

Small Repairs of Composite Materials

Doc.-No.: P520-901502

**STEMME S10
Variant S12**


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0.1. RECORD OF REVISIONS

Any revision to the present guideline must be recorded in the following table.

The newly changed text in the revised page will be indicated by a black vertical line in the right-hand margin, and the revision date will be shown in the right footer section of the page.

Rev. No.	Date	Pages affected	Reason for revision	Signature
Initial issue	Apr 20, 2017	all	Complete new issue valid for S12	

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1. GENERAL REMARKS ON REPAIR

1.1. GENERAL

The purpose of this repair guideline is to provide basic repair instructions for minor damage to the GFRP and CFRP* structure of the powered sailplane types. Detailed information regarding all the processing of GFRP and CFRP is not given in this guideline since it is assumed that all repair work will only be carried out by people with practical experience in the use of these materials. Further information can be found in MIL-HDBK-23, Part 1, U.S. Government Printing Office, Washington 25 D.C., USA.

The repair of sailplanes should not be used to learn FRP laminating techniques.

Before beginning any repair work carefully determine what materials, tools, jigs and repair methods are to be used. The required information can be found partly in this guideline. To ensure that the performance of the aircraft is maintained, the surface finish of repair work should be the same quality as the original finish.

If there are any doubts whether the damage can be repaired or not, contact STEMME AG for further information.

The information in this guideline refers only to repairs of minor damage like holes in the underside of the fuselage, or damage from hangar accidents etc.

Major damages which are outside the scope of this guideline must be repaired by a certified repair workshop. It must be authorised by STEMME AG to carry out composite aircraft structure work.

For the conversion of technical data the following factors have been used:

1 in	25.4 mm
1 oz.	28.349 g
1 sqft	0.0929 m ²

*(Glass and Carbon Fibre Reinforced Plastics)

1.2. DEFINITION OF DAMAGES

1.2.1. Minor damages

Only the damages listed below can be considered as small damages and repaired by qualified personnel:

- Any damages limited to paint, UP-Gelcoat or filler
- Permissible dimensions of holes, dents and cracks are listed in the following table:

RFP Parts	Average Hole or Dent Diameter		Crack Length
	[in]	[mm]	[in]
Front fuselage (cockpit)	2	50	3
Tail boom (rearfuselage)	1	25	2
Wing	3.2	80	4.8
Flap, Aileron	1	25	1.6
Rudder, Elevator	1	25	2
Horizontal Tail/Fin	1.2	30	2

