Chapter 53

Fuselage
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The fuselage structure consists of a TIG-welded steel tube construction integrating the wing and empennage connections as well as the seat (refer to Figure 1).

The particular areas of the fuselage are covered with different materials as shown in the following list (refer to Chapter 51-00-01 "Access Panel Identification"):

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The one-piece canopy frame is built of carbon fibre laminate and rovings. The window portion is made of acrylic glass.

The layer sequences of the engine cowlings and the fuselage covers are shown in the 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, aluminium and steel components refer to Chapter 51. The repair of fabric has to be executed in accordance to the FAA AC 43.13-1A.
Fuselage Steel Tube Design
Figure 1
Layer Sequence Top Half of the Engine Cowling

Figure 2

1. Gelcoat on the whole plane
   1xCCC452

2. 1xCCC452 circular
   25mm under honeycomb

3. 1xCCC452

4. Honeycomb 5mm ECA-R4.8-29

5. 2xCCC452 circular

6. 2xCCC452 screwing frame

7. 2xCCC452

8. 1xCCC452

9. 1xCCC452 circular
   25mm over honeycomb

10. 1xCCC452
Layer Sequence Bottom Half of the Engine Cowling

Figure 3

1. Gelcoat on the whole plane
   1x9210 20mm

2. 1xCCC452

3. 1xCCC452 circular
   25mm under Honeycomb

4. Honeycomb 5mm ECA-R4.8-29

5. 2xCCC452 circular
   20 mmL

6. 2xCCC452 screwing frame

7. 1xCCC452 circular
   25mm over Honeycomb

8. 1xCCC452
Layer Sequence Main Fuselage Cover

Figure 4, Sheet 1
Layer Sequence Main Fuselage Cover

Figure 4, Sheet 2
1) Gelcoat T35, 50g, on the whole plane, CF-Yarn + 1 x 92110 in rebate area with HM25

2) 1 x CCC452, 0/90°

3) Honeycomb Sonic XF 2mm, 0°

4) Reinforcement 3xCCC452, ±45°

5) 1 x CCC490, 0/90°

6) Reinforcement profile TH50 with CCC452

**Layer Sequence Side Cover**

**Figure 5**
Layer Sequence:

1. 1 Layer Carbon fabric CCC 447 on the whole plane 0°190°
2. 1 Layer Carbon fabric CCC 447 50mm wide tape; see drawing ±45°
3. 1 Layer Carbon fabric CCC 447 50mm wide tape; see drawing ±45°
4. 1 Layer Carbon fabric CCC 447 on the whole plane 0°190°
53-00-10  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.

53-00-11  Canopy Glass

Replacement

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