

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CMP-001-C-A-	Windscreen Frame	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1

Note:
See next page for the Windscreen/Window Bonding Procedure.

Note
Refrigerate the Sika products for use later in the construction

Step 1

Start the canopy construction by painting the inside of Part number (1) and (2) to the desired colour or finish preferred.

Note: Do not paint outer parts of canopy frames

Step 2

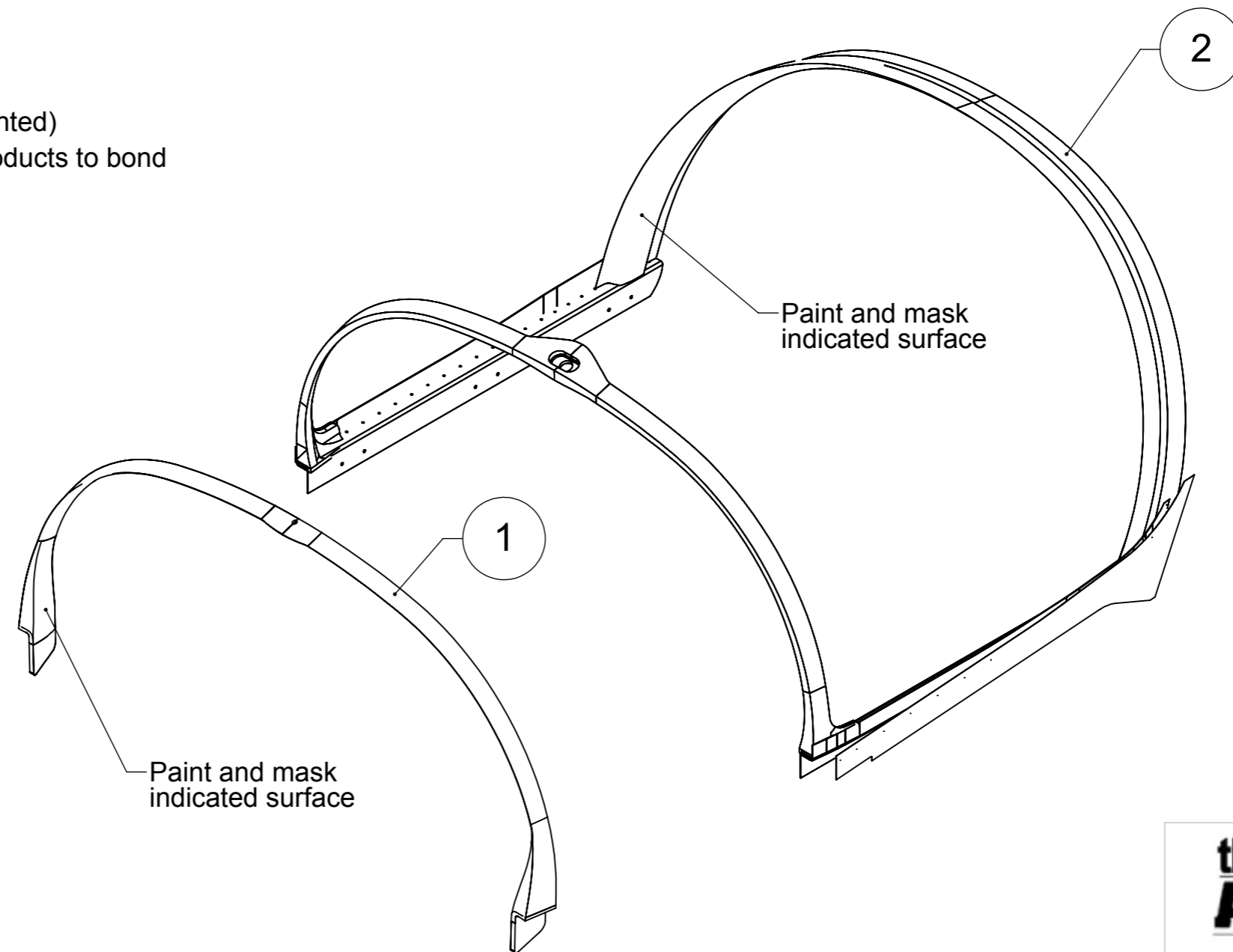
Use masking tape on the painted surface of parts (1) and (2) so that Sika products in following steps will not damage painted surface.

Step 3

Using sanding paper sand down the outer surface (Unpainted) of part (2) to a rough texture as this will help the Sika products to bond in step 17, 18 and 19 on page CA7 and CA8.

Step 4

Use a cloth and Sika Cleaner -205 to clean / Prime the roughened surface of part (2)



DESCRIPTION pg CA1

CANOPY FRAME PREPERATION

Sling 2 Windscreen/Window Bonding Procedure.

Date: 2016/12/12

Revision: 0

The following steps needed to be followed only after the Windscreen/Window has been properly cut and correctly fitted as described in the Construction Manual.

Please note that the Shelf Life of the Cleaner, Primer and Bonding paste listed below must be within the allowed specification clearly marked on the container.

- 1) **Sika Cleaner – 205.** For all cleaning before the Primer is added.
- 2) **Sika Primer – 206 G+P.** To be used on Composite (Canopy) parts only.
- 3) **Sika Primer – 209 N.** To be used on Perspex (Windscreen/Windows) only.
- 4) **Sikaflex – 295 UV.** To be used for bonding of the Windscreen/Windows.

Step 1.

- a) Windscreen/Window must be held firmly in place.
- b) Use a Whiteboard marker and mark Windscreen/Window on inside, using the canopy edge as reference.
- c) Use a thin Pinstripe tape to mark the Windscreen on the outside using the dashboard stitch as a reference. (Tape should be ± 2 mm below the stitch mark.)

Step 2.

Abrade the marked bonding surfaces on the Windscreen/Window with P80 sandpaper. The defined bonding area should be from the Whiteboard marker and/or Pinstripe towards the edge of the Windscreen/Window.

Step 3.

- a) Mark the outside of the canopy with a Pinstripe on the edge of the Windscreen/Window recess on the canopy.
- b) Use masking tape to cover up a wide strip of the canopy from the Pinstripe towards the back. Only the bonding area must be visible. Also cover the inside of the canopy with a masking tape strip.
- c) Cover exposed areas on Skin 015 also with a masking tape strip.

Step 4.

Abrade the exposed bonding area on the canopy with P80 sandpaper. Care must be taken that the covered areas on the canopy does not get damaged.

Step 5.

After sanding both bonding areas they must be properly cleaned with Sika Cleaner-205 and a paper towel.

Step 6.

The following primers to be applied onto the bonding areas using a new and clean sponge.

- a) Sika Primer - 206 G+P to be used on the composite (canopy) only
- b) Sika Primer – 209 N to be used on Perspex (Windscreen/Window)

Allow approximately 10 to 15 seconds for Primer to dry. (Do not touch these areas.)

Step 7.

Apply a thick layer of Sikaflex – 295 UV to the canopy and dashboard bonding areas only, using a proper Sikaflex Gun. Sikaflex must not be applied to the Windscreen/Window.

Step 8.

After the Sikaflex is applied, the Windscreen/Window can be fitted by evenly pressed it down onto the frame until it fits perfectly and flush with all edges.

Step 9.

Remove all excess Sikaflex and clean surfaces properly with Benzene.

Step 10.

All other markings and masking tape can be removed after Sikaflex are properly dried and again clean all areas thoroughly with Benzene.

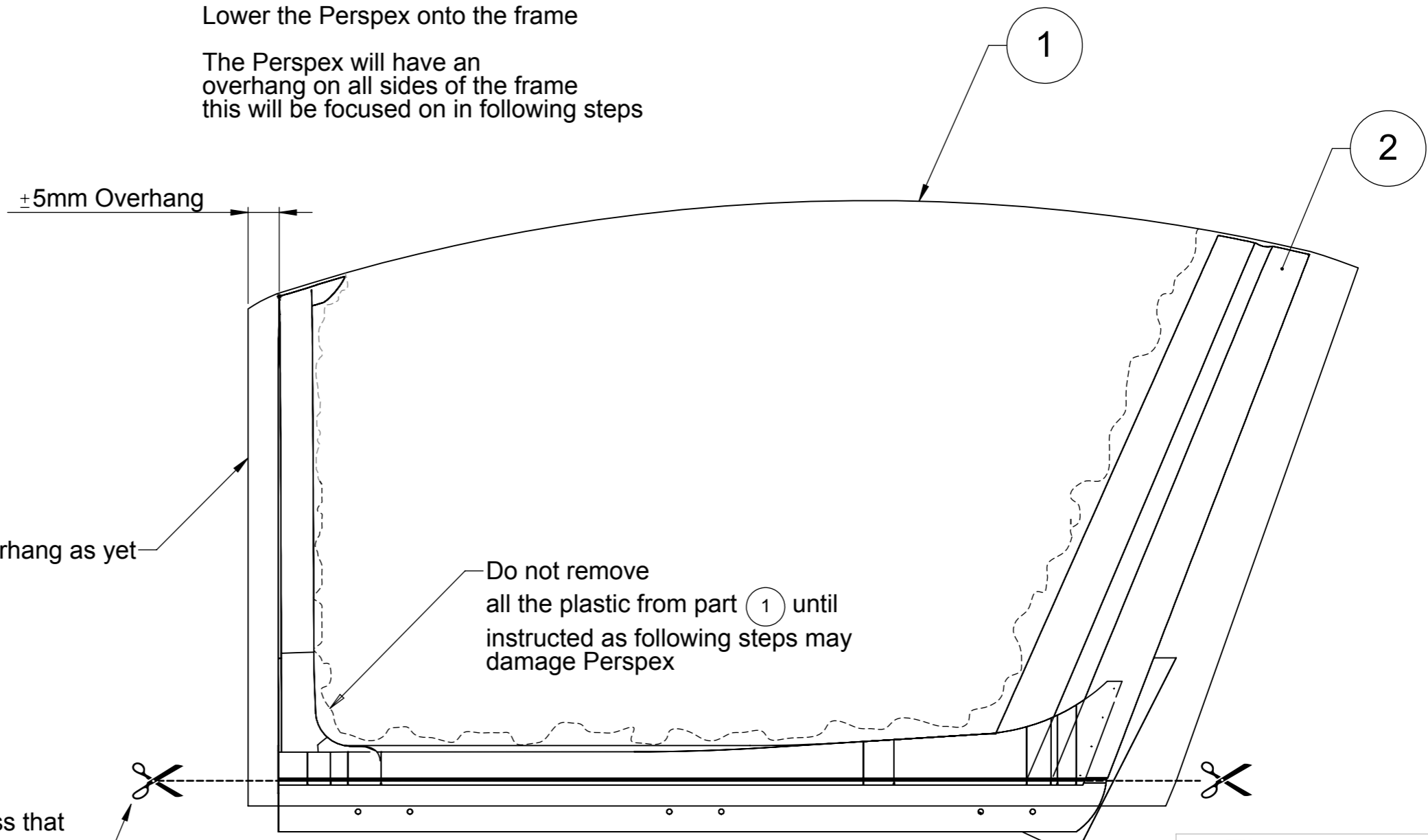
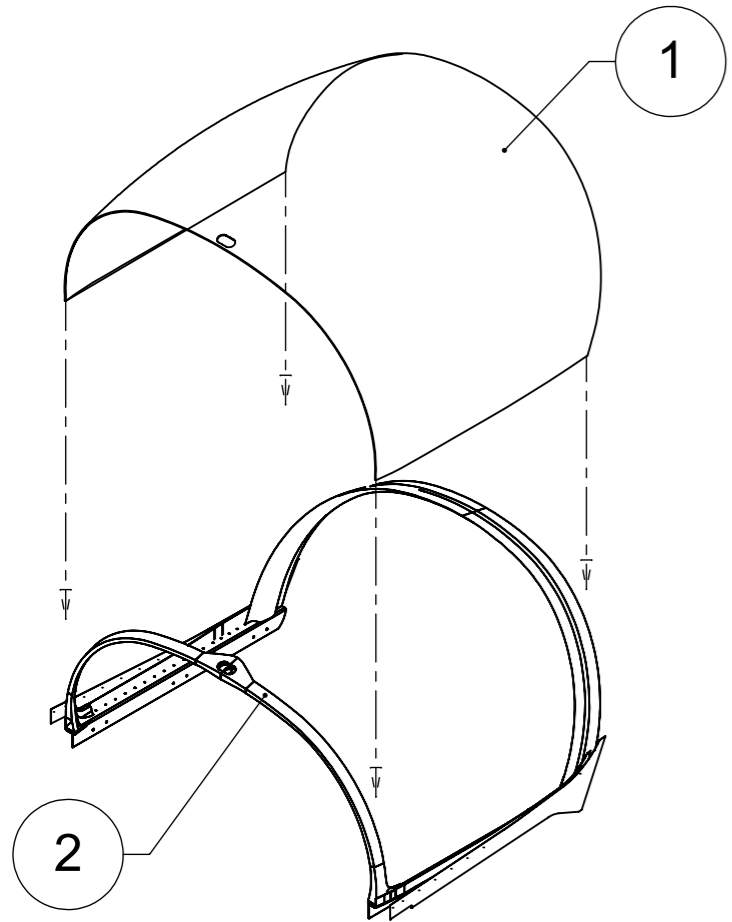
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
1	CA-CMP-002-C-A-	Canopy Composite Frame	1

Step 5
Place part (2) on a level surface ie. a table and try keep the part in its most natural position as this is important for perspex fitment and final fitment to the airframe

Step 6
Remove a portion of the protective liner of part (1) to expose the portion of Perspex that will make contact with the outer surface of part (2)

Lower the Perspex onto the frame

The Perspex will have an overhang on all sides of the frame this will be focused on in following steps



Step 7
Using masking tape, mask off excess glass that overlaps the lower part of the frame as shown and cut off the excess Perspex

Note: If canopy cracks see next page for solutions.



