Chapter 15 Assembling and Installing the Seats

15.1 Introduction

In this chapter you will make and install all four seats in your ES. This process includes assembling the pilot and co-pilot seats which are a tubular steel design. They incorporate slider mechanisms for adjusting the seats. You will fabricate and install the aft bench seat which now has a one-piece bottom. In addition all the seat belt hardpoints and reinforcements are installed in this chapter. The first section, 15.3.A *Making the Hardpoints for the Aft Seat Belts* on page 15.3, was completed as you worked on the wing fairings. Now you can skip this section and start with 15.3.B *Seat Pan Installation for the Front Seats* on page 15.4.

Steps to Completion

- Make the hardpoints for the rear seat belts.
- Install the front seat pan on the seat frame.
- Assemble the front seats.
- Make the cover for the shear box.
- Make the reinforcement for the center attachment for the front seat belts.
- Close off the forward seat mount.
- Mount the front seats.
- Make and install the aft seats.
- Make and install the torque tube cover.
- Install the front and aft seat belts, including the front seat shoulder harness.

Caution!

Make sure you completed 15.3.A *Making the Hardpoints for the Aft Seat Belts* on page 15.3 when you installed the wing fairings. If you did not, then the hardpoints need to be completed.

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.

15.2 Parts List

Blueprints needed for this chapter include:

- 3301 – Aft seat configuration

Front seats

Item	Part Number	QTY	Description
4)	18-2-G	4	Nicopress fittings
5)	3/32x7x7	2	3/32 diameter cable
6)	7/16-18	8	Stop bolt (pre-installed)
7)	AN100-4	4	Thimble
8)	AN310-4	4	Castlenut
9)	AN3-10A	8	Bolt (securing seats)
10)	AN3-5A	8	Bolt (seat track)
11)	AN365-1032	8	Locknut (securing seats)
12)	AN365-1032A	8	Locknut
13)	AN4-15	4	Bolt
14)	AN960-10	8	Washer (securing seats)
15)	AN960-416	4	Washer
16)	AN970-3	8	Washer
17)	BSPQ-44		Rivets
18)	MS42665-140	4	Cotter pin
19)	SM-01	2	Left slider mechanism (no handle)
20)	SM-02	2	Right slider mechanism
21)	ST705-02	2	Front seat back weldment
22)	ST705-01	2	Front seat bottom weldment
23)	ST706	2	Front seat pan, aluminum

Rear seats

Item	Part Number	QTY	Description
1)	3610-04 & 3610-05	2	Latches, left and right

Rear seats (Continued)

Item	Part Number	QTY	Description
2)	AN426A3-5		Rivet
3)	AN426AD3-8		Rivet
4)	AN525-10R10	16	Screw
5)	K1000-3		Nutplate
6)	MS20001	1	Extruded hinge (seat back)

Torque tube cover

Item	Part Number	QTY	Description
1)	K1000-08	5	Nutplate
2)	AN525-832R8	5	Screw
3)	AN426AD3-8	10	Rivet

Seat belts

Item	Part Number	QTY	Description
1)	707-01	2	Front lap belt and shoulder harness
2)	707-02	2	Seat belt, back
3)	AN365-524	2	Locknut
4)	AN365-524A	3	Locknut
5)	AN365-624A	2	Locknut
6)	AN5-12A	3	Bolt
7)	AN6-6A	2	Bolt
8)	AN960-616	4	Washer
9)	AN970-4	4	Washer
10)	AN970-5	16	Washer

15.3 Construction Procedures

15.3.A Making the Hardpoints for the Aft Seat Belts

In this section you install the hardpoints in the fuselage for the side attachments of the aft seat belts.

The bolt securing the seat belt should be installed in the following approximate location:

- 7-1/2” (187 mm) forward of the bulkhead

– and –

- 2-1/2” (62 mm) above the floor

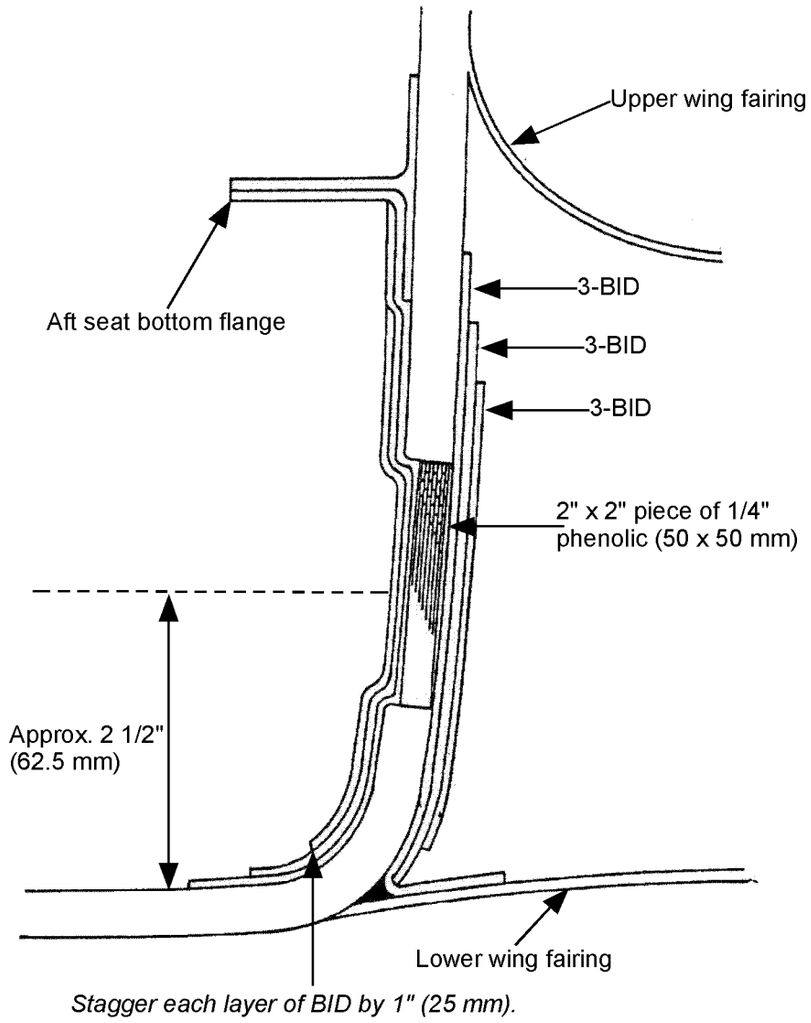
Steps...

1. Remove the inner laminates and core at this location.
2. Prepare all bonding surfaces.
3. Install a 2” x 2” (50 x 50 mm) piece of 1/4” (6 mm) thick phenolic using an epoxy/ flox mixture.
4. Reinforce with a 9-BID on each side of the fuselage, centered on the phenolic piece, using the following layup schedule.
   - First install a 10” x 10” (250 x 250 mm) 3-BID centered on the piece of phenolic. The BID on the inside of the fuselage may run onto the aft seat bottom flange. The BID on the outside of the fuselage may run onto the wing fairing.
   - Next, apply an 8” X 8” (200 x 200 mm) 3-BID to both sides of the fuselage. This BID reinforcement should also be centered on the piece of phenolic.
   - Finally, apply a 6” x 6” (150 x 150 mm) 3-BID to the outside and the inside of the fuselage.