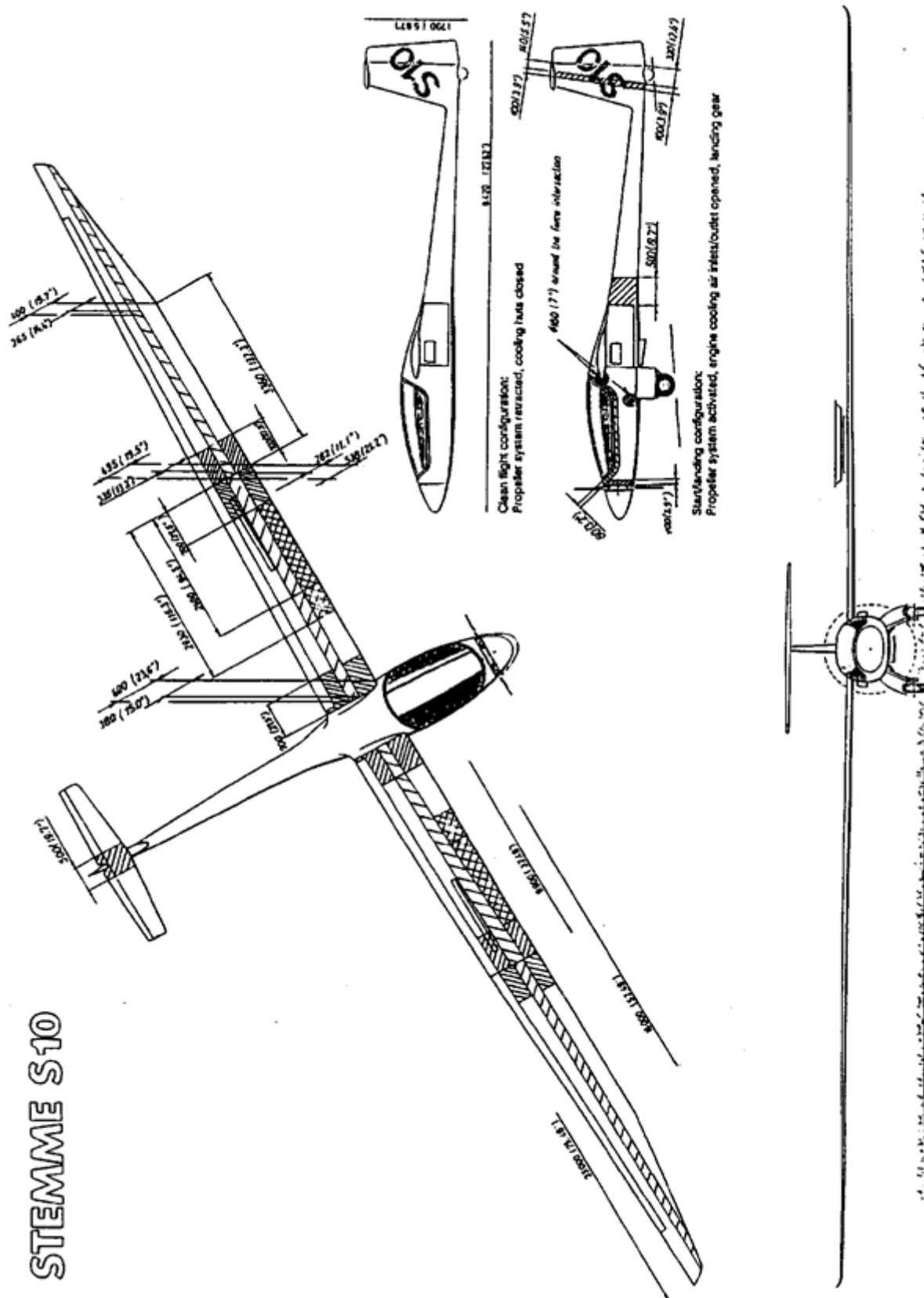
The parts above should not be damaged in force intersection or reinforced areas (i.e. spars, ribs).

If a repair on a control surface is necessary, please see also chapter 6.4 of the Maintenance Manual.

1.2.2. Additional restrictions

In general, all repair work on force intersection and reinforced areas must be carried out by a certified repair station for composite aircraft structure work. If there are any doubts, please contact the manufacturer. An overview of the main critical areas is shown in Figure 1.

WARNING: Damages in the marked areas shown in Figure 1 are to be considered as major damages!



STEMME S10

Figure 1 Stemme S10 series major damage areas (incl. S12)

2. MATERIAL LIST FOR FRP REPAIRS

2.1. MATERIAL FOR STEMME S10-S12 AIRCRAFT

2.1.1. Types of composite fibre materials and their overlap dimensions

Glass fabrics

INTERGLAS No.	WLB-No. LN 9169	Weight		Weave Pattern	Overlap [in]
		[oz/sqft]	[g/m ²]		
90070	8.4505.60	0.26	80	plain	0.5
92110	8.4548.60	0.54	163	twill 2/2	0.8
92125	8.4551.60	0.92	280	twill 2/2	1.2
92140	8.4554.60	1.28	390	twill 2/2	1.6
92145	8.4520.60	0.72	220	unidirectional	2.0

For all glass fabrics: Finish I 550

Manufacturer: INTERGLAS AG
Benzstraße 14
D-89155 Erbach
Tel.: +49 (0) 7305-955 444

Carbon fabrics

INTERGLAS No.	WLB-No. LN 9169	Weight		Weave Pattern	Overlap [in]
		[oz/sqft]	[g/m ²]		
98140	8.3509.80	0.66	200	plain	1.2
98141	8.3520.80	0.66	200	2 x 2 twill	1.2
98130	8.3508.80	0,53	163	plain	1.2
98110	8.3520.80	0,30	93	plain	0.6
98340	-	0.56	170	unidirectional	2.0

Manufacturer: INTERGLAS AG

UD-Carbon fabrics

Repairs of damages on the primary structure including carbon tapes are considered as major repairs and must be performed by a certified repair station rated for composite aircraft structure work.

