







<u>Step 1</u>: Assemble the WD-01218-1 Canopy Latch and C-656 Canopy Handle as shown in Figure 1. The tube end of the canopy latch may be shortened if/as required to achieve the dimension called out.

Using the pilot hole in the canopy handle as a drill guide, match-drill #30 through both sides of the canopy latch tube and into the canopy handle to the depth called out in Figure 1.

Disassemble the canopy latch and canopy handle. Final-Drill #19 through the front part of the canopy handle. Final-Drill #19 through the canopy latch. Deburr holes. Cut threads in the rear "tail" portion of the canopy handle using an 8-32 tap. Machine countersink the canopy handle to fit the head of a #8 flush screw. Round the head of the screw as required to match the curvature of the canopy handle.







FIGURE 3: CANOPY LATCH













<u>Step 3:</u> Beginning at one of the holes nearest the center of the front bow, drill with a #30 Plexiglass bit through the canopy and into the pre-drilled hole in the frame. Use the tape contact line to aid drilling through the center of the tube and use the reflection of the drill bit in the canopy to drill perpendicular to the canopy surface. See Page 39iS/U-07, Detail C. Drill using full drill speed and light pressure. Cleco the hole after drilling.

Using a #30 Plexiglass bit, drill and cleco the canopy to the canopy frame rear bow at the hole nearest the top center of the rear bow. Clear any shavings from under the canopy before clecoing each drilled hole. Be sure that the canopy lays tightly against the canopy frame rear bow when it is clecoed. It is acceptable to loosen the spring clamps and allow the canopy frame to move upward even if the gap between the bottom of the canopy frame and deck becomes greater than 1/8 in. [3.2 mm].

Re-verify that the strips of duct tape (installed in Step 2) are holding both sides of the canopy tight to the canopy frame front and rear bows and to the C-01203A-1 & B-1 Attach Angles.

Alternate drilling and clecoing between the front bow and rear bow working one hole outboard toward the left and right sides each time. Periodically check the position of the canopy on the frame to make sure that the canopy is neither migrating out of position nor that the canopy sides are bulging outboard as drilling progresses.

<u>Step 4:</u> Position the C-1202 Canopy Skirt to the outside surface of the canopy frame sides as shown in Figure 1, Section A-A and Section B-B. With the canopy skirt held or taped in place, match-drill #30 through the canopy skirt and into the canopy frame and cleco. Remove chips as required after drilling each hole, then cleco.

Repeat for the opposite side of the canopy.

<u>Step 5:</u> Remove the C-1202 Canopy Skirt and deburr the drilled holes. Dimple the most forward five rivet holes in the canopy skirt and machine countersink the corresponding holes in the frame as called out in Figure 1.

<u>Step 6:</u> Curl the forward upper corner of the canopy skirt to match the shape of the fuselage such that the upper forward corner of the skirt lays tight against the canopy and frame when clecoed in place. Over-curling is preferable to under- bending so as to keep the curled skirt firmly in contact with the canopy and frame. The curl can be formed using hand pressure on the canopy skirt held against a cylindrical object.

This will require a few iterations of clecoing to the fuselage, noting required adjustments, removing, adjusting, and re-fitting. When nearly satisfied with the fit of the skirt to the fuselage, trim the aft end of the skirt to leave a 1/16 in. [1.6 mm] gap between the aft edge of the skirt and the fwd edge of the notch in the F-01277-L-1 Fwd Turtle Deck Skin.

Step 7: Remove the Canopy from the canopy frame and deburr the holes in each.

Remove the clamps and spacers that were holding the canopy frame rear bow in position. Rotate the canopy frame to the open position. Remove the corrugated cardboard spacers that were placed between the canopy frame and the cockpit sills.



<u>Step 1:</u> You will need to have a non-claustrophobic friend/spouse/child/leprechaun/goblin or hobbit. help you with this step. After having your helper climb into the cockpit, rotate the WD-1219 Canopy Frame back down to the closed position. Hand one of the wood spacers to your helper.

Place the C-1201 Canopy back into place on the canopy frame and re-cleco.

<u>Step 2</u>: Re-cleco both C-1202 Canopy Skirts to the canopy frame. Be sure that the canopy is clecoed along the full width of the front and rear bows. Use duct tape if/as required to pull the canopy sides down between the front and rear bows.

