

Supplement–Main Gear Doors

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S.1 Introduction

The main gear doors have been cut from the fuselage when you receive your kit. In this supplement you will complete the main gear doors so they will be ready for installation.

When the tires are warm they will expand as much as a 1/2” (12 mm). When you are checking the size of the gear door and its opening, make sure you allow for tire expansion.

When you are finished with the gear door it should not be seen when viewing the side of the airplane.

Steps to Completion

- Shape the forward end of the gear doors to match the provided pattern.
- Mark and cut the aft wing fairings.
- Mark and trim the gear doors.
- Bond the piece cut from the aft wing fairings to the gear doors.
- Install the hinge to the gear doors.
- Cut and install the runner.
- Create the flange around the fuselage gear doors.

Before You Start

Before you start this supplement the aft wing fairings must be bonded in place.

A Word about Sanding and Cleaning

The instructions in this chapter refer to preparing a surface or preparing a bonding area. When we recommend preparing a surface or a bonding area, we expect each of the following steps to be completed every time.

1. Sand the area using 40-grit sandpaper.
2. Vacuum all sanded areas.
3. Clean all sanded surfaces with Acetone.



S.2 Parts List

Item	Part Number	QTY	Description
1)	AN3-5A	20	Bolts
2)	AN365-1032A	20	Locknuts
3)	AN426A3-4	130	Rivets
4)	AN960-10	20	Washers
5)	K1000-3	65	Nutplates
6)	MS20001	2	Piano hinge
7)	MS24694-S7	65	Bolts
8)	Poly-250-6x36	1	Plastic sheet for runner

Shape of the gear leg door in the kit.



Shape of the gear leg door when it is ready for installation.