Aramide(Kevlar)fabrics

INTERGLAS No.	WLB-No. LN 9169	Weight		Weave Pattern	Overlap
		[oz/sqft]	[g/m ²]		[in]
98612	-	0.55	170	twill 2/2	0.6

Manufacturer: INTERGLAS AG

Rovings

Repairs of damages on the primary structure including glass or carbon rovings are considered as major repairs and must be performed by a certified repair workshop authorised to carry out composite aircraft structure work.

2.1.2. Resin and hardener

Manufacturer/Supplier: HEXION B.V.
Seattleweg 17
3195 ND Pernis - Rotterdam
The Netherlands
Tel: +31 6 52511079
Email: 4information@hexion.com

Laminating resin: EPIKOTE Resin MGS LR 285 (formerly Scheufler L285)

Hardener: EPIKURE Curing Agent MGS LH 285, 286 or 287
(formerly Scheufler 285, 286 or 287)

Mixture ratio: 100:40 ±2 parts by weight
100:51 ±2 parts by volume

Processing temperature: 60-86°F (15-30°C)

Setting(initial curing): 24h/68-77°F (24h/20-25°C)

Heat treatment (hot curing): 15h/122-131°F (15h/50-55°C)

2.1.3 Fill material for epoxy-resin

Chopped cotton fibre

Manufacturer: Schwarzwälder Textilfabrik
Austr. 3
D-77773 Schenkenzell
Germany
Tel: +49 (0) 7836-570

Type: FB1/035 (white)

Microballoon

Manufacturer: Brenntag AG
Stinnes-Platz 1
D-45472 Mülheim (Ruhr)
Germany
Tel: +49 (0) 208 7828-0

Type: BJ0-0930 (brown)

Thixotropic agents

Manufacturer: VOSS Chemie GmbH
Esinger Steinweg 50
D-25436 Uetersen
Germany
Tel: +49 (0) 4122-717-0

Type: Aerosil

Manufacturer: CABOT GmbH

Supplier: Lange + Ritter GmbH
Dieselstraße 25
D-70839 Gerlingen
Germany
Tel.:+49 (0) 715620060

Type: CAB-O-SIL M5

2.1.4. Foam

Manufacturer: DIAB GmbH
Max-von-Laue-Straße 7
D-30966 Hemmingen
Germany
Tel: +49 (0) 511-20340

Type: Divinycell H60

Thickness		Application
[in]	[mm]	
0.118	3	Rudder
0.157	4	Wing flaps, Aileron, Outer wing
0.236	6	Wing extensions, baggage compartment
0.315	8	Inner wing, Vertical Fin, Horizontal Fin, Centre Fuselage Cowling

2.1.5. Paint

UP- Gelcoat (for propeller blades)

Manufacturer: HEXION B.V.
Type: UP Gelcoat T35
Hardener: **SF 2** **SF10**
Mixing ratio: **100 : 2**(parts by weight) **100 : 10** (parts by weight)
Thinner: SF (add up to 10%)
Pot life approx.: 30-45min at 70-77°F (20-25°C)
Gelling time approx.: 100-150min, depending on temperature and layer thickness
Non tacky after approx.: 2-4h at 70-77°F (20-25°C)
Curing time approx.: 5-6h at 70-77°F (20-25°C)
Completely cured after: 2-3days at 70-77°F (20-25°C)

Filler for acrylic paint and for polyurethane paint

Autocolor filler

Manufacturer: PPG Deutschland Sales & Services GmbH
Geschäftsbereich Nexa Autocolor
Postfach 201 - 40702 Hilden
Germany

Type: P580-2100

Binder: 2K-EP Primer P580-2100

Hardener: 2K-EP-Hardener P210-833

Thinner: Thinner P580-1392 "normal"

Mixing ratio: 8:1:2 parts by volume

Pot life: 6-8h at 68°F (20°C)

Non tacky after approx.: 30min at 68°F (20°C)

Grindable after approx.: min. 16h at 68°F (20°C)

DuPont filler acrylate

Manufacturer: Du Pont de Nemours (Deutschland) GmbH
Horbeller Straße 15
50858 Köln

Type: 2K- Acrylic- Primer DuPont LE2001

Binder: DuPont LE2001 Primer (White)

Hardener: DuPont AK260

Thinner: DuPont XB383 Thinner standard

Mixing ratio: 5:1: up to 0.25 parts by volume

Pot life: 2-3h at 68°F (20°C)

Grindable after approx.: min. 4h at 68°F (20°C)

