

NOTE: This section provides instruction for the installation of the left wheel only. The right side is a mirror of the left.

NOTE: If transparent, the fairings in this section must remain transparent to accomplish the installation. Do not sand or prime either side of the fairings until directed to do so or until installation is complete.

If the fairings are opaque, refer to Section 5.18 MATCH-DRILLING OPAQUE FIBERGLASS PARTS.

The U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft should mate as accurately as possible. Due to the variations in fiberglass molds it is necessary to first make the parts fit.

Step 1: The U-00001A Wheel Fairing Front has been laid up so that there are overlapping layers of cloth along its centerline. The area of overlap is thicker than the rest of the fairing. Sand down this thicker area so that at least 3/4 inch of the aft edge of the wheel fairing front is the same thickness all along its length.

Step 2: Trim the tire opening of the U-00001A Wheel Fairing Front to 1/16 inch from the scribe line with hand shears. Finish to the scribe line using a sanding block. See Figure 1.

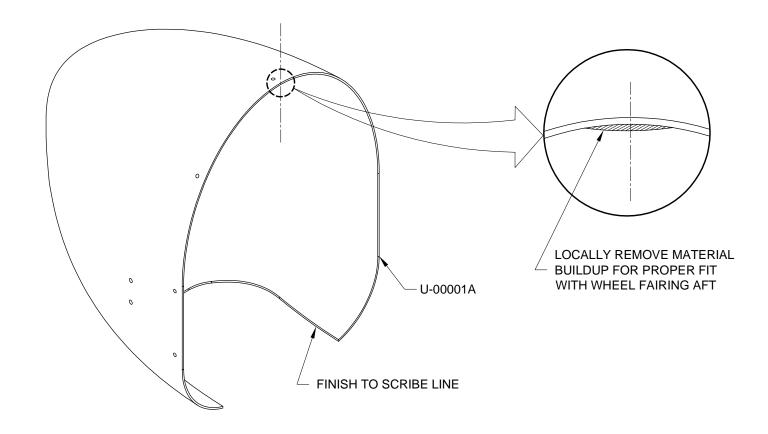


FIGURE 1: PREP FRONT FAIRING

Step 3: Square up the inside corner of molded step in the U-00001B Wheel Fairing Aft as required to allow for a good fit of the fairing halves as shown in Figure 2. A coarse file works well. Trim the wheel fairing aft flange to 3/4 inch from the molded step as shown in Figure 2.

Step 4: Trim the tire opening of the U-00001B Wheel Fairing Aft to 1/16 inch from the scribe line with hand shears. See Figure 2.

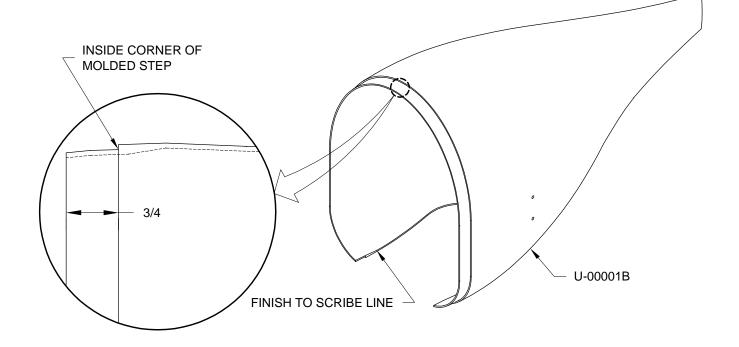


FIGURE 2: PREP REAR FAIRING

Step 5: Use coarse sandpaper glued to a straight stick as a disposable file to remove material up to the scribe line. Remove material that prevents the halves from matching smoothly. Take the time required to precision fit the wheel fairing halves.

Assemble the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft and align the wheel hole openings. Tape them in this position and place a tape reference mark across the seam. Slit the tape on the seam with a razor blade and use this mark to realign the fairings during assembly.

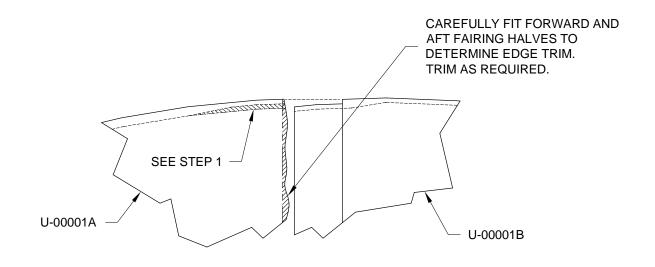


FIGURE 3: FIT AND TRIM FAIRING HALVES

Step 1: Check the length of each U-00002 Wheel Fairing Bracket for curve. If the part is curved, straighten as shown in Figure 1.

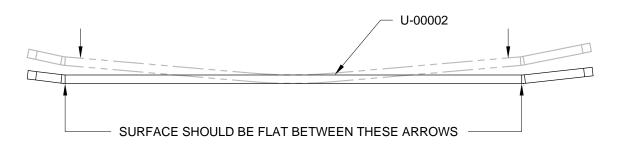


FIGURE 1: STRAIGHTENING THE WHEEL FAIRING BRACKETS

NOTE: Use a bright light shining through the opposite side of the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft to align the holes and dimples in the following step.

Step 2: With the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft joined, place a U-00002 Wheel Fairing Bracket flush on the interior surface of the wheel fairings. Align the holes in the wheel fairing bracket with the dimples in the wheel fairings. Check alignment on both sides of the wheel fairing halves. If required, sand the wheel fairing front's aft edge until the holes and dimples align properly. See Figure 2.

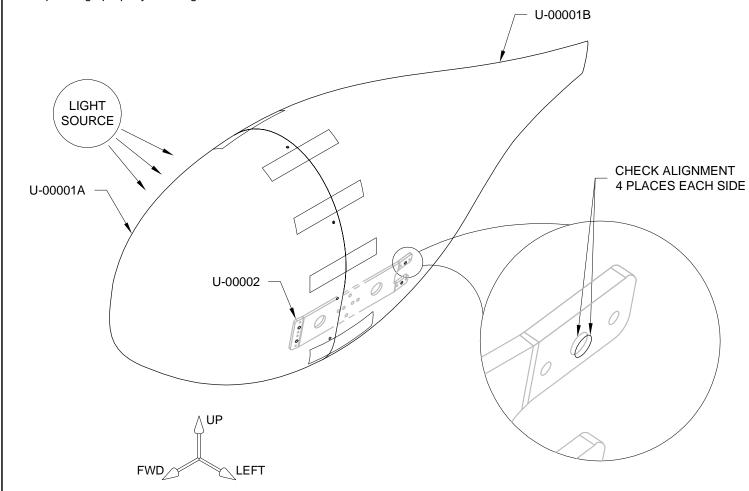


FIGURE 2: ALIGNING THE WHEEL FAIRING HALVES

VAN'S AIRCRAFT, INC.

VC.

