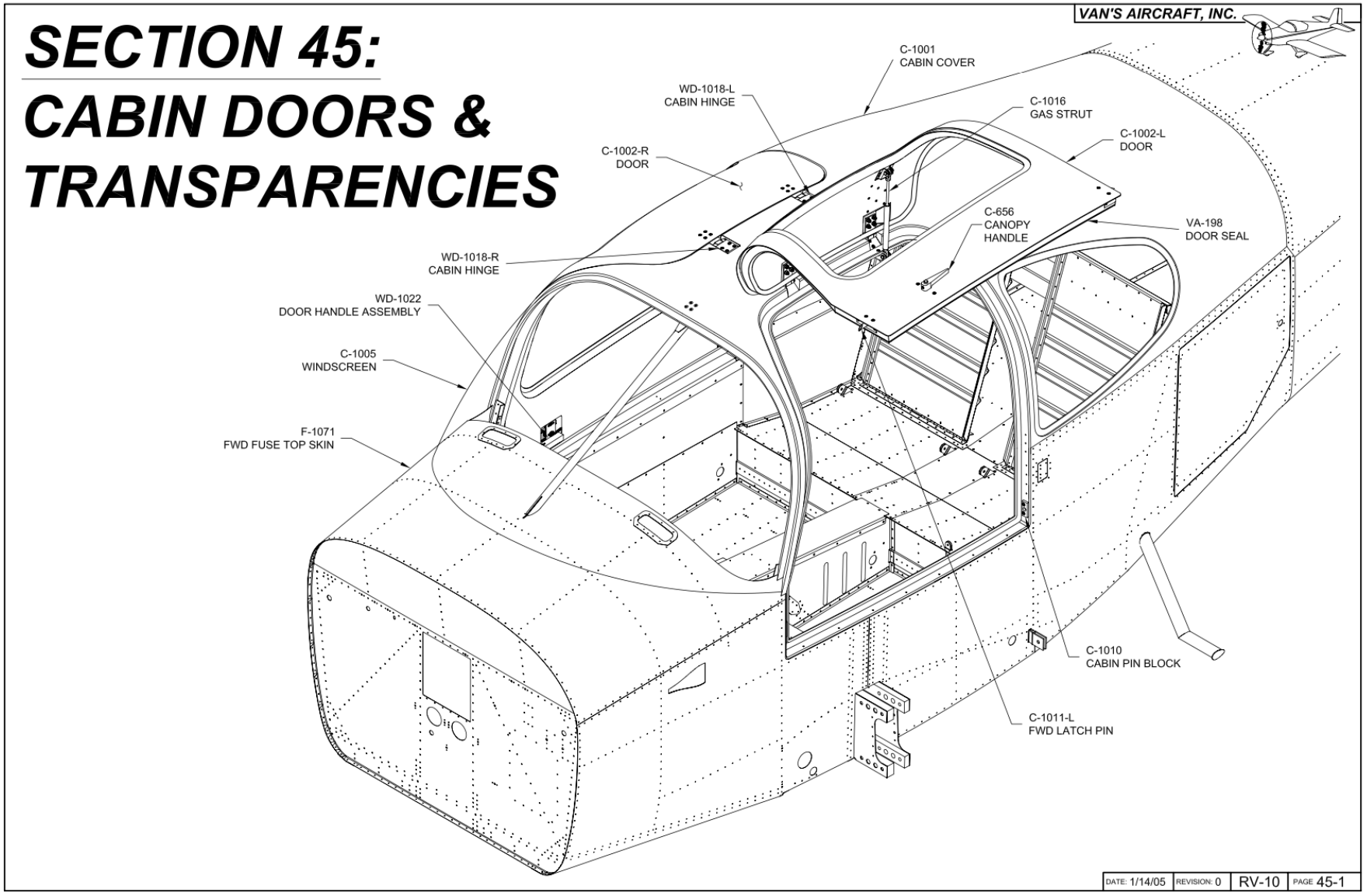
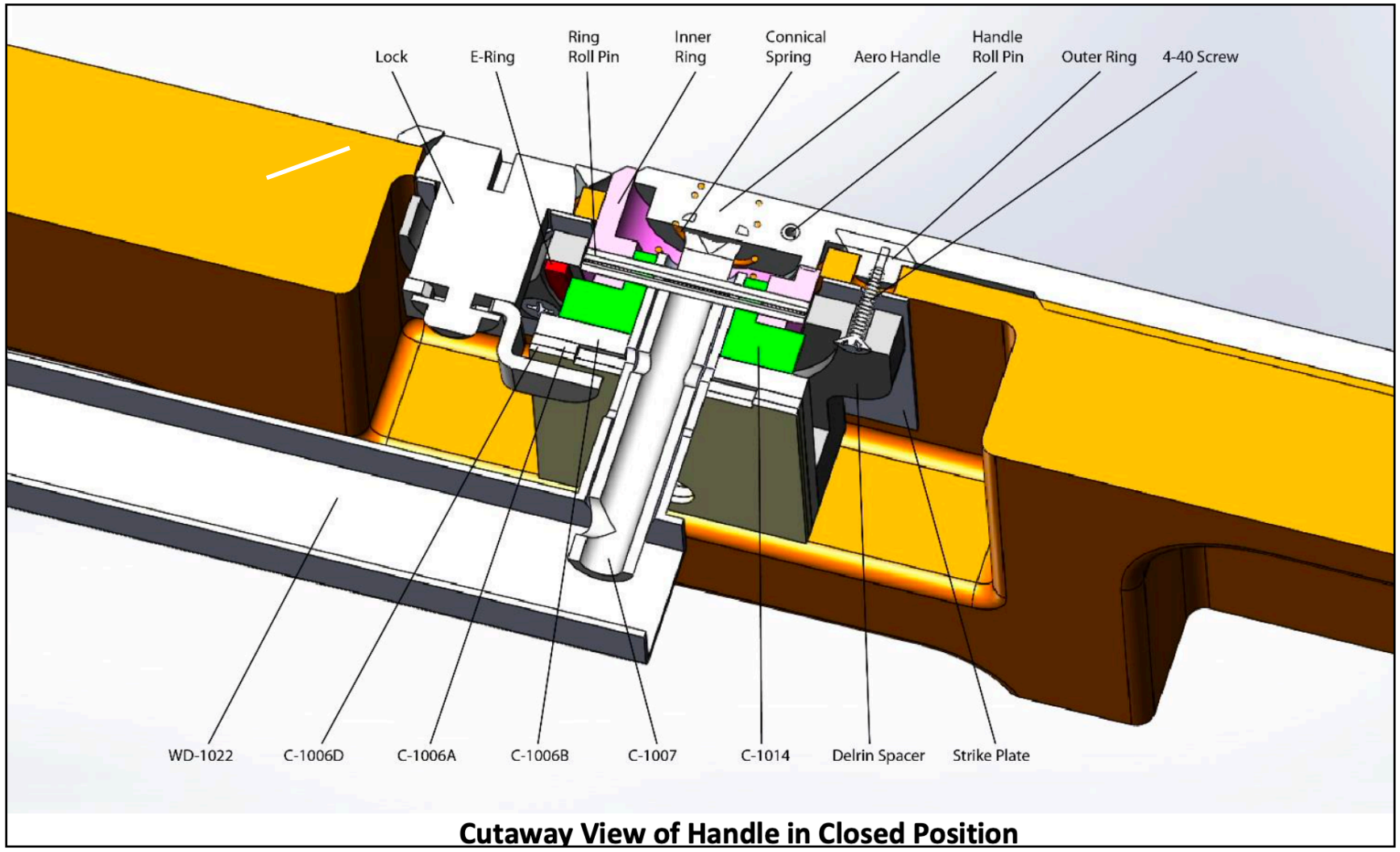
RV-10 Door Instruction Compilation (v5) - David Peterson - 31 March 2024 - Vans Air Force ID: DavidP2020

- This 50+ page guide is designed to be used in conjunction with a 4-page chart of the same name with the same steps which shows an overview of which set of instructions is used in each step.
- When I built my RV-10 doors, I found the process of sorting 6 sets of instructions to be very confusing. This resulted in having to undo some steps in order to do a step from a different process that should have been done earlier. I spent a great deal of time trying to figure out which step should be next. This guide is an attempt to make the process easier for future builders. I'm sure this guide can be refined further.
- This guide compiles the following instructions:
  - Vans RV-10, Chapter 45, Cabin Doors and Transparencies
  - Aerosport, RV-10 Low Profile Handle
  - Aerosport, RV-10 Door Handle Cover
  - PlaneAround, New 180 Door Latch
  - PlaneAround, Angled Pins and Delrin Guides
  - PlaneAround, Strut Attach Brackets
- NOTES:
  - Compiled and made public with permission of Aerosport and PlaneAround
  - It is the responsibility of the builder to ensure they have the latest version of each installation guide and follow those guides correctly.
  - It is highly recommended to read completely through each guide before starting.
  - This guide assumes the builder is doing a new installation and using all of the above options. If your build is different, modify these steps accordingly.
  - At times, I will refer to (as an example) "#5". This refers to the Step 5 in THIS guide.
  - My additional NOTES are in *italics*.
  - I am not using the McMaster Seals. If using those, you will have to add those steps or possibly modify the sequence.
  - To the max extent possible, I copied and pasted original instructions into this guide. Please confirm that you are using current instructions provided by the manufacturers.
- Good luck on your build. Hopefully this guide will help simplify the process of combining some very good after-market accessories into a good-looking, effective end result for you.

1. Title Page and Overview. Vans 45-01.

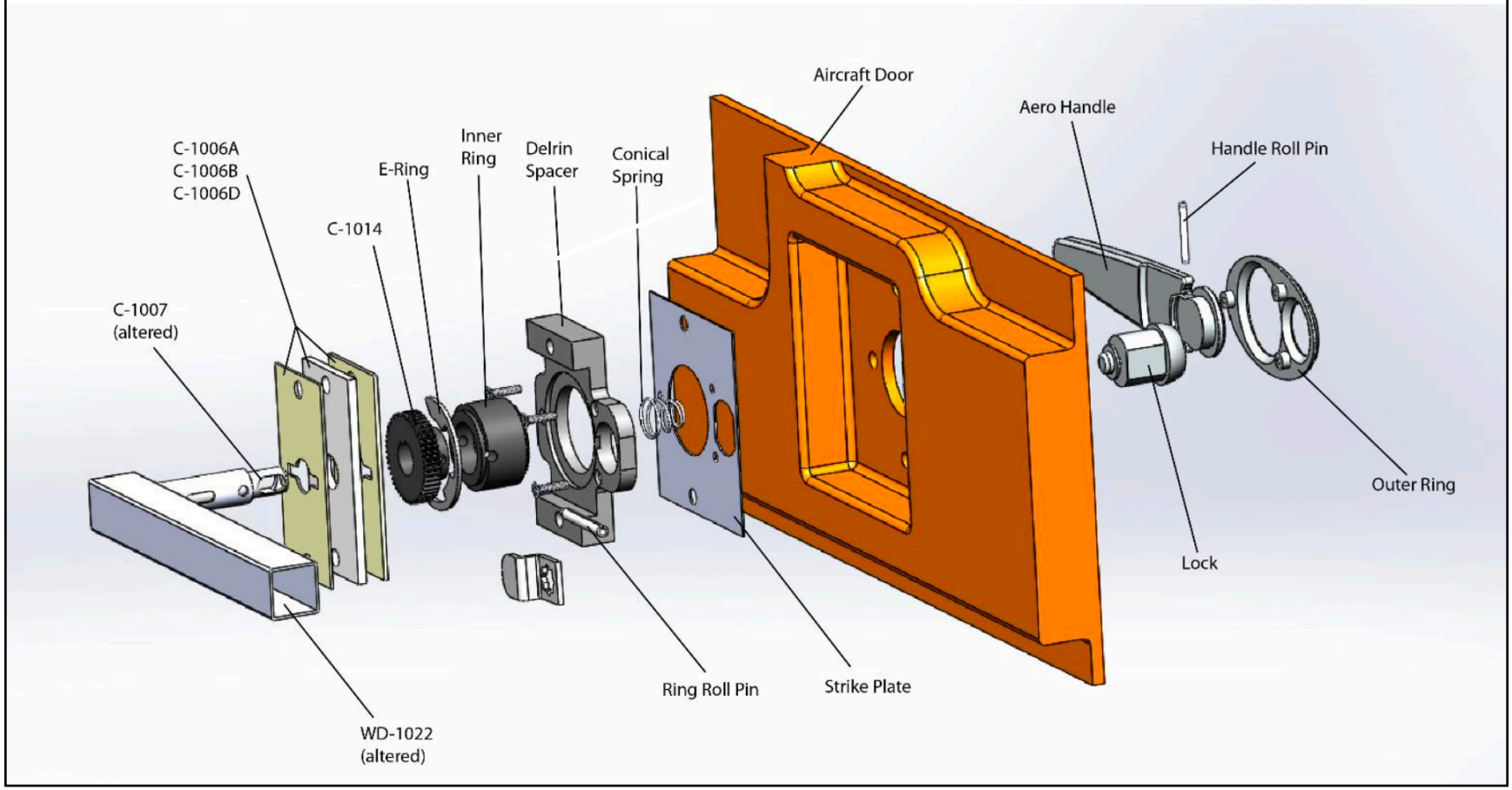


2. Low Profile Handle Overview. Aerosport.

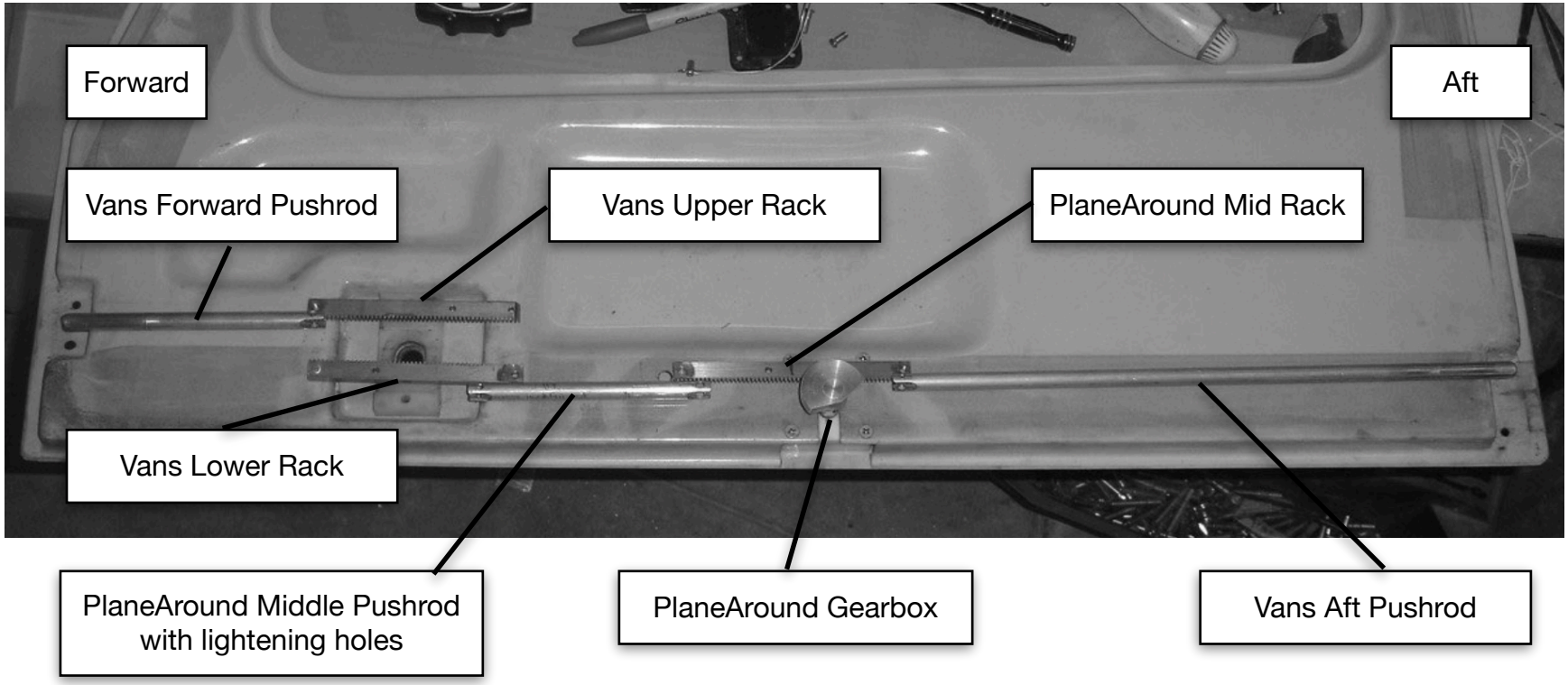


Cutaway View of Handle in Closed Position

Handle Installation



3. Overview. PlaneAround New 180 Door Latch.



4. Trim and Sand Doors. Vans 45-02 Steps 1-4.

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Note: The terms "bag side" and "tool side" are used in this section. "Bag side" refers to the "rough" side of the part which shows the weave of the fabric and may have wrinkles and other surface irregularities. "Tool Side" refers to the "smooth" side of the part which is an exact mirror of the mold upon which the part was layed-up and cured.

Step 1: Trim the outside perimeter and window flange of the C-1002A-L and -R Cabin Door Outer Shells as shown in Figure 1.

There are six "dimples" molded into the tool side of each cabin door outer shell; one near the lower door forward edge, one near the lower door aft edge, and one in the window flange near each of the four corners of the window. Drill a #40 hole through the cabin door outer shell at the center of each of the six dimples. These holes are "index holes" used to locate the door shells to each other and to the fuselage.

Draw two lines on the window flange of each cabin door outer shell, one line ¾ inch offset from the window joggle and one line 1 ¼ inch offset from the window joggle. See Figure 1, Sect A-A.

On the 1 ¼ inch window joggle offset line, make a mark approximately every 1 ½ inch around the window perimeter. Drill #40 hole at each mark.

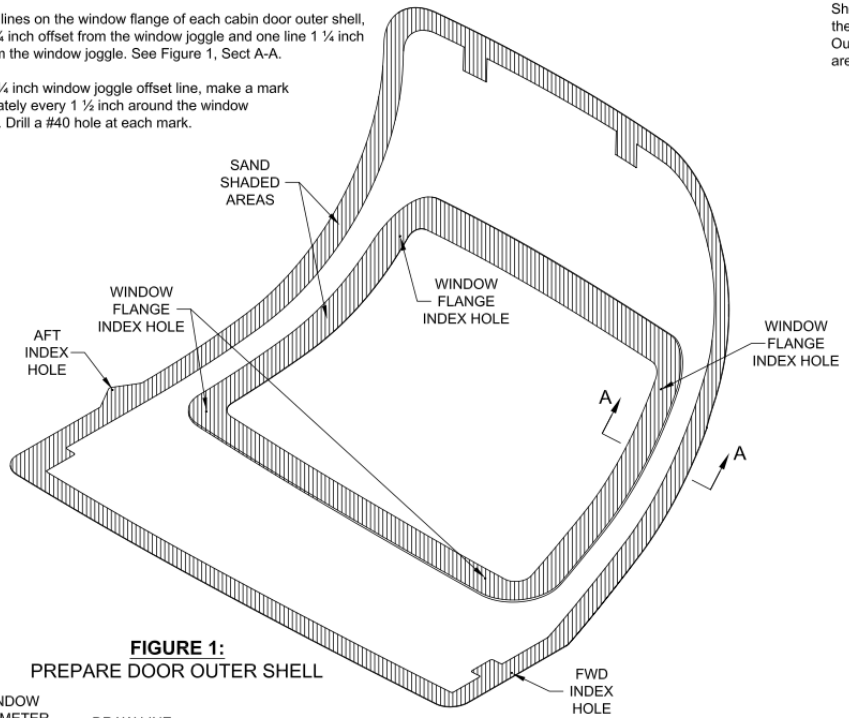
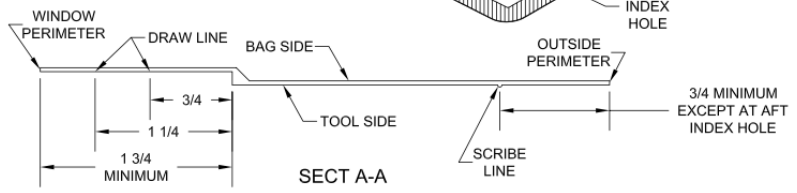


FIGURE 1:
PREPARE DOOR OUTER SHELL



SECT A-A

Step 2: Trim the outside perimeter and window flange of the C-1002B-L and -R Cabin Door Inner Shells as shown in Figure 2.

