



A division of
LANITZ-PRENA
FOLIEN FACTORY GmbH

ORATEX® System for DR Series & Jodel Aircraft
Rib Strip Installation
& Airplane Maintenance Manual Supplement

ORATEX® System for DR Series and Jodel Aircraft Rib Strip Installation & Airplane Maintenance Manual Supplement

For certified aircraft

For Rib Strip Installation Kit item no. 08890

Doc. N°

ADxC-51-401-AMM Supplement Edition 1.0



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Amendments

| Issue | Date | Revised pages | Description |
|-------------|--------------|---------------|--------------|
| Edition 1.0 | 14-June-2019 | All | First issue. |

List of Service Bulletins

| SB No | Date | Title | Affected Serial no.'s | AD (EASA) |
|-------|------|-------|-----------------------|-----------|
| | | | | |

NOTE

This is the Service Bulletin list of STC¹ related to changes ADxC-DC-51-401, -403, -501..-509. For the aircraft SB list, refer to the TC holder documentation.

¹ Refer to 02-20 *Terminology and Abbreviations*



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01 Introduction

01-00 General

The rib strip installation is part of the STC that installs the **ORATEX®** fabric system in the DR Series of the airplanes without the need of stitching (lacing) and inter rib bracing.

NOTE

No other type of fabric is approved to be installed using the rib strips. Installation is only approved with respective engineering order issued by ADC.

For general guidance see „Werkstattpraxis für den Bau von Gleit- und Segelflugzeugen“ from Hans Jacobs.

Refer to the drawings ADxC-51-401-001 and ADxC-51-401-002 presented below. Full size drawing can be obtained from ADC in connection with the related STC.

Rib strip integration details that are specific to the DR100 series aircraft are given in Sheet 4 of drawing ADxC-51-401-001.

01-10 Coverage

This manual only covers the airplanes listed in the *Approved Aircraft* paragraph of Chapter 04 Limitations of this Manual.

01-20 Related Publications

- ORATEX Application Manual and Airplane Maintenance Manual Doc. N° ADxC-51-001-AMM Issue 7.2 or later revision/edition
- AC43.13-1B 9/8/98
- C.E.A.P.R. DR400 Structural Repair Manual and related documents
- „Werkstattpraxis für den Bau von Gleit- und Segelflugzeugen“ from Hans Jacobs.
- Adhesive mixing and curing instruction Aerodux 185 / Casophen G 1131

01-30

Addresses

| Firm | Address |
|---|--|
| LANITZ-PRENA FOLIEN FACTORY GmbH | Am Ritterschlösschen 20 D-04179 Leipzig www.ORATEX.eu |

In case of change of ownership of the airplane, design deficiency or occurrence in relation with this STC, please contact:

| Firm | Address |
|---|--|
| Aircraft Design Certification GmbH (ADC) | Reichensteinstrasse 48 D-69151 Neckargemünd E-mail: stc@aircraftdc.de |

LANITZ-PRENA FOLIEN FACTORY GmbH developed the System and is the according STC Holder. The company has discharged the obligations with respect to Part 21. requirements to ADC EASA DOA.21.J.411.

02 How to Use the Manual

02-00 General

The format and contents of this manual have been prepared in accordance with the GENERAL AVIATION MANUFACTURERS ASSOCIATION (GAMA) Specification No. 2.

The contents of this manual are organized in three levels:

- Group
- System/Chapter
- Subsystem (if needed)

Group

Groups used in this manual are:

| Group | Chapters | Definition / Remark |
|---------------------------|-----------------------------|--|
| General | 01 & 02 | General information |
| Aircraft | 03 to 05 | Complete operational unit, limitations |
| Airframe & Structure | 20 & 51 | All airframe systems except power plant |
| Supplementary information | To be collected in Appendix | Forms, Advanced maintenance instructions, Service bulletins etc. |

System/Chapter

Systems are arranged numerically per GAMA Specification 2 (ATA 100) recommended number assignment. The first two numbers indicate the chapter or system; the second two indicate the sub-system or section (for example Chapter 02-10).

When a subsystem is further divided into units, a third element is added to the number sequence, e.g. 53-20-01

The table of content lists only those chapter numbers which are used in this supplement.

02-10 Notes

Notes and safety notes in this handbook are marked by the words **NOTE**, **NOTICE**, **CAUTION**, **WARNING** or **DANGER** in the left margin column. The text of the note or safety note is printed in bold. See the following definitions:

 **DANGER**

indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

 **WARNING**

indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

 **CAUTION**

indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

NOTICE

is used to address practices not related to physical injury.

NOTE

represents a remarkable hint.

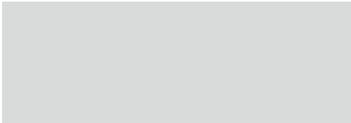
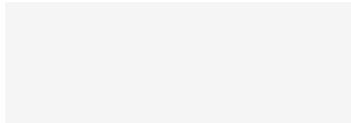
02-20 Terminology and Abbreviations

| Term | Meaning |
|------------------|--|
| rib bracing tape | Tapes crosswise attached between ribs to stabilize them. From ORATEX® 6000 (straight cut) |
| lacing | Generally the attachment of fabric to the structure by means of threads. |
| BVS | German certification specification for gliders |
| DDP | Declaration of Design & Performance |
| STC | Supplemental Type Certificate |
| TCDS | Type Certificate Data Sheet |

02-30 Standard Elements

Graphical Elements

The following graphical elements are generally used within this manual:

| | | |
|---|------------|------------------------------|
|  | 20% black | structure (general) |
|  | 100% black | underlying surface structure |
|  | 5% black | fabric |
|  | 70% black | fabric layer |

Text Elements

The following text elements are generally used within this manual:

Normal text

- Itemization



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- ▶ Instructions
- ▶ Instructions within a safety note

Head Lines

Head Lines (when referenced)

02-40 Safety

- ▶ Make sure that you have all necessary ratings to begin your work. These ratings may be differently regulated in different countries. Before you start working, always contact your respective examiner. For applications in the scope of the EASA an approval by a Part 66 licensed examiner is imperative while in the scope of the FAA it has to be approved by an IA licensed A & P (airframe and powerplant mechanic with IA entry). In case of aircrafts addressed under EU REGULATION (EU) 2018/1139 Annex I, the national aviation authority and examiner have to be contacted. The approval is documented by a signature on the Engineering Order and a record in the logbook of the aircraft. In addition, a form 337 has to be filled in in scope of the FAA. Appropriate regulations of other countries must also be observed. With the approval, the compliance to the requirements of the STC is confirmed.
- ▶ Do not start any modification, fabric application or any related preparations without an explicit Engineering Order from Aircraft Design Certification GmbH or other relevant authority approval applicable to the respective airplane.
- ▶ Do not begin any work before completely having read and understood the contents of this manual.
- ▶ Remove adhesive and dope only in explosion proof rooms with exhaustion device.
- ▶ Wear ventilated protective clothing, protective goggles, chemical resistant gloves and respiratory mask when working with solvents or in dusty conditions.
- ▶ Wear safety gloves to protect yourself against high temperatures.
- ▶ Observe and follow the instructions of the products data and safety sheets (refer to www.oracover.eu).