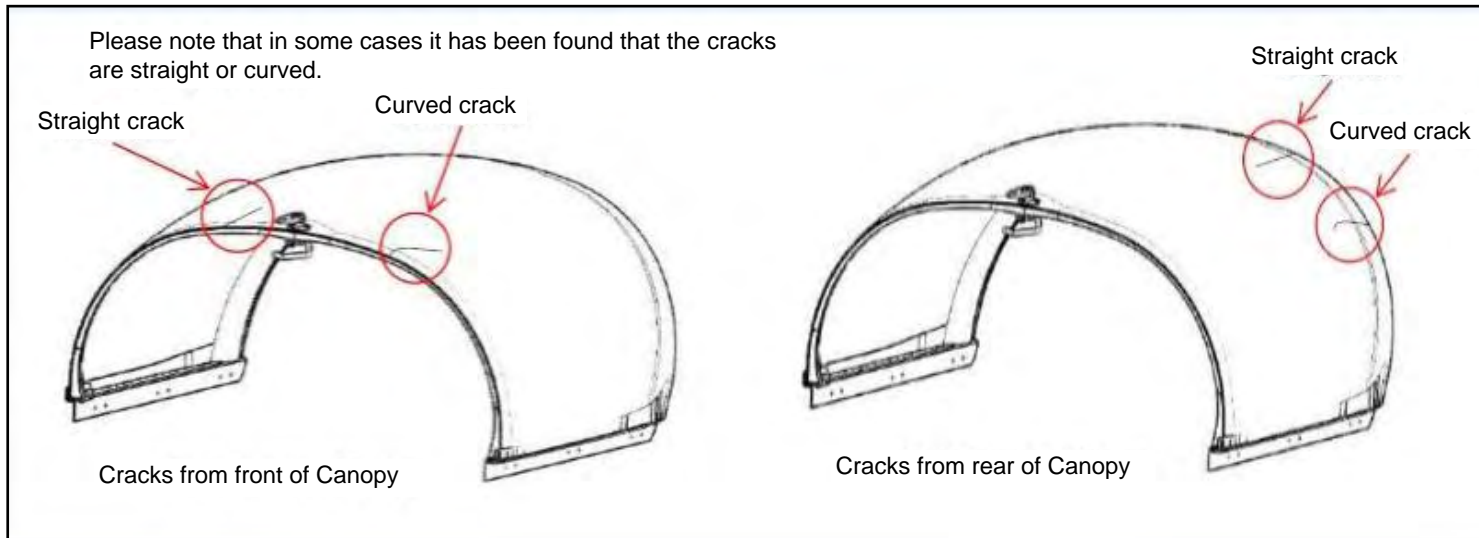
DESCRIPTION pg CA2

PERSPEX PREPERATION

REPAIR CRACKS ON CANOPY

Date: 2016/11/18 Revision: 0

Most common cracks you get in the Canopy.



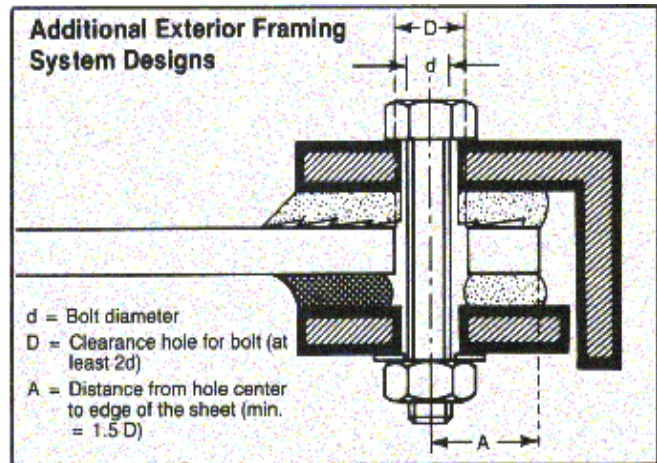
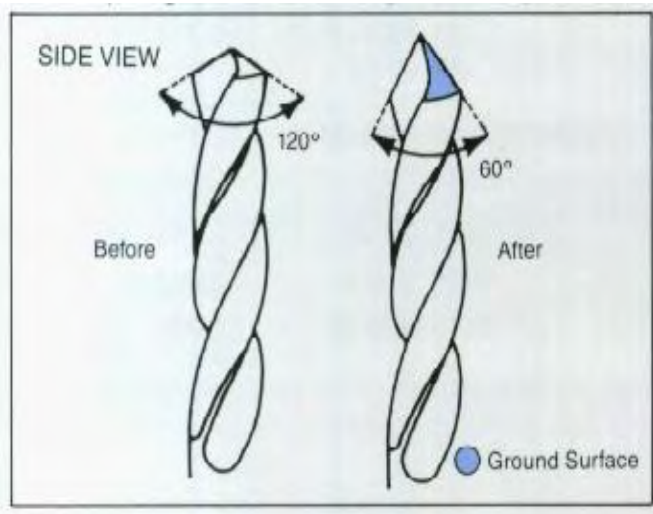
- **Repairing a Crack in Plexiglass read thru the following solutions ,**

Cracks can be stopped with a simple procedure. Using a very small drill bit, 1/16" (1.5mm) or so, drill a hole through the material at the end of the crack. That's it. If it is a long crack, you might be able to inject some IPS WeldOn #3 (methylene chloride) into the crack to partially seal it. If the plastic is on a sign, and therefore most likely opaque, you should glue a 1" (25.4mm) strip of 3/16" (4.7mm) Plexiglas to the back side to reinforce the cracked area.

Since your dome isn't transparent, I'd think epoxy would make a suitable substitute for the strip of acrylic they suggest for reinforcement. If you choose to inject an acrylic solvent in an effort to seal the crack, wait at least 24 hours before applying epoxy as reinforcement.

1. Stop the crack NOW. You do this by drilling a tiny hole at the end of the crack. Teeny will be defined as the smallest drill bit you have laying around. From 1/16" (1.5mm) to 1/8" (3.1mm) will work fine. You don't need the special Plexiglas drill bit for this one since the Plexiglas is already cracked. (otherwise), you really DO need those bits for NEW holes).
2. Airplanes, gliders, and other aerospace cracking. Drill a hole. Normally, the plexiglass acrylic used in plane windows and windshields is different than the plexiglass used in displays and windows. It's chemical resistant and the regular #4 glue won't work. It may or may not be "stretched" or "pre-shrunk" acrylic. I don't know FAA regs, but I doubt slapping on a strip over the hole will pass inspection. However, that said, you "could" do that by using another glue such as WeldOn #16 or better, WeldOn #40 and a small piece of CAST plexiglass sheet (not extruded).
3. Preventing Cracks. Most cracks propagate from holes or from edges that have not been smoothed after cutting. When you get plexiglass from a "real" dealer (not HD or Lowes) they have the equipment to cut sheet correctly. When you DIY, you might have some chips from your cutting. That's OK - just sand down the chips with 80-100 grit sandpaper. Trust me on this - it makes ALL the difference in the impact resistance of the final piece. The same goes with polycarbonate (Lexan) - it is also "notch sensitive" (like glass too) and WILL break at the chip. Now a lot of cracks come from the HOLE that was drilled. First - make sure you use a Plexiglas drill bit (the head is reshaped to a 60 degree angle and carves through - metal bits punch out the backside of the plexi and cause chipping). Second - make sure the hole is BIGGER than the screw or bolt. Why? The expansion and contraction of the plexiglass will put stress on the hole. Overstressing causes cracking. This can also happen in a window where something impacts against it –

and Boom, there's a crack in your sheet. According to Cyro Industries (Evonik): When drilling holes to support sheet by point fastening, there are two rules that apply. First, the bolt hole diameter should be at least 2 times the diameter of the bolt. This allows for adequate clearance for thermal and moisture expansion and contraction. Second, the distance from the hole centre to the edge of the sheet should be at least 1.5 times the diameter of the drilled hole. Please see the picture below for a detailed diagram.



4. Preventing Cracks - Part 2 - while we are on the discussion of holes, try NOT to countersink. Countersinking basically STOPS the ability of the sheet to move. This causes cracking. It is always best to drill a hole slightly larger than the bolt or pan-headed screw and use a washer to disperse the energy of an impact. That said, NEVER tighten a bolt or screw "all the way". Hand tighten and then back off 1/4 turn. This allows for expansion and contraction too.

DP804 is a two-part, clear acrylic structural adhesive with much lower odour than most acrylics adhesives. Excellent shear and peel strength with good impact resistance.

3M Scotch-Weld DP804 Clear Acrylic Adhesive is a two-part, 1:1 mix ratio, structural adhesive with significantly less odour than most acrylic adhesives. DP804 has excellent shear and peel strength along with good impact resistance and durability. DP804 is designed to quickly bond clear plastic (PMMA, polycarbonate) and also offers good adhesion on glass and metals. DP804 offers high transparency when mixed and offers excellent long-term resistance to UV. DP804 has a 3 minutes work life with 4 minutes time to handling strength. Very good ageing properties in humid and warm environments.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1
11	CA-CANOPY CMP-001-C-A- GLASS LESS	G	1