Lesonal 2k epoxy filler

Manufacturer: Lesonal
Sieglestraße29
P.O. box 30 07 09
D-70469 Stuttgart
Germany

Type: Lesonal 2k Epoxy Filler
Binder: Lesonal 2k Epoxy Filler
Hardener: Hardener for Lesonal 2k Epoxy Filler
Thinner: Lesonal Multi Thinner HT
Mixing ratio: 2:1:0.8 parts by volume
Pot life: 6h at 68°F (20°C)
Non tacky after approx.: 30min at 68°F (20°C)
Grindable after approx.: min. 8h at 68°F (20°C)

Standex filler „Epoxy-Grundierung 5:1/Epoxy-Surfacel 5:1“

Manufacturer: Standox GmbH
Christbusch 45
42285 Wuppertal
Germany

Type: Standox 2k Epoxy Filler 5:1
Binder: Standox 2k Epoxy Filler 5:1
Hardener: Standofleet Epoxy-Hardener
Thinner: Standofleet 2K-Thinner
Mixing ratio: 5:1:up to to 0.3 parts by volume
Pot life: 8h at 68°F (20°C)
Next layer after approx.: 30-60min at 68°F (20°C)
Grindable after approx.: 12h at 68°F (20°C)

Acrylic paint

Lesonal Kl. 53 Carcoat BT

Manufacturer: Lesonal
Type: Kl. 53 Carcoat BT
Binder: Lesonal 2k Epoxy Filler
Recipe No.: BT-300
Hardener: Z53
Recipe No.: 07 - 20102
Thinner: V 53
Recipe No.: 06 - 30097
V 85 B
06 - 10025
Mixing ratio: 4:1:1 parts by volume
Pot life: 2.5h at 68°F (20°C)
Non tacky after approx.: 2h at 68°F (20°C) or
40min at 104°F (40°C)
Grindable after approx.: 12h at 68°F (20°C) or
2h at 104°F (40°C)

Mason Super Thane 2K S80 Topcoat

Manufacturer: Akzo Nobel Car Refinishes bv
Rijksstraatweg 31
NL-2171 AJ Sassenheim
Netherlands

Type: Mason Super Thane 2K S80 Topcoat

Binder: Lesonal 2k Epoxy Filler

Recipe No.: mixed by:
Mason Super Thane 2K S80 Binder and
Mason Super Thane 2K S80 Mixcolour 01
part by volume 60:40

Hardener: Mason Super Thane 2K S80 H5 Standard

Thinner: Mason Super Thane 2K S80 T5 Standard

Mixing ratio: 2:1: up to max. 0.15 parts by volume

Pot life: 8h at 68°F (20°C)

Non tacky after approx.: 10-15min at 68°F (20°C)

Grindable after approx.: 6-8h at 68°F (20°C)

Standex HS-Decklack

Manufacturer: Standox GmbH

Type: Standox 2k HS-top-coat

Binder: Standox 2k HS-top-coat

Hardener: Standox 2k HS-hardener

Thinner: Standox 2k HS-thinner

Mixing ratio: 3:1: up to 0.15 parts by volume

Pot life: 2-3h at 68°F (20°C)

Next layer after approx.: 5-15min at 68°F (20°C)

Grindable after approx.: 12h at 68°F (20°C)

Polyurethane paint

DuPont Imron 700

Manufacturer:	Du Pont de Nemours (Deutschland) GmbH Horbeller Str. 15 D- 50858 Köln Tel.: +49 (0) 60191620
Type:	Imron 700
Binder:	Polyurethane Binder AU170
Hardener:	Polyurethane Activator AU270
Thinner:	Polyurethane Thinner AU370
Mixing ratio:	4:1: 0.5 up to 1
Pot life approx.:	4h at 68°F(20°C)
Non tacky after approx.:	0.5h at 68°F (20°C)
Full strength after:	12h at 68°F (20°C)

Fire resisting paint

The fire resisting paint covers inside surfaces of composite parts situated around the engine compartment (e.g. cowlings) and covers also composite parts situated in the exhaust plume.

The fire resisting paint is a coating system by two components. First layer is the fire resisting paint as base coat sealed by the clear coat for covering the fire resisting paint.