Using a #40 bit, match-drill the wheel fairing front to the wheel fairing aft at each of the nine "dimples" that are molded into the circumference of the wheel fairing front where it overlaps the wheel fairing aft. Cleco each drilled hole before drilling the next.

Begin match-drilling at the top-center and work downward, alternating side-to-side until all nine dimples have been drilled.

Hold the drill bit perpendicular to the surface of the wheel fairing halves while match-drilling.

Be aware of debris between parts as drilling progresses. Take apart and clean-out as necessary.

Step 3: Join the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft as shown in Figure 3. Align the parts until they are fitting as well as possible

then use several strips of tape to hold them together.

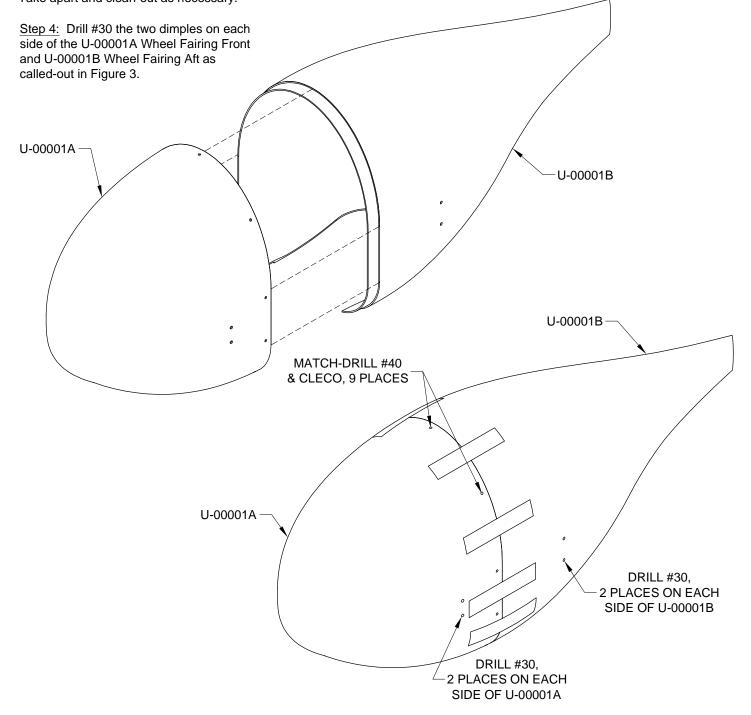


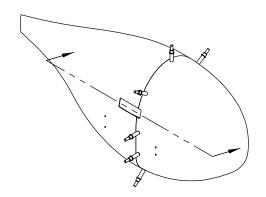
FIGURE 3: JOIN FAIRING HALVES & MATCH-DRILL



NOTE: Illustration shows left side installation only, when modifying the right wheel fairings make the cutout on the opposite side of the fairings.

Step 1: Use a fine point felt pen to mark gear leg opening on the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft as shown in Figure 1. Trim to within 1/16 of trim line then sand to finish edge.

Add a radius to wheel fairing aft for brake line clearance as shown in Figure 1.