A hole will be drilled for the seat belt attach bolt when the aft seat belts are installed in *Installing the Aft Seat Belts* on page 15.27.

STOP Return to Chapter 9 *Wing Fairings* on page 9.1.

Figure 15.3.A.1 Fuselage hardpoint for aft seat belts



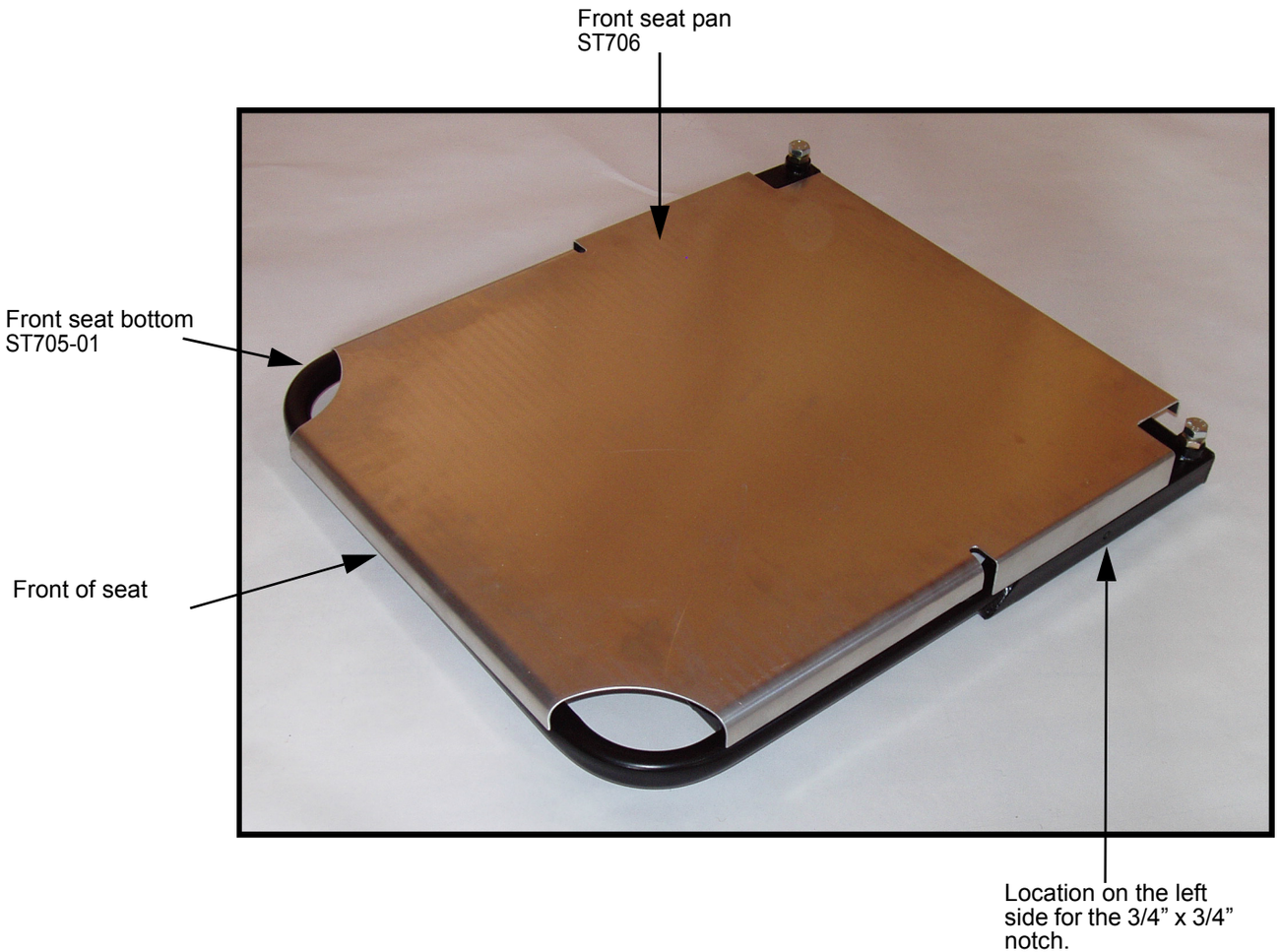
15.3.B Seat Pan Installation for the Front Seats

Each front seat will need an aluminum seat pan that protects the slider mechanism from interference. The seat backs are supported by the webs your upholstery shop will install. The webbing is similar to lawn chair webs and is lighter than aluminum.

Steps...

1. Place the aluminum seat pan on the seat bottom frame.
2. Make a 3/4" wide, 3/4" high (20 mm x 20 mm) notch in both sides of the aluminum pan, centered on the seat back pivot bolt hole, as shown in Figure 15.3.B.1.
3. Check that the aluminum seat pan fits tight to the steel frame on all four sides. The curved and right angle edges should all fit snugly.
4. Secure the seat pan to the bottom seat frame with BSPQ-44 pop rivets. Use 10-12 rivets to secure each seat pan edge to the steel seat bottom frame.

Figure 15.3.B.1 Seat bottom frame and aluminum pan



15.3.C Assembling the Front Seats

The seat back can fold forward and pivots on two 1/4" (6 mm) bolts. The angle of the seat backs can be adjusted using the two stop bolts. The entire seat is adjustable fore/aft on the two slider tracks.

Steps...

1. Bolt the seat back frame to the bottom seat frame by sliding a bolt (AN4-15) from the inside of the seat bottom frame.

   The seat back frame's arm is installed on the outside as shown in Figure 15.3.C.1.