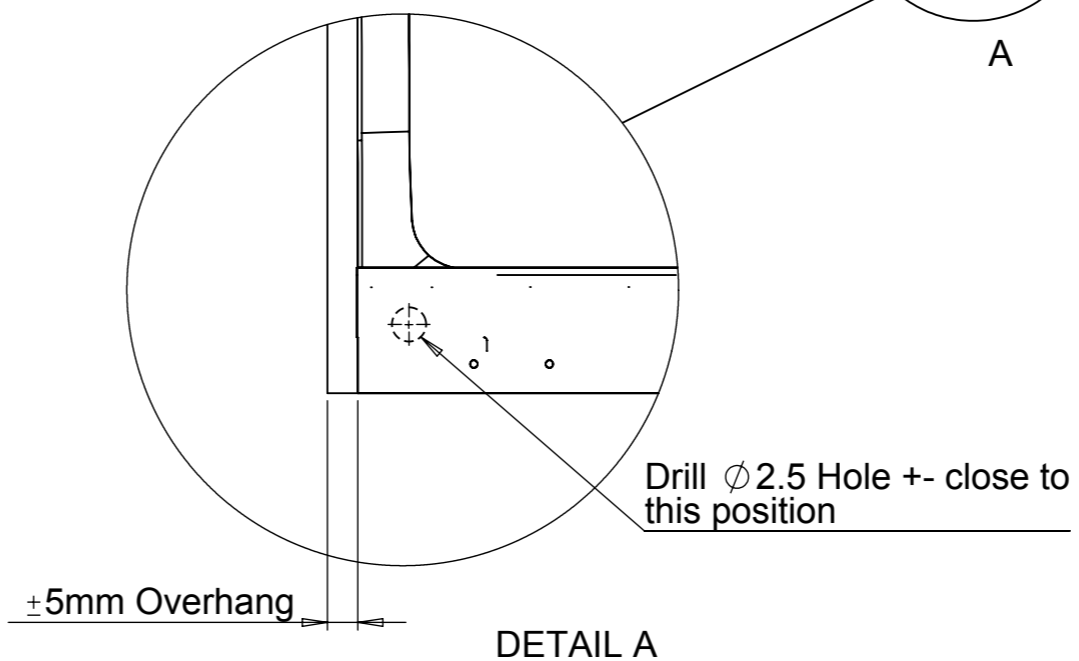
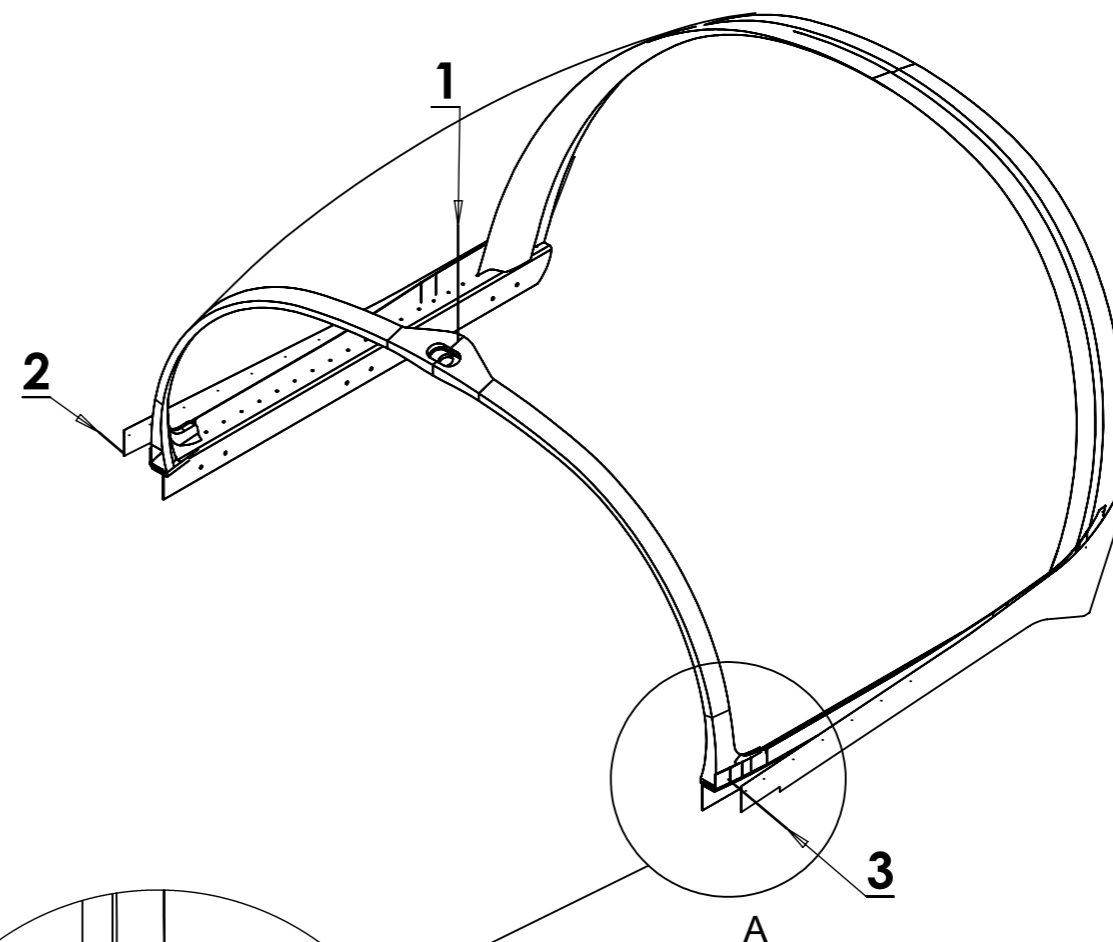
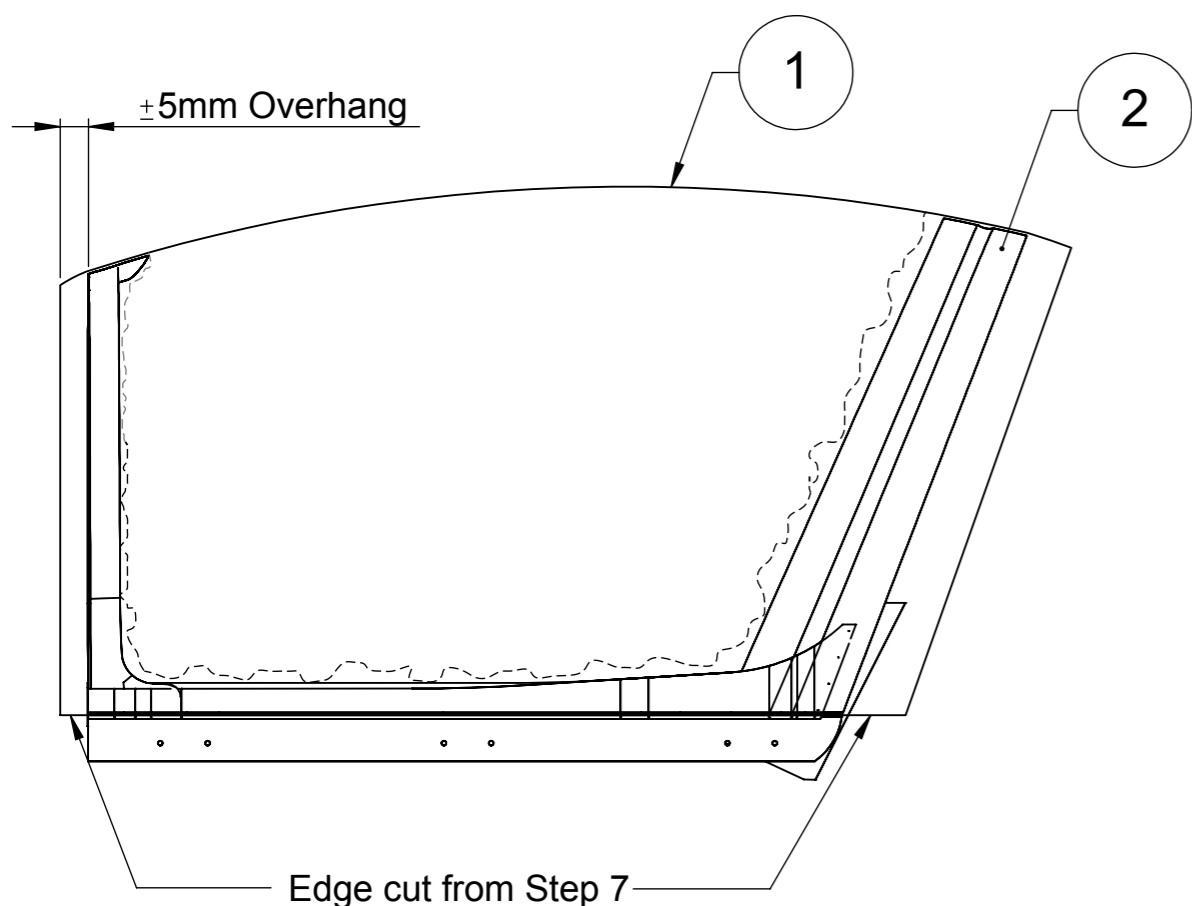
Note
Using a bigger diameter drill bit may crack the Perspex.

Step 8
Line up the Perspex on the frame so that there is at least 5mm overhang at the closest point (normally at the top)

Ensure that the rear part of the frame is covered by the Perspex as well

Step 9
Drill $\phi 2.5\text{mm}$ hole at points marked 1,2 and 3 through the Perspex and +5mm deep into the frame, Ensure the you do not drill straight through the frame

Once holes 1,2 and 3 have been drilled, insert the shaft of a pulled rivet or $\phi 2.5\text{mm}$ cleco as this will help with alignment and serve as a datum point for later in the build

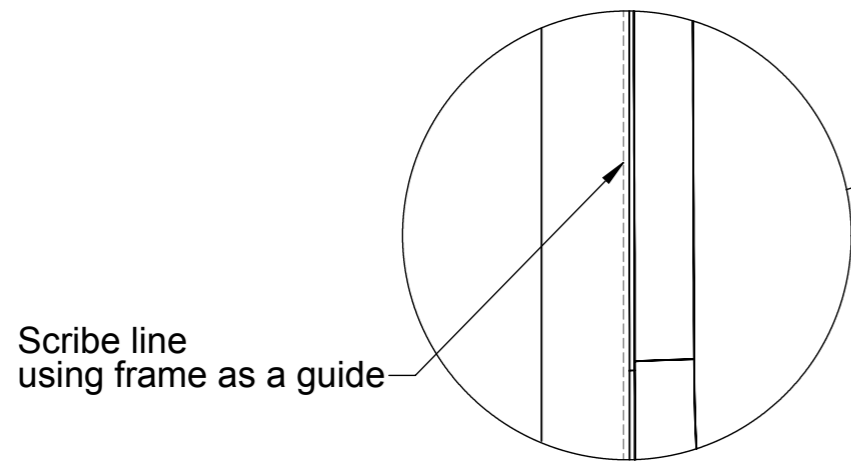


DESCRIPTION pg CA3

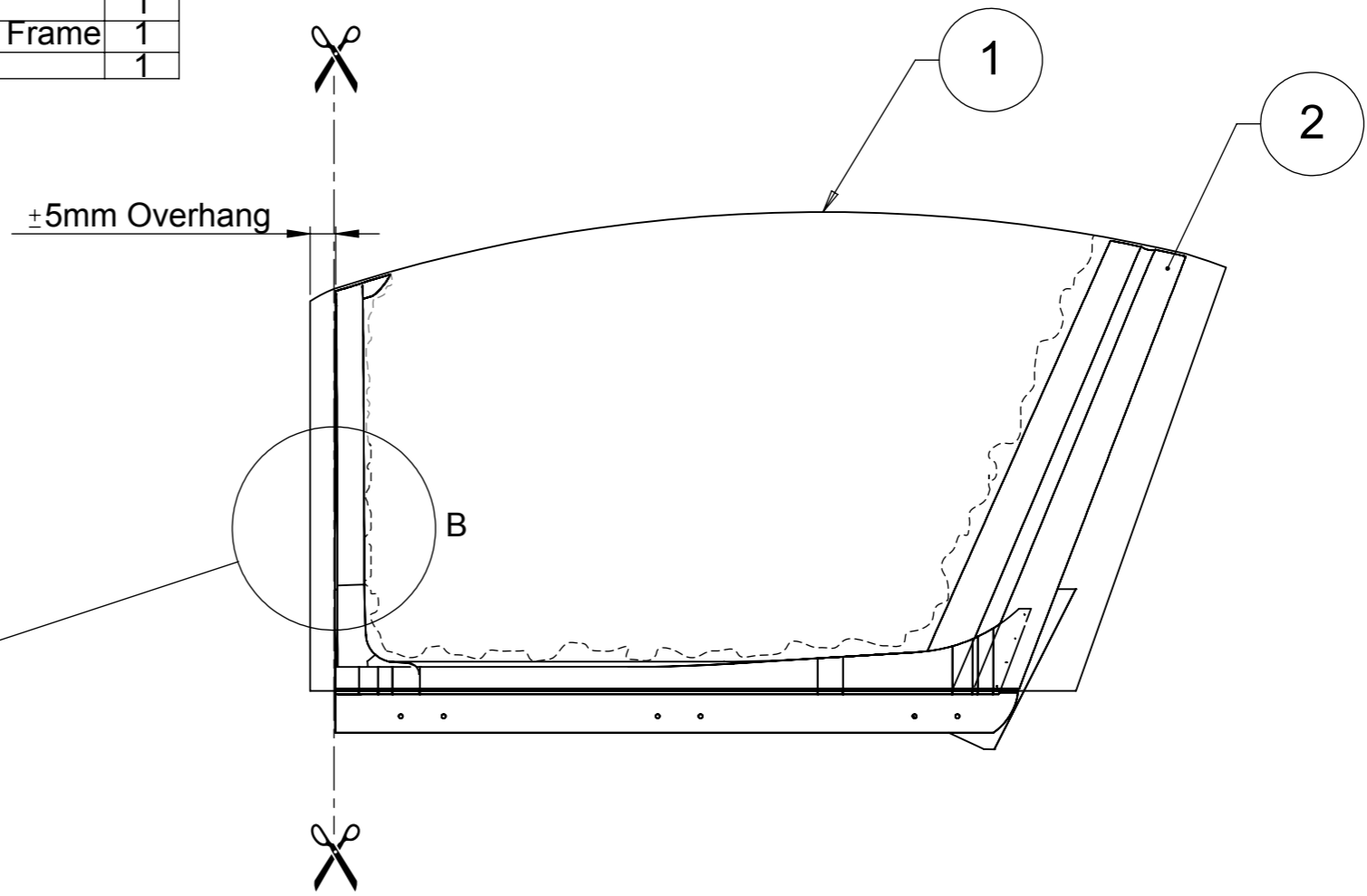
FIXTURE PREPERATION

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1
11	CA-CANOPY CMP-001-C-A- GLASS LESS	G	1

Step 10
Use a scribe to mark off the access 5mm overhang from step 8 using the frame as a guide line.