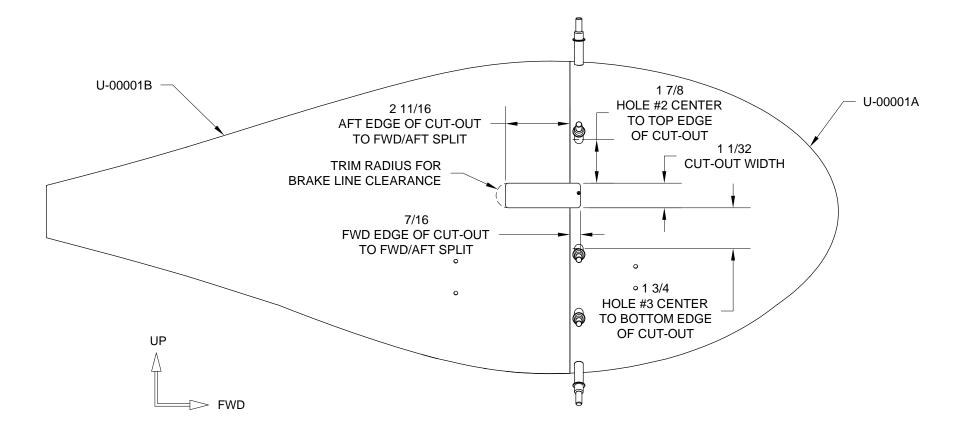
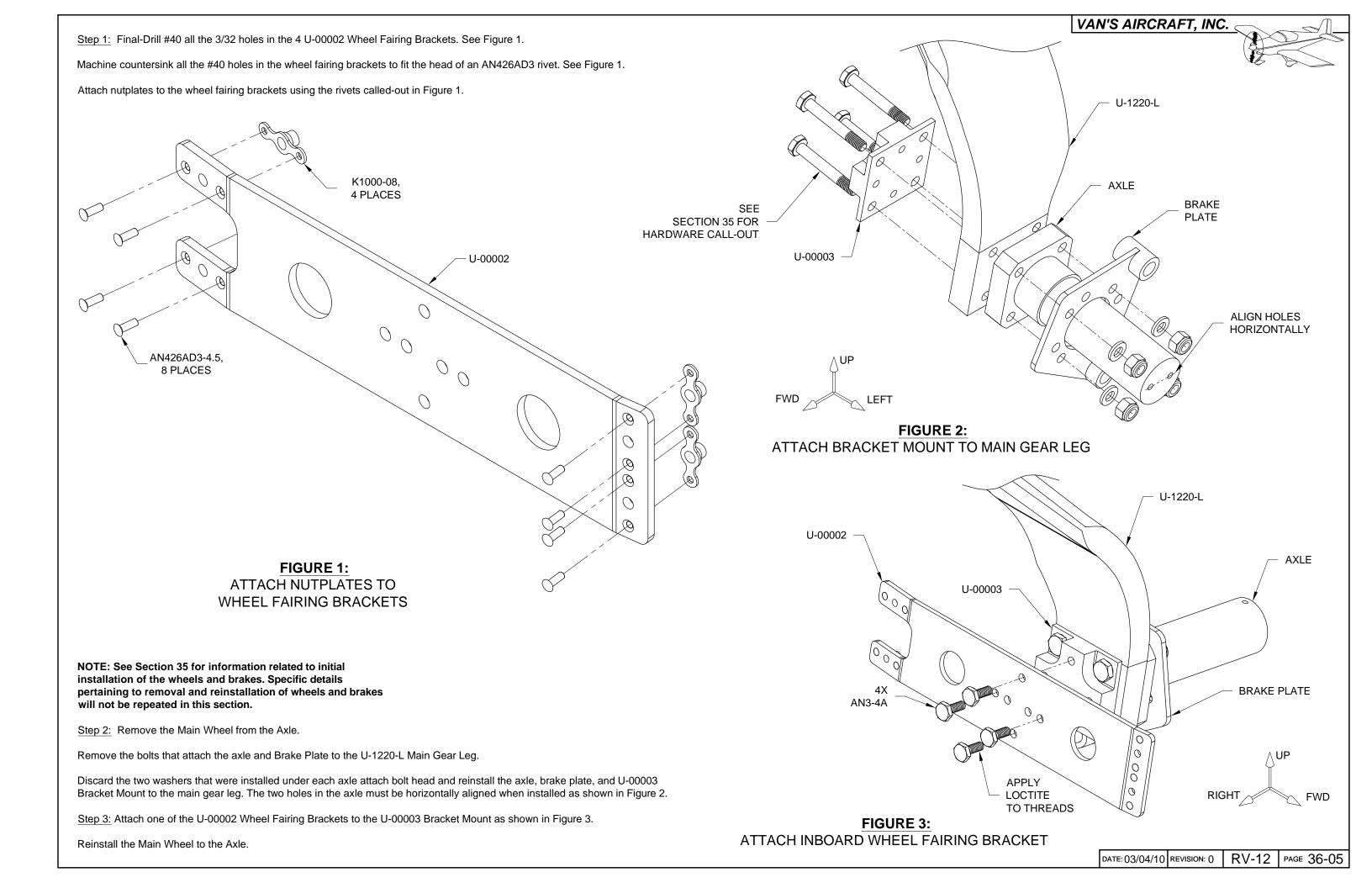
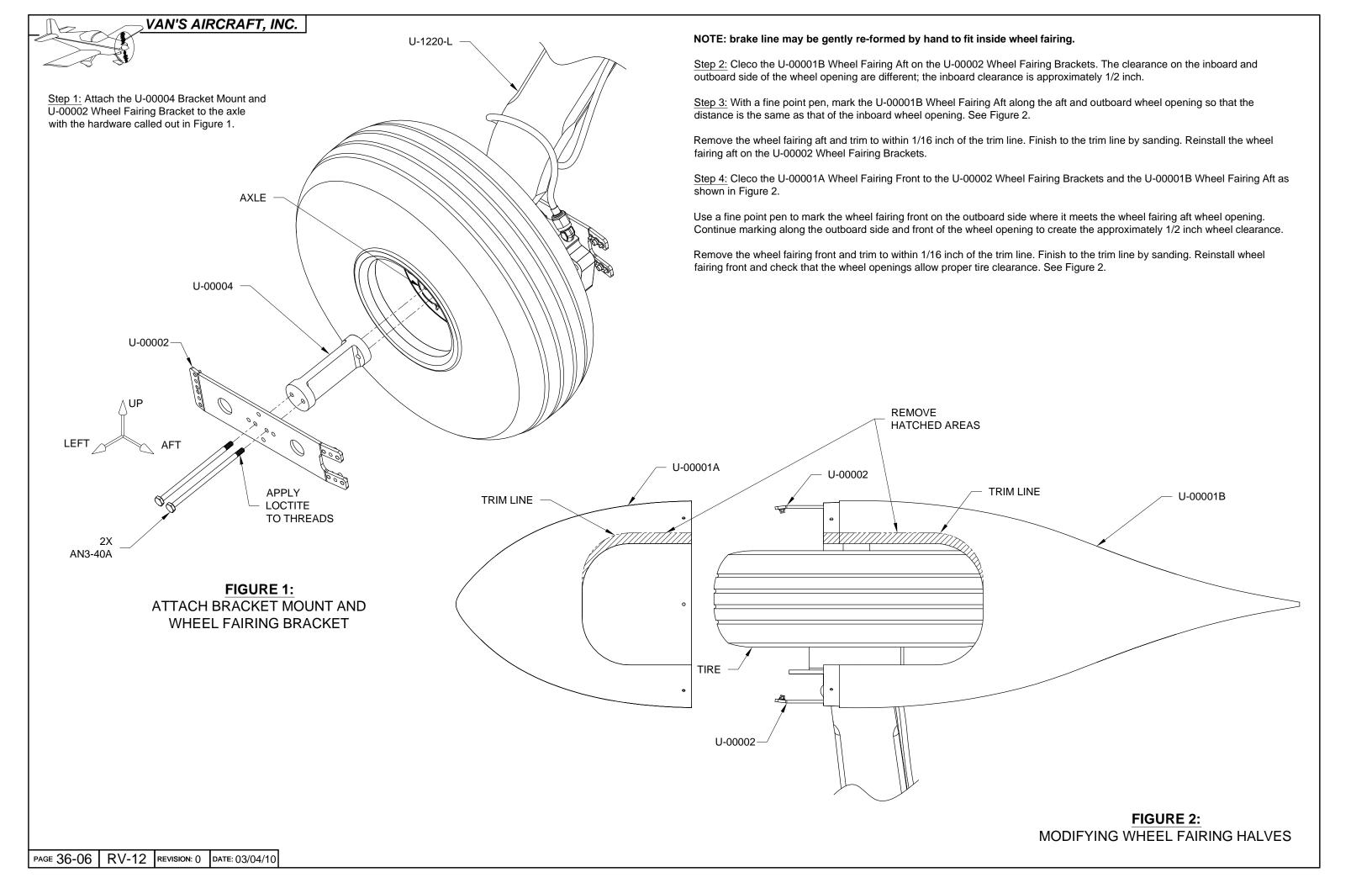


FIGURE 1: GEAR LEG CLEARANCE HOLE





Step 1: Final-drill #19 the U-00001B Wheel Fairing Aft and the U-00001A Wheel Fairing Front to the U-00002 Wheel Fairing Brackets. Avoid drilling into the nutplates mounted on the wheel fairing brackets. See Figure 1. Remove clecos and wheel

Step 2: Aggressively roughen the inside of the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft at the #19 screw locations. Clean.

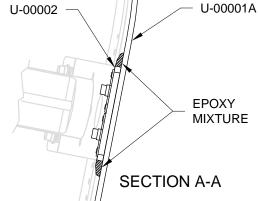
Coat the threads of the 8-32 screws (called out in Figure 2) with wax to prevent epoxy from bonding to them. Tape the U-00002 Wheel Fairing Bracket tabs to prevent the epoxy/flox mixture from bonding to them.

Mix epoxy and flox (cotton or glass) to the consistency of peanut butter and build up the areas around the four screws on both the forward and aft main wheel fairings. Apply enough epoxy mixture (approximately 1/16 of an inch) to create a recess when the brackets are pressed against them, but not so much that the epoxy will capture the brackets. See Figure 1 Section A-A.