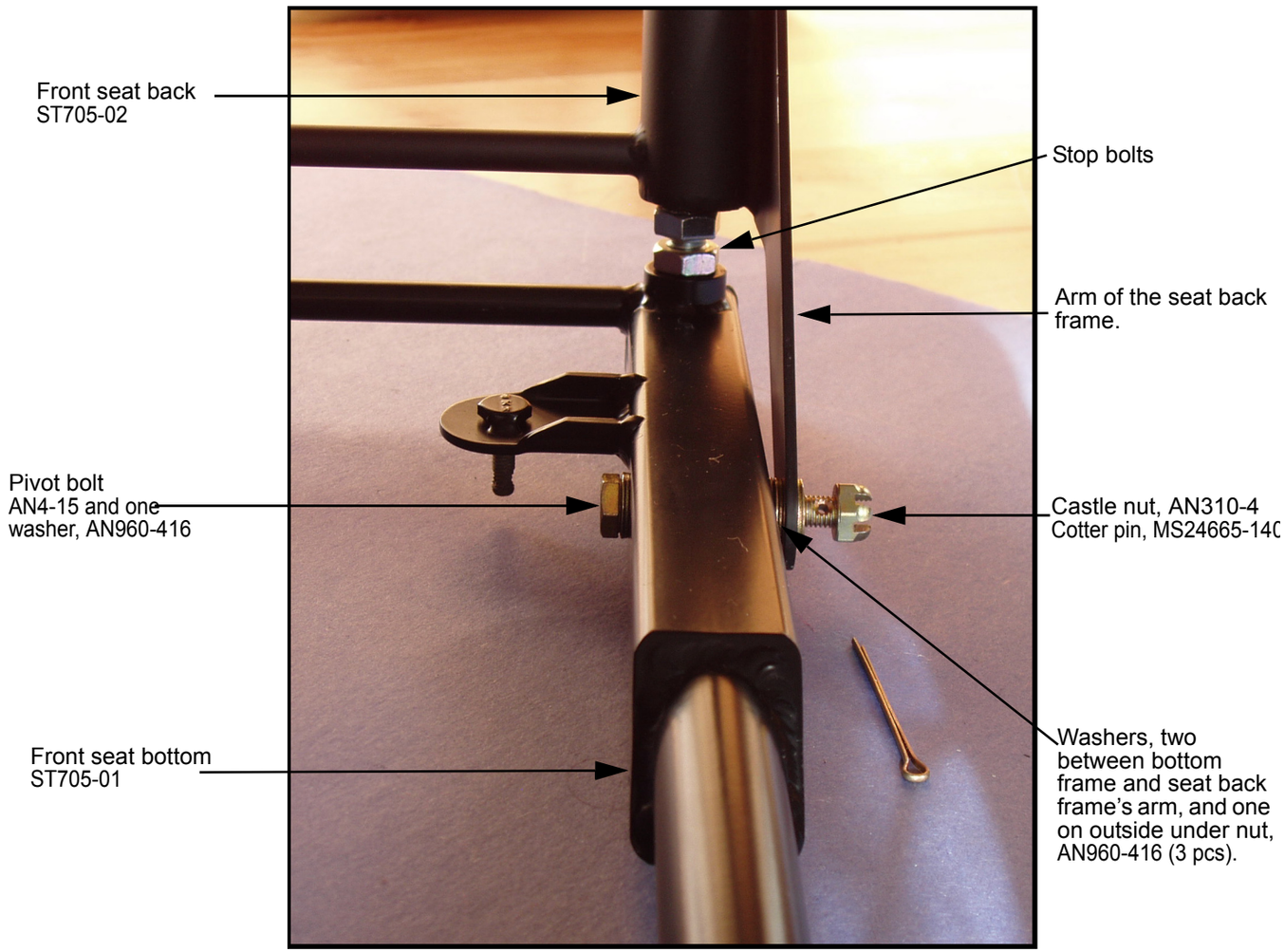
2. Add four washers (AN960-416) as shown in Figure 15.3.C.1 and a castle nut (AN310-4) and a cotter pin (MS24665-140).

   Do not tighten the castle nut too tight or the seat back will not fold forward easily.

Your seat bottom frame has stop bolts and check nuts already installed. You can adjust the seat back angle so the seat back strikes the heads of the stop bolts evenly. Then tighten the checknuts to lock in the height adjustment.

The height of the stop bolts will determine the angle of the seat back. What seat back angle is most comfortable? This is totally builder preference.

Figure 15.3.C.1 Seat back pivot bolts and stop bolts (seat pan removed for clarity)



3. Mount the seat tracks on the two bolts, on each side of the seat bottom frame, that secures each track.

   The tracks with the release handle are mounted on the right side of each seat.

4. Add a washer (AN970-3) and a locknut (AN365-1032A).

   Optional adjustment...

   - To modify the angle of the seat bottom, use two 1/2" (12 mm) spacers on the bolts between the tracks and the seat frame. These will give the seat bottom a steeper angle. These spacers reduce the amount of foam necessary to support your legs, but they also create a slight misalignment to the mounting bolts. The misalignment is not enough to harm the nut or bolt.

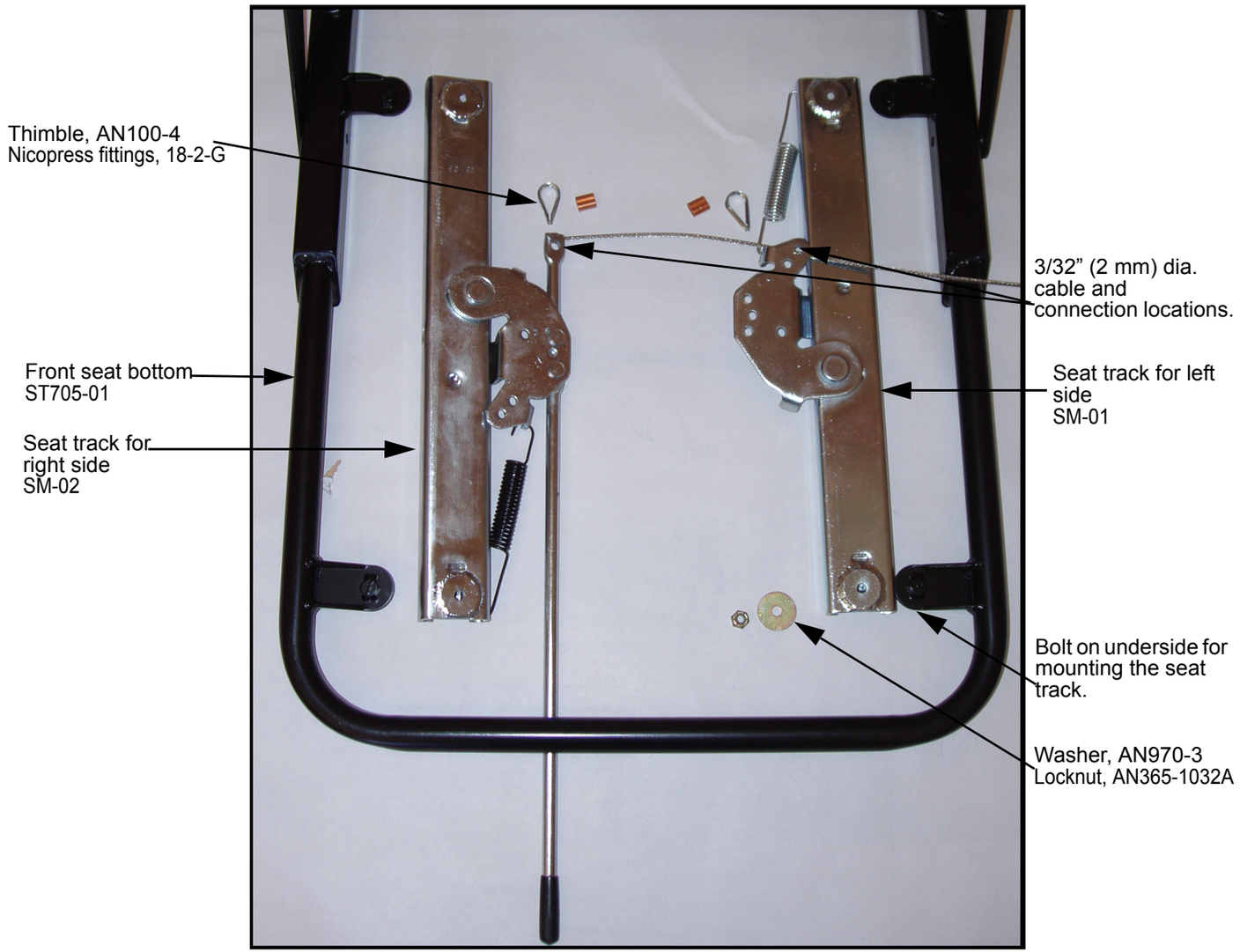
Steps continued...