The tool side of each cabin door inner shell has molded-in dimples that correspond to the dimples molded into the C-1002A-L and R Cabin Door Outer Shells. Drill a #40 hole through the cabin door inner shell at the center of each of the six dimples.

Step 3: Sand the bag side surface of the C-1002A-L and -R Cabin Door Outer Shells in the areas that will mate to the C-1002B-L and -R Cabin Door Inner Shells. The mating areas are shown shaded in Figure 1.

Step 4: Sand the bag side surface of the C-1002B-L and -R Cabin Door Inner Shells in the areas that will mate to the C-1002A-L and -R Cabin Door Outer Shells. The mating areas are shown shaded in Figure 2.

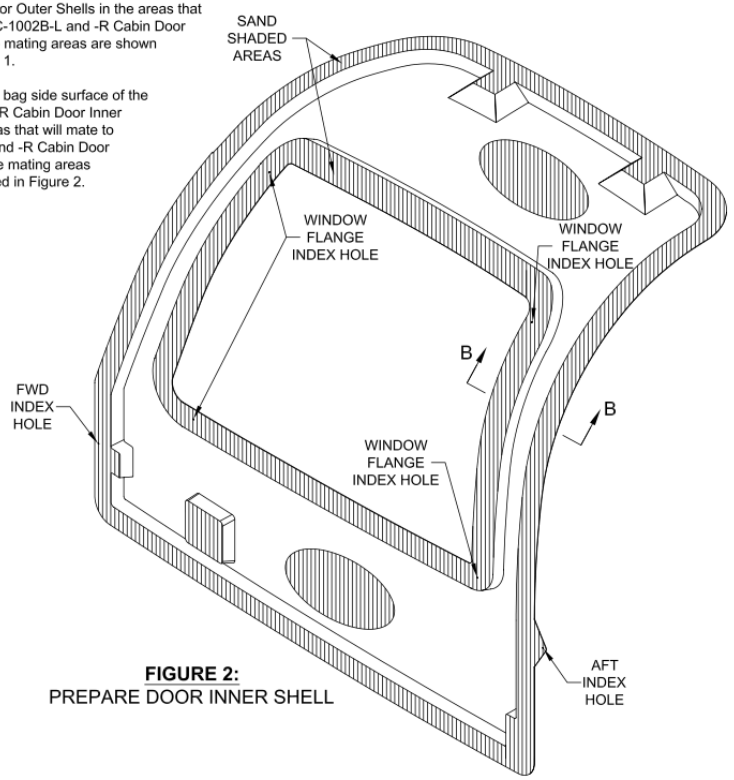
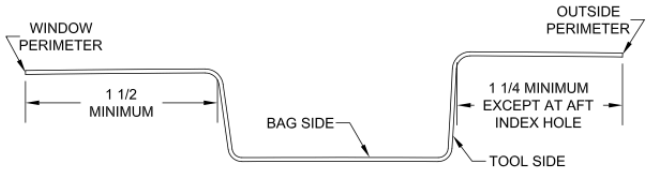


FIGURE 2:
PREPARE DOOR INNER SHELL



SECT B-B

5. Cleco Doors to each other and Fuselage. Vans 45-03 Steps 1-3.

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Step 1: There are several rivet holes in the fuselage that were deliberately left open to facilitate gluing the C-1002A Door Outer Shells to the C-1002B Door Inner Shells. See Page 29-17, Figures 1 & 2, and Page 29-18, Figure 1. At each of the open holes, draw reference lines on the fuselage side so that the hole centers can be located when covered. See Figure 1.

If you have a hole finder, you can skip this step.

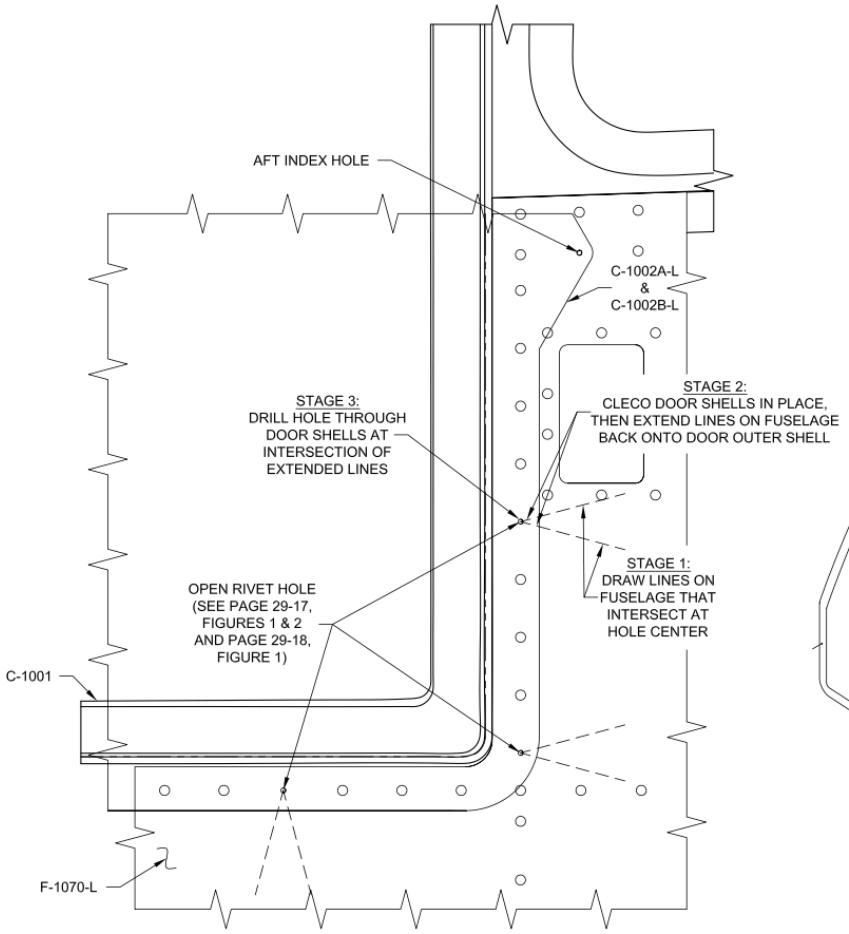

FIGURE 1:
LOCATING BLIND HOLES

Step 2: Cleco the C-1002A-L Door Outer Shell to the C-1002B-L Door Inner Shell using the four #40 holes in the window flange of the door inner shell. See Figure 2.

Step 3: Cleco the C-1002A-L Door Outer Shell/C-1002B-L Door Inner Shell to the fuselage using the forward and aft index holes. See Figure 2.

Verify that there is a constant 1/16 to 1/8 inch gap between the C-1002B-L Door Inner Shell and the return flange of the C-1001 Cabin Cover. Trim or sand the cabin cover return flange if/as required to achieve the required gap. See Page 45-04, Figure 1, " Stage 1: Initial Placement on Fuselage".

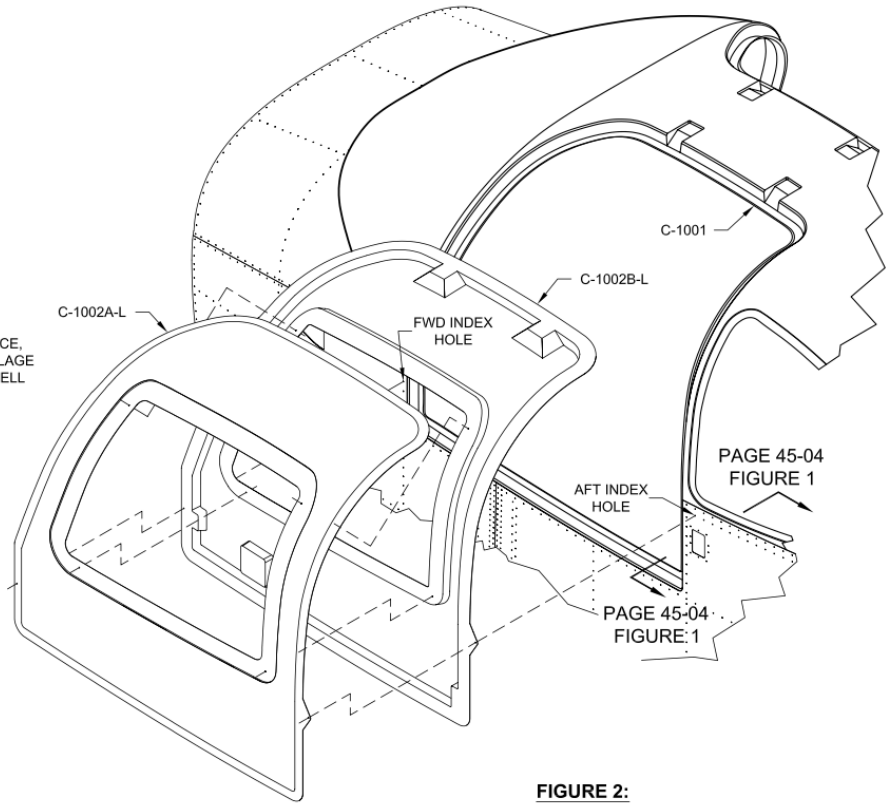

FIGURE 2:
CLECO DOOR SHELLS TO FUSELAGE

6. Install Gas Strut Doublers. Vans 45-04 Steps 1-7.

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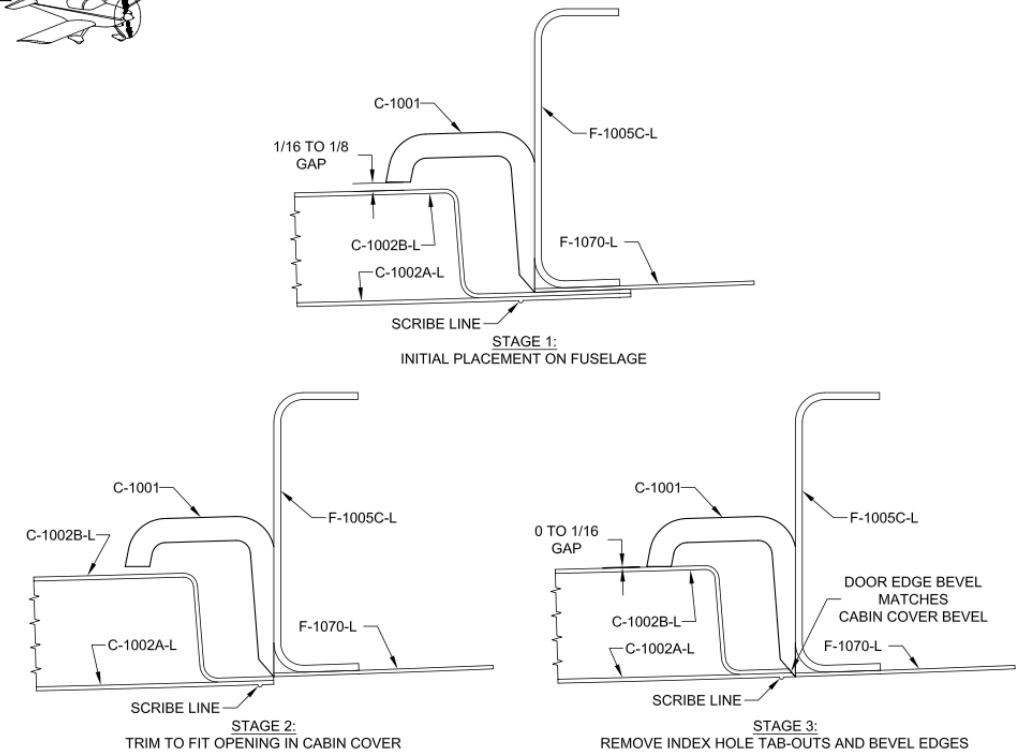


FIGURE 1: PROGRESSION OF DOOR TRIM AND FIT

Step 1: Using the open hole reference lines (or hole finder) drill #40 through the C-1002A-L Door Outer Shell/C-1002B-L Door Inner Shell into the open rivet holes in the fuselage. See Page 45-03, Figure 1. Install a cleco in each hole as it is drilled. If any mismatch occurs, the hole in the door inner/outer shells should be elongated rather than the hole in the fuselage. The clecos are used to hold the door inner/outer shells tightly to the side of the fuselage.

Step 2: Duct tape the upper part of the C-1002A-L Door Outer Shell/C-1002B-L Door Inner Shell to the C-1001 Cabin Cover. The duct tape should hold the door inner/outer shells to the upper cabin cover as tightly as possible.

Step 3: Match-Drill #40 the holes in the window flange of the C-1002A-L Door Outer Shell into the window flange of the C-1002B-L Door Inner Shell. Install a cleco in each hole as it is drilled.

Step 4: Remove the C-1002A-L Door Outer Shell/C-1002B-L Door Inner Shell from the fuselage and separate the door outer shell from the door inner shell.

Step 5: Repeat all preceding steps for the right side door.

Step 6: Position one of the C-1002C Gas Strut Attach Doublers on the bag side surface of the C-1002B-L Door Inner Shell as shown in Figure 2.

The gas strut attach doubler centers on the width of the aft hinge pocket molded into the door inner shell.

The shape of the gas strut attach doubler can be adjusted as required to achieve a good fit to the door inner shell. The fit need not be perfect because the glue used to attach the gas strut attach doubler to the door inner shell will easily fill any gaps of up to 1/16 inch.

Match-Drill #30 and cleco the gas strut attach doubler to the door inner shell. Remove the gas strut attach doubler and deburr holes.

Repeat this step for the right side door.

Step 7: Mix some epoxy and thicken it with cab-o-sil to the point that it will not pour out of the mixing cup. A total mixture quantity of about 2 fluid ounces will be required.

Use 80 grit sandpaper to roughen the mating surfaces of the C-1002B-L & R Door Inner Shells and C-1002C gas strut attach doublers.

Apply a 1/16 inch thick layer of thickened epoxy to each gas strut attach doubler and cleco each one to the appropriate door inner shell. Use two clecos for each gas strut attach doubler inserted through the two holes on the part centerline. Install the clecos from the tool side of the door inner shells. Use hand pressure to seat the gas strut attach doublers to the door inner shells and to squeeze out any excess epoxy which should be removed.

After the epoxy has cured re-drill the holes to #30 and install rivets as shown in Figure 2.

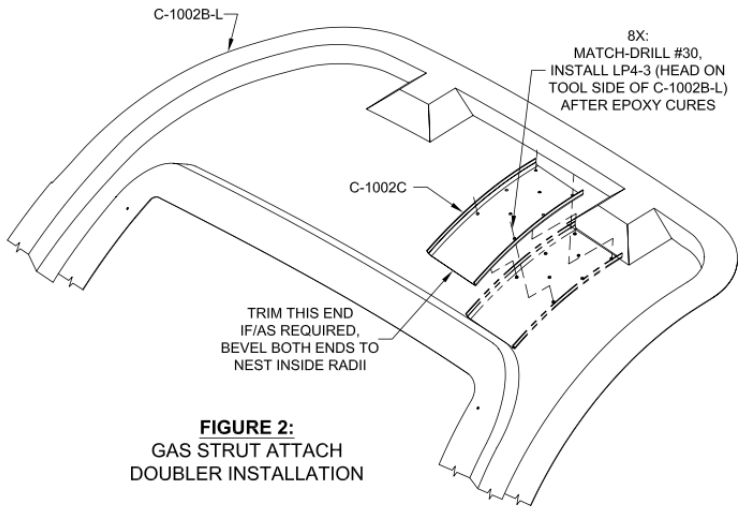


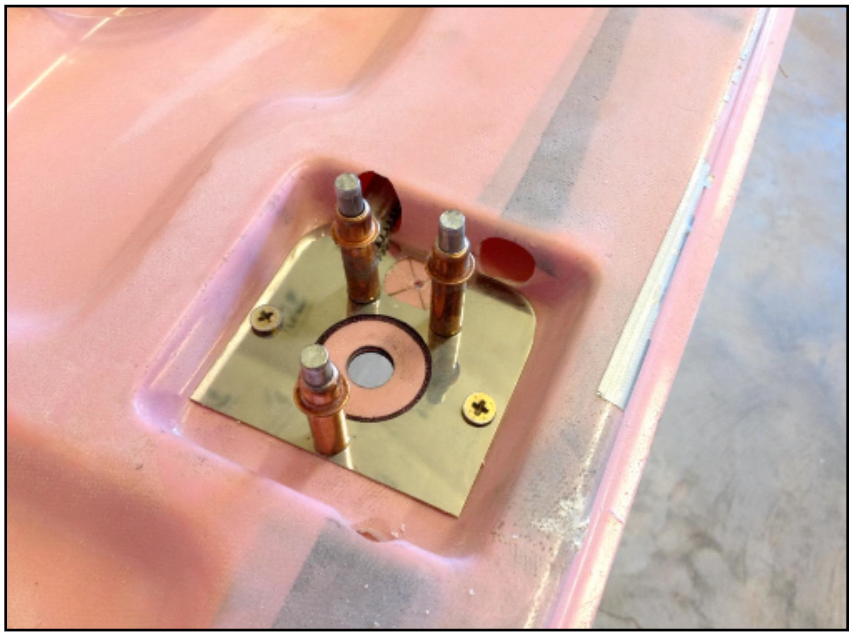
FIGURE 2:
GAS STRUT ATTACH
DOUBLER INSTALLATION

7. Door Prep. Aerosport Low Profile Handle Step 1

1. New Install: Using the Strike Plate from the kit as a template, center the upper and lower screw holes in the door pocket. Round the forward corners of the plate as needed to clear the door pocket's fillets and ensure the strike plate is sitting flush with the door skin. Be sure the lock cut out is facing forward. Drill the two holes using a #12 bit.

Existing Install: Round the forward corners of the plate as needed to clear the door pockets fillets and ensure the strike plate is sitting flush with the door skin. Line up the existing screw holes with the template and proceed.

New and Existing Install: Slide some #10 screws through the holes to align the strike plate and secure it in place. Drill the #4 screw holes with a #30 drill bit and secure with clecos as you drill. Mark an X on the door skin using a fine point pencil and the flats of the lock cutout as a guide (see image). Drill a pilot hole in the center of the X using a #30 drill bit. Leave the hole as is you will return to this later. With the plate still held in position use it as a guide to cut out the large center hole. Trace the inside perimeter of the plate's hole onto the door skin using a sharpie marker to space the inner hole off the template. Cut a hole slightly smaller than the marking and then finish shaping with sandpaper up to the mark. Ensure the internal handle assembly, with the steel inner ring, fits through the hole for smooth operation. Increase the diameter as needed up to the diameter of the strike plate hole.



NOTE: The #30 holes can be used for clecos during the bonding process to help hold this section of the inner and outer door shells tight together.

8. Bond Door Shells Together. Vans 45-05 Steps 1-12.

Step 1: There are three locations on each door where the bag sides of the C-1002A Door Outer Shell and C-1002B Door Inner Shell are locally bonded together. The three locations are as follows: The "cranial cavity" in the upper door above the window, the "latch pocket" in the lower door, and the "elbow cavity" in the lower door aft of the latch pocket. At the cranial cavity and elbow cavity the door shells require a "bridge" of structural filler material between them.

The material used for the structural filler is a 3 dimensional weave glass fiber fabric called ParaBeam.

Cut four pieces of parabeam (two for each door) to the dimensions shown in Figure 1.

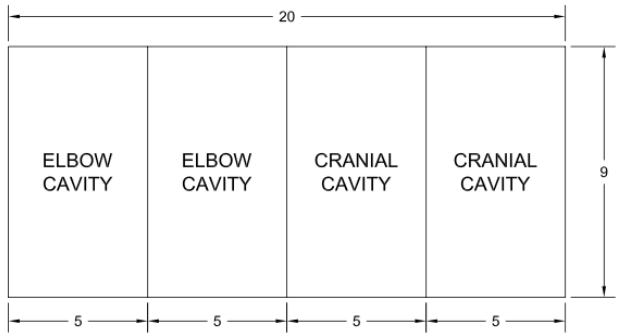


FIGURE 1: PARABEAM CUT DIMENSIONS

Step 2: Mask-off the fuselage in anticipation of joining the C-1002A Door Outer Shell and C-1002B Door Inner Shell in place on the fuselage.

NOTE: Steps 3 through 8 must be done in a single work session. This will require use of an epoxy with a 30 minute (minimum) pot life.

Step 3: Brush a light coat of epoxy to the bag sides of the C-1002A-L Door Outer Shell and C-1002B-L Door Inner Shell at the three places where they are bonded together.