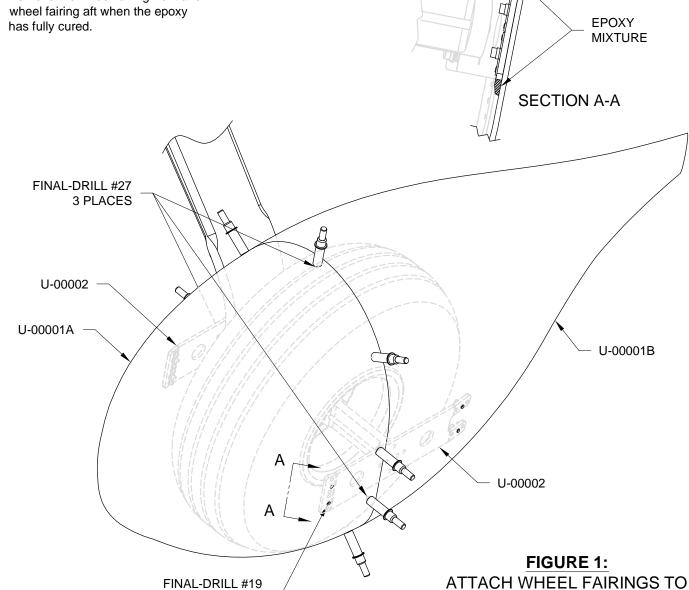
Attach the wheel fairings to the brackets and to each other while the mixture is wet. Do not tighten the screws. Leave 1/16 protruding above the surface of the fairing.

Final-Drill #19 the screw holes again to remove any flox mixture.

Step 3: Final-Drill #27 three (of the nine) evenly spaced #40 screw attach holes in the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft as shown in Figure 1. Remove the wheel fairing front and wheel fairing aft when the epoxy has fully cured.



WHEEL FAIRING BRACKETS



8 PLACES

VAN'S AIRCRAFT, INC.

NOTE: To locate the nutplate rivet holes the nutplate is held in place with a mounting screw and the nutplate is used as a drill template Cleco the first rivet hole to prevent the nutplate from rotating while locating the second rivet hole. It is important on curved surfaces that the nutplate is match-drilled from the side of the part on which it will later be installed.

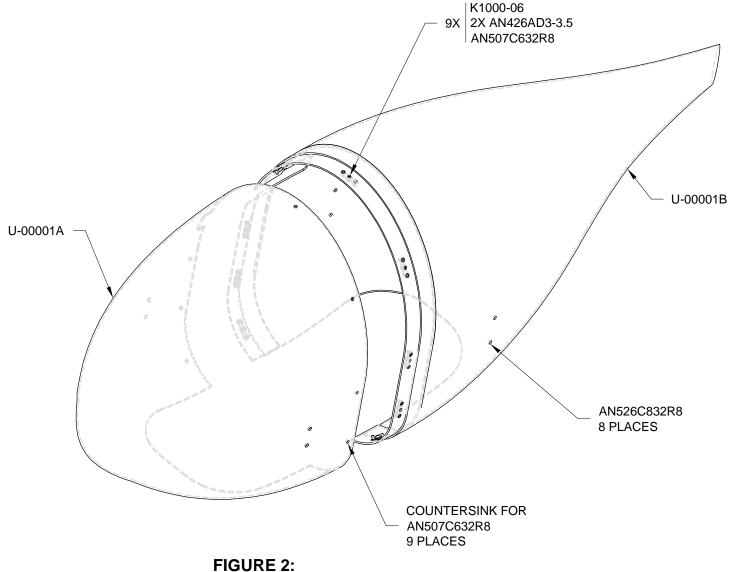
NOTE: Machine countersinks into fiberglass that are up to .005 too shallow are acceptable, even preferable, to countersinks which are too deep. Rivets should be slightly under set where installed in fiberglass parts.

Step 4: Install nutplates at the three #27 holes drilled in Step 4. Final-Drill #40 and countersink the U-00001B Wheel Fairing Aft for nutplate rivets as shown in Figure 1. Deburr the holes. Rivet the nutplates to the wheel fairing aft as per the callouts.

Step 5: Reassemble the U-00001A Wheel Fairing Front and U-00001B Wheel Fairing Aft using three #6 screws and clecos at the rest of the holes. Final-Drill #27 the remainder of the #40 holes. Disassemble the wheel fairing halves. Install the remaining nutplates.

Countersink the #27 holes in the wheel fairing front as per the callout in Figure 2.

Step 6: Mount the U-00001B Wheel Fairing Aft and U-00001A Wheel Fairing Front to the U-00002 Wheel Fairing Brackets using the hardware called out in Figure 2. Use the screws called out in Figure 2 to attach the wheel fairing halves together.



ATTACH WHEEL FAIRINGS TO EACH OTHER

DATE: 11/18/15 REVISION: 1 RV-12 | PAGE 36-07



Step 1: Remove material up to the scribe lines on both the U-00005A Wheel Fairing Front and U-00005B Wheel Fairing Aft.

Use a 3/4 inch step drill to remove the hatched areas on each side of the wheel fairing front. Center the drill on the dimples as shown in Figure 1.

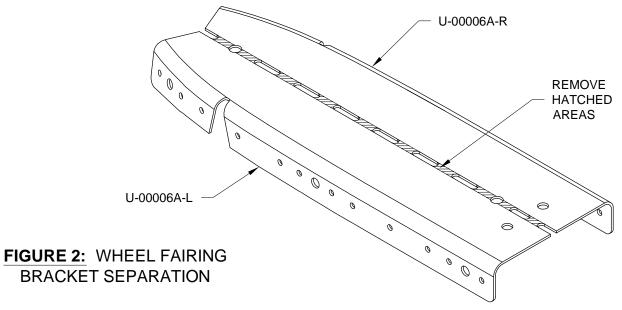
Check the inside of the wheel fairing front and aft in the areas where the parts are dimpled by running a finger over the interior surface. If there are thick spots, or bumps in the fiberglass, sand them down to make a uniform surface.

<u>Step 2:</u> Drill #40 the dimples in the U-00005A Wheel Fairing Front in six places as shown in Figure 1. Take care that the drill is held perpendicular to the surface.

Step 3: Holding the drill perpendicular to the surface, drill #40 the dimples in the U-00005B Wheel Fairing Aft as shown in Figure 1. REMOVE HATCHED AREA 2 PLACES CENTER DIMPLE, U-00005B 2 PLACES REMOVE MATERIAL UP TO SCRIBE LINE DRILL #40 U-00005A 12 PLACES DRILL #40 3 PLACES **EACH SIDE**

FIGURE 1: TRIMMING WHEEL FAIRING HALVES

<u>Step 4:</u> Remove hatched area from U-00006A Wheel Fairing Bracket to create U-00006A-L and U-00006A-R Wheel Fairing Brackets as shown in Figure 2.



<u>Step 5:</u> Bend the U-00006B Splice Strips so that they fit the interior shape of the U-00005A Wheel Fairing Front. A close fit is desired. See Figure 3.

<u>Step 6:</u> Cleco the U-00006B Splice Strips to the inside of the U-00005A Wheel Fairing Front as shown in Figure 3. Match-Drill #40 and cleco the rivet attach holes between the nose wheel fairing and the splice strip. Clean debris as required.