5. Connect the track release mechanisms so they release together using the handle on the right. Make a short cable, 3/32” (2 mm), and install it using Nicopress fittings (18-2-G) and thimbles (AN100-4).

   Determine the cable length by measuring the distance between the two mounting holes on the tracks.

   Note: Having two lockable tracks on each seat is not necessary. We have had good luck by locking the seat in position with only the right track (the one with the handle). If you wish to do away with the interconnect cable and a little weight, simply grind off the locking mechanisms from the left tracks. There will be a slight amount of twisting potential by locking only the right track, but it is negligible.

Figure 15.3.C.2 Mounting the seat tracks and connecting the cable (seat pan removed for clarity)



15.3.D Making the Shear Box Cover

The shear box is covered with a prepreg panel that will serve as the forward piece of the aft seats. It will also isolate the cockpit from the elements.

Before you start this section, make sure you check the alternate method of creating and installing the cover in *Alternate method* on page 15.8.

Steps...

1. Measure for a shear box cover using the dimension locations in Figure 15.3.D.2.
2. Cut a shear box cover from 2-BID per side, fiberglass prepreg panel for the cover.

   The cover should rest on the shear panel flanges and the bottom (4-BID) shear panel supports. It will also serve as the forward piece of the aft seats.

Figure 15.3.D.1 Shear panel and cover

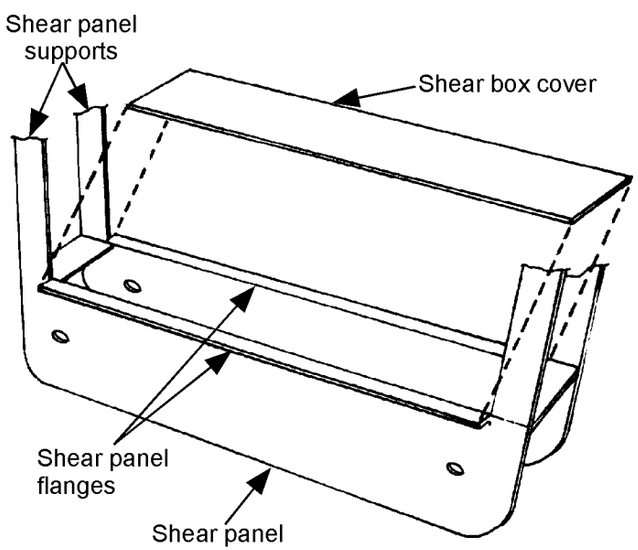
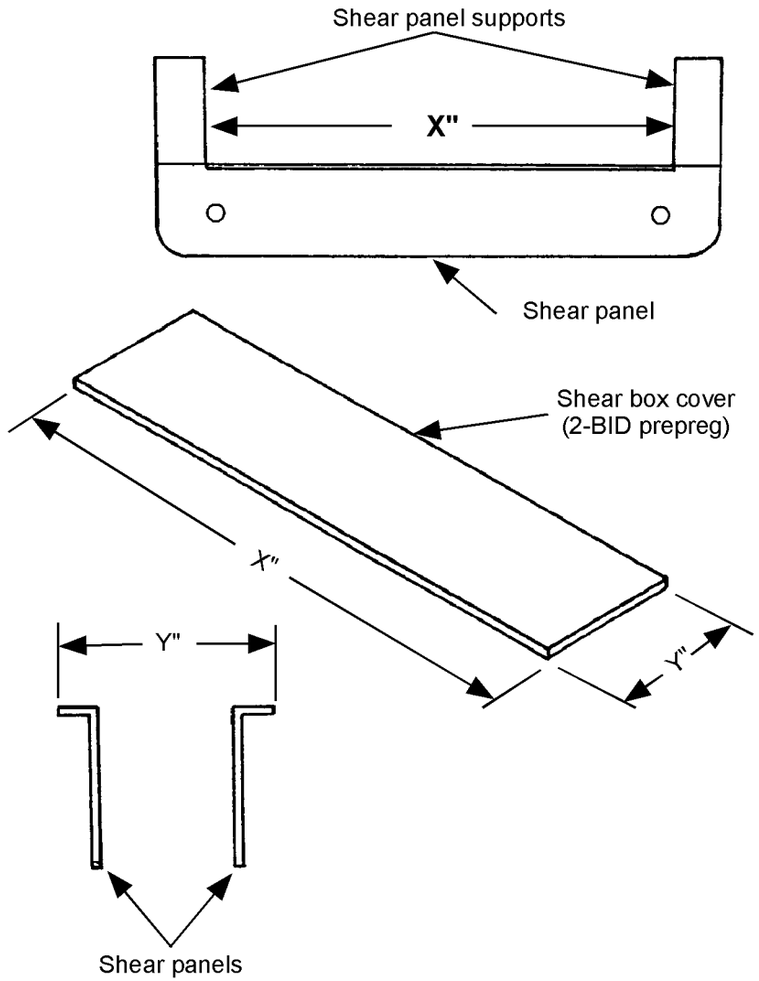


Figure 15.3.D.2 Shear box cover measurements



3. Remove the laminate and core of the shear box cover where it will be mounted to the shear panel flanges and the 4-BID prepreg. This is done to avoid crushing the core.
4. Reinforce the coreless areas of the cover with 2-BID, overlapping onto the original bottom surface by 1" (25 mm).
5. Sand the bonding areas of the cover, shear panel flanges, and bottom supports with 40-grit. Clean these areas.

The process of bonding the shear box cover to the shear box is described in the next step. You do not need to bond the cover into position at this time. We suggest waiting until you no longer need access to the shear box area.

6. Bond the shear box cover in position with flox. As usual, mix a little flox in with the epoxy to give it more body.

Alternate method

An alternate method for creating a shear box cover is instead of removing the core around the cover, simply place the cover on top of the shear box. Then apply enough BID (usually 4-6) to build up the supports at each end of the cover until they are level with the cover.