Step 4: Wet-out with epoxy each of the two pieces of parabeam for the left door then place it at the appropriate spot on the C-1002B-L Door Inner Shell.

Step 5: Mix some epoxy and thicken it with cab-o-sil to the point that it will not pour out of the mixing cup. A total mixture quantity of about 10 fluid ounces will be required.

Apply a 1/32 to 1/16 inch layer of thickened epoxy to all the mating surfaces around the door outside perimeter and window inside perimeter of the C-1002B-L Door Inner Shell. These areas are shown shaded on Page 45-02, Figure 2.

Step 6: Put one cleco at the lower forward corner and one cleco at the lower aft corner of the C-1002A-L Door Outer Shell.

Allowing contact only along the lower edge, use the two clecos to join the door outer shell to the C-1002B-L Door Inner Shell. Lay the remainder of the door outer shell in place on the door inner shell and cleco them together at only the upper forward and upper rear corners of the window.

Step 7: Place the C-1002A-L door inner shell/C-1002B-L door outer shell subassembly on the fuselage and cleco it to the fuselage at the two index holes.

Insert clecos through the door inner shell/door outer shell and into all the open holes in the fuselage

Insert clecos through all the holes around the perimeter of the window.

Use C-clamps, small weights, duct tape, or whatever works to hold the door inner shell and door outer shell tightly to each other AND to the fuselage while the epoxy cures. Apply hand pressure to push-out any excess thickened epoxy between the parts. Use only light pressure if you use C-clamps or other mechanical clamps so as not to locally distort the door shells. Any irregularities will be permanent after the epoxy has cured.

Step 8: After the door is fully cured remove all clecos, clamps, weights, duct tape then remove the door from the fuselage.

Step 9: Repeat Steps 3 through 8 for the right side door. The doors will subsequently be referred to as the C-1002-L Door and C-1002-R Door.

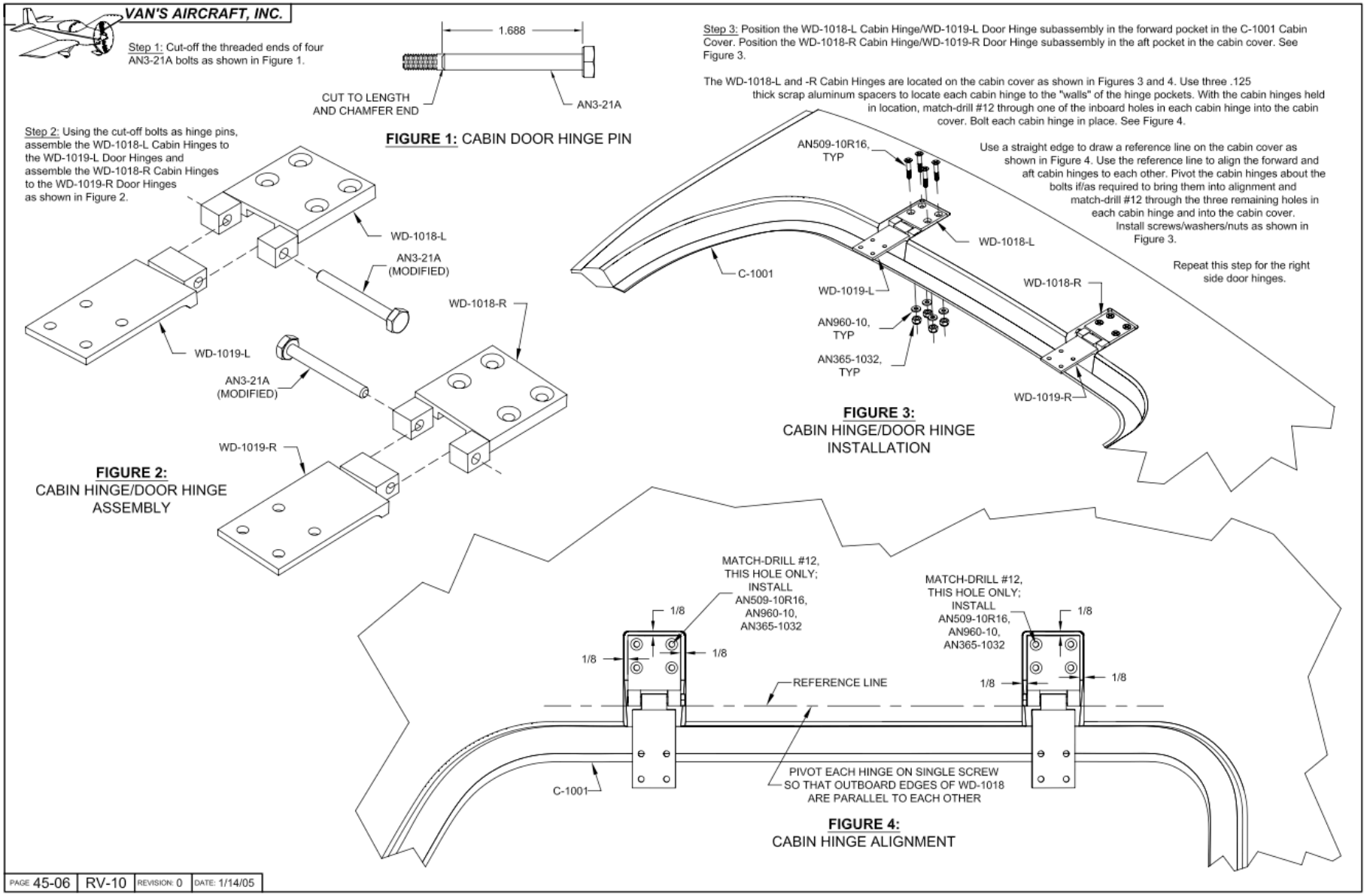
Step 10: Trim the window openings in the C-1002-L and R Doors such that a ¾ inch wide flange remains. This trim line was drawn per Page 45-02, Step 1.

Step 11: Trim the outside perimeter of the C-1002-L and R Doors to within 1/8 inch of the molded-in scribe line except leave a small tab-out at the front and rear indexing holes. See Page 45-04, Figure 1, "Stage 2: Trim to Fit Opening in Cabin Cover".

Cleco the doors back onto the fuselage. Mark any areas of the door outside perimeter which require further trimming in order to fit to the fuselage. Small amounts of material are best removed with 80 to 100 grit sandpaper on a long (approximately 12 inches) sanding block.

Step 12: Trim the indexing hole tab-outs from the C-1002 Doors. Sand a 45 degree bevel into the outside perimeter of the doors as shown on Page 45-04, Figure 1, " Stage 3: Remove Index Hole Tab-Outs and Bevel Edges". Trim/sand the door as required for it to just fit the opening in the fuselage.

9. Hinges to Fuselage. Vans 45-06 Steps 1-3.



10. Hinges to Doors. Vans 45-07 Steps 1-5.

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Step 1: Place the C-1002-L Door on the fuselage and hold it in place with duct tape.

Step 2: Working from inside the cabin, match-drill #12 one of the outboard holes in each of the WD-1019 Door Hinges. Temporarily install a screw/washer/nut through the door hinge and C-1002-L Door as shown in Figure 1. Match-Drill #12 the remaining outboard hole in each door hinge and install screw/washer/nut.

Step 3: Un-tape the C-1002-L Door, swing it open and match-drill #12 the remaining 2 holes in each WD-1019 Door Hinge as shown in Figure 2.

Machine countersink the outside surface of the door at the four open holes. Install screw/washer/nuts in countersunk holes. Remove screw/washer/nuts from the holes not yet countersunk and countersink the holes. Install screw/washer/nuts in the holes.

Close the door and see if it distorts. If the door wants to ride too low relative to the cabin cover shim between the inside surface of the door and WD-1019 Door Hinges.

Step 4: Repeat Steps 1 through 3 for the C-1002-R Door.

Step 5: Remove the C-1002-L and C-1002-R Doors from the WD-1019-L/R Door Hinges.

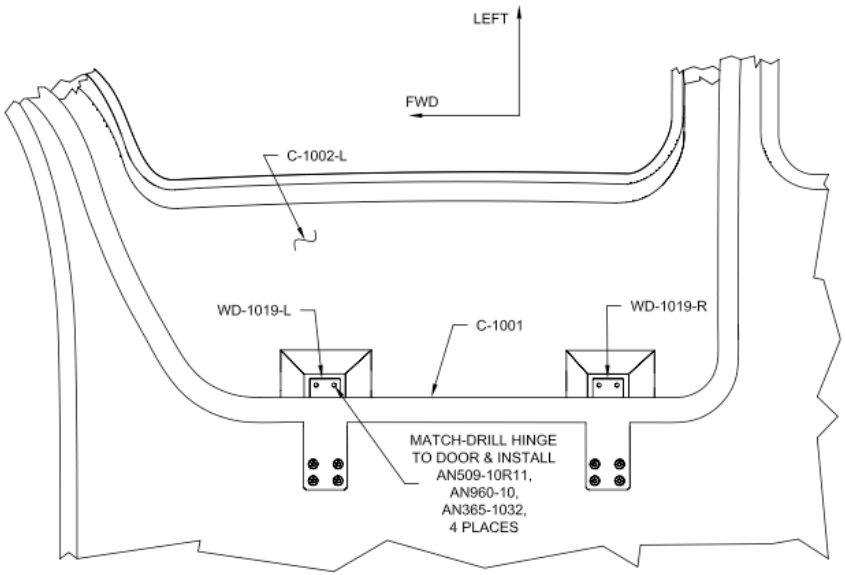


FIGURE 1: MATCH-DRILL DOOR HINGE OUTBOARD HOLES TO DOOR
(VIEW LOOKING UP AT INNER SURFACE OF CLOSED LEFT DOOR AND CABIN COVER)

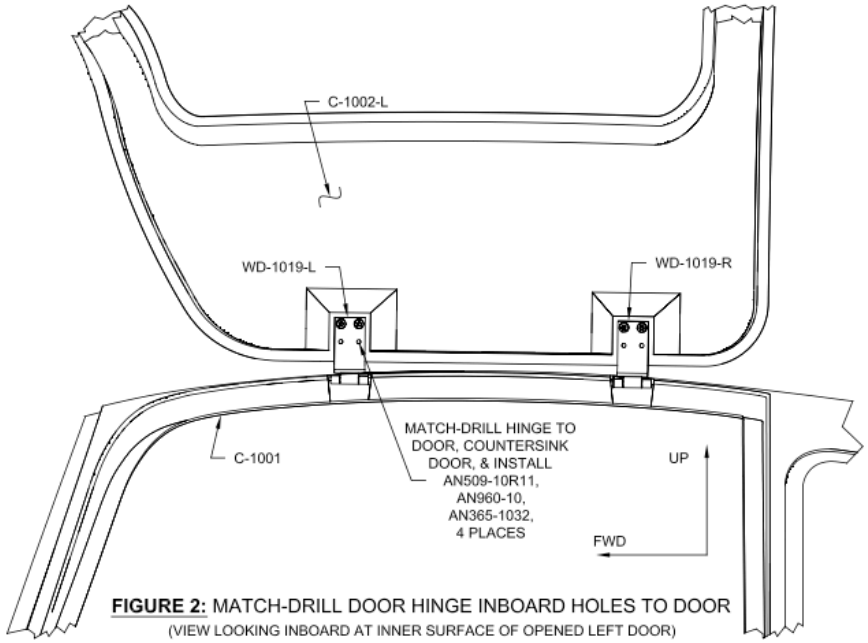


FIGURE 2: MATCH-DRILL DOOR HINGE INBOARD HOLES TO DOOR
(VIEW LOOKING INBOARD AT INNER SURFACE OF OPENED LEFT DOOR)

11. Install Windows in Doors. Vans 45-08 Steps 1-6. Optional at this time. I elected to leave this step until later when I installed the rear windows.

12. Prep Inner and Outer Vans Handles. Vans 45-09 Steps 1-4. SKIP. Not required due to not using Vans interior handles.

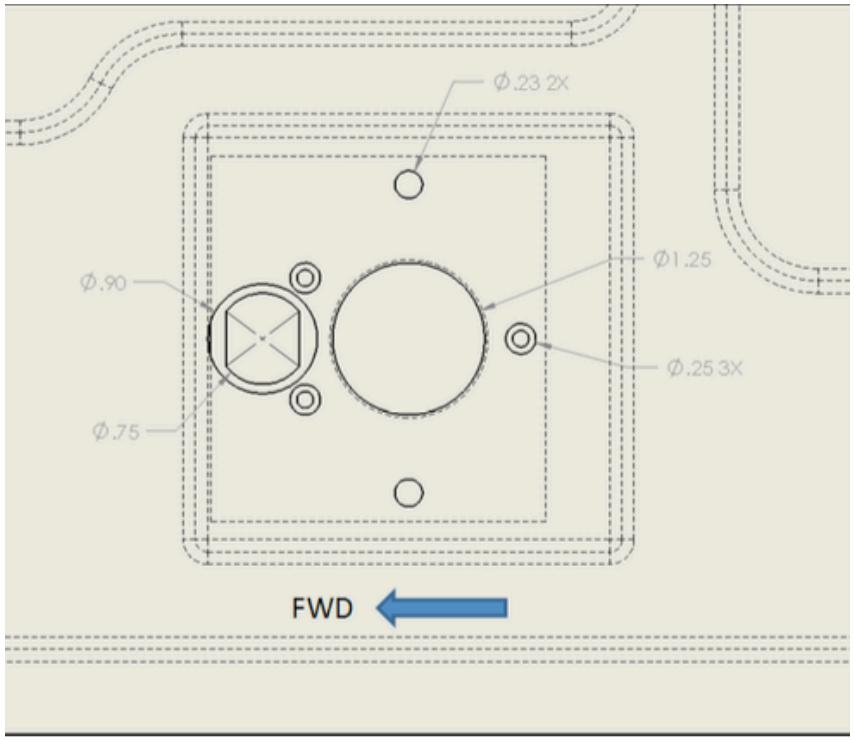
13. Prep Strike Plate Area of Doors. Aerosport Low Profile Handle Steps 2-6a

    2. New and Existing Install: Remove all of the parts including the strike plate. Using the pilot holes in the previous step, drill the three #30 holes up to a ¼" hole, stepping the drill bits up in size before the final drill. Next, using a step drill bit, drill the lock pilot hole up to ¾".

    3. New and Existing Install: With the strike plate held back in place by two #10 screws. Slide the lock body in the ¾" hole until the lock head rests on the outer skin of the door. The flats of the lock should line up and slide into the flats of the strike plate. If it does not just open the hole in the door skin until the lock head rests on the outer door skin and between the strike plate flats without force. Then, trace a circle around the lock head onto the outer door skin using the lock head as a template. This tracing should be around 0.90" in diameter. Remove the lock and strike plate and cut a hole through the door skin up to the marking. See the images below and on the following page for clarity. Use caution, the material between the 0.25" holes and the new 0.90" hole will be very thin. Try your best to not damage it. (If the layer of material does become broken just clip the thin material to a clean edge).

Step 13, continued.

4. New and Existing Install: Reinstall the strike plate. The outer skin should look like the image below. Ensure the lock head slides into the hole and between the flats without great force. The lock will now sit recessed inside the door skin and rest on the strike plate.



Door Exterior Looking Inboard

5. New and Existing Install: This is a good time to test fit the outer ring. The bosses on the bottom of the outer ring should slide into the 0.25” holes and the lock should align with the center of the forward hole. Adjust as necessary

Step 13, continued.

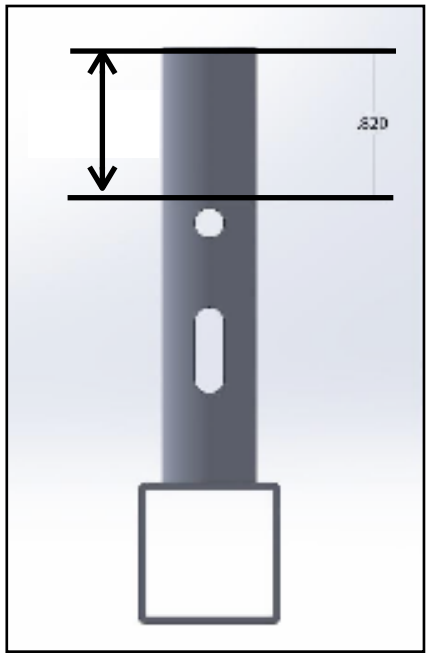
6. New and Existing Install: This is also a good time to ensure the door skins are properly bonded. Check for any gaps or unfilled voids in the door (note the separation of the door skins inside the large hole) and fill with epoxy resin. Flexing in the door when tightening the screws may cause the door thickness to adjust during final fitment of the handle. Also, opening the clearance holes of the racks will make installation easier. It is suggested to maximize the size of the holes for best clearance. *NOTE: This portion done at a later time* ***(Step #39)*** *as the clearance holes have not been drilled in for a new installation.*

14. Modify Vans Handle Parts (C-1007 and WD-1022). Aerosport Low Profile Handle Step 7.

7. New and Existing Install: Modify existing interior handle parts by cutting away the tops of the C-1007 Pin and WD-1022 Handle as shown. Debur and polish the ends of the parts after cutting.

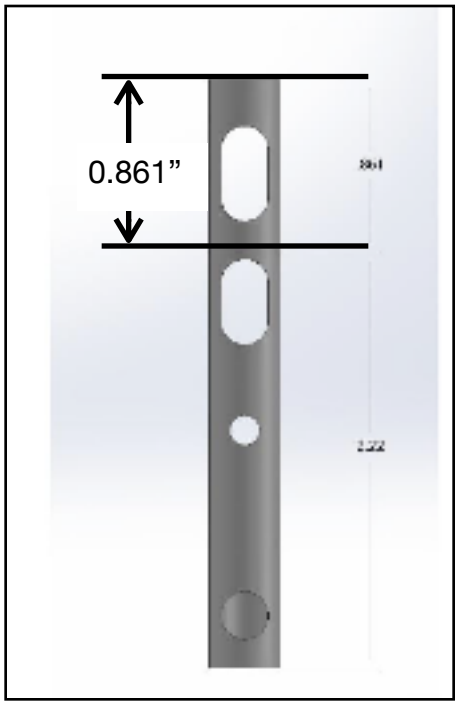
Creating a slight dome shape while polishing on the top of the C-1007 Pin is recommended for smoother operation.

Remove 26/32” (0.820”) from top of WD-1022 Handle as shown.



Step 14, continued.

Remove 57/64” (0.861”) from top of C-1007 Pin as shown.



15. Directed to Vans 45-10. Aerosport Low Profile Handle Step 8.

8. New Install: Assemble handles and C-1006 A, B, C, and D plates as shown in Van’s instructions page 45-10 Rev 0.

16. Vans Door Handle Mechanism. Vans 45-10 Steps 1-4.

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Step 1: Temporarily assemble the C-1006A Handle Plate, C-1006B & C-1006C Handle Pivots, C-1006D Handle Face Plate, C-1014 Handle Spur Gear, and WD-1022 Door Handle Assembly as shown in Figure 1. Align the edges of the handle plate, handle pivots, and handle face plate and match-drill #10 two places as shown in Figure 1. Remove the C-1006C Handle Pivot and the handle spur gear. Match-Drill #40 through the C-1006D Handle Face Plate, C-1006A Handle Plate, and C-1006B Handle Pivot four places as shown in Figure 1.

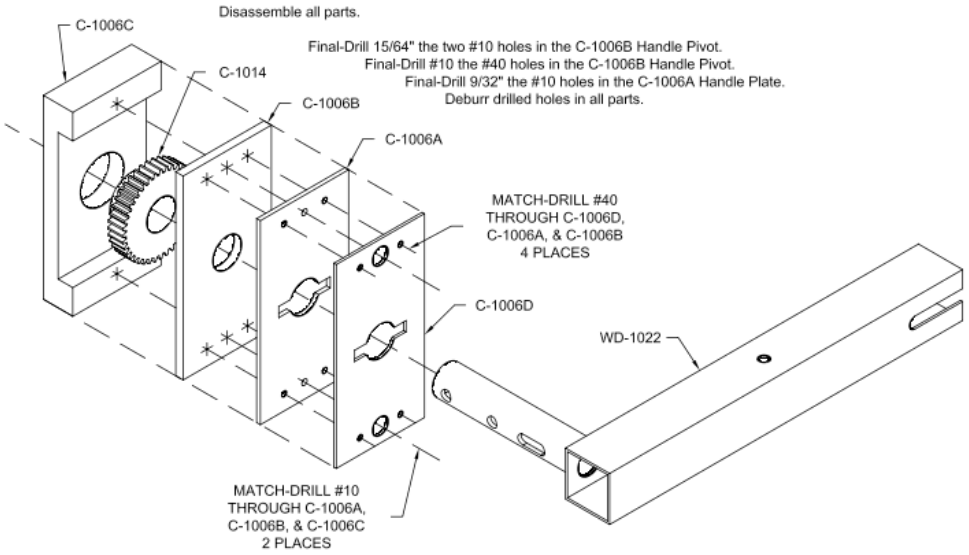


FIGURE 1: MATCH-DRILL HANDLE PLATES

Step 2: Rivet the C-1006A Handle Plate and C-1006D Handle Face Plate to each other and install nutplates as shown in Figure 2.

