CARBON CUB EX
EXPERIMENTAL

CUBCRAFTERS

cubcrafters.com

COVER MANUAL

REV	CHANGE	DATE	NAME
1.0	INITAIL REVISION	01/07/2011	MST
1.01	REVISED FIGURE C9. ADDED FIGURES C10, C11, AND C12	11/06/2012	MST
1.02	ADDED FABRIC RIVETING AND RIB LACING. ADDED FIGURES C13, C14,C15, C16, AND C17	12/11/2012	MST
1.03	REVISED FUSELAGE PREP.	03/21/2013	MST
1.04	ADDED RIB STITCH FIGURES	03/18/2014	MST
1.05	REVISED SECTIONS 10,11, AND 12.	04/15/2014	MST

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SECTION 1 OVERVIEW

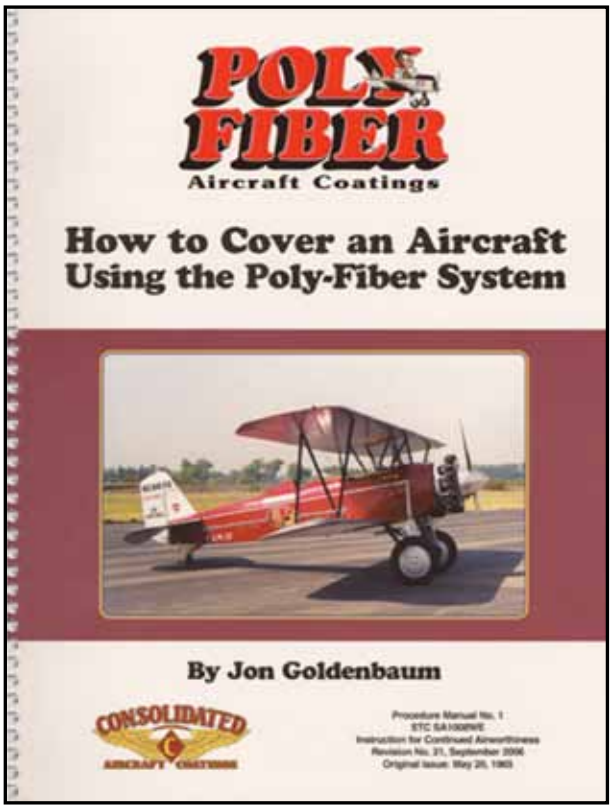
CubCrafters employs the Poly-Fiber Aircraft Fabric Covering Process (herein referred to as “Poly-Fiber”) for its aircraft. The designers of the Carbon Cub Kit have done their work with the intention that the Carbon Cub Kit be covered with Poly-Fiber also.

The instructions that follow address the basics of the Poly-fiber process and the particulars of the fuselage covering technique that should be followed for the Carbon Cub Kit. In case you haven’t sensed it, the Carbon Cub Kit deviates slightly from the “pure” Poly-Fiber instructions for the aircraft covering. The remainder of the covering process uses the conventional Poly-Fiber process.

SECTION 2 POLY-FIBER PROCESS

The Poly-Fiber process is well presented in books. It is not reasonable to try to paraphrase, condense or revise these manuals in this Carbon Cub Kit Build Manual as the authors did a good job the first time around. As such, you need to purchase a copy of this manual. You need to read and learn the process. It may seem daunting but mortals readily accomplish the process. Many award-winning planes have come from homebuilders just like you.

You can get the book from the Poly-Fiber people directly (see inset to the right) or from the EAA (as well as other book sellers).



PolyFiber
Box 3129
Riverside, California 92519
800-362-3490
information@polyfiber.com

While you are buying books, you may also want to get a copy of the paint color card so that YOUR paint scheme can become a reality. Good 'ole #143 "Cub Yellow" is available but you can also be wild!!

Last but not least, there are video instruction manuals on how to cover aircraft. A very good one is produced by and available through the EAA.

Let's launch into covering the fuselage.

SECTION 3 MASKING

Begin by cutting a piece of painter's thin plastic film approximately 3.5 ft. long. Open the film and spread it over the interior floorboard of the cockpit. Begin applying masking tape to the left rear of the cockpit. Ensure that half the width of the tape is applied to the floorboard and half to the protective film.

Do not allow the masking tape to fold over the edge of the floorboard. This will make tape removal very difficult later, after the fabric is on.

Photo 001

Photo 002

Photo 003

Photo 004

Photo 005

Photo 006

Ensure the aileron pulley is completely covered with masking tape.

Photo 007

Seal the plastic film where it wraps around the rudder cable.

Photo 008

Seal the entire edge of the floorboard to prevent overspray from reaching the surface of the floorboard. Overspray is very “sneaky”. It will go everywhere that it is not explicitly prevented from going. As such, mask very carefully. You will come to appreciate the sentiment that paint preparation is much more labor intensive than painting itself.

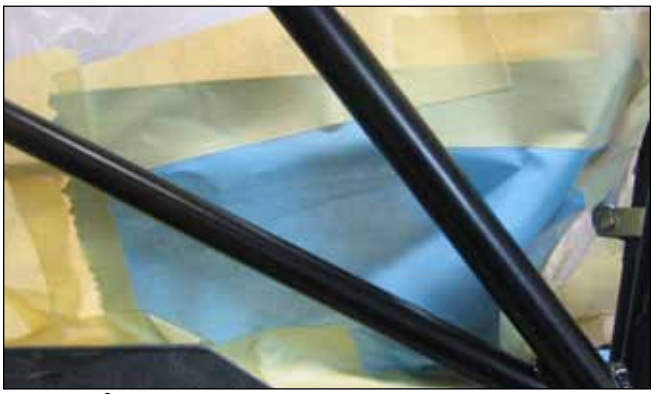


Photo 009

Use the blue paper as necessary if the plastic film was cut short.

Continue to seal the plastic film to the right side of the floorboard.

Photo 010

Tape plastic film to the rear of the cockpit storage area.

Photo 011

Apply masking tape to the bottom edge of the rear window frame with the sticky side facing inboard.

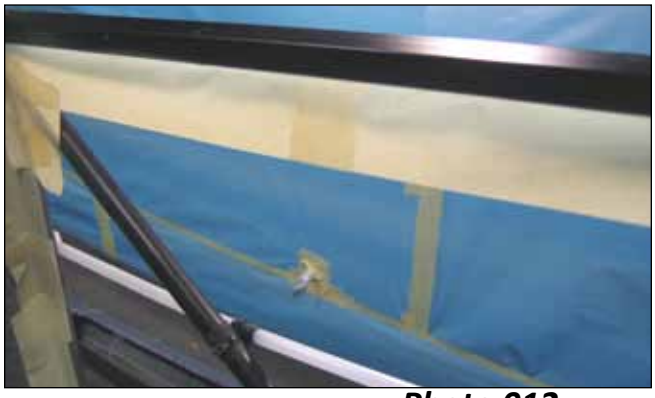


Photo 012

Continue to apply masking tape to the bottom of left side window to the forward end of window.

Photo 013

Photo 014

Apply 18” blue paper to the tape installed in the preceding step (the sticky-side-out tape).

Photo 015

Continue to apply the blue paper all the way to the front of the fuselage.

Photo 016

Seal the blue paper to the plastic film on the floorboard along the entire length of the left side.

Photo 017

Apply masking tape to the right side of the cockpit with the sticky side facing inboard as on the left side of cockpit.

Photo 018

Photo 019

Use 18” blue paper and apply tape from the rear of cockpit working toward the front.

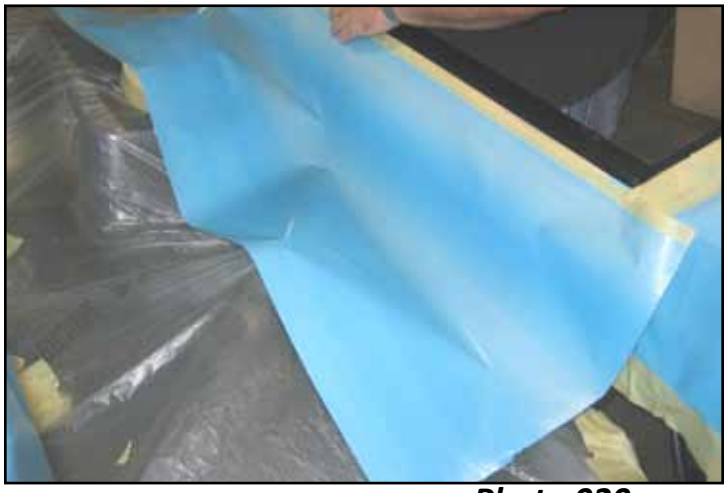


Photo 020

Split the paper around the rudder cables and seal the paper with masking tape.

Photo 021

Photo 022

Photo 023

Cover the area between the bottom of the panel and the floorboard with blue paper. Seal all open edges between paper and plastic.

Photo 024

Tape the bottom edge of the paper to the front of the firewall to protect the underside of the panel.

Photo 025

When taping down along the doorframe, keep the tape under the lip of the cowl spacer.

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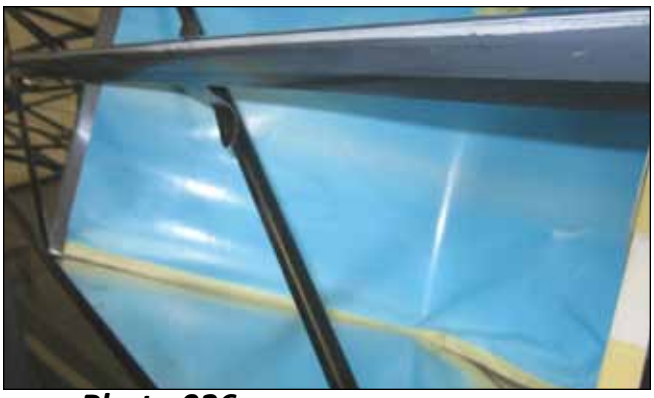


Rotate the fuselage to allow easier access to the left side of baggage compartment. Cover the baggage compartment with blue paper beginning with the back and bottom.

Photo 026

Ensure that the tape does not overlap the top edge of the compartment. Such tape will be hard to remove if covered with fabric.

Photo 027

Carefully apply masking tape to the edge of the aluminum side panels ensuring that tape follows the edge of the panel. Do not allow the tape to go past the edge of the metal side panel.

The photographs below illustrate how NOT to tape the edge of the blue paper. The masking tape must overlap the paper and make contact with the surface you are sealing.

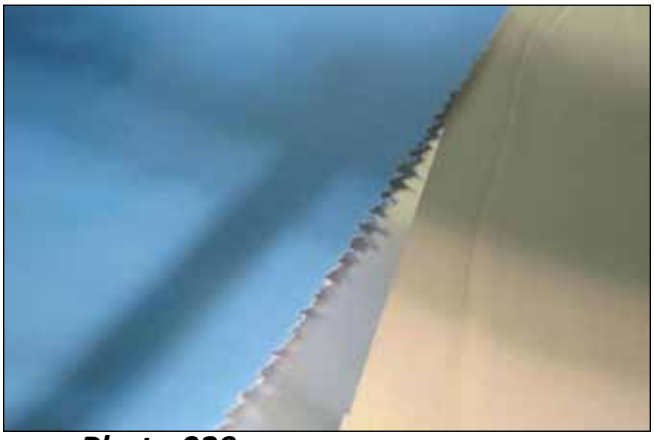


Photo 029

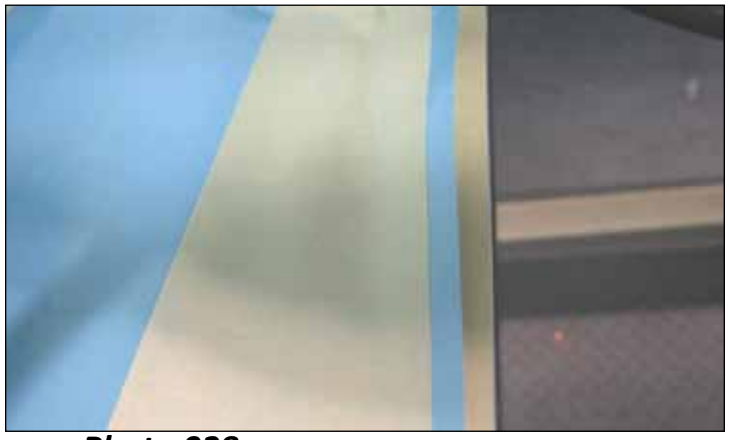


Photo 028

Rotate the fuselage to allow access to the right side of the baggage compartment. Cover the side panel as shown.

Photo 030

Ensure the area between the end of the ELT box and side panel is sealed. Apply tape as shown in photo the top diagonal tube.

Do not wrap tape around the tube, as it will be hard to remove after the fuselage is covered.

Apply blue striping tape to the four tubes above the rear shoulder harness bracket. Tape should be approximately 1" from the cross tube.

Keep all tape wraps evenly spaced from the cross tube.

Photo 031

Photo 032

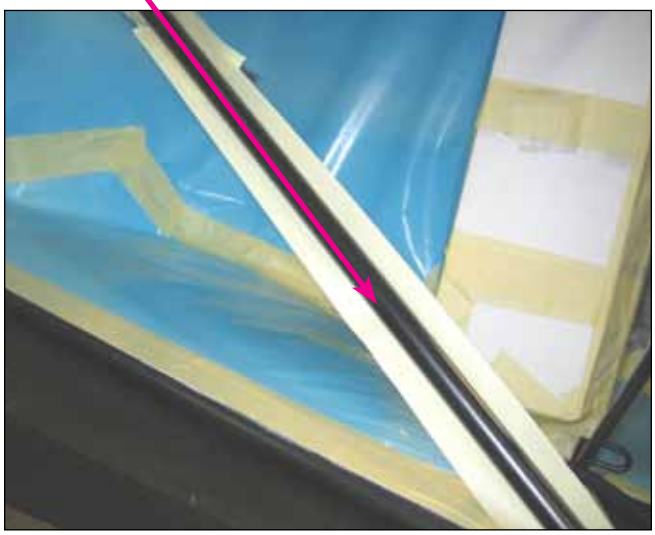


Photo 033

Wrap tube with 6” blue paper.

Use masking tape to seal blue paper to the striping tape.

Photo 035

Photo 037

Photo 039

Photo 034

Photo 036

Photo 038

Apply paper to the top cross bar and top cockpit tubes. Cover the center plate with blue paper and seal with masking tape.

Cover the front top cross tube with blue paper and seal around the wing mount brackets with masking tape.

Photo 040

Cover the front tubes from the top of the fuselage to top of the panel.

Photo 041

Tape the three tubes at the rear side window as shown in the left photograph below. Do not let the tape "wander" when applying it to the tube. You want a clean, straight line around the tube.

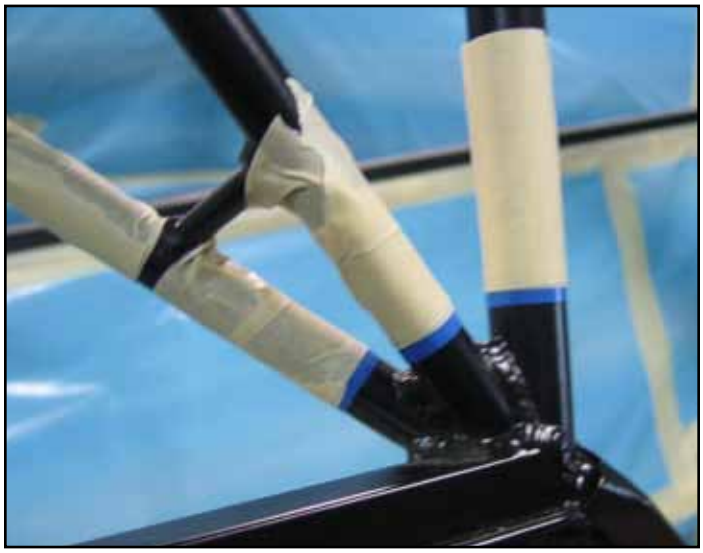


Photo 042

Photo 043

Tape the tube at the aft corner of the rear side window. Use masking tape to wrap the chafe tape that is covering the fuel line.

Tape all remaining tubes as shown in this photograph.

Use masking tape to seal the flap hinge bracket and the rear wing mount bracket.

Photo 044

Photo 046

Photo 045

Repeat this taping for the left hand rear window tubes and flap hinge bracket.

Wrap the “A” pillar and front wing mount bracket.

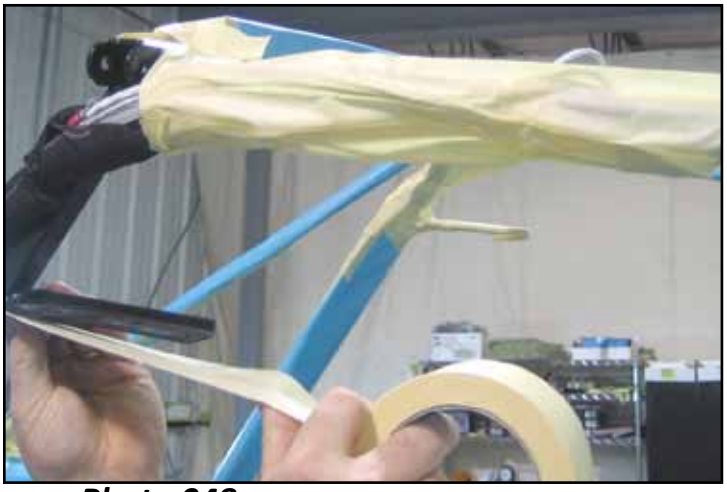


Photo 048

Photo 047

Tape the top storage hooks as shown in this photograph.

Photo 049

Completely cover the lower hooks with masking tape.

Wrap the front tubes at the firewall.

Photo 050

Examine the entire masking job at this time. Look for any gaps or voids and seal with masking tape. Obviously, there will still be tubing showing where the fabric is to be fastened but you don't want internal structure to get painted.
We're now ready for fabric cover.

Photo 051

Photo 052

SECTION 4 FINAL PREP

Lightly scuff the powder coat around the strut/rear landing gear mount.
This area needs positive, strong adhesion with the fabric and the Poly-Tak adhesive. Use a ScotchBrite pad and clean with MEK.
Repeat on the opposite side of fuselage.
Use Light Weight Filler Putty to fill where needed: ends of all stringers, base of tail fin and the joint between the fabric spacer and the top stringer on left hand side of the fuselage.

Photo 053

Photo 054

Photo 055

Photo 056

Photo 057

Allow approximately 20 to 25 minutes for the filler to dry. Sand the filler smooth with 220-grit sandpaper. Additional layers of filler may be applied if necessary to properly smooth the transition between parts.

Photo 059

Photo 058

Use an air nozzle to blow off all of the sanding dust. Clean the stringer with MEK and a rag. Mask the area at the aft end of the fuselage where filler was applied. You will be priming and painting the filler.

Photo 061

Photo 060

Spray Etch Primer (RM 30005-11) on all of the places filler was applied. Let the primer dry, then spray the area with black paint. Remove all of this extra masking when the paint is dry.

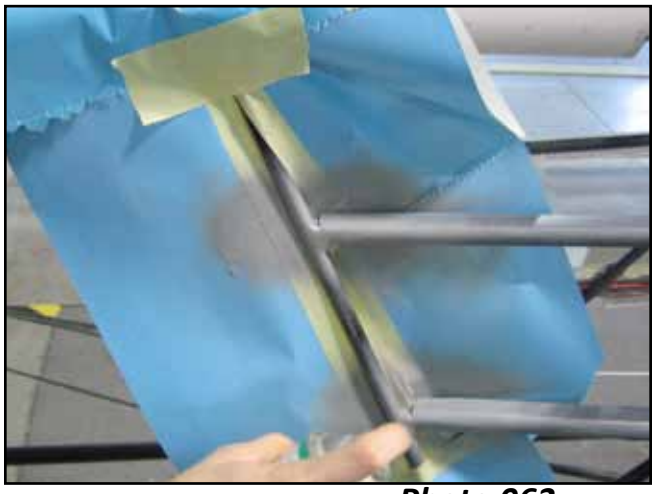


Photo 063

Photo 062

Apply green masking tape to the 3 zip ties on the wire harness at the aft end of the fuselage right hand side.

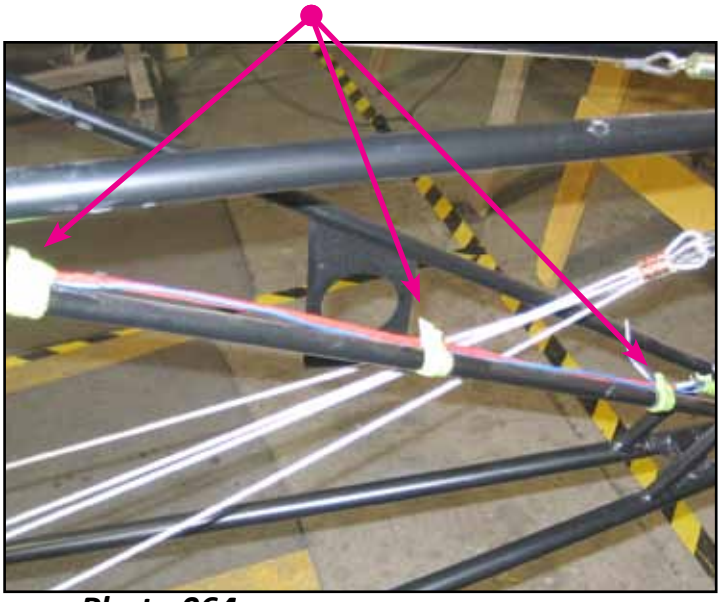


Photo 064

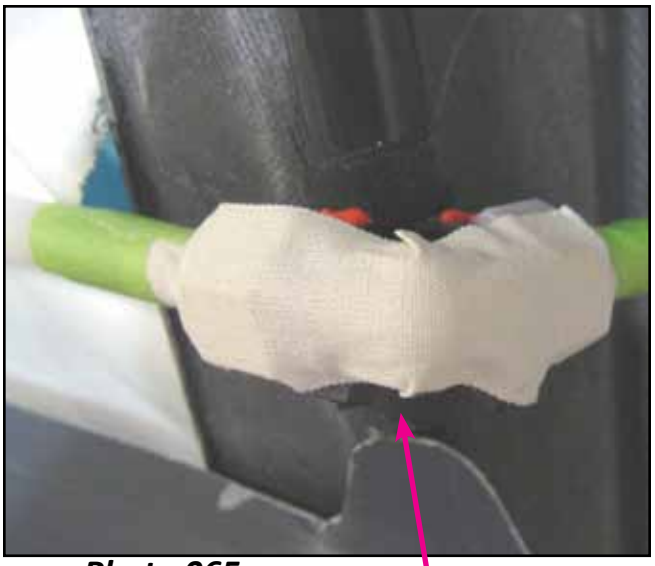


Photo 065

Apply green masking tape and chafe tape to the 90° elbow at the left hand aft baggage compartment.

Apply green masking tape to the 3 fuel line zip ties on LH side of fuselage.

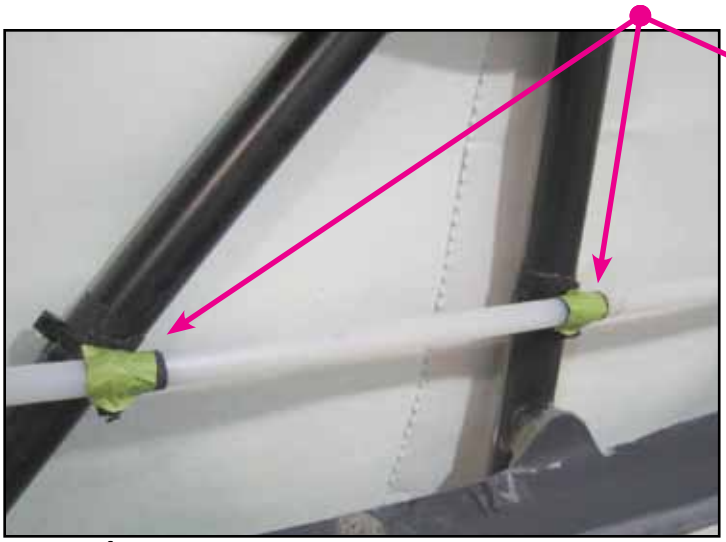


Photo 066

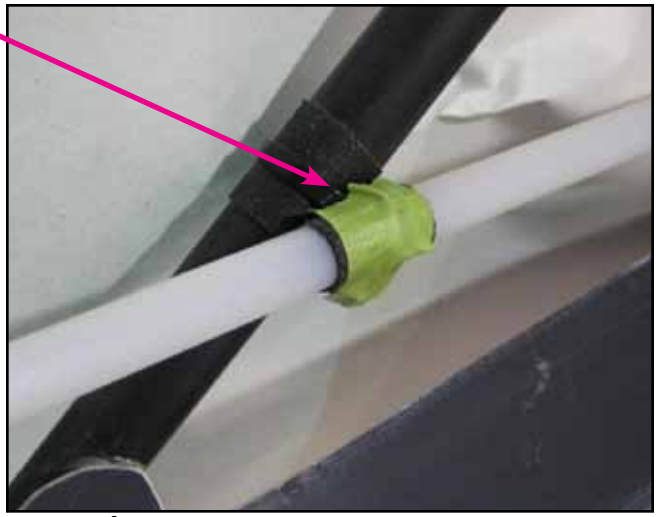


Photo 067

Photo 068

Apply green masking tape to the float fittings on both sides of the fuselage and to the bottom of the low point drain located at the aft end of right hand floorboard.