Machine countersink holes in the wheel fairing front for the head of an AN426AD3 rivet.

NOTE: Use a 1 inch step drill (if available) to finish the 3/4 holes drilled in Step 1.

Step 7: Finish the holes drilled in the U-00005A Wheel Fairing Front in Step 1 to the finish diameter shown in Figure 3.

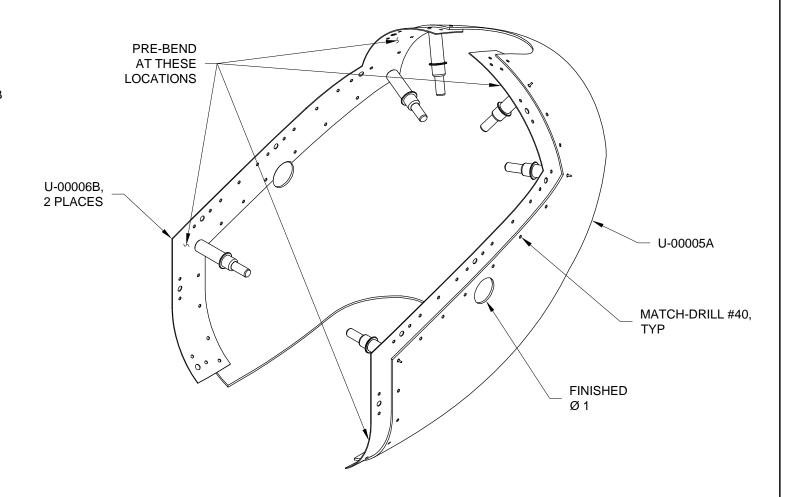


FIGURE 3: FITTING SPLICE STRIPS AND WHEEL FAIRING FRONT

Step 1: Cleco the U-00005B Wheel Fairing Aft to the U-00006B Splice Strips and check fit. The parts fit together well when there is no strain or interference between the parts.

With the wheel fairing halves and splice strips clecoed together from the inside, the parts may be repositioned slightly. Make any additional adjustments to the fit by sanding the edges of the wheel fairing and forming the splice strips with smooth jawed and/or fluting pliers. See Figure 1.

Step 2: Final-Drill #19, using the #19 holes in the U-00006B Splice Strips as drill guides wherever possible, the #40 holes in the U-00005B Wheel Fairing Aft as shown in Figure 1. Secure the drilled holes with 8-32 screws and nuts to prevent the parts from shifting while drilling the next hole.

Match-Drill #19 the two top screw holes in the wheel fairing aft from the holes in the Splice Strips. See Figure 1.

<u>Step 3:</u> Cleco U-00006A Wheel Fairing Brackets to the U-00006B Splice Strips as shown in Figure 2. The forward flanges of the wheel fairing brackets need to be adjusted slightly by hand for a good fit.

Final-Drill #27 All screw hole locations between the splice strips and wheel fairing brackets.

Final-Drill #40 all remaining 3/32 hole locations in the splice strips and wheel fairing brackets. Remove wheel fairing brackets.

Dimple all nutplate attachment hole locations and the rivet hole locations common to the splice strips and the wheel fairing brackets. Dimple rivet holes in the corresponding nutplates. See Figures 1 and 2.

<u>Step 4:</u> With the U-00006B Splice Strips still clecoed to the U-00005A Wheel Fairing Front, carefully apply masking tape to the splice strip, following the edge of the nose wheel fairing front. Tape the entire length of the intersection between the parts.

<u>Step 5:</u> Remove the clecoes and the U-00006B Splice Strips. Aggressively roughen the surface area on each part where the two overlap with 80 grit sandpaper. Leaving the tape in place, clean the parts.

Mix epoxy and flox (cotton or glass) to the consistency of peanut butter and smear a thin coating along the roughened surface of the U-00006B Splice Strips.

Step 6: While the epoxy mixture is still wet, cleco then rivet the U-00006B Splice Strips to the U-00005A Wheel Fairing Front with the rivets called out in Figure 1. With a popsicle stick, remove any excess epoxy mixture that has squeezed out between the parts. Remove masking tape. Allow epoxy to cure. MATCH-DRILL #19 THESE HOLES (FROM THE INSIDE) U-00005B U-00006B U-00005A APPLY MASKING TAPE TO THE SPLICE PLATE AN426AD3-3.5 ALONG THIS INTERSECTION TYP

FIGURE 1: RIVETING SPLICE STRIPS TO THE WHEEL FAIRING FRONT

VAN'S AIRCRAFT, INC.

NOTE: Nutplates installed in tight radius areas will fit better if pre-bent.

<u>Step 7:</u> Cleco then rivet the U-00006A Wheel Fairing Brackets to the U-00006B Splice Strips. Install the nutplates called out in Figure 2.

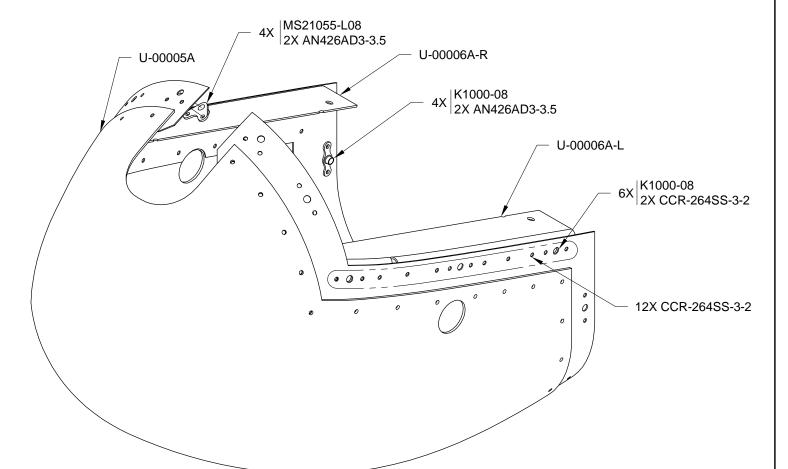


FIGURE 2: RIVETING WHEEL FAIRING BRACKETS AND NUTPLATES TO THE WHEEL FAIRING FRONT

Step 1: Secure the U-00006C Drill Template to the U-00006A-L and U-00006A-R Wheel Fairing Brackets with #8 screws and nuts as shown in Figure 1.

Step 2: Attach the U-00005B Wheel Fairing Aft to the U-00006B Splice Strips. Clamp the U-00006C Drill Template to the U-00006A-L and U-00006A-R Wheel Fairing Brackets. Use a fine point felt pen to mark the drill template along the intersection between the drill template and the wheel fairing brackets. See Figure 2.

Remove the nose wheel fairing aft.

Step 3: Check that the U-00006C Drill Template is still aligned properly with the U-00006B-L and U-00006B-R Wheel Fairing Brackets by checking the alignment marks made in Step 2. Match-Drill #19 the drill template to the wheel fairing brackets. See Figure 1.