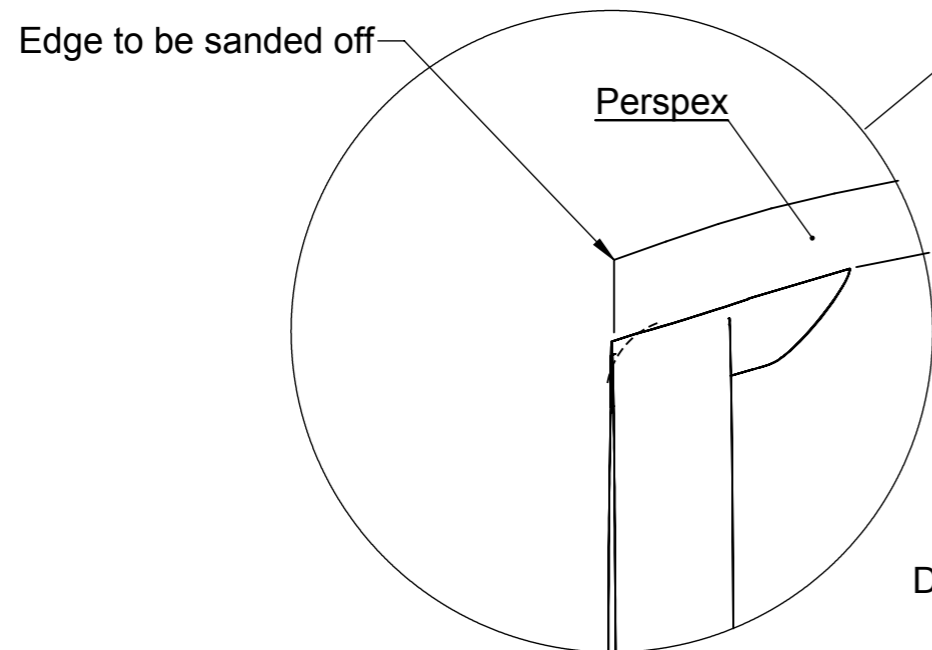


DETAIL B

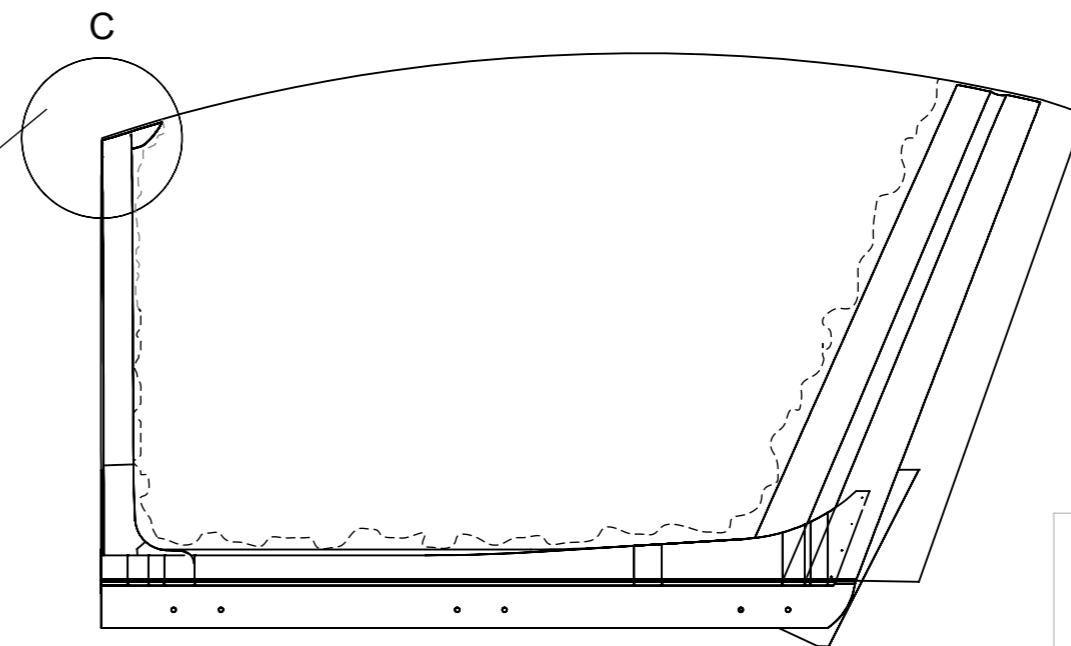


Step 11
Cut along the scribe line to remove the excess perspex, Ensure that you do not damage the frame whilst cutting

Once cut is complete use a sanding block to round off the prior cut surface.



DETAIL C



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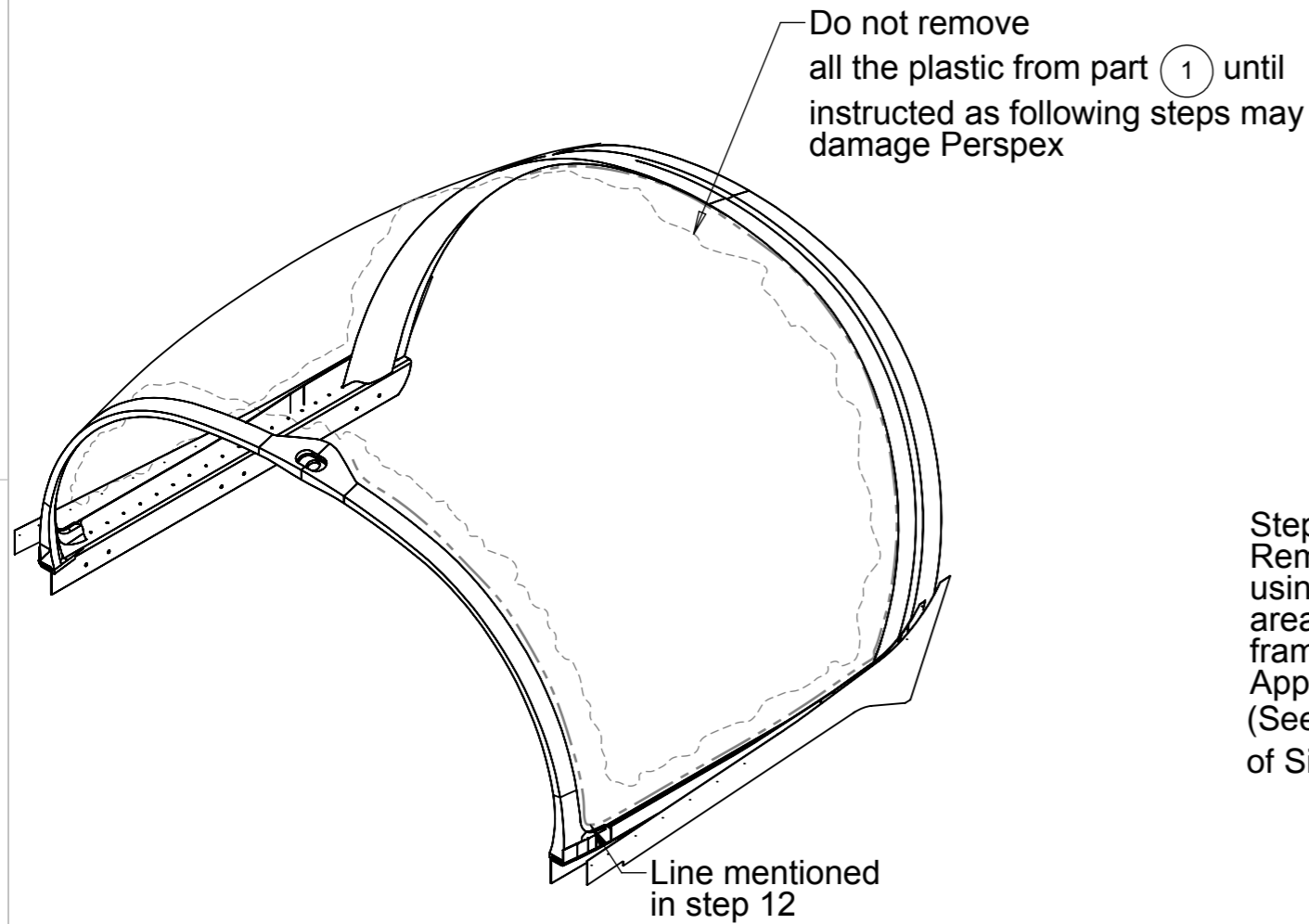


DESCRIPTION pg CA4

PERSPEX FINISHING

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1
3	CA-SIK-002-C-A-	Sika cleaner 205	1

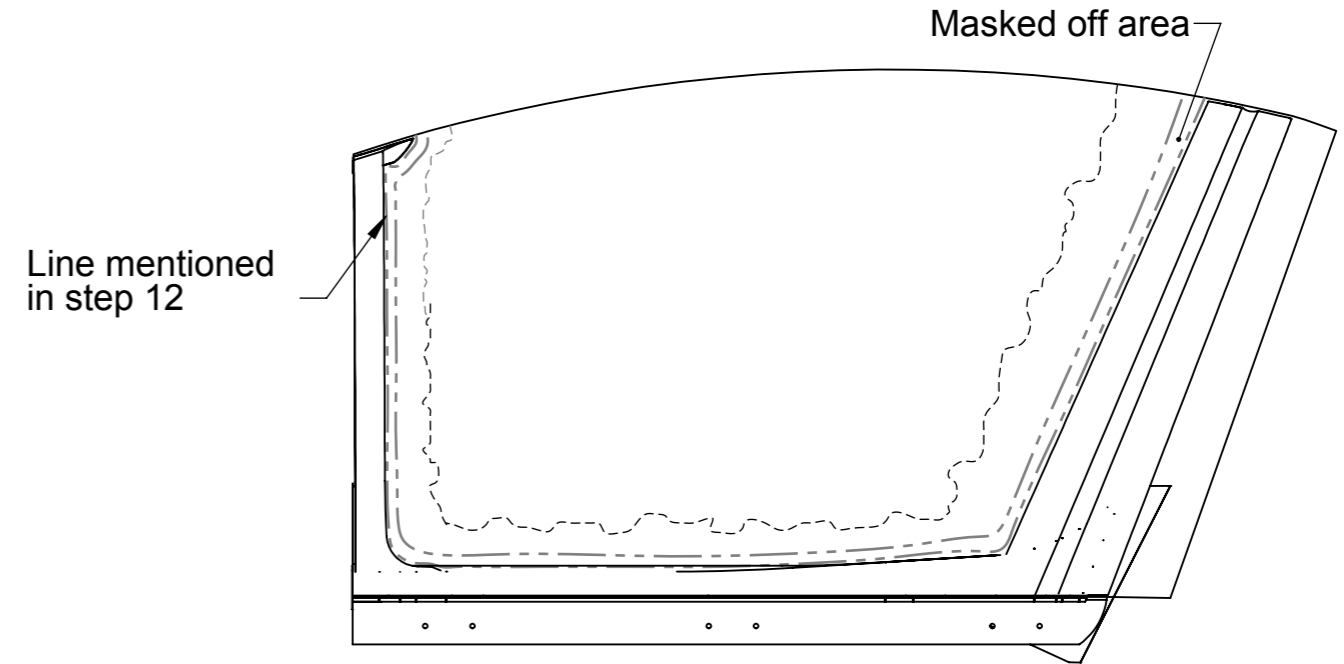
Note
If you removed the clecos and perspex for prior steps, place the Perspex back on frame and reinsert clecos for proper alignment



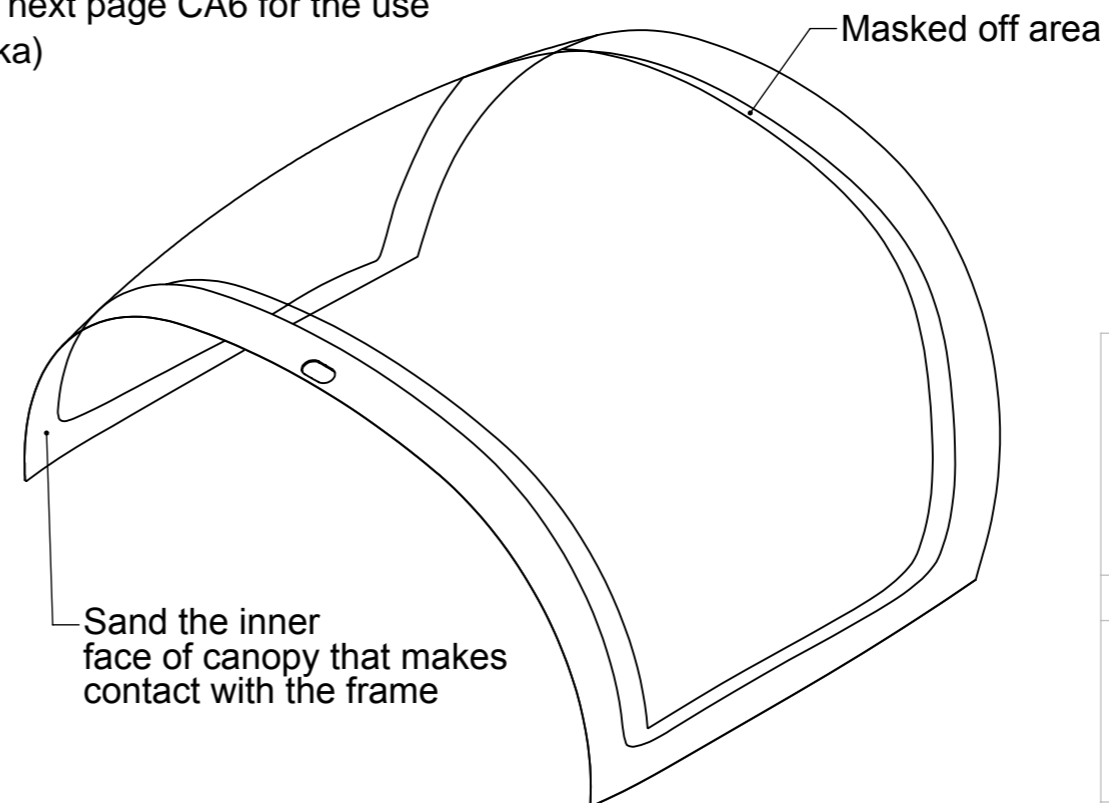
Step 12
Now with the canopy cut and sanded and placed on the frame with clecos, Use a marker (whiteboard if possible) and trace the shape of the inside of the frame onto the Perspex

Step 13
Use line tape and/or masking tape to mask off the inside of the lines made in step 12
The masking process may be easier if Perspex is removed from frame

Note.
Make sure the inside of the Perspex is completely covered using the procreative plastic, as the next steps may damage the Perspex



Step 14
Remove the Perspex from the frame and using P80 Sandpaper, lightly abrade the areas that would make contact with the frame to prepare the surface for the primer. Apply Sika primer. (See next page CA6 for the use of Sika)