Match-Drill using a #30 Plexiglass bit through the upper row of holes in the canopy skirt through the Canopy and C-01203A-1 and C-1203B-1 Attach Angles. (The Plexiglass bit will easily cut through the thin aluminum attach angles.) Have your helper hold the wood spacer against the canopy attach angles to resist the drill pressure. Cleco each hole after drilling.

Repeat for the opposite side of the canopy.

<u>Step 3:</u> Let the helper out from inside the canopy then place the canopy back into position. Make sure the room temperature is approximately 70 °F [21 °C]. Note the canopy material expands and contracts significantly relative to the canopy frame with changes in temperature. Place a line of tape 1/16 inch forward of the forward edge of the F-1277B Aft Window to mark the final aft edge of the canopy.

Step 4: Remove the canopy from the fuselage and set it on your work table.

Final-Drill all holes in the canopy using a #27 Plexiglass bit. Deburr the drilled holes in the canopy.

Machine countersink the holes along the front edge of the canopy to fit the head of an AACQ4-4 blind rivet. Countersinks that are up to .015 in. [.4 mm] too shallow are acceptable and are preferable to countersinks that are even slightly too deep.

<u>Step 5:</u> Using sand paper attached to a straight edge sand the aft edge of the canopy even with the tape installed in Step 3. Remove the tape.



FIGURE 1: TRIMMING THE CANOPY AFT EDGE



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<u>Step 1:</u> Machine countersink the two holes in each C-1207 Guide Block to fit the head of a #8 flush screw. See Figure 1. Countersinks that are up to .015 too deep are acceptable and are preferable to countersinks that are too shallow. Tap 8-32 the two holes in each guide block.

<u>Step 2:</u> Install C-1207 Guide Blocks as shown in Figure 1.

<u>Step 3:</u> Insert the C-01206-1 Guide Plate in the slot in the C-1207 Guide Block and position as called out in Figure 2. Match-Drill the guide plate to the WD-1219 Canopy Frame using a #30 drill bit. Remove the guide plate and deburr holes. Rivet the guide plate to the canopy frame using the blind rivets called out in Figure 2.

NOTE: This is a good time to paint the canopy frame, the 'D' Handle portion of the canopy latch, and inner surfaces of the canopy skirts to match the interior of the aircraft. Given that the canopy rear bow above the upper edges of the canopy skirts will be visible from the outside of the aircraft it may be more desirable to paint portions to match the aircraft exterior rather than interior. Consider also that when the canopy is in the open position certain parts of the canopy frame are exposed and it may be more desirable to paint to match the exterior rather than the interior.

Leave the outer surfaces of the forward "arms" of the canopy frame bare in the area where the C-1208 Canopy Foam will be bonded. See Page 39iS/U-15.



F-01254-L-1

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Step 1: Cut the C-01210-1 Lift Handle into left and right parts as shown in Figure 1.

C-1210-R-1 REMOVE HATCHED AREA C-1210-L-1 6 FIGURE 1:

CUTTING APART THE HANDLES

canopy to the canopy frame along the front bow.

turn freely.

to the WD-1219 Canopy Frame as shown in Figure 3.

the point that the screws do not turn freely.

the end of the nut. See call-out on Page 39iS/U-12, Figure 2.

Rivet the canopy to the frame along the front. See Figure 3.





Step 1: Install the WD-01218-1 Canopy Latch, called out bushing, C-671 Plastic Washer and C-656 Canopy Handle on the WD-1219 Canopy Frame as shown in Figure 1.

If a gap exists between the top of the bushing and the canopy frame use an extra C-671 Plastic Washer to fill the gap. Place the washer on top of the bushing as shown in Figure 1.

If the canopy latch rotates freely enough in the canopy frame tube that it will turn under its own weight when the canopy is rotated up to the open position, then the bottom of the canopy frame tube should be carefully pinched slightly so as to create enough friction to prevent undesired rotation.

When installing the canopy latch for the final time, lightly grease the pivot tube to prevent corrosion and help keep water out.

Step 2: Remove the canopy struts at this time and set aside until the fiberglass lay-up has been trimmed.

Step 4: From inside the cockpit lower the canopy and rotate the latch to the closed position. It is acceptable for the latch plate to strike the ramped portion of the block. See Figures 2 and 3. Pull firmly, straight down on the latch handle. If there is any gap between the top surface of the latch plate and the lower surface of the guide block that allows canopy movement (even though the latch is fully closed and the latch pin is snapped into the detent in the guide block) remove the guide block and add one or two C-01205B Shims between AN509-8R14 guide block and roll bar to lower the block and eliminate the gap. C-656 See Figure 3. C-671 **BUSHING-AL** .509X.625X.281 IF REQUIRED C-671 WD-01218-1 WD-1219 TRIM THIS SCREW SO THAT ONLY 2 THREADS PROTRUDE BEYOND THE END OF THE NUT, **LEFT & RIGHT SIDES** FIGURE 1: CANOPY LATCH INSTALLATION



but not the gas struts.