04 Limitations

NOTE

The airworthiness limitations section is approved and variations must also be approved.

Approved Aircraft

| TC Holder | Model | TCDS | STC ORATEX approval | STC Rib strip installation approval |
|---|----------------------|---------------|----------------------|-------------------------------------|
| C.E.A.P.R. | DR200 Series | EASA A.510 | EASA STC 10045970 | |
| C.E.A.P.R. | DR300/400 Series | EASA A.367 | EASA STC 10045970 | |
| Centre-Est Aéronautique Société Aéronautique Normande | DR 100 Series | LBA 585 | LBA EMZ SA 1468 | |
| Walter Uetz, Flugzeugbau | Jodel D11 - Swiss | LBA 570b | LBA EMZ SA 1468 | |
| Wassmer | Jodel D120 (D112) | None | LBA EMZ SA 1468 | |
| ETUDES Aéronautiques & Commerciales | Jodel D128 | LBA 631 | LBA EMZ SA 1468 | |
| Société Aéronautique Noemande | Jodel D140 | LBA 628 | LBA EMZ SA 1468 | |
| Société Aéronautique Noemande | Jodel 150 | LBA 659 | LBA EMZ SA 1468 | |
| Société Aéronautique Noemande | Jodel D117 | LBA 632 | LBA EMZ SA 1468 | |
| Wassmer | Jodel D120 | LBA 570A | LBA EMZ SA 1468 | |
| Aero- Diffusion S.L. | Jodel D1190-S | LBA 671 | LBA EMZ SA 1468 | |



04-10 **General**

All Limitations of the aircraft type remain valid.

For initial Installation parts as presented on drawing ADxC-51-401-002 must have an EASA Form One.

05 Inspection and Maintenance

05-10 Time limits and inspection program

The time limits and inspection program of the respective airplane type remain valid.

05-20 Scheduled maintenance

| Scheduled Inspection | as specified | 100h | Annual |
|---|--------------|------|--------|
| Flight check: Observe all in flight visible wing cover carefully in flight for anomalies, looseness or vibrations or buffeting. All non visible surfaces are carefully to be inspected after a dedicated flight that explores the respective V_{NE} of the airplane at bank angles approved for the airplane. | | | X |
| Perform <i>Bonding Check</i> (Chapter 22-55-08 from ADxC-51-001-AMM latest revision) . | | | X |
| Perform <i>Fabric Tension Test</i> (Chapter 20-55-11 from ADxC-51-001-AMM latest revision). | | | X |
| If blisters, bumps or bubbles are present cut open the respective area and inspect for underlying wood degradation, delamination and moisture. Repair as required according airplane manufacturer information. Patch up the fabric area with ORATEX® thereafter according to <i>Chapter 51-70 of ADxC-51-001-AMM latest revision</i> . | | | X |

| Scheduled Inspection | as specified | 100h | Annual |
|--|----------------|------|--------|
| Apply ORATEX ® Wax on the complete fabric surface. Refer to Chapter 03-02 from ADxC-51-001-AMM latest revision. | X ² | | |
| Inspect all rib-strip to rib bonding (coin tapping) | | | X |

05-50 **Unscheduled Maintenance**

After extreme meteorological conditions perform *Bonding Check (22-55-08)* and *Fabric Tension Test (20-55-11)* as per ADxC-51-001-AMM latest revision.

² After each fabric attachment and then recommended every 3 months

20 Standard Practices–Airframe

20–51 General Preparations

Ambient Temperature

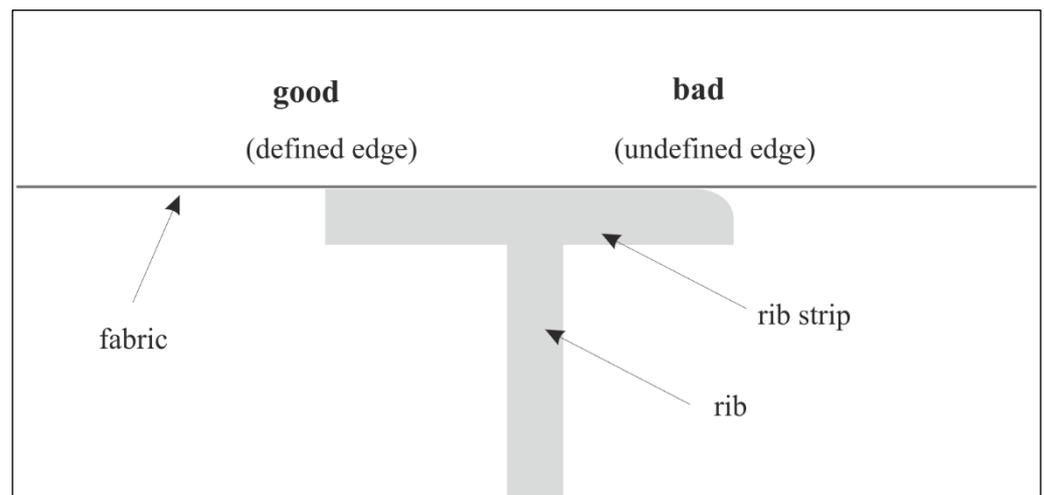
For the correct application an according ambient temperature is necessary. Even the products can be used above 5 °C, we strongly recommend an ambient operational temperature of minimum 15 °C. It is difficult to work with cold hands and fingers. Also the drying and curing times will be extremely extended at cold temperatures.

Quality Control

Wooden Parts

Wooden parts shall be inspected prior usage:

- Form One available?
- No apparent damage?
- Dimensions as on drawing?
- Defined edges?



NOTICE

Sharp edges can occur by the cutting process of wood.

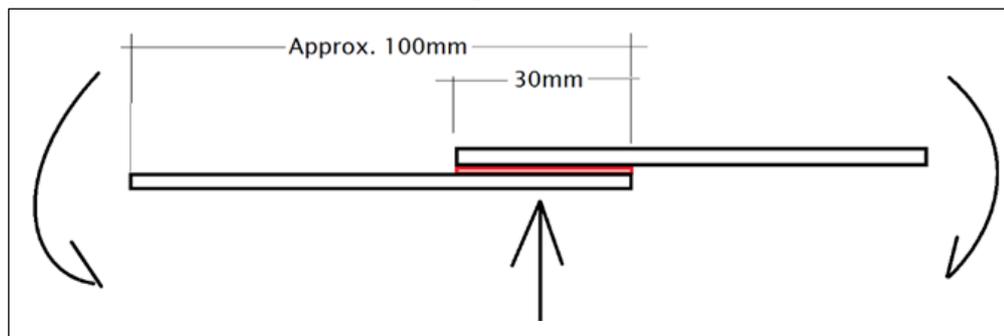
- ▶ Do not round off the edges.
- ▶ Edges must be sanded flat.