Remove the drill template and deburr wheel fairing brackets.

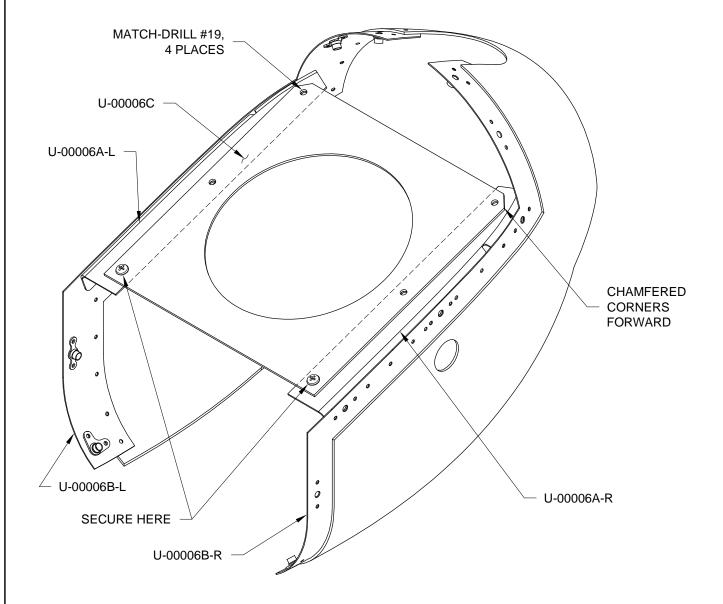
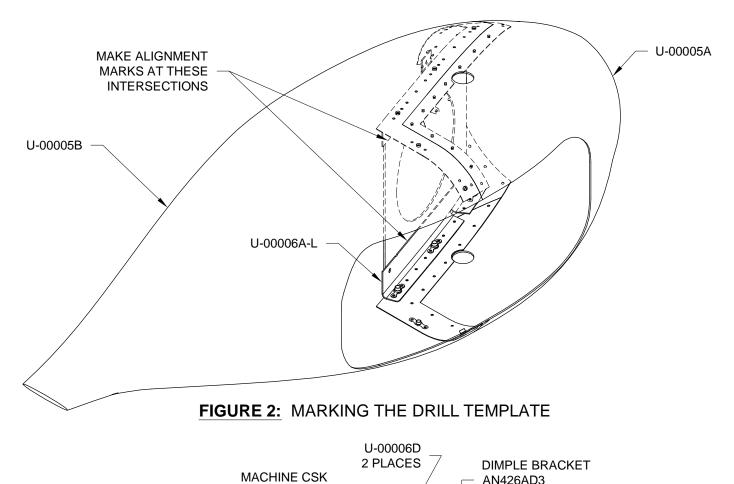


FIGURE 1: POSITIONING THE DRILL TEMPLATE



AN426AD3 OTHER SIDE FLUSH OTHER SIDE Step 4: Secure the U-00006D FOR DIMPLED Doubler Plates to the **BRACKET** U-00006A-L and U-00006A-R AN426AD3-4 Wheel Fairing Brackets with #8 5 PL/BRKT AN470AD3-4 screws and nuts as shown for 5 PL/BRKT U-00006A-R in Figure 3. Match-Drill #40 the doublers to the brackets. Disassemble and deburr. Dimple the brackets per the call-out in Figure 3. Machine countersink the doublers to fit the dimples in the brackets. MATCH-DRILL #40 10 PL/BRKT Rivet the doublers to the brackets as shown for U-00006A-L using the rivets called out in Figure 3. SECURE HERE, 3 PLACES U-00006A-L (SHOWN MATCH-AN426AD3-4 U-00006A-R

FIGURE 3: INSTALLING THE DOUBLER PLATES

(SHOWN UNDRILLED)

DRILLED)

Step 1: Remove the Nose Wheel Assembly from the WD-1230 Nose Fork. Machine countersink the rivet hole locations on WD-1230 Nose Fork to fit the head of an AN426AD3 rivet. Rivet the nutplates called out in Figure 1 onto the nose fork.

Final-Drill 5/16 the 1/4 inch holes in the nose fork as shown in Figure 1. Install the bolts, washers and nuts shown in Figure 1. Reinstall the Nose Wheel Assembly.

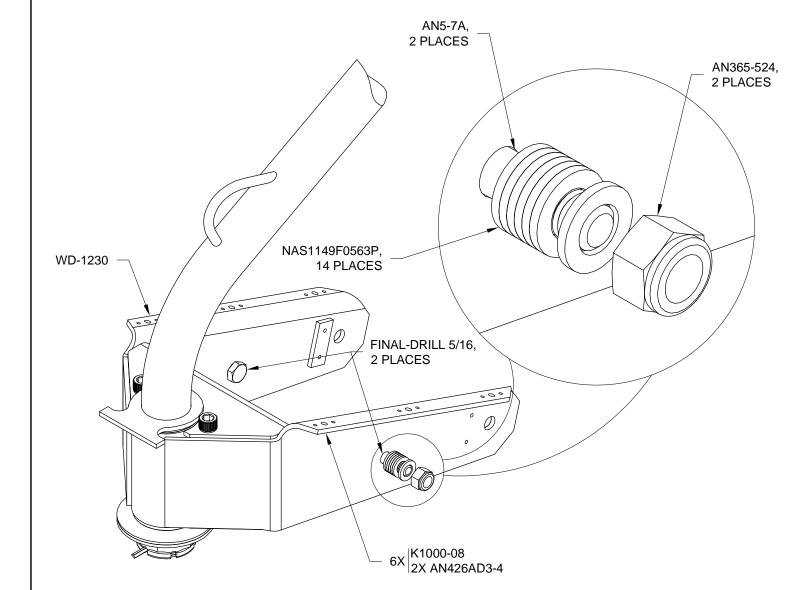
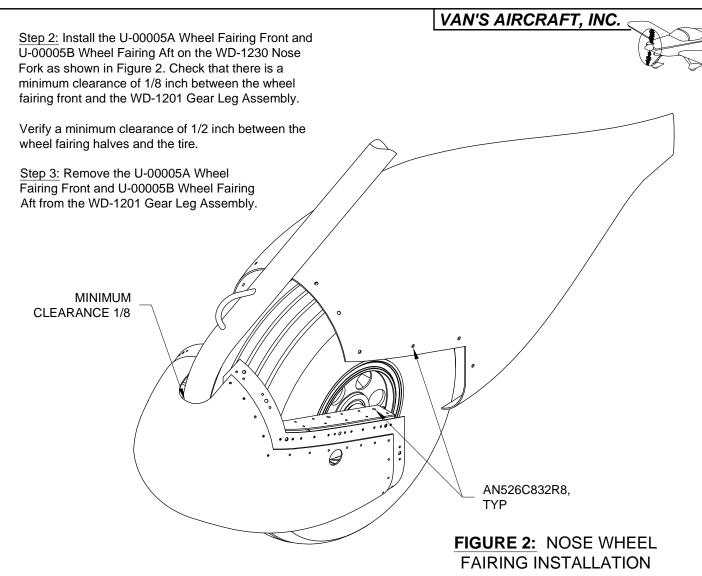