Figure 15.3.D.3 Alternate vs. standard shear box cover

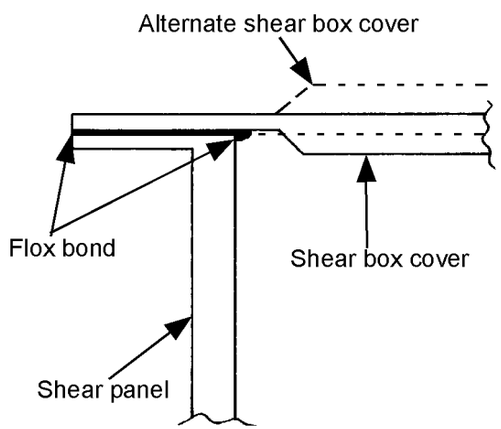
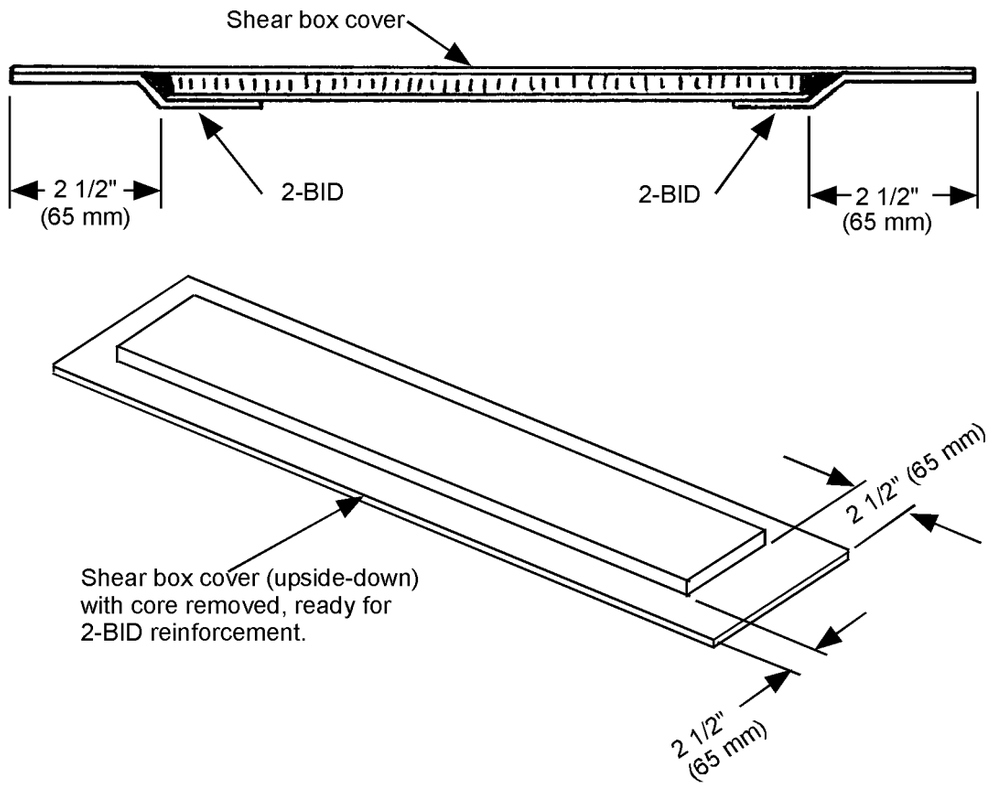


Figure 15.3.D.4 Reinforcing the shear box cover



15.3.E Creating the Center Seat Belt Attach Reinforcement

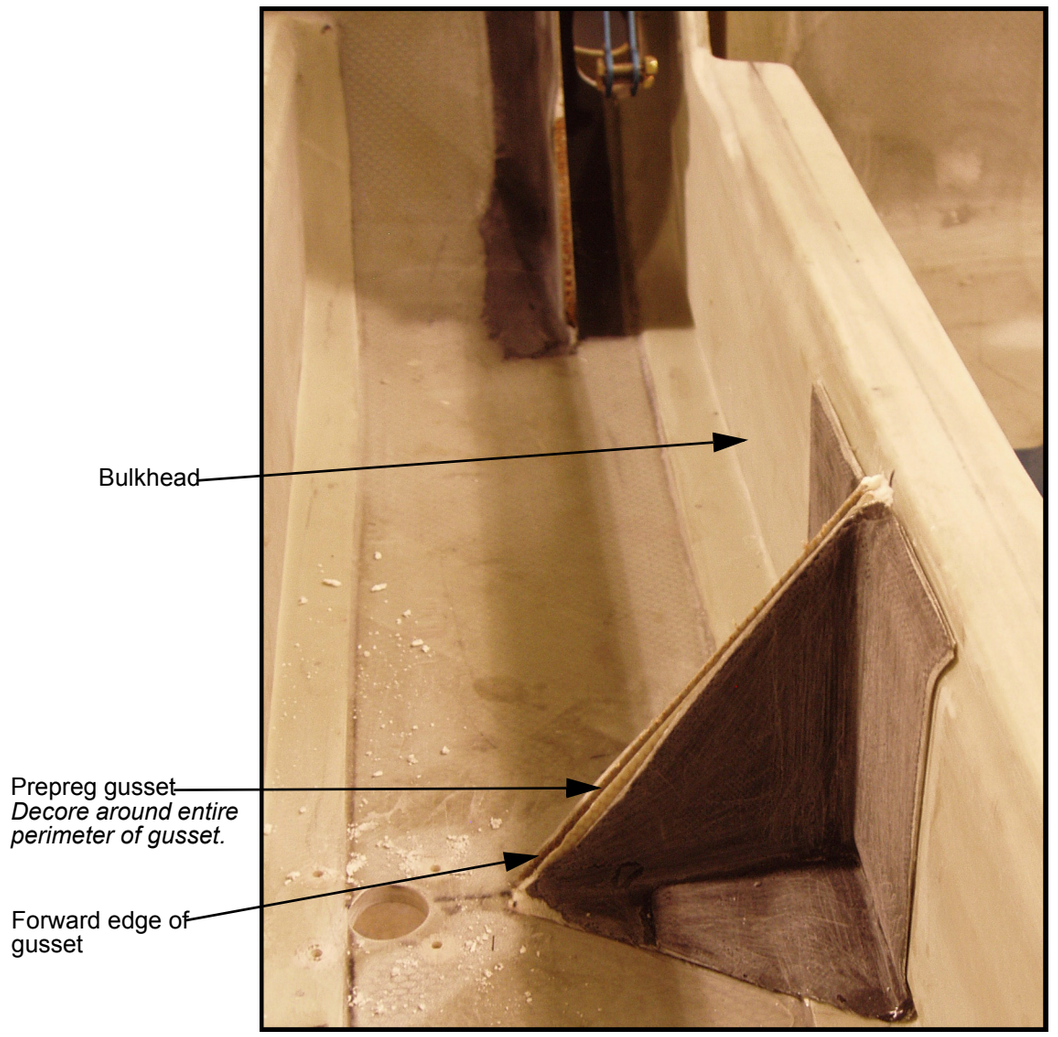
The front seat belts are attached to the wing attach bracket fittings and to the phenolic hardpoint between the seats. In this section you will install a gusset in front of the bulkhead.

Steps...

1. Cut a gusset from 2 PPS, 1/4" (6 mm) prepreg.
2. Remove 1/8-1/4" (3-6 mm) of core around the perimeter of the prepreg.