Photo 069

NOW IS A GOOD TIME TO WATCH THE COVER VIDEOS THAT WERE INCLUDED IN YOUR MANUALS. YOU CAN GET MORE VIDEOS FROM DROPBOX ALSO

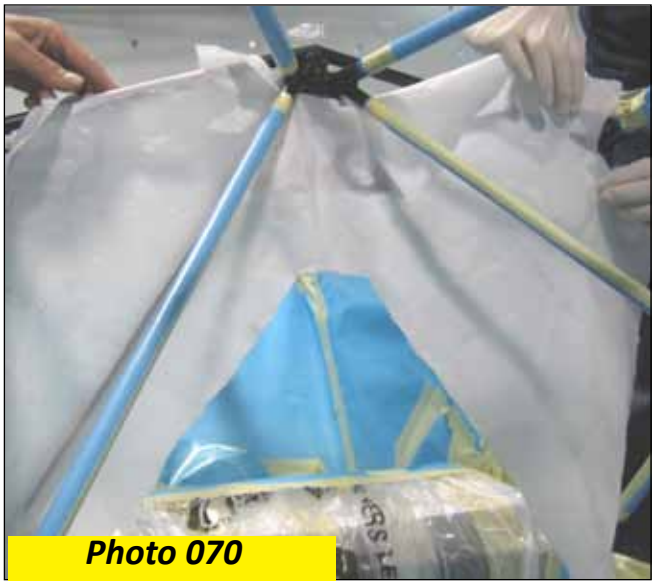


Photo 070

SECTION 5 FABRIC

Remember the Poly-Fiber instruction book. If you skipped reading it before, now is the time. The text that follows assumes that you know the basics of the Poly-fiber process.

SECTION 5 FABRIC

Step 1. INERTIA PLATE AREA

Retrieve the pre-cut fuselage fabric from storage. Begin to apply the fabric to the forward end of the aft cargo compartment.

Photo 071

Mark and trim for proper fit at the tube joint above the inertia plate.

Glue fabric to the backside of the top 2 tubes and the inertia plate with Poly-Tak. Do not apply Poly-Tak above the 10 O'clock position on the tube.

Photo 073

Photo 072

Cut the fabric at the bottom of the inertia plate to allow for gluing the fabric to the tube.

Photo 074

Apply Poly-Tak and secure the fabric to the angled tube below the inertia plate.

Use the small fabric iron to assist in shaping the fabric in the hard to fit areas.

Mark and trim the fabric around the fuel line at the lower right hand window frame.

Photo 075

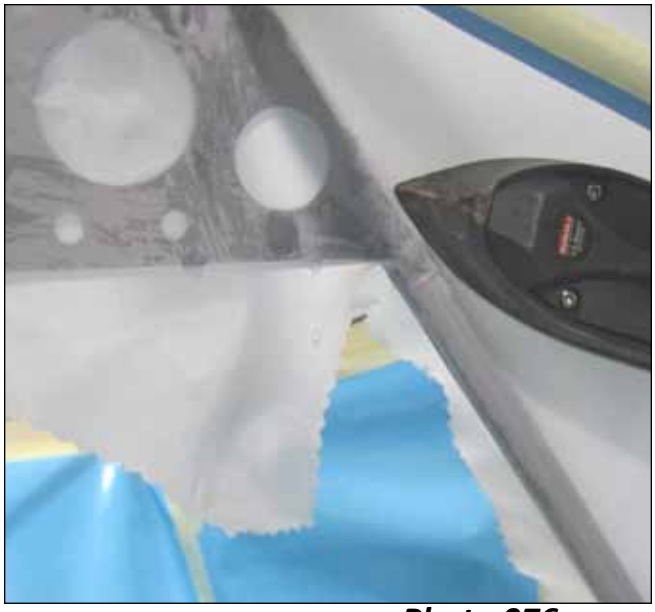


Photo 076

Photo 077

Photo 078

Roll the fabric around the tube and mark with a soft pencil.

Photo 079

Use pinking shears and cut along the marked line.

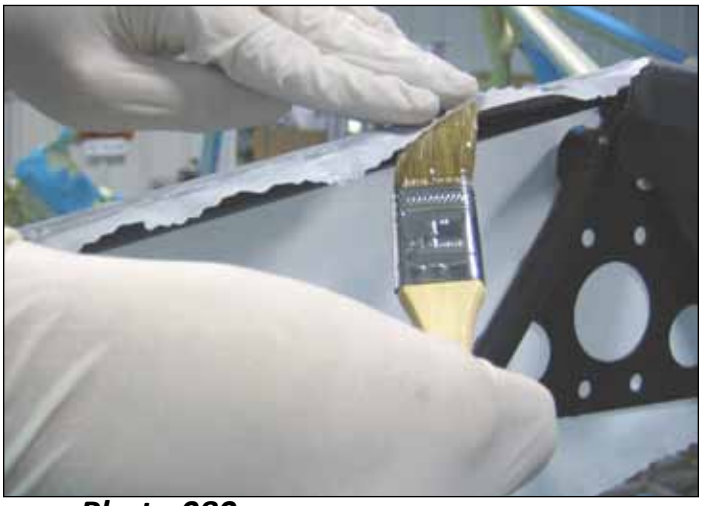


Photo 080

Apply Poly-Tak to the cut fabric and secure to the fuselage tube.

Photo 081

Ensure there is a 1” bond between the Poly-Tak, the fabric and the fuselage tube. That is, the adhesive wet zone should be 1 inch wide.

Trim the fabric on the vertical “D” window frame with a razor blade. Hold the blade at a 45° angle to the frame.

Photo 082

Mark the fabric for trimming on the backside of the inertia plate as shown in the photograph to the right.

Secure the fabric with Poly-Tak. Use the bottom of these holes as a guide for trimming.

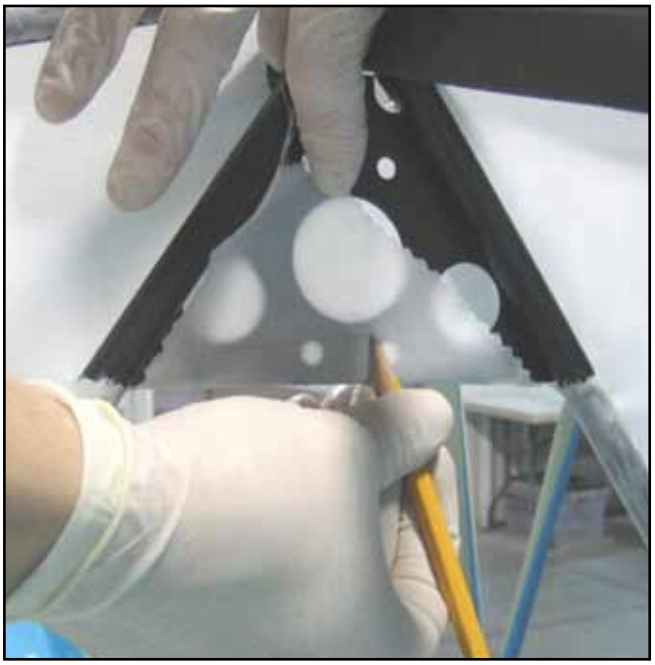


Photo 083

Iron the fabric with a 250° iron. Work out all wrinkles and ensure that the fabric is smooth at the glued fuselage tubes.

Wipe glued areas with MEK and a rag to remove any excess Poly-Tak.

Photo 084

Photo 085

Photo 086

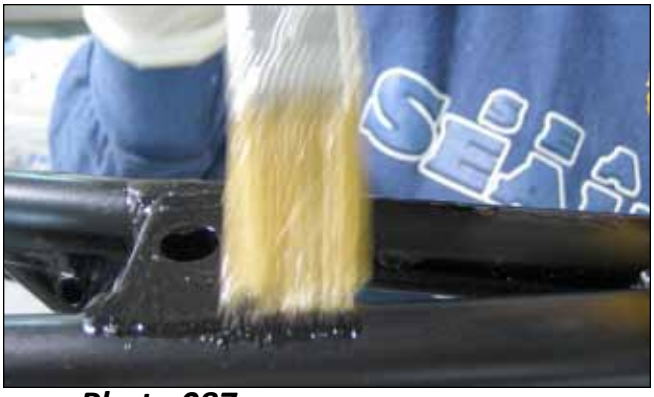


Photo 087

Photo 088

SECTION 5 FABRIC
Step 2. FUSELAGE BOTTOM

Rotate the fuselage so that the bottom is facing up.

Clean the side longerons, the rear landing gear mount and the belly stringers with MEK.

Wipe the bottom stringer (now facing up) with MEK to remove any excess Methacrylic that may remain from the installation of the stringer.

Lay the bottom fabric into place on the fuselage.

Apply Poly-Tak down 8” each side from the aft end of the fuselage (both sides and center mount).

Keep the crease of the fabric lined up with the center stringer.

Apply Poly-Tak in 10” to 12” sections and press fabric into the Poly-Tak. Alternate attaching the fabric from the left to the right side of fuselage to within 4” of the grab handle.

Photo 089

Keep the crease in the fabric on the bottom (center) stringer.

Photo 090

Mark to trim for the aft end of the grab handle.

Make a straight cut to the mark, and then follow the mark. Repeat this process for the forward end of the grab handle.

Photo 091

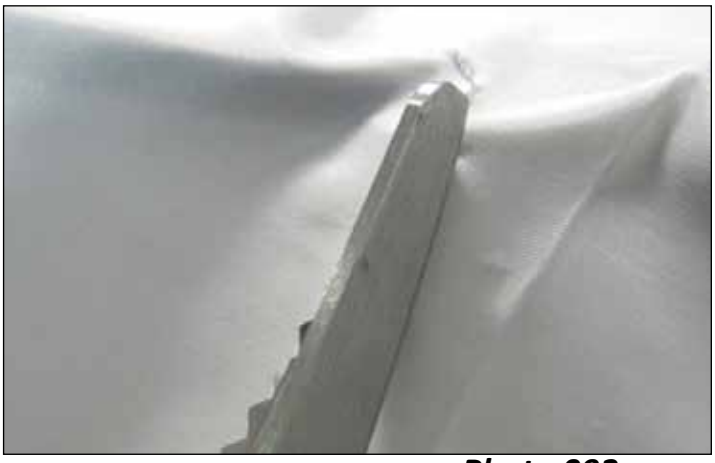


Photo 092

Pull the center piece of fabric through the handle and mark for the inside cuts. Apply Poly-Tak and secure the fabric.

Photo 093

Photo 094

Continue to attach fabric to the longeron, working aft to forward. Alternate sides and ensure that the crease follows the center stringer.

Photo 095

Photo 096

Secure the fabric on both longerons up to the aft landing gear mounts. Use the small iron and work out any wrinkles. Ensure that the fabric is smooth over all glued areas on the longeron.

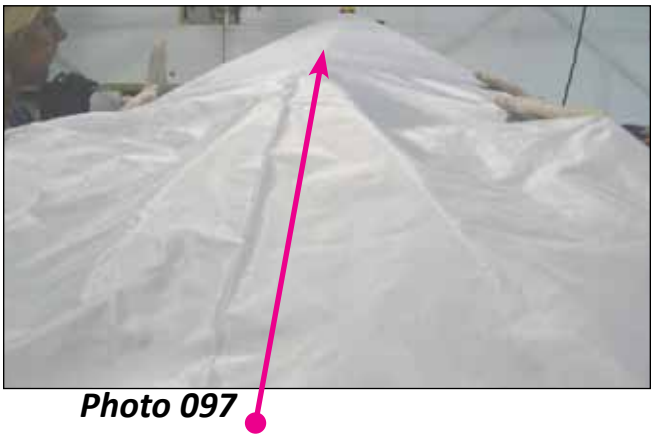


Photo 097

Photo 098

Keep the crease over the bottom (center) stringer.

Fold the fabric back from the aft landing gear mount. Apply a coat of Poly-Tak to both belly stringers and allow this to completely dry before continuing.

Photo 099

Glue the fabric to within 4” of the aft landing gear bracket. Mark and trim as needed for proper fit around the aft flange of the bracket.

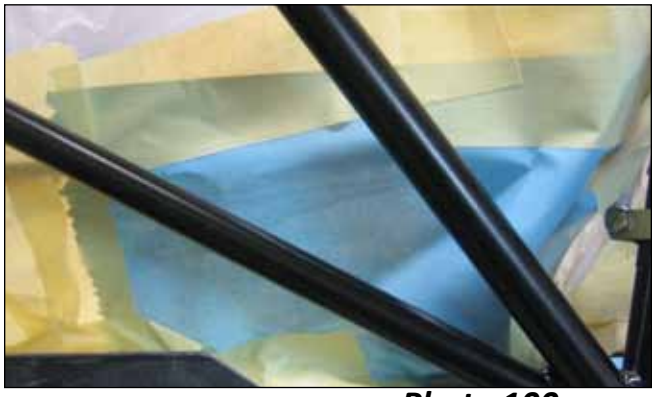


Photo 100

Check depth of cut. Fabric must meet the base of the flange.

Photo 101

Mark should follow the weld line.
Make cut to the base of the line.

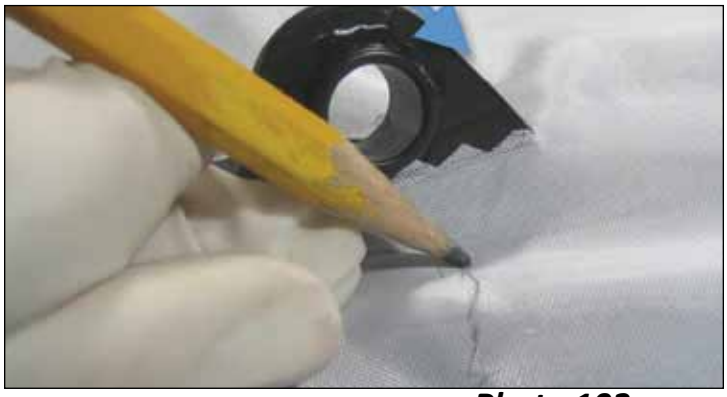


Photo 102

Photo 103

Glue the fabric to the longeron up to the landing gear bracket. Mark and trim for the forward flange of the aft landing gear bracket. Glue fabric to the center section of bracket and forward of the bracket on the longeron with Poly-Tak.

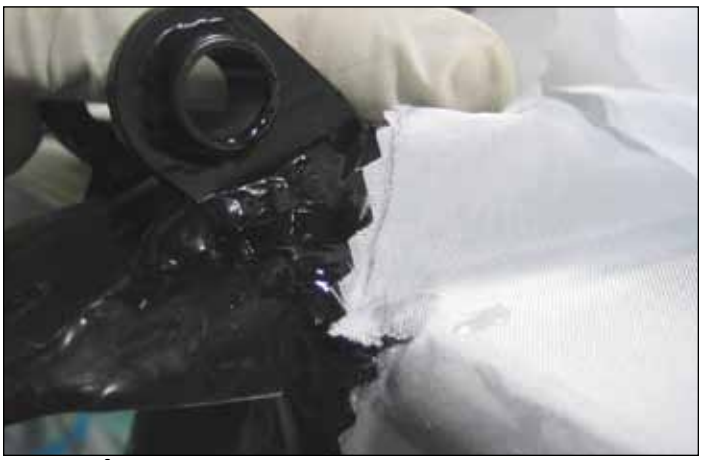


Photo 104

Photo 105

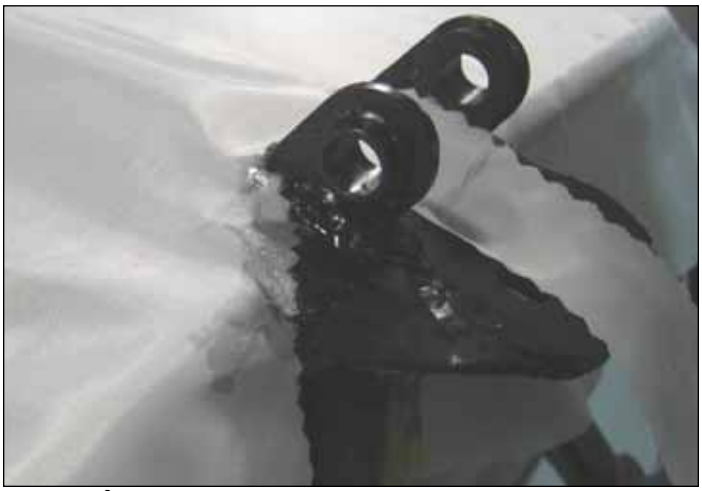


Photo 106

Photo 107

Glue the fabric to the longeron to within 4” of the aft flange of the forward landing gear bracket. Mark and trim using the same procedure as used on the aft landing gear bracket. (See preceding two steps)

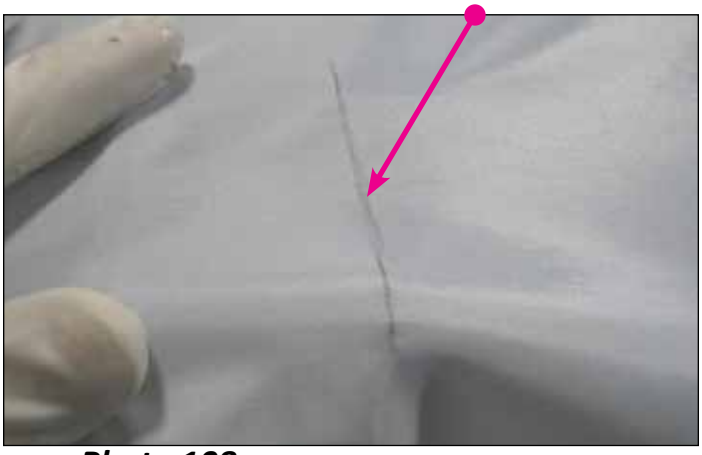


Photo 108

Photo 109

Photo 110

Photo 111

Glue the fabric to the center cross tube. Apply Poly-Tak to the bottom and the forward edge of the cross tube.

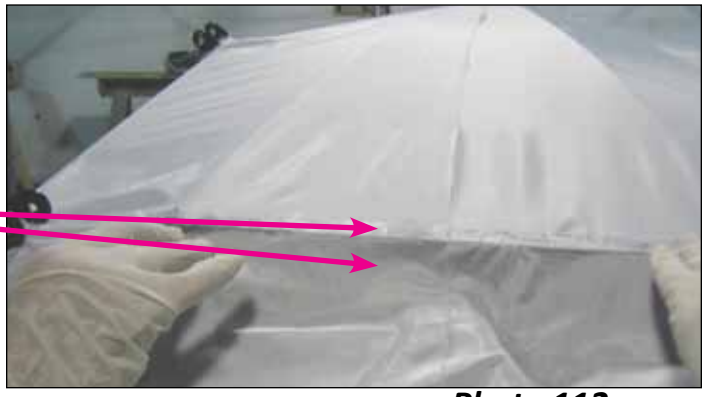


Photo 112

Use a small aluminum piece to press the fabric to the forward edge of the cross tube.

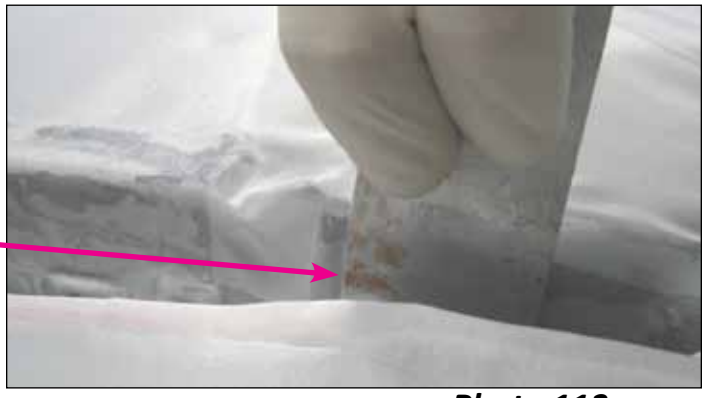


Photo 113

Cut the fabric with a razor blade at the top forward edge of the tube.

Photo 114

Apply ¾" masking tape on the outside edge of the belly stringers. Place two 5-pound weight bags into the space between the belly stringers to hold the fabric in place. Work Poly-Tak through the fabric to activate the first coat of Poly-Tak applied above.

Photo 115

Photo 116

Use a pencil compass to mark a line 1" from the top on longeron and both sides of fuselage. Cut along this line on both sides.

Photo 117

Photo 118

Trim the fabric, as needed, at the fuselage tube to longeron joints.

Photo 119

Photo 120

Apply Poly-Tak to the fabric near the floorboard.

Photo 121

Use a small piece of aluminum to push the fabric onto the longeron under the floorboard. Use the small iron as needed to smooth wrinkles and ensure a positive bond between the fabric, the Poly-Tak and the longeron. Wipe all glued areas with MEK and a rag to remove any excess Poly-Tak.

Photo 122

Push fabric onto longeron under floorboard.
Set the large iron at 250° and verify the temperature. Now, complete the first ironing.

Ensure the entire surface is ironed to remove all slack and wrinkles.

Photo 123

Set the iron to 350° and verify the temperature.
Now, complete the second ironing.
Move the iron at a rate of 4 to 7 inches per second

Photo 124

Rotate the fuselage to the upright position. Check fabric adhesion on the longeron and add Poly-Tak as needed. Use the small iron to insure a proper bond.

Photo 125

Photo 126

SECTION 5 FABRIC

Step 3. FUSELAGE UPPER SIDE PREP

First you will apply a coat of Poly-Tak around the baggage door frame shown in Photo 127, and right at the top of the window frames per Photo 128 and Photo 129. After the upper fabric is installed, you will use MEK to soften these pre glued areas and finish glue them before the first shrink of the fabric.

Photo 127

Photo 128

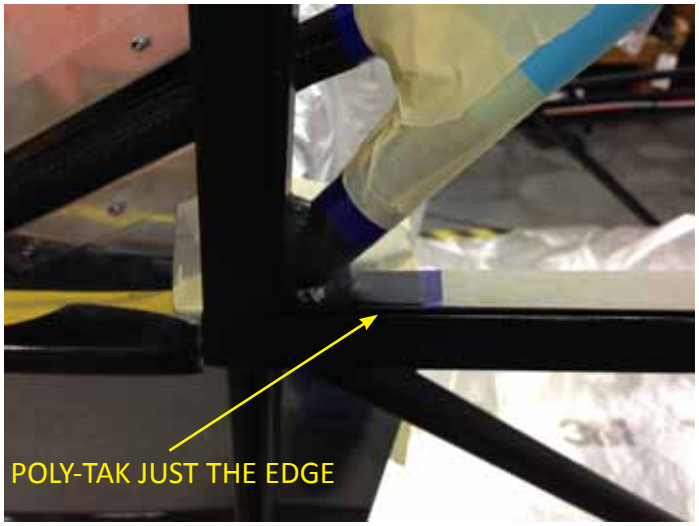


Photo 129

Photo 130

SECTION 5 FABRIC
Step 4. FUSELAGE UPPER SIDE

Drape the fabric envelope over the topside of the fuselage.
Ensure a good fit at the forward top edge of the fin.

Photo 131

Remove the envelope from the fin and fold the fabric toward the front of the fuselage.
Apply Poly-Tak to the curved transition from the center stringer up to the fin.

Photo 132

Press the fabric into the Poly-Tak.

Photo 133

Use the small iron as needed to remove wrinkles and smooth the glued fabric. Apply Poly-Tak up the front of the fin and across the top.
Do not let Poly-Tak get on the sides of the top tube of the fin. Ensure that the seam of the fabric envelope is on the centerline of the fin.
Do not do anything with the aft end of the fin at this time.

Here are two more photographs showing the situation at this stage.

Photo 134

When the fin fabric is secure, roll the fabric envelope toward the aft end of the fuselage Photo 135. Apply Poly-Tak to the center stringer and secure the fabric. Work in sections keeping the center seam on the center of the stringer Photo 137. Secure fabric all the way forward to the end of the stringer. Use the small iron as needed for wrinkle removal.

Photo 136

Photo 137

Photo 135

Photo 139

Photo 138

Photo 140

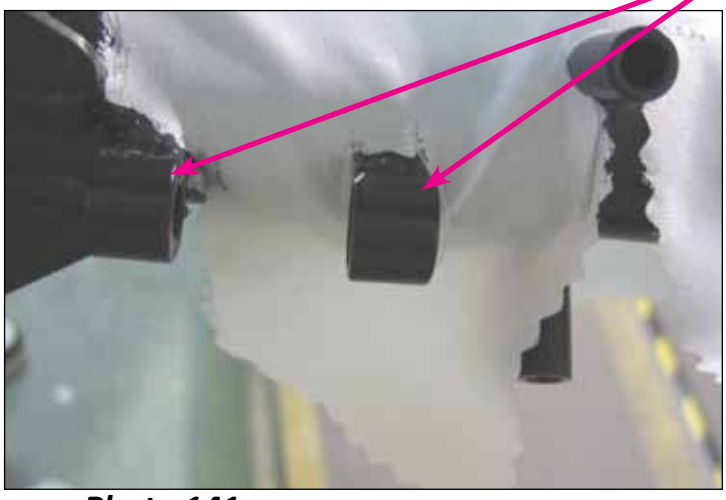


Photo 141

Rotate the fuselage to have the left side up. Mark cuts for the rudder stop and the aft tail wheel
mount.

Cut the fabric and check the fit.

Locate the bottom rudder hinge.

Fold the fabric at the rudder hinge location and cut
on the marks. Check the fit of the fabric at the hinge and the rudder stop.

Now, lay the fabric over the aft end of the fin. Cut the seam open at the top aft end of the fin, leaving a 1” tail. This tail will be secured in a later step.

Photo 142

Apply Poly-Tak and secure the fabric to the back of the fin, working from the bottom hinge toward the top.

Photo 143

Mark and cut holes for the top rudder hinge. Secure fabric around the hinge with Poly-Tak. Apply Poly-Tak to the bottom left longeron, beginning at the aft end of the fuselage. Do not allow Poly-Tak to get above the centerline of the longeron. Lay the fabric into the glue without significant slack or wrinkles. It does not have to be pulled taut. Continue to secure the fabric forward to the float fitting.