Fire resisting paint

Manufacturer:	Courtaulds Aerospace
Supplier:	Röder Präzision GmbH Flugplatz D- 63329 Egelsbach
Type:	N56582/T508
Hardener:	---
Thinner:	water
Mixing ratio:	pure for painting, 9:1 for spraying
Pot life:	---
Non tacky after approx.:	2h at 68°F (20°C)
Full strength after:	8h at 68°F (20°C)

Clear coat for fire resisting paint

	Type A	Type B
Manufacturer:	Courtaulds Aerospace	Spies-Hecker GmbH Horbeller Str. 17 D- 50858 Köln
Supplier:	Röder Präzision GmbH Flugplatz 63329 Egelsbach	DuPont Performance Coatings Logistikcenter Berlin Motzener Str. 19 D-12277 Berlin
Type:	Clear Coat 4232-0303	Permasolid HS Clear Coat 8035
Hardener:	N39/1327 or N50/2509	Permasolid HS 3310
Thinner:	N39/3091	Permacron Thinner 3380
Mixing ratio:	4:2:1.5	2:1 :0.75
Pot life:	2h at 68°F (20°C)	1h at 68°F (20°C)
Non tacky after approx.:	---	30min at 68°F (20°C)
Full strength after approx.:	2h at 68°F (20°C)	24h at 68°F (20°C)

Putty/sanding surfacer

Polyester sanding surfacer

Manufacturer: VOSS Chemie GmbH
EsingerSteinweg 50
D-25436 Uetersen
Germany
Tel: +49 (0) 4122-717-0

Filler: Ferro-Elastic-Weiß (FEW)

Hardener: BPO farblos (colourless)

Mixture ratio: 100:1 to 3 parts by weight

Pot life: approx. 4min

2.1.6.Waxing-polish

Polish for UP-Gelcoat

Distributor: Matzerna- Werk GmbH KG
Industriestr. 25
D-76470 Ötigheim
Germany
Tel.: +49 (0) 7222-91 57 0

Type: Polish PO 25/2
"Glanzwachs 16"

Polish for acrylic and polyurethane paint

Manufacturer: Farecla Products Ltd.
Broadmeads, Ware, Herts. SG12 9HS, England
Tel: +44 (0) 920 485 548
Tel: +44 (0) 920 466 557

- a. Superfinish rubbing compound „Rapid Grade G6“ (STEMME parts no. A301)
- b. Superfinish rubbing compound „Regular Grade G3“ (STEMME parts no. A302)
- c. Superfinish liquid compound „Extra Fine Grade G10“ (STEMME parts no. A303)
- d. Superfinish compound applicator „G-Mop M14“ (STEMME parts no. A304)

3. INSTRUCTIONS FOR FRP REPAIRS

3.1. GENERAL




To ensure optimal working conditions, the room temperature during repair work and at least 12 hours later should be maintained between 68-77°F (20-25°C). After setting, the parts can be hot cured. It may be necessary to make a hot curing tent using a plastic foil or styrofoam panels.

The humidity should not be greater than 50%.






Repairs should be carried out so that the bonding is wet over dry. The outline of the repair hole must be round. For plain and twill 2/2 woven fabrics the sanded slope should be 1:50 and for unidirectional fabrics it should be 1:100 relating to the depth of the repair. The component weight of resin and fabric must be equal (50:50). Specific details concerning the handling and use of fibre reinforced plastics can be obtained from various publications i.e. „Petite Plane Patch Primer“.

Note: Only materials listed in Section 2 must be used.
This guideline is applicable only for minor damages as defined in Section 1.2.

3.2. REPAIRING ON A FRP SHELL

<p>1) Cut out the damaged area and roughen the surrounding area for the required overlap (see Section 2.1.1./2.2.1./2.3.1.). Sand the shell so that the individual layers of fabrics can be seen like plywood layers. Roughen the paint/filler at least 1in (25mm) around the repair.</p>	
<p>2) Lay up the repair plies. Note the orientation. If the orientation is not clear please contact Stemme AG.</p>	
<p>3) Let cure at room temperature. 4) Then hot cure according to 2.1.2 5) Sand the area down to the old contour. 6) Finish the repaired area by using sanding surfacer, filler and paint.</p>	