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Supplement—Main Gear Doors

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S.3 Construction Procedures

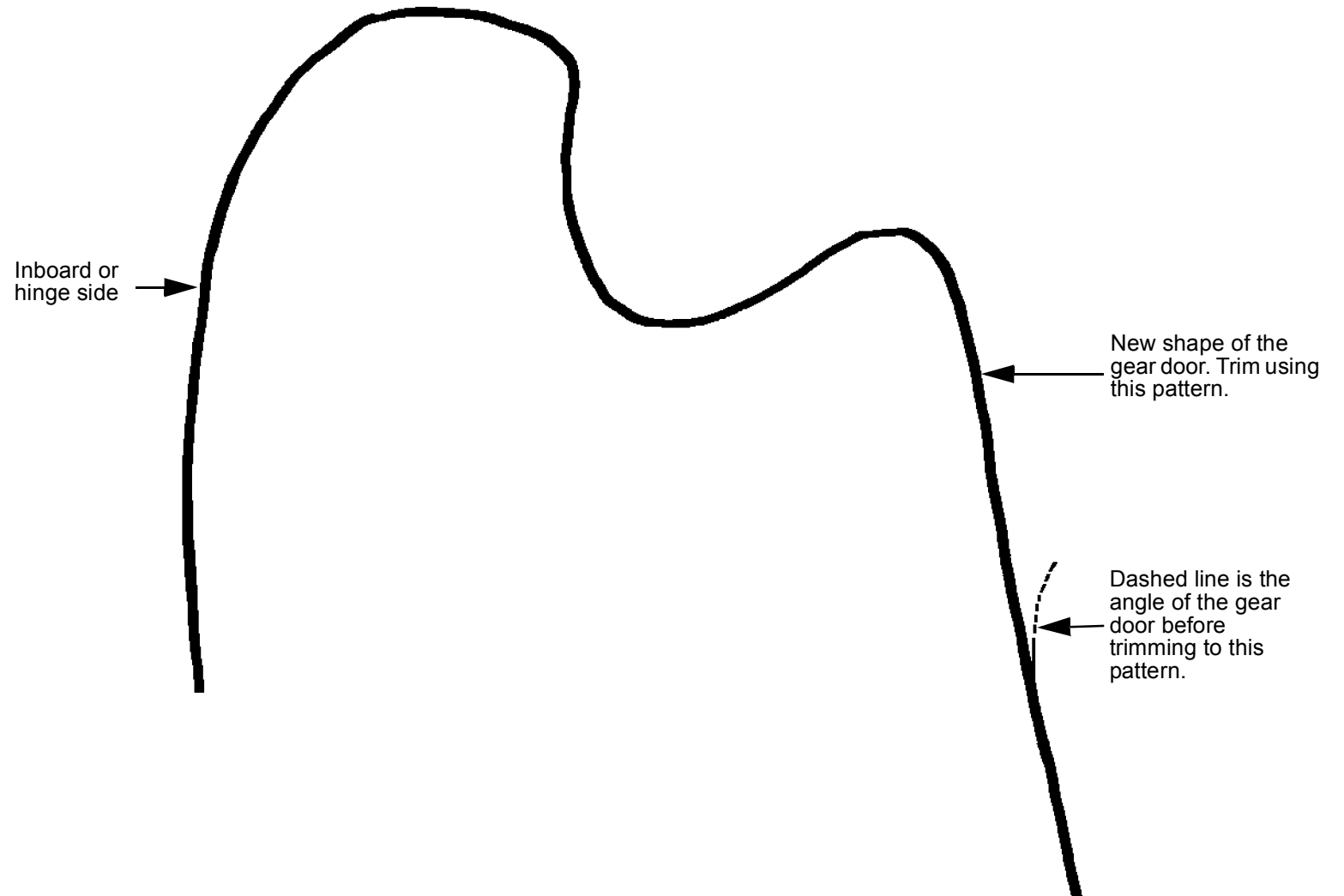
S.3.A Shaping the Main Gear Doors

Before you can fit the main gear door, you need to shape the forward portion of the gear door so it will fit into its opening in the fuselage. Then you will determine how much of the aft wing fairing becomes part of the gear door.

Steps...

