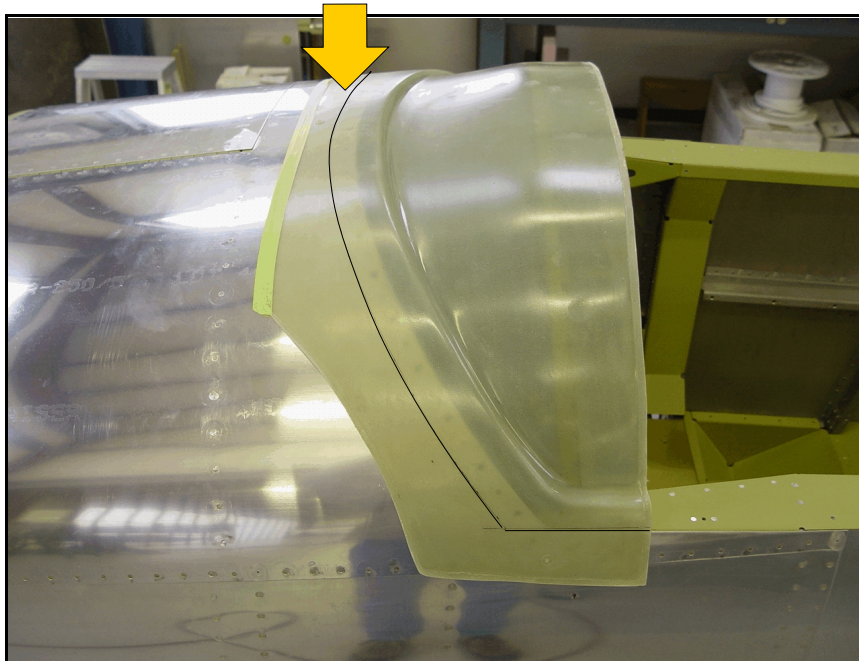
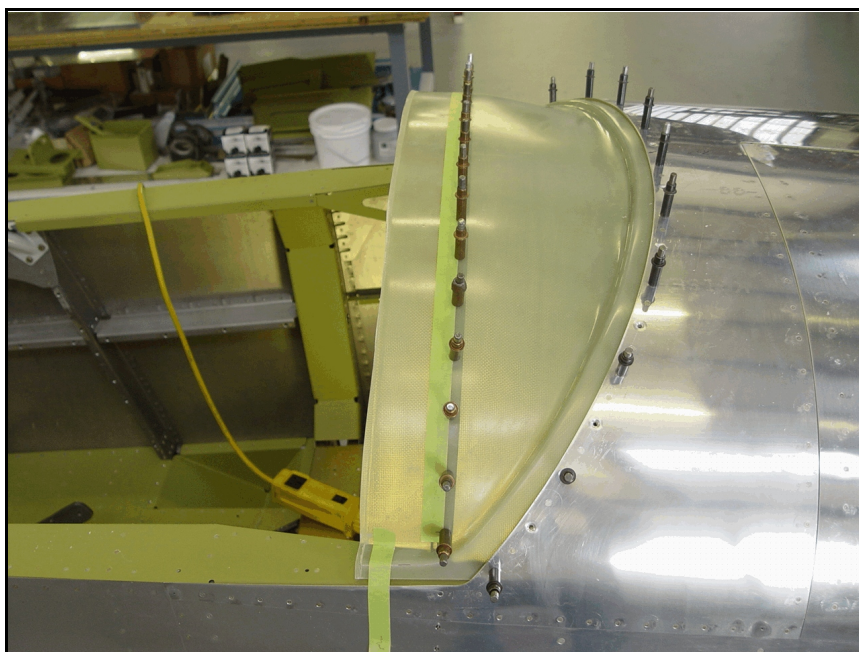


Canopy construction

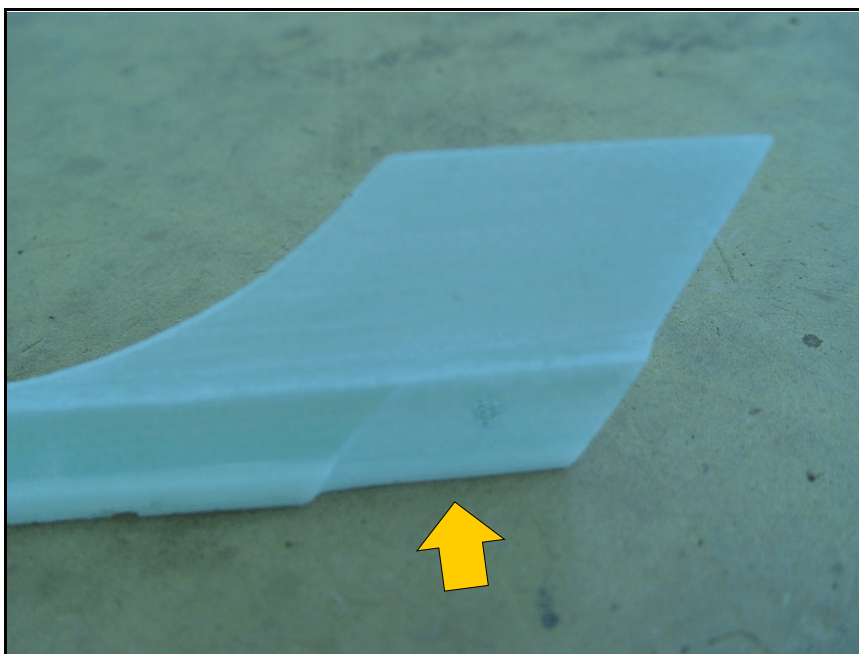
Position the C-821fb instrument cover 5/8" from the molded relief to the F-821pp edge and even left to right. Draw a line on the C-821fb 3/4" fwd of the F-821pp skin, and even with the left and right F-816fb cockpit rail. Trim at this line.