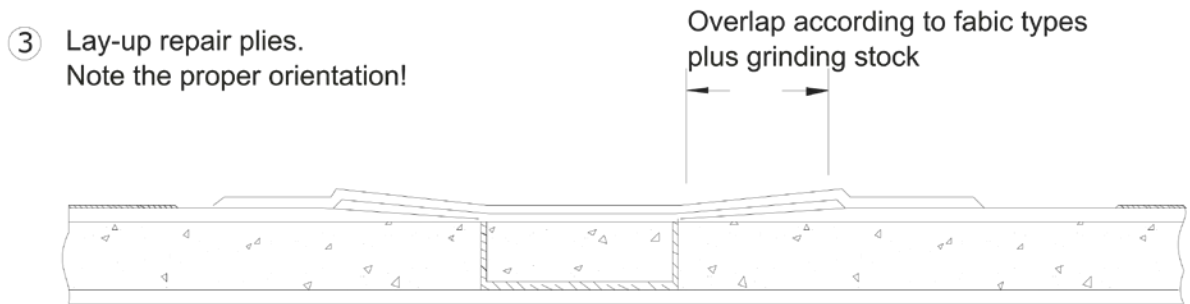
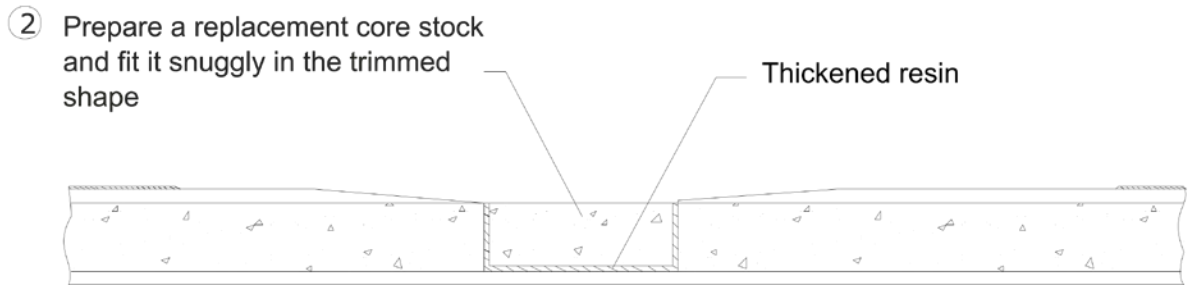
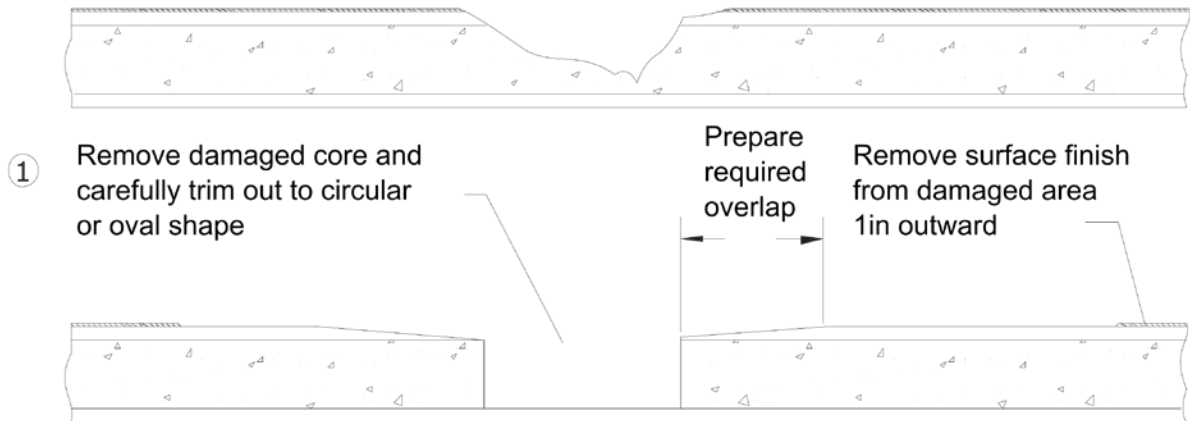
3.3. REPAIRING THE OUTER SKIN OF A SANDWICH PANEL

<p>1) Cut out the damaged area and roughen the surrounding area with 80-grit sandpaper.</p>	
<p>2) Fill the damaged foam area with resin thickened by microballoons and let it cure.</p>	
<p>3) Sand the area down and laminate the new fabrics onto the repair.</p>	
<p>4) Let cure at room temperature. 5) Then hot cure according to 2.1.2</p>	
<p>6) Sand the area down to the old contour. 7) Finish the repaired area by using the sanding surfacer, filler and paint.</p>	

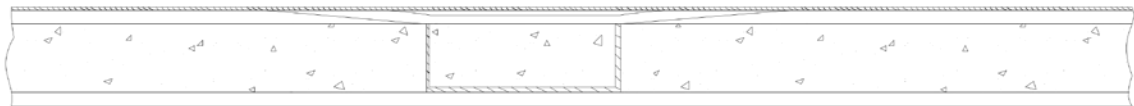
3.4. REPAIRING THE OUTER AND INNER SKIN OF A SANDWICH PANEL

For the first step see Section 3.3. Additionally remove as much foam as necessary so that the entire damage to the inner skin plus enough undamaged inner skin as is required for overlapping can be seen.