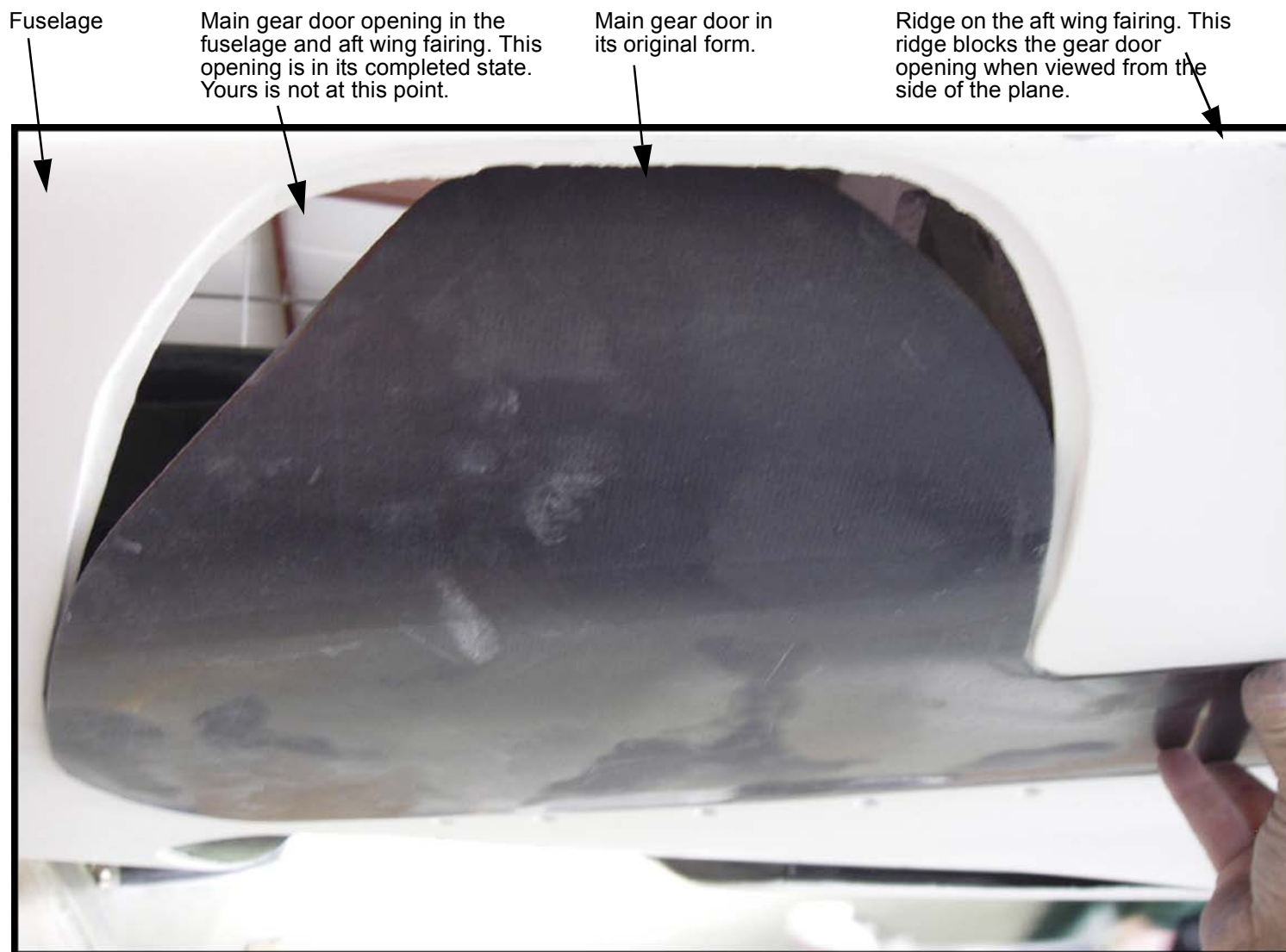
1. Trim the forward end of the gear door using the pattern in Figure S.3.A.1.
The forward end of the gear door must be shaped before it can be held in the gear door opening.

Figure S.3.A.1 Pattern for the forward end of the main gear door



2. Hold the gear door in place in the main gear door opening. Observe the shape of the door and the shape of the opening in Figure S.3.A.2. Plan for the following fit:
- Allow for a 1/16" (1.5 mm) clearance all the way around the door.
 - Part of the aft wing fairing will need to be removed and applied to the gear door as shown in Figure S.3.A.3.
 - The hinge side (inboard edge) will need a 1/8" to 1/4" (3 to 6 mm) clearance.
- Note:* Please ignore the fact that the gear door opening is completed in Figure S.3.A.2.

Figure S.3.A.2 Main gear door and the completed opening for the main gear door



3. Hold a pen perpendicular to the floor and against the gear door opening. Trace an outline of the gear door opening onto the installed aft wing fairing.

The mark you make on the fairing should meet the following criteria:

- Approximately 4" of the aft wing fairing will be removed,
- Should not extend into the ridge on the fairing. See Figure S.3.A.2 to identify the ridge.
- The tire will need to fit through the opening.