Step 1: Final-Drill #29 then tap the C-01212-1 attach holes in the F-1231A-FL and F-1231A-FR Roll Bar Frames as shown in Figure 1. Use the hole in the guide block to hold the tap aligned while cutting threads.

<u>Step 2</u>: Install both guide blocks as shown in Figure 1.

<u>Step 3:</u> Rotate the canopy down to the closed position. As the canopy nears the fully closed position, verify that there is no interference between any screws and the lower outboard corners of the guide blocks. Chamfer the lower outboard corner of the guide block as required to eliminate interference.







Step 1: A void needs to be made to accommodate the C-1217A Fwd Seal, (Page 39iS/U-21). Fabricate the

F-01240-1

Α

42 5/16

[107.5 cm]

FIGURE 2: TRIM SEAL SPACER

SEE DETAIL

C-00003 Seal Spacer by cutting AS3-025X.5X43 to the length shown in Figure 2.

Measure the thickness of your duct tape to determine the number of layers needed to achieve the dimension provided. Wrap the seal spacer in duct tape. Begin by placing the edge of the spacer along the edge of the tape.

Raise the canopy. Align the wrapped spacer along the aft edge of the F-01240-1 Upper Fwd Fuse Skin. See Figure 1 detail and View A-A. Work the excess width of the tape downward onto the aft face of the panel jig as shown in the Figure 1 detail, making relief cuts to allow the tape to lie flat. Add layers as required to achieve the total thickness shown, which includes .010 in. [.3 mm] for paint.

Step 2: Use masking tape and paper to cover the F-12133 Instrument Panel Jig, F-01202B-1 Panel Base and the coves where the canopy frame forward arms nest when the canopy is closed. Form a pocket in the cover to catch dripping epoxy.

> ADD BACKING IN VOIDS TO SUPPORT CLOTH

> > ...

ONE LAYER OF DUCT TAPE Place duct tape along the upper edge of the F-01270-L-1 & -R-1 Fuselage Side Skins from the firewall to approximately 24 to 30 in. [61-76 cm] aft of the firewall. See Figure 1 call-out for thickness.

Remove the three most forward screws on each side as called out in Figure 1.

Lower the canopy.

Mark an offset reference line onto the F-01270-L-1 & -R-1 parallel to the bottom of the canopy skirt to be used for establishing the trim line on the cured fiberglass. See the Figure 1 call-out.

Step 3: Place duct tape per the call-out to the side edges of

C-00003

7/16

REMOVE SCREWS

FIGURE 1:

the F-01240-1 Upper Forward Fuselage Skin as shown in Figure 1. Mask-off the remaining area of the upper forward fuselage skin using masking tape and newsprint or butcher paper.

Step 4: Trim each C-1208 Canopy Foam as shown in Figure 3

Step 5: Position the trimmed C-1208 Canopy Foam in place on the canopy frame as shown in Figure 4.

Push each canopy foam aft against the forward edge of the C-1202 Canopy Skirts so that the canopy skirts crush the canopy foam to a depth of approximately 1/32 in. [.8 mm].

Push each canopy foam inboard against the head of the screws that the canopy frame pivots on so that the bolt head crushes the canopy foam to a depth of approximately 1/32 in. [.8 mm].

Using a Sharpie (fine tip permanent marker) pen, trace the



DUCT TAPE TOTAL THICKNESS

.050-.060 [1.3-1.5 mm]

C-00003

(1/2)[12.7 mm] shape of the upper forward fuselage onto the inboard side of each canopy foam.

Remove the canopy foam and trim the upper edge to the sharpie mark. Use a hack-saw blade. Using a unibit, drill a 1/2 diameter hole through the canopy foam at the center of the mark made by the screw head.

Use a piece of 80 to 100 grit sandpaper to scuff the surface of the canopy frame where the canopy foam will be in contact. Scuff so that the gloss is removed from the entire aluminum surface.

Glue the canopy foam to the canopy frame using epoxy thickened with flox. Flox should be added to the resin until the mixture is just thick enough that it won't pour when the mixing cup is tipped.