Adhesive (Aerodux 185 / Casophen G1131)

- ▶ Check expiration date.

Before 1st usage and with each adhesive process a traveler test specimen shall be prepared:

- ▶ Bond two plywood strips following the instructions of adhesive manufacturer.
 - strip dimension 40x1.5x100mm (grain in length direction)
 - bond area is 30mm long
- ▶ Apply pressure and leave the sample to cure as per adhesive manufacturer instructions.
- ▶ Test the sample where by loading it as outlined on the sketch below:



Test is passed if plywood always fails before the adhesive. If the failure is on the adhesive bond, there must be clear marks (pieces) of broken plywood.

20-52 Structure Preparation

All old adhesive and dope remnants have to be removed from the structure to enable the Aerodux 185 adhesive (CASOPHEN G1131 is equivalent) to bond with the structure thoroughly.

⚠ DANGER

Explosion hazard due to abrasive dust and solvent vapors.

- ▶ **Remove adhesive and dope only in explosion proof rooms with exhaustion device.**

⚠ WARNING

Poisoning hazard due to abrasive dust and solvent vapors. Thinners of approved dope and adhesive are poisonous and carcinogenic.

- ▶ **Wear externally ventilated protective clothing, protective goggles, chemical resistant gloves and respiratory mask when removing adhesive and dope.**
- ▶ Remove old fabric, adhesive and covering following the procedures and safety instructions of the respective manufacturers.
- ▶ Remove old rib bracing tapes.
- ▶ Debur the structure members.
- ▶ Clean the surfaces with nitro-cellulose based thinner.
- ▶ Remove conservation paint from the surfaces on which new parts will be bonded (use sandpaper grade 80).

NOTE

Do not apply the conservation paint on any surface on which fabric will later be bonded.

- ▶ Except on later bonding surfaces, apply conservation paint on new parts minimum 2 times. Use Super Duroffix 1K-Klarlack or equivalent.

20-53 Rib Strip Installation

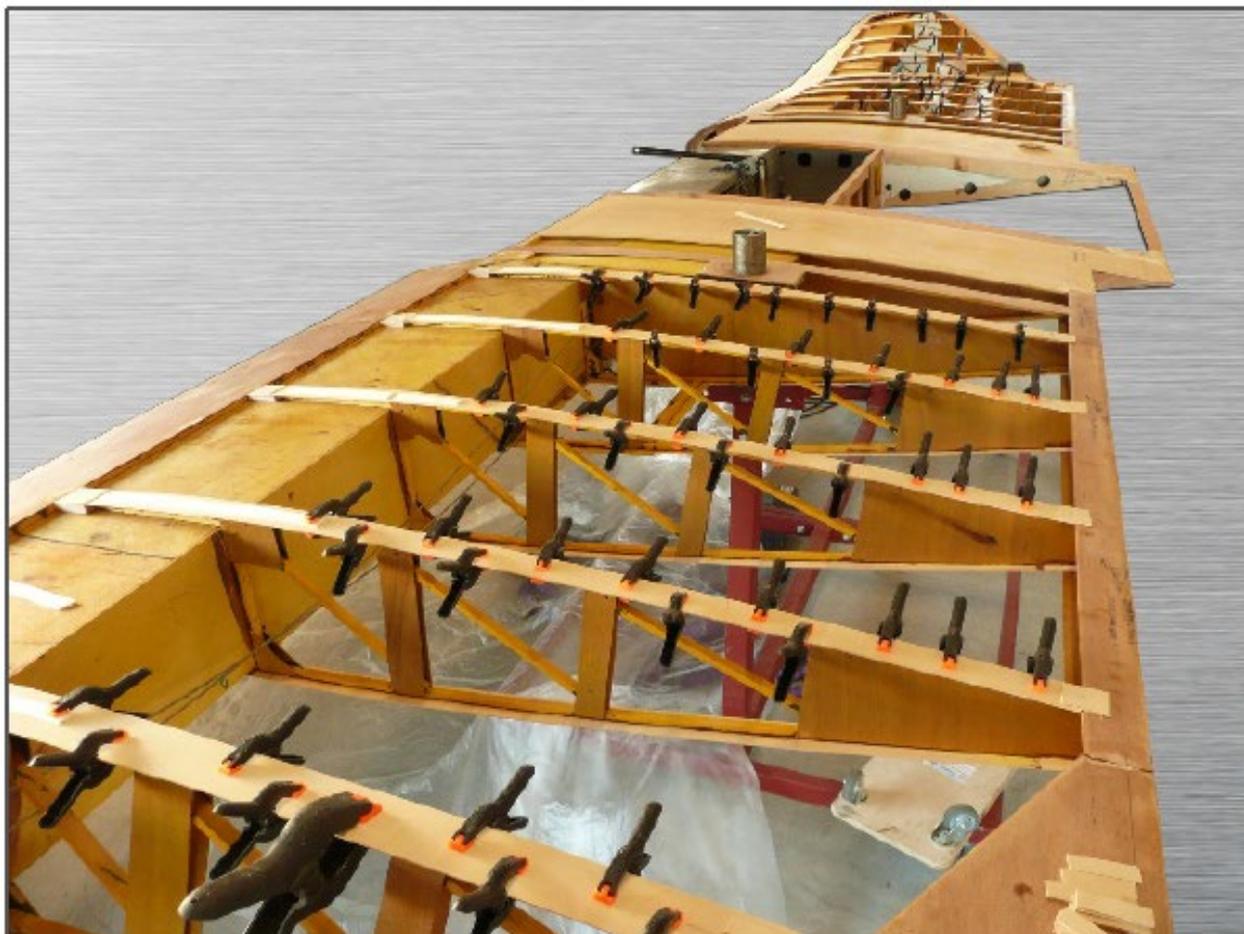
Materials

Individual parts used for the following procedure are drawn in drawing ADxC-51-401-002.

For bonding use Aerodux 185 adhesive (CASOPHEN G1131 is equivalent). For use instructions see adhesive specifications, especially the necessary pressure for correct adhesive bonding.