Place the C-821fb cover under the F-821afb reinforcement, hold in position and drill a hole at center screw location. Hold cover down onto F-803 sub assy. and *(NOTE; trim sides if necessary for correct fit)* drill through cover into F-803 on 1.95" centers nineteen locations starting at the top. Finish drilling the inst. cover at the F-821pp skin location. Mark and trim the cover .063" aft of the F-803 sub assy. to account for instrument panel thickness.



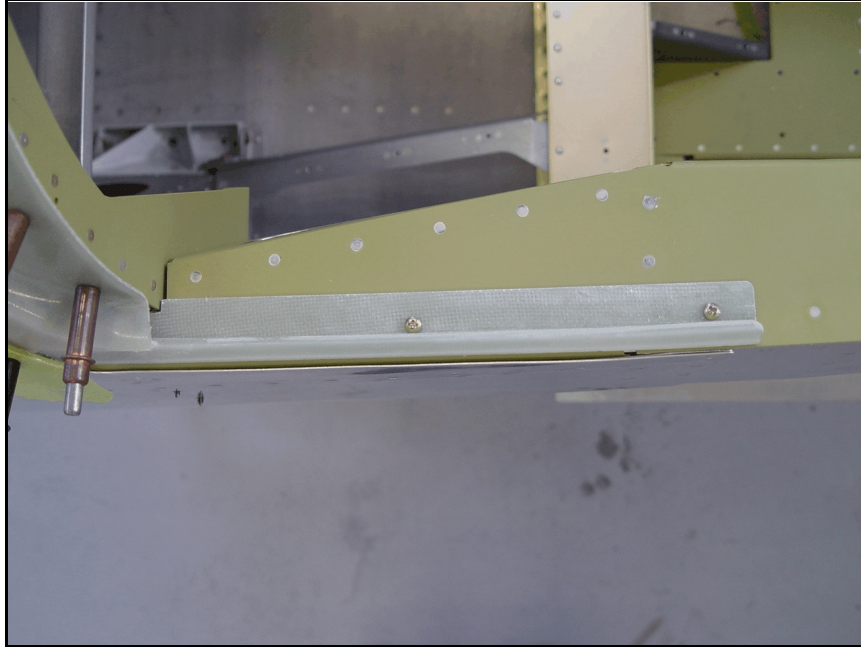
Trim the left and right C-821afb fillets on pre marked lines. Remove material shown on right fillet for a flush fit against the F-821afb reinforcement.



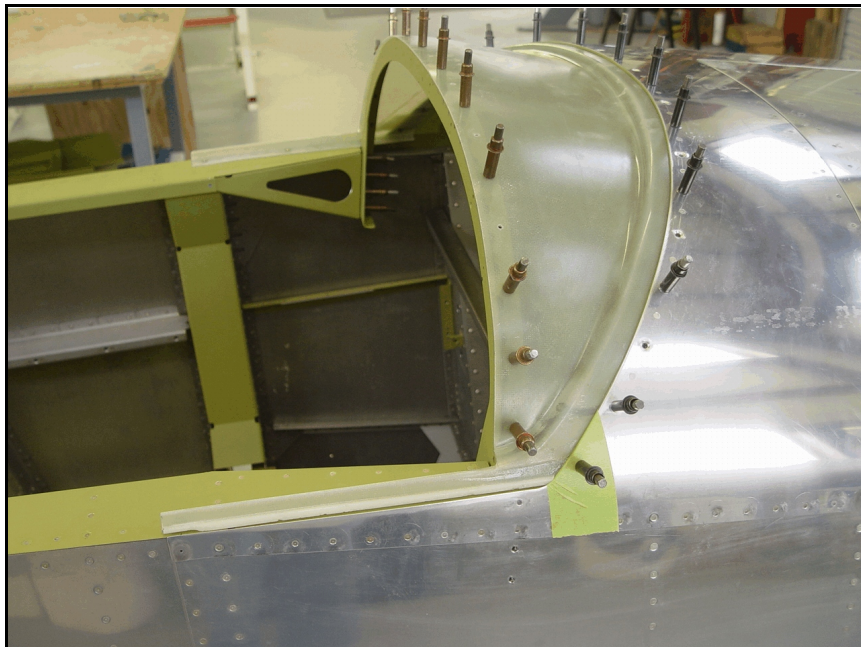
Trim C-821fb inst. cover approx. 5/8" up from F-816fb cockpit rail both sides for fillet installation.



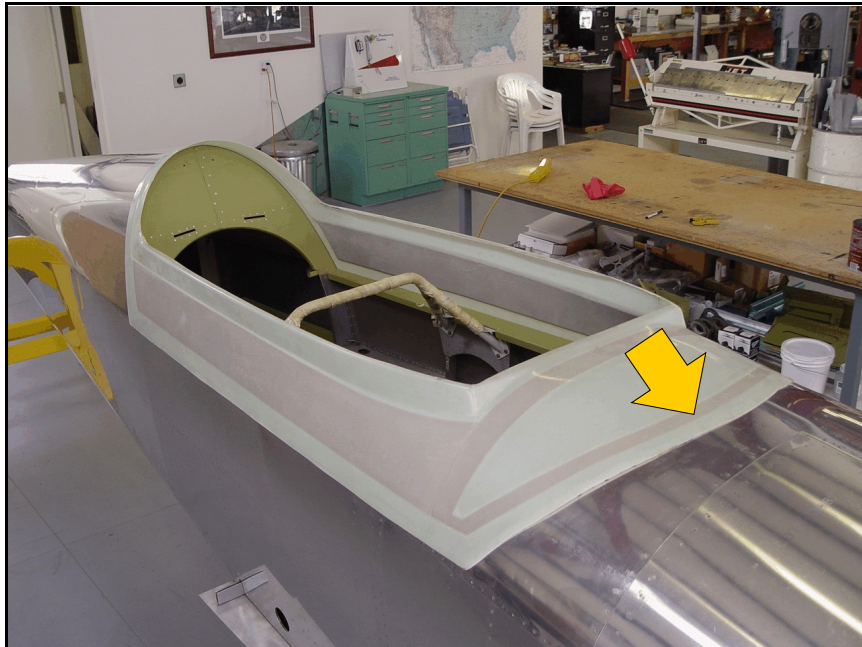
Position the left fillet approx. .063" inboard from the edge of F-816fb rail this will allow for the canopy frame thickness, and right fillet even with the edge of rail. Mark screw holes locations in cockpit rail, remove and drill holes in fillet. Attach fillets with screws then drill through the lower hole in F-821pp.