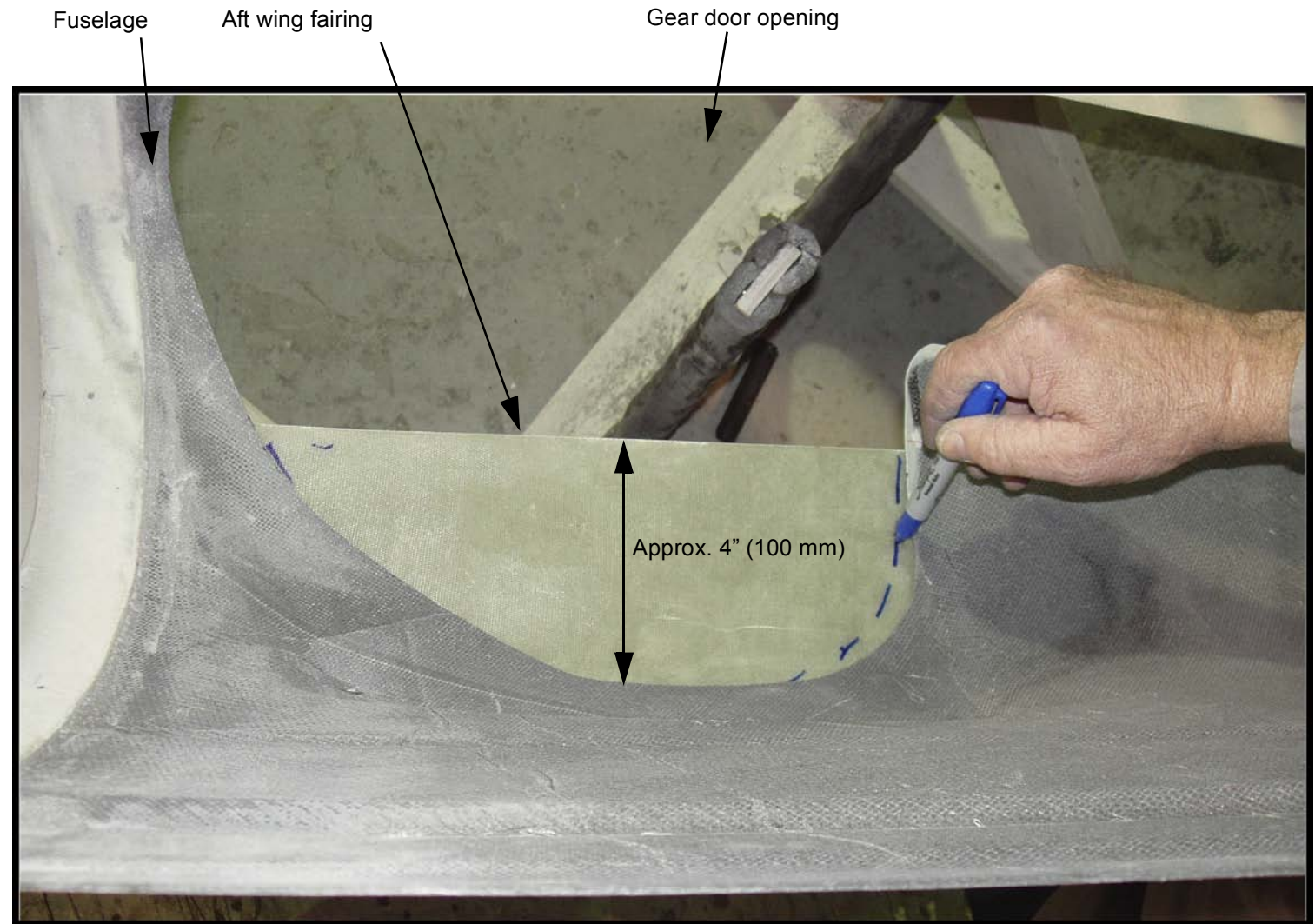
Tip: Another method is to make a paper pattern of the gear door opening.

4. Trim the aft wing fairing along the pen line.

Now you have the section of the aft wing fairing that is glued to the gear door on the outside edge to create a door that will fit into the gear door opening. But first the gear door must be trimmed.

5. Make a pattern of the aft portion of the gear door opening, including where you cut away the wing fairing.

Figure S.3.A.3 Main gear door opening and installed aft wing fairing looking down from inside the fuselage



6. Arrange the gear door and the piece of aft wing fairing on the pattern to determine how much of the gear door to trim.
7. Mark the gear door and trim to fit the pattern.
8. Bond the fairing piece onto the gear door.
9. Apply the following BID layups over the bond and the fairing piece.

