Chapter 53

Fuselage
## Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-00-00</td>
<td>GENERAL</td>
<td>3</td>
</tr>
<tr>
<td>53-00-01</td>
<td>Canopy</td>
<td>11</td>
</tr>
<tr>
<td>53-00-02</td>
<td>Canopy Glass</td>
<td>11</td>
</tr>
<tr>
<td>53-00-03</td>
<td>Main Fuselage Cover</td>
<td>14</td>
</tr>
<tr>
<td>53-00-04</td>
<td>Bottom Fuselage Cover</td>
<td>14</td>
</tr>
</tbody>
</table>
The fuselage structure of the EXTRA 300L consists of a TIG-welded steel tube construction integrating the wing and empennage connections (refer to Figure 1).

The particular areas of the fuselage are covered with different materials (also refer to Chapter 51-00-01 "Access Panel Identification"): Both halves of the engine cowling consist of glass fibre laminate and honeycomb. The main fuselage cover consists of glass fibre, carbon fibre and aramid laminate. The bottom fuselage cover is made of carbon fibre and aramid fibre laminate, the cuffs of carbon fibre laminate. The lower rear part of the fuselage is covered with fabric. The window portion is of acrylic glass. The tail fairing consists of glass fibre laminate and the tail side skins are made of aluminium sheet metal. The layer sequences of the composite parts are shown in Figures 2-6.

All composite parts, as protection against moisture and UV radiation, are coated with an unsaturated polyester gel-coat, an acrylic filler and finally with an acrylic paint.

For repair of composite parts and steel components refer to Chapter 51. The repair of fabric has to be executed in accordance to the FAAAC 43.13-1A.
Fuselage Steel Tube Design
Figure 1
Layer Sequence Top Half of the Engine Cowling

Figure 2
Layer Sequence Bottom Half of the Engine Cowling

Figure 3

1. Gelcoat Scheuffer T 30
2. 1 * Interglass 92125 +90° (overall outer layer)
3. Local reinforcement 1 * Interglass 92140 +45°
4. Local reinforcement 1 * Interglass 92140 +45°
5. Honeycomb ECA 4.8 -29 R, t = 5 mm (0.19")
6. 1 * Interglass 92125 +90° (overall inner layer)
7. Foam stringer 10 mm(0.4") 20 mm(0.8")
8. Bolting edge 3 * Interglass 92140 +45° b=120 mm(4.7")
9. Cooling air inlet
   6 * Roving Tenax J HTA 5181 1600 tex
10. Cooling air inlet
    Reinforcement 1 * Interglass 92125 +90° b=120 mm(4.7")
11. Air intake
    2 * Interglass 92125 +45°
12. Fire protection paint (WEDOFLUGAT N 56582)
Layer Sequence Main Fuselage Cover from Ser. N° 11
Figure 4, Sheet 2
Layer Sequence Bottom Fuselage Cover

- Vertical Schotter 15D, white with hammer 57D on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane

Layer Sequence Cuffs

- Vertical Schotter 15D, white with hammer 57D on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane
- Glassfabrics Interplas 927D
- Layer on the whole plane

RH Cuff symmetrically

Laminating resin for steps 1-6
Epoxid resin Baullite L20/SL

Figure 5
Layer Sequence Tail Fairing from Ser. No. 52
Figure 6, Sheet 2

Layer Sequence Tail Fairing up to Ser. No. 51
Figure 6, Sheet 1

1. Gelcoat Scheffer T 30
2. 2 * Interglas 92125 x90°
3. Reinforcement 2 * Interglas 92125 x±60° b=100 mm (3.9")
**53-00-01**

**Canopy**

**Removal/Installation**

1. Open canopy.

**CAUTION** Support the canopy by hand before disconnecting the opening limiter strap.

2. Remove the attachment bolt of the opening limiter strap.

3. Push canopy to front and remove.

4. Install in reverse sequence of removal.

**53-00-02**

**Canopy Glass**

**Replacement**

1. Remove canopy per Chapter 53-00-01.

2. Remove the old canopy glass.

3. Gently remove remaining glue with a chisel.

4. Sand down the bonding area on the canopy frame completely (sandpaper grit/P120). Check that there are no reflecting areas left.