- 1) Remove the damaged parts of the inner skin. If the inner skin remains strong enough to provide a basis for laminating, ensure a gap of 0.04-0.08in (1-2mm) for glueing the foam.
- 2) Grind properly and laminate the new fabrics over it. Insert a suitably cut piece of foam and glue it with resin thickened by microballoons.
- 2) If the inner skin is damaged to such an extent that the above procedure cannot be used, the inner skin layers should be applied to the foam first (vacuum bagging) and, after hardening, glued with thickened resin (thickened by chopped cotton fibres).
- 3) For laminating on the foam, a thin layer resin thickened by microballoons should be applied to the foam to avoid air bubbles.
- 4) Complete analogously 3.3 (steps 4 to 7).



④ After curing, grind the surface to contour and refinish repair area



3.5. OUTER SKIN FINISH

Depending on the wishes of the customer, the material for the outer skin finish of all composite parts, except the propeller, is either polyurethane paint or acrylic paint combined with Epoxy- or Acrylic-Filler-Systems. The propeller is painted with UP-Gelcoat.

3.5.1 UP-Gelcoat

Caution: Any repair on propeller blades can result in imbalance and therefore in the need for propeller weight balancing

On the STEMME S10-S12 UP-Gelcoat is only used on the propeller blades. Refer to Maintenance Manual STEMME S12 first!

WARNING: Balancing the variable pitch propeller or its assemblies may only be performed by the manufacturer or by authorised and licensed maintenance facilities according to the specific instructions and using appropriate equipment.

The repair should have exactly the level or should be only slightly higher as the surrounding skin surface.

Sand the cured repair surface with dry 80 to 120 grade sandpaper. Fill with sanding surfacer, leave to dry and sand again with dry sandpaper. When the surface is smooth, sand the repair area and at least 1in (25mm) of the surrounding gelcoat with wet sandpaper grade 400. Spray the repair area with 2 coats of Gelcoat T35.

After the UP-Gelcoat has hardened, sand with 600 grade and wet sandpaper until the surface is smooth. Polish with a power angle sander (electric drill or similar with cloth polish wheel). Apply a block of wax to the rotating polishing wheel and then polish the repaired area. Do not polish in only one direction and do not polish one spot for too long so that overheating occurs.

Further information can be found in the "Recommendation for Maintenance of UP Gelcoat T30/UP Gelcoat T35" (see Appendix of the Maintenance Manual STEMME S12).

3.5.2 Filler

Before the acrylic or polyurethane paint can be sprayed, the surface must be coated with a thin layer of filler. Filler and paint are a system and therefore do not try to spray acrylic paint on surfaces without EP-filler. If the layer of filler is still intact, continue with 3.5.2.3 Preparations for acrylic and polyurethane Paint.

3.5.2.1 Preparations for EP-filler

- Sand the repair area until its surface is smooth and without holes. Use wet sandpaper, grade 800, for the last step.
- Clean the surface with fresh water and dry it. If necessary, use

compressed air to rid the surface of dust and particles.

- A dust-free room is required for spraying.

3.5.2.2 Application of filler

F21 EP- filler, white

- Mix the components according to data sheet thoroughly before spraying.
- Spray 3 to 4 thin layers of filler so that the layers melt into each other.
- Let the filler harden for 12 hours at 68°F (20°C).
Attention! EP-filler does not cure below 59°F (15°C) !
- Sand the filler with wet sandpaper, grade 800, until everything is smooth and without holes again

Lesonal 2k epoxy filler

- Mix the components thoroughly spraying according to data sheet.
- Spray 2 to 3 thin layers of filler so that the layers melt into each other.
- Let the filler harden for 8 hours at 68°F (20°C).
- Sand the filler with wet sandpaper, grade 800, until everything is smooth and without holes again.