Sand mating surfaces of cover and fillet with 80 grit sandpaper. Apply epoxy/flox mixture and bond the fillets to the instrument cover while held in location. Once adhesive has cured remove and install #6 nut plates in cover and F803ccp flange.



With the C-821fb cover removed set the C-802fb canopy frame on the fuselage, position it equally left and right by measuring from the joggled point to a common line parallel to the longeron in four locations. Position the frame so the fwd inner foam reinforcement is 3/4" aft of the F-821pp skin edge. *(NOTE; there has to be adequate clearance between the C-821afb cover when installed and the canopy frame or contact will occur)*. Double check all measurements for correct position, then mark a line on the inside of canopy frame starting at the aft end of the right F-816afb cockpit rail going fwd along F-821pp finishing at the aft edge of the F-821pp and F-824pp side skin overlap. At this point the canopy frame will overlap the fuselage side, refer to figure 3-1. After trimming the frame with sharp tin snips install C-821fb cover and check the frame for fit. Wait to trim overlapping canopy material on left side aft of F-821pp skin and turtle deck until latch mechanism is in operation.



Once the frame fits correct, mark a line $\frac{3}{16}$ " up from the right cockpit rail and trim, refer to figure 3-2. Install frame hinge flush with fuselage side skin, use the #6 screw as the last fwd fastener. Add one additional fastener hole between the screw and the last empty hole in the cockpit rail. *(NOTE; as an option you can use a .025" shim between hinge and cockpit rail to help keep paint from chafing while opening)*. With hinge clecoed in place locate the frame back in position keeping it $\frac{3}{16}$ " up from cockpit rail on the RH side, and correct fit else were, drill hinge for $\frac{3}{32}$ rivet on $1 \frac{7}{16}$ " spacing 33 locations. If canopy will not open 90° remove from hinge and sand frame edge at a slight bevel. Once the canopy frame opens correct refer to figure 3-2 for C-836fb hinge seal installation. *(NOTE; to reduce the possibility of the hinge attach rivets from fretting drill $\frac{1}{4}$ " holes in-between each rivet location on hinge, then bond the hinge on using epoxy/flox mixture)*. Mark and trim frame $\frac{7}{8}$ " up from bubble joggle all the way around mating surface refer to figure 3-1.



Check the fit on fwd and aft canopy bulkheads with the canopy frame closed, sand edges if necessary for correct fit. Clamp the C-802afb fwd and C-802cfb aft bulkhead 1/4" away from abutting fuselage bulkheads. Fwd and aft bulkheads should be 1" up from F-816fb cockpit rails. When bulkheads are in their correct location sand mating surface on canopy with 80 grit sandpaper and bond one at a time by spreading an epoxy/flox mixture on the entire edge of bulkhead then close canopy and hold in position. *(NOTE; make sure canopy is in the correct closed position and secured when bonding bulkheads, if necessary fabricate 3/4" x 11/2" x .063 aluminum straps to hold the fwd edge of canopy frame, attach using screws in the F-821).*



Clamp the C-802bfb mid bulkhead 1 1/4" aft of WD-808 seat back support and 1 3/8" up from F-816fb cockpit rail, bond at this location refer to figure 3-2. (NOTE: there has to be adequate clearance between bulkhead and seat back support for gas strut installation).



After vertical bulkhead has cured set the top half in place with a slight fwd offset but still above bulkhead, apply adhesive to sides and top corner.



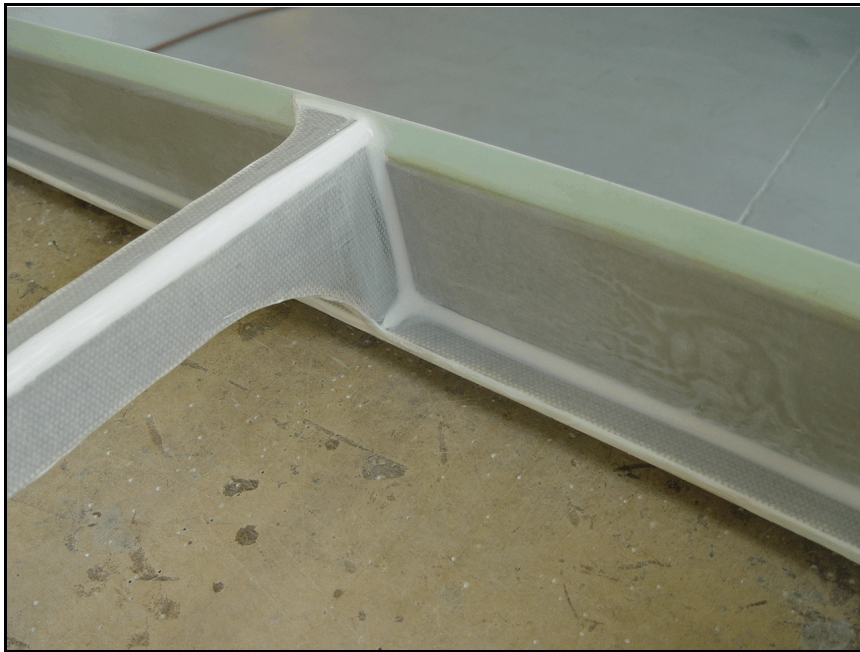
Fit the C-802dfb L/R side stiffeners with a 1" spacers on the cockpit rail and between fwd and aft bulkheads refer to figure 3-2. With canopy closed and held in position apply adhesive to stiffener and clamp in two locations.