Photo 144

Photo 145

Photo 146

Photo 150

Rotate the fuselage so that the right hand side is up.

Photo 149

Use a pencil to mark a cut line for the fabric at the aft fin.

Photo 148

Cut the fabric and use Poly-Tak to secure it.

Photo 147

Ensure a 1” bond between the fabric and the fin. Use a small iron to smooth fabric, as necessary.

Now that one side of the fabric is applied, it is time to do the other side.

Photo 151

Begin by marking the fabric for a cut line at the aft end of the fin.

Mark and trim the fabric around the rudder stop and the rudder hinges following the same procedure as for the previous side.

Photo 152

Fasten the fabric to the longeron with Poly-Tak as in the previous steps.

Use the same process for cutting around the grab handle as you did for other “cut-outs”.

Photo 153

Continue to glue fabric to longeron forward to the float fitting.

Photo 154

Photo 155

Rotate the fuselage to the upright position.
Cut away the excess fabric for the window and door on the right hand side of the fuselage.
Cut away the excess fabric for the window on the left hand side of the fuselage.

Photo 156

Leave approx. 8” of fabric to work with around all of the openings.

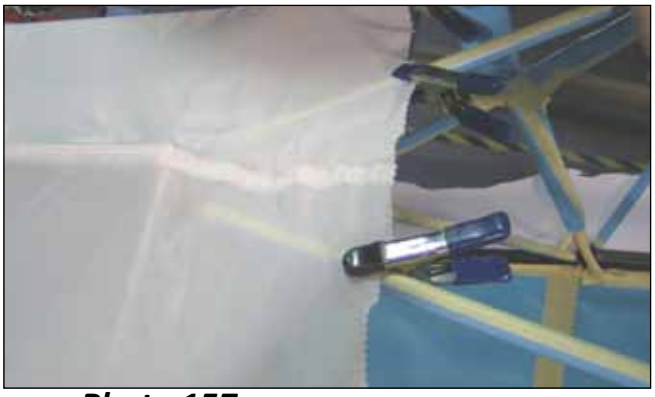


Photo 157

Use spring clamps to secure the fabric above the aft baggage compartment.

Photo 158

Shrink the fabric above the baggage compartment with the small iron. The fabric needs to be preshrunk before cutting and gluing to the top of the aft baggage compartment.

This will provide a smooth seam when glued.

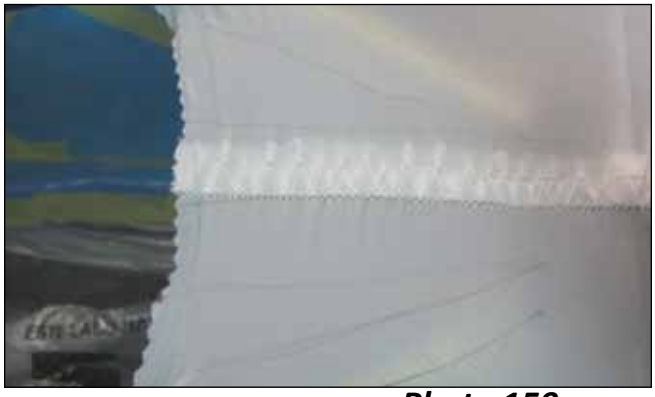


Photo 159

Mark and trim around the cargo tie downs.

Photo 160

Make a line with a pencil compass 1” below the top edge of tube, as shown here.

Photo 161

Cut the marked line with pinking shears.

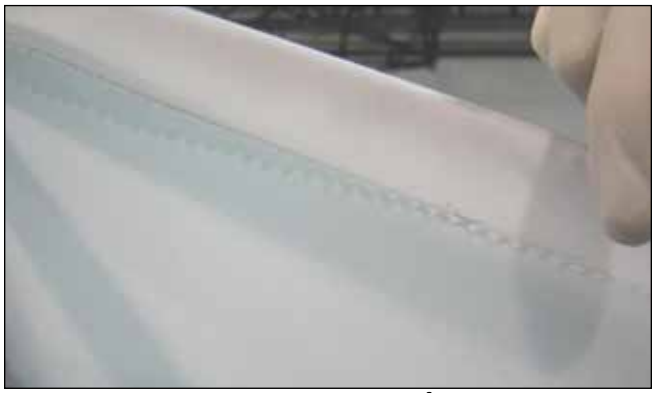
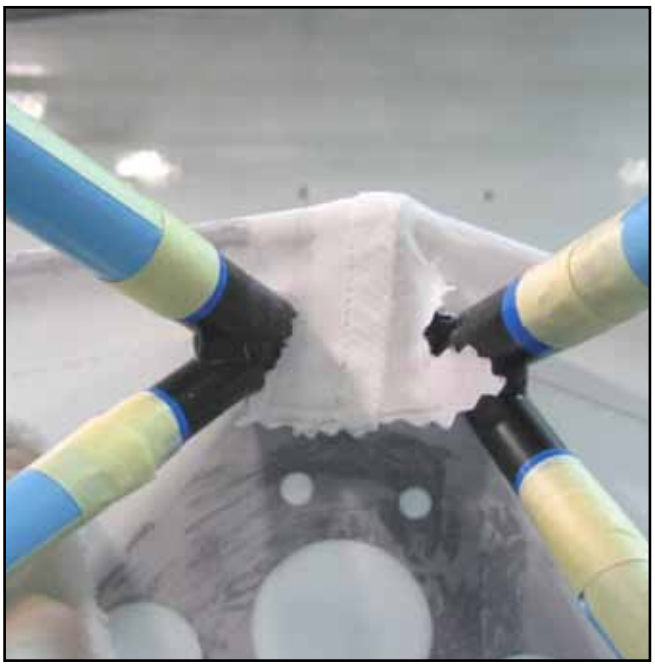


Photo 162

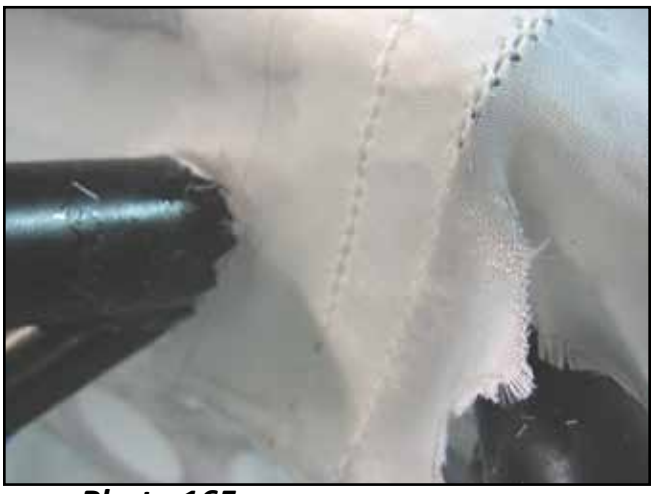
Apply Poly-Tak and secure the fabric to the tube with a smooth seam

Photo 163



Mark and trim the fabric above the inertia plate as in this photograph.

Photo 164



A relief cut may be needed above the inertia plate. If so, use a sharp razor blade to make the cut.

Photo 165

Mark a line along the 45° tube to the corner of the “D” window.
Cut the fabric along this line per Photo 166.

Mark and trim around the forward cluster of tubes at the lower front of the “D” window.

Mark and trim at the aft lower corner.

Photo 166

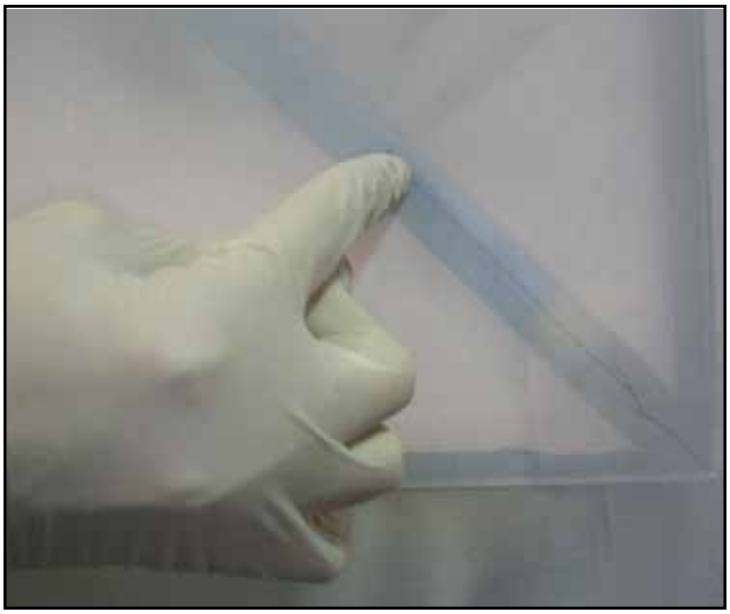


Photo 167

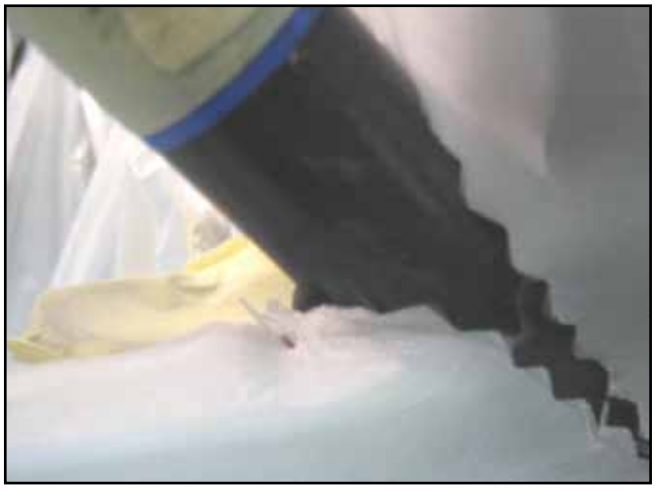


Photo 169

Photo 168

Photo 170

Photo 171

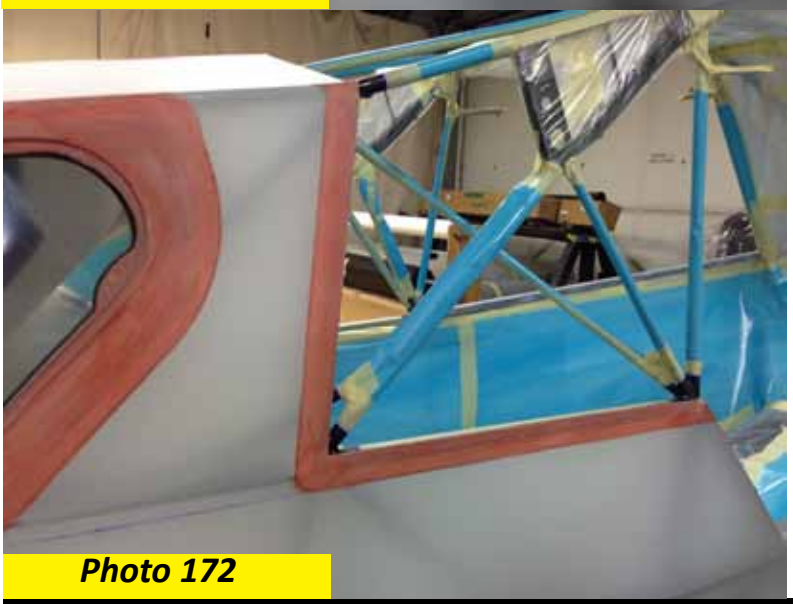


Photo 172

After you have softened the Poly-Tak with MEK and the fabric is bonded to the window frame. Apply more Poly-Tak into the window frame channel and use a piece of bent aluminum to force the fabric into the glue shown in Photo 170 and Photo 171. DO NOT APPLY SO MUCH POLY-TAK THAT YOU FILL UP THE WINDOW CHANNEL. USE ONLY ENOUGH TO ADHERE THE FABRIC TO THE CHANNEL. Repeat the process for the window channel on the other side of the fuselage.

Photo 170, Photo 171, and Photo 172 show the window with fabric tape installed. The same process will be used for installing the tapes, the only difference is that you will use poly brush for the tapes.

Secure the fabric with Poly-Tak.

Photo 173

Use the small iron to assist in shaping the fabric to fit over the bottom window frame.

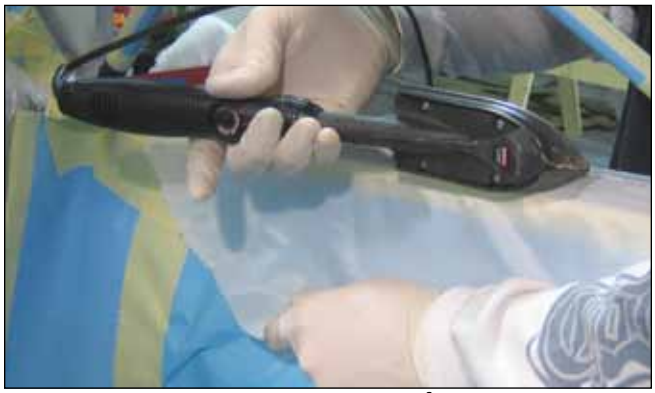


Photo 174

Apply Poly-Tak and secure the fabric. Use the small iron, as needed, for smoothing.

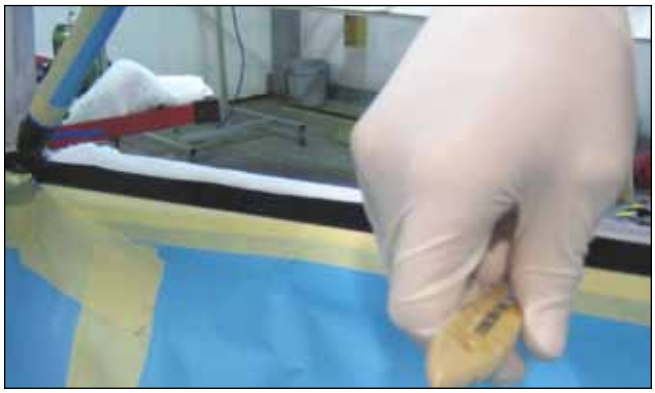


Photo 175

Trim the fabric with a razor blade along the bottom inside edge.
Repeat this entire process for the opposite “D” window.

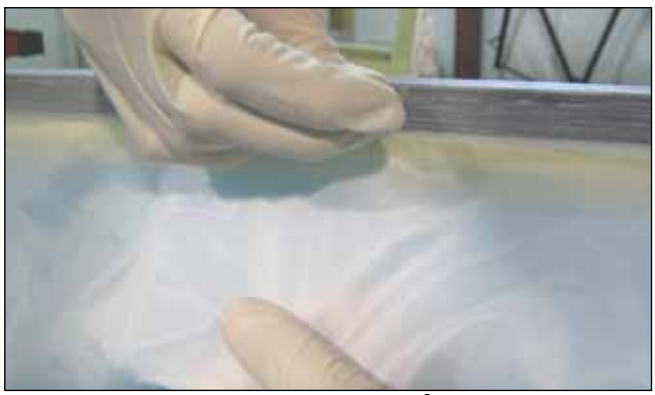


Photo 176

Photo 177

Rotate the fuselage so that the right hand side is up.
Glue the fabric to the bottom longeron up to the aft landing gear mount.

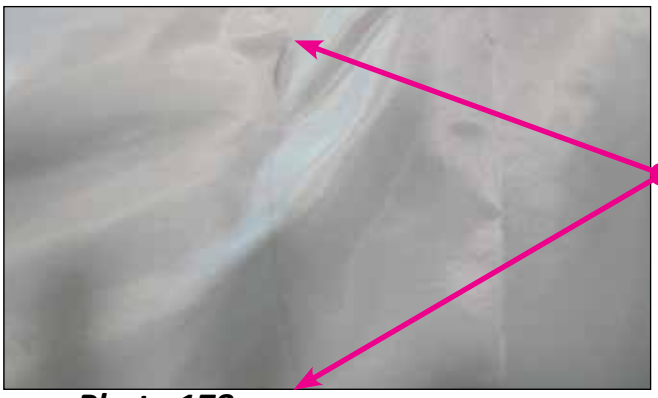


Photo 178

Mark and trim the fabric around the landing gear mount.

Photo 179

Mark with a pencil and trim

Photo 180

Use Poly-Tak to secure the fabric to underside of the landing gear mount.

Mark the fabric to fit the top of the landing gear mount. This is the area that powder coat was removed during fuselage preparations. There must be a secure bond in this area. Continue to secure the fabric forward on the longeron to the forward landing gear mount.

Mark the trim line with a pencil

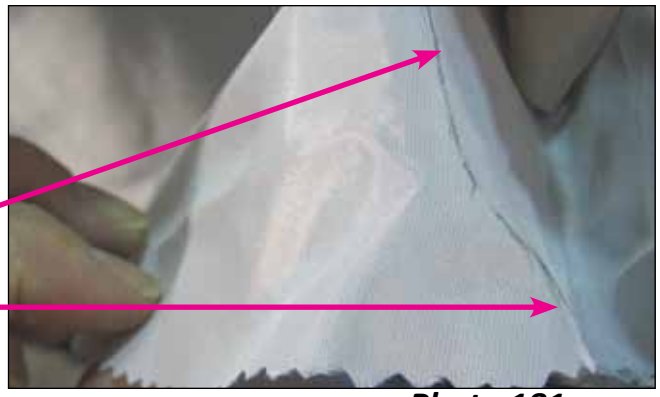


Photo 181

Use extra Poly-Tak in this area

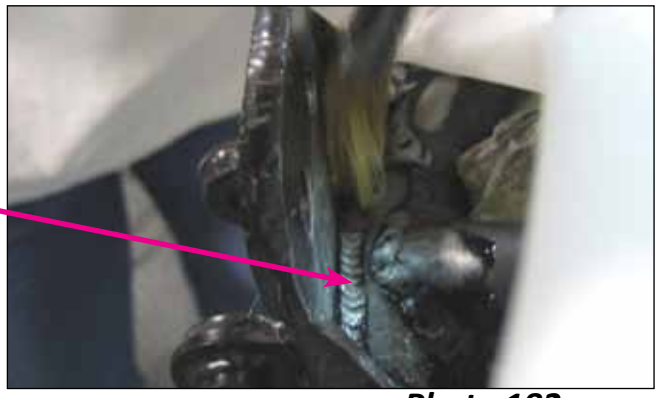


Photo 182

Allow the Poly-Tak to set before proceeding.

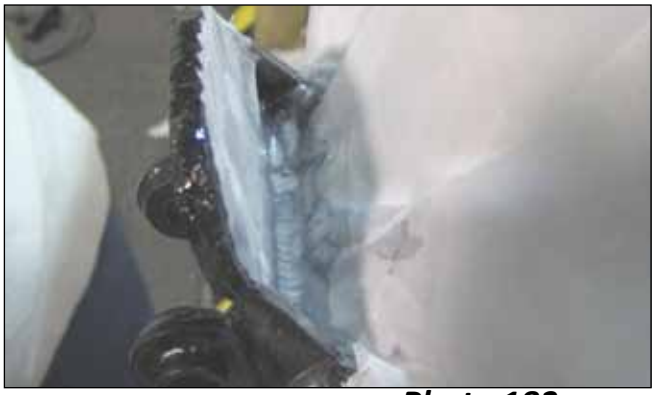


Photo 183

Photo 184

Mark the location of the front hinge and trim to fit.

Photo 186

Photo 185

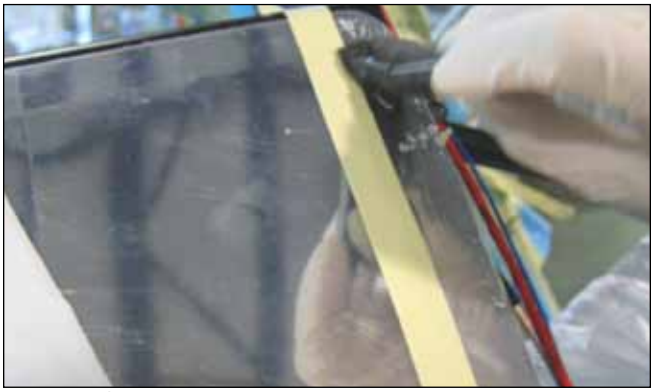


Photo 187

Mark the right hand fabric spacer. Confirm that this is the same as the cheek cowl (1" from the edge) and apply ¾" masking tape to the spacer. Thin the Poly-Tak with MEK and apply with a foam paintbrush. Ensure a light even coat of Poly-Tak along the edge of the fabric spacer.

Photo 188

Remove the masking tape and press the fabric into place.

Photo 189

Wipe the glued area with MEK and a rag to remove any excess Poly-Tak.

CARBON CUB EX EXPERIMENTAL

Mark and trim the fabric at the front landing gear.

Photo 190

Apply Poly-Tak and secure the fabric.

Photo 191

Apply Poly-Tak to the longeron in front of the landing gear mount up to the end of the fabric.

Photo 192

Mark the fabric with a compass 1” beyond the tube and then cut the marked line with pinking shears. Secure the fabric with Poly-Tak. Use the small iron to smooth out wrinkles, as necessary.

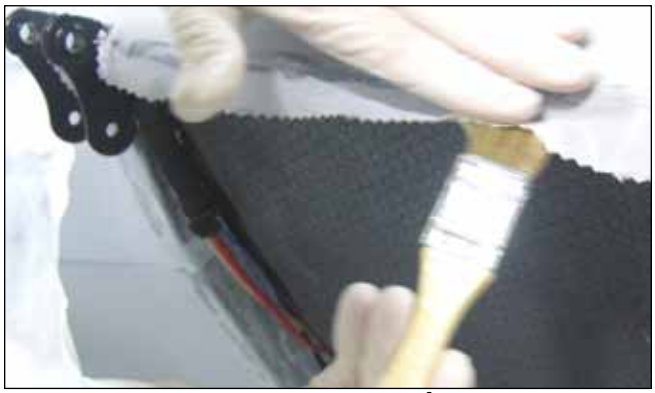


Photo 193

Mark the fabric with a compass 1” beyond the longeron tube.

Photo 194

Cut the marked line with pinking shears along the entire length of the fuselage.

Photo 195

Mark and trim around the grab handle, as shown here.

Photo 196

Secure the fabric with Poly-Tak.

Photo 197

Use the small iron to smooth and finish the seam.

Photo 198

Rotate the fuselage to allow access to the left hand window area. Mark and cut the fabric at the forward end of the window.

Photo 199

Place a strip of ¾" masking tape along the top edge of the top stringer. Use the line that is built into the stringer as a guide for the masking tape.

Use the same process used for the left fabric spacer for the right hand fabric spacer. Apply thinned Poly-Tak with a sponge paintbrush, remove the masking tape and apply the fabric. Wipe the glued fabric with a rag and MEK to ensure a smooth surface.

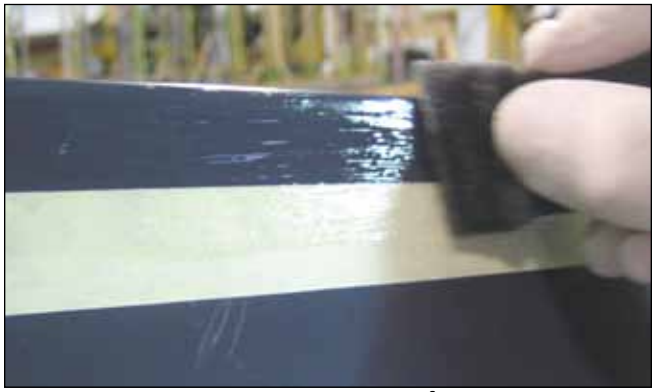


Photo 200

Photo 201

Photo 202

Photo 203

Apply the fabric to the right hand fabric spacer with the same process as used for the left fabric spacer.

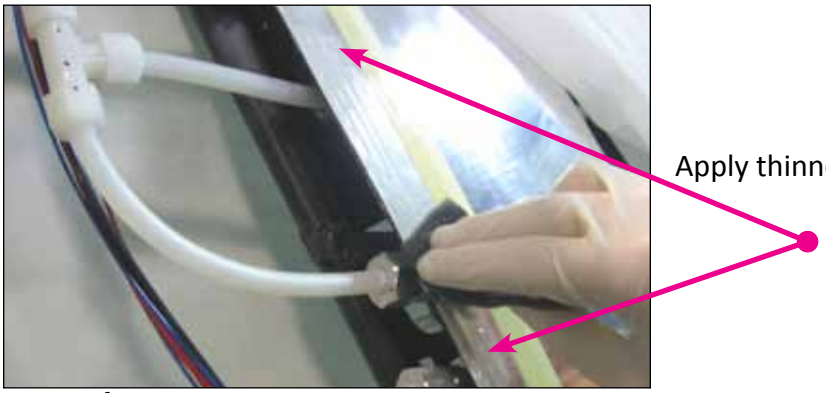


Photo 204

Apply thinned Poly-Tak with a sponge

Photo 205

Use the small iron to assist in shaping the fabric for proper fit on the left hand lower window frame. Secure the fabric with Poly-Tak.

Photo 207

Photo 206

CARBON CUB EX EXPERIMENTAL

Rotate the fuselage so that it is upright. Make a mark at the rear of the door as shown here. Mark a cut line at 45 degrees at the front of the door sill. Cut the marked line.

Photo 208

Apply Poly-Tak to the bottom door sill and secure the fabric.

Photo 209

Smooth the fabric with the small iron, as needed.

Photo 210

Mark and trim the fabric at the front of the door sill.

Photo 211

Photo 212

Mark and trim fabric at the rear door stop.

Photo 213

Use razor blade to cut fabric at base of door stop.