Inside:

- 2-BID over the bond,
- 2-BID over the bond and extend 1 1/2" beyond the first layup,
- Continue to layer the 2-BID on until the bond and the fairing piece have a total of 6-BID applied.

Outside:

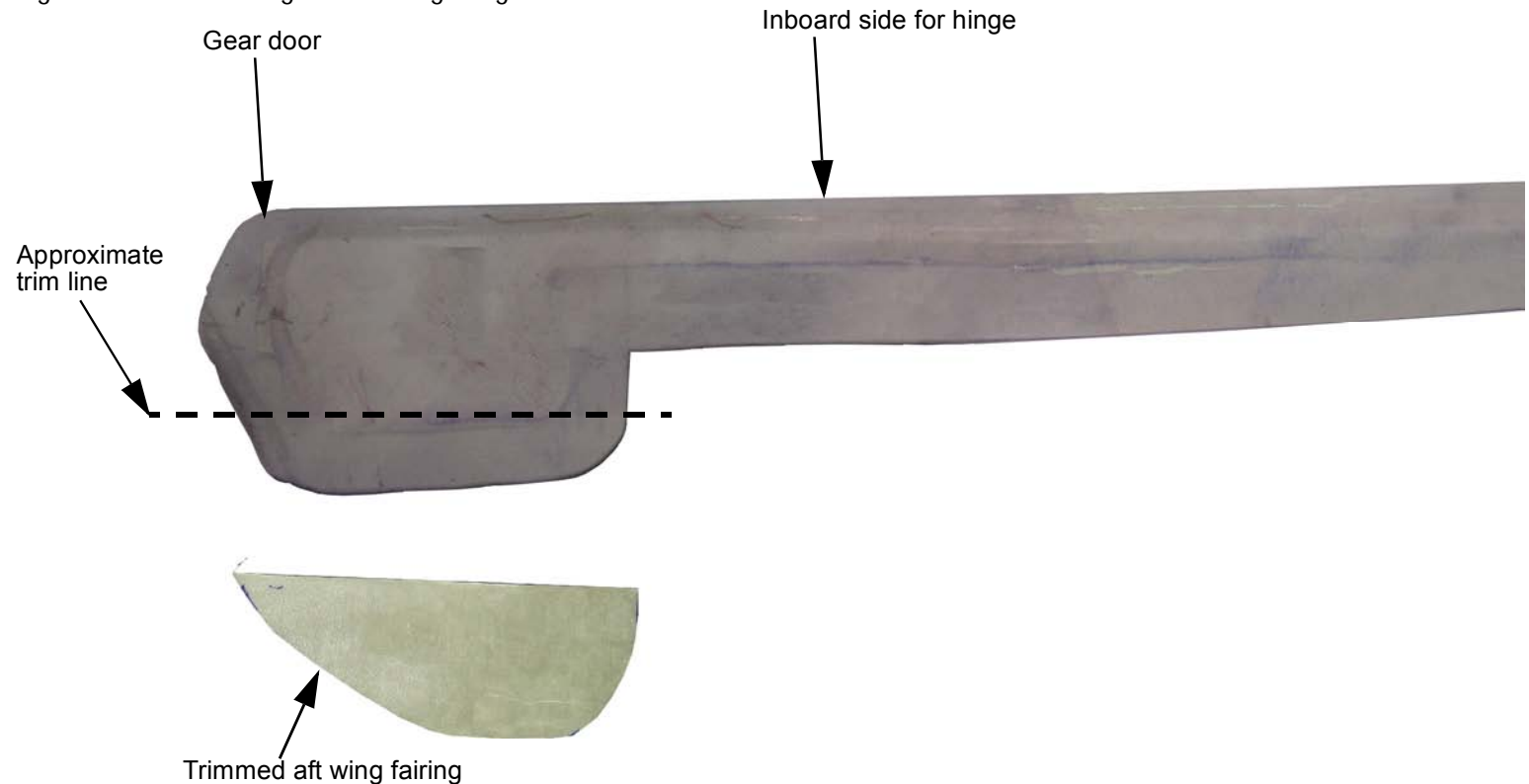
- 2-BID over the bond.