Remove canopy frame and grind off excess adhesive. Install C-805fb latch pin slides in fwd and aft bulkhead pockets using epoxy/flox mixture, clamp a plate over pocket to secure for curing.



Radius all inside corners smooth using a epoxy/micro balloon filler. *(NOTE; do not allow filler to interfere with canopy hinge).* Also fill the outer edge of each bulkhead and stiffener.



Sand all corners and 2" each side of the corner with 80 grit sandpaper. Use an 8.5 ounce fiberglass cloth two layers thick 2" wide lay-up along both sides of the fwd and mid bulkheads. *(Refer to 3-19 for lay-up method)* Use a 2" wide lay-up on fwd side of the aft bulkhead and a 1 1/2" on the aft side. *(NOTE; make sure the lay-up on the aft side does not interfere with turtle deck when the canopy is closed).* Lay-up on the top of the L/R stiffeners and on the bottom of the mid bulkhead.



Use an extra lay-up over the C-805fb latch pin slides on fwd and aft bulkheads.



After all lay-ups are complete, sand micro balloon filled edges of bulkheads and stiffeners smooth. Reinstall canopy frame on aircraft and check for correct fit in all locations, sand were needed if a interference exist. Secure canopy in the closed position and drill through the fwd F-805fb latch pin slide just below the center point with a 6" # 30 drill bit. Drill the aft latch pin slide 1/8" below center line, hold the drill bit parallel to C-802dfb stiffener.

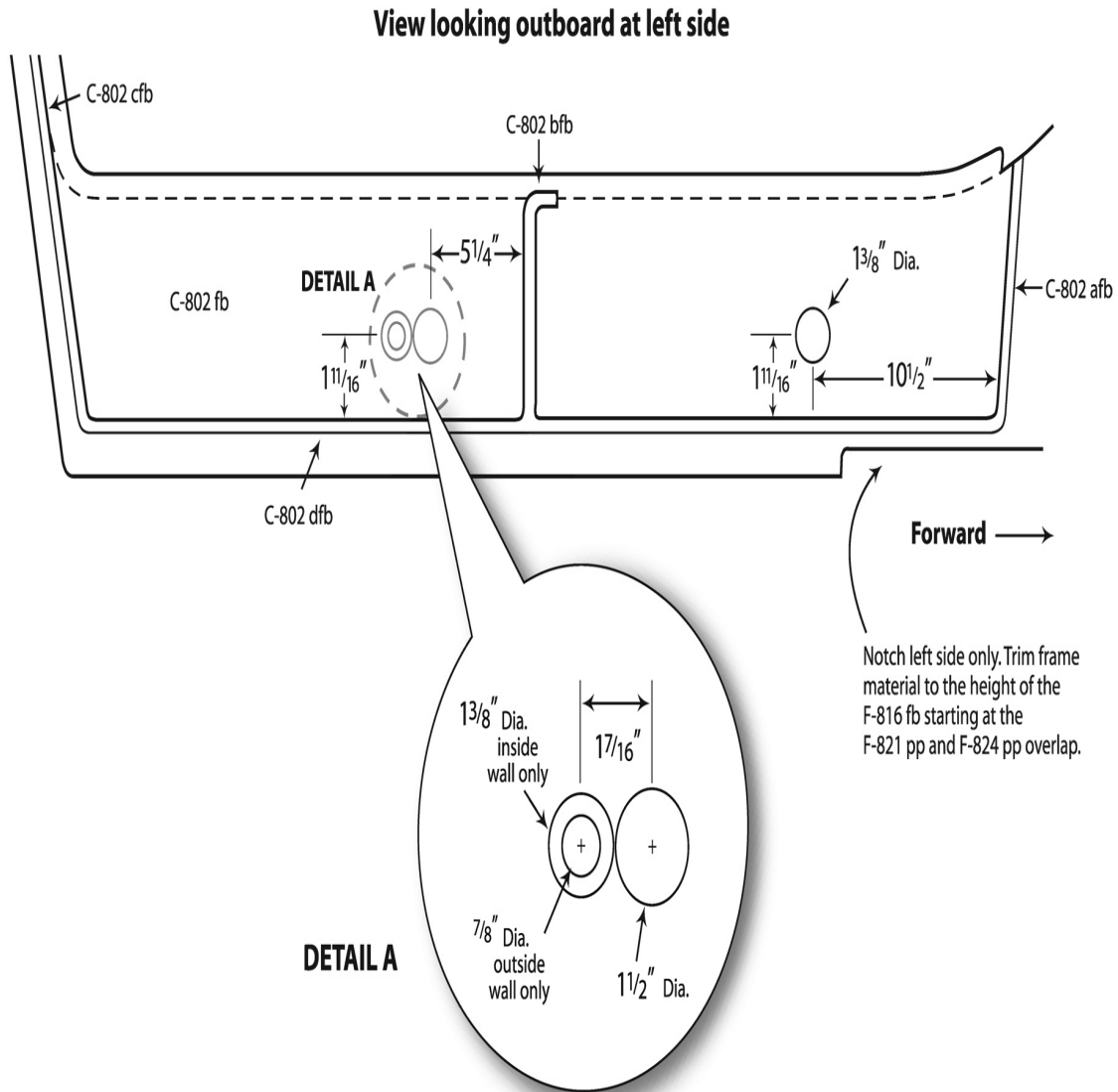


Using the C-806fb latch pin anchor material, cut nylon into a 2 ½" and 4" length piece. Locate the 4" piece evenly behind the # 30 hole in the F-807bfb bulkhead, secure it with two 10/32 flush screws. Locate the 2 ½" piece behind the #30 hole in the F-803pp inst. panel bulkhead, this piece will have to be modified to fit the uneven surface, attach it with two 10/32 flush screws. After both anchors are in place secure the canopy closed and repeat the drilling process stepping drill bits up in size until you finish with a W bit. (*NOTE: be very cautious to keep the drill bit parallel to the cockpit rail*).