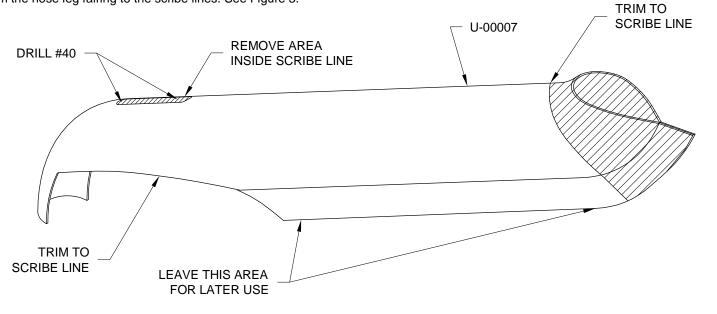
FIGURE 1: ADDING HARDWARE TO NOSE FORK



<u>Step 4:</u> Drill #40 multiple places inside the scribe line on the forward surface of the U-00007 Nose Leg Fairing to create an opening for the WD-1201 Gear Leg Assembly winch lug as shown in Figure 3. Finish up to the scribe line with a file and sandpaper.

FIGURE 3: NOSE LEG FAIRING TRIM

Trim the nose leg fairing to the scribe lines. See Figure 3.



DATE: 07/19/12 REVISION: 1

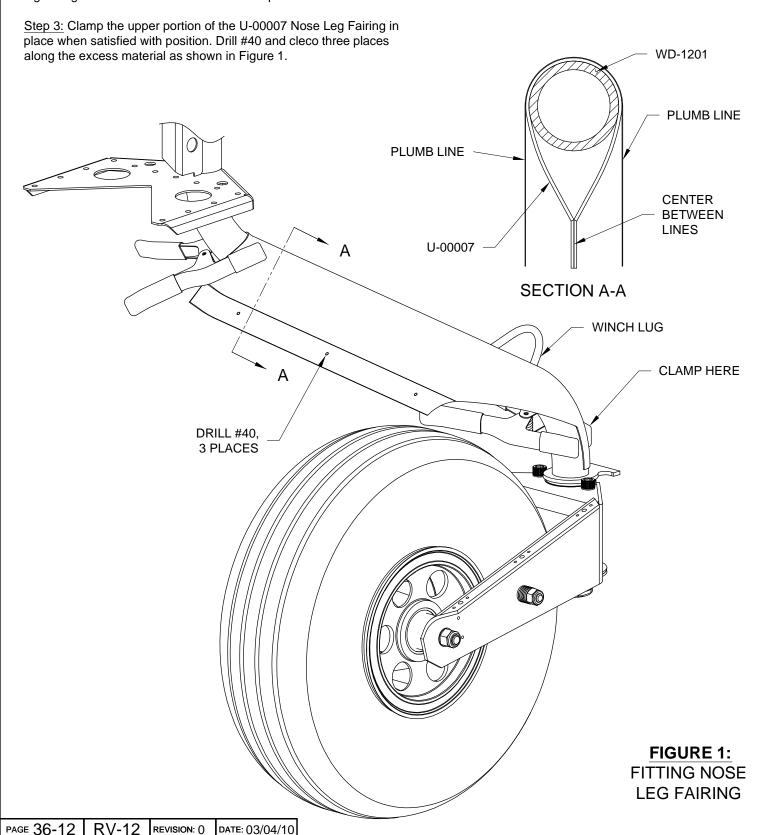
RV-12 | PAGE 36-11

NOTE: Aircraft should be fairly level side to side during the fitting of the U-00007 Nose Leg Fairing to achieve a good fit.

Step 1: Slip the U-00007 Nose Leg Fairing over the WD-1201 Nose Leg Assembly and clamp at the base as shown in Figure 1. It may be necessary to enlarge the hole in the U-00007 Nose Leg Fairing for the welds on the winch lug.

Trim the "tail" of the nose leg fairing as required to clear the tire as shown in Figure 1.

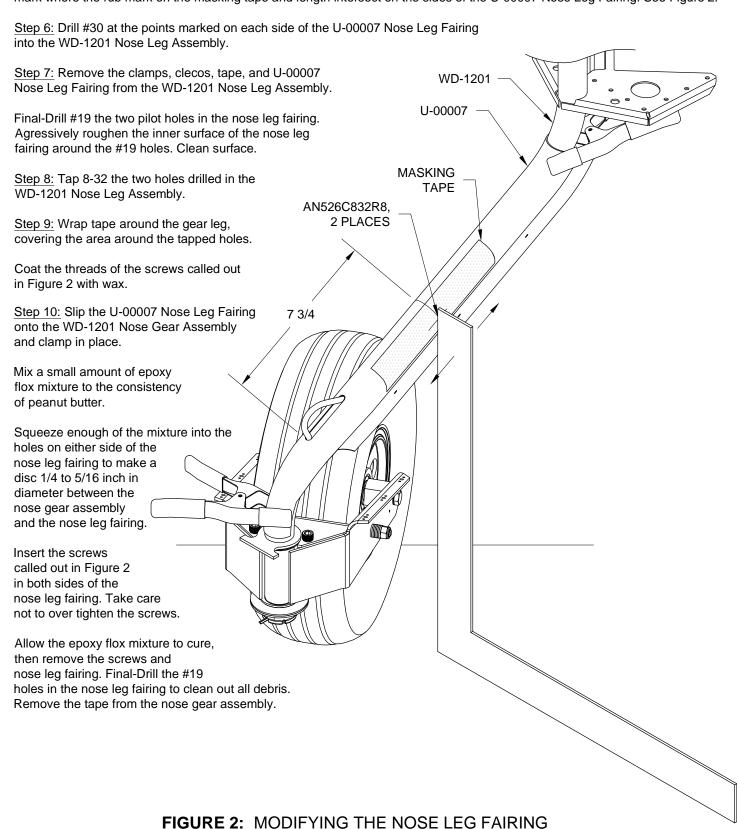
<u>Step 2:</u> Attach plumb lines to the upper portion of the U-00007 Nose Leg Fairing as shown in Figure 1 Section A-A. Align the nose leg fairing so that it is centered between the plumb lines.