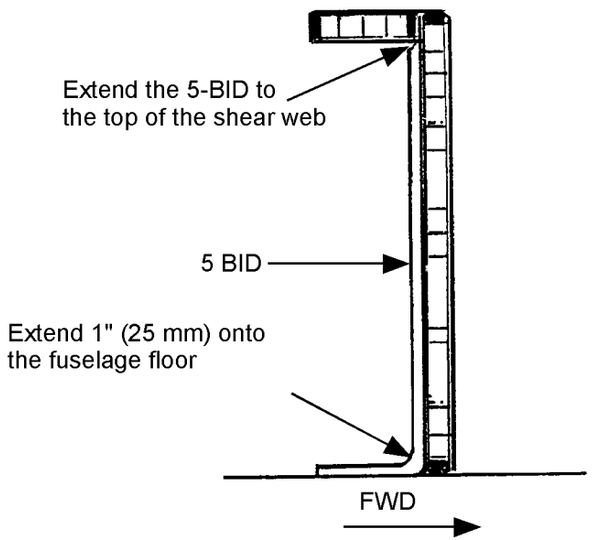
   Note: At a later time you may need to trim the gusset a little for aileron crossover tube clearance.
3. Prepare the bonding surfaces of the gusset and the bulkhead.
4. Pot the gusset in place using an epoxy/flox mixture. Also fill the forward edge of the gusset with a micro.
5. Prepare the bonding surfaces on the forward side of the bulkhead for the 9-BID reinforcement.

Figure 15.3.E.1 Gusset reinforcement for the center front seat belts



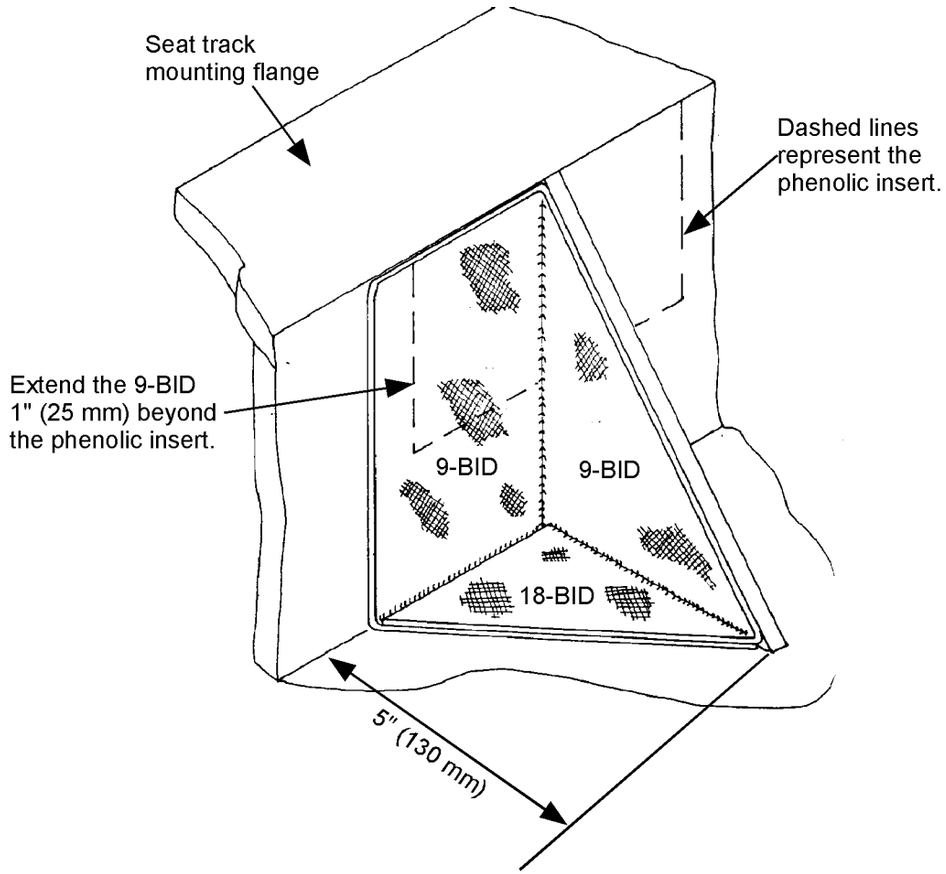
6. Reinforce the gusset with 9-BID as shown Figure 15.3.E.3. You may find it easier to cut a paper pattern for the 9-BID reinforcement.
7. Prepare the aft face of the bulkhead for the 5-BID reinforcement. Sand using 40-grit sandpaper and clean with Acetone).
8. Reinforce the aft side of the bulkhead with 5-BID. Extend the 5-BID 1" (25 mm) onto the fuselage floor and all the way up to the top edge of the bulkhead (but not onto the seat track mounting flange).

Figure 15.3.E.2 Aft side of gusset location with 5-BID



Later in this chapter you will drill the appropriate holes through the hardpoint and install the seat belts.

Figure 15.3.E.3 Applying 9-BID to the seat belt gusset



15.3.F Closing Off the Forward Seat Mount

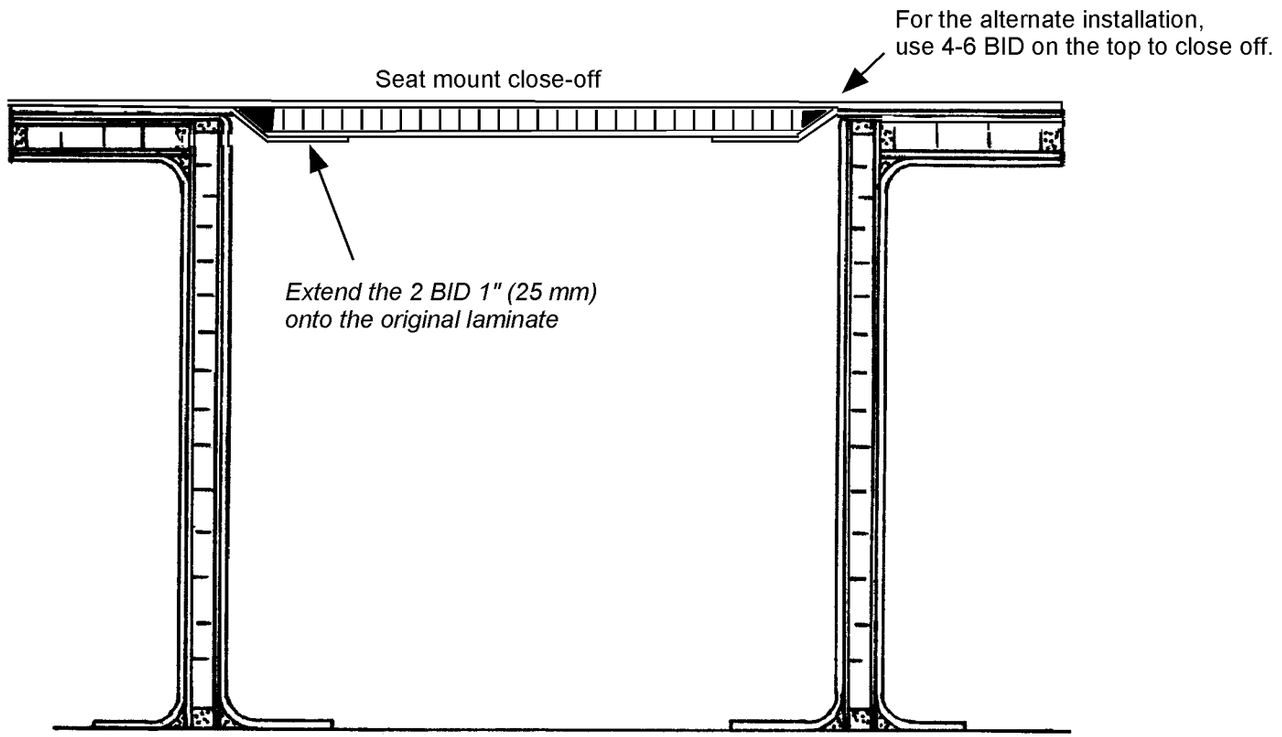
The forward seat mount close-off does exactly that, it closes off the area underneath the forward seats. This is to prevent anything from falling down under the seats and entangling with the aileron controls. It also seals the cabin from the outside environment.