Refer to figure 3-1 for the correct location of the C-856fb exterior handle boss, C-810fb lock boss, and C-811fb interior handle boss. Use caution when drilling lock and interior handle boss locations to not penetrate exterior skin. Sand area and bond all bosses with epoxy/flox mixture.



FIGURE 3-1 Canopy Frame Detail



Cut a slot in the C-856fb handle bushing matching the WD-840fb torque tube. Assemble the C-856fb handle and torque tube using the 10/32 cap screw, trim it's length to provide free movement. Install the WD-842fb interior handle then drill a 5/8" hole in the C-802bfb bulkhead to allow the latch pin rod to connect to both handles. Measure the distance with handles in neutral position and cut the 3/8" rod to size and tap 4/28 thread for clevis fork. Repeat this for the fwd and aft latch pins, bend as necessary for correct alignment, when the interior handle is in the locked position there should be approximately 1 1/4" of rod extended beyond fwd and aft bulkhead.



Install the WD-800fb taxi pos. latch on the C-802bfb bulkhead refer to figure 3-2. (*NOTE; remove material if necessary for correct fit on fwd side of latch*). Install C-850fb spring retainer on latch rod. Locate the gas strut attachment nut on the WD-808 seat back support referring to figure 3-2. (*NOTE; release strut gas pressure until it can be collapsed easily between your hands*). Before welding nut in place determine if the strut bottoms out or the canopy opens beyond 90°.



Position and weld C-807fb taxi pos. striker on the WD-808 seat back support with the frame in the closed position. Attach the anchor block using two 10/32 screws. (*NOTE; you may have to remove the lower corner of anchor block for correct fit.*)

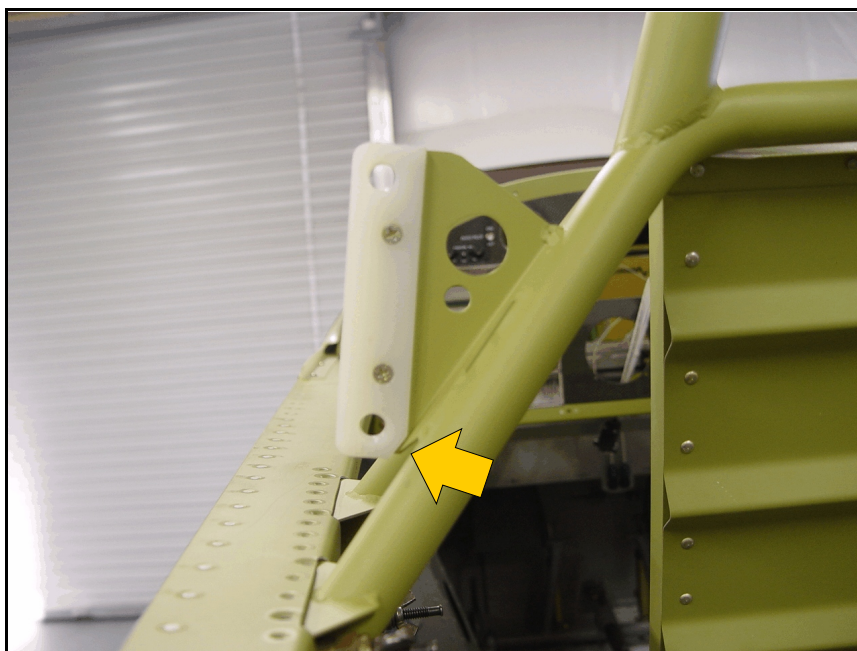
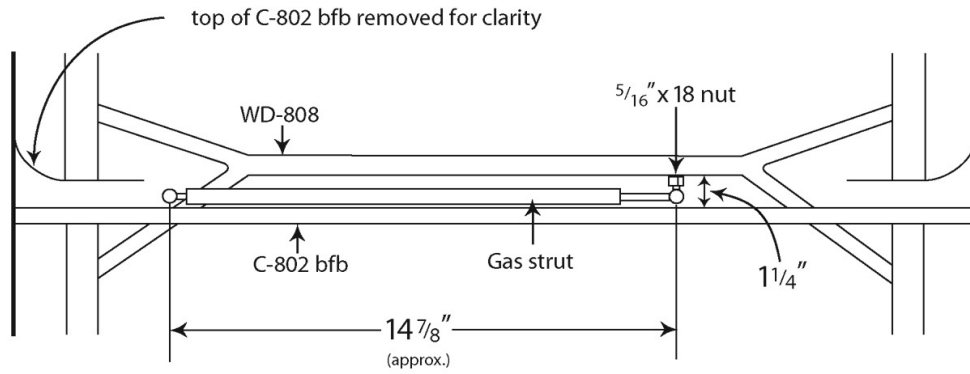
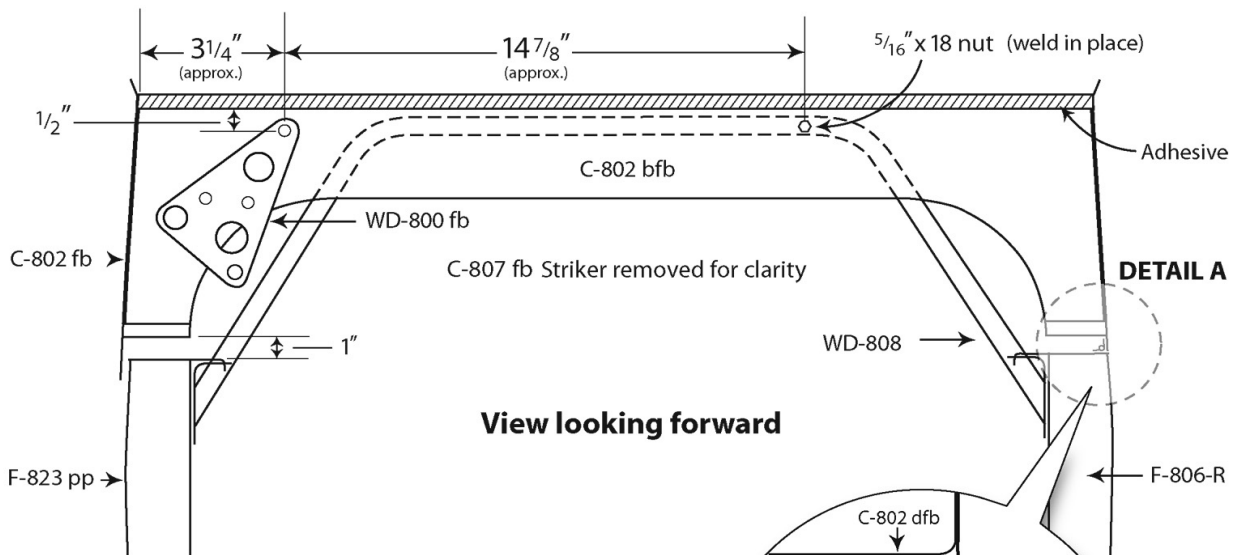