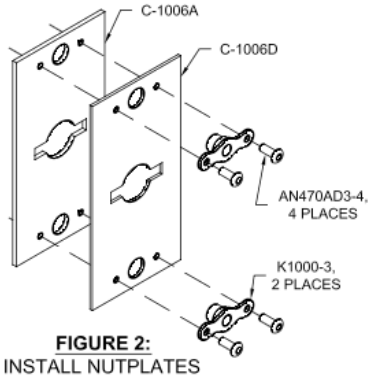


FIGURE 2:
INSTALL NUTPLATES

Step 3: Final-Drill and round the corners of the narrow end of each C-1008 Handle Lever as shown in Figure 3. Smooth all edges of the handle levers.

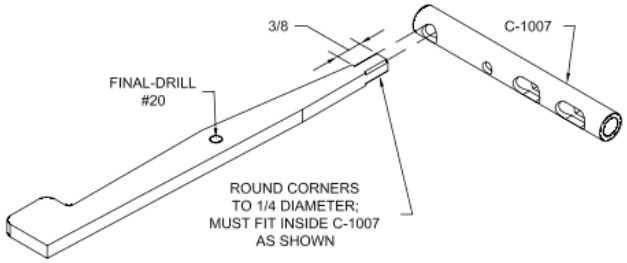


FIGURE 3: PREPARE HANDLE LEVER

Step 4: Install a nutplate on the WD-1022 Door Handle Assembly as shown in Figure 4. Install a nutplate on the remaining door handle assembly on the side opposite that shown in Figure 4.

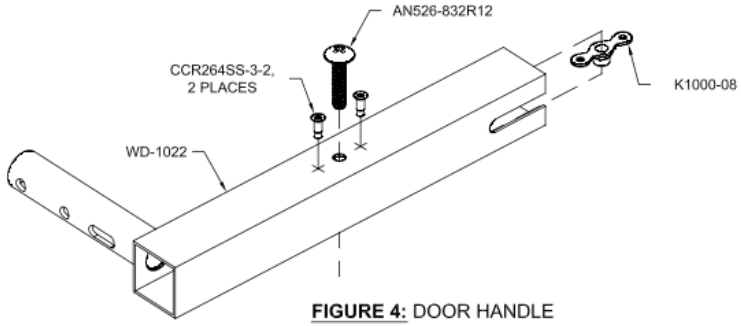


FIGURE 4: DOOR HANDLE
NUTPLATE INSTALLATION

17. Cut C-Racks. Vans 45-11 Step 1. SKIP. This is done later in Step #32.

18. Match Drill for Handle Mechanism. Vans 45-11 Steps 2-4. SKIP. Already done in #7

19. Preparing the Pushrods. PlaneAround 180 Door Latch Step 1.0-1.2. Skip to #20 if new installation.

    Step 1.0 Preparing the pushrods: If the door has been previously installed, you will need to remove the door, the inside handle mechanism and both Vans UHMW pin blocks. If door and pushrods have not been installed, skip to Step 1.3. See Figure M.

    Step 1.1 Remove the safety wire holding the pin on the pushrods to the rack gear joints.

    Step 1.2 Pull out both door pushrods.

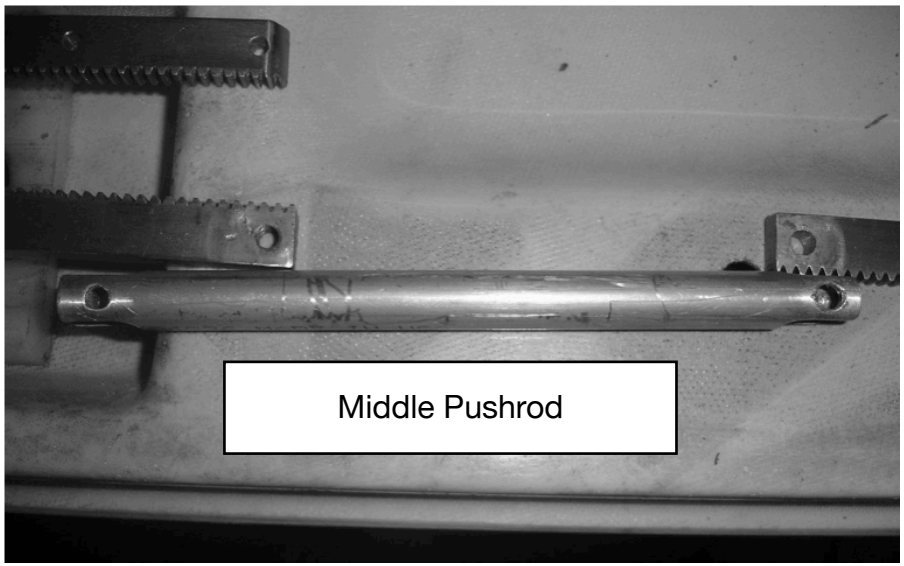
20. Find 5-5/8" Pushrod from PlaneAround kit. PlaneAround 180 Door Latch Step 1.3.

    Step 1.3 Find the 5-5/8 inch pushrod with side drilled lightening holes from the PlaneAround kit. This new push rod will be referred to as the "middle pushrod".

    See Figure A. The figure shows the same pushrod without lightening holes

    Note: You will use the same connection method for all joints on the pushrods which is pins and safety wire. However, leave the safety wire off until final assembly.

Figure A:



21. Connect Aft Pushrod (Vans) to Mid Rack from kit. PlaneAround 180 Door Latch Step 1.4.

Step 1.4 Connect the forward end of the aft pushrod to mid rack (labeled “mid rack” in the kit) lining up to the 1/8th inch holes. Use a clevis pin and safety wire per Van’s instructions. (See Van’s Figure 3 page 45-14 in Van’s instructions). The teeth of the mid rack gear will face down.

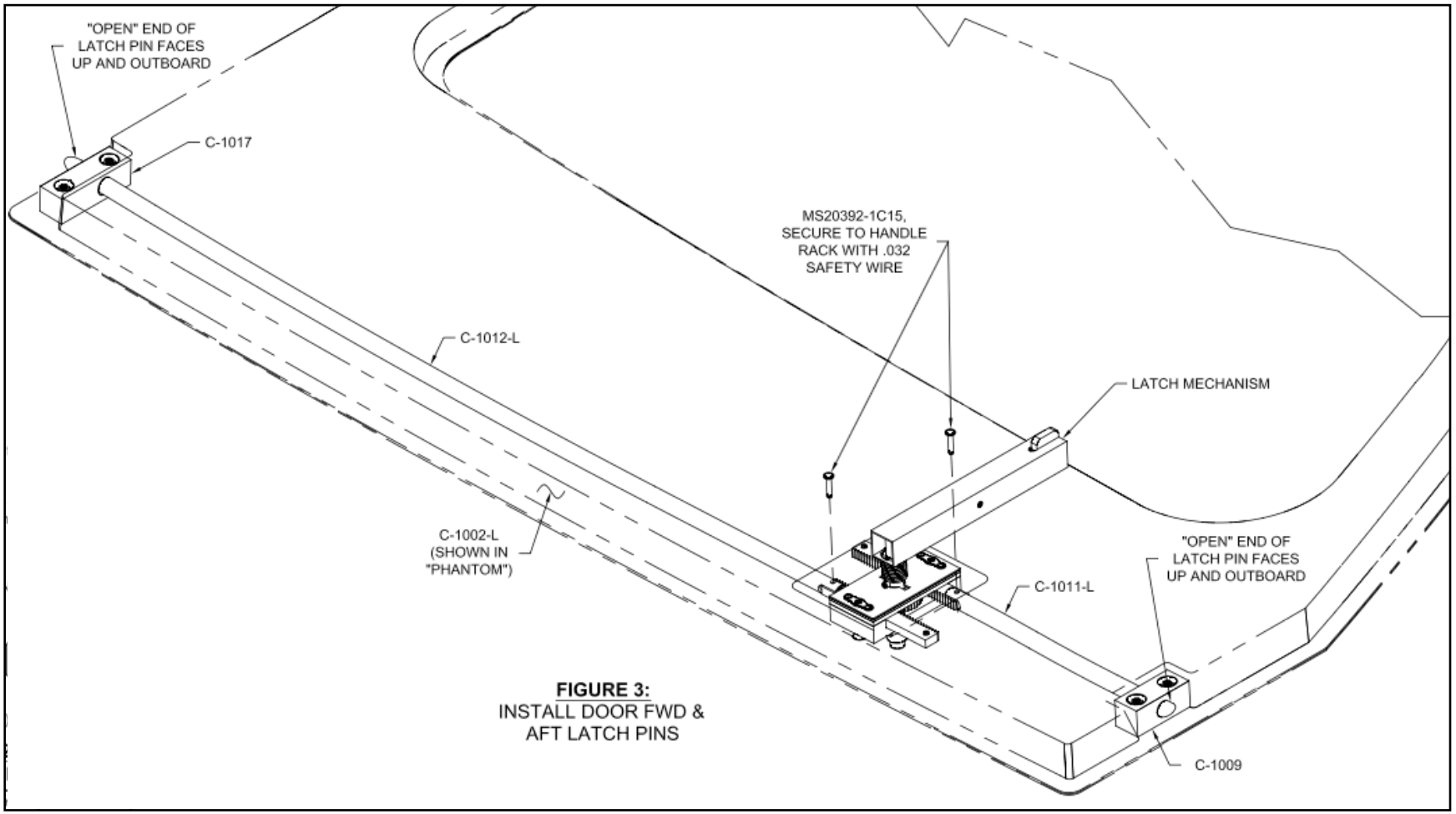


FIGURE 3:
INSTALL DOOR FWD & AFT LATCH PINS

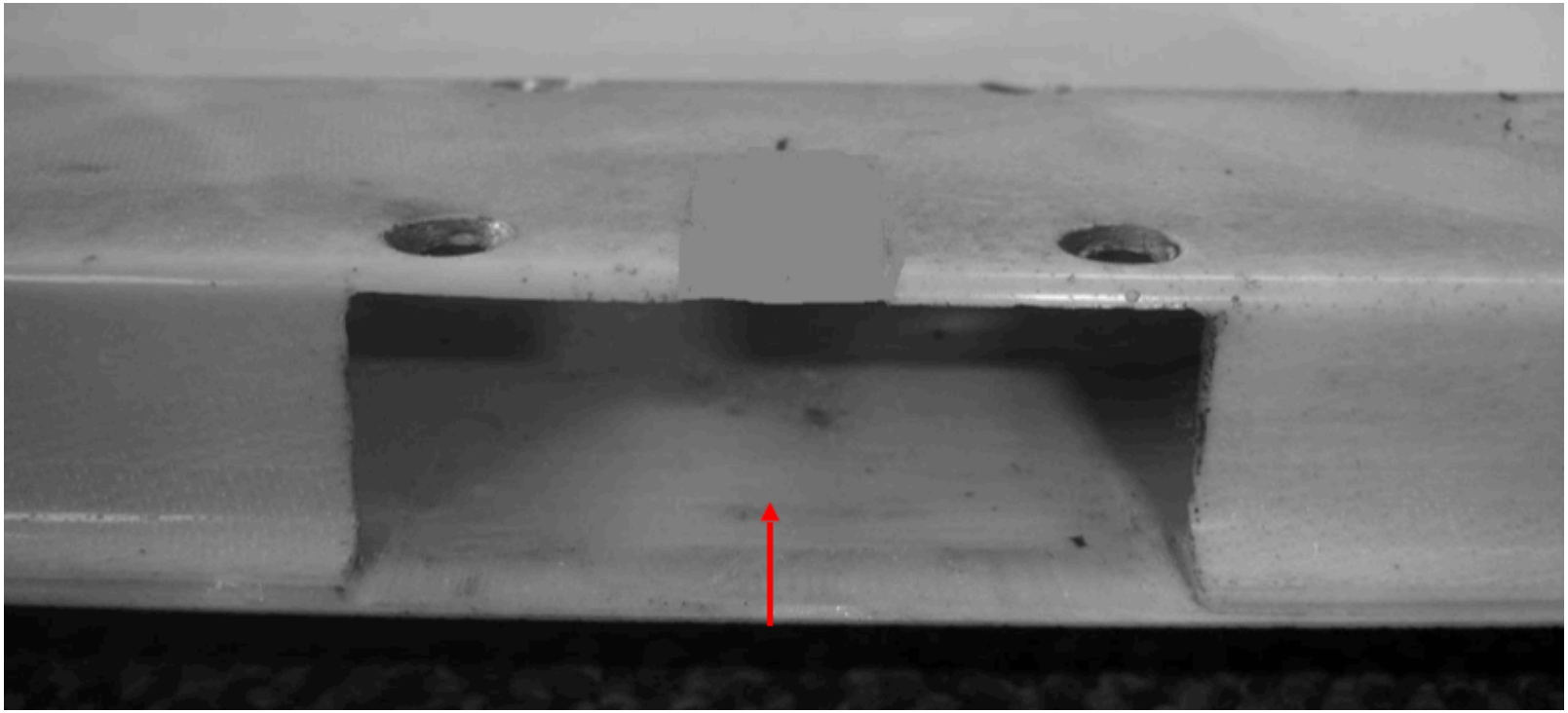
22. Prep Door and install Gearbox. PlaneAround 180 Door Latch Steps 2.1-2.7.

Step 2 Cutting slot for gearbox: Measuring from the interior front corner of the door, make a mark at 18-3/8 inch. This will be the center of the gearbox slot. See Figure B and C.

Figure B:

Step 22, continued.

Figure C:



Step 2.1 Cut a 13/16 inch by 2-3/16 inch slot on the bottom of your door centered on the 18-3/8 mark (just enough to slide in your gearbox against the interior skin). Do not cut into the exterior skins. See Figure C.

Step 2.2 Measuring from the interior skin, mark a center drill hole 29/32 inch up from the bottom of the door.

Step 22, continued.

Step 2.3 Using the mark from step 2.2, drill a 1/2 inch hole with a step drill for the shaft. Slot the fiberglass from the 1/2 inch hole to the bottom of the door to join the slot. Now you can see how the assembly will slide up in place. See Figure D & E.

Figure D:

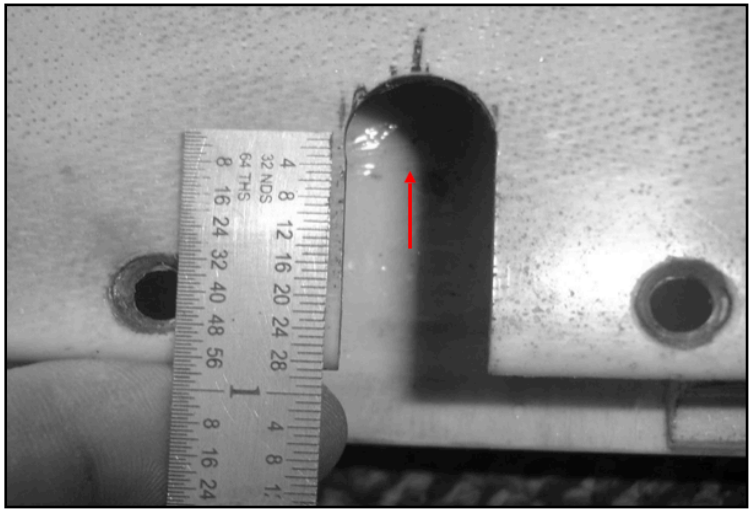
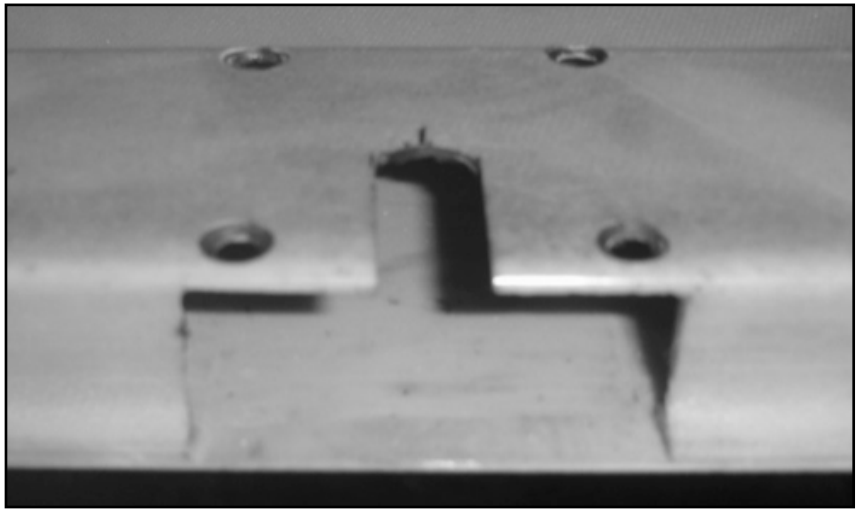


Figure E:



Step 2.4 Pull the top cover off of the gearbox and keep the shaft and gear in it. Clamp it in place over the mounting location to mark the new screw holes. Match drill #12 holes through the interior fiberglass using gold #12 clecos to keep in place as you drill. Be careful not to drill through the exterior skin

Step 2.5 Mix some structural epoxy/fiber mix and reinforce the inner joints of the slot on both sides and glue the structural fiberglass blocks (provided in the kit) into place: these should be as close to the bottom of the door as possible and out of the way so there is no interference when the pushrods are moving. Allow epoxy to dry completely before moving on to next steps.

Step 22, continued.

Note: Imagine the cam will be pulling in on the door in this area. If you adjust the cam too tight there may be undue stress on the door skins. Be careful not to leave any glue in the area where you will be sliding the gearbox back in. A file works great for relieving any tight corners. The bottom slot can be filled in or fiberglassed later to close up this slot and have a clean look. Keep in mind if you had to pull this assembly out in the future you would have to cut this area free to pull the gearbox out so build it up accordingly to your preference. Mine has been in for over 11+years with no trouble.

Step 2.6 Countersink the four holes on the interior skin for the included MS24694 screws

Step 2.7 Put the top cover back on the gearbox (removed in step 2.4). Slide in the gearbox and screw it in place. Delrin is a great material but don't over tighten the screws; Lock tight the screws.

23. Directed to Vans 45-12 to temporarily install Vans UHMW blocks. PlaneAround 180 Door Latch Step 4. PlaneAround 180 Door Latch Step 3 is done later at Step #26.

Step 4 Delrin door pin blocks: Follow Van's instructions on page 45-12 by temporarily installing the Van's UHMW door pin blocks and drilling the 7/16 holes and #12 mounting holes in the door.

24. Install Vans UHMW Door Pin Blocks. Vans 45-12 Steps 1-5.

NOTE: This is done temporarily in order to locate where match-drilling through door for block installation and door pins should be. PlaneAround Guides (aka blocks) installed later. Do not re-install Vans blocks at end of Vans Step 4.

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Step 1: Position the C-1009 Door Fwd Pin Block in the pocket in the C-1002-L Door as shown in Figures 1 and 3. Round the upper, aft, and lower outboard edges as required for the door fwd pin block to nest tightly against the door. The door forward pin block must not protrude beyond the forward "wall" of the door.

With the door fwd pin block held in place, match-drill #12 through the door using the holes in the door fwd pin block as drill guides.

Remove the door fwd pin block and mark "left" or "right" as appropriate.