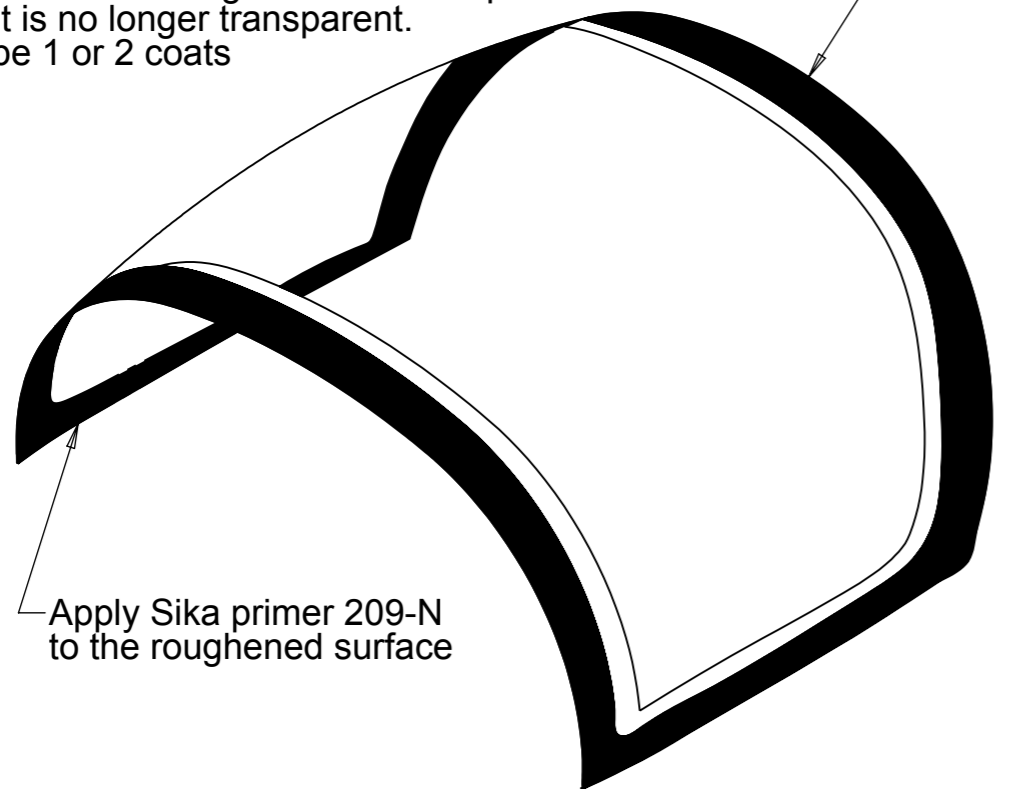


DESCRIPTION pg CA5

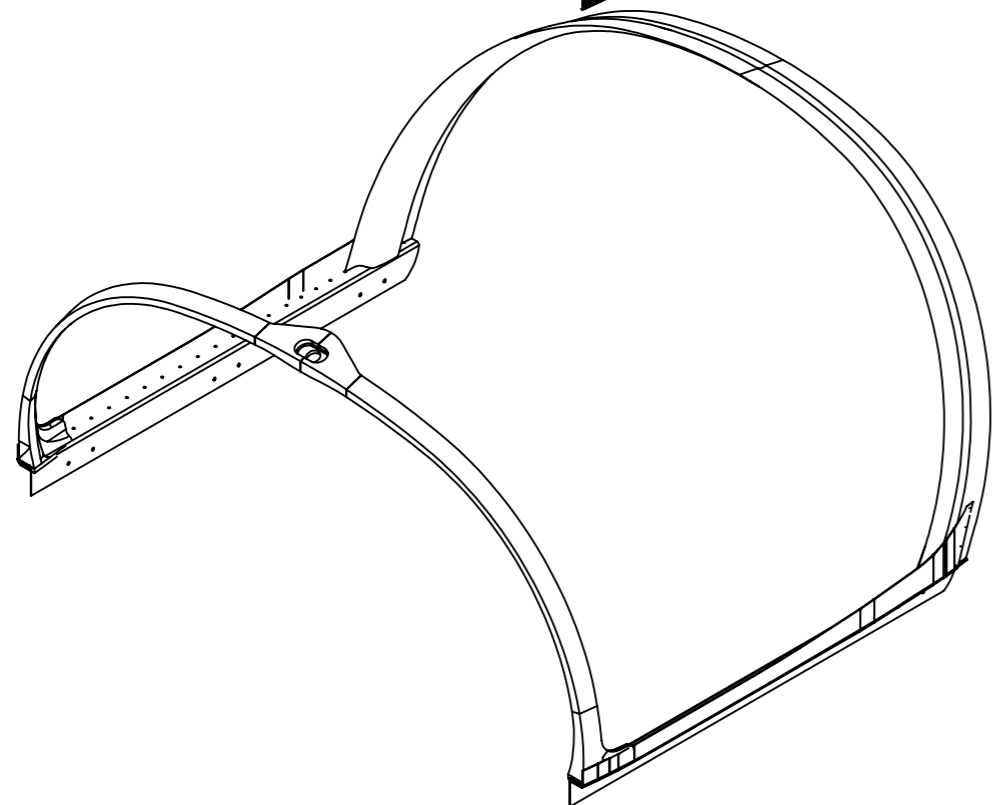
PRE-BONDING PREPERATION

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1
3	CA-SIK-004-C-A-	Sika Primer 209-N	1
4	CA-SIK-003-C-A-	Sika Primer 206 G-P	1
13	CA-CANOPY CMP-001-C-A- GLASS LESS	G	1

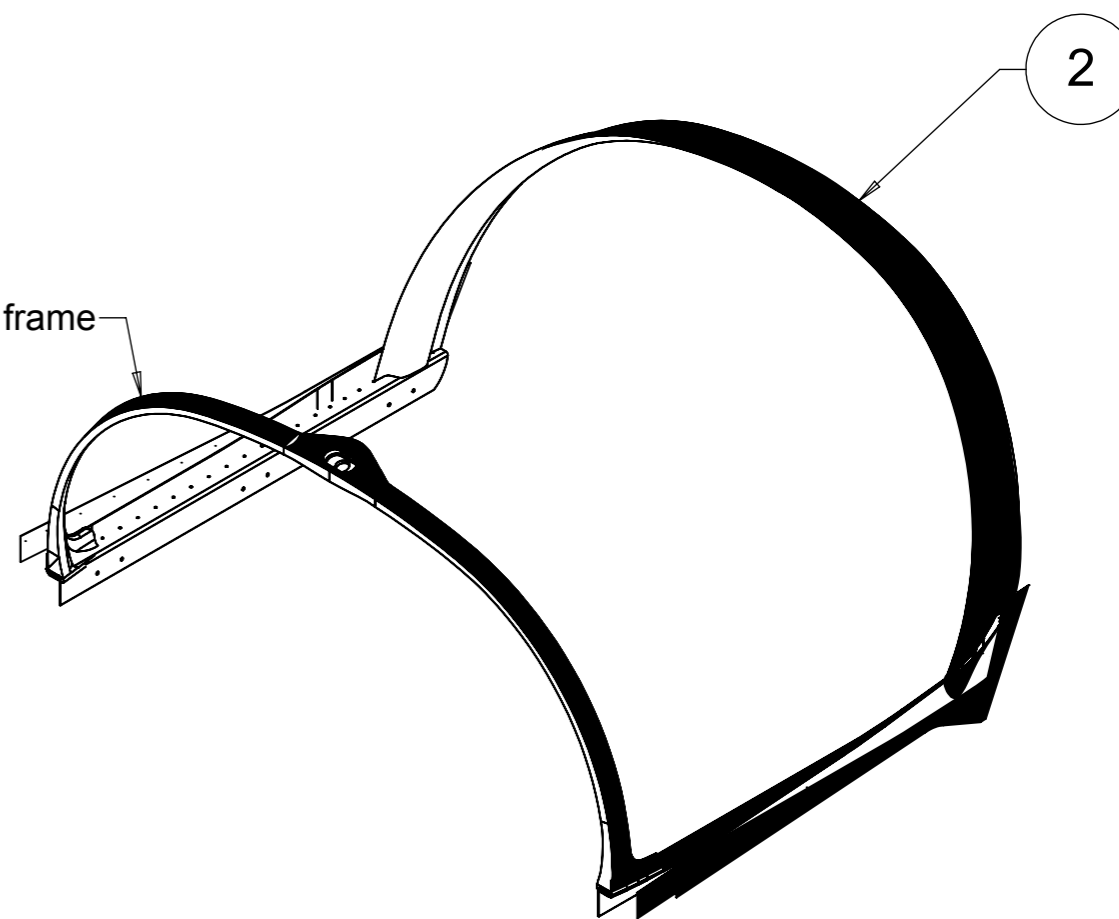
STEP 15
 Apply Sika primer 209-N using a sponge/ cloth to sanded surface. Just enough to cover Perspex to a point where it is no longer transparent. This should be 1 or 2 coats



Apply Sika primer 209-N to the roughened surface



STEP 16
 Apply Sika primer 206 GP using a sponge/ cloth to sanded surface of the composite frame. Just enough to cover composite as in step 15 +- 1 or 2 layers



Apply Sika primer 206 G-P to the roughened surface of frame

Note avoid messing the sika products on perspex cover and paint as it may damage finish. However if Sika has been spilt on paint clean off immediately with Sika cleaner



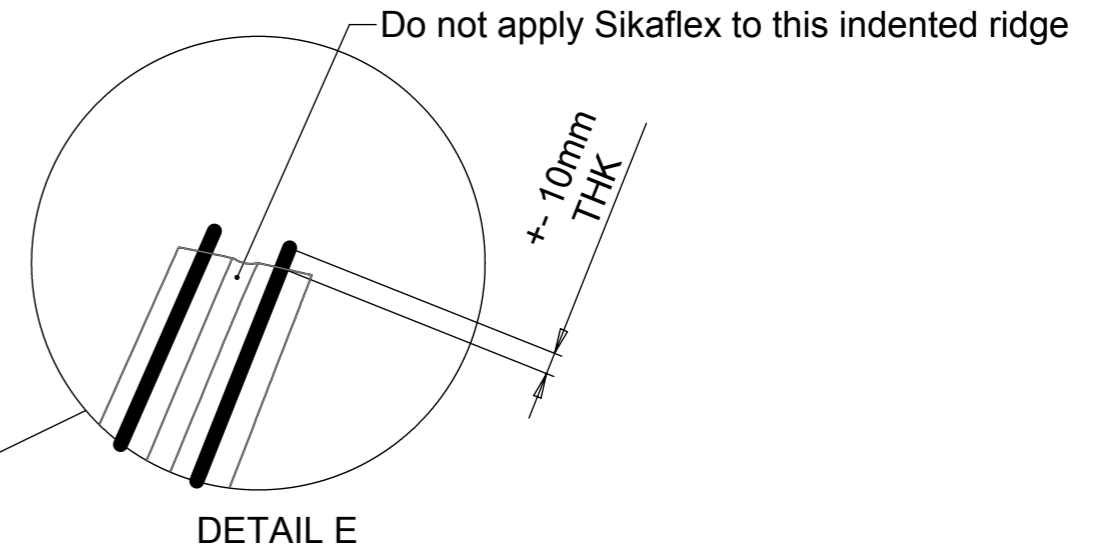
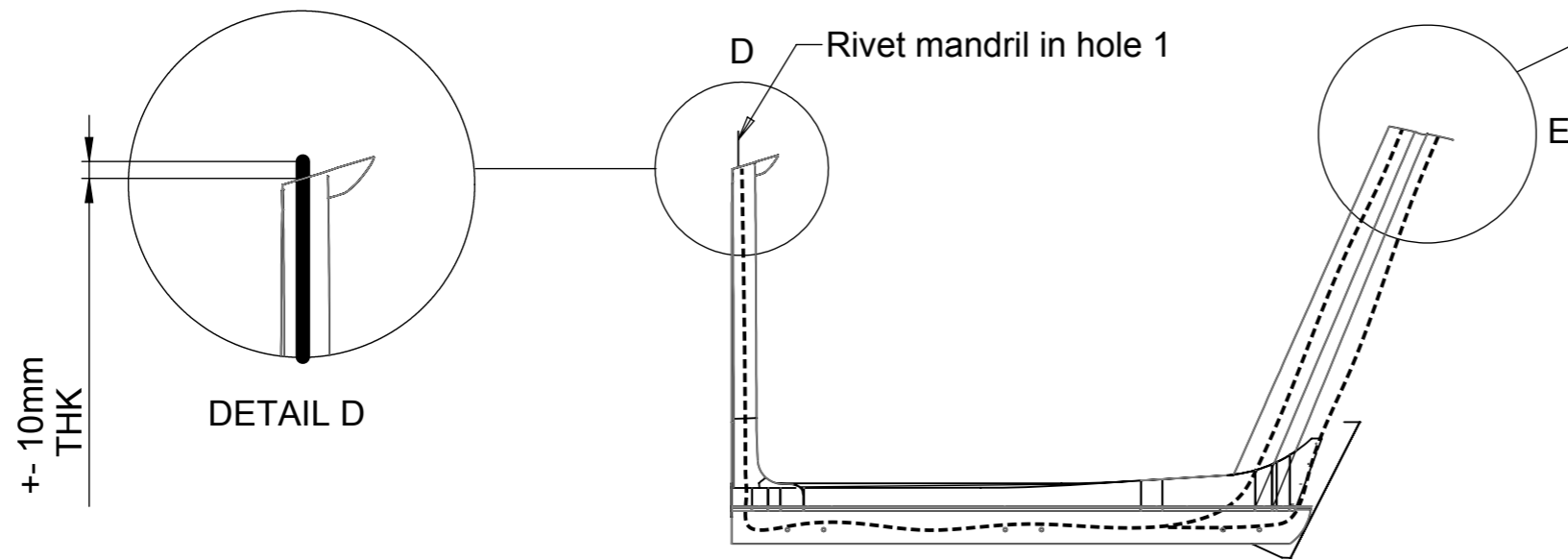
DESCRIPTION pg CA6

BONDING AGENT APPLICATION

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1
3		Sikaflex 295 uv	
12	CA-CANOPY CMP-001-C-A- GLASS LESS	G	1