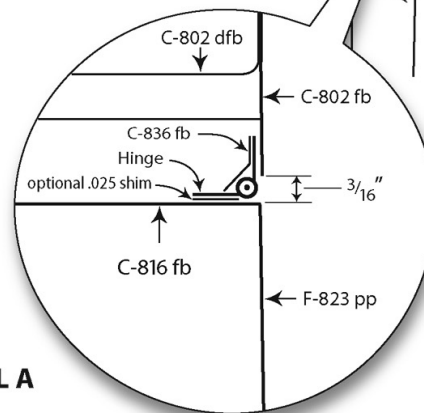
FIGURE 3-2 Canopy Frame Detail



View looking down



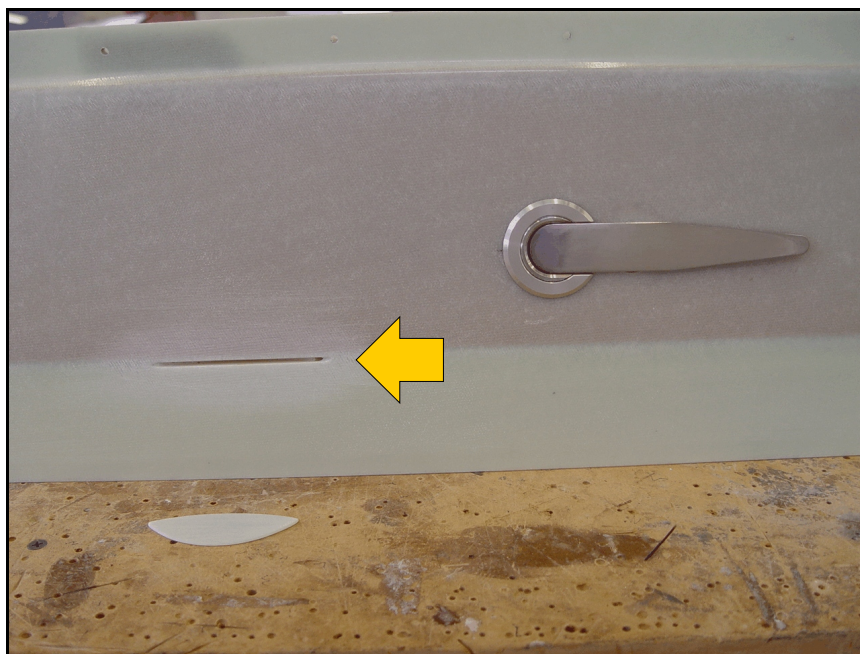
View looking forward



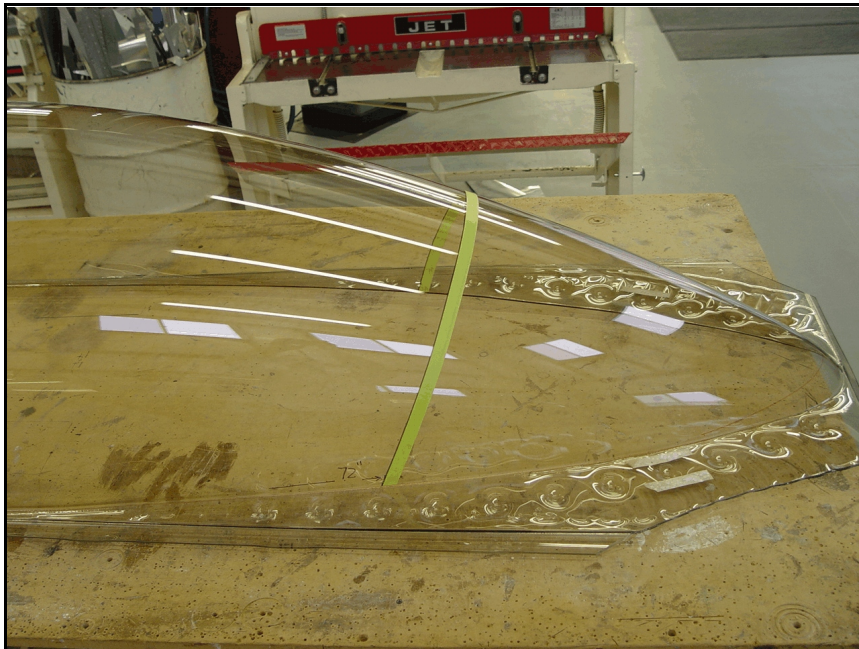
After taxi pos. latch and striker have been located correctly drill the striker anchor block in the closed and taxi position.