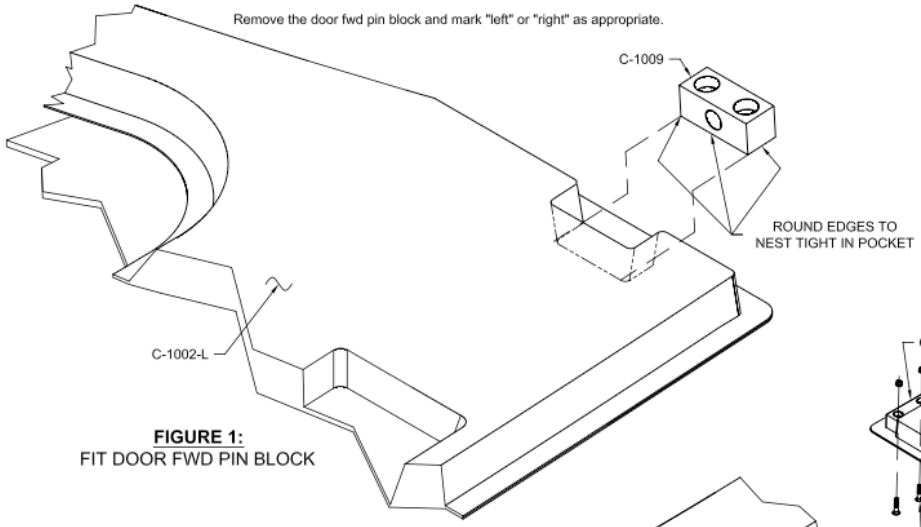

FIGURE 1:
FIT DOOR FWD PIN BLOCK

Step 2: Position the C-1017 Door Aft Pin Block in the pocket in the C-1002-L Door as shown in Figures 2 and 3. Round the upper and fwd outboard edges as required for the door aft pin block to nest tightly against the door.The aft pin block must not protrude beyond the aft "wall" of the door.

With the door aft pin block held in place, match-drill #12 through the door using the holes in the door aft pin block as drill guides.

Remove the door aft pin block and mark "left" or "right" as appropriate.

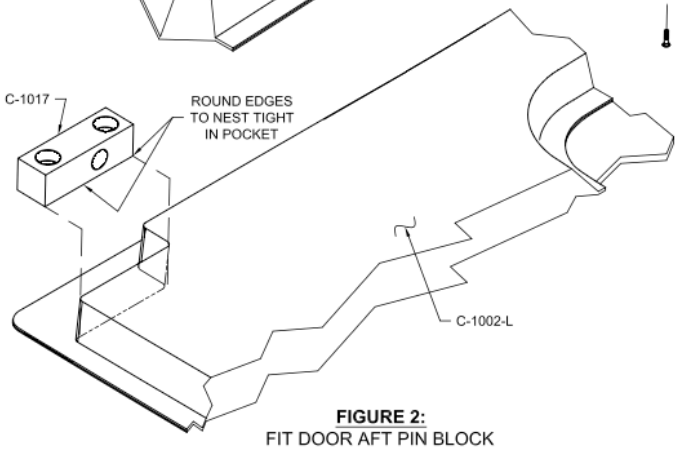

FIGURE 2:
FIT DOOR AFT PIN BLOCK

Step 3: Machine countersink the outer surfaces of the C-1002-L Door at all #12 holes (six places per door) to fit the head of an AN509-10 screw. It is better to under-countersink by .010 to .015 depth at this point in construction.

Step 4: Attach the C-1009 Door Fwd Pin Block and C-1017 Door Aft Pin Block to the C-1002-L Door as shown in Figure 3.

Match-Drill 7/16 into the "walls" of the door using the holes in the pin blocks as drill guides. Remove the fwd and aft pin blocks. Enlarge the 7/16 holes to 15/32 or 1/2.

Re-install the fwd and aft pin blocks.

Step 5: Repeat Steps 1 through 4 for the right side door.

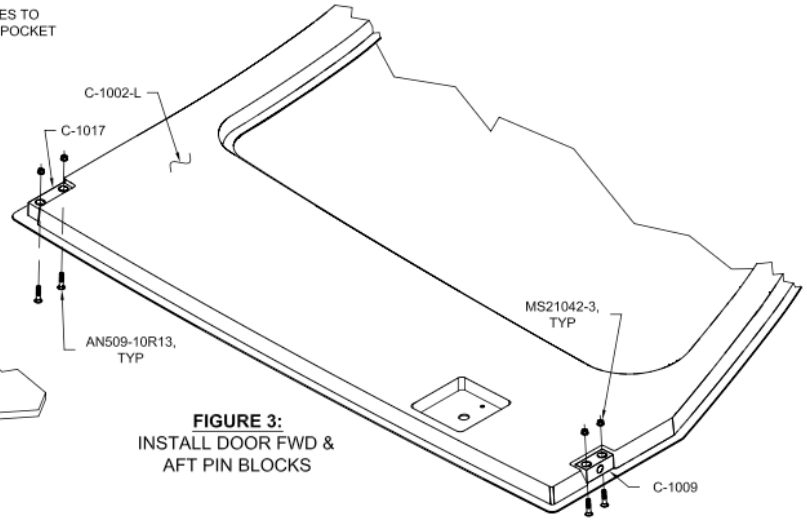

FIGURE 3:
INSTALL DOOR FWD & AFT PIN BLOCKS

PAGE 45-12 | RV-10 | REVISION: 1 | DATE: 09/07/06

25. Remove Vans UHMW Door Pin Blocks (if installed) and expand holes in Doors. PlaneAround 180 Door Latch Steps 4.1-4.2.

    Step 4.1 Remove the Van's UHMW blocks. Starting on the aft pin block open the 7/16 holes in the fiberglass door corners with a step drill to 11/16 inch or larger to accommodate the new pin blocks.

    NOTE: For Step 4.2, ensure you have the correct Door Pin Block in the correct location (fore and aft, left and right). Label blocks with tape until permanent installation once you have them sanded for a particular location.

    Step 4.2 The door pin blocks in the kit are a little oversized to fit the various built doors. After sanding the pin blocks to fit in the area, push it onto the 7/16 pushrod. Make sure all sides fit in the door for better sealing. Clamp the block in place and match drill #12 though door skins into the blocks. The blocks come counter-bored for the MS21042-3 nuts. Remove the Delrin pin blocks for the next steps.

26. Install Aft Pushrod. PlaneAround 180 Door Latch Step 3.

    Step 3 Installing the aft door pushrod: Start with the long aft pushrod connected to the mid rack with a pin and safety wire (from Step 1.4). From the aft pushrod opening in the door, look into the open hole and spot the opening in the gearbox that receives the middle rack. Remember to keep the teeth down while sliding in the pushrod. You can turn the cam shaft to help pull the middle rack through. It helps to have someone hold the door vertically and use gravity and the gearbox shaft to line up and pull the rack in.

27. Directed to Vans Handle Installation (45-13) except DO NOT cut racks per Vans instructions. This is done later in Step #32. PlaneAround 180 Door Latch Step 5

    Step 5 Handle assembly: Follow Van's instruction for handle installation except when they refer to cutting the racks. You will follow PlaneAround instructions for cutting racks which will be covered in the next step.

    Note. Here is a good time if you want to change the way your handle button locks. If you want it to lock in the open and closed position you don't have to change the roll pin. If you want to change it so it only locks in the closed latched position you will need to take the handle assembly apart and cut a 1/8 inch notch on one side of the C-1006A and C-1006D plates making it 1 inch total for the supplied 1 inch roll pin. Push the roll pin enough for it to lock only in the closed position.

28. Assemble and install Vans Inner Handle and Mechanism. Vans 45-13 Steps 1-2b. NOTE: Attaching of C-1014 Handle Spur Gear and roll pin will be done later in Step #29.

1-2b

2c

Step 29

Step 1: Secure the VA-197 Spring and C-1007 Handle Slide to the WD-1022 Door Handle Assembly with a roll pin as shown in Figure 1.

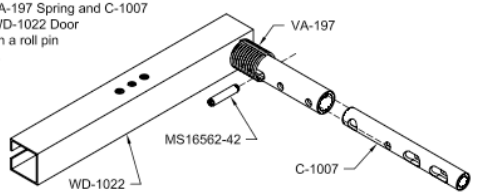

FIGURE 1: BEGIN LATCH MECHANISM ASSEMBLY

Step 2: Secure the C-1008 Handle Lever to the WD-1022 Door Handle Assembly with a screw as shown in Figure 2. When the handle lever is secured in place, the narrow end must engage the opening in the C-1007 Handle Slide as shown in Page 45-10, Figure 3.

Slide the C-1006D Handle Face Plate/C-1006A Handle Plate assembly and the C-1006B Handle Pivot onto the door handle assembly as shown in Figure 2.

Attach the C-1014 Handle Spur Gear to the door handle assembly using a roll pin as shown in Figure 2. The ends of the roll pin must be flush with the outside diameter of the handle spur gear.

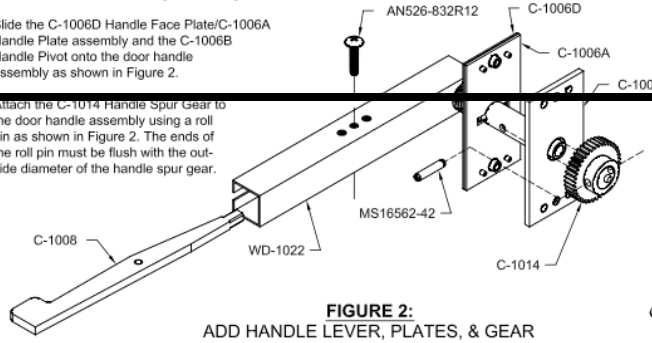

FIGURE 2:
ADD HANDLE LEVER, PLATES, & GEAR

NOTE: For the initial assembly of the Latch Mechanism shown in Figure 3 temporarily install the Rack Trimmings (see Page 45-11, Figure 1) rather than the handle racks.

Step 3: Place two Handle Racks on the C-1014 Handle Spur Gear as shown in Figure 3.

Slide the C-1006C Handle Pivot over the handle spur gear and handle racks as shown in Figure 3.

The assembly just created will subsequently be referred to as the Latch Mechanism.

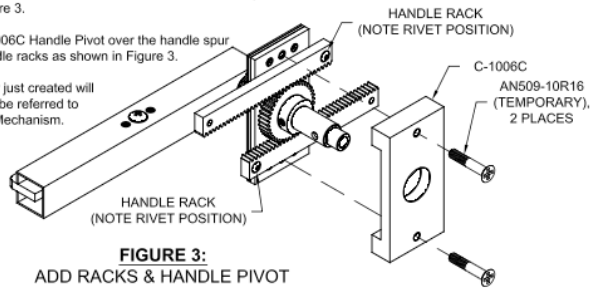

FIGURE 3:
ADD RACKS & HANDLE PIVOT

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Step 4: Attach the Latch Mechanism to the C-1002-L Door as shown in Figure 4.

Operate the latch mechanism so as to cause the Rack Trimmings to extend fore and aft from the latch mechanism and lightly contact the walls of the latch pocket.

Mark the walls of the latch pocket around the ends of the rack trimmings. Retract the rack trimmings and remove the latch mechanism from the door.

Drill 1/2 inch diameter (minimum) holes in the walls of the latch pocket. Temporarily re-attach the latch mechanism to the door and operate the latch mechanism. Check that the holes in the walls of the latch pocket will clear the ends of the rack trimmings. Enlarge the holes in the walls of the latch pocket if/as required to allow the ends of the rack trimmings to pass through with clearance of 1/16 to 1/8.

Remove the latch mechanism and replace the rack trimmings with the Handle Racks (created per Page 45-11, Step 1) as shown in Figure 3. Because of the size of the latch pocket in the door and the length of the handle racks, the latch mechanism must be assembled "in-position" in the latch pocket.

Step 5: Repeat the Latch Mechanism assembly (Steps 1 through 3) and installation (Step 4) for the right side door.

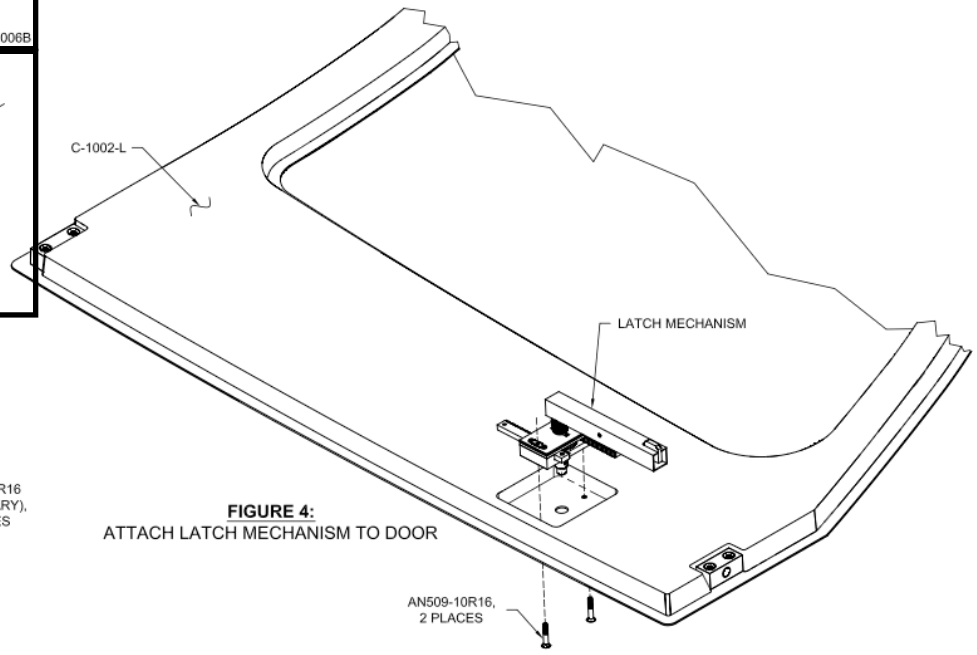
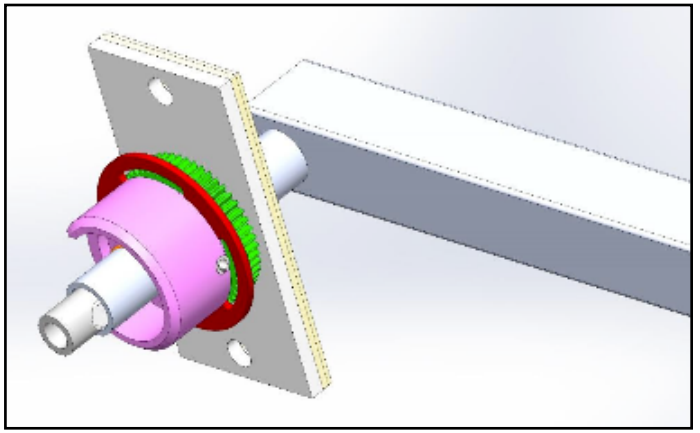


FIGURE 4:
ATTACH LATCH MECHANISM TO DOOR

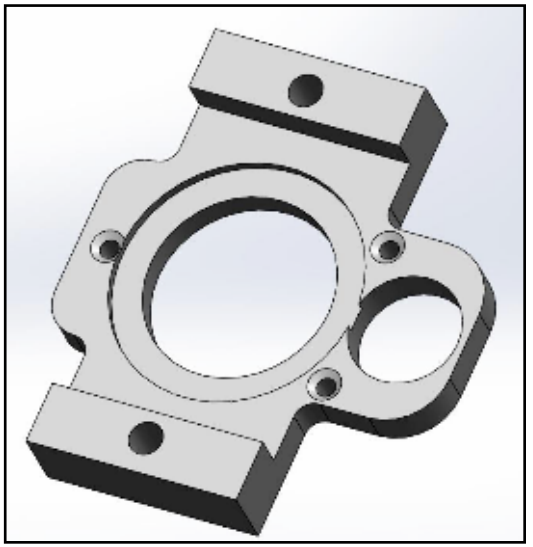
29. Add Aerosport Inner Ring and long Roll Pin. Vans 45-13 Step 2c and Aerosport Low Profile Handle Step 9.

9. New and Existing Install: Assemble the handle lever and latch mechanism as shown in Van's instructions page 45.13 Rev 1. With the exception of adding the inner ring and the large roll pin. The large roll pin replaces the original pin that holds the C-1014 gear in place. The new pin is installed in the same hole of the gear but also holds the inner ring to the gear. Ensure the outer edges of the pin do not protrude and polish as necessary. Polish the inside of the ring as needed to create a snug fit over the gear.



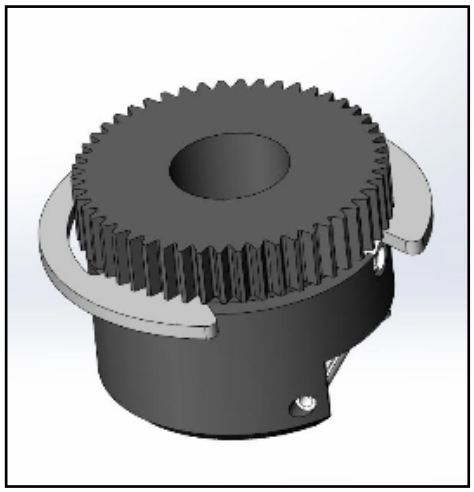
30. Countersink Delrin Block. NA if new Delrin Block (it comes with countersunk holes). Aerosport Low Profile Handle Step 10.

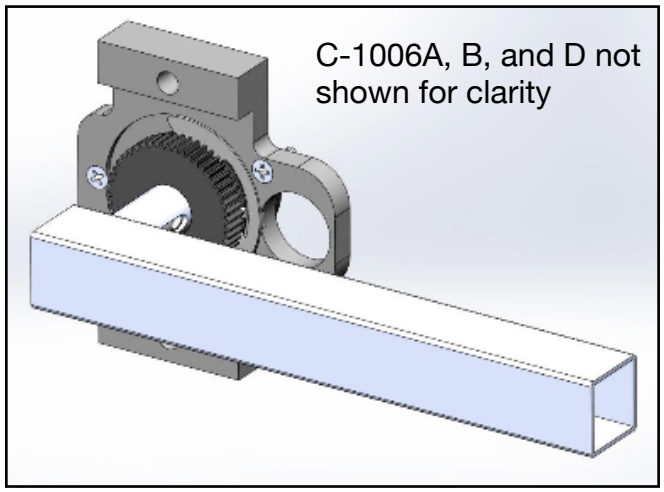
10. New and Existing Install: Countersink the three #4 holes by using a #30 countersink on the inboard face of the Delrin block as shown in the image [to the right].



31. Handle Assembly into Delrin Spacer and E-Ring. Aerosport Low Profile Handle Step 11.

    11. New and Existing Install: Slide the handle assembly into the delrin spacer and push the e-ring into the groove.





32. Cut Racks. PlaneAround 180 Door Latch Step 6.

    Step 6 Cutting the Van's supplied racks: Buying the new 180 kit requires you to cut the Van's supplied rack gears exactly in half. You will use 5 inches for the top handle rack and 5 inches for the bottom handle rack.

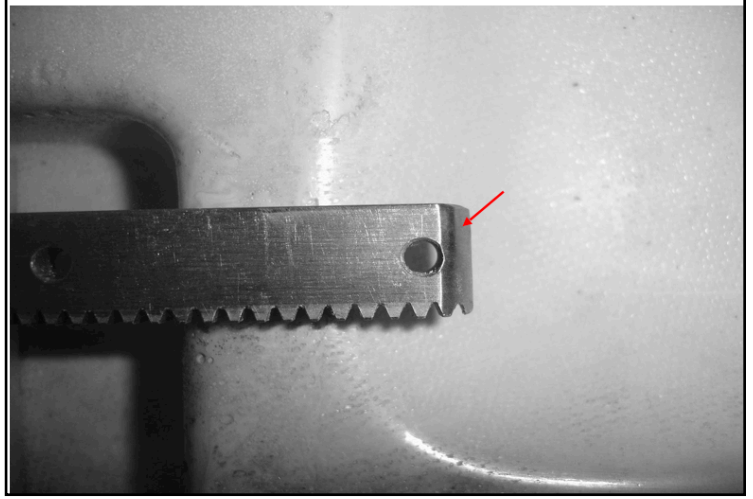
33. Rack preparation. PlaneAround 180 Door Latch Steps 6.1-6.2.

    Step 6.1 After you cut the racks in half make a 1/8 hole 3/16 inch from both of the new ends that were cut. On the top rack you will need to bevel the top of the new cut end so it won't interfere when the door is opened with the elbow cavity. See Figure F.

    Step 6.2 On the other rack you will need to install an LP4-3 on the forward end (*See Note below and* Vans instructions *[45-11 Fig 1 and 45-13 Fig 3]*). You will be using the rack with the riveted end first. The rack with the rivet will be called the lower handle rack and the beveled rack will be called the upper handle rack.

    NOTE: Do NOT instal LP4-3 rivet at this time. This is so that the racks will engage the handle mechanism during clocking.