Autocolor filler

- Mix the components according to data sheet thoroughly before spraying .
- Spray 3 to 4 thin layers of filler so that the layers melt into each other.
- Let the filler harden for 4-12 hours at 68°F (20°C).
Attention! EP-filler does not cure below 59°F (15°C) !
- Sand the filler with wet sandpaper, grade 800, until everything is smooth and without holes again

Standex Standofleet filler

- Mix the components according to data sheet thoroughly before spraying .
- Spray 3 to 4 thin layers of filler so that the layers melt into each other.
- Let the filler harden for 12 hours at 68°F (20°C).
Attention! EP-filler does not cure below 59°F (15°C) !
- Sand the filler with wet sandpaper, grade 800, until everything is smooth and without holes again

3.5.2.3 Preparations for acrylic and polyurethane paint

- Sand the surface with wet sandpaper, grade 1200, within approximately 400 mm around the repair area.
- Clean the surface with fresh water and dry it. If necessary, use compressed air to rid the surface of dust and particles.

- A dust-free room is required for spraying.
- Before spraying the repair area, make sure that the colour of the acrylic paint exactly matches the colour of the powered sailplane's surface. Make a test specimen, for example a test spraying, to verify this. Compare the colour of the hardened paint with the colour of the powered sailplane.

3.5.3 Application of acrylic paint

Acrylic Paint "Lesonal KI. 53 Carcoat BT"

- Mix the components according to data sheet thoroughly before spraying.
- Spray the prepared area. Spray up to 4 thin layers of acrylic paint so that the layers melt into each other. Wait 10 minutes before applying the next layer. Add 1.5 to 2 parts (by volume) of V53-thinner to the paint for the last layer.
- Wait 1 to 2 minutes after the last layer of paint has been sprayed, pour the rest of the paint out of the spray gun, add a small amount of Lesonal V85 B thinner, and spray the thinner in a thin haze on the prepared area (i.e. the whole sanded area).
- Let the acrylic paint harden for 48 hours at 68°F (20°C), or 16 hours at 104°F (40°C) respectively.
- Sand the painted area carefully by use of wet sandpaper, grade 1200.

Acrylic Paint "Mason Super Thane 2K S80"

- Mix the components according to data sheet thoroughly before spraying.
- Spray the prepared area. Spray up to 3 layers of acrylic paint so that the layers melt into each other. Wait 10 minutes before applying the next layer.
- Let the acrylic paint harden for 6-8h at 68°F (20°C).
- Sand the painted area carefully by use of wet sandpaper, grade 1200.

Acrylic Paint "Stadox Standofleet 2k HS-top-coat"

- Mix the components according to data sheet thoroughly before spraying.
- Spray the prepared area. Spray up to 3 layers of acrylic paint so that the layers melt into each other. Wait 10 minutes before applying the next layer.
- Let the acrylic paint harden for 12h at 68°F (20°C).
- Sand the painted area carefully by use of wet sandpaper, grade 1200.

3.5.3 Application of polyurethane paint

DuPont Imron 700

- Mix the components according to data sheet thoroughly before spraying.
- Spray the prepared area. Spray up to **2** layers of acrylic paint so that the layers melt into each other. Wait 10 minutes before applying the next layer.
- Let the polyurethane paint harden for 12h at 68°F (20°C).
- Sand the painted area carefully by use of wet sandpaper, grade 1200.

3.9. POLISHING

- Clean the surface with a sponge and fresh water, then dry it again.
- Spread a very small amount of polish type „Rapid Grade G6“ and some fresh water over the surface, then polish the surface using a water-soaked Superfinish compound applicator „G-Mop M14“ at about 1,500 rpm.

After the scratches caused by the sandpaper have disappeared, clean the surface and the compound applicator with fresh water, then continue with polish type „Regular Grade G3“.

- Clean the surface and the compound applicator with fresh water again, then continue with polish type „Extra Fine Grade G10“.
- Clean the surface with a sponge, fresh water, and if necessary some acetone, then dry it again.

After the completion of the polish, the surface must not be dull. If this is the case, start the polish again from the beginning.

3.8. REPAIRS ON CANOPY GLASS

All small repairs on canopy glass must be carried out by an authorized mechanic familiar with work on PMMA (polymethylmethacrylate) parts.

Caution: Canopy glass with cracks longer than 7.8in (200mm) must be replaced.