10. Cut a piece of piano hinge to 45 1/2" (1.137 meters).
11. Lay the hinge on the inboard edge of the gear door and cleco into place.
Determine whether the door edge has enough room for the hinge to lay flat. If the hinge needs more room you will need to do the following:
 - Cut and decore the stiffener in any areas where the hinge does not lay flat.
 - Do a micro/flox release to create a flat surface for the hinge.
 - Cleco the hinge in place on the gear door.
12. Place the gear door into the opening again and check the hinge spacing. The piano hinge needs 1/8" to 1/4" (3 mm to 6 mm) of space. Mark any areas of the gear door that need to be trimmed
13. Remove the door and trim any marked areas on the gear door.
14. Drill 3/16" (4.5 mm) holes in both sides of the hinge every 3" (75 mm) for the nutplates.

15. Rivet (AN426A3-4) the nutplates (K1000-3) in place on both sides of the hinge.
16. Secure one side of the hinge to the gear door using MS24694-S7 bolts. See Figure S.3.C.1.

17. Drill the inboard side of the gear door opening in the fuselage for the hinge. Again the drilled holes are 3/16" (4.5 mm) every 3" (75 mm).

Figure S.3.A.4 Trimming and bonding the gear door



S.3.B Cutting and Applying the Runner

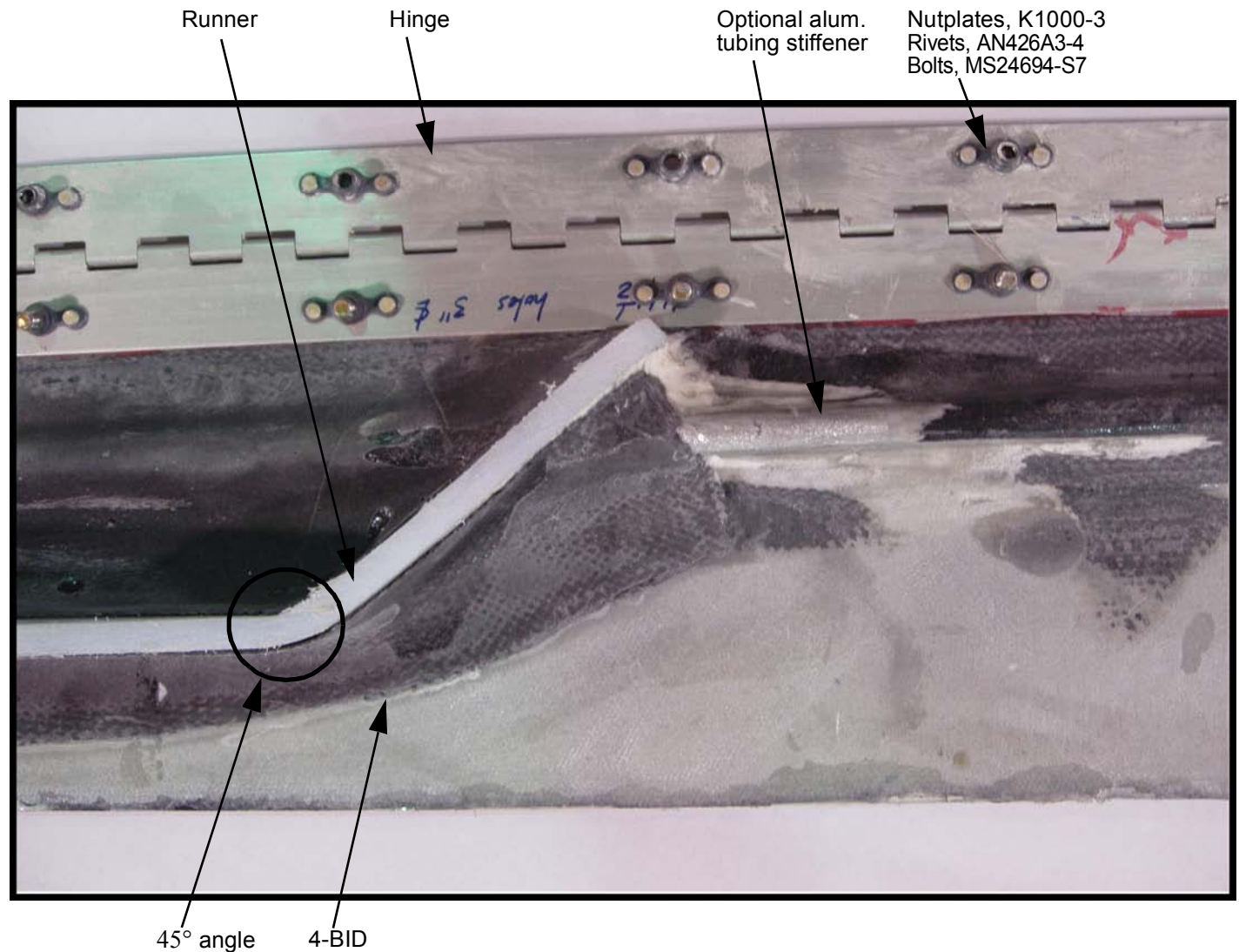
In this section you will cut the plastic runner that the gear leg slides along to open the gear doors.