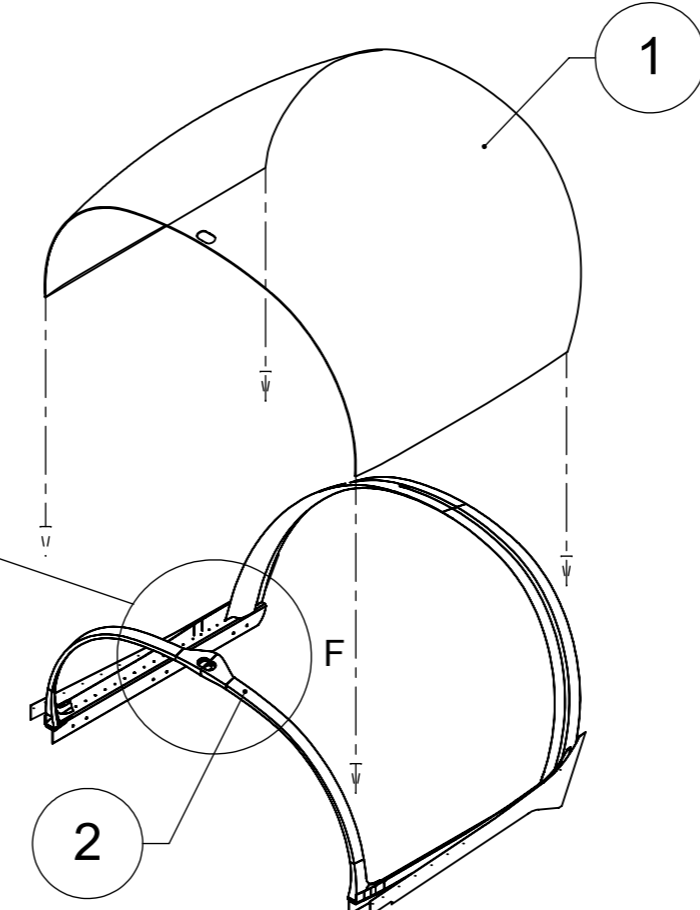
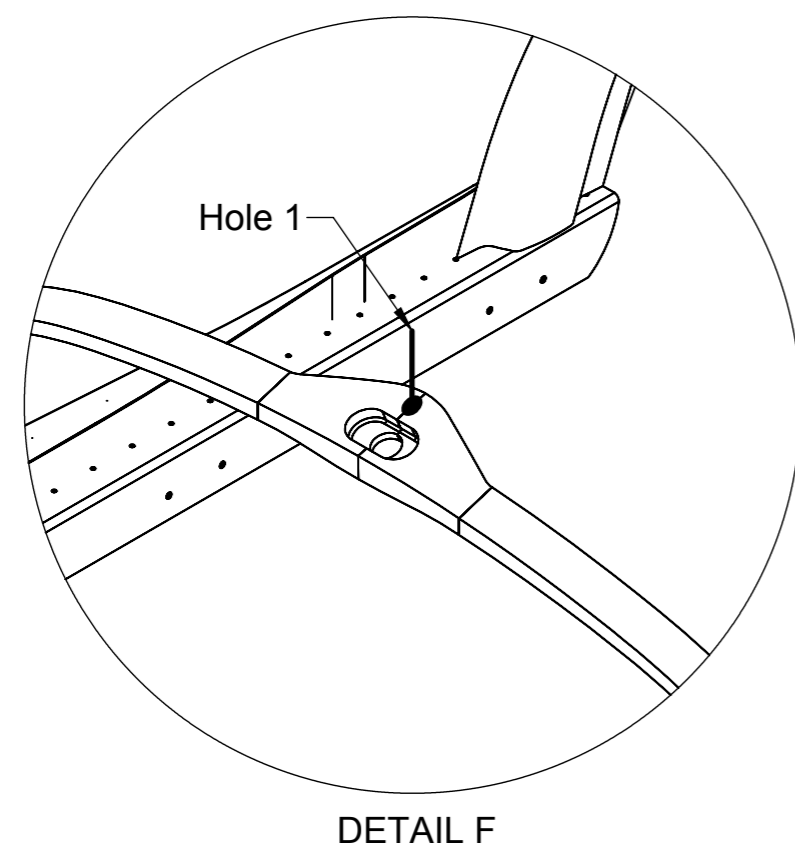
Step 17
Using a Sika-gun (Silicon gun) apply the Sikaflex 295uv to the primed frame

Before applying Sikaflex to frame place the rivet mandril back into the hole marked 1 in step 9 this makes the fitment of the Perspex easier as you can align parts



Note
Do not apply Sikaflex to indented ridge in the rear of the frame only apply Sikaflex to surfaces that make contact with Perspex

Step 18
Lower the Perspex onto the frame using the Pulled rivet in hole 1 as a guide



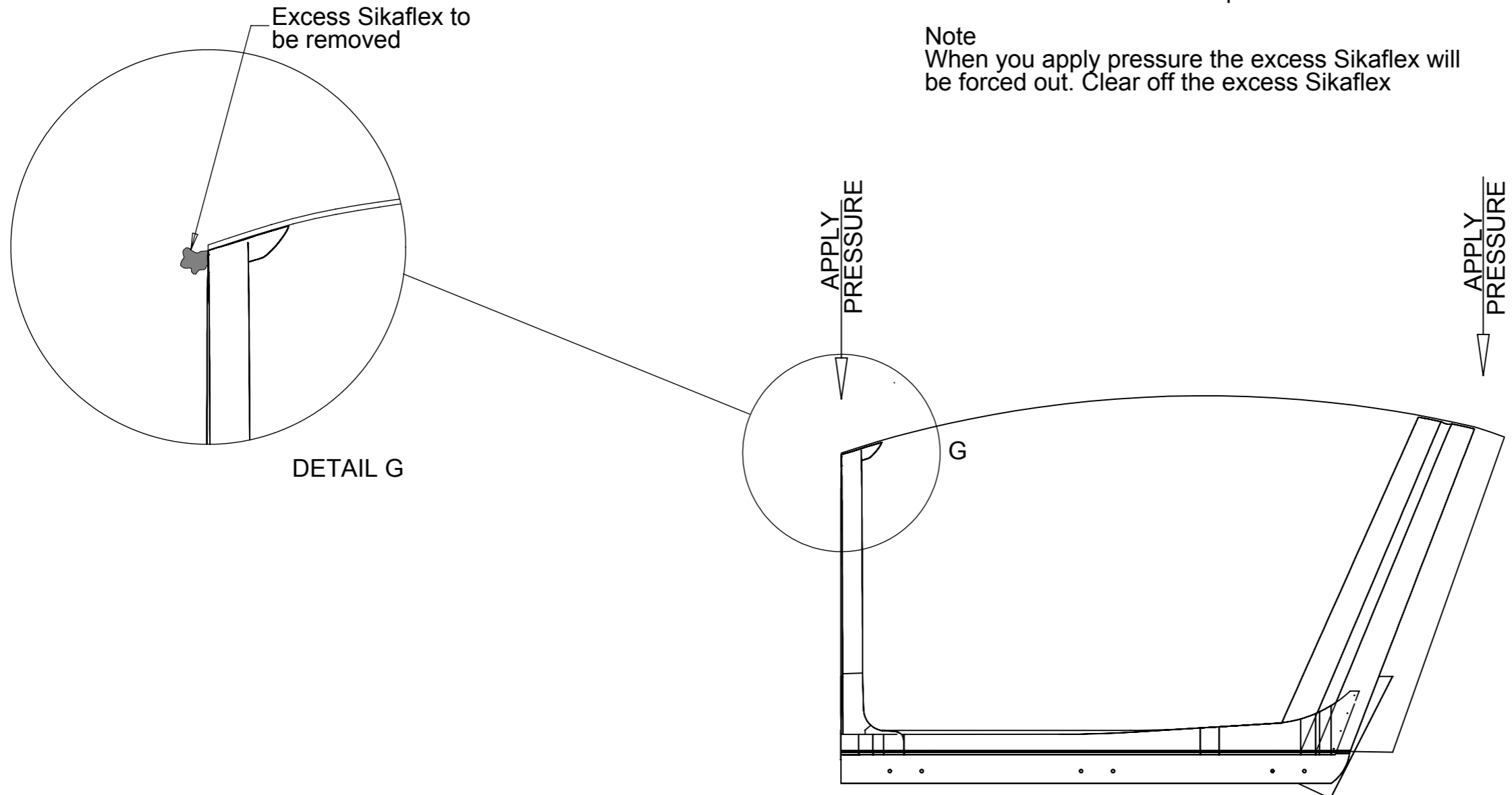
DESCRIPTION pg CA7

PERSPEX TO FRAME BONDING

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	CA-CAN-002-C-A-	Main Canopy	1
2	CA-CMP-002-C-A-	Canopy Composite Frame	1

Step 19
 Apply pressure on Perspex whilst twisting and turning the Perspex to best fit the frame.
 Keep applying pressure until you can locate holes marked 2 and 3 in step 9

Note
 When you apply pressure the excess Sikaflex will be forced out. Clear off the excess Sikaflex



DESCRIPTION pg CA8

**PERSPEX TO
 FRAME BONDING**

ITEM NO.	PART NUMBER	Description	QTY.
1	CF-ASS-001-C-A-	Sling 2 Centre Fuselage Assembly	1
2	CA-CMP-001-C-A-	Windscreen Frame	1
3	CA-CAN-001-C-A-	Front Windscreen	1
4	HW-SBM-525-X-X-	M5 x 25 Buttonhead Screw (silver)	4
5	HW-RNM-500-X-X-	M5 Rivnut (Large Flange)	4
6	CA-PLT-003-X-A-	Canopy Locking Plate 3	1
7	CA-PIN-001-X-A-	Canopy Lock Pin	1
8	HW-RIV-142-X-X-	3.2 x 8mm Alu Domed Rivet	4

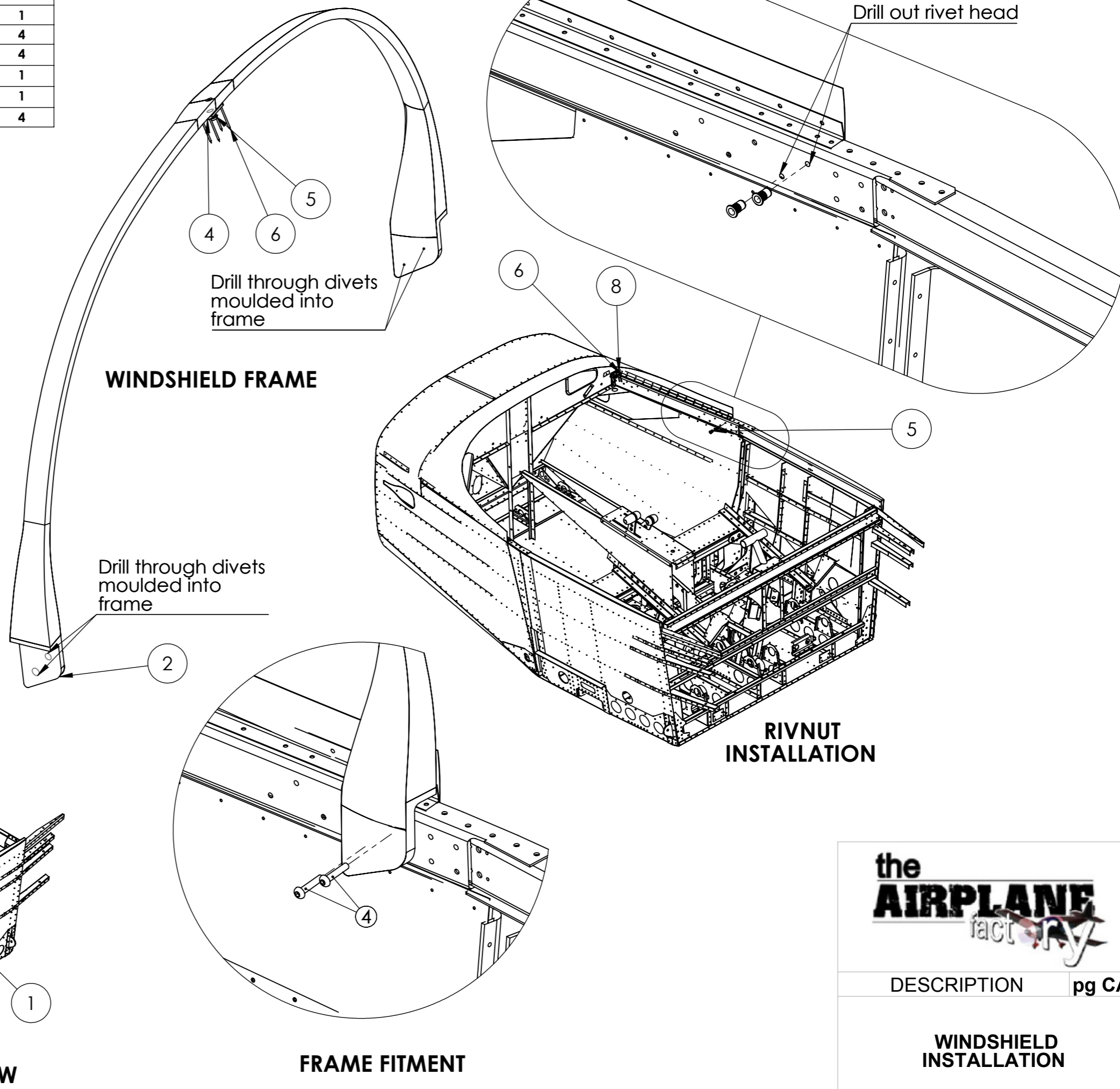
Step 1
 Closely examine the view of the windscreen frame opposite. Carefully drill two 5mm holes through the windscreen frame at the divets moulded into the base of the frame. Ensure the holes are as perpendicular as possible to the face you drill through.