Spread a thin (approx. 1/16 in. [1.6 mm]) layer of thickened epoxy on the mating surface of the foam. Achieve a good bond between the canopy foam and canopy frame but use care so as not to get any epoxy/flox mixture on the pivot screws or washers.



Step 1: Using a 15 to 18 in. [38 to 46 cm] long by 3 in. [76.2 mm] wide sanding block with 80 grit sandpaper, shape the C-1208 Canopy Foam to match the contours of the forward fuselage. Use the sanding block held in an approximately fwd/aft direction guiding on the fuselage structure to achieve the desired shape.

Step 2: Cut out the CANOPY MASKING GUIDE & GLASS FABRIC PLY TEMPLATES. (These are supplied full scale on a separate 24 X 36 in. [61.0 X 91.4 cm] drawing.) Using several small pieces of masking tape align both right and left side templates to the canopy and tape in place.

Step 3: Place a strip of good quality electrical tape on the canopy closely following the edge of the paper templates. Use tape to bridge between the right and left templates following the line established by the templates. When bridging between right and left sides, project the line from the template on one side across the center of the canopy to match the line from the template on the other side.

Carefully remove the templates and set them aside to be used in the next step.

Place a second layer of electrical tape on top of the first layer. Mask-off the entire canopy above and aft of the double layer of electrical tape.

Step 4: Cut ten plies (two each of ply #1 through #5 as called out on the CANOPY MASKING GUIDE & GLASS FABRIC PLY TEMPLATE) from 9 oz./square yard [305 g/sq. m], plain weave E-Glass fabric. Use a rotary cutter on a smooth, relatively soft surface when cutting (the finished side of the crate your kit was delivered in makes a good surface for the rotary cutter). Cut the plies to the size and shape defined on the template. The templates will not be used again, so it is acceptable to cut the template down as you are cutting the plies.

Arrange the cut plies into two neat sequential stacks with ply #5 at the bottom of each.

Step 5: Sand the exposed canopy with 60 to 80 grit sandpaper. Sand the canopy skirt where glass fabric will be bonded. Use extra care to be sure that there are no shiny or glossy areas anywhere on the canopy or canopy skirts that will have glass fabric bonded to them. There must be NO visible shiny or glossy spots on any of the surfaces. Brush away (with a new paint brush) or gently blow away (using compressed air) all the sanding dust and other shop debris.

Place mylar packaging tape over the duct tape strips that are protecting the F-01240-1 Upper Forward Fuselage Skin as well as the tape over the spacer.

Apply a light coating of wax to the surface of the mylar tape. Use great care to not get wax on any surface that the glass fabric bonds to.

NOTE: The remaining steps on this page should be completed in a single work session, so you will need to budget approximately four hours of uninterrupted work time before moving forward.

Step 6: Cut away the thin edges of the C-1208 Canopy Foam along the upper edge until there is a "shelf" approximately 1/8 in. [3.2 mm] wide.

Mix epoxy and thicken with flox to create a paste and fill the just created gaps with the thickened resin mixture. See Figure 1 and Page 39iS/U-16, Figure 2.

Step 7: Place a piece (or pieces) of plastic food wrap on your work table. Place ply #1 on the plastic wrap and wet it out with epoxy. Use bondo squeegee to ensure that fabric is wetted with epoxy but not excessively so.

canopy foam as well as on the surfaces of the canopy and canopy skirts that will have glass fabric bonded to them.

Pick up the plastic food wrap with ply #1 on it and position it on the canopy. Working through the plastic wrap, smooth-out the glass fabric and work the edges until they bridge across any unsupported areas with little sag. When satisfied with the placement of ply #1, carefully peel the plastic wrap away from the glass fabric and throw it away.



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Step 1: Cut strips of glass fabric that are 36 in. [91.4 cm] long with quantities and widths as listed in Table 1.

Use a rotary cutter along with a long straight edge when cutting these long skinny strips. Arrange the cut plies into a neat sequential stack with ply #13 at the bottom.

VVIUII	111111	QLY	riguie i Fiy#
2 3/4	[69.9]	1	1
2 1/2	[63.5]	2	2, 12
2 1/4	[57.2]	1	13
2	[50.8]	1	3
3/4	[19.1]	2	5, 9
1/2	[12.7]	3	4, 6, 10
3/8	[9.5]	2	7, 11
1/4	[6.4]	1	8

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TABLE 1: LAY-UP SCHEDULE

NOTE: The next step on this page should be completed in a single work session, so you will need to budget approximately three hours of uninterrupted work time before moving forward. Exact ply placement and number can be adjusted to provide the best smooth transitional shape.