Steps...

1. Cut the forward seat mount close off from two PPS 1/4” (6 mm) thick prepreg.
2. Fit the forward seat mount close off snugly along the sides of the fuselage. It should be flush with the forward and aft flanges of the seat mount
3. Remove the lower laminate and core along the forward and aft edges of the close off. Reinforce these areas section with a 2-BID extending 1" (25 mm) onto the original laminate.
4. Make holes in the close off for the pushrod that goes from the inboard aileron bellcrank to the aileron torque tube.

   This close-off will be sandwiched between the seats and the flanges. This will keep it in place.

Figure 15.3.F.1 Forward seat mount close-off



15.3.G Mounting the Seats

The pilot and co-pilot seats are mounted to the seat mount close off completed in the previous section, 15.3.F *Closing Off the Forward Seat Mount* on page 15.11. ~~seat back mounting flanges installed in Chapter 17.~~

Steps...

1. Position each seat with the mounting studs at the locations shown in Figure 15.3.G.1. Mark the stud locations on the shear panel cover.

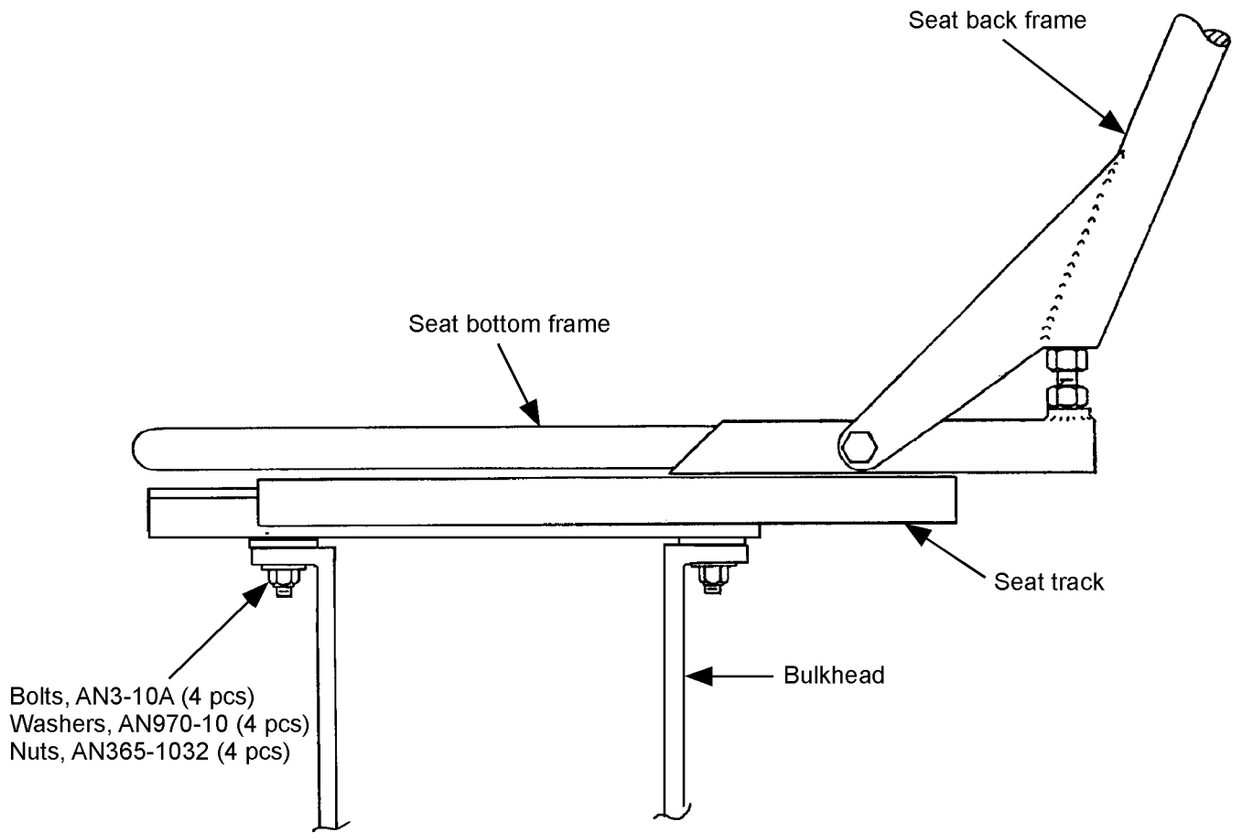
   Attempt to center the holes on the phenolic hardpoints of the flanges.
2. Drill 5/16" (8 mm) diameter holes through the shear panel flanges at each mounting stud location.

   You should have four holes in each shear panel and eight holes total.
3. Secure the seat tracks to the shear panel flanges with four bolts (AN3-10A), washers (AN960-10) and nuts (AN365-1032).

Alternate method

If you need additional leg room for the front seats, you can install the seat slightly aft of the bulkhead. Use the instructions for the *Alternate Seat Mounting Method* on page 15.13.