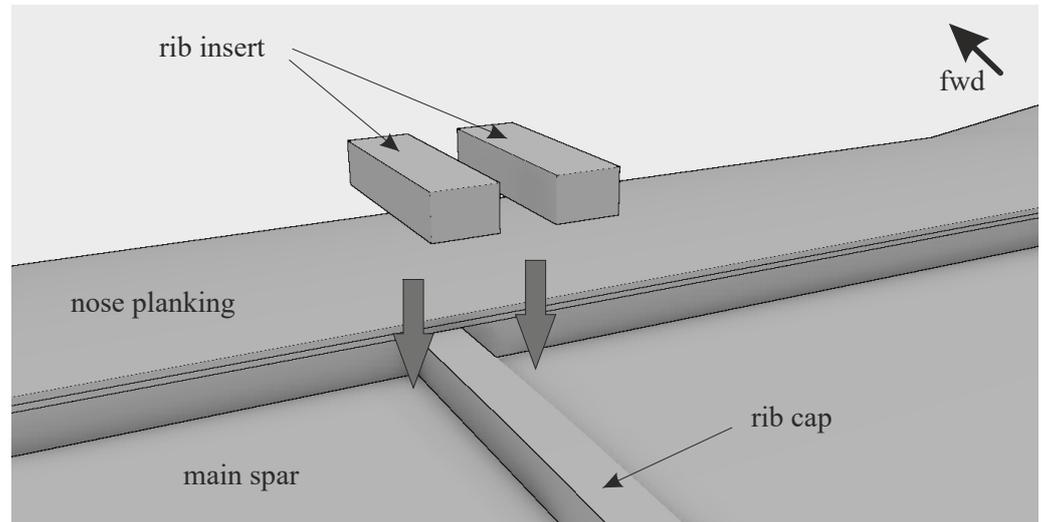
The following figure shows a sample arrangement, in which glue presses are used for applying sufficient pressure to the bonding areas. In areas, where glue presses cannot be placed (i.e. above the

main spar), a ledge (stapler) is used to provide the necessary pressure.

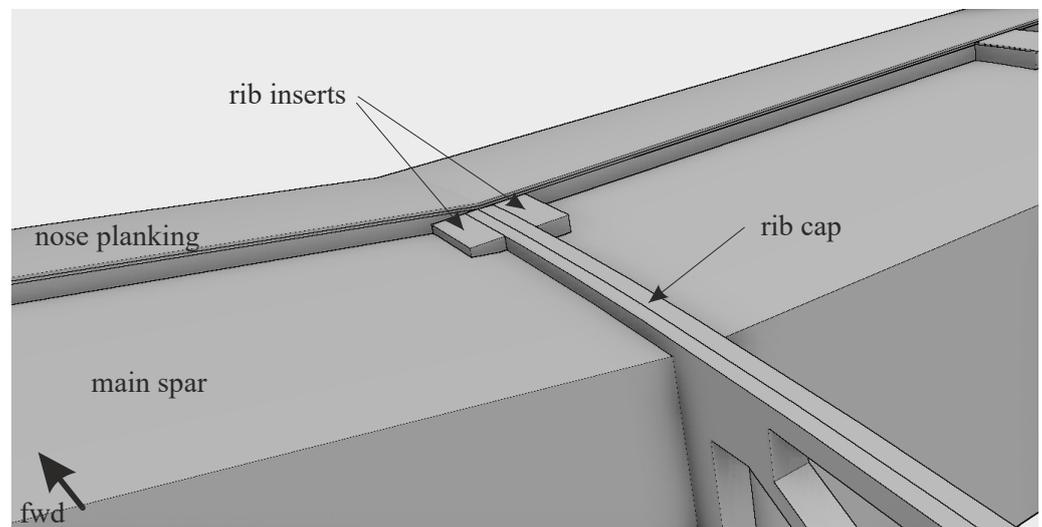


Procedure

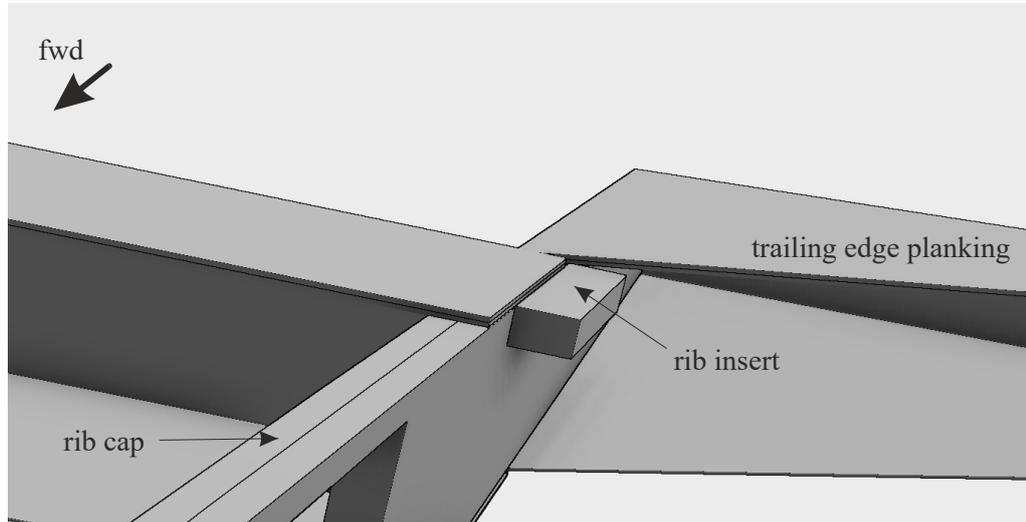
- ▶ Bond rib inserts (ADxC-51-401-103) left and right at forward end of upper rib cap of rib N4-N7 (all ribs inwards of the kink rib) and N9-N11 (all ribs outward of the kink rib).



- ▶ On station N8 (station at wing kink) bond two rib inserts on upper front side.



- ▶ On station N8 (station at wing kink) bond a further rib insert on upper aft inboard side. Also refer to sheet 3 of ADxC-51-401-101 drawing for details.