10/idth

Step 2: Remove the peel ply (if used) from the previous lay-ups. If peel ply was not used, sand the most inboard three inches of the previous lay-up with 60 to 80 grit sandpaper. Use extra care to be sure that there are no un-sanded areas anywhere on the previous lav-up that will have glass fabric bonded to them. Brush away (with a new paint brush) or gently blow away (using compressed air) all the sanding dust and other shop debris.

Step 3: Place a piece of plastic food wrap on your work table. Place ply #1 on the plastic wrap and wet it out with epoxy. Use a bondo squeegee to ensure that the glass fabric is wetted with epoxy but not excessively so.

Brush a coat of epoxy on the surfaces of the canopy and previous lay-ups that will have glass fabric bonded to them.

Pick up the plastic food wrap with ply #1 on it and position it on the canopy. Place the edge of ply #1 against the edge of the electrical tape. Place the end of ply #1 such that it overlaps the previous lay-up by approximately 1/2 in. [12.7 mm]. Working through the plastic wrap, smooth-out the glass fabric and work the edges until they bridge across the unsupported areas with little sag. When satisfied with the placement of ply #1, carefully peel the plastic wrap away from the glass fabric and throw it away.

Work from one side across to the other and trim the ply to achieve 1/2 in. [12.7 mm] overlap "in-place" as the last few inches are layed down.

Step 4: Allow resin to cure to the point that it is beginning to gel, but is still tacky. With the epoxy for ply #1 still uncured, place ply #2 (dry) in place on the canopy and wet it out with epoxy resin. Place the edge of ply #2 1/8 in. [3.2 mm] below the edge of ply #1 as shown in Figure 1. Place the end of ply #2 such that it overlaps the end of ply #1 by approximately 1/2 in. [12.7 mm]. Use care while wetting-out the ply #2 fabric so as not to disturb the placement of ply #1. Trim the other end to achieve 1/2 in. [12.7 mm] overlap.

Continue placing successive plies until ply #13 has been placed and wetted-out. Place the edges of the plies as shown in Figure 1. Stagger the ends of the various plies so that the thickness of the new lay-up transitions smoothly into the previous lay-ups thus preventing "lumps" that make final finishing more difficult.

Step 5: Allow everything to cure for a day or so before beginning the finishing process. Start with 60 to 80 grit sandpaper on a flat sanding block for the sides and use a round (approximately 2 in. [50.8 mm] radius) sanding block for the center. This will get you quickly to the general shape, but be careful to not get into the electrical tape that is protecting the canopy.

When you get down near the tape, switch to about 80 to 100 grit sandpaper and work very carefully until you are just contacting the tape and the canopy skirt metal on the edges of the lay-up.



If you sand through the first layer of electrical tape, the second one should protect the canopy if you are watching carefully.

In areas where the edges of the lay-up don't bond onto the canopy or canopy skirt, it is only necessary to finish the surface to within approximately 1/4 in. [6.4 mm] of the edge of the lav-up.

Remove the top layer of electrical tape (leaving only the first layer to protect the canopy) and sand carefully using 150 grit sandpaper until you just start to see sanding marks in the tape.

Brush on a heavy coat of epoxy overlapping the epoxy onto the tape and let harden.

Sand again with 100 grit sandpaper then 150 grit sandpaper.

If there are any areas that need filling you can fill them now by scuffing with 60 grit sandpaper and filling with a dry mix of epoxy and microballoons.

The goal is to have a lay-up with the outer surface being a build-up of two or three coats of epoxy that has been finish sanded to final shape with the epoxy blending onto the canopy being the thickness of the electrical tape (or less). The epoxy/glass fabric lay-up that covers the forward portion of the C-1202 Canopy Skirts should blend to zero thickness seamlessly onto the metal. The final blending of the lay-up into the metal may require a couple of wet sanded applications of a filler primer to blend it out entirely.

PLY #1-
PLY #2
PLY #3—
PLY #4 —
PLY #5-

<u>Step 1</u>: Draw a trim line onto the surface of the cured fiberglass lay-up that is parallel to the offset reference line drawn onto the side of the fuselage earlier and that is collinear to the lower edge of the C-1202 Canopy Skirt. See Page 39iS/U-14 Figure 1.