Figure F:



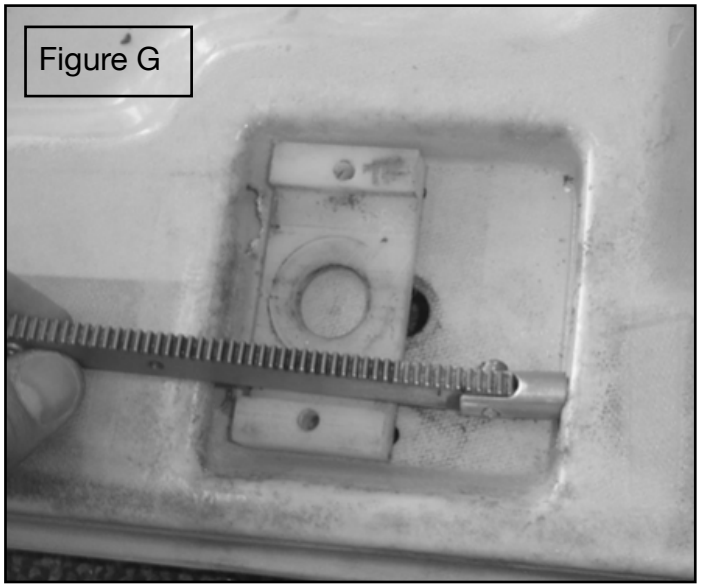
34. Push Rod preparation. PlaneAround 180 Door Latch Steps 7.0.

    Step 7 Installing middle and front pushrods: Join the lower handle rack with the middle pushrod, lining up the 1/8 inch holes, using a clevis pin and safety wire.

35. Slide Middle Pushrod Toward Gearbox.

    Step 7.1 Place the Vans UHMW handle block (Vans part # C-1006C) in the handle recess. Slide the middle pushrod toward the gearbox and place the middle pushrod and lower handle rack over the **Vans UHMW handle block**. See Figure G.

Figure G



36. Drill hole for Middle Pushrod-Mid Rack Pin

Step 7.2 Measure up 1-3/4 inch from the bottom of the interior skin and 2-9/16 from the front of the bottom slot. Drill a 3/8 inch hole. This hole will allow enough room to pin the assembly in the next step See Figure H.

Note: If preferred, you can fiberglass, fill or put a removable cap and upholster over this hole later.

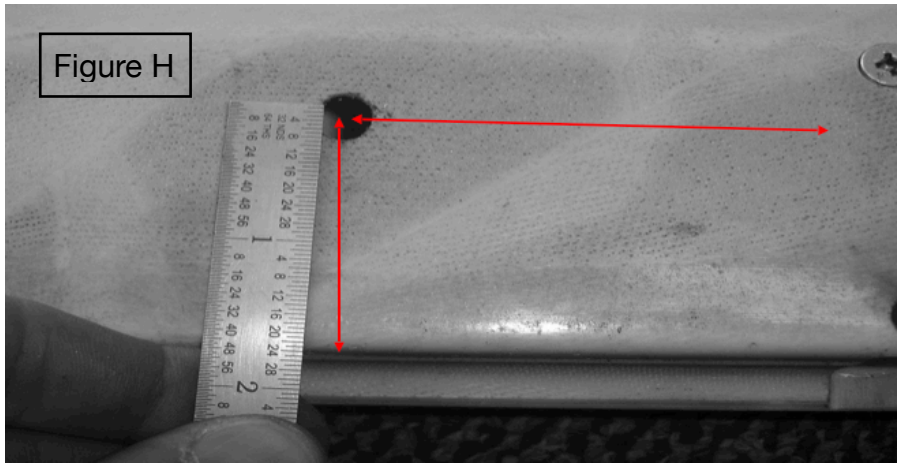


Figure H

37. Connect Middle Pushrod to Mid Rack

Step 7.3 While looking through the 3/8 inch hole, push or pull the aft pin and gear assembly to spot the 3/16 inch hole in the forward end of the middle rack. Once holes are aligned, join the middle pushrod with the middle rack using the quick release pin supplied in the kit. Once pin is in place, move the pushrod assembly as forward as possible so the pushrod is around a 1/16 from hitting the **Vans UHMW handle block.** See Figure I

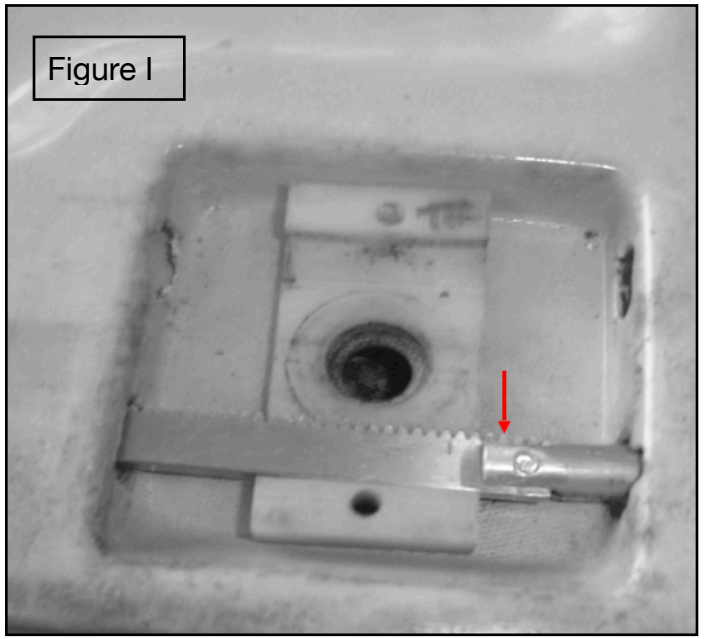


Figure I

38. Assemble and Install Vans Inner Handle and Mechanism. Skip. Do not install at this time.

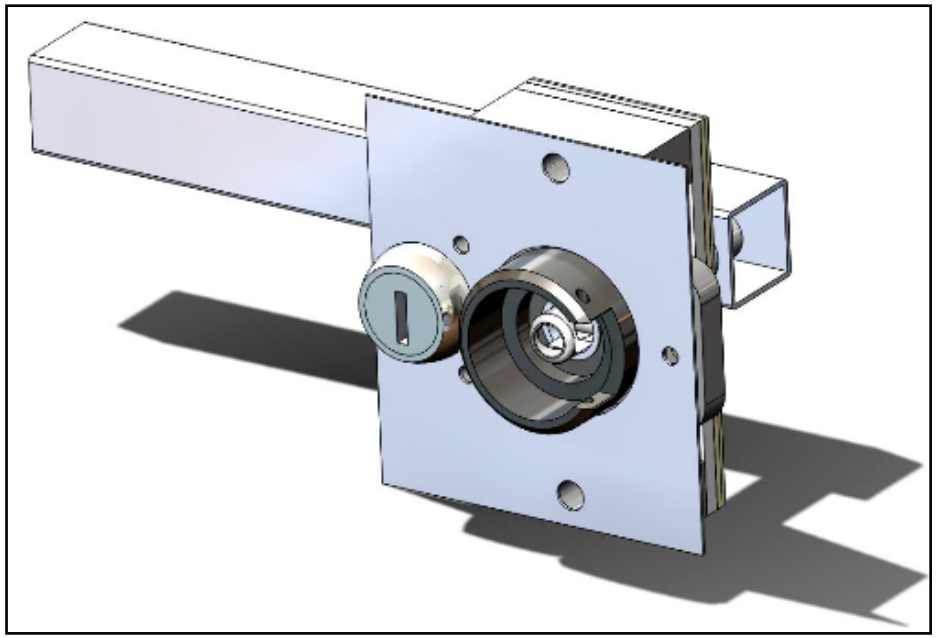
39. Drill and open rack clearance holes. Modification of Vans 45-13 Steps 3-5. Aerosport Low Profile Handle Step 6b.

NOTE: Vans instructions call for using the "Rack Trimmings" from cutting the Racks per their instructions. Since we did not cut them then, there are no "Trimmings." What I did here was to place the Latch Mechanism in the Latch Pocket, overlay the Racks (which were cut in #33), and mark the approximate edges of each clearance hole on the door. Then using a small drill bit, step drill, and Dremel grinding bit, drilled and expanded the clearance holes so there would be no conflict with the Racks. If you have the Aerosport Door Handle Cover, this pocket will be completely covered, so making the holes slightly larger does not pose an aesthetic problem.

Step 6(b). Also, opening the clearance holes of the racks will make installation easier. It is suggested to maximize the size of the holes for best clearance.

40. Strike Plate and Lock. Aerosport Low Profile Handle Step 12.

12. New and Existing Install: Align the strike plate in position. Place the lock into position and secure with nut supplied with the lock.

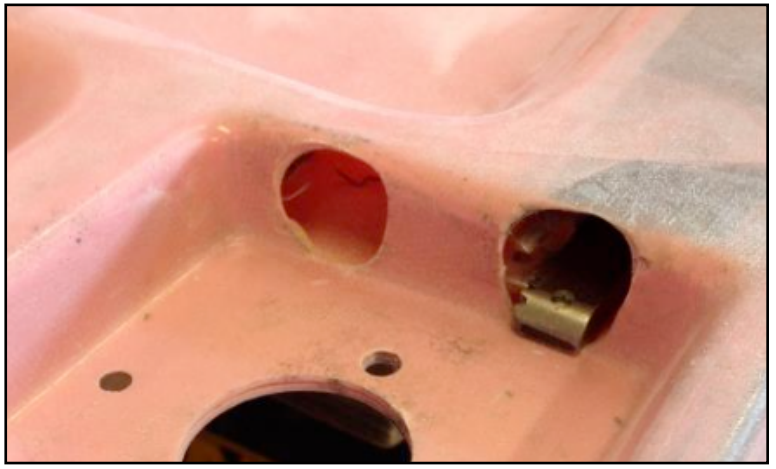


41. Ensure Rack Ends free and Forward Pin installed. Aerosport Low Profile Handle Step 13.

    13. New and Existing Install: Ensure the rack ends are free from the pop rivets or large burrs that would stop them from being inserted into the slot of the Delrin spacer and catch the gear. Once the final “timing” of the pin extension is perfected a pop rivet or other “stop” method can be installed if required/desired. Ensure the forward pin is installed in the door and that it’s rack clears the door pocket.

42. Slide Aft Rack into Clearance Hole. Aerosport Low Profile Handle Step 14.

    14. New and Existing Install: Slide the aft rack into its clearance hole (Note: the rack is removed from its pushrod). This will allow clearance to drop the handle into place and ease in its installation.

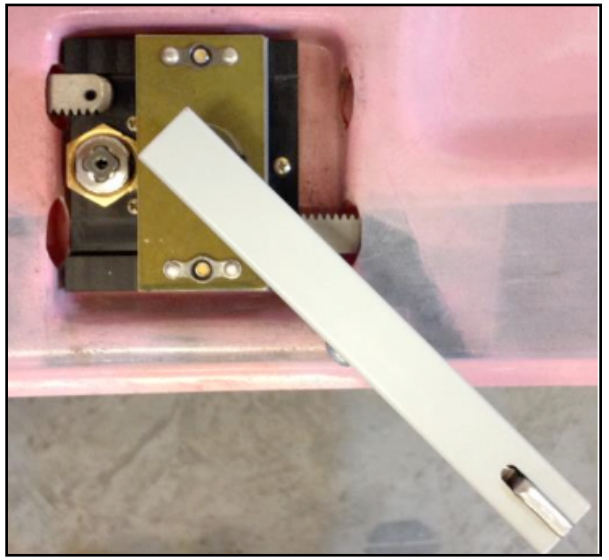


43. Connect Forward Pushrod to Upper Handle Rack. PlaneAround 180 Door Latch Step 7.4.

    Step 7.4 Connect the forward pushrod with the upper handle rack with the bevel facing the elbow cavity using the pin and safety wire method (see Step 1.4 note).

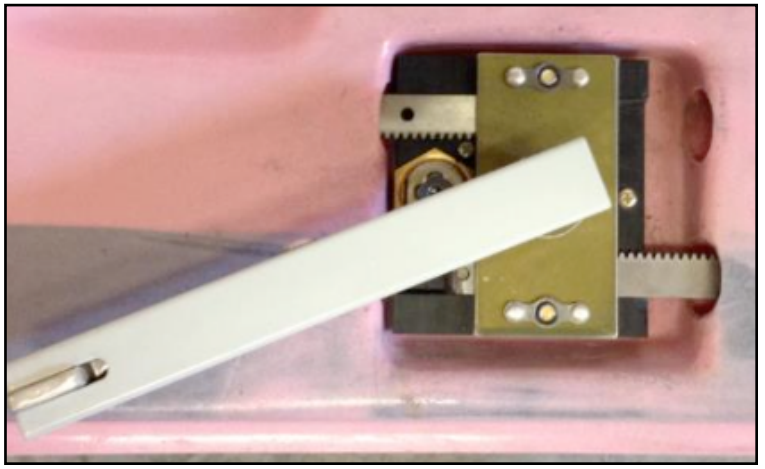
44. Place Handle in Pocket, place Upper and Lower Handle Racks. Screw Handle Assembly in place. Aerosport Low Profile Handle Step 15

15. New and Existing Install: Place the handle in the pocket. Screw the handle into place using the #10 screws as shown in Van's instructions. Before fully tightening the handle installation screws install the outer ring with all three 4-40 screws to ensure proper alignment of the handle and then lightly tighten the screws until the installation is complete. Lift the forward *[upper]* rack out of the clearance hole and leave it resting on the Delrin block as shown. Pull the aft *[lower]* rack out of it's clearance hole, and with the handle placed in the angle shown below, push the *[lower]* rack into the handle while turning the handle clockwise engaging the lower rack.



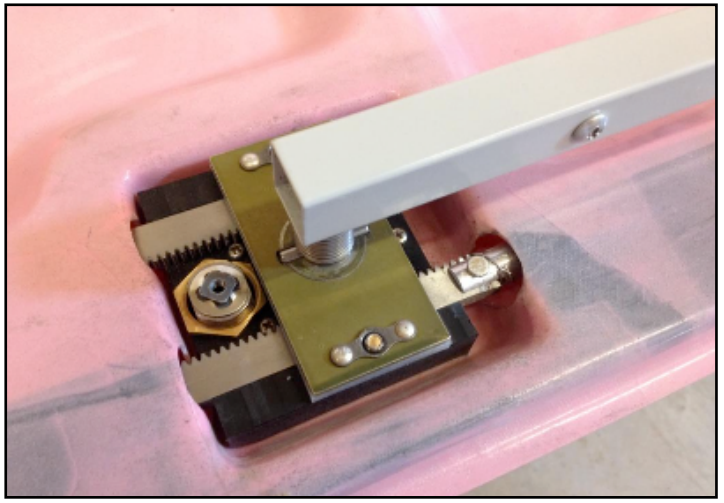
45. Engage Forward (Upper) Rack. Aerosport Low Profile Handle Step 16.

16. New and Existing Install: Rotate the handle to the position shown and engage the forward rack. Continue rotating pulling the rack through.



46. Pin into Lower Rack, test timing. Aerosport Low Profile Door Handle Step 17.

    17. New and Existing Install: Fully rotate the handle and insert the pin through the lower rack into the pushrod. Secure with safety wire as desired. Test the timing of the handle and when it extends and retracts the pins. Slight adjustments may be necessary and can be accomplished by changing the angle of the handle when the racks are engaged.



47. Upper and Lower Rack Timing. PlaneAround 180 Door Latch Step 7.5. Skip.

48. Pushrod protrusion and deburring. PlaneAround 180 Door Latch Step 8.

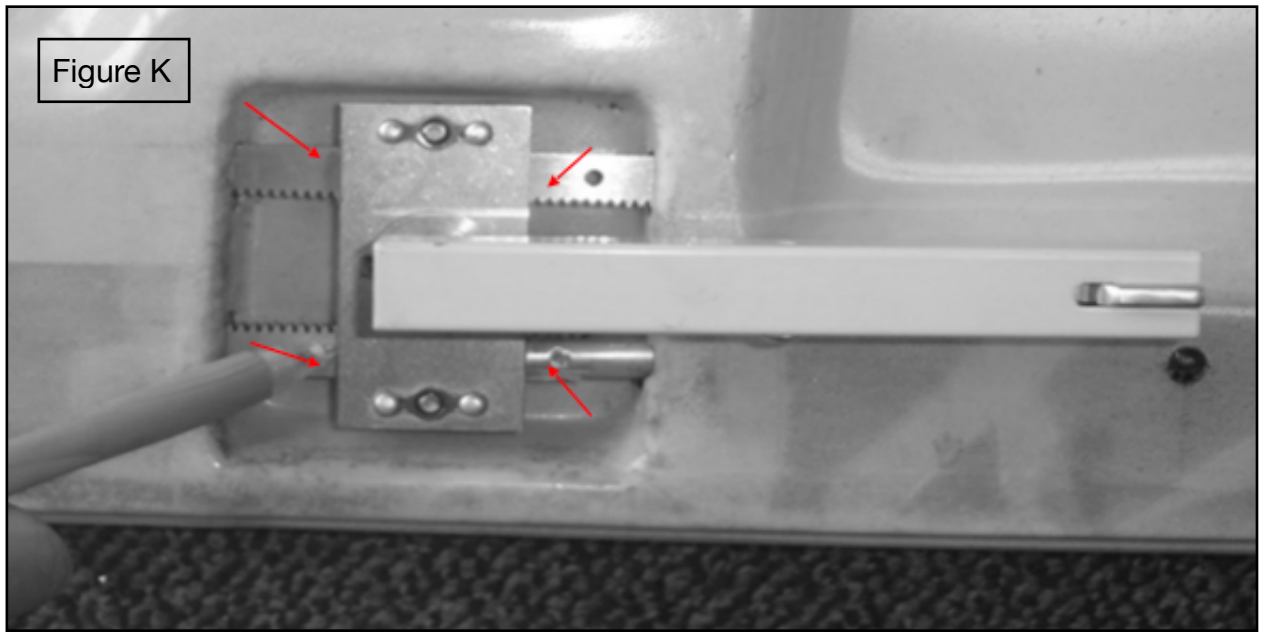
    Step 8 Timing: Move the handle to the forward locked position. The pushrods should protrude further from the door. Make sure the ends of the pushrods are smooth and de-burred for the pin blocks even though we will be cutting them again.

49. Bolt Delrin Door Pin Blocks in place. PlaneAround 180 Door Latch Step 8.1.

    Step 8.1 Slide the Delrin door pin blocks over the pushrods and bolt in place. Mark the pushrods where they exit the Delrin blocks in the forward locked position. Be sure to mark the pushrods with something that won't rub off easily.

50. Mark Rack Gears. PlaneAround 180 Door Latch Step 8.2.

Step 8.2 Move the handle in the aft position parallel to the bottom of the door. Mark the handle rack gears at the Vans UHMW handle block where they enter. This will help timing during reassembly. See Figure K.



51. Remove Door Pin Blocks, Handle Assembly, and Pushrods. PlaneAround 180 Door Latch Step 8.3.

Step 8.3 Take off the door pin blocks and remove handle assembly. Remove forward pushrod; remove quick release pin from 3/8 inch hole and remove aft pushrod.

Note: Twisting the cam shaft will help with the removal.

52. Install Magnets into Pins. PlaneAround Angled Pins and Delrin Guide paragraph 1.

Para.1. With the angled pins you need to know a few things. The inside of the stainless pins are hollow with a solid end. This allows you to use Vans' proximity switch kit which is supplied with your finish kit. You just drop some epoxy down into the pin and then drop the magnet in place. Try to clean the glue off the threads with a tap. Let dry. The magnetic switches will work the same as Vans intended. After the glue dries you can screw in the set screw.

53. Cut Pushrods. PlaneAround Angled Pins and Delrin Guide paragraph 2 and 180 Door Latch Step 8.4.

Para.2. The pins are two inches long so cut your pushrods accordingly.

Step 8.4 If you are using PlaneAround pins and pin guides you will need to measure 3/8 inches inside the mark made in Step 8.1 and cut the pushrods. Repeat this step for both aft and forward pushrods.