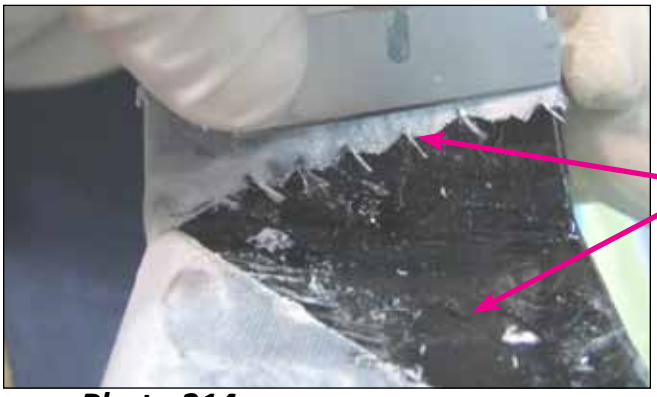


Photo 214

Use a razor blade to clean the cuts at the rear bottom door sill.

Lay a piece of scrap fabric into the corner and trace a patch to fit the V-shaped open space.

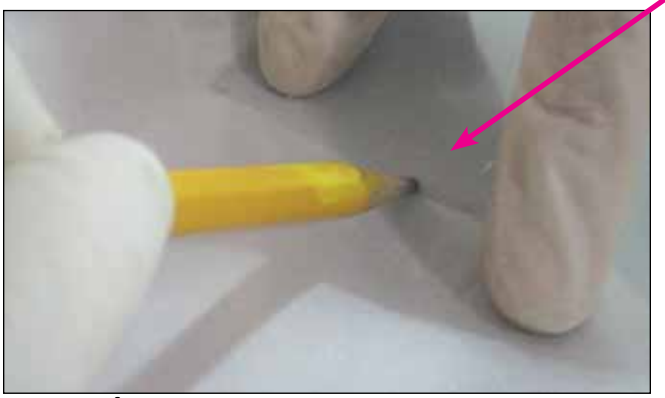


Photo 216

Apply Poly-Tak and secure the patch.

Photo 215

Photo 217

Rotate the fuselage so that the left hand side is up. Glue the fabric to the bottom longeron following the same procedure as for the right hand side.

Photo 218

Mark the fabric at the aft side of the fin as shown to the right. Then cut the marked line with pinking shears. Cut the fabric so that the tops of teeth are on the marked line.

Photo 219

Use the small iron to shape the fabric around the bolt head at the rear of the fin.

Leave a 1” tail at the top rear of the fin. Apply Poly-Tak and secure the fabric using the small iron to smooth wrinkles, as needed.

Photo 220

Photo 221

Rotate the fuselage to allow access to the inside of the right hand door.

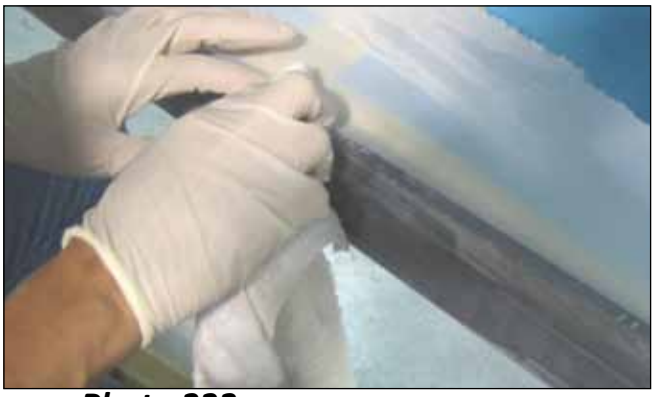


Photo 222

Apply a thin coat of Poly-Tak and secure the fabric to the inside of the door sill. Wipe with a rag and MEK to provide a smooth surface.

Cut the fabric 3/8” to ½” past the bottom edge of the door sill. Make vertical cuts every 3” to 4” apart.

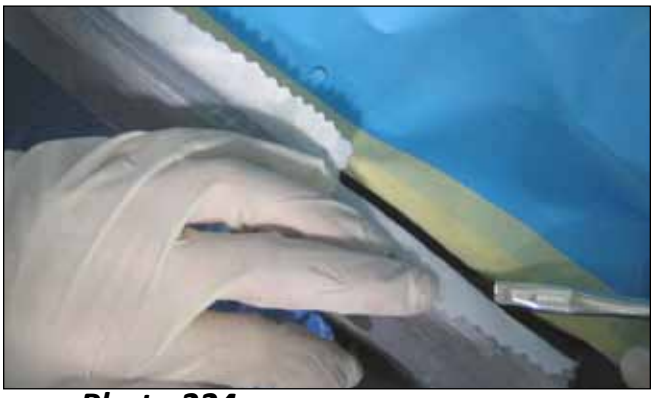


Photo 224

Photo 223

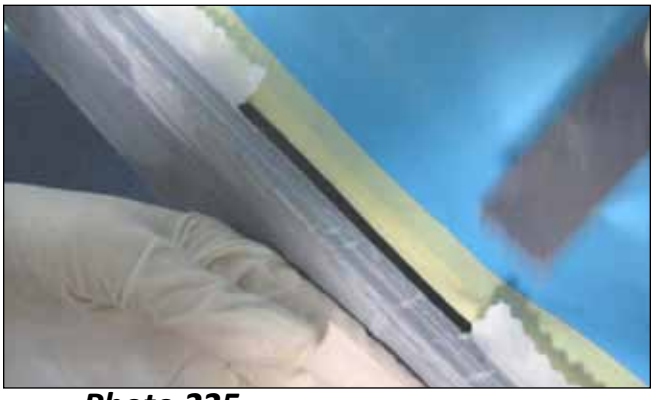


Photo 225

Using a small brush apply Poly-Tak and work the fabric under the lip of the sill. Work fabric into the Poly-Tak with a metal blade. Use the small iron to eliminate wrinkles, as necessary.

Mark and trim the rear door sill as above. Apply Poly-Tak and secure the fabric.

Photo 226

Photo 227

Trim the corner patch, apply glue and work the fabric under the lip of the sill. Cut fabric as before and secure with Poly-Tak.

Photo 228

Photo 229

Photo 230

Photo 231

Rotate the fuselage to be upright. Mark and trim the fabric at the forward bottom corner of the window. Test fit the fabric on the forward fuselage tubes and trim as needed.

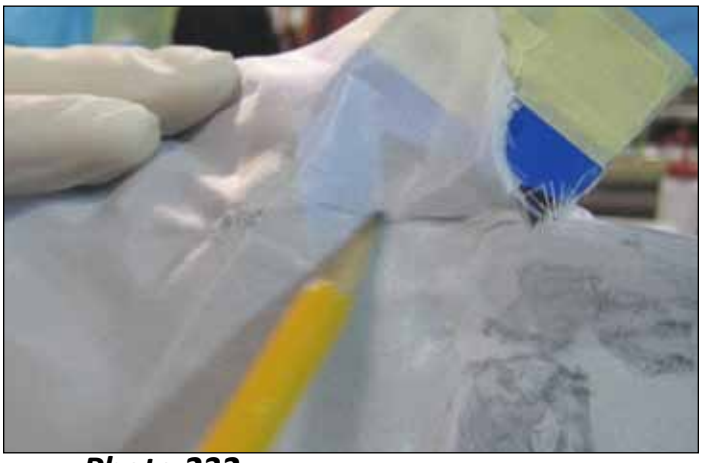


Photo 232

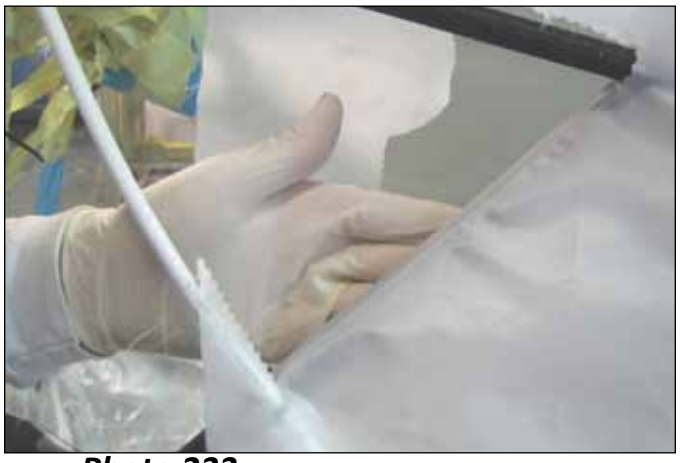


Photo 233

Mark and trim the fabric as needed to attach to the forward fuselage tube.

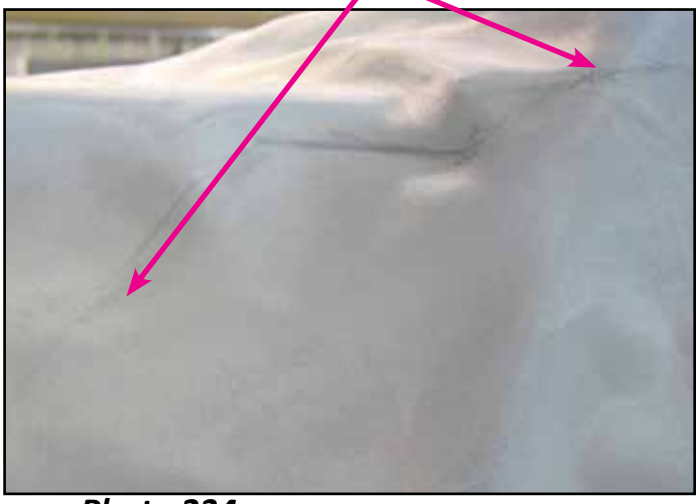


Photo 234

Apply Poly-Tak and secure fabric.

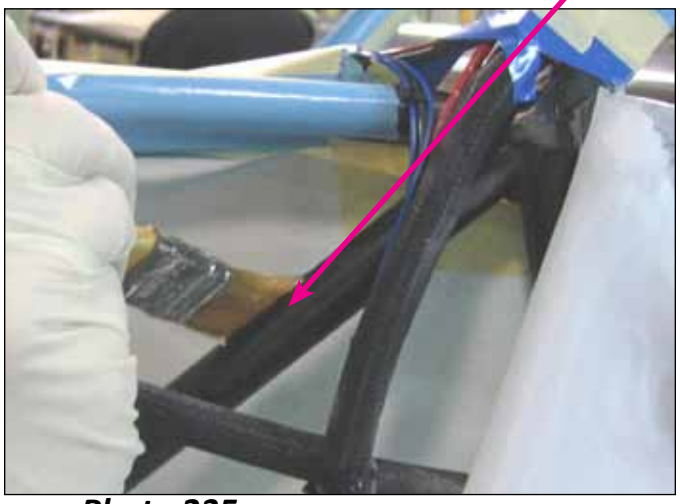


Photo 235

Trim for the bottom forward tube.

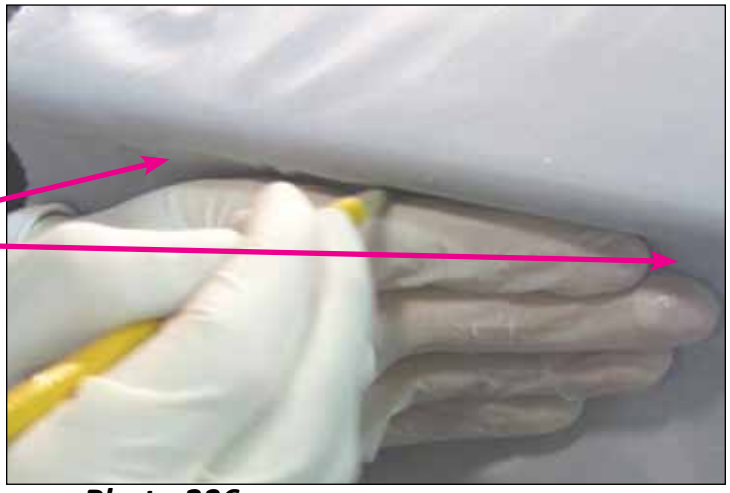


Photo 236

Use the small iron to help shape the fabric on the bottom of the left hand window before applying the Poly-Tak.

Photo 237

Apply the Poly-Tak and secure the fabric.

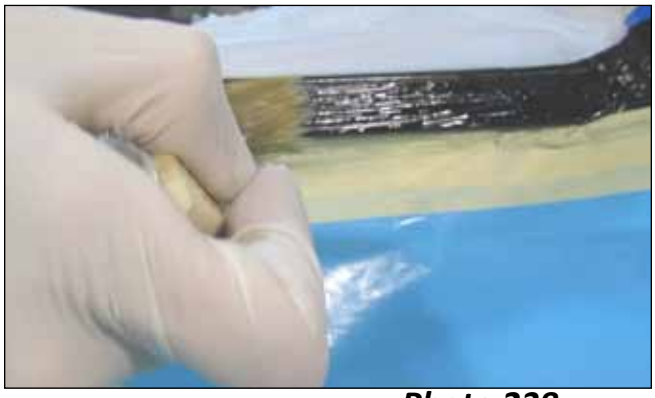


Photo 238

Wipe the glued area with MEK and a rag to ensure a smooth wrinkle free bond.

Photo 239

Use a razor blade to cut the fabric at the bottom of the window frame.

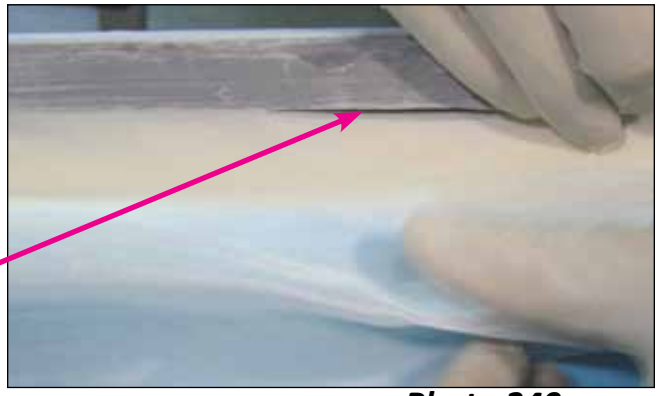


Photo 240

Mark and trim the fabric to fit the forward fuselage tubes. Secure the fabric with Poly-Tak and use the small iron to shrink the area in front of the fabric spacers on both sides of the fuselage.

Photo 241

Photo 242

Photo 243

Wrap a piece of scrap fabric around the iron and verify the temperature. The first ironing should be with a 250° iron.

Begin at the fin and work toward the forward end of the fuselage. Ensure the center seam remains centered on the center stringer. Ensure that the entire surface is ironed to remove all slack and wrinkles.

Photo 245

Photo 244

When the first ironing is complete, set the iron temperature to 350° and verify the temperature. Begin the second and final ironing. Move the iron at a rate of 4 to 7 inches per second and keep moving.

Photo 246

Use the small iron to smooth all the glued areas and seams.

Photo 247

All exposed metal parts must be scuffed with a gray ScotchBrite pad.

Photo 248

Please ignore the apparent burgundy color in the ScotchBrite in this photograph.

Photo 249

Photo 250

Glue and iron the 1” piece of seam to the aft top of the fin.

Photo 251

Mask the rear door stop with blue tape.

Photo 252

Mask the bottom front of the fuselage.

Photo 253

Ensure all fuselage tubing is masked and ready for the first coat of Poly-Brush.

SECTION 6 RIB LACING

In this section you need to apply the rib lacing. The rib lacing keeps the ribs straight during the covering process. In Photo 254 thru Photo 260 you will see how the ribs are laced at the factory. Refer to Figure C19 for material and lacing instructions. MAKE SURE THAT THE RIB LACING IS TIGHT. DO NOT COLLAPSE THE RIBS DURING THIS OPERATION.

Photo 254

Photo 255

Photo 256

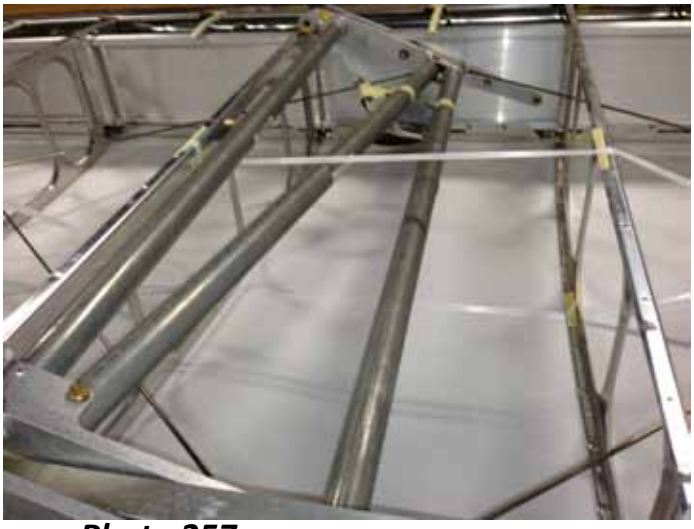


Photo 257

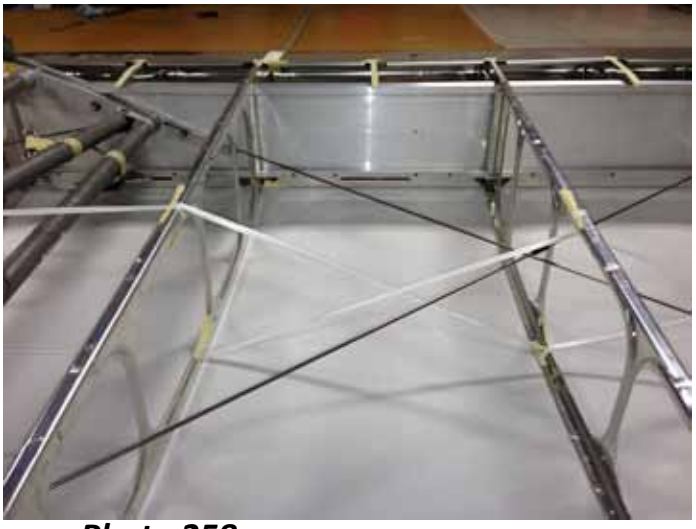


Photo 258

Photo 259

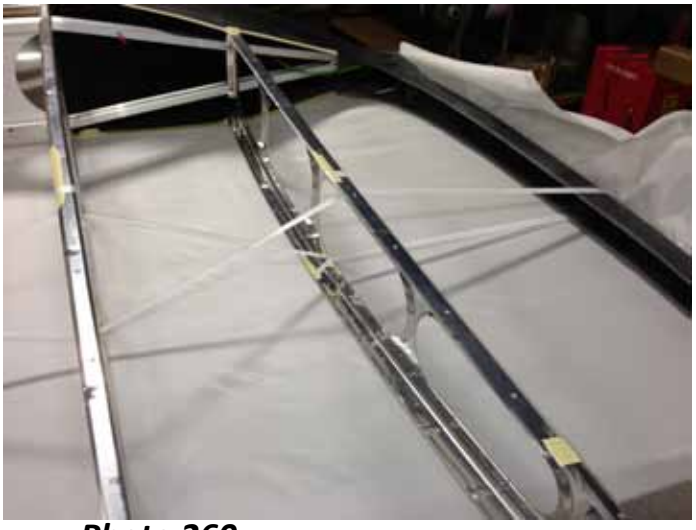


Photo 260

SECTION 7 FABRIC RIVETS OR RIB STITCHING

This section deals with fabric riveting. Your Carbon Cub EX wings could be rib stitched or fabric riveted. CubCrafters factory has adopted the fabric rivet method for it's production line. If you choose the fabric rivet option, you will first need to drill the rivet holes as shown in Figure C15, Figure C16, Figure C17, and Figure C18. Photo 262 thru Photo 270 shows how we mark and install the fabric rivets at the factory. first mark the holes with a marker, then install the reinforcing tape. IF YOU USE THE RIVET METHOD, DO NOT PUT MASKING TAPE ON THE RIBS. Next you will burn the fabric holes with a hot soldering iron. Now place the rivets in the burned holes, it is best to place as many rivets as possible before starting the pulling process. At the factory we use an air powered rivet puller. Place a rag over the air exhaust hole if it exhausts on the fabric. DO NOT APPLY TO MUCH PRESSURE TO THE RIVET WHEN PULLING.