<u>Step 2</u>: Drill a 3/8 diameter hole through the glass fabric lay-up at the location of the canopy pivot screw centers. Carefully enlarge the holes to 1/2 in. [12.7 mm] using a file or coarse sandpaper wrapped around a drill bit.

With the canopy pivot screws now accessible, remove the screws and then remove the canopy. Remove the tape protecting the upper forward fuselage and fuselage side skins.

<u>Step 3:</u> Re-drill the three holes on each side where screws were removed and re-install the screws, washers and nuts.

Trim the lower edges (the edges that slightly overlap the F-01270-L-1 & -R-1 Fuselage Side Skins) of the glass fabric lay-up along the line drawn in Step 1.

<u>Step 4:</u> Cut out the CANOPY LAY-UP TRIM TEMPLATE. (This is supplied full scale on a separate 24 X 36 in. [61.0 X 91.4 cm] drawing.) Using several small pieces of masking tape, align the template to the canopy and tape in place. Mark the trim line on the glass fabric lay-up using the template as a guide. (Page 39iS/U-15, Figure 1 also depicts the final-trim of the glass fabric lay-up.) Remove the template and use it to mark the opposite side of the canopy. Trim the glass fabric lay-up to the trim lines. Finish sand the trimmed edges.

<u>Step 5:</u> Reinstall the struts then place the canopy back on the fuselage and re-install the pivot screws. Carefully pivot the canopy up while observing the relationship of the forward edges of the glass fabric lay-up and the upper forward fuselage. If there is any impending interference, stop moving the canopy and mark where the glass fabric lay-up needs to be trimmed to clear the fuselage as it pivots up. Remove the canopy and trim as required. Repeat this process until the canopy can be fully opened without any interference between the glass fabric lay-up and the fuselage.

<u>Step 6:</u> Brush-coat with epoxy the exposed areas of the C-1208 Canopy Foam inside the pivot screw cavities and along the front edge of the canopy foam where the glass fabric lay-up does not cover it. This will seal the foam and make it more durable. The epoxy may be thickened with flox if needed to fill gaps or cavities. Finish sand these areas as desired. Repetition of the brush coat may be necessary after finish sanding.



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NOTE: The Base Seal is intended to be cut longer than necessary in order to provide something to hold onto while installing.

Step 1: Fabricate the F-00059A-L & -R Base Seals from SEAL-00003 Foam PVC .375X.625 per the dimensions shown in Figure 1.





WITH EXISTING TANK SEALANT FILLET

TRIM CORNER OF SEAL TO

ELIMINATE INTERFERENCE





Step 7: Close the canopy but don't latch it.

Place a piece of masking tape on the C-1201 Canopy with the tape's fwd edge parallel to the fwd edge of the C-01213B and aft the distance called out in Figure 4, View B-B.



FIGURE 4: INDEX CENTER LATCH SEAL AFT EDGE



Step 2: Trim the lower inboard corner of the F-00059A-L Base Seal where it would interfere with the fillet of sealant at the bottom of the F-1202H-L Canopy Rib as shown in Figure 2, View A-A.

Step 3: Temporarily position the base seal onto the F-01202B-1 Panel Base with the seal's aft inboard corner aligned with the beginning of the bend in F-1202H-L Canopy Rib and the inboard face of the seal butted up against the canopy rib. See Figure 2.

Step 4: Place a reference mark on the fuselage side skin as shown. Set aside the base seal for now.

Step 5: Repeat Steps 2-5 for the F-00059A-R Base Seal



FIGURE 2: PREPARE BASE SEALS

RIGHT

FIGURE 1: FABRICATE BASE SEAL **LEFT SHOWN - RIGHT OPPOSITE**

NOTE: Check for fit before priming or painting the C-01221-L/R Seal Retainers.

<u>Step 1:</u> Place the SEAL-00002, C-01221-L & -R Seal Retainers, a 5/16 nut driver, Phillips screwdriver, straight-slot screwdriver with the end taped over, "Sharpie" pen, and C-1219 Foam Spacer (see Page 39iS/U-20 Section C-C) inside the cockpit and climb inside.

<u>Step 2</u>: With the canopy assembly open loosen the nuts attaching the C-1201 Canopy to the canopy frame enough to allow the retainers to slide in between the frame and the washers.

Install the C-01221-L & -R Seal Retainers as shown in Figure 1 and Figure 3, Section B-B.

Tighten the screws just enough to hold the retainers in place and still allow the retainers to be adjusted with the taped screwdriver.