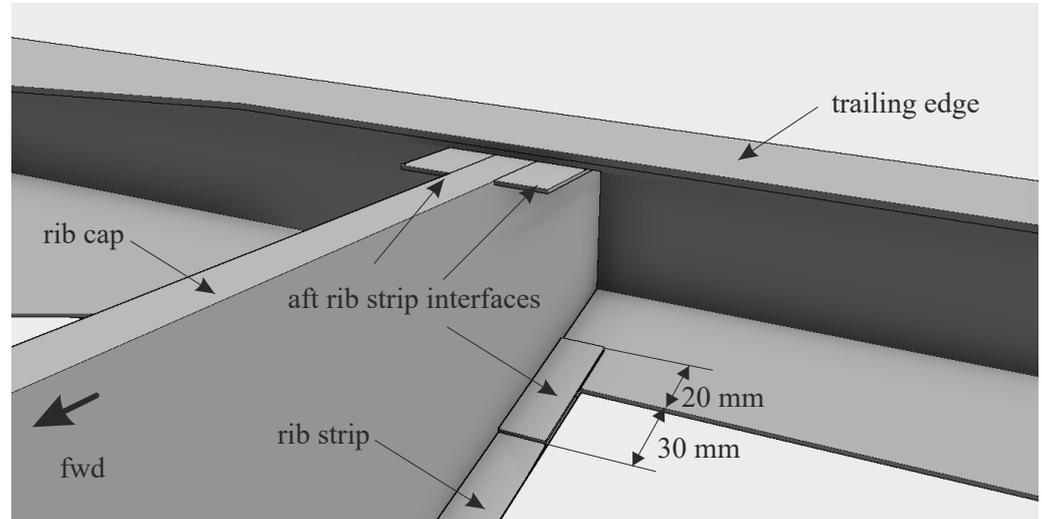


- ▶ Bond inserts (ADxC-51-401-103) on the lower rib cap on the left and right side of the rib at the forward end of the rib cap at stations N4-N7 and N9-N11 (the following photo indicates the position).

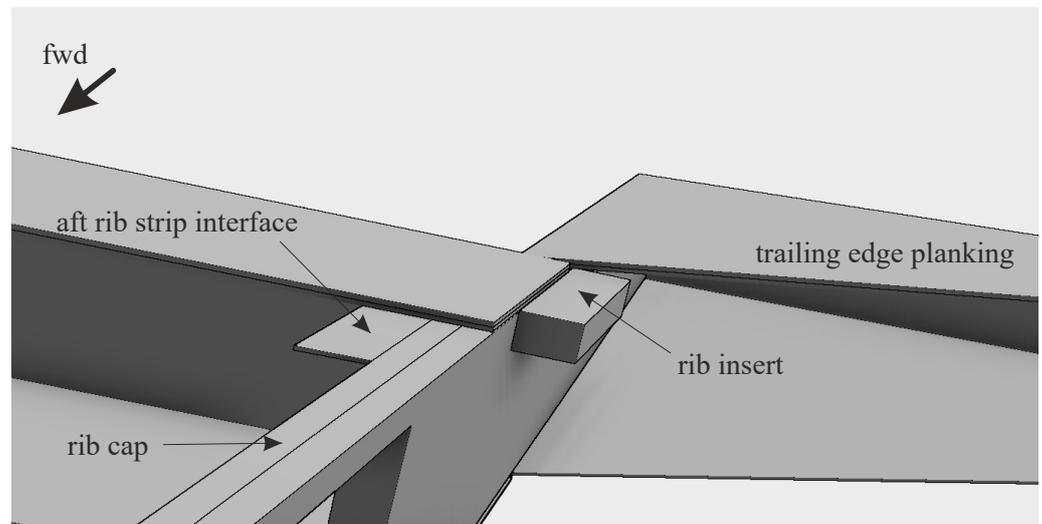


- ▶ Sand the inserts till they are flush with rib surface.

- ▶ Bond the aft rib strip interfaces (ADxC-51-401-104) to the trailing edge planking to receive a later single lap joint with the rib strips. 30 mm of the aft rib strip interfaces must overlap with the rib strip.

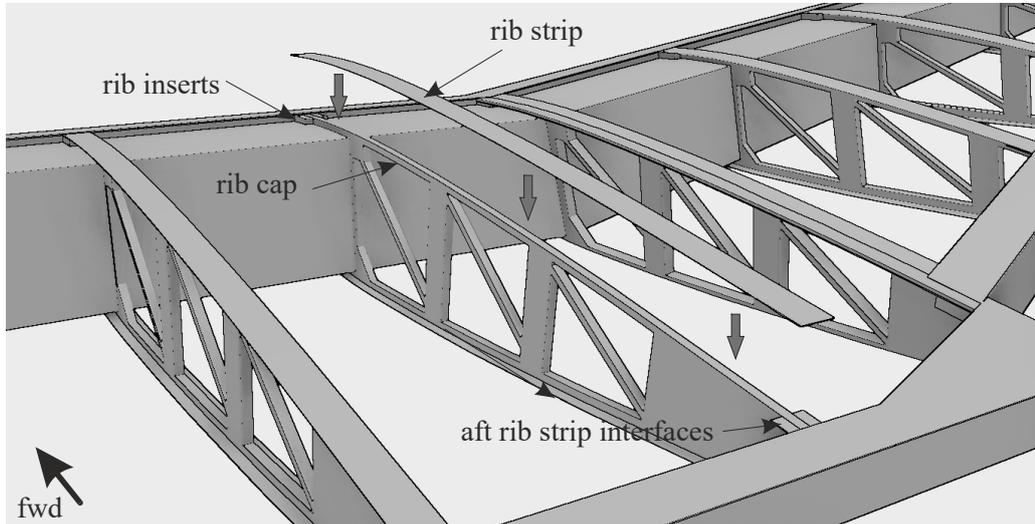


On station N8 aft situation including the aft rib strip interface is as follows:

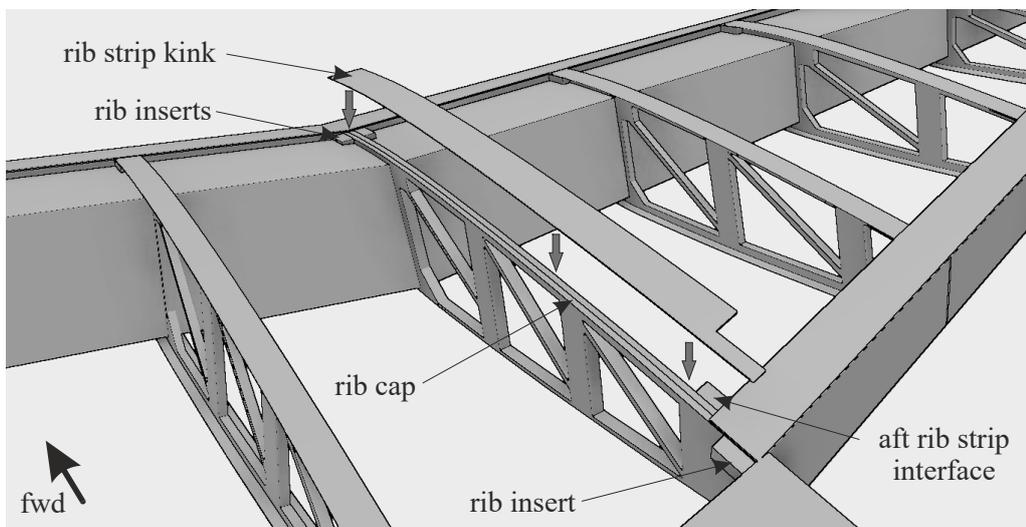


- ▶ Shorten the rib strips for each rib station as required. Rib strips are not scarfed at the interfaces with existing plywood.