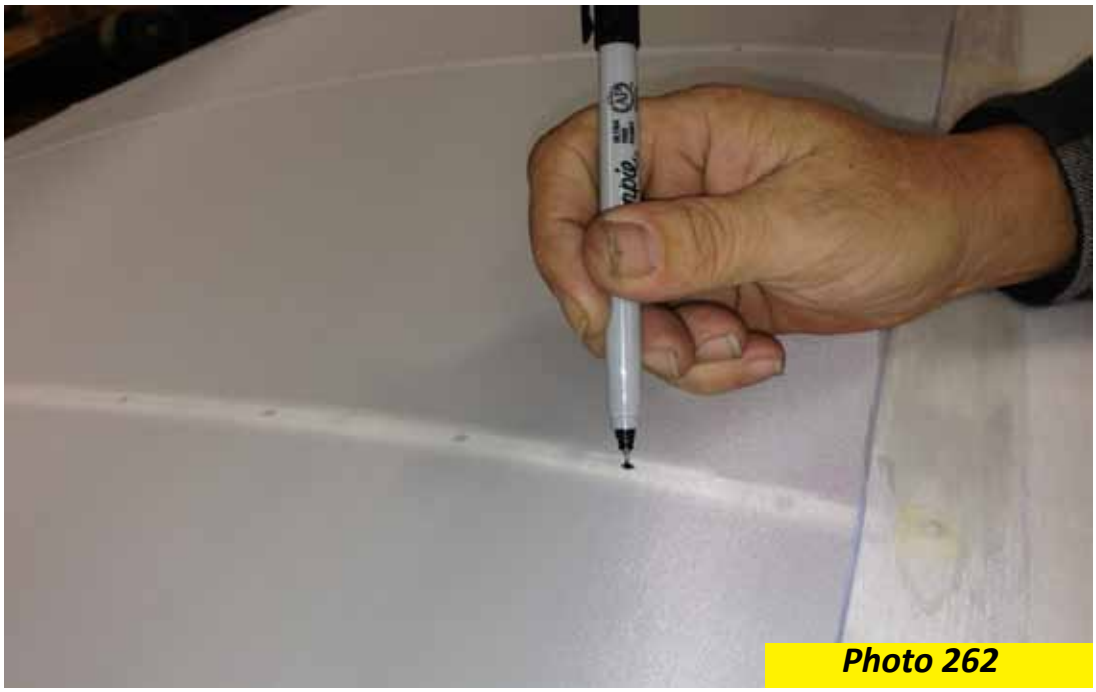


Photo 262

Photo 261

Photo 263

Photo 264

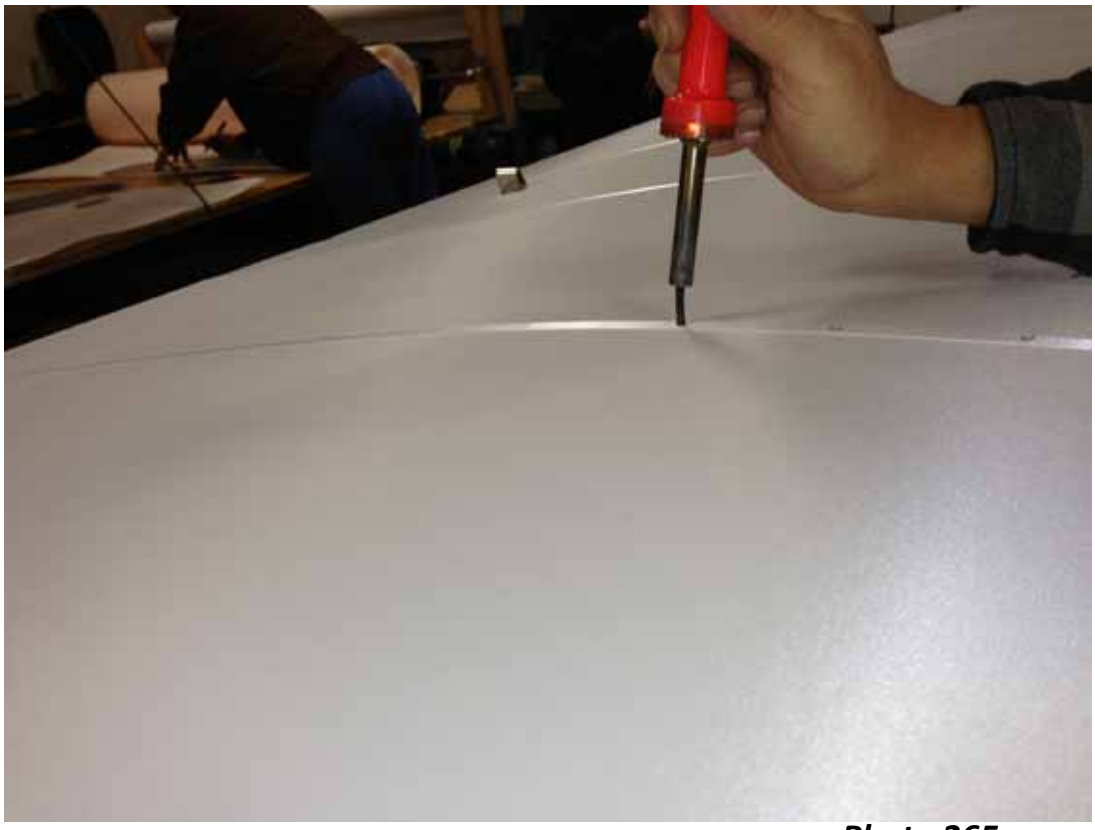


Photo 265

Photo 266

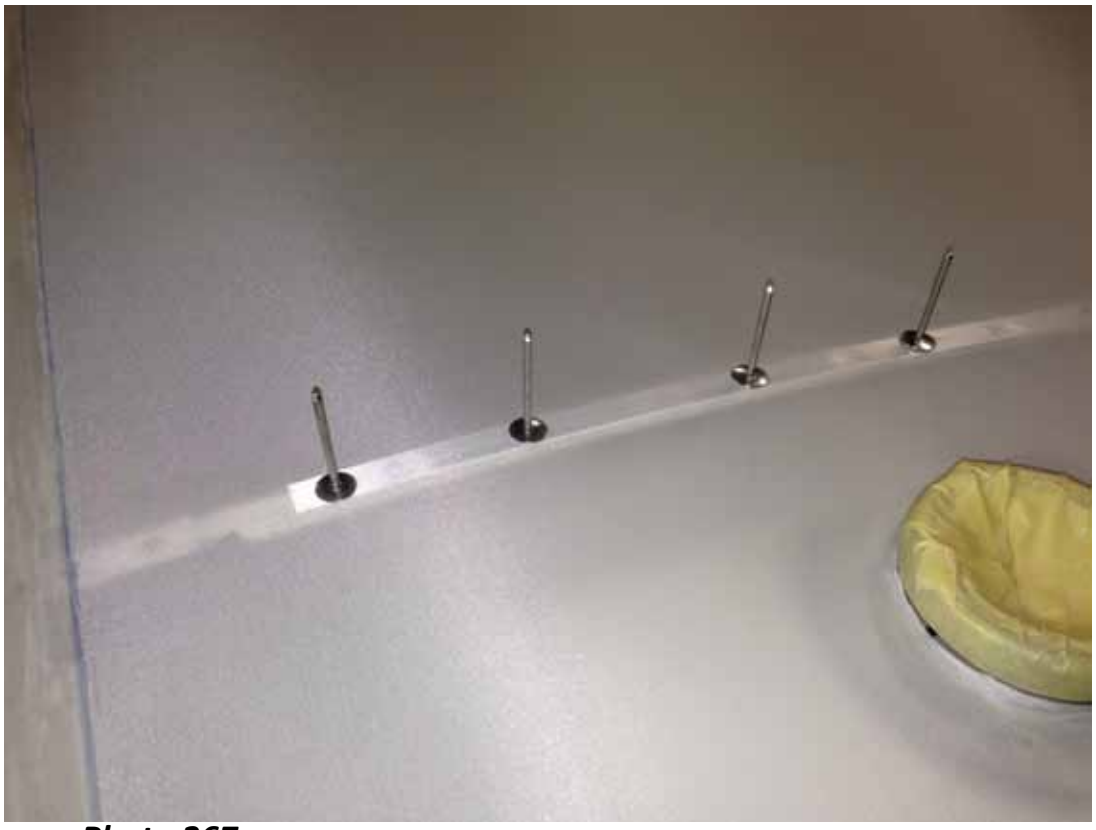


Photo 267

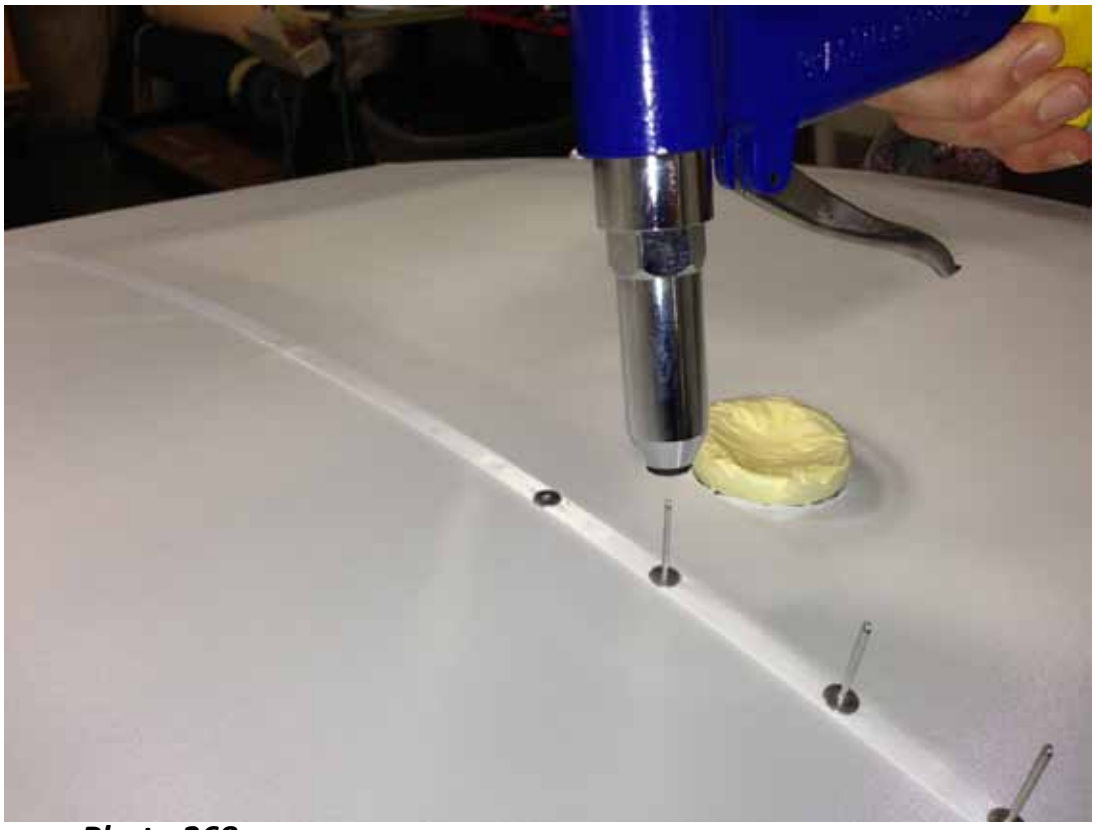


Photo 268

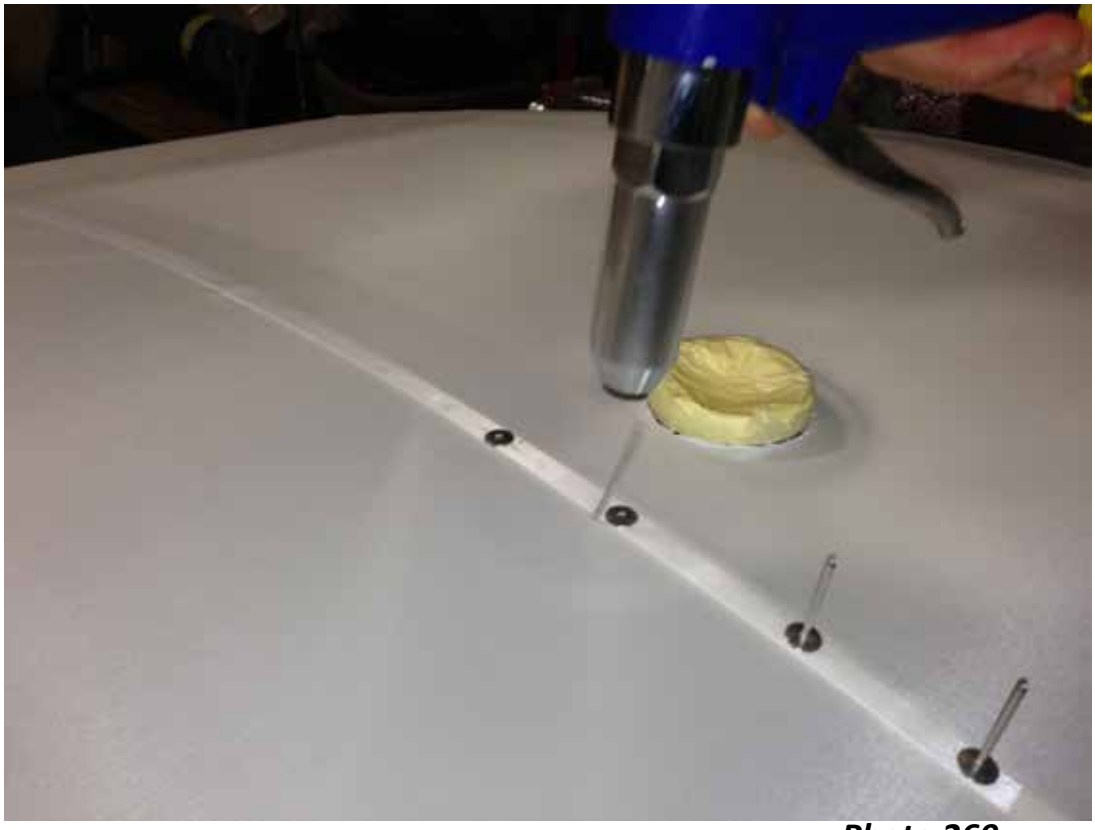


Photo 269

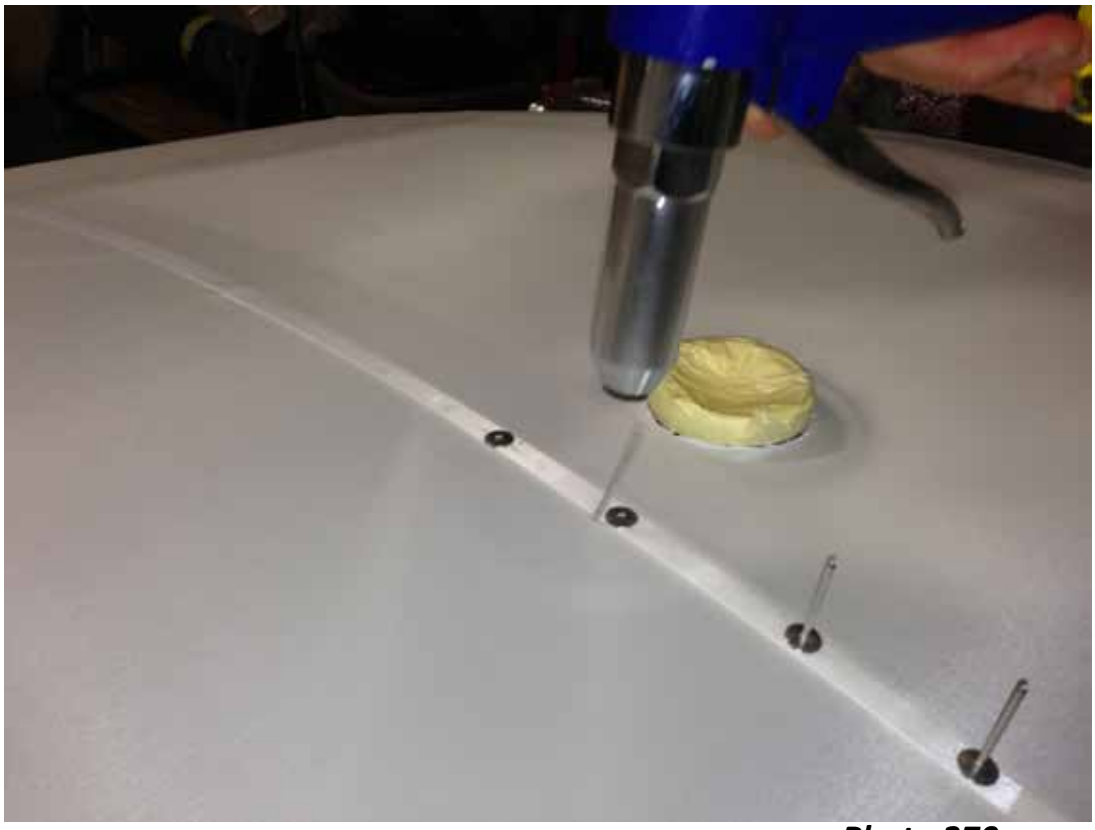


Photo 270

SECTION 8 INSTALLING THE TAPES OVER RIVETED RIBS

When you install the tapes over the fabric rivets, you will use a slightly different process than installing tapes over rib stitching. For both stitching and riveting we apply the first coat of Poly Brush, let it dry. Then apply a second coat of Poly Brush and let dry. Next we apply the tape with a wet coat of Poly Brush over the top of a dry tape. Here is where it gets a little different, with the rivets you will want to brush the Poly Brush towards the rivet head on all four sides of the rivet head. This will add a small amount of Poly Brush in between the tape and the fabric around the rivet head and help with the air bubble that will form under the tape around the rivet head. You will want to try to leave the air bubble around the rivet head as small as possible. Apply another coat of Poly Brush on top of the tapes and let it dry. You are now finished with the rib tapes.

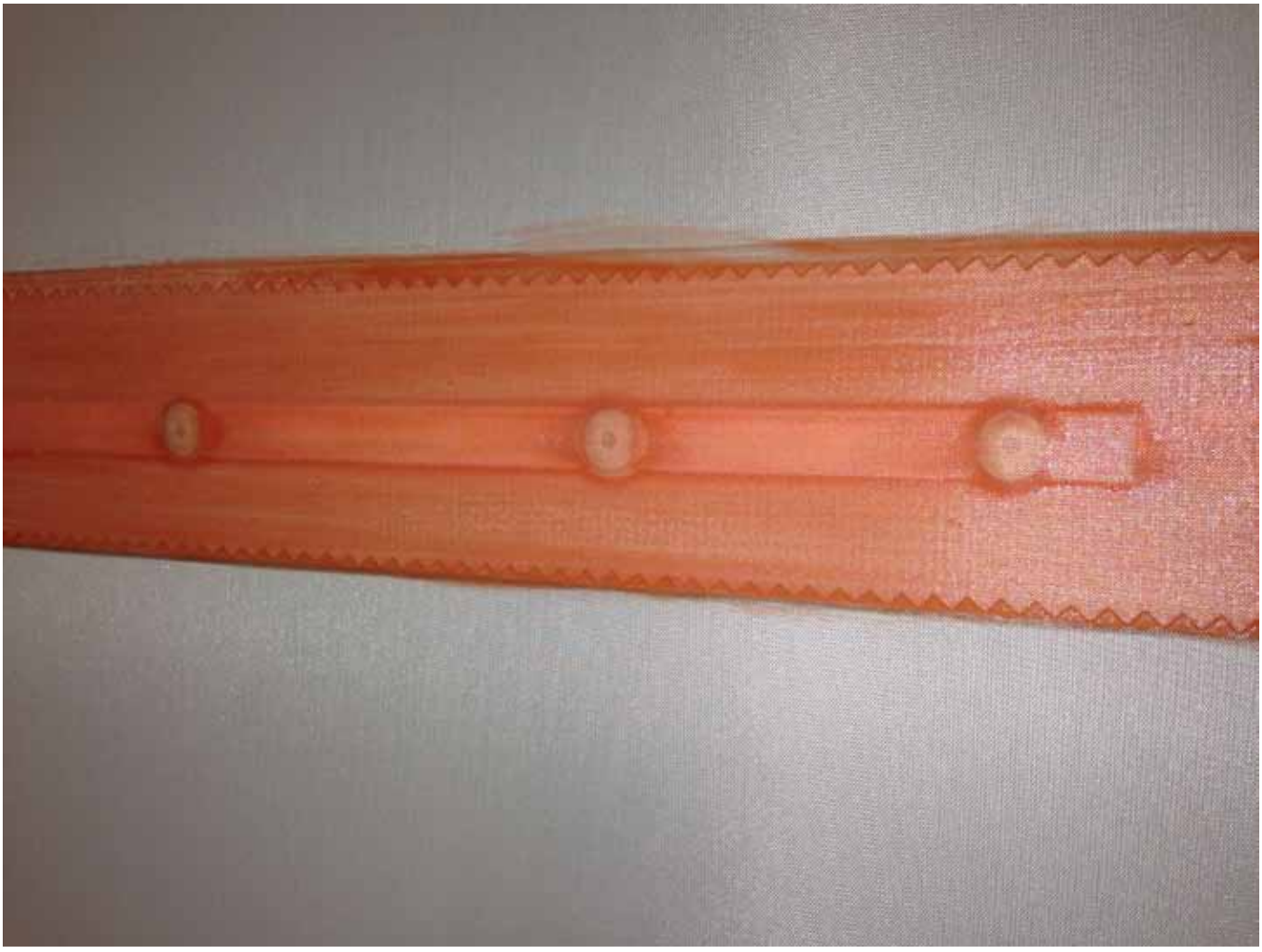


Photo 271

SECTION 9 REINFORCEMENT AND FINISHING TAPE APPLICATION

Install finishing tapes; these are used to cover sewn or glued seams or to provide an extra layer of cloth over areas that need reinforcement and will be indicated on Figure C1 through Figure C9.
Generally, most finishing tapes are 2 inches wide; however, 3-inch tapes may be used.
Glue inspection hole reinforcements and strut hole reinforcements with Poly-Tak.
Install fabric patches over all reinforcements. Tapes and patches shall be attached by brushing on a coat of Poly-Brush with a bristle brush and then laying the fabric over the affected area. Another coat of Poly Brush is to be applied over the top to make sure all the fabric is saturated. Any excess may be wiped off while still wet. Air pockets under the tapes or patches may be removed using an iron heated to 225ºF. This will also aid the adhesion.
Floatplanes may specify drain grommets. If this is the case, melt a 0.13 inches diameter hole through the fabric before attaching the seaplane grommets. The grommets are glued with Poly-Tak. They must be installed with the opening facing aft.

SECTION 10 FIRST POLY-BRUSH APPLICATION

Poly-Brush is applied to seal and soak through the fabric to help secure it to the structure. Two coats are applied in two separate applications.
Thin the Poly-Brush per manufacturer's instructions before application.
Blow and tack off the wing to be sure it is dust free.
Apply the first coat of Poly-Brush using a HVLP gun with 30-50 PSI inlet pressure as follows: Spray a 3' X 3' area; then, using a foam brush, work the Poly-Brush into the material. Use uniform strokes and not more than 3 or 4 passes in any given area. Repeat the procedure until the entire item is covered. Replace brush as necessary.

SECTION 11 SECOND POLY-BRUSH APPLICATION

The second Poly-Brush application consists of one sprayed-on coat. Blow and tack off the wing before spraying to be sure it is dust free. Thin the Poly-Brush per manufacturer's instructions before application. Spray the second coat of Poly-Brush and allow it to dry for 15 minutes. A third coat of Poly Brush should be applied to the Leading edge skin. EACH TIME POLY-BRUSH IS SPRAYED ONTO THE LEADING EDGE SKIN, IT SHOULD BE BRUSHED IN WITH A 4" FOAM BRUSH. THIS WILL HELP PREVENT BUBBLES FROM FORMING IN THE POLY-BRUSH.

SECTION 12

POLY-SPRAY APPLICATION

Poly-Spray blocks UV rays and provides a sandable filler coat. The Poly-Spray application consists of two coats in two applications.

SECTION 13

PAINTING PREPARATION OF METAL

Degrease components with DX330 per manufacturer's instructions.
Mix and apply PPG Metal Primer DX1787 and DX1788 per manufacturer's instructions.

SECTION 14

PAINTING PREPARATION OF FIBERGLASS

Degrease components with DX330 per manufacturer's instructions.
Mix and apply PPG Metal Primer DX1787 and DX1788 per manufacturer's instructions.

SECTION 15

PAINTING PREPARATION OF FABRIC

Smooth any edges with a small iron. Use dry 400-grit sandpaper to smooth tape and doubler edges and remove surface dust bumps. 3M 8500 Sealant or equivalent can be used to cover seams in corners, as needed.

SECTION 16

PAINTING GENERAL

The final finish is a polyurethane DUHS paint from PPG. Mix the paint in accordance with the PPG's application guide. Spray the first coat with a HVLP gun with a 30-50 psi inlet pressure. Allow to dry for 20 minutes and apply a second coat.
After a minimum of 20 minutes (or after the paint has flashed off) air dry at 70°F for approximately eight hours.

SECTION 17

PAINT SCHEME AND AIRCRAFT REGISTRATION MARKS

The paint scheme shall be optional in accordance with the owners concept
Aircraft registration markings will be applied following the country specific requirements.