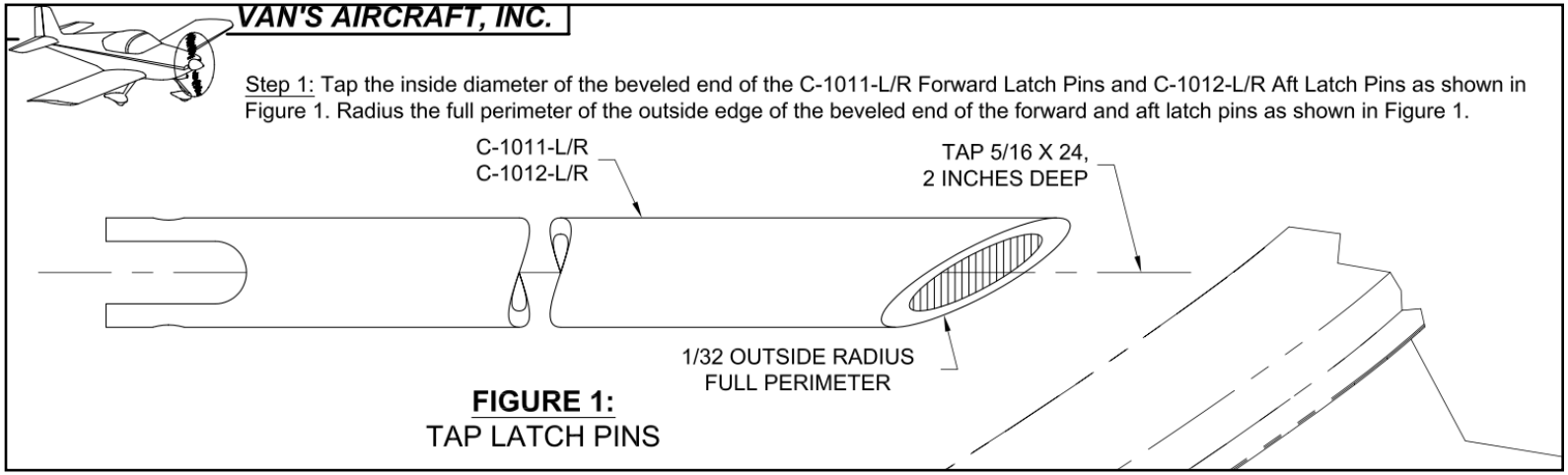
Note: This will leave 1-5/8 inch of pin extending out of the door when door is latched. PlaneAround door pins are 2 inches.

Note: If using Vans pushrods with no pins, you will measure 1-5/8 inch out from the mark made in Step 8.1 and cut the pushrods. Re-bevel the pushrod ends to mimic Vans original design.

Note: If using other manufactured pins, make sure you have at least 1-1/4 inch extension in the closed latch position.

54. Tap Pushrods. Vans 45-14 Step 1, PlaneAround 180 Door Latch Step 8.5, and Angled Pins and Delrin Guide paragraph 2.

Vans 45-14 Step 1. Tap the inside diameter of the ~~beveled~~ end of the C-1011-L/R Forward Latch Pins and C-1012-L/R Aft Latch Pins as shown in Figure 1. *NOTE: Vans Figure 1 shows beveled end. This was removed in previous step. Follow Vans instructions regarding the part numbers and tap instructions.*



Step 8.5 If using PlaneAround door pins, thread the ends of the pushrods 5/16-24 at least one inch deep. Use some thread lock and screw in pins *(NOTE: wait to use thread lock until after test fitting)*. Make sure to clock the pins in the right orientation if using the angled pins. See pin and guide instructions.

Paragraph 2. Tap the end of the pushrod for the set screw and pin to be used.

55. Create two “pointers”. Vans 45-14 Step 2.

Step 2: Create two "pointers" from hardware store bolts as shown in Figure 2.

The point can easily be made concentric to the threads by using an electric drill motor and grinding the end while turning the bolt in the drill.

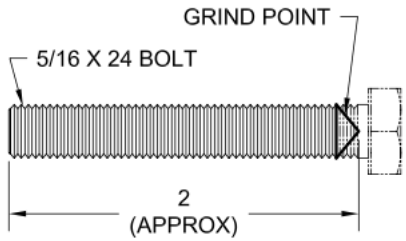


FIGURE 2:
FABRICATE POINTERS

56. Test fit Aft Pin on the Pushrods and install. Vans 45-14 Step 3, PlaneAround 180 Door Latch Step 9, and PlaneAround Angled Pins and Delrin Guide paragraph 2.

Step 3: Establish proper orientation of the C-1012 Aft Latch Pins. See Figure 3 (next page).

Bend the aft latch pin to match the contour of the door lower edge. The goal of the bending is to have the forward end of the aft latch pin parallel to the lower Handle Rack while the aft end of the aft latch pin is parallel to the hole in the C-1017 Door Aft Pin Block

Insert the aft latch pin into the door through the door aft pin block and attach it to the lower handle rack using the hardware shown in Figure 3 (next page).

Step 9 Reassembling the door: Insert the aft pushrod assembly through the aft pushrod hole and slide through gearbox assembly (See Step 3)

Paragraph 2. When the pushrods are cut the right length for the pins you can test fit the pins on the pushrods using the supplied 5/16-24 set screw. If the pin bottoms out in the wrong “clocked” position, you will need to lightly file down the end of the pushrod until it seats or clocks in the correct direction which is OUT and UP from the fuselage. This way it will pull the door down and in as it closes. This is an easy process and only take a few tries. Just make sure you lightly sand it and try again. If you sand too much you have to sand enough to turn it all the way around again. After testing your door you can use Loctite to glue it in place on both ends of the set screw.

Step 3: Establish proper orientation of the C-1012-L Aft Latch Pin. See Figure 3.

Bend the aft latch pin to match the contour of the door lower edge. The goal of the bending is to have the forward end of the aft latch pin parallel to the lower Handle Rack while the aft end of the aft latch pin is parallel to the hole in the C-1017 Door Aft Pin Block.

Insert the aft latch pin into the door through the door aft pin block and attach it to the lower handle rack using the hardware shown in Figure 3.

Step 4: Establish proper orientation of the C-1011-L Fwd Latch Pin. See Figure 3.

Bend the fwd latch pin to match the contour of the door lower edge. The goal of the bending is to have the aft end of the fwd latch pin parallel to the upper Handle Rack while the forward end of the fwd latch pin is parallel to the hole in the C-1009 Door Fwd Pin Block.

Insert the fwd latch pin into the door through the door fwd pin block and attach it to the upper handle rack using the hardware shown in Figure 3.

Step 5: Attach the door to the fuselage.

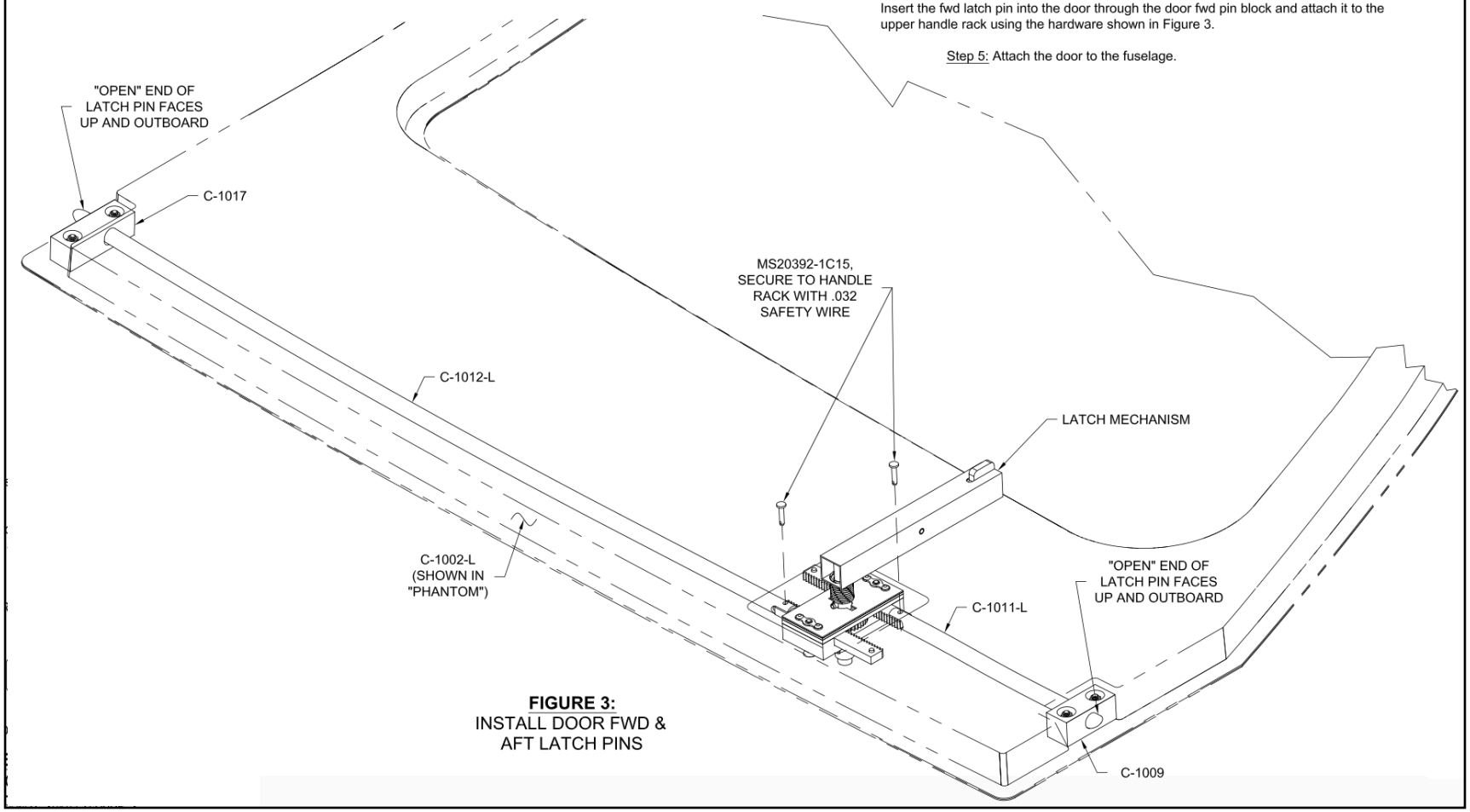


FIGURE 3:
INSTALL DOOR FWD & AFT LATCH PINS

57. Install Middle Pushrod. PlaneAround 180 Door Latch Step 9.1.

    Step 9.1 While looking through the 3/8 inch hole, push or pull the aft pin and gear assembly to spot the 3/16 inch hole in the forward end of the middle rack. Once holes are aligned, join the middle pushrod with the middle rack using the quick release pin supplied in the kit. If you want use .020 safety wire to wrap around the head of the pin, push the pin in to join the pushrod and the rack and feed the safety wire towards the handle hole then wrap around the pushrod and feed back to the 3/8" hole, twist the safety wire and pigtail. This will hold the pin in if for some reason the spring ball fell out. Haven't heard of this happening but up to the builder.

58. Establish Fwd Pin orientation and install Fwd Pushrod Assembly. Vans 45-14 Step 4, PlaneAround 180 Door Latch Step 9.2.

    Establish proper orientation of the C-1011 Fwd Latch Pins. See Figure 3 (previous page).

    Bend the fwd latch pin to match the contour of the door lower edge. The goal of the being is to have the aft end of the fwd latch pin parallel to the upper Handle Rack while the forward end of the fwd latch pin is parallel to the hole in the C-1009 Door Fwd Pin Block.
    Insert he fwd itch pin into the door through the door fwd pin block and attach it to the upper handle rack using the hardware shown in Figure 3.

    Step 9.2 Insert forward pushrod assembly through the forward pushrod hole and align the marks from Step 8.2 on the handle rack gears to the **Vans UHMW handle block.**

59. Remount Door Handle Assembly. PlaneAround 180 Door Latch Step 9.3.

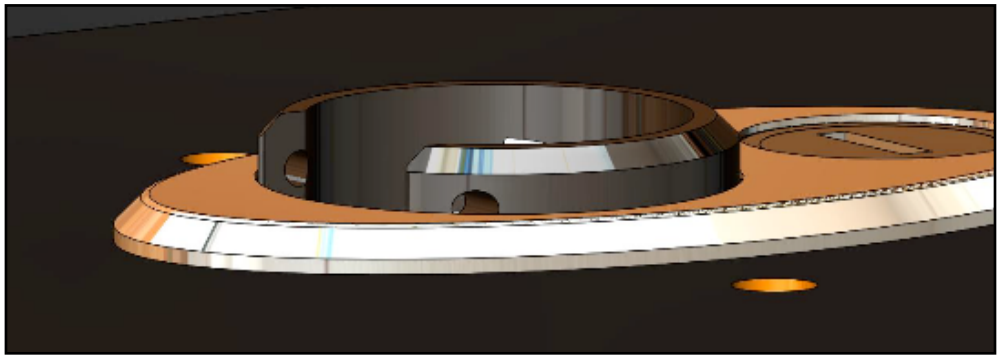
    Step 9.3 Take door handle assembly and place it in the aft open position and permanently remount the handle.

60. Reinstall Delrin Pin Blocks. PlaneAround 180 Door Latch Step 9.4.

    Step 9.4 Reinstall Delrin pin blocks.

61. Check Handle Attach pin hole. Aerosport Low Profile Handle Step 18.

18. New and Existing Install: Flip the door over and check to see if the handle attach pin hole in the inner ring clears the outer ring. Tighten the outer ring screws to compress the door skin for maximum clearance. For thick doors, as shown in the image below, the hole will not sit above the outer ring and therefore does not clear it. You must remove the outer ring at this point. For thin doors the hole will clear (sit above the outer ring) and you can proceed without removing the ring.

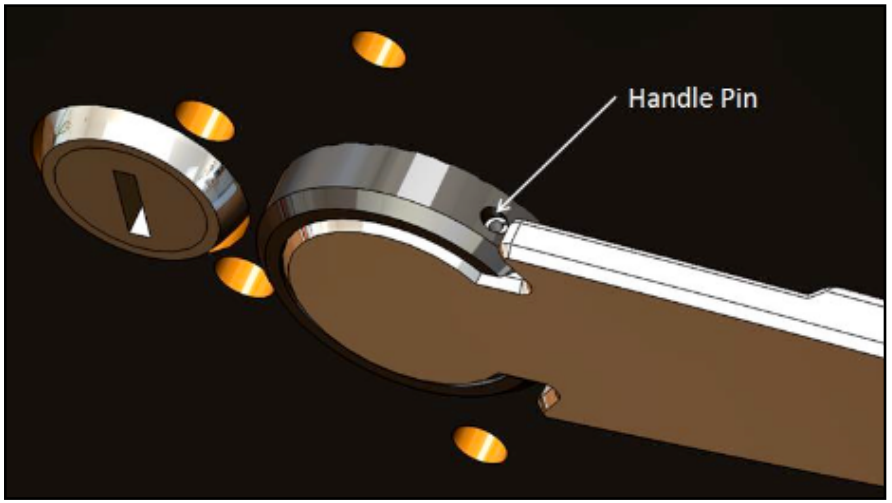


62. Insert conical Spring. Aerosport Low Profile Handle Step 19.

19. New and Existing Install: Place the conical spring into position on the outside of the door. NOTE: For thick doors the ring will be removed at this point.

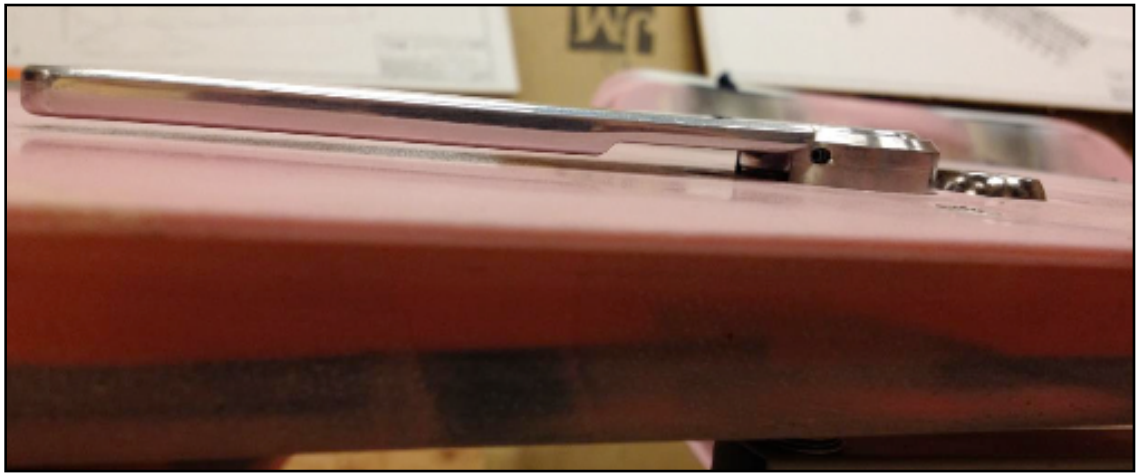
63. Pin Handle into place. Aerosport Low Profile Handle Step 20.

20. New and Existing Install: Place the handle into position and carefully tap the pin into place. Note: Extra pins are included in the kit for fitting purposes. It is recommended to polish the “fitting” pins down until they slide into the holes with a gentle tap. You can polish them down by chucking them into a drill and spinning the pin while running it along a deburr wheel. Note: For thin doors the outer ring would still be installed and you must carefully install the pin without scratching or marring the outer ring.



64. Check Handle parallel to Door. Aerosport Low Profile Door Handle Step 21.

21. New and Existing Install: Check that the handle rests parallel to the door. If it is sticking out away from the door the boss on the bottom of the handle may need to be lightly sanded to reduce its height and therefore the angle of the handle. Use caution as a very small amount of removed material will dramatically change the angle of the handle.

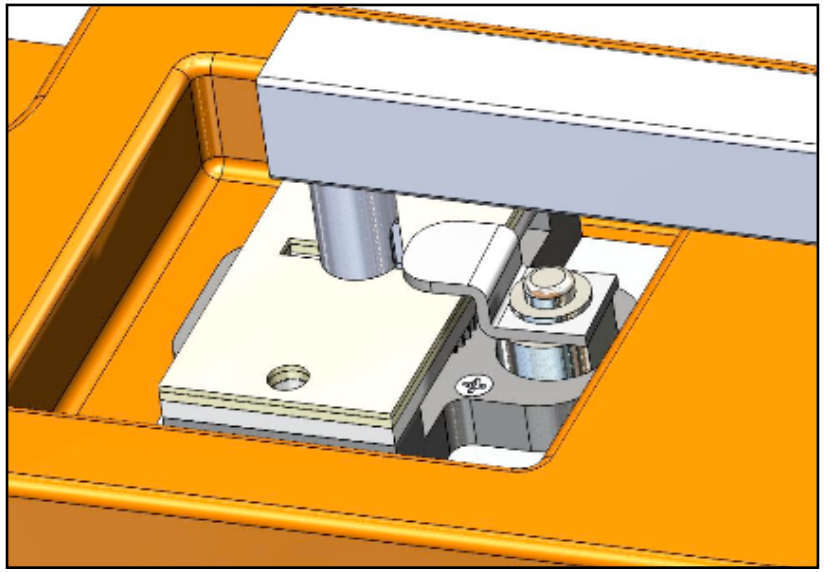


65. For thick doors: Install Outer Ring if not done earlier. Aerosport Low Profile Handle Step 22.

22. New and Existing Install: Push the head of the handle to cause it to pull away from the door skin. Then carefully slide the outer ring into position. The chamfers on the back of the ring will allow extra clearance to aid in aligning the ring into position. Note: Sliding the ring into position along the thin edge and then turning into position at the end will aid in the installation as well. Reinstall the 4-40 screws into the outer ring. This step can be skipped for thin doors that the outer ring is already in place.

66. Insert Lock Cam. Aerosport Low Profile Handle Step 23.

23. New and Existing Install: Once the handle is installed, and in its final position, install the cam on the lock and ensure proper operation of the lock. Adjust the angle of the cam tab as needed. The intent of the lock cam is to restrain the pin from disengaging from its slot. If the pin can't come out of the slot, the doors cannot be opened.



Final Aerosport Low Profile Handle note. This completes the installation. I hope you enjoy your handles and the security and beauty they bring to your airplane!

NOTE. This is the end of the Aerosport Low Profile Handle Instructions.

67. Install Door on airplane. Vans 45-14 Step 5, PlaneAround 180 Door Latch Step 9.5.

    45-14 Step 5. Attach the door to the fuselage.