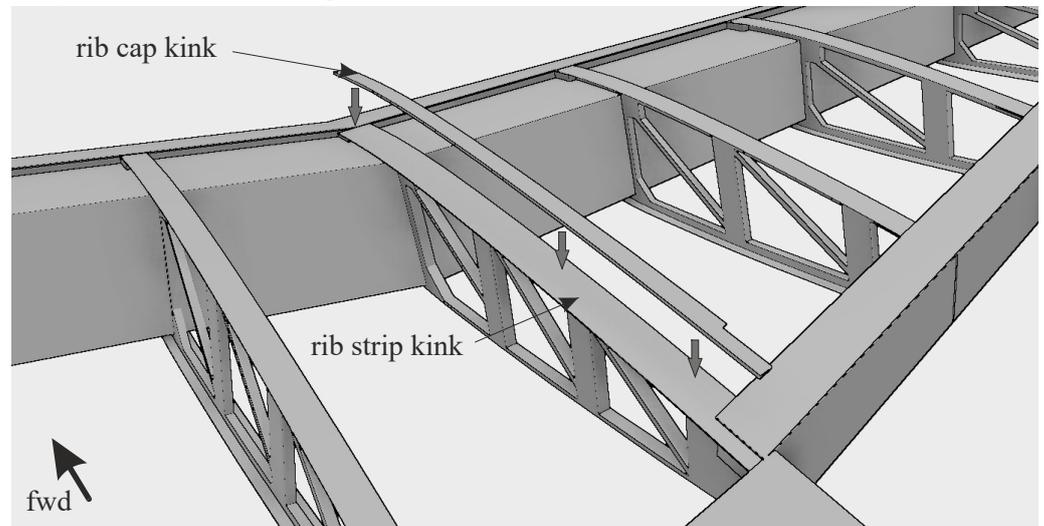
- ▶ Bond the rib strips (ADxC-51-401-100 and ADxC-51-401-102) to the rib caps, rib inserts and aft rib strip interfaces. When bonding the strips avoid excess adhesive.



- ▶ On station 8 (station at wing kink) bond the rib strip kink to the rib cap, inserts and aft rib strip interface.



- ▶ On station 8 (station at wing kink) bond the rib cap kink to the rib strip kink (inboard edges flush).



- ▶ After all the wood work has been completed, fill all non-perfect transitions, especially the centre joint on the angled rib 8, with **ORACOLOR®** 2-K-Filler (Item No. 08445) and – after drying – sanded to match.
- ▶ All new added wooden parts receive on those sides, on which there will be no glue, according to the state of the art a two layer impregnation with “Super Duroffix” 1-K Clearcote, or equivalent.

20-54 Covering

After completion of the rib strip installation it is advisable to continue the work with general preparations for the covering, especially with the check, if all ventilation/drainage holes are present. Information about this subject and all information needed for covering the aircraft you find in the ORATEX Application Manual and Airplane Maintenance Manual Supplement. Also refer to Chapter 89-02 of this Handbook, which contains special information about DR Series and Jodel Aircraft.