SECTION 18 FIGURES

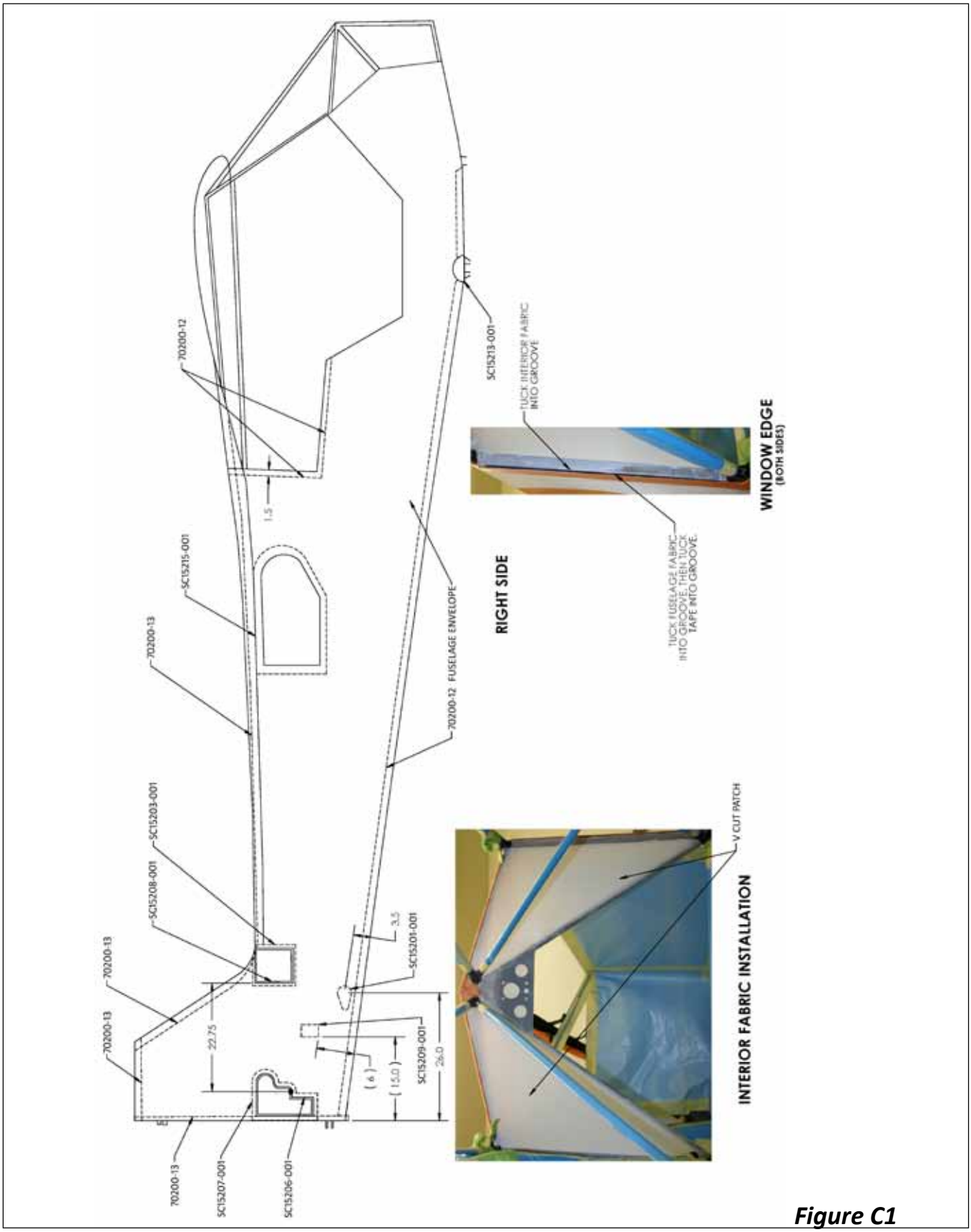


Figure C1

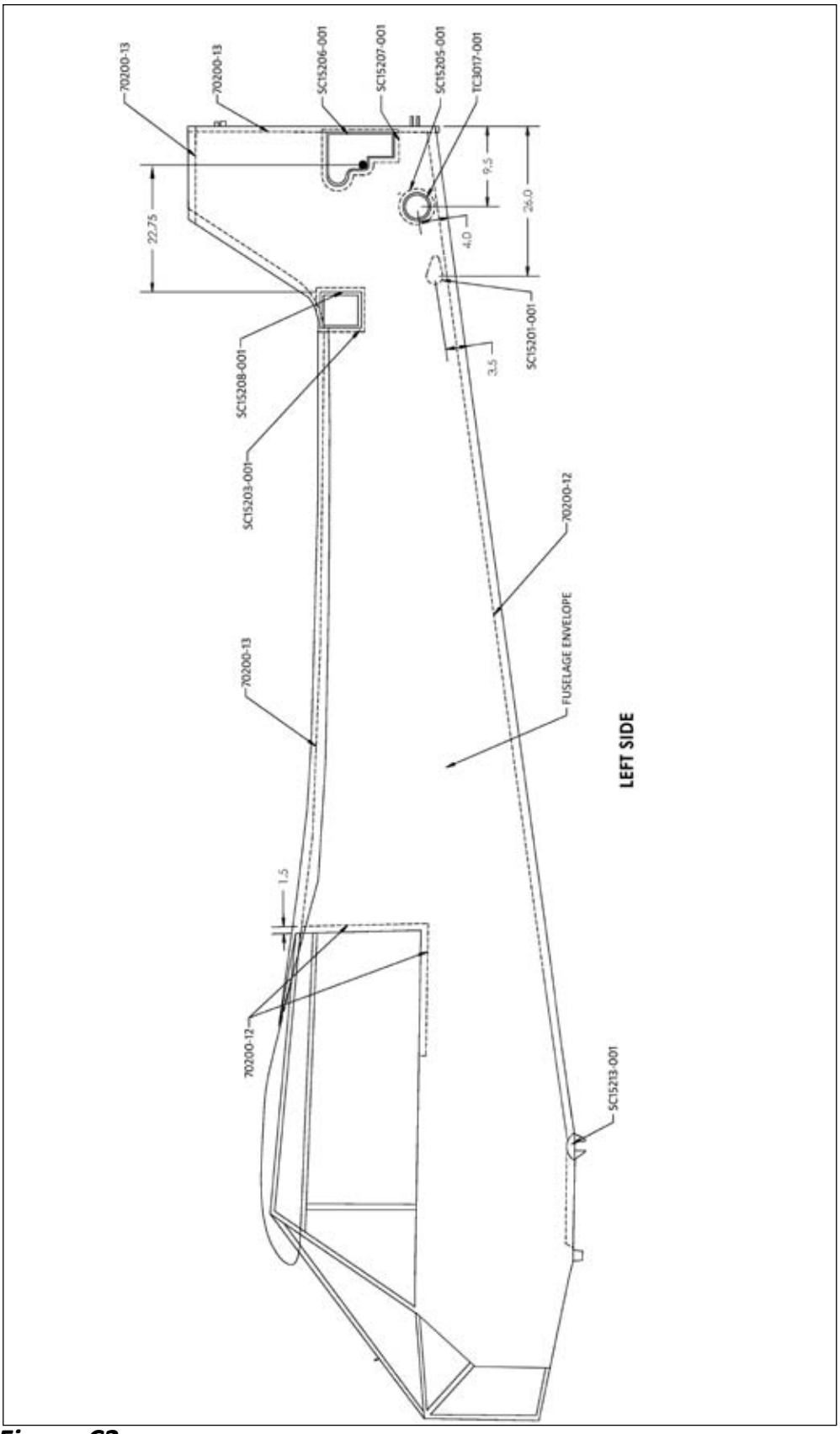


Figure C2

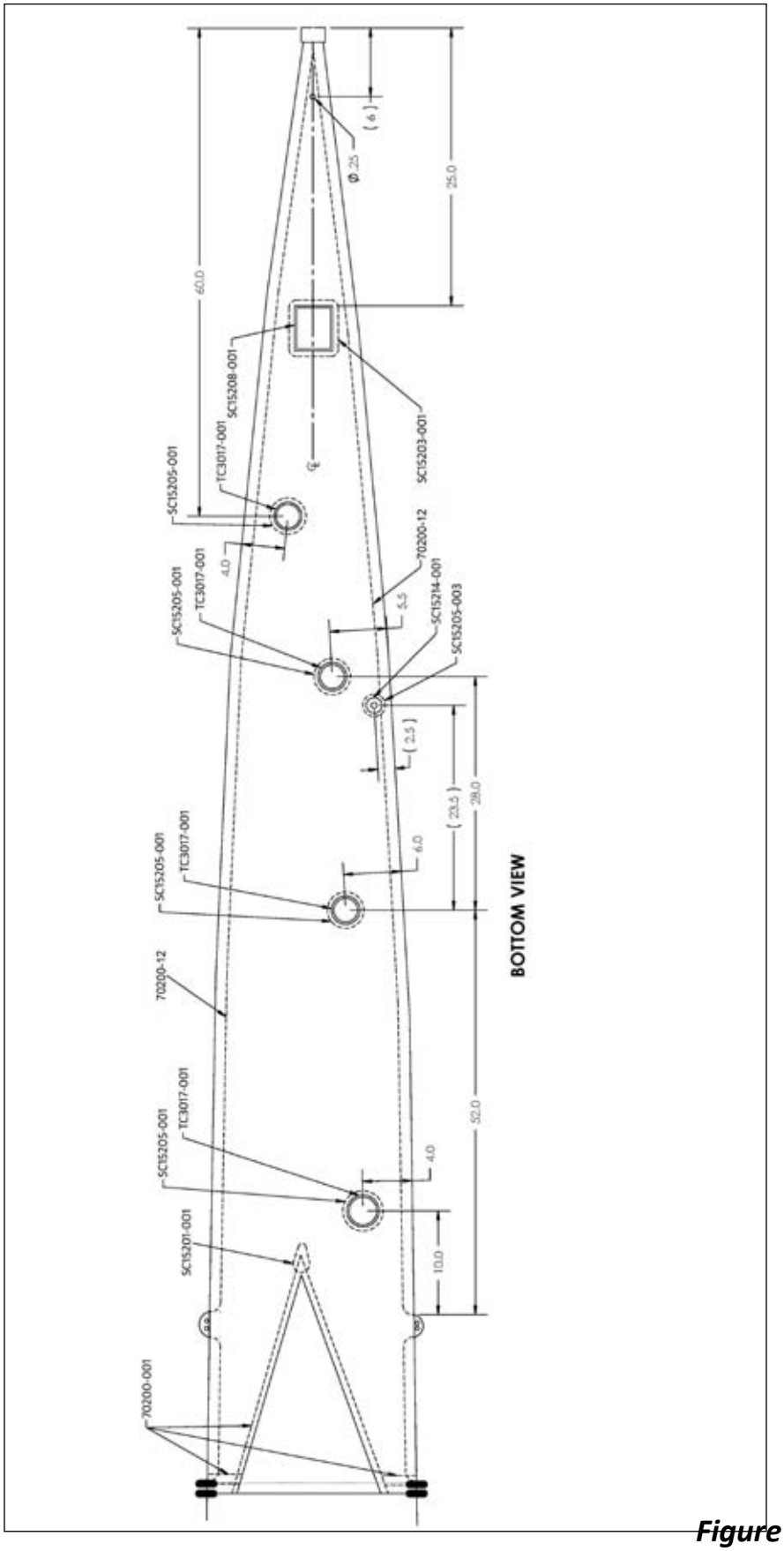


Figure C3

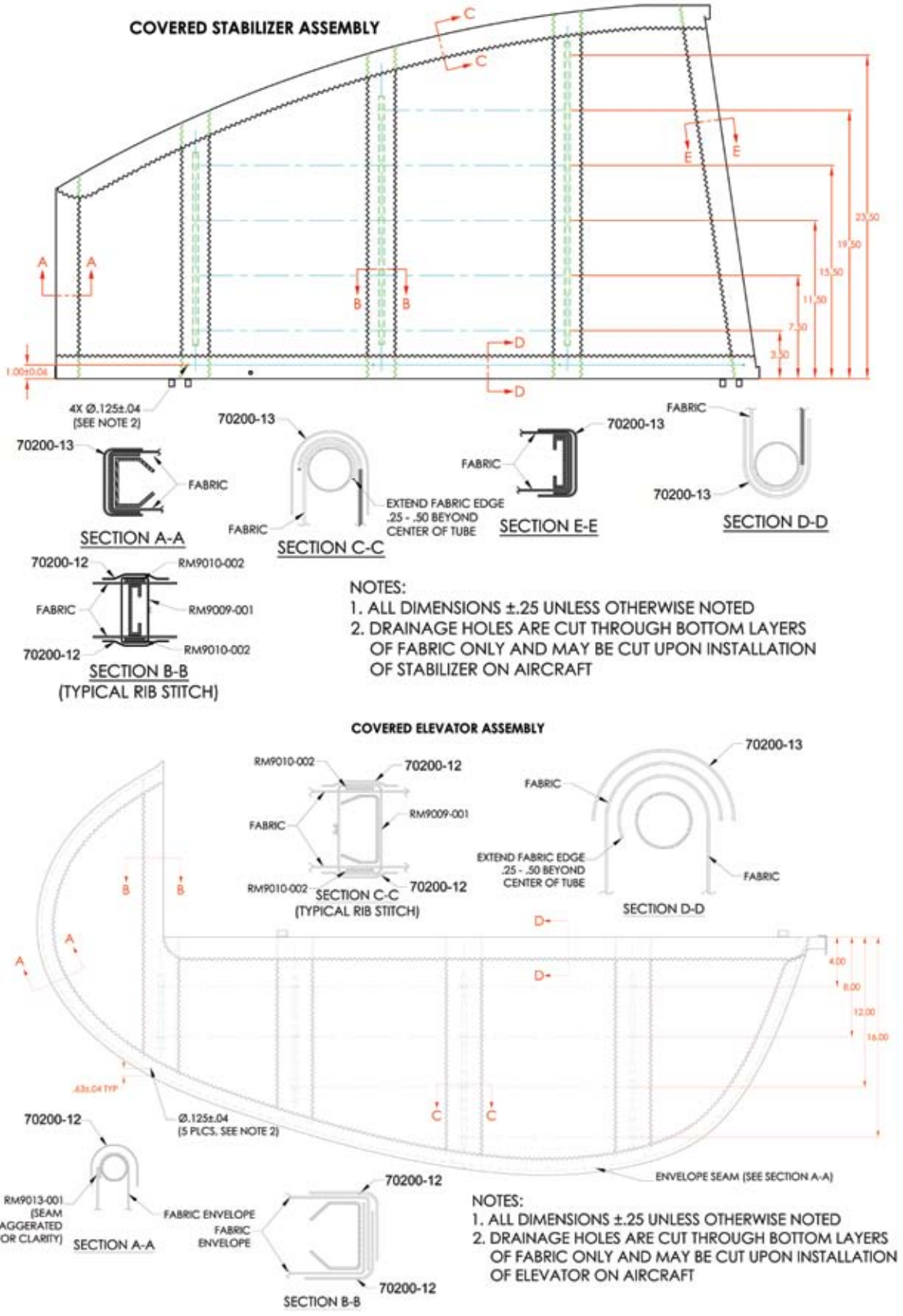

COVERED STABILIZER ASSEMBLY
4X Ø.125±.04
(SEE NOTE 2)
70200-13
FABRIC
SECTION A-A
EXTEND FABRIC EDGE
.25 - .50 BEYOND
CENTER OF TUBE
SECTION C-C
SECTION E-E
SECTION D-D
70200-12
RM9010-002
RM9009-001
SECTION B-B
(TYPICAL RIB STITCH)
NOTES:
1. ALL DIMENSIONS ±.25 UNLESS OTHERWISE NOTED
2. DRAINAGE HOLES ARE CUT THROUGH BOTTOM LAYERS
OF FABRIC ONLY AND MAY BE CUT UPON INSTALLATION
OF STABILIZER ON AIRCRAFT
COVERED ELEVATOR ASSEMBLY
Ø.125±.04
(5 PLCS. SEE NOTE 2)
ENVELOPE SEAM (SEE SECTION A-A)
RM9013-001
(SEAM
EXAGGERATED
FOR CLARITY)
FABRIC ENVELOPE
NOTES:
1. ALL DIMENSIONS ±.25 UNLESS OTHERWISE NOTED
2. DRAINAGE HOLES ARE CUT THROUGH BOTTOM LAYERS
OF FABRIC ONLY AND MAY BE CUT UPON INSTALLATION
OF ELEVATOR ON AIRCRAFT

