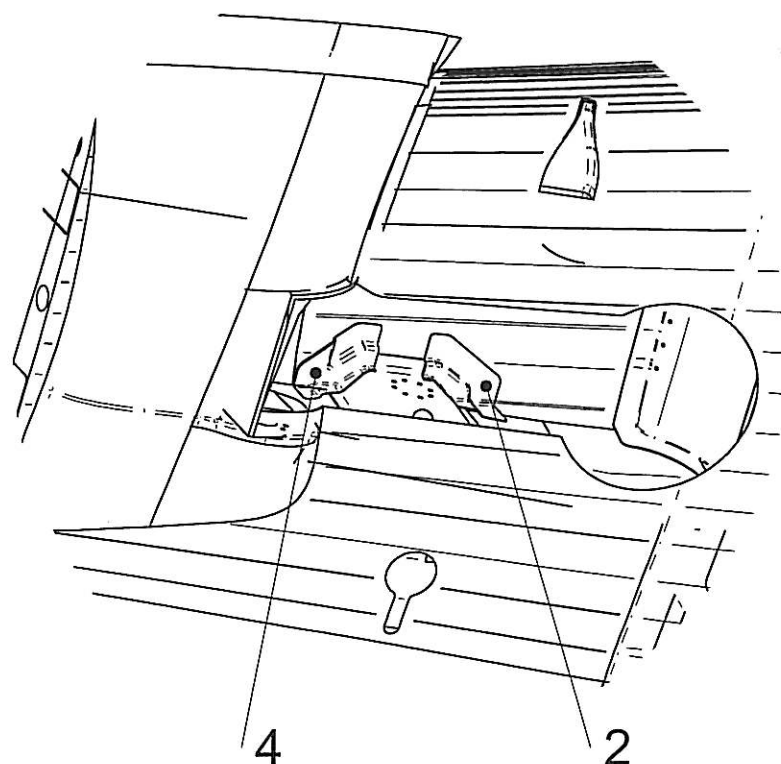
D

C

B

A

View A

Detail C
1:10Detail B
1:10

4	-	1	D60-5710-38-00	Brace rib reinforcement outboard RH		
3	1	-	D60-5710-37-00	Brace rib reinforcement outboard LH		
2	-	1	D60-5710-34-00	Brace rib reinforcement inboard RH		
1	1	-	D60-5710-33-00	Brace rib reinforcement inboard LH		
Pos.	QTYL	QTYR	Part Number	Specification	Supplier	
Approved: 			Checked: 	General Tolerance: ISO 2768 medium		Scale: 1:20
Date: 13. NOV. 2008			Name: _____	Title: _____		
			Next Higher Assembly: _____			
				Center wing lower shell ass		
			DA 42 Twin Star	Drawing Number: D60-5710-03-00RÄM		
Rev. Change Date Name			Saved under: D60-5710-03-00RAM.asm	Sheet from		
RAM 42-041 14.11.06 Schuster						