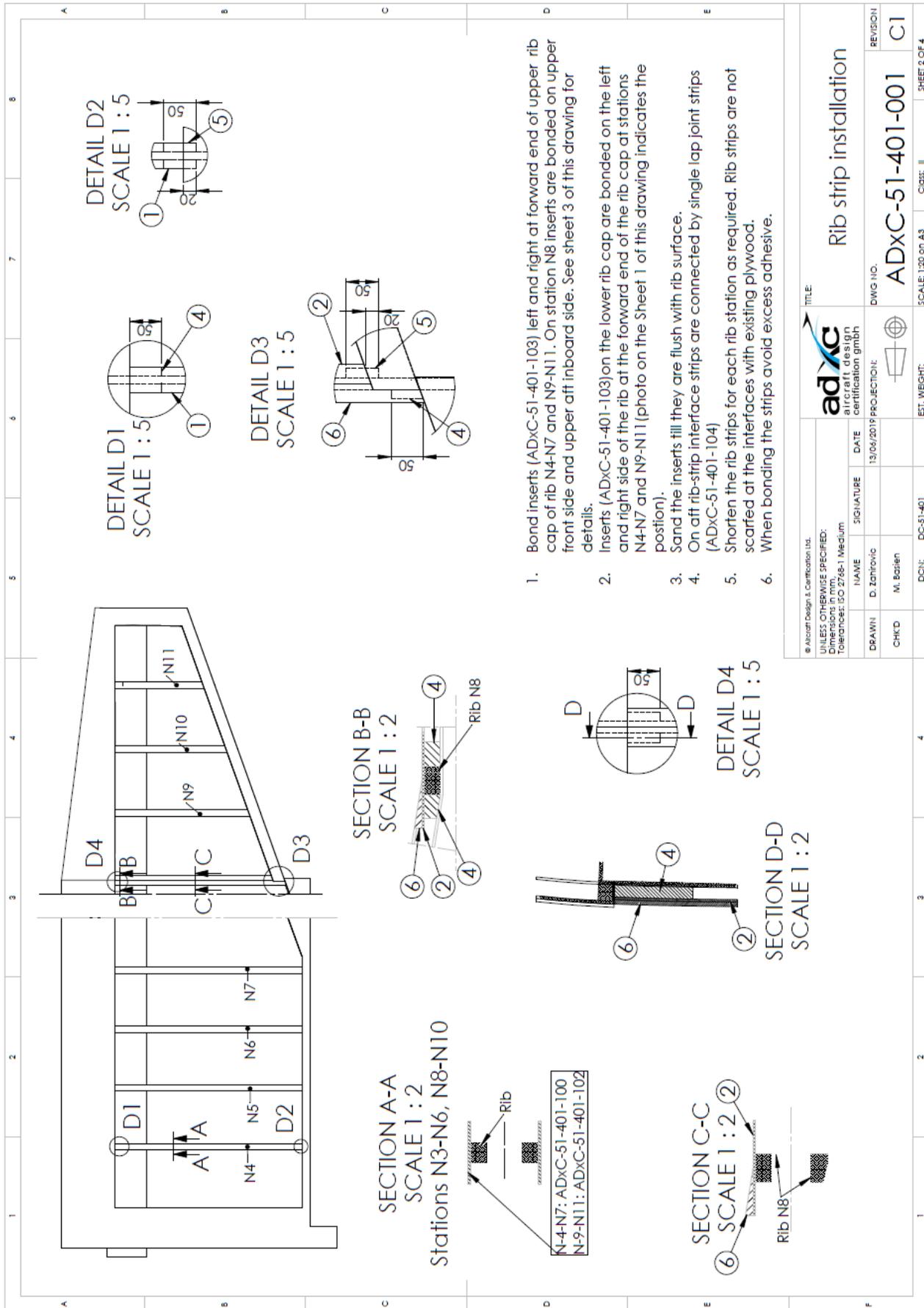
51 Standard Practices Structure

51-70 Repair

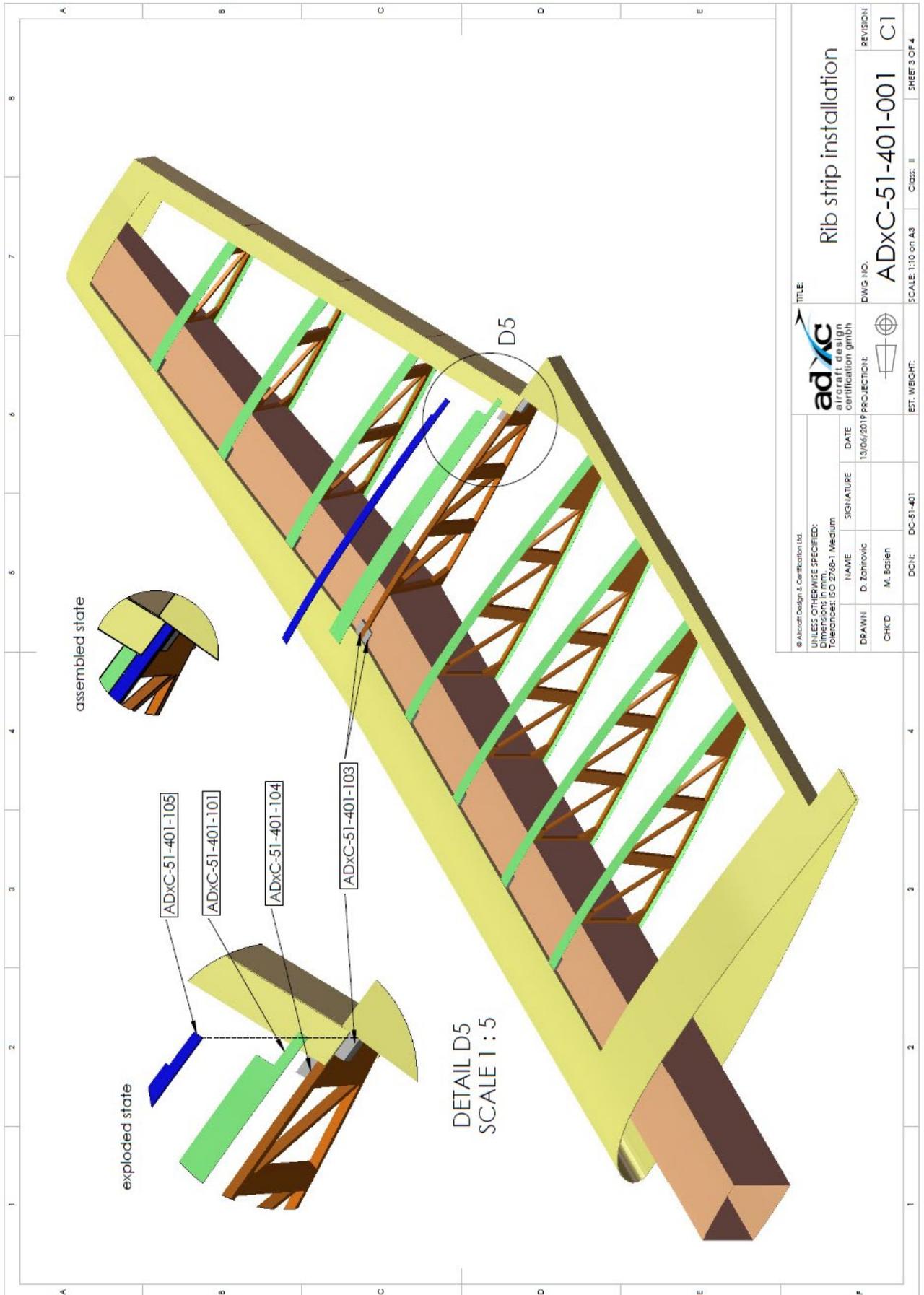
General

- ▶ When repair is necessary on Robin parts modified by the rib strip installation such as ribs, planking or such, first restore the original state referring to the aircrafts Structural Repair Manual and related documents.
- ▶ Then follow the Rip Strip Installation Procedure for the restored parts.

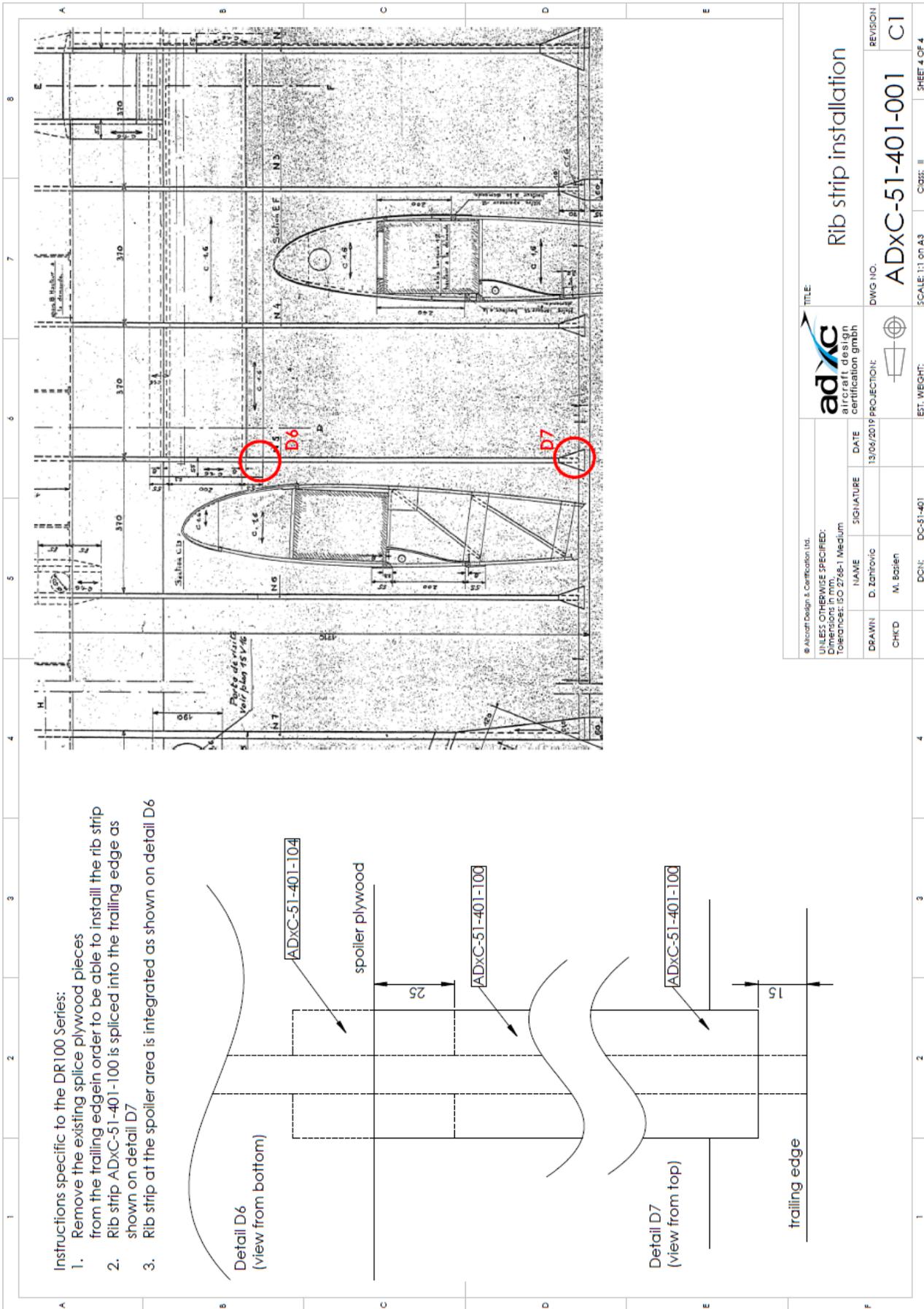
Damaged rib strip installation parts can be repaired by the service station, when the material quality matches that of the original parts (refer to Drawing ADxC-51-401-001).