Figure C4

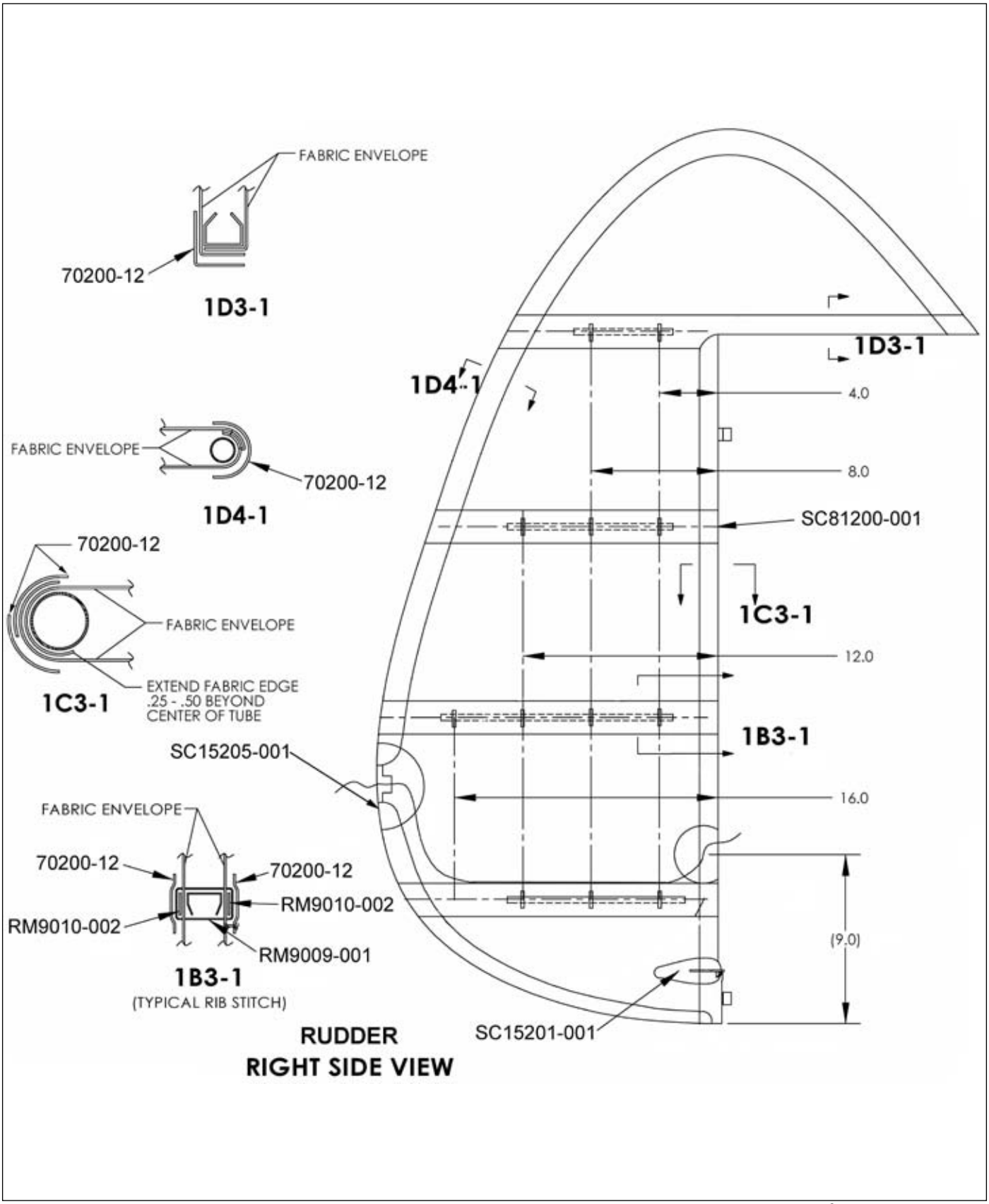


Figure C5

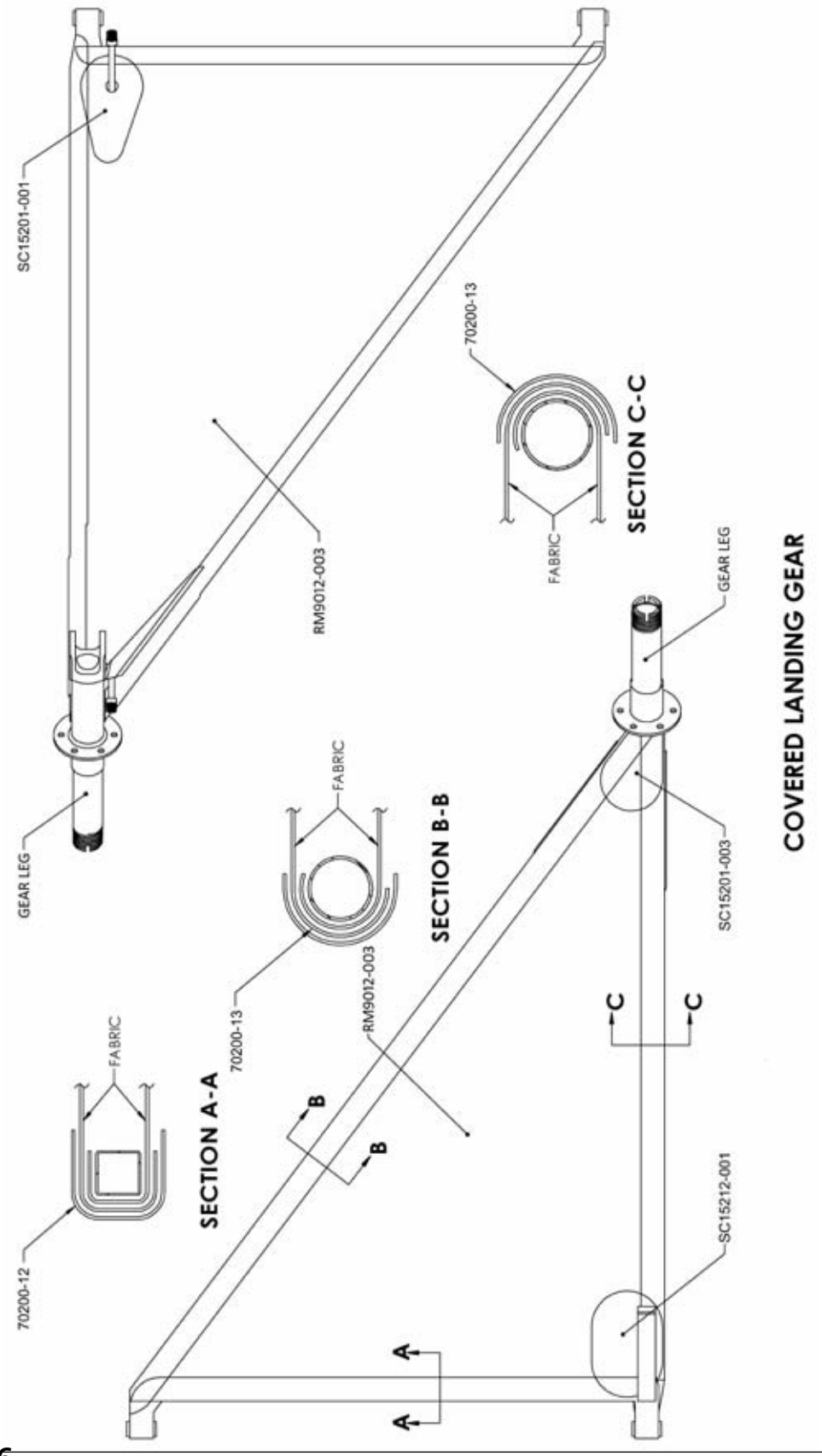


Figure C6

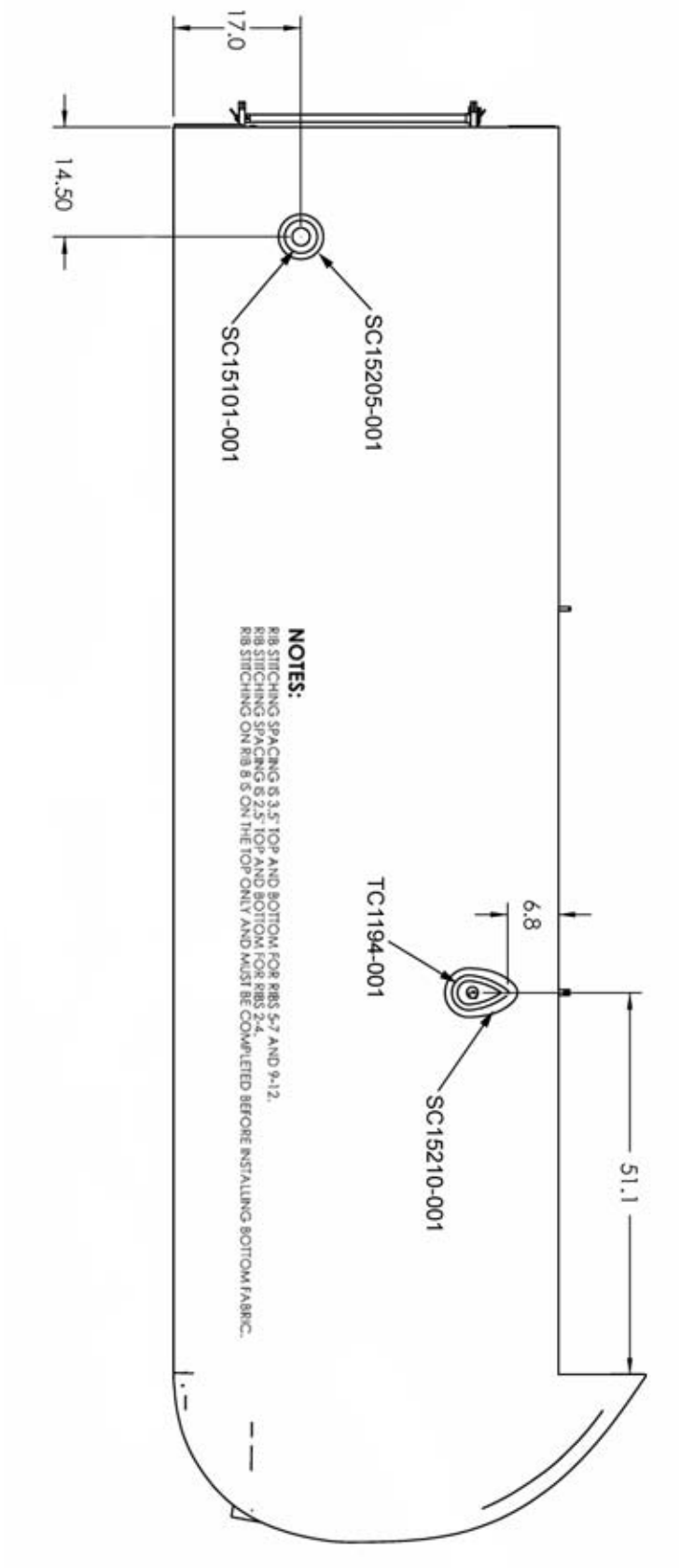


Figure C7

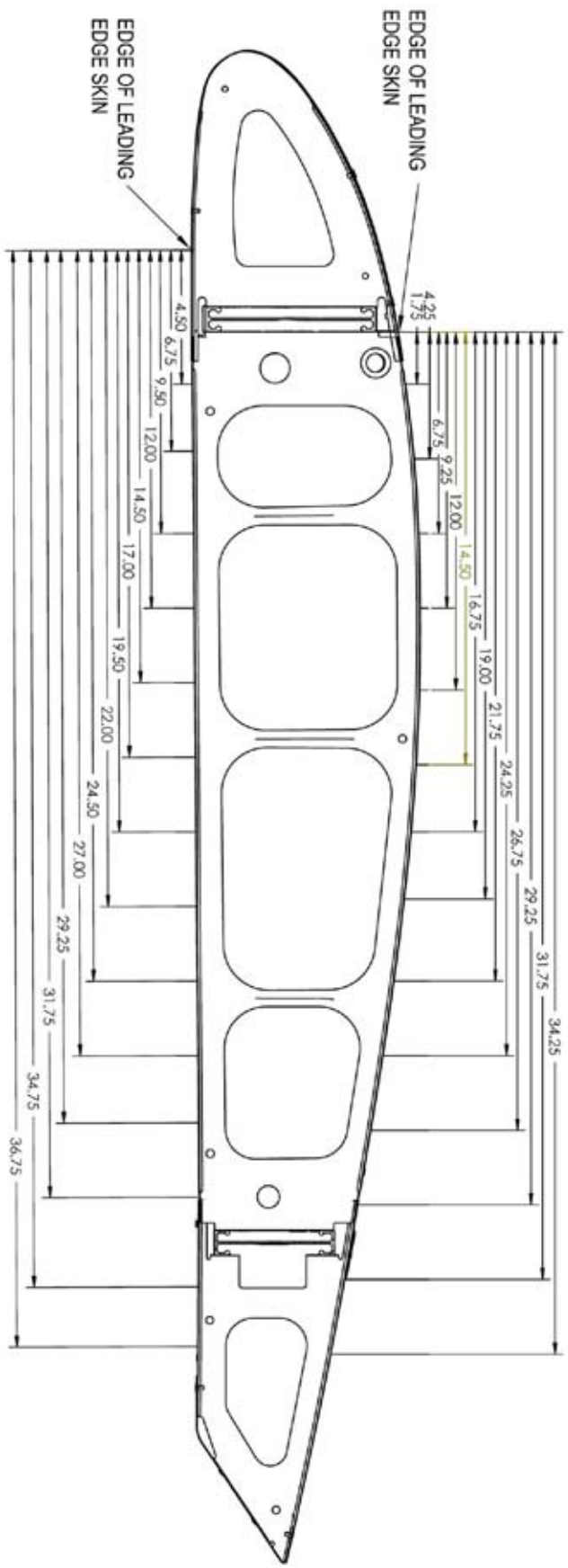


Figure C8

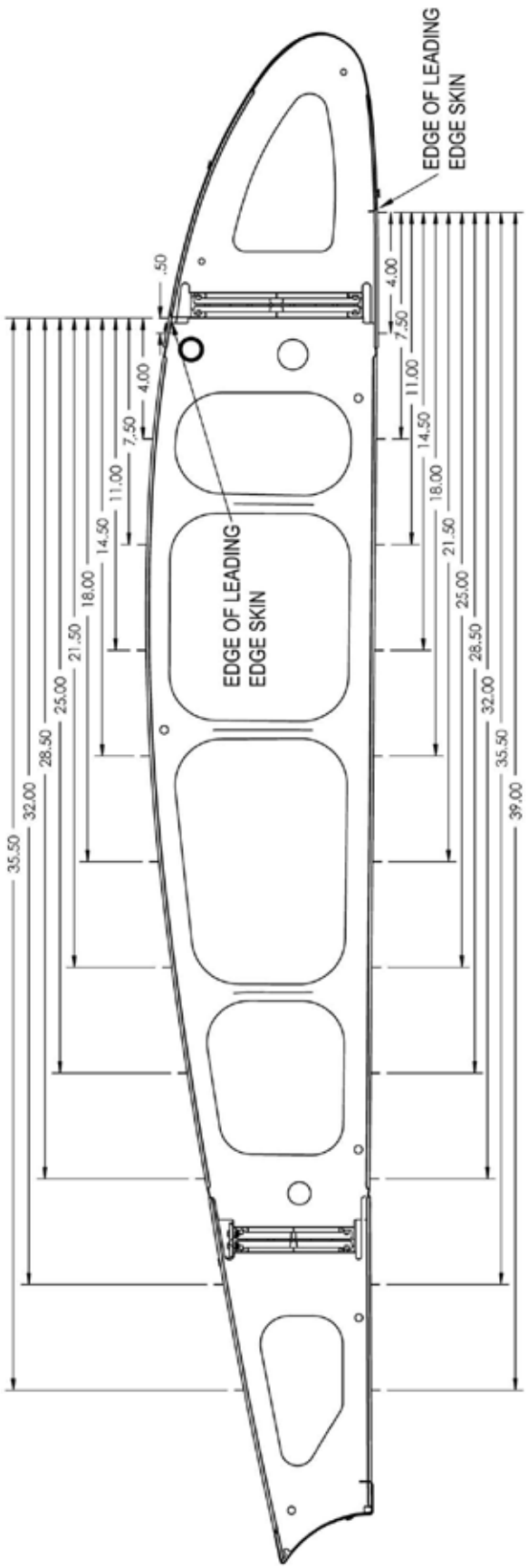


Figure C9

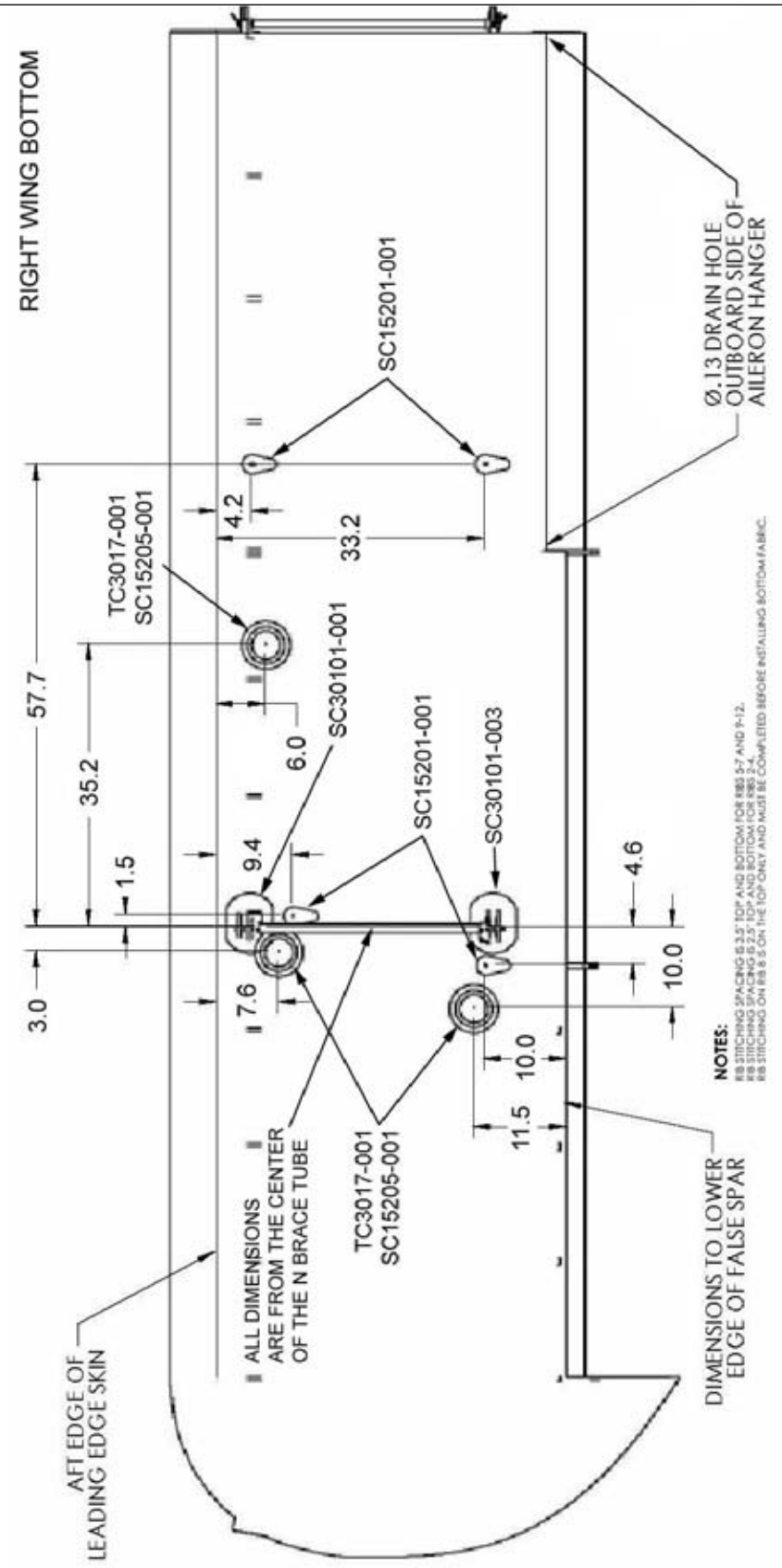


Figure C10

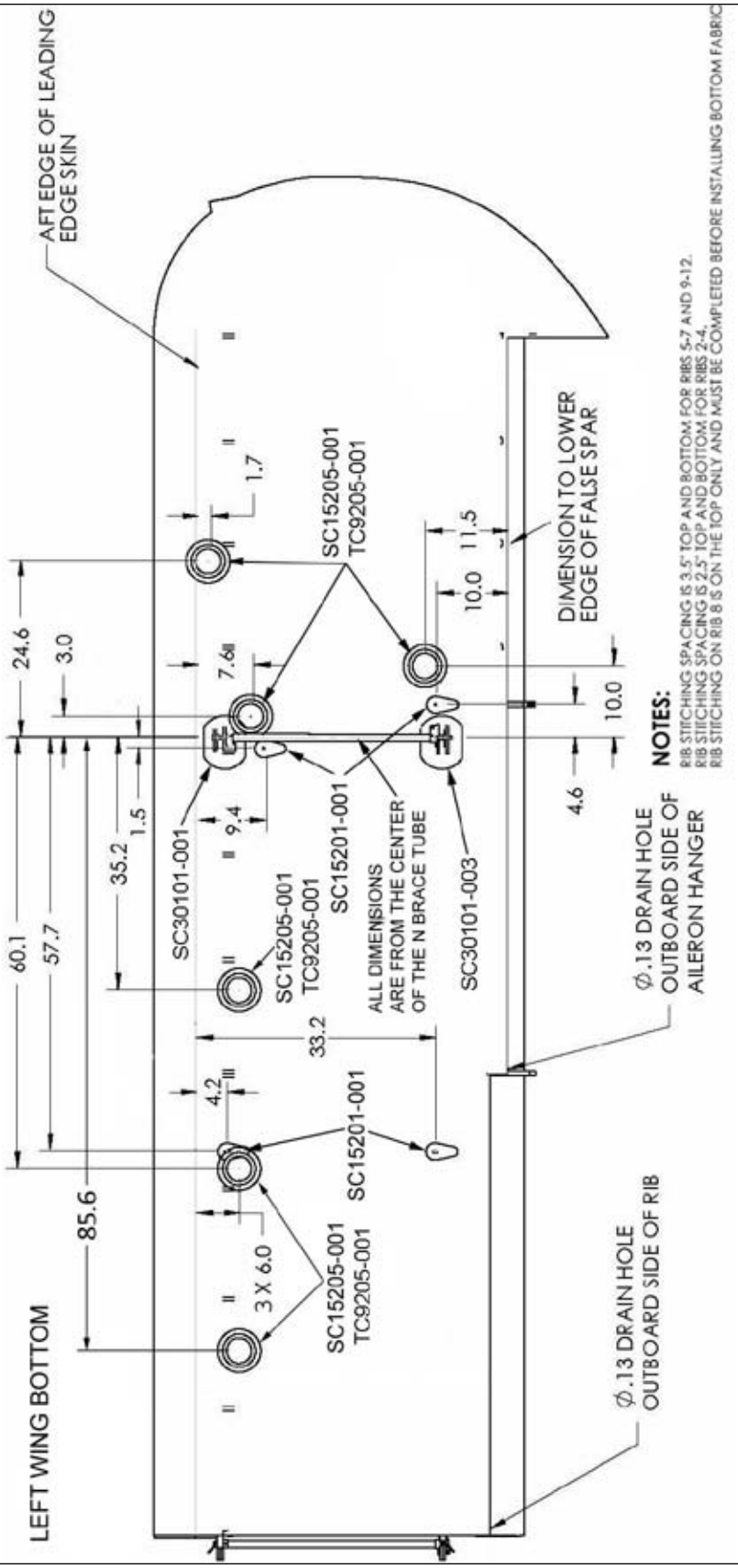


Figure C11

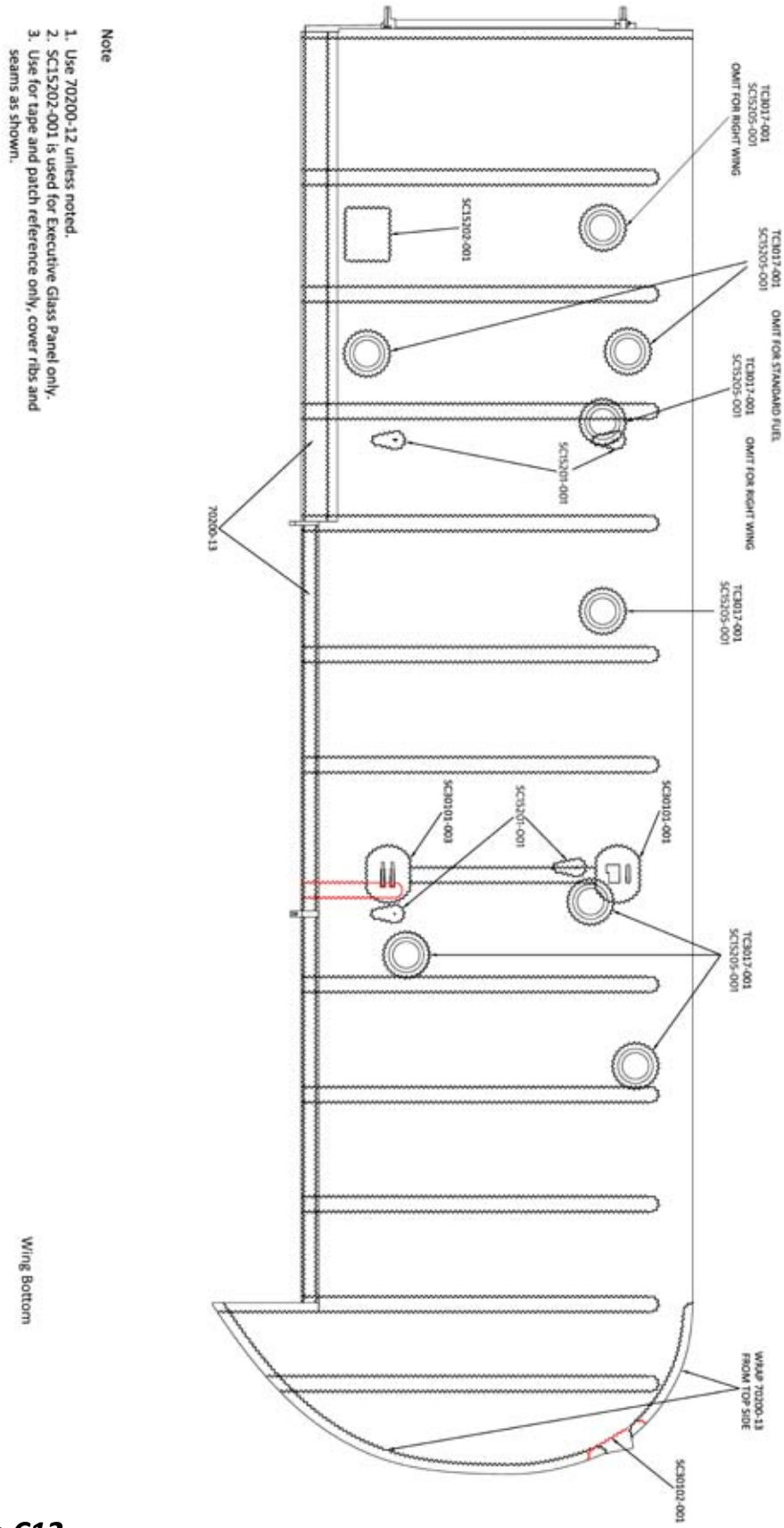


Figure C12

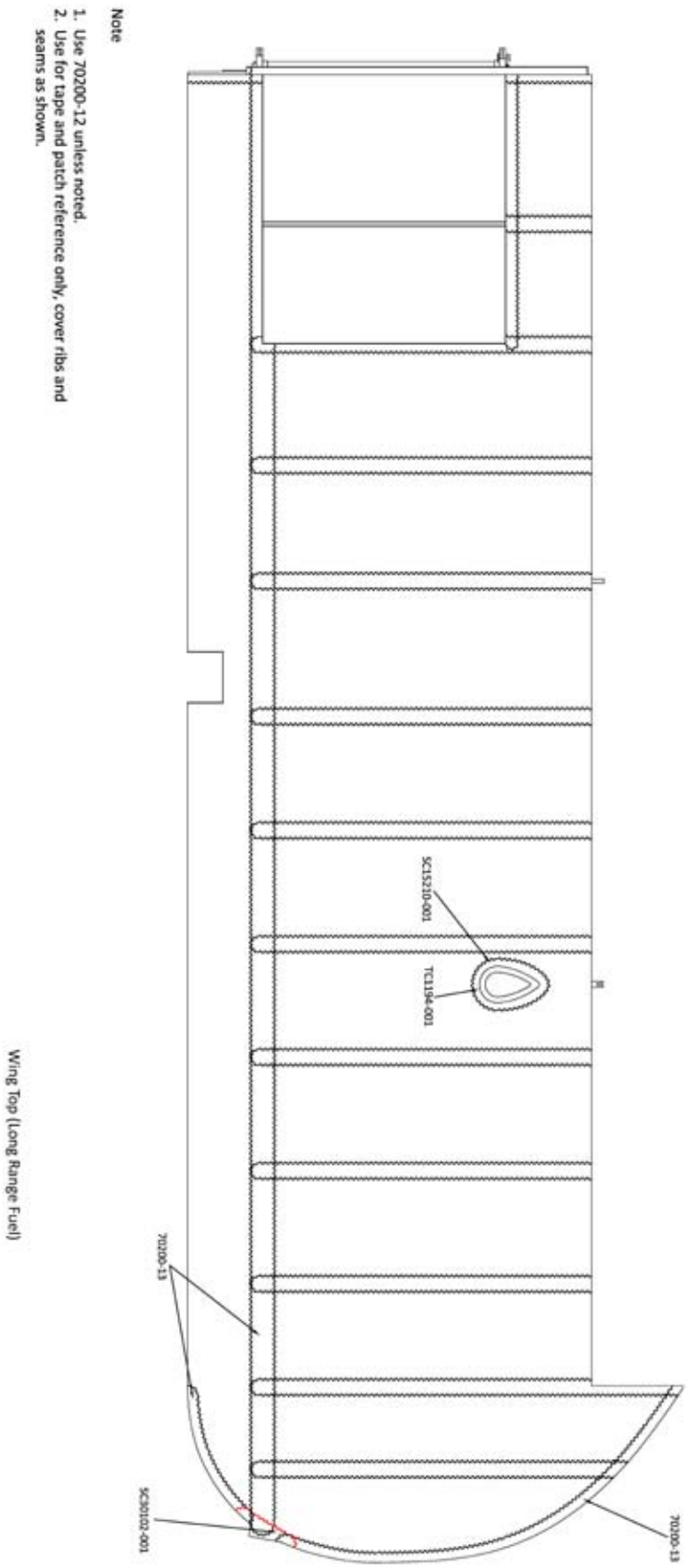


Figure C13

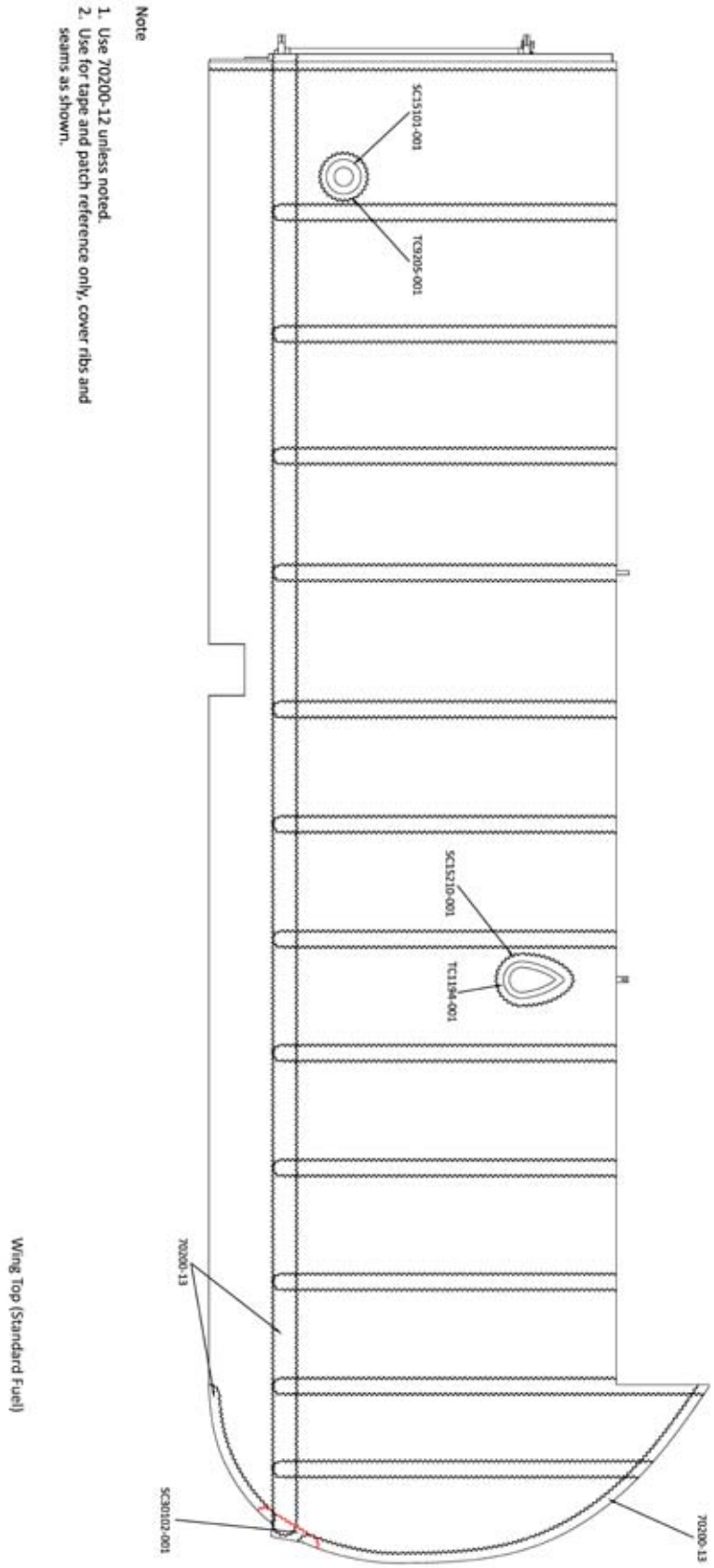


Figure C14

OUTBOARD AILERON TRAILING EDGE RIB
VIEW FROM OUTBOARD SIDE

OUTBOARD AILERON TRAILING EDGE RIB
HOLES TO DRILL UPON ASSEMBLY

Figure C15

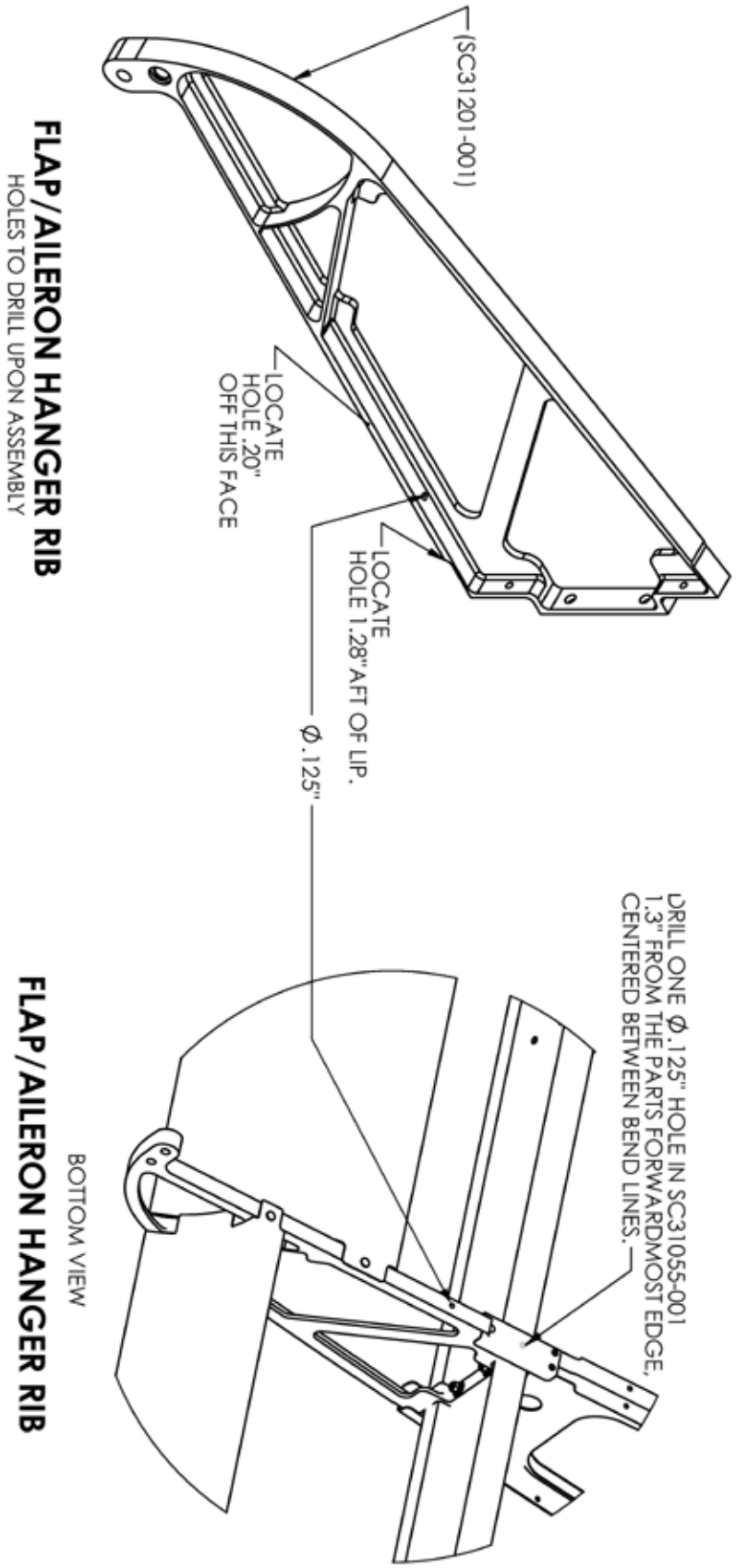
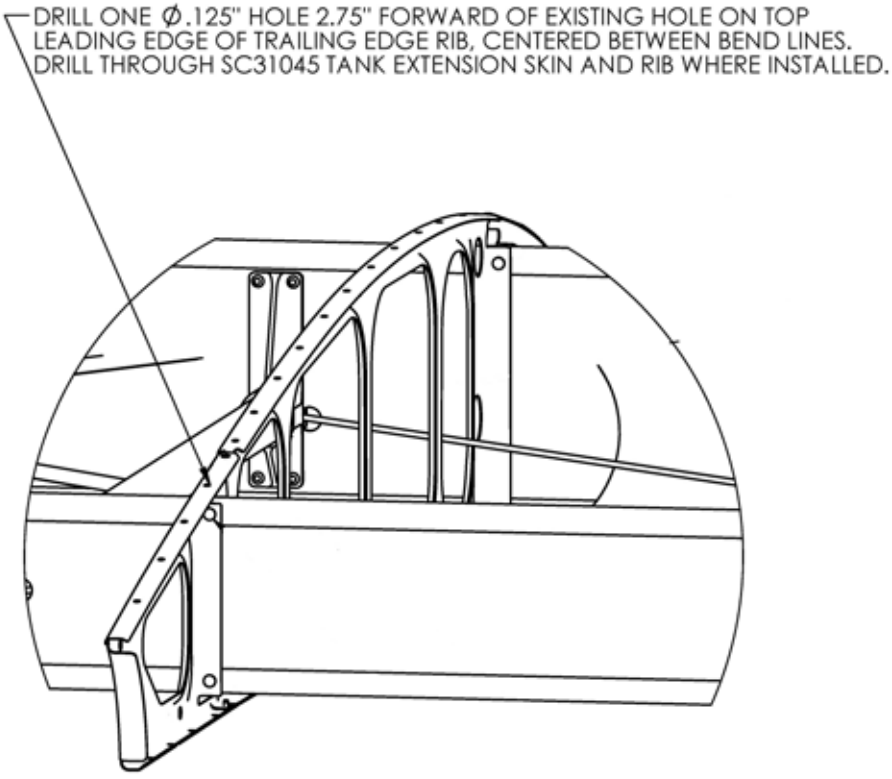
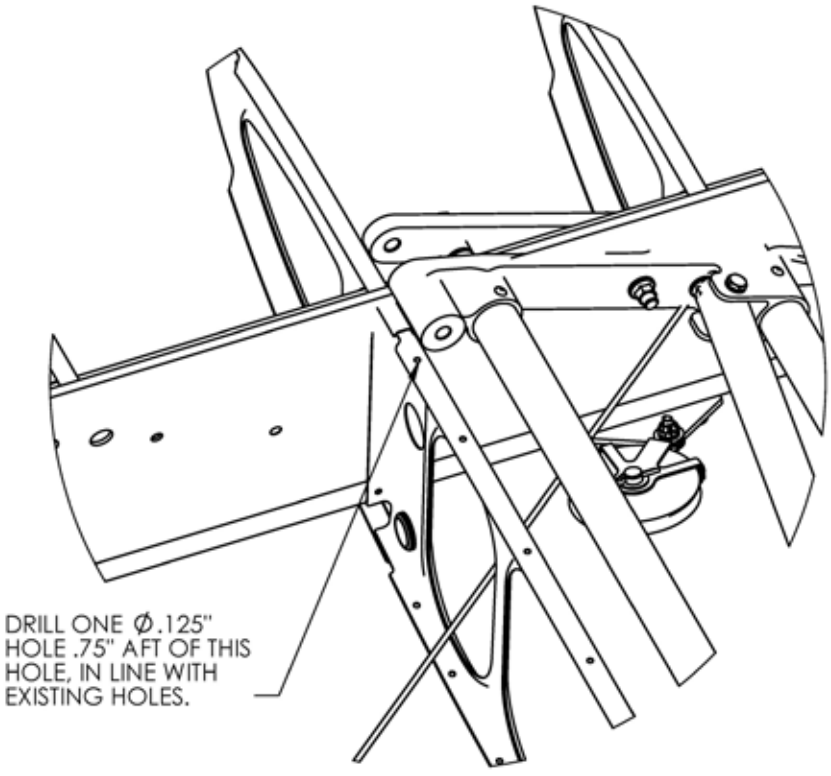