<u>Step 3</u>: Push the end of the SEAL-00002 into the gap between the canopy and the seal retainer starting at the lower end of the left retainer. Match the end of the seal to the end of the retainer.

Push in the seal until reaching the upper end of the retainer then mark the seal at the end of the retainer. Pull out the last few inches of seal and cut with scissors at the mark. When cut, the seal is designated C-01220-L. Reinstall the C-01220-L and repeat this step for the right side (C-01220-R).

<u>Step 4:</u> Verify the seals are fully seated along the entire length of both seal retainers. See Section B-B.



<u>Step 5:</u> Close and latch the canopy with an assistant stationed on the wing walk and the Phillip's screwdriver in hand.

NOTE: The assistant's job is to observe the seal gap from outside the canopy and tell the one on the inside which direction the seal retainer and seal should be moved and by how much.

<u>Step 6:</u> Pry the seal retainer fwd or aft with the taped screwdriver to obtain the amount of seal-to-roll bar engagement called out in the Section B-B detail.

NOTE: If the retainer is pushed fwd as far as it will go but the seal is tightly compressed, trim the aft edge of the retainer to relieve the seal. If the fwd edge of the retainer is riding the radius of the frame trim back the fwd edge of the retainer.



FIGURE 1: SEAL RETAINER & ROLL BAR SEAL INSTALLATION

FIGURE 2: COMPLETED SEAL INSTALLATION



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<u>Step 7:</u> Mark the retainer before removal for an accurate reinstallation (fore and aft). Trim the retainer if necessary, deburr, prime, and paint if desired.

NOTE: Do not over-tighten canopy attach screws, rather tighten just enough to prevent screws from turning freely.

Step 8: Reinstall the retainers and the roll bar seals.

<u>Step 9:</u> Position the C-01224A Latch Seal laterally between the ends of the C-01220-L/R seals with the adhesive side up. Position it fore and aft so that its aft edge aligns with the fwd edge of the masking tape (See Page 39iS/U-18, View B-B).

Mark where the C-01224A will need to be relieved to fit around the tube and the nut as shown in Figures 1 and 2. Cut notches into the seal then remove the paper backing and install the C-01224A onto the canopy frame flange and C-01221-L Retainer as shown in Figures 1 and 2.

Use the same process for the C-01224B-R, cutting a notch for clearance, then installing it to the C-01221-R retainer as shown in Figures 1 and 2. Butt the seal up to the end of the C-01224A latch seal and contact the fwd face of the C-01221-L roll bar seal to close the small transverse gap between the roll bar seal and the center latch seal.

Install seal C-01224B-L to the C-01221-L Retainer in similar fashion to the C-01224B-R.

NOTE: Section C-C depicts the intended design gap between the WD-1219 Canopy Frame and the F-01234-L-1 Canopy Deck.

In some cases this gap may exceed the vertical capability of the C-1217B Side Seal which is about 1/4 in. [6.4 mm]. Compare Sections C-C and C'-C'.

If necessary reduce this gap using the C-1219 Foam Spacer wherever the gap is large enough to allow it to slide in easily.

Step 1: From inside the cockpit, with the canopy closed and latched, attempt to slide the foam spacer into the gap between the WD-1219 Canopy Frame and F-01234-L-1 Canopy Deck, keeping in mind that the C-1217B Side Seal will also be attached later.

Mark the length of the canopy frame needing the foam spacer, if at all.

Repeat for the other side of the canopy.

Step 2: Clean the entire length of the underside of the square tubes.



Step 3 (FOAM SPACER NOT NEEDED): Skip to Step 4.

NOTE: If the C-1219 Foam Spacer is needed taper the end to provide a smoother transition for the side seal as it transitions from the square tube to the surface of the spacer. See Figure 1.

Step 3 (FOAM SPACER NEEDED): Apply the C-1219 Foam Spacer to the bottom of the square tube per the marks made in Step 1 and as shown in Section C'-C'.

TRANSITION

Step 4: Determine the starting point (fwd end) of the C-1217B Side Seal by transferring the reference mark made on Page 39iS/U-18, Figure 2 to the outer surface of the C-1202 Canopy Skirt, then to the inner surface of the skirt, and finally to the bottom of the square tube.

NOTE: When a continuous length of side seal is applied around the corner joint in the square tube the seal collapses somewhat and may leak. To prevent this a two-piece seal is used to provide enough material for an overlapping joint.