Cut out exterior and interior lift tabs using extra canopy frame material. Slot frame skin through one layer and fit tab were desired, sand and bond in place.



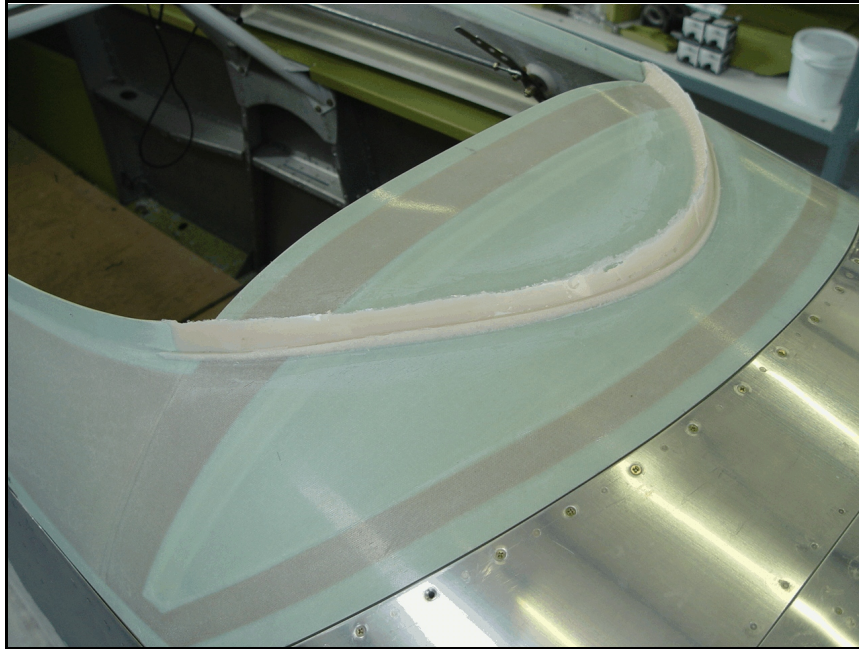
Remove protective covering from bubble and mark the center of fwd red cut line. From this point measure 77" over the top going aft and mark. Measure 72" from the center going aft on left and right side. Draw a line that intersects these three points, cut along this line and stock red line with a high speed cutter.



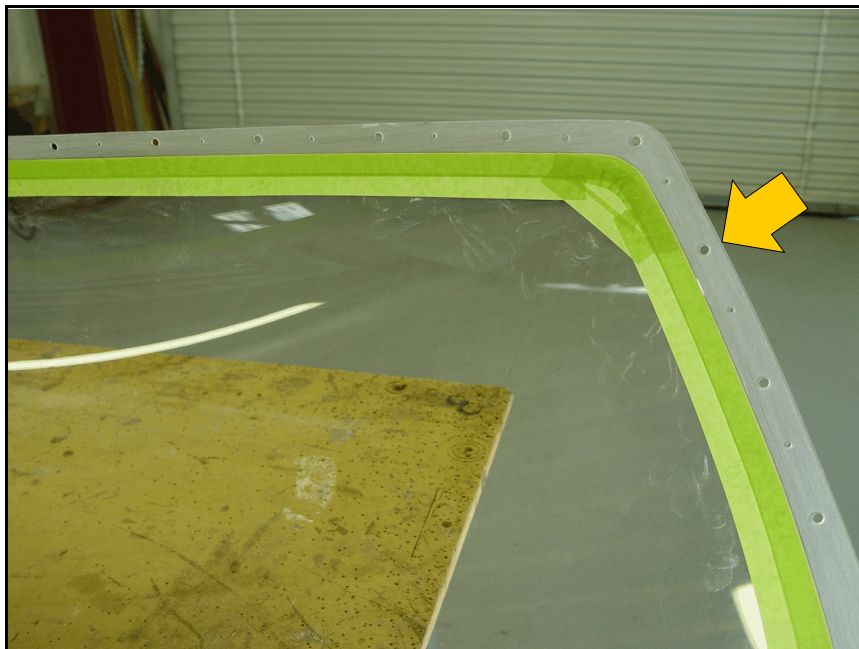
Place bubble on canopy frame and check fit, remove and trim as necessary. *(NOTE; to change the profile of the bubble cut more off the front tapering aft, use caution not to over trim)*. Once desired fit has been achieved drill on 4" centers starting from the corner going fwd.