5. Fit the new canopy glass in the canopy frame. Opening between canopy glass and canopy frame about 2-4mm.

*Typical cross section of canopy bonding area*

*Figure 7*
6 Secure the canopy glass in the frame. Draw a positioning line (see figure 7) and position markings on the inside (see figure 8).

7 Prepare canopy glass for bonding.

8 Remove a strip (width approx. 50mm) from the protective layer from the outside along the canopy glass bonding area.

9 Place fine tape (width 3mm) on the outside opposing the positioning line on the inside.

10 For protection purposes, place 3 layers of tape as depicted in figure 9.

11 Sand down the canopy glass up to the fine tape line (use Scotch Brite Handpad Medium). Check that there are no reflecting areas left.
12 Remove the fine tape.

13 Prepare adhesive (3M Scotch-Weld Urethane Adhesives 3549 B/A): Thoroughly mix approx. 300 g (approx. 10.6 oz.) adhesive (weight ratio white base : brown accelerator - 100 : 109, 40-70 minutes application time at RT). Mix approximately 15 seconds after a uniform color is obtained.

14 Put adhesive on the bonding area. For maximum bonding strength, apply product to both canopy glass and canopy frame.

15 Place canopy glass in canopy frame. Observe correct position using position markings.

16 Apply pressure on canopy glass using tightener to hold it in place.

17 Remove adhesive remainders with wooden spatula.

18 Curing time: min. 75 °F 8h
               68 °F 15h

19 The next day: Remove tightener and remove canopy from form.

20 Sand down (using Scotch Brite Handpad Fine) a small area around the outside edge between canopy frame and canopy glass (area A in figure 10).

21 Apply primer (EP801-1552, curing time: 24h) before applying filler (Glasurit 839-53) and refinish the area.

**CAUTION** Make sure, the filler does not get in contact with untreated canopy glass.
22 Sand down (using Scotch Brite Handpad Fine) the overlapping part between canopy glass and canopy frame on the inside (Area B in figure 10).

23 Apply primer (Glasurit 934-0) and refinish the area (Nextel).

53-00-03 Main Fuselage Cover

Removal/Installation

1 Remove the canopy per Chapter 53-00-01.
2 Disconnect the pitot hoses from the front instruments.
3 Remove the instrument cover per Chapter 31.
4 Remove the rear canopy hinge.
5 Remove the filler neck attachment screws.
6 Remove the main fuselage cover attachment screws.
7 Remove the main fuselage cover.
8 Install in reverse sequence of removal.

53-00-04 Bottom Fuselage Cover

Removal

1 Remove cowling and landing gear cuffs as per Chapter 51-00-01.
2 Remove main fuselage cover as per Chapter 53-00-03
2 Remove bottom fuselage cover by removing the attachment screws.
Installation

The cockpit area must be thoroughly sealed and thus separated from the engine compartment. Gases or fluids could get into the cockpit area.

Critical areas to be observed are the following:
Position A and D of Figure 1A, where different parts converge (firewall, aluminium profile, bottom fuselage cover and exhaust area covering sheet)
Position B and C, where a bent corner ends in a bore hole.

1 Position bottom fuselage cover in its original position and install attachment screws.

2 Install bottom cowling attachment screws (one on either side) without cowling present (see two outer circles in Figure 1A).

3 Loosen clamp screws on gascolator drain and fuel pump vent lines for easy access (see inner dotted circles).

4 Prepare PR-812 firewall sealant by mixing brown part A with black part B with weight ratio 2.5:100.

5 Clean areas (from inside and outside) with solvents at four positions pointed out by the arrows in Figure 1A. Immediately thereafter, dry these areas with a new dry cloth.

6 At the gascolator drain (position A) seal the remaining gap between firewall and bottom fuselage cover from inside and outside with PR-812 firewall sealant.
Minimum sealant thickness approximately 1/8 inch (= 3 mm).

7 Repeat step 6 at positions B, C and D.

8 Cure for at least 24 hours at room temperature.

9 Fasten clamp screws on gascolator drain and fuel pump vent lines.

10 Remove the two bottom cowling attachment screws.

11 Reinstall main fuselage cover as per Chapter 53-00-03

12 Reinstall landing gear cuffs and engine cowling as per Chapter 51-00-01.