Step 2
 Loosely fit the main canopy to the airframe with four screws, then, fit the windscreen frame in place loosely using clamps. Ensure that the two frames line up perfectly when the canopy is in the closed position.

Step 3
 Next, carefully remove the canopy without moving the windscreen frame. Using the frame as a jig, drill two 7mm holes into either side of the fuselage using the holes drilled in step 1 as a guide, this will be through the two rivets shown in the rivnut installation detail view opposite.

Step 4
 Remove the windscreen frame and fit two M5 rivnuts to either side of the fuselage as shown in the rivnut installation view. Secure the frame to the fuselage with four m5 X 25mm allen cap screws and Loctite 243.

Step 5
 Follow the same procedure to install the windscreen perspex as for the canopy perspex.



DESCRIPTION pg CA9

**WINDSHIELD
 INSTALLATION**

ITEM NO.	PART NUMBER	Description	QTY.
1	CA-CANOPY-001-C-A-	Canopy Assembly	1
2	Lock Base	Lock Base	1
3	HW-RNM-500-X-X-	M5 Rivnut (Large Flange)	2
4	HW-CAS-516-X-X-	M5 x 16mm Countersunk Allen Screw	2

Step 1
Drill a 4mm hole through the perspex from the bottom of the frame at the pred - drilled hole in the top front of the frame.

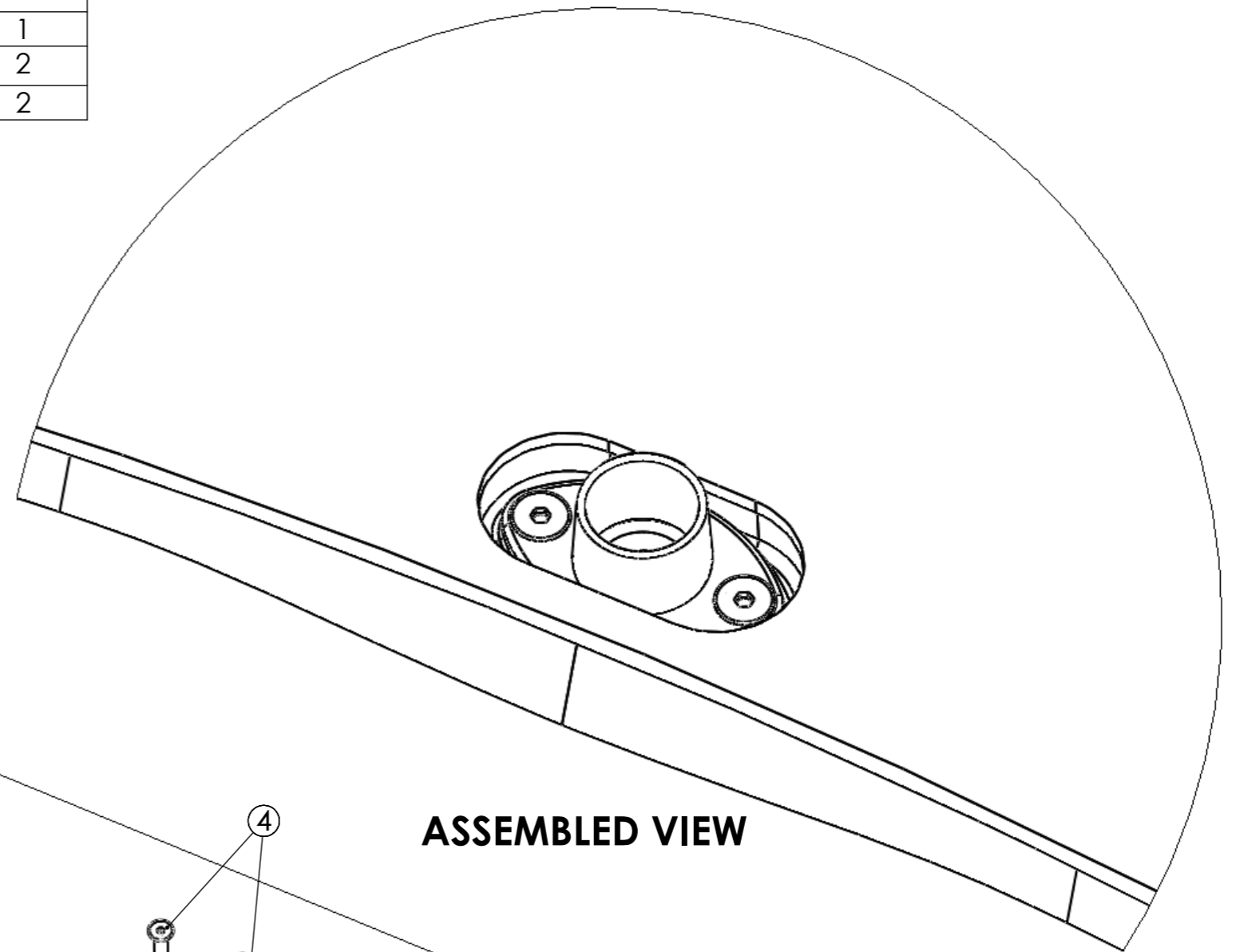
Step 2
Use a router to open up the 4mm hole to 22mm.

Step 3
Place the lock base in from above and mark the outline of of the lock base.
Use a router to remove the perspex and sika within the outline of the lock base.

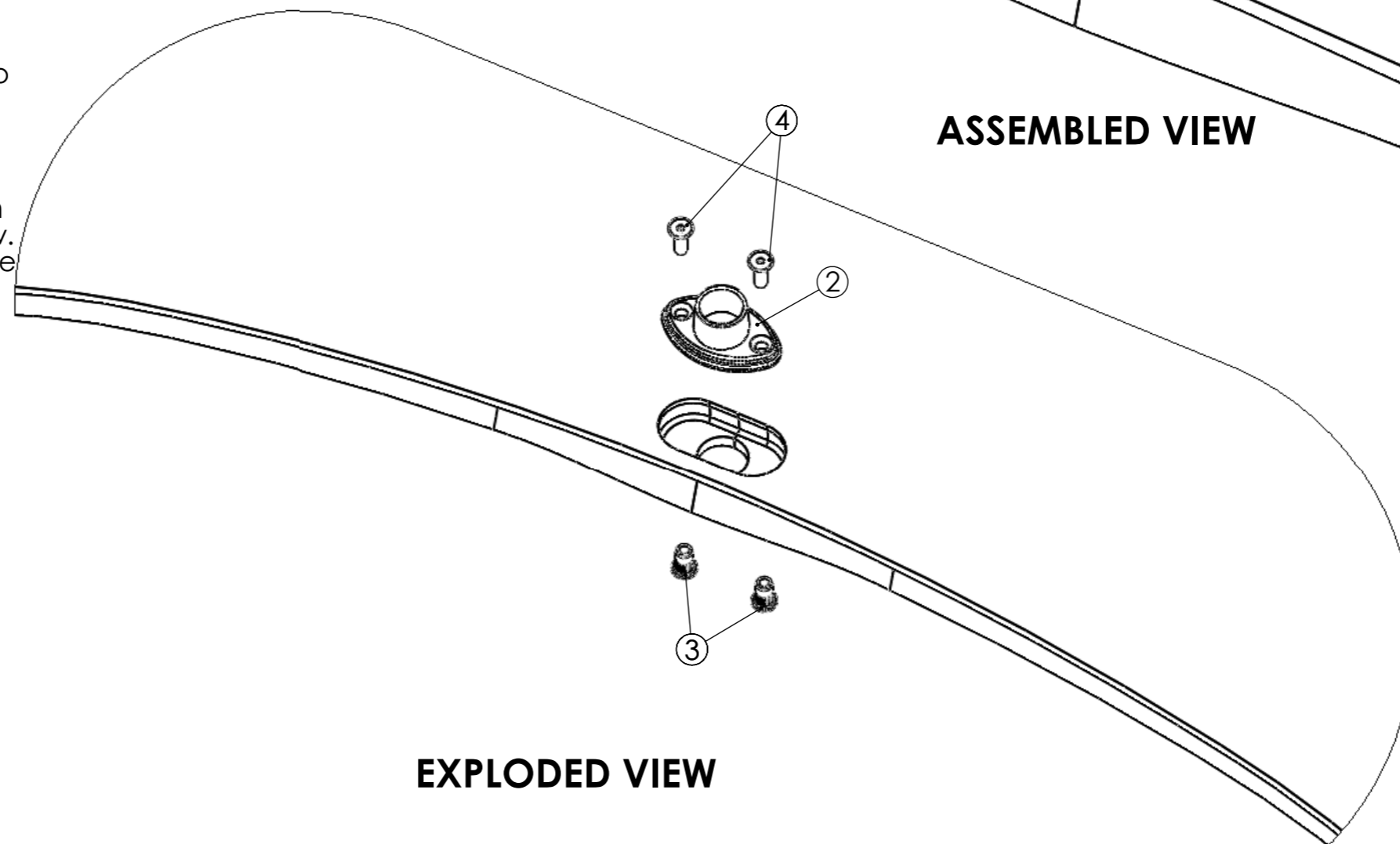
Step 4
Place the lock base in the hole as shown in the view below. Make sure the lock base is perpendicular to the frame, then using a 5mm drill bit, drill through the holes on either side of the lock base as pilot holes for the rivnuts to be fitted as described in the next step.

Step 5
Use a 7mm drill bit (diameter of rivnut) to open the two 5mm holes drilled in the previous step.

Step 6.
Fit the two M5 rivnuts in from the bottom of the frame as shown in the view below. Fit the lock base with part ④ and secure them using Loctite 243.
Continue on to the next page.



ASSEMBLED VIEW



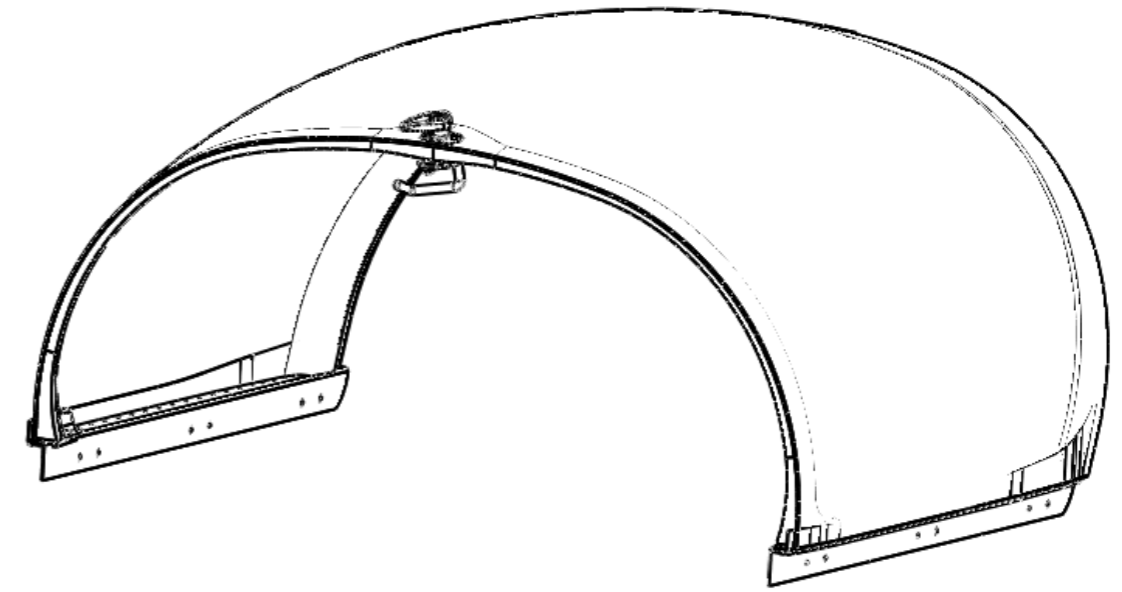
EXPLODED VIEW



DESCRIPTION pgCA10

SLING 2 CANOPY LOCK INSTALLATION

ITEM NO.	PART NUMBER	Description	QTY.
1	CA-CANOPY-001-C-A-	Canopy Assembly	1
2	HW-CAS-516-X-X-	M5 x 16mm Countersunk Allen Screw	2
3	Lock Handle	Lock Handle	1
4	Lock Bush	Lock Bush	1
5	HW-RIV-303-X-X-		2
6	CA-LCH-001-X-X-	Canopy Latch	1
7	CA-PLT-006-X-A-	Sling 2 Canopy Latch	1
8	Canopy special M8	M6 x 15 Bolt	1
9	Latch Spring	Latch Spring	1
10	HW-ANL-051-R-X-	AN5 Locknut (Low Profile)	1
11	HW-RNM-500-X-X-	M5 Rivnut (Large Flange)	2
12	HW-SBM-816-X-X-	M8 x 16mm Allen Cap Screw	1



ASSEMBLED VIEW

Step 1
Disassemble the supplied lock handle.
Note that if the steel handle shaft is not used in the lock mechanism and can be put aside.