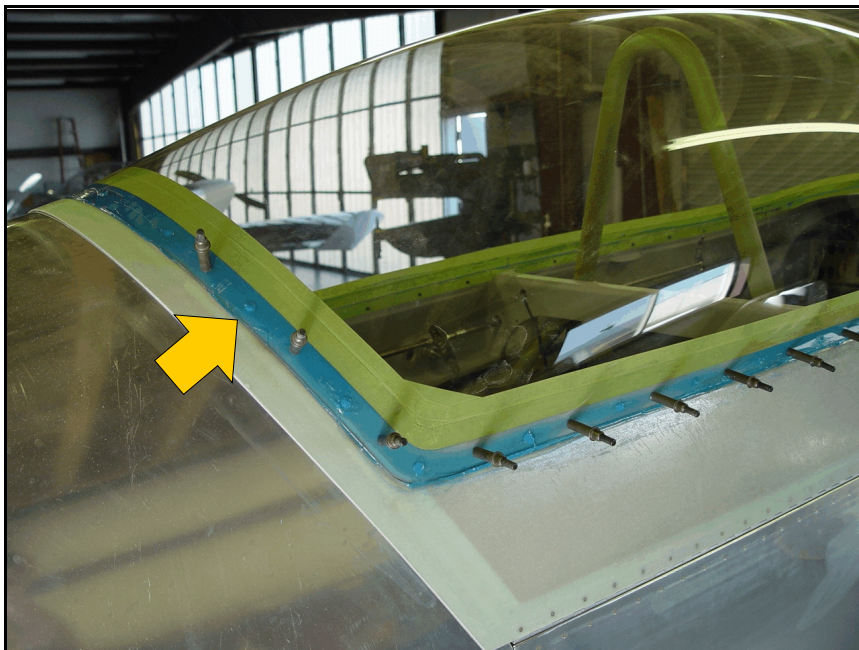
Mark around the fwd edge of bubble from flange to flange, remove and sand this area for bonding. Wax fwd portion of bubble and install on frame, fill along inside of bubble from flange to flange with epoxy/flox mixture. After curing remove bubble and sand flange even, fill the back side with micro balloon for a smooth finish.



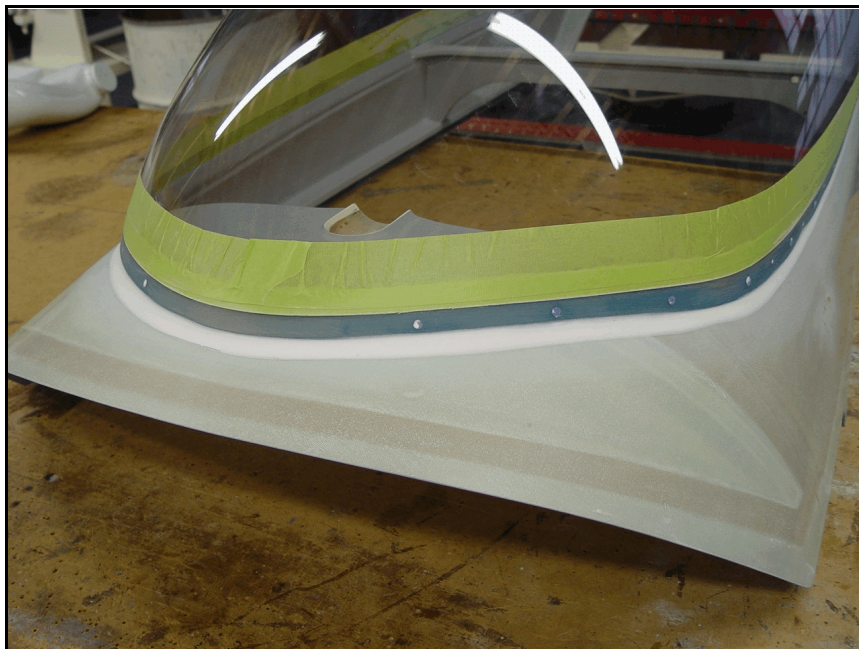
(NOTE; at this time you may find it easier to do all interior paint prep without bubble installed). Drill 1/4" holes in bubble between all attach points then make a small countersink on outer surface. Tape off area above flange on the inside of the bubble and sand with 80 grit paper, also sand canopy flange. Make sure to sand throughly for a good bond.



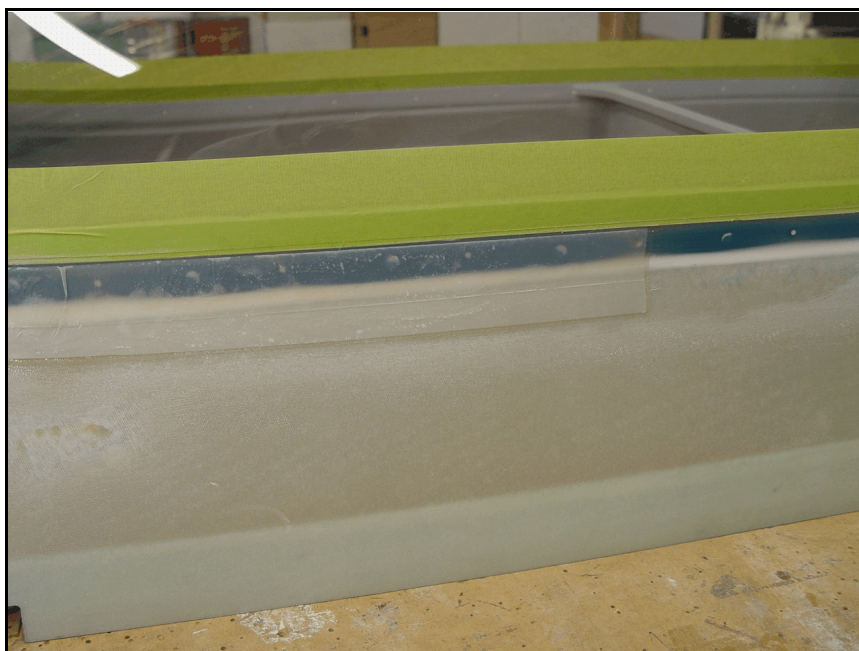
Bond canopy bubble in place (*Show Planes recommends Hysol EA 9360 structural adhesive*) , allow it to permeate through 1/4" holes.



After adhesive has cured apply multiple layers of masking tape around bubble at the height of inside flange. Use micro balloon filler to radius the corners and fill any voids before final lay-up.



Sand the bubble and 2" down on frame using 80 grit sandpaper. Apply a 2 ½" two layer lay-up all the way around the bubble and frame joint. *(NOTE; use a opaque trash bag to sandwich the lay-up, then cut to size and transfer it to the canopy with one side exposed until correctly located, remove backing and work out all air bubbles).*



After completion attach canopy hinge to the F-816fb cockpit rail using LP4-5 blind rivets.