    Step 9.5. Hinge the door on the airplane

68. Install Vans Cabin Pin Blocks. Vans 45-15 Steps 1-3. SKIP. PlaneAround Block installed next step.

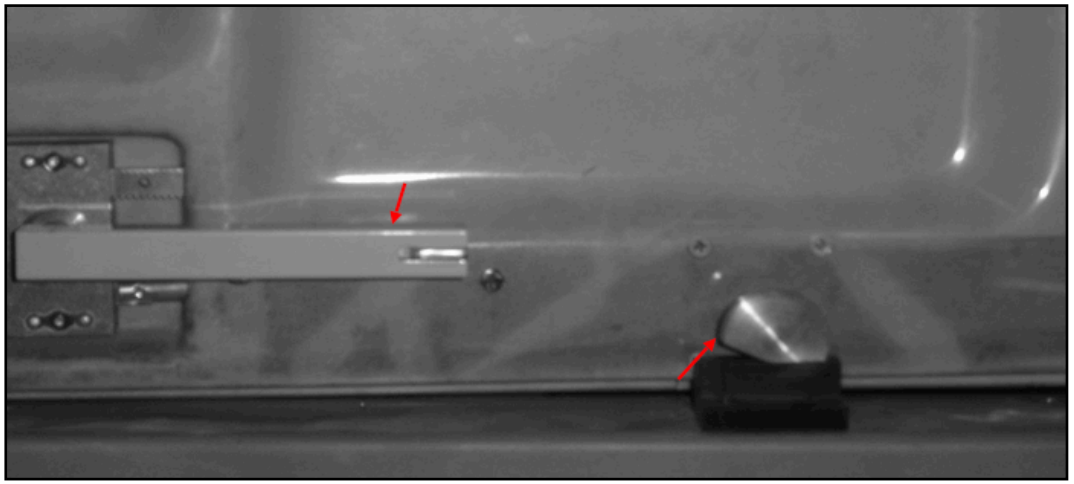
69. Sand and install PlaneAround Cabin Pin Blocks. PlaneAround Angled Pins and Delrin Guides paragraph 3.

    Para.3. The guides supplied have the same bolt pattern as the original Vans blocks. Sand the bottom of the guides to fit nicely against the fiberglass cabin door opening. The best results are when the guides center the door in place. If they hold the door in place, the door can't shift fore nor aft. There will always be one pushrod which has a little more friction than the other. That makes the door shift fore or aft if the door is not capture without play between the two guides. This is why the guides are thicker than needed. You need to sand them for YOUR specific opening.

70. Install Cam. PlaneAround 180 Door Latch Step 10.0

    Step 10 Fitting the cam and door block:
    Push the PlaneAround cam over the cam shaft while the door is closed and the handle is in the open position. Set the cam so the bottom is parallel to the cabin door lip (See Figure L) shut the door and check rotation of the cam.

    NOTE: Depending on your trim, it may be desirable to wait on Steps 70-75 until after interior trim is installed



71. Finalize Cabin Block placement and clamp Delrin Block onto preferred location. PlaneAround 180 Door Latch Step 10.1.

    Step 10.1 The cabin block position is up to the builder depending on your configuration such as armrests, upholstery, cabin lip thickness and seal thickness. Some cabin lips may need to be modified due to variables in construction and thickness. Once you decide on your cabin block location, clamp the Delrin block onto preferred cabin location.

72. Temporarily install Cam. PlaneAround 180 Door Latch Step 10.2.

    Step 10.2 Temporarily install the cam and tighten set screw. Adjust the location of the cam on the shaft as necessary while pushing in on the middle of the door while latched closed. You will want to check the middle exterior of the door to make sure it is flush to the aircraft skin.

    Note: There is a lot of mechanical advantage with this cam. you can easily put too much force on the door; don't overdo it. Too much force could separate door skins at the gearbox location.

73. Mark Cam location. PlaneAround 180 Door Latch Step 10.3.

    Step 10.3 Once satisfied with cam and door block location mark the cam shaft where it extends out of the cam. Cut shaft at marked location and deburr.

74. Permanently install Cam. PlaneAround 180 Door Latch Step 10.4.

    Step 10.4 Permanently install the cam by drilling 1/8th inch hole through the cam pilot hole, through the shaft and out the other side of the cam. Make sure to drill straight and parallel. Push the supplied 1/8th inch roll pin through the new hole.

    Note: Vice grips with no teeth or soft teeth work well for inserting roll pin.

75. Permanently mount Block. PlaneAround 180 Door Latch Step 10.5.

    Step 10.5 Mark the block location and match drill the holes. Drill one hole, bolt it and match drill the other hole, disassemble and de-burr the holes and permanently mount the block.

76. Install Magnets and Proximity Switches. PlaneAround 180 Door Latch Step 10.6.

> Step 10.6 Install the…proximity switches per Van's instructions or per PlaneAround pin and guide instructions. Epoxy works great for the magnets. *NOTE: magnets were installed in Step 52.*

NOTE. This is the end of the PlaneAround 180 Door Latch Instructions.

77. Gas Strut Attach Brackets. Vans 45-16 Steps 1-4. SKIP if using PlaneAround Strut Attach Brackets.

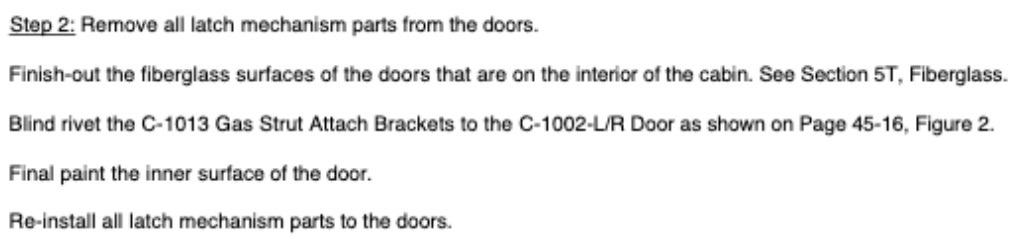
78. PlaneAround Strut Attach Brackets. PlaneAround Strut Attach Brackets paragraph 1 of 1.

> Para.1. The PlaneAround LLC strut attach brackets are used to replace the metal brackets provided by Vans. The PA brackets are billet aluminum anodized black. The geometry is slightly different making it easy to close up the hinge pockets for better insulation from outside air. They also have two other advantages: They have a relief area for the seal and wider ears to accommodate aftermarket gas struts. Okay THREE advantages, they look better too. They are threaded and can be mounted using the original screws supplied by Vans. A good way to make the holes is to use Vans brackets as a guide and Vans instructions for installation. The hole pattern is the same. Then install the PA brackets. Be careful NOT to cross thread the new brackets. Once satisfied with the fit use Loctite of your choice to secure the brackets.

NOTE. This is the end of the PlaneAround Strut Attach Bracket Instructions.

79. Cabin Door Safety Latch. Vans 45-17 Step 1-2 and 45A. SKIP.

80. Remove Latch Mechanisms, finish fiberglass, Door Strut Attach Brackets, paint, reinstall Latch Mechanisms. Vans 45-17 Step 1-2.



Step 2: Remove all latch mechanism parts from the doors.

Finish-out the fiberglass surfaces of the doors that are on the interior of the cabin. See Section 5T, Fiberglass.

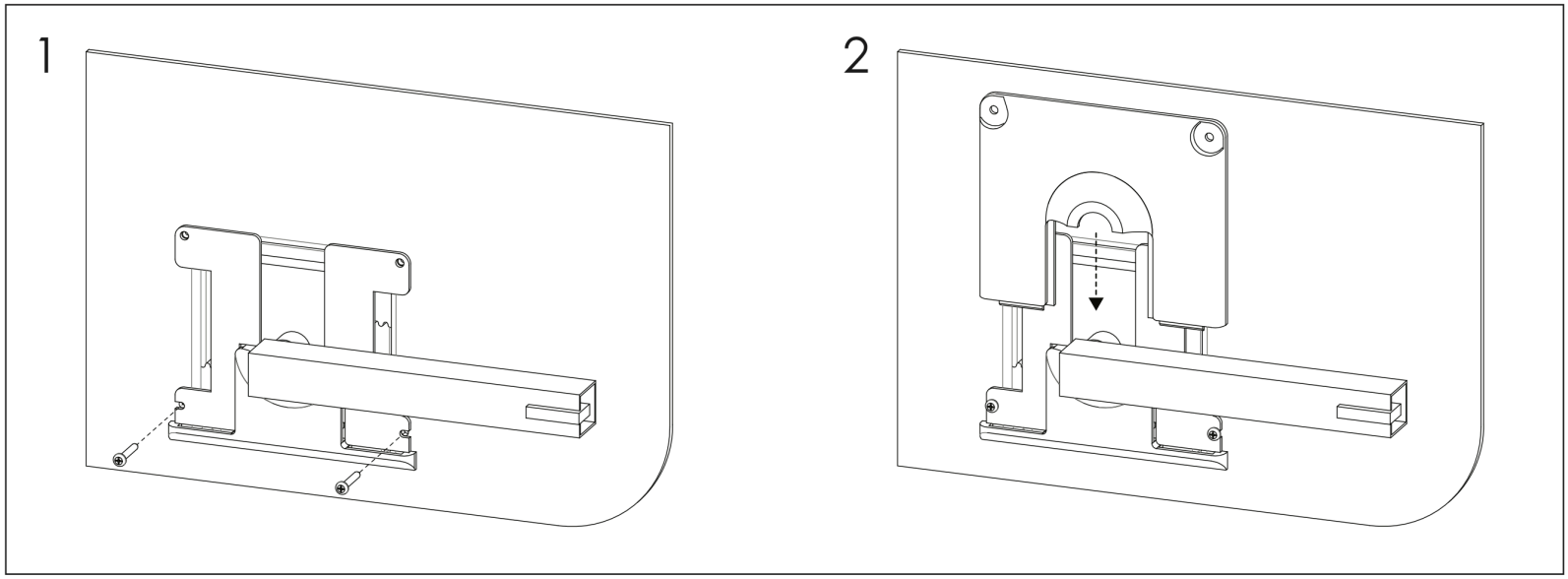
Blind rivet the C-1013 Gas Strut Attach Brackets to the C-1002-L/R Door as shown on Page 45-16, Figure 2.

Final paint the inner surface of the door.

Re-install all latch mechanism parts to the doors.

81. Door Seal. Vans 45-17 Step 3. SKIP. Install McMaster, South Florida Sport Aviation, or other door seal as desired.

82. Install Aerosport Interior Door Handle Cover. Aerosport Door Handle Cover Steps 1-6.



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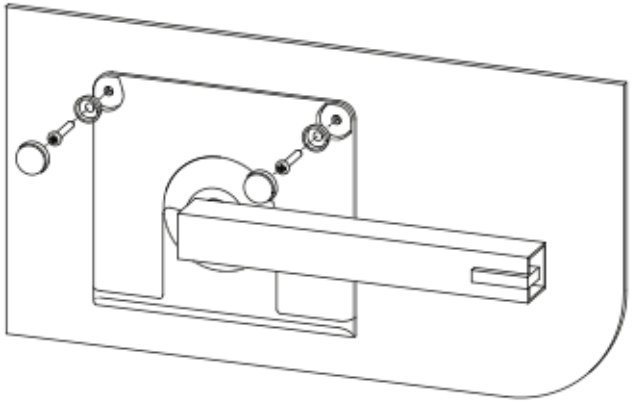

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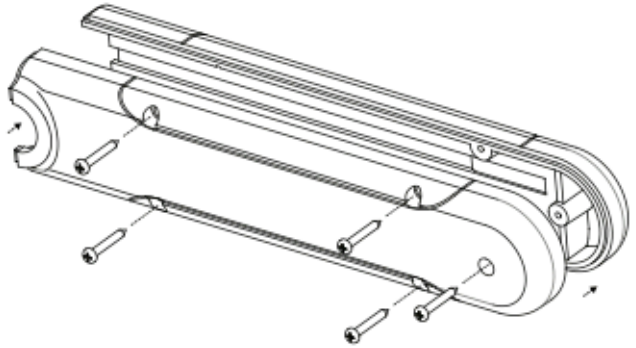

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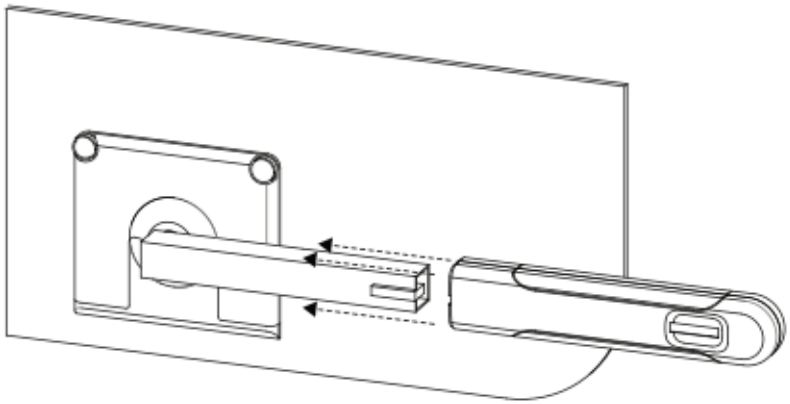

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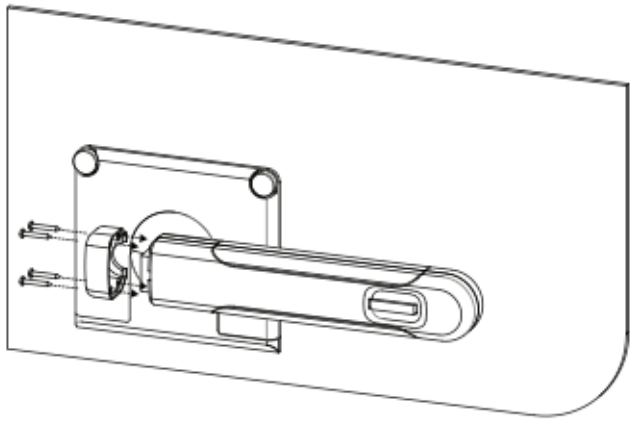

NOTE. This is the end of the Aerosport Door Handle Cover Instructions.

NOTE. This is the end of the Aerosport Door Handle Cover Instructions.

83. Vans Latch Pin Plates. Skip. Vans 45-17 Step 4.

84. Attach Doors to Fuselage. Vans 45-17 Step 5.

Step 5: Attach the C-1002-L/R Doors to the fuselage.

85. Gas Struts. Vans 45-17 Step 6.

Step 6: Install the C-1016 Gas Struts as shown on Page 45-16, Figures 1 and 2.

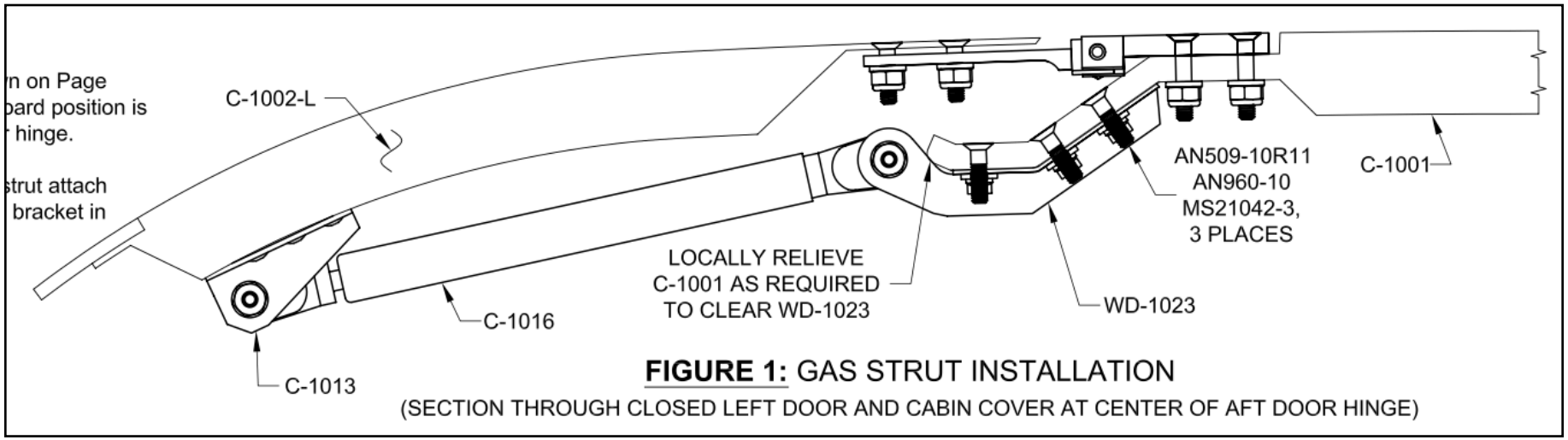

FIGURE 1: GAS STRUT INSTALLATION
(SECTION THROUGH CLOSED LEFT DOOR AND CABIN COVER AT CENTER OF AFT DOOR HINGE)

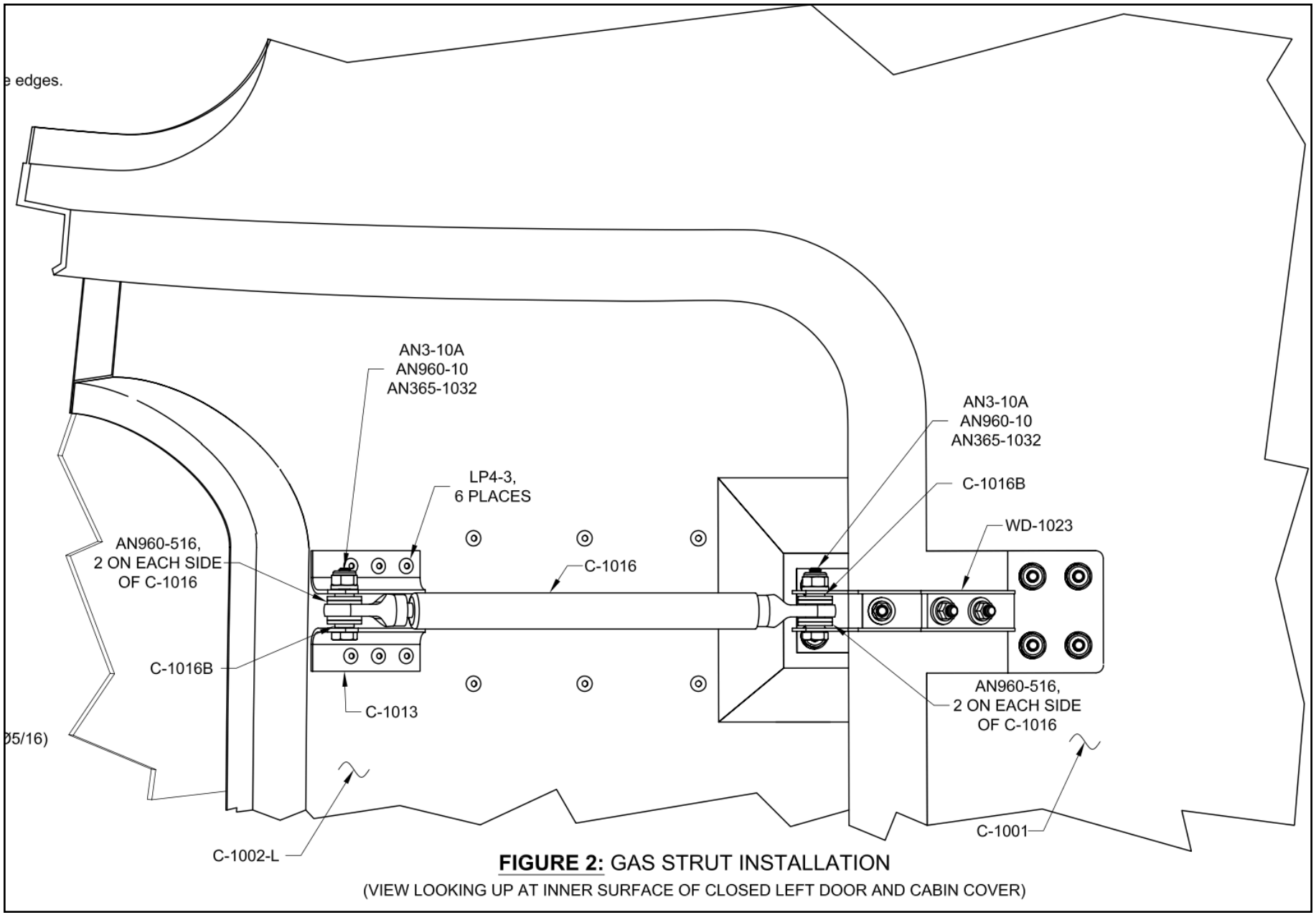

FIGURE 2: GAS STRUT INSTALLATION

(VIEW LOOKING UP AT INNER SURFACE OF CLOSED LEFT DOOR AND CABIN COVER)

86. Cabin Door Safety Latch. Vans 45-17 Step 7. SKIP.

NOTE. This is the end of this guide. Continue in Vans Section 45-18 and 19 with Windshield installation.