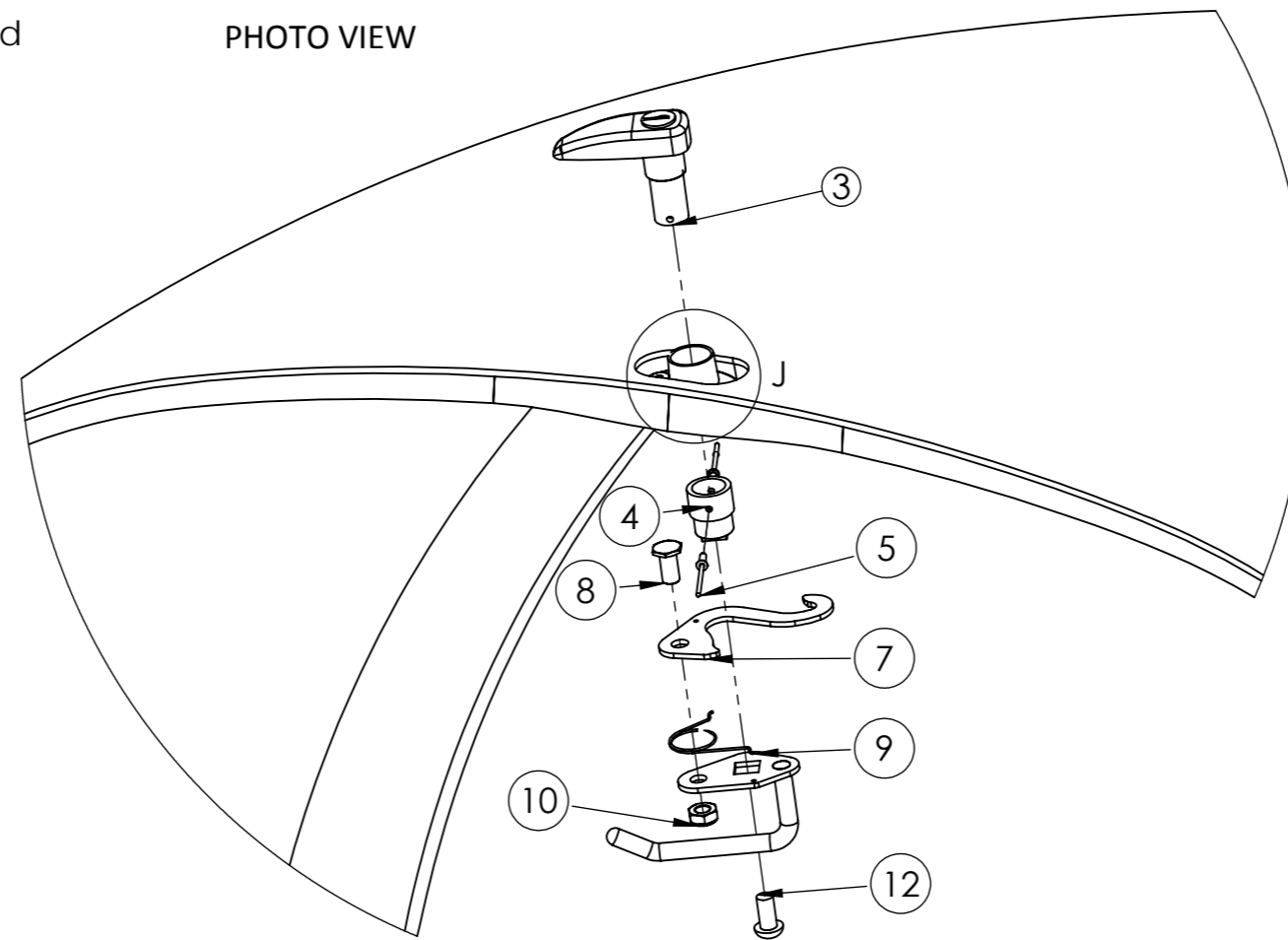
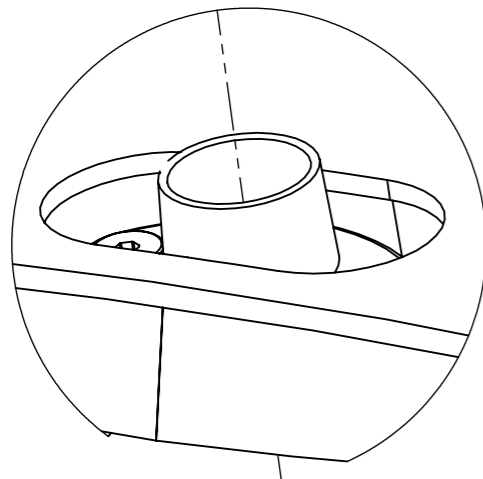
step 2
Fit part ③ through the lock base, slide part ④ onto part ③ and secure the two with part ⑤ on both sides.



PHOTO VIEW

Step 3
Next, assemble parts together as shown in the exploded view note PART ⑦'s orientation and secure the latch to the handle using parts ⑧ & ⑩ .

Step 4
Secure the handle and latch assembly to part ④ with part ⑫ and move the handle to ensure free and smooth movement of the latch mechanism.
Also, slide the canopy back and forth to check that the latch catches the pin on the windscreen effectively.



EXPLODED VIEW



DESCRIPTION pg CA11

LATCH INSTALLATION

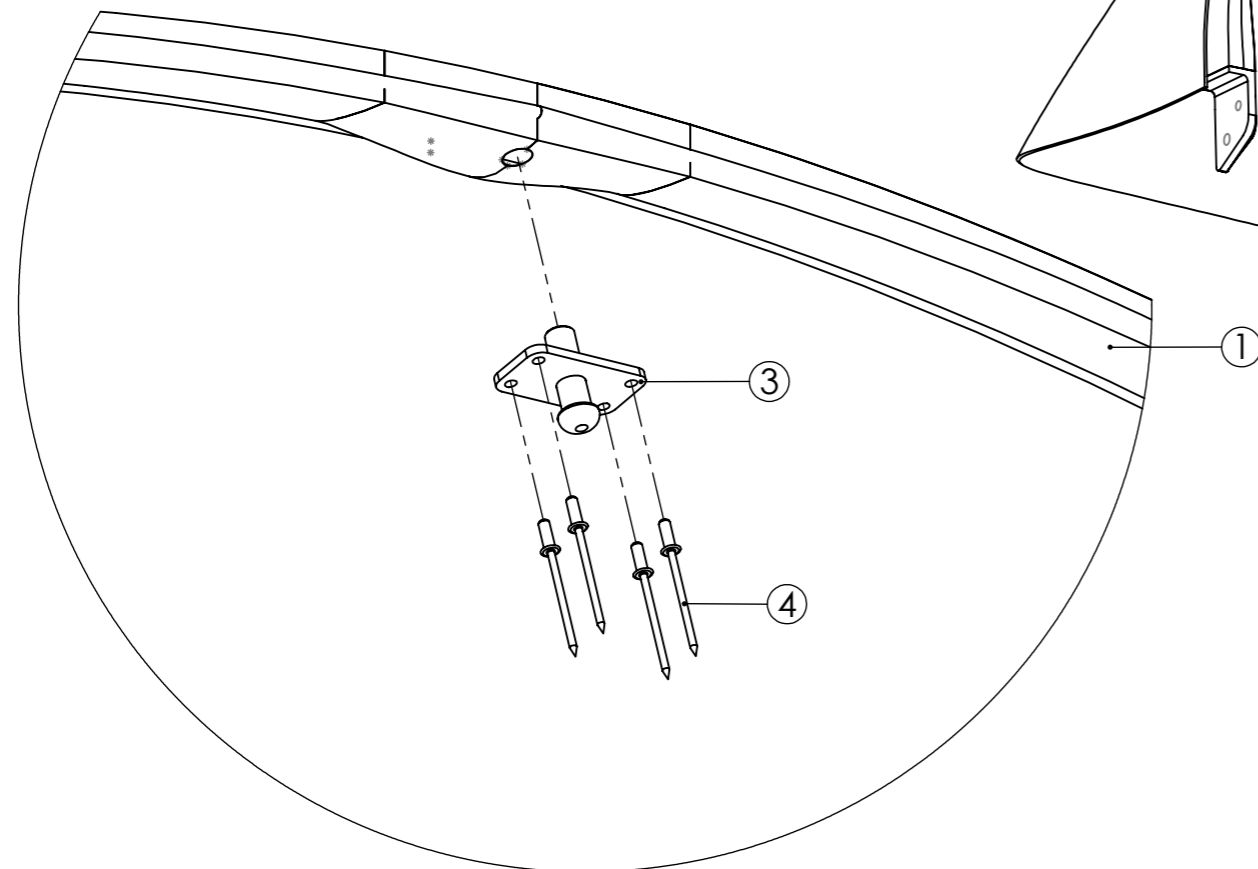
ITEM NO.	PART NUMBER	Description	QTY
1	CA-CMP-001-C-A-	Windscreen Frame	1
2	CA-CAN-002-C-A-	Main Canopy	1
3	Canopy Latch Pin	Canopy Latch Pin	1
4	HW-RIV-142-X-X-	3.2 x 8mm Alu Domed Rivet	4

Step 1
Carefully drill an 8mm hole into the centre of the windshield frame 9 mm from the inside edge as shown in the view below. Ensure that the hole is perpendicular to the frame. Also, be careful to not drill all the way through the frame.

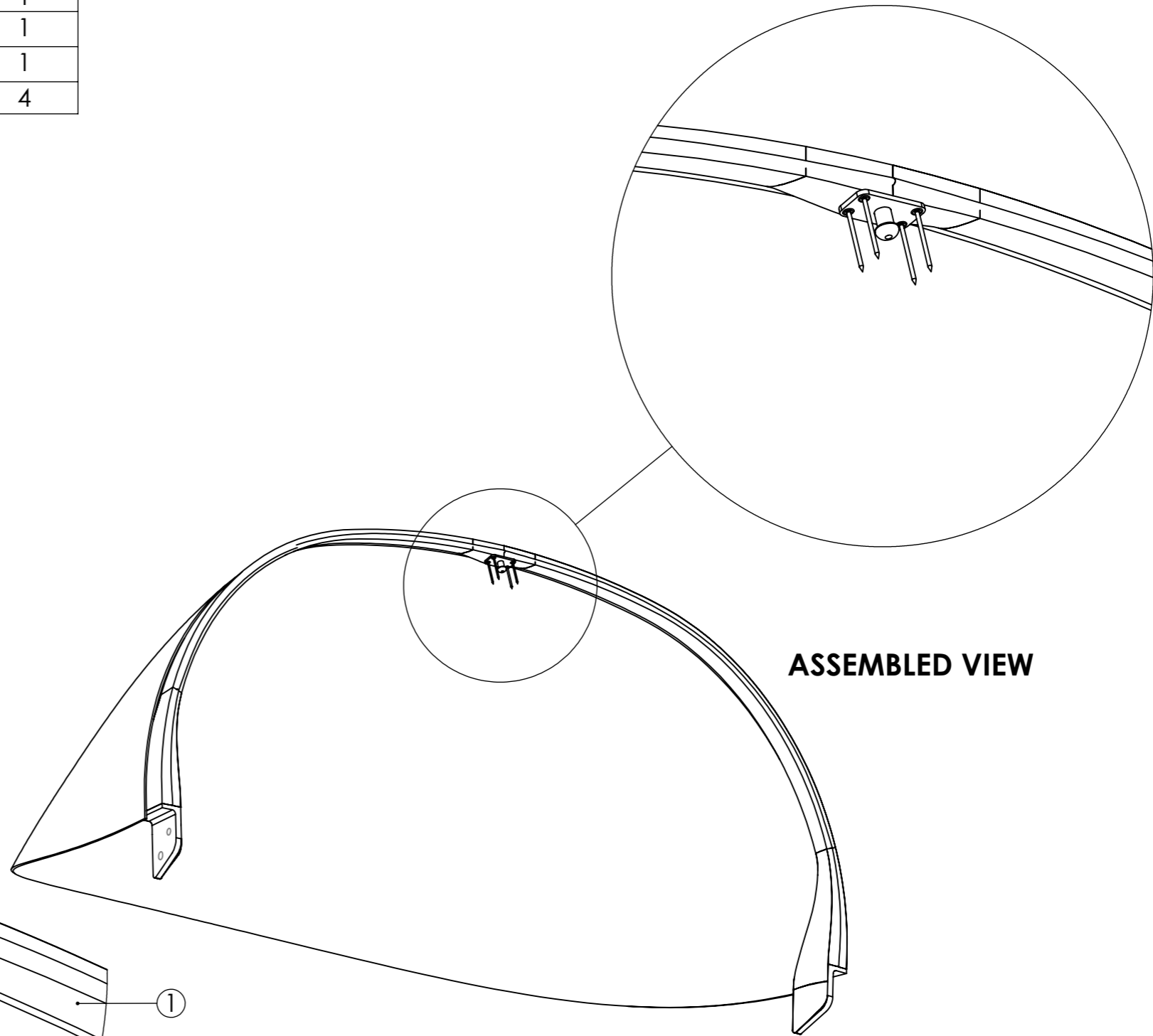
Step 2
loosely fit the canopy latch pin into the hole and line up the plate squarely with the frame.

Step 3
Using the four rivet holes in the plate, carefully mark and drill four 3mm holes into the frame for part ④.

Step 4
Rivet part ③ to part ① and operate the canopy latch mechanism to ensure the latch catches the latch pin securely.



EXPLODED VIEW



ASSEMBLED VIEW



DESCRIPTION pg CA12

**CANOPY LATCH PIN
FITMENT**