(SC31201-001)
LOCATE HOLE .20" OFF THIS FACE
LOCATE HOLE 1.28" AFT OF LIP.
Ø.125"
FLAP/AILERON HANGER RIB
HOLES TO DRILL UPON ASSEMBLY
DRILL ONE Ø.125" HOLE IN SC31055-001 1.3" FROM THE PARTS FORWARDMOST EDGE, CENTERED BETWEEN BEND LINES.
BOTTOM VIEW
FLAP/AILERON HANGER RIB

Figure C16



ADDED TAIL RIB HOLE TYPICAL

Figure C17



#8 RIB DETAIL (BOTTOM ONLY)

Figure C18

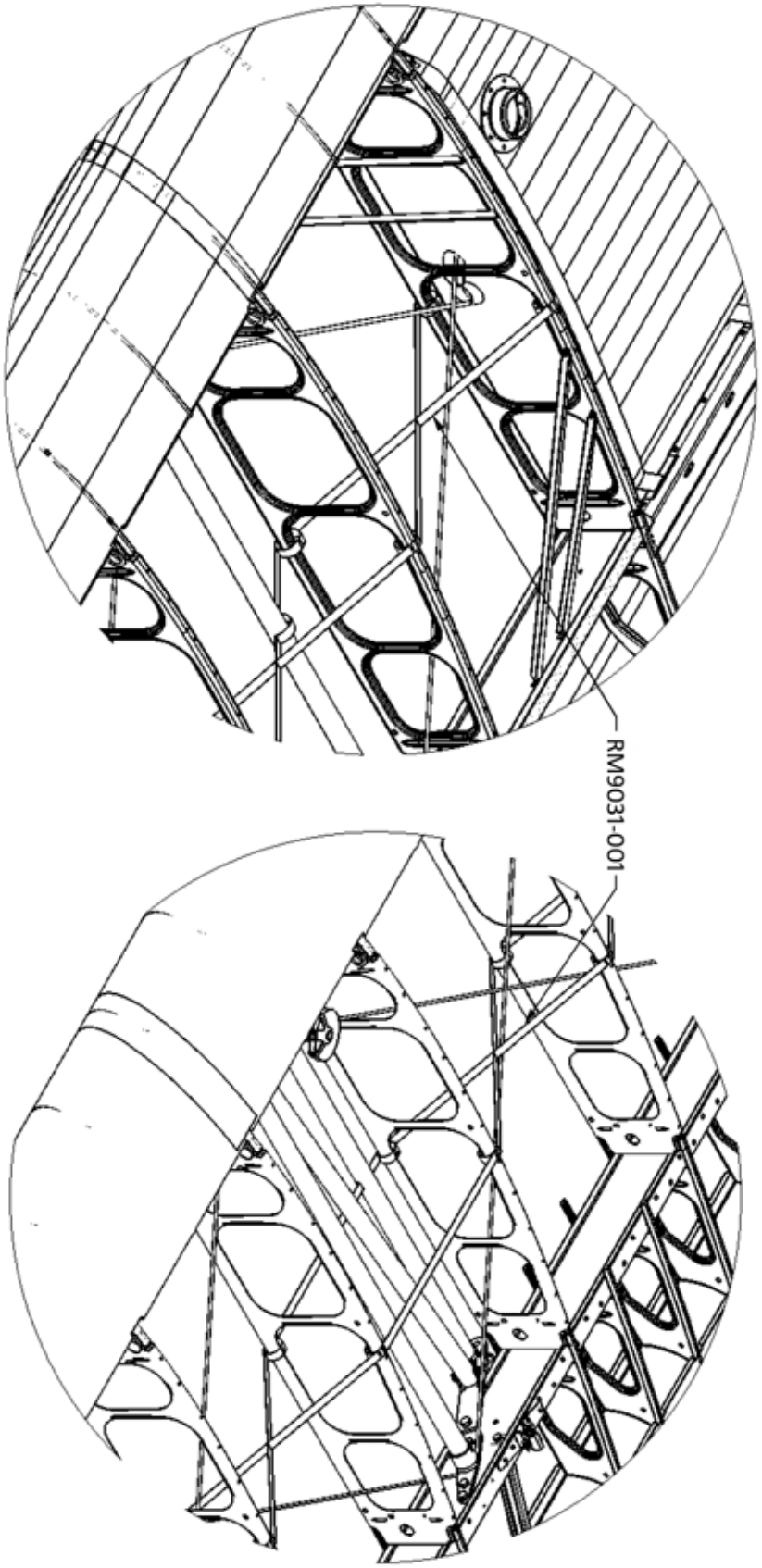


Figure C19

SECTION 19 CCK DRAIN LOCATIONS

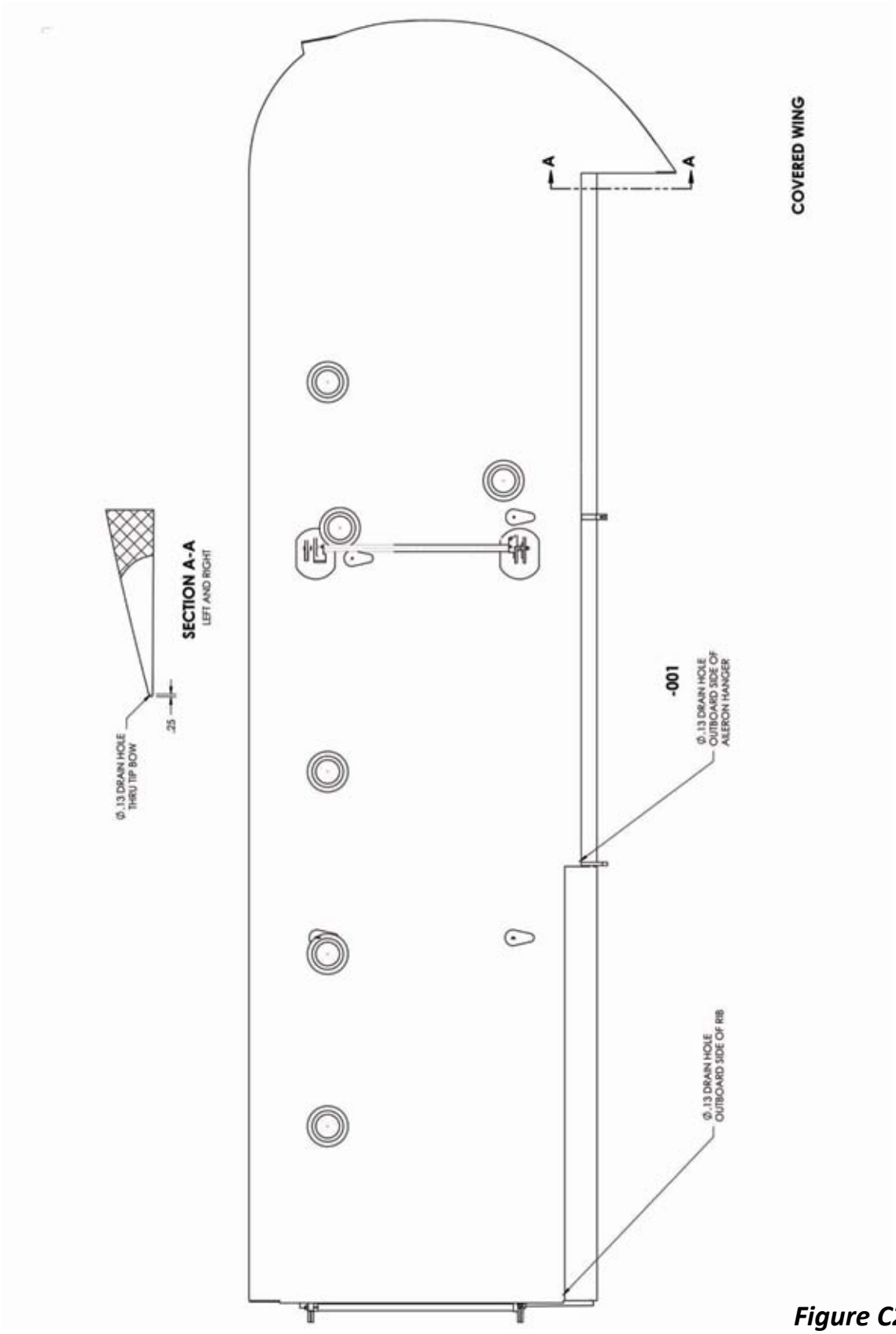


Figure C20

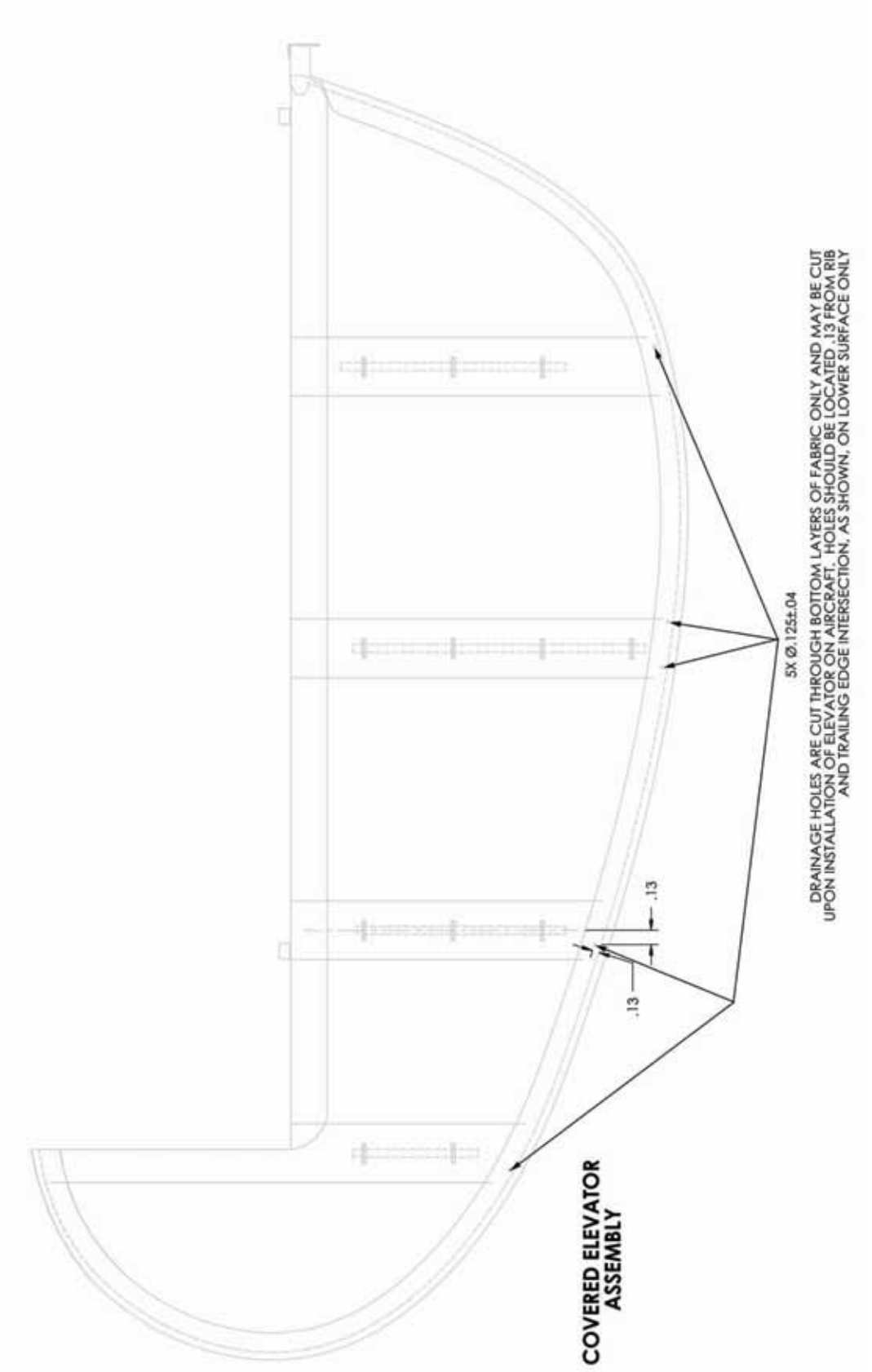


Figure C21

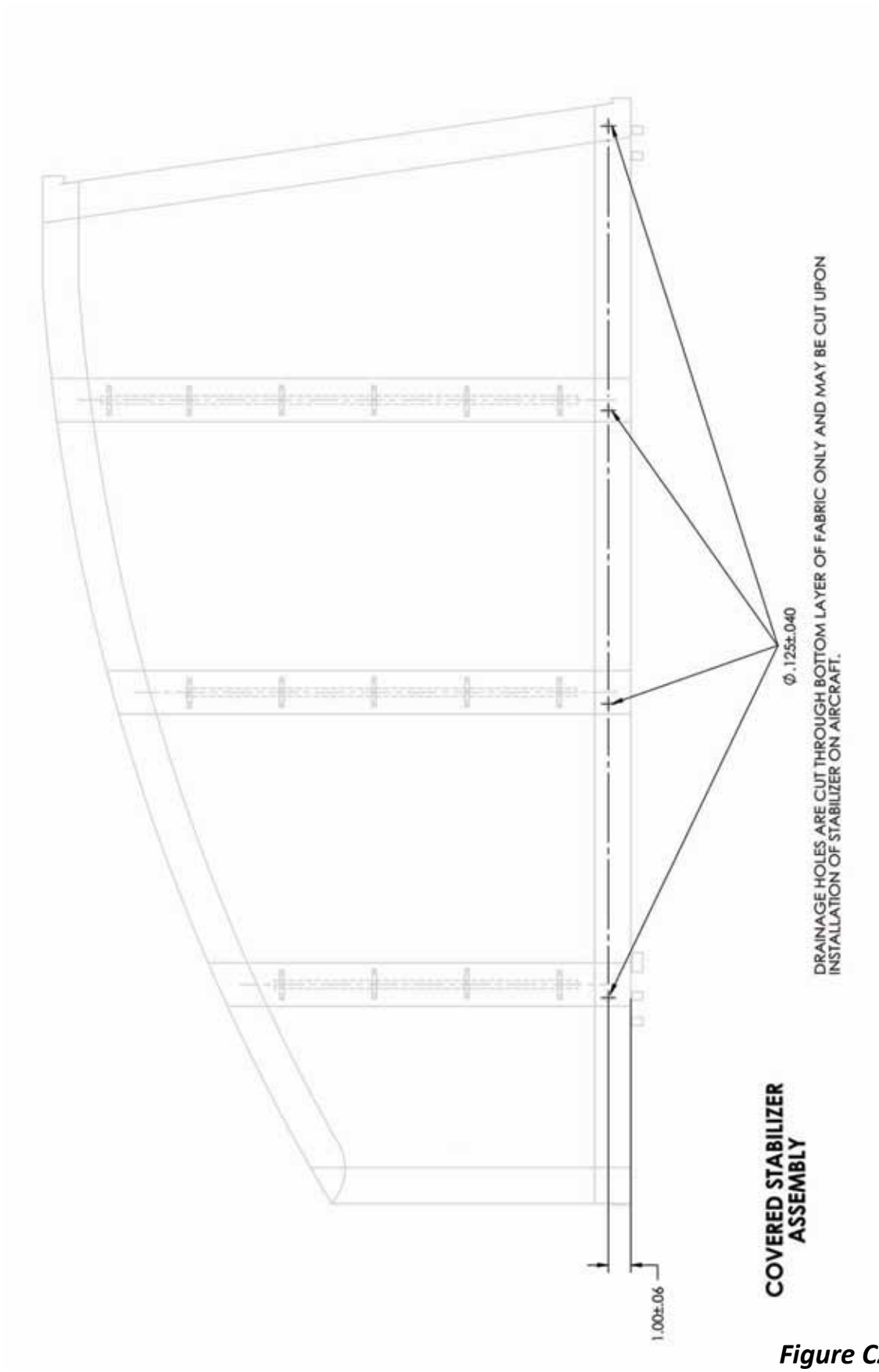
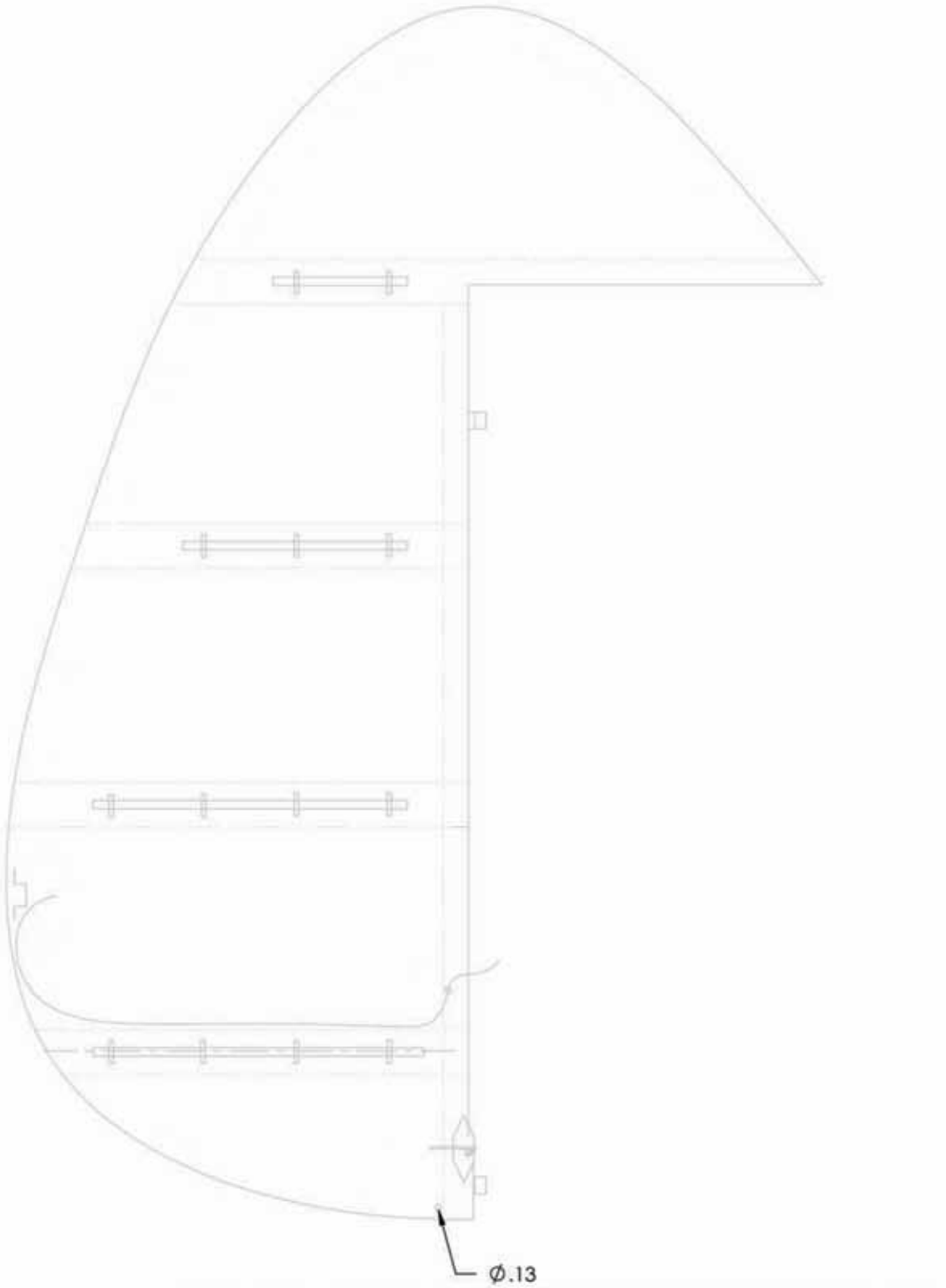


Figure C22



DRAINAGE HOLE MAY BE CUT UPON INSTALLATION OF RUDDER ON AIRCRAFT. HOLE SHOULD BE PLACED AS CLOSE TO TUBE AS POSSIBLE ON RIGHT HAND SIDE ONLY.

RIGHT SIDE VIEW

Figure C23

COVERED RUDDER ASSEMBLY

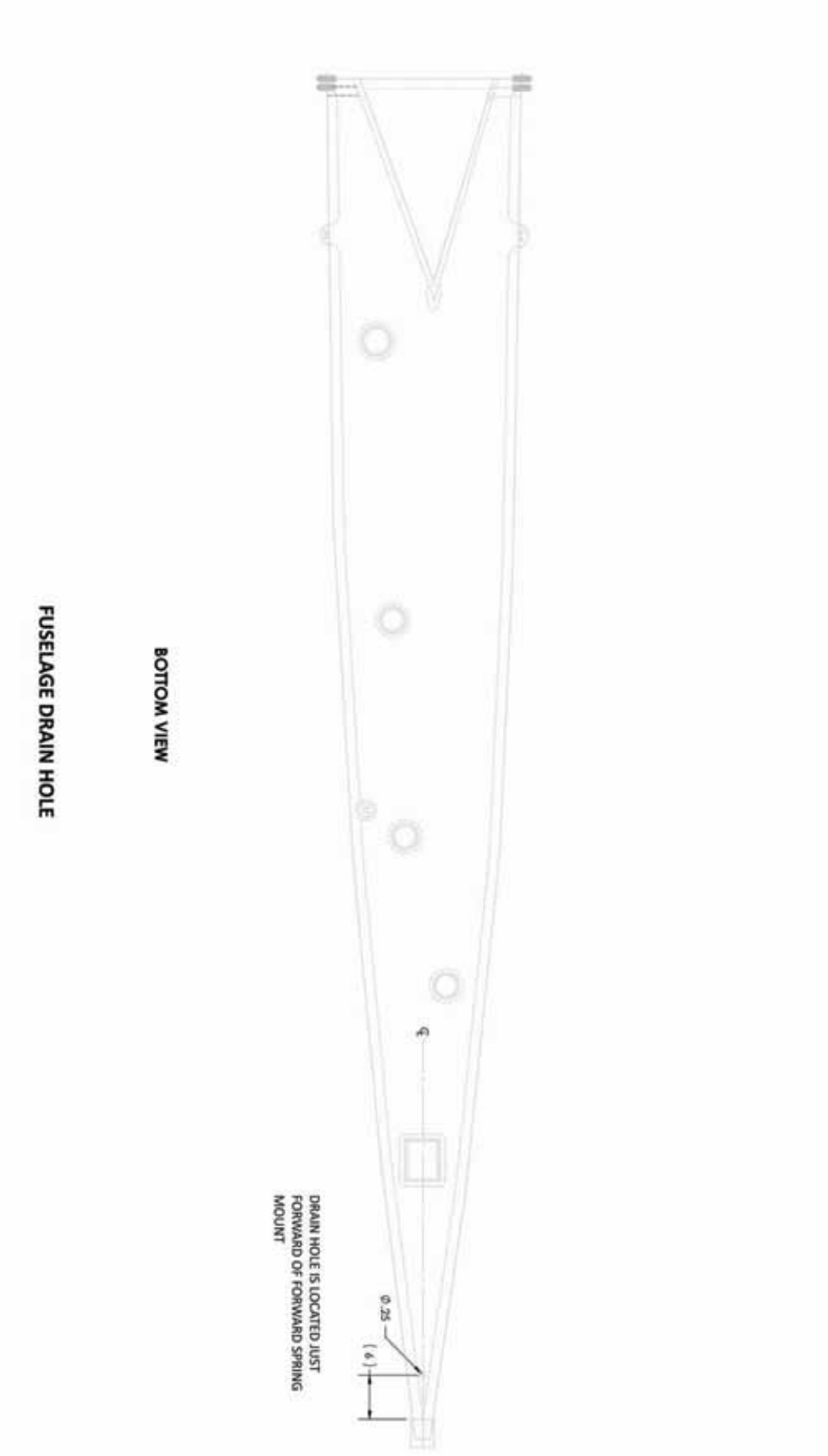


Figure C24