Note: Before you install the runner, you can apply a stiffener to the gear door by using a 1/4" or 3/8" (6 or 9 mm) aluminum tubing. The tubing runs next to the plastic runner, and beyond it to the forward end of the gear door. Micro the tubing in place and then start the following steps for the runner.

Steps...

1. Cut the plastic runner (Poly-250-6x36) using blueprint 426-0004 as a pattern.
2. Measure the gear leg to find the location of the bend for the runner. Mark the location on the runner.
3. Heat the runner with a heat gun until you see the nylon start to bend. Place a 2x4 flat against the surface of the runner and bend it to 45°. The bent portion will face inboard 45° on the gear door.
4. Locate the straight portion of the runner 3" (75 mm) from the hinged side of the gear door. The 45° portion is angled toward the hinge. See Figure S.3.B.2 on the next page to view the tapers at the forward and aft end of the runner.
5. Secure the runner to the gear door with super glue.
6. Apply a micro radius to both sides of the runner.
7. Apply a 4-BID to both sides of the runner and within 1/4" (6 mm) of the forward end.

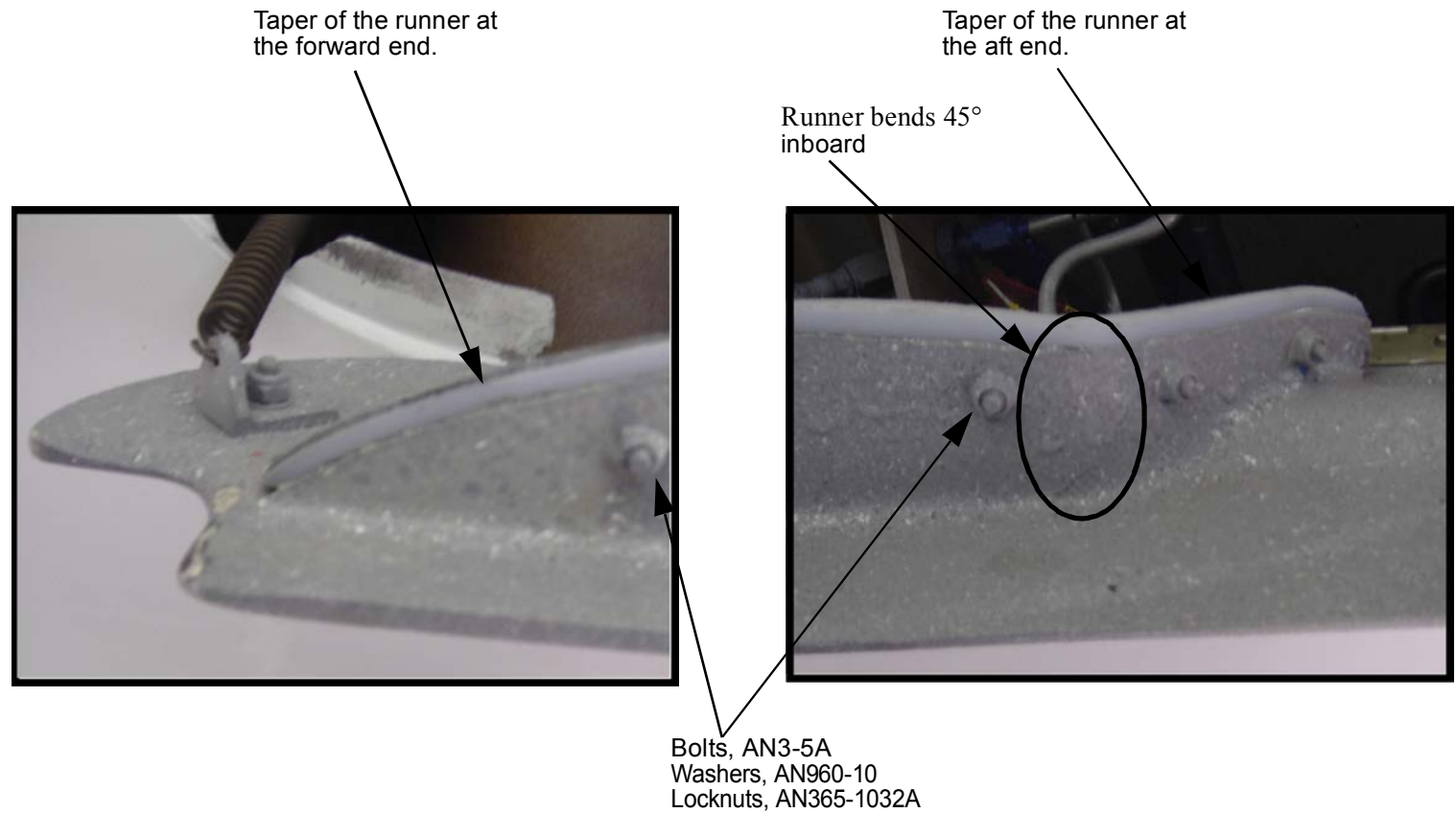
Figure S.3.B.1 Aft end of the plastic runner with layups and optional stiffener



Steps after cure...

1. Drill 3/16" (4.5 mm) holes every 4" (100 mm) the length of the runner.
2. Use AN3-5A bolts with washers (AN960-10) and locknuts (AN365-1032A) to hold the runner in place.

Figure S.3.B.2 Side views of the forward and aft end of the gear door runner



S.3.C Creating the Flange

In this section you will create the flange on the fuselage along the gear door opening.

Steps...

1. Apply clear tape to the gear door.
2. Fit the gear door in the opening and secure in place with small sticks.
3. Apply a 2" (50 mm) 4-BID to the fuselage non-hinge side of the gear door opening. Make sure that 1/2" (12 mm) overhangs onto the gear door.

Remove the gear door once the layup is dry.



Test fit both gear doors and the gear legs. The gear leg needs to slide on the runner to open the door. The leg and door should not bind. Make sure there is a 1/2" (12 mm) minimum clearance on both sides of the tire.

Now return to the section of the manual where you were working.

Figure S.3.C.1 Gear door with the hinge and runner installed