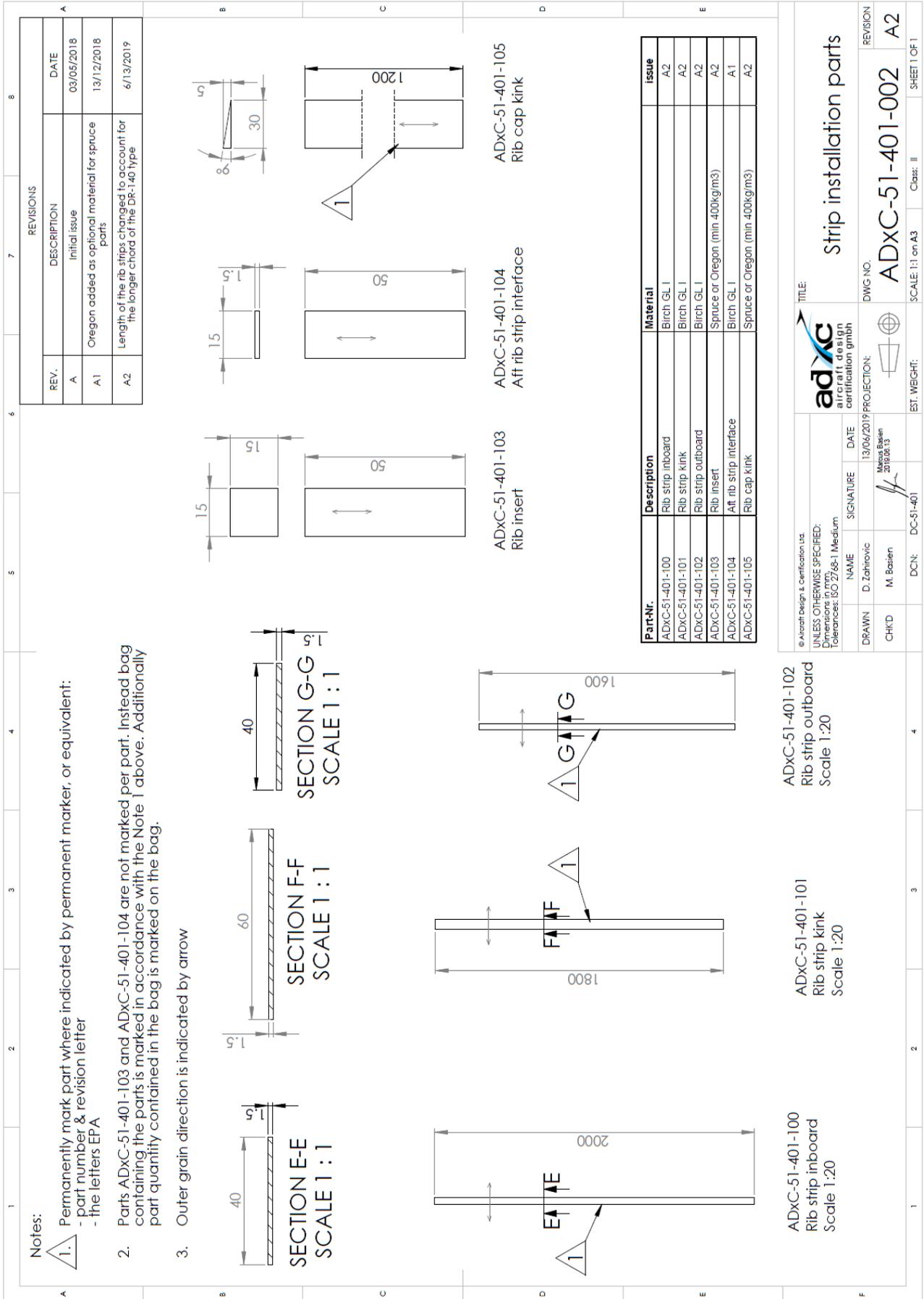


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| © Aircraft Design & Certification Ltd. UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS TOLERANCES: ISO 2768-1 Medium | | TITLE adxc aircraft design certification gmbh | |
| DRAWN | D. Zahrnovic | SIGNATURE | DATE |
| CHKD | M. Bajtien | | 13/06/2019 |
| DCN: | DC-51-401 | PROJECTION: | |
| EST. WEIGHT: | | DWG NO.: | ADxC-51-401-001 |
| SCALE: | 1:20 on A3 | CLASS: | II |
| | | REVISION | C1 |
| | | | SHEET 2 OF 4 |



| | | | | | |
|--|---------------------|--|------------------|-------------------------------|--------------------------|
| | | adxc aircraft design certification gmbh | | TITLE: Rib strip installation | |
| <small>© Aircraft Design & Certification Ltd. UNLESS OTHERWISE SPECIFIED: Dimensions in mm. Tolerances: ISO 2768-1 Medium</small> | | SIGNATURE: | DATE: 13/05/2019 | PROJECTION: | DWG NO.: ADxC-51-401-001 |
| DRAWN: D. Zaitovic | CHECKED: M. Bostien | DCN: DC-51-401 | EST. WEIGHT: | SCALE: 1:10 on A3 | CLASS: II |
| | | | | REVISION: | SHEET 3 OF 4 |







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