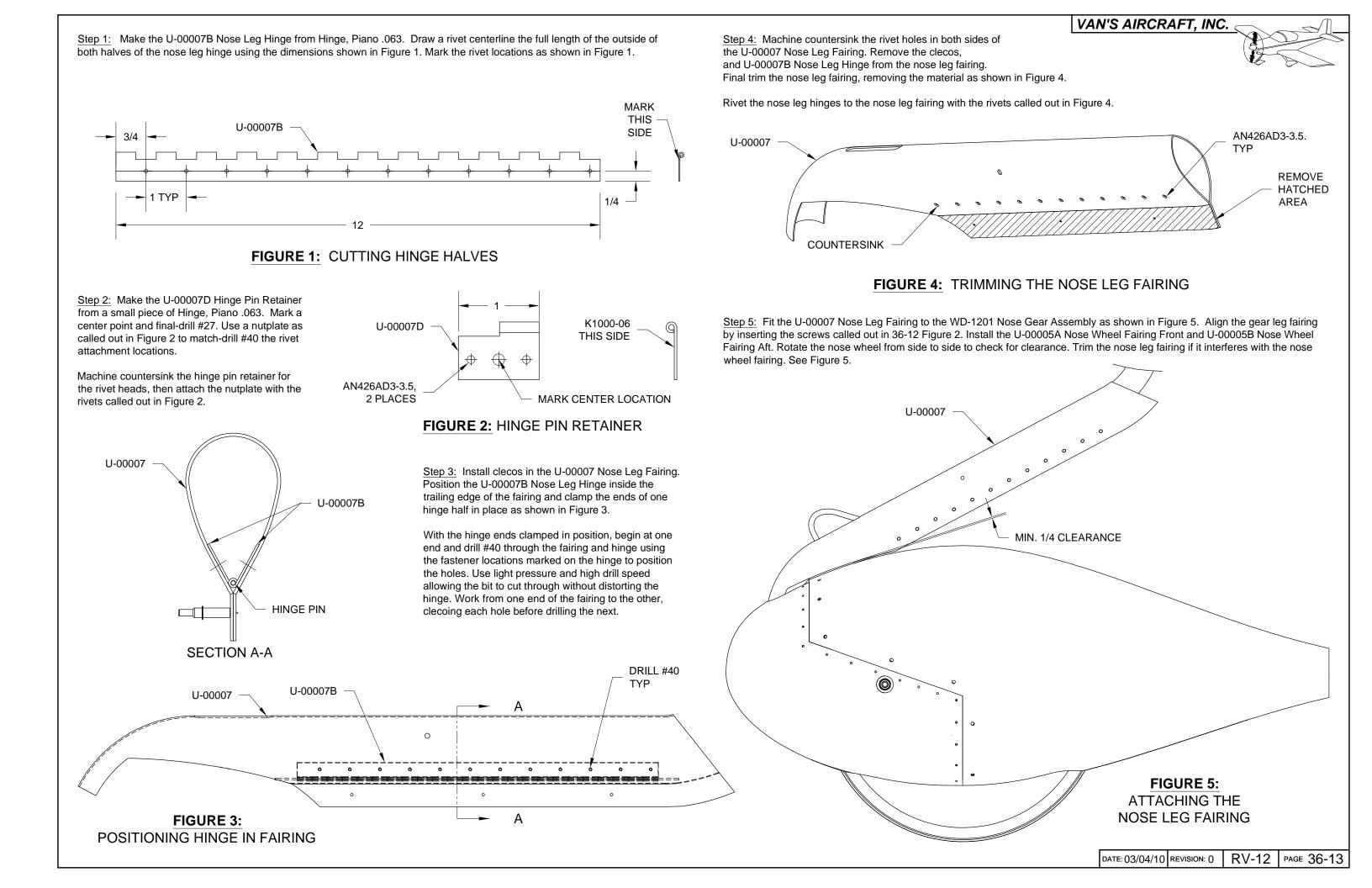


Step 4: Lightly apply a length of masking tape to each side of the U-00007 Nose Leg Fairing as shown in Figure 2.

With the nose wheel turned to one side, take a square and align it against the nose leg fairing as shown in Figure 2. Rocking the square forward and aft over the taped area will produce a mark on the masking tape at the tangent of the nose leg fairing. Repeat on opposite side of the nose leg fairing.

Step 5: Measure 7 3/4 inches from the bottom of the loop on the WD-1201 Nose Leg Assembly and use a fine point felt pen to mark where the rub mark on the masking tape and length intersect on the sides of the U-00007 Nose Leg Fairing. See Figure 2.







<u>Step 1:</u> Bend one end of the provided hinge pin to create U-00007C Hinge Pin. The pin should fit into the loop of the U-00007D Hinge Pin Retainer as shown in Figure 1. Dimensions given in Figure 2 are for reference only, adjust as required to achieve a good fit.

Step 2: With the U-00007D Hinge Pin Retainer attached to one end of the U-00007C Hinge Pin, slide the hinge pin retainer inside of the U-00007 Nose Leg Fairing and press against the side. Mark the center of the nutplate on outside of the nose leg fairing with a fine point felt pen.

Final-Drill the nose leg fairing #27 for the screw called out in Figure 1. Install screw through nose leg fairing and into hinge pin retainer and check the length of hinge protruding from the other end of the nose leg fairing hinge. Trim pin as required.

Step 3: Remove the U-00007 Nose Leg Fairing and apply wax to an approximately 1 inch diameter area of the WD-1201 Nose Gear Assembly as shown in Figure 1. Roughen the inside of the nose leg fairing in the same area. Apply a bead of RTV AN526C632R8 approximately 1/8 inch thick and 1/2 inch in diameter to the nose leg fairing. Install the nose leg fairing on the nose gear assembly. Allow to cure. Installation Complete. WAX NOSE GEAR ASSEMBLY HERE APPLY RTV TO INTERIOR OF FAIRING U-00007 U-00007C (7/8) $(12 \ 3/8)$

FIGURE 2: BENDING HINGE PIN

FIGURE 1: HINGE PIN RETAINER LOCATION

<u>Step 1:</u> Enter the values for "Delta Weight" and "Delta Moment" from Table 1 on the same line as "Gear Leg and Wheel Fairings" in the POH.

VAN'S AIRCRAFT, INC.



DESCRIPTION WEIGHT(LBS) ARM(IN.) MOMENT(IN-LBS)

NOSE WHEEL AND NOSE

2.250

67.253

LEG FAIRING ASSEMBLIES

MAIN WHEEL FAIRING

ASSEMBLIES

7.000 9.250

95.187 <u>666.308</u> 734 IN-LBS

DELTA WEIGHT = 9.3 LBS

DELTA MOMENT = 734 IN-LBS

29.890

TABLE 1: WEIGHT AND BALANCE ADJUSTMENT FOR GEAR LEG AND WHEEL FAIRING OPTION

Step 2: Recalculate new values for Empty Weight, Empty Moment and Empty Arm.

Step 3: Make an entry on page W&B-2 of the RV-12 Production Acceptance Procedures as follows:

As of this date; ___/___ the following values represent current Weight and Balance calculations resulting from the installation of the Gear Leg and Wheel Fairings Optional Kit. Revised Empty Weight:

Revised Empty Moment:

Revised Empty Arm:

Signed: ______ lbs _____ in-lbs ______ in-lbs ______ in.

Step 4: Enter the current date along with the the recalculated values and sign the entry.

Step 5: Section complete.