Step 5: Fabricate the C-1217B and C-1217C Side Seals from SEAL-00001 LEAF SIL .313X.438.

Measure the side seal length beginning from the mark (see Step 4) near the fwd end and extending aft to the corner joint. Add 1/4 in, [6.4 mm] for the overlap, Refer to this piece as the C-1217B Side Seal, See Detail F.

Attach the C-1217B Side Seal per the method described on Page 39iS/U-21, Steps 2-7.

Trim off only the C-1217B adhesive leg where it butts to the weld at the corner of the tube.

Trim the C-1217B's non-adhesive leg at the angle shown at the corner to fabricate the overlap.

Step 6: Repeat Step 5 for the C-1217C Side Seal, this time leaving 1/4 in. [6.4 mm] extra length forward of the tube corner.





Step 1: Inspect the underside of the fiberglass lay-up where the C-1217A Fwd Seal will attach as shown in Figure 1, Section A-A. Remove any high spots that may prevent good adhesion.

CAUTION: Mineral Spirits or other petroleum based cleaning products should NOT be used.

Step 2: Clean the surface to which the fwd seal is to be attached with isopropyl (rubbing) alcohol. Let the surface dry completely.

NOTE: The C-1217A Fwd Seal is intended to overlap the yet to be installed F-00059B Vertical Seal. See Page 39iS/U-23, Figure 1.

Step 3: Measure the cut length of the seal. See Figure 2 to locate seal end points. Pre-cut the seal with about one in. extra from SEAL-00001 LEAF SIL .313X.438 material before installing.

NOTE: Apply when temperature is between 50°F and 100°F. Do NOT stretch fwd seal as it can retract or shrink. Use very firm pressure when applying.

Adhesion takes delayed set. Immediate removal and resetting can be done if an error occurs in the initial placement. DO NOT reset after one hour.

Step 4: Remove approximately 12 in. [30.5 cm] of paper backing from the adhesive strip.

Step 5: Position the seal as shown in Section A-A and Figure 2, starting at one end and working toward the other.

Step 6: Remove the next 12 in. [30.5 cm] of paper backing and repeat until the entire length is installed. Trim the excess with a razor blade.

NOTE: If available use a wallpaper seam roller or similar tool to reinforce adhesion after applying.

Step 7: Once installed apply firm pressure along the entire surface of the seal to ensure proper adhesion.

Double-check adhesion after 2-3 hours. Full set is reached in 24 hours.







SECTION A-A: SEAL POSITION OPEN CANOPY SHOWN







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F-00059A-L

Step 1: Apply a clear silicone adhesive to the lower end of the F-00059B Vertical Seal where the vertical seal will sit on top of the base seal. See Figure 1.

Remove the paper backing from the vertical seal.

Step 2: Attach the F-00059B Vertical Seal to the top of the F-00059A-L Base Seal then to the F-1202H-L Canopy Rib as shown in Figure 1.

Apply firm pressure to ensure a good bond.

Repeat Steps 1 and 2 for the right side of the fuselage.

Step 3: Allow the foam seals and silicone adhesive to cure for 48 hours before trimming the seal or closing the canopy.

Step 4: After the sealant has had time to cure position a 1/16 in. [1.6 mm] spacer roughly tangent to the F-01240-1 Upper Forward Fuselage Skin surface. See View G-G.

Trim the upper end of the F-00059B Vertical Seal using a sharp razor blade atop the spacer.

Trim the outboard end of the F-00059A-L & -R to be flush with the fuselage side skin.





(INSTRUMENT PANEL JIG NOT SHOWN)



Step 1: Fabricate four C-1222 Foam Plugs from SEAL-00003 Foam PVC .375X.625 per the dimensions shown in Figure 1.



FIGURE 1: FABRICATE FOAM PLUG

Step 2: Remove the adhesive backing from the C-1222 Foam Plug. Double up the foam strip with the adhesive contacting itself to form a plug as shown in Detail E.

Install one foam plug into each of the forward and aft open ends of the WD-1219 Canopy Frame square tubes. Additional adhesive is not required.



Step 3: With the seals in place check the canopy latch operation.

The canopy latch was designed not only to secure the canopy in the closed position but to complete canopy seal compression. By design this operation requires a reasonable, but not excessive, amount of force.

From outside the cockpit lower the canopy and rotate the handle to the closed position. You should observe the roll bar seal compressing slightly against the roll bar as the handle is turned. If not, stop and move the roll bar seal aft. See Page 39iS/U-19 Section B-B.