Figure 15.3.G.1 Mounting and securing the seats



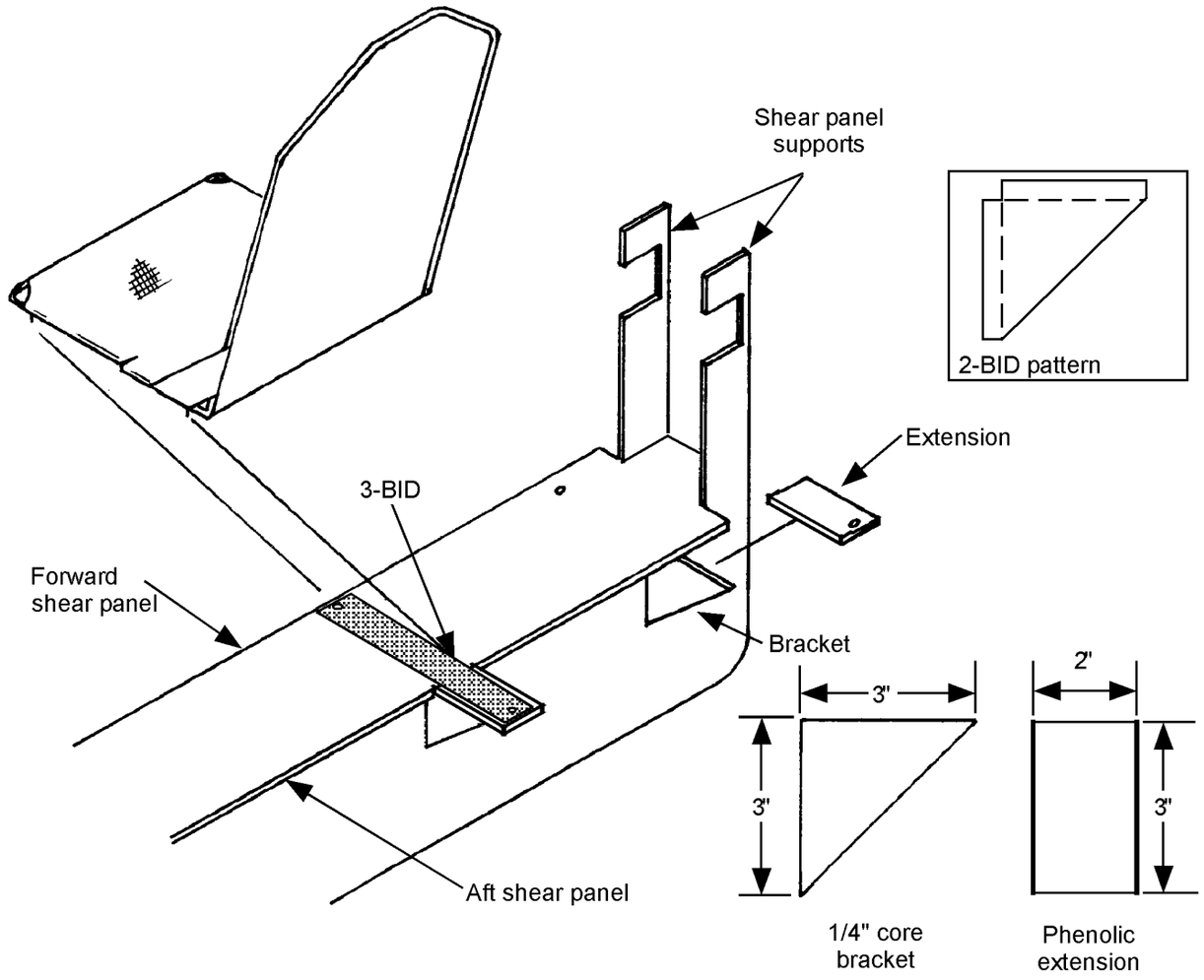
Alternate Seat Mounting Method

Some builders may wish to install the seat slightly aft of the bulkhead to provide additional leg room for the front seats. To do this you will need to follow these instructions.

- Cut four 1/4" (6 mm) prepreg brackets to the dimensions shown in Figure 15.3.G.2.
- Attach the brackets with a 2-BID layup across the aft shear panel.
- Position the brackets so they fit under the seat tracks.
- Using 1/4" (6 mm) phenolic, cut four rectangular pieces to the dimensions given in Figure 15.3.G.2.
- Create hardpoints for the bolts.
- Center the rectangular phenolic pieces over the core and attach with a 3-BID layup.

Move the forward seat mount accordingly.

Figure 15.3.G.2 Alternate seat mount (co-pilot's seat)



15.3.H Making and Installing the Aft Seats

The aft seat is constructed of 2 PPS prepreg and covers the flap mechanism. The aft seat folds forward to allow for long objects in the cargo area. You may also install a removable panel in the aft seat back. Refer to blueprint 3301 for this section.

Steps...

1. Cut and fit the aft seat bottom from 2 PPS prepreg.

   Cutting guidelines:

   - The outboard sides of the seat bottom should follow the contour of the side of the fuselage. The front edge of the seat should be approximately 5/8”(16 mm) wider than the rear edge. For example, if the front edge is 32-3/8”, the rear edge would be 31-3/4”.
   - The forward edge rests on the top of the shear box cover.
   - The aft edge extends 16-1/2" (412 mm) aft of the shear box.
   - The total length is approximately 18" (450 mm) which includes the flange.

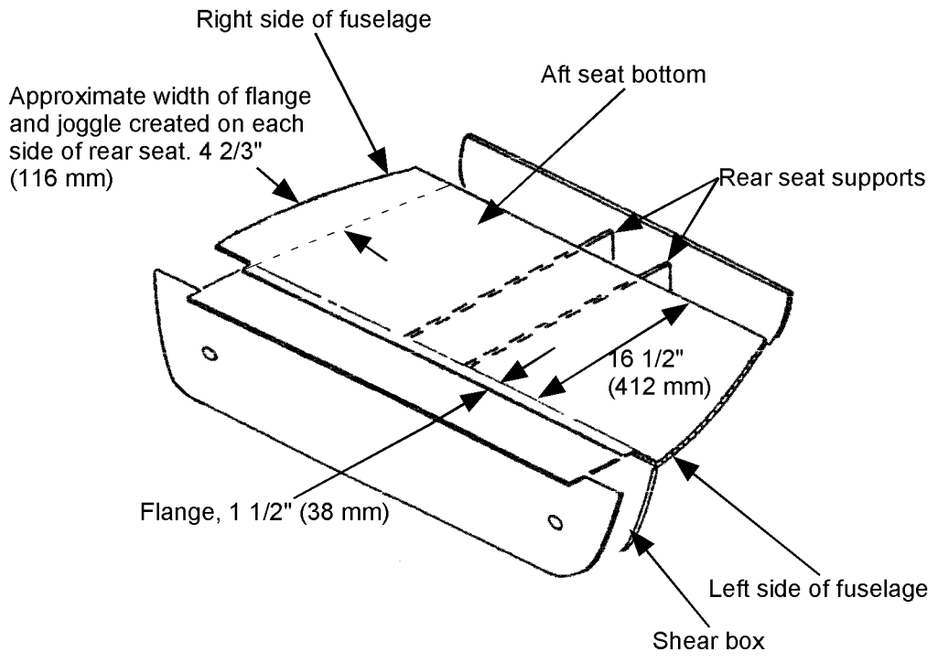
   Remember that the rear seat will need to clear the interior panels and the armrests when it is removed.
2. Remove the seat bottom.
3. Sand and prep the left and right edges of the seat for bonding.
4. Mark the seat bottom for the left and right side flanges. The flange and joggle will extend in from the fuselage side using the following measurements:

   front – 5-1/2” (137 mm)

   center – 4-2/3” (116 mm)

   rear – 4-5/8” (115 mm)
5. Following the mark made in the previous step, make a partial cut along both sides of the seat bottom.
6. Sand and prep. the inside of the fuselage where the left and right side layups for the flanges will be applied.

Figure 15.3.H.1 Creating the aft seat bottom



7. Put the seat bottom back in place and level it from left to right.

   Now you can use the seat bottom to build the left and right side flanges.
8. Glue the seat bottom in place and apply micro to each joint where the fuselage meets the seat bottom.
9. Apply a 2-BID layup on the side of the fuselage and onto the seat bottom using the following measurements for applying the BID onto the seat bottom.

   front – 5-1/2” (137 mm)

   center – 4-2/3” (116 mm)

   rear – 4-5/8” (115 mm)

Steps after cure...

1. After the first 2-BID has cured, cut the seat bottom along the score lines you made earlier and remove the center piece.

   Now you have the start of the flange with the 2 PPS prepreg and the 2-BID applied to the top of the seat bottom.
2. Sand and clean all bonding areas.
3. Release tape the area that will create the flange.
4. Reinforce the flange with a 2-BID on the upper side as shown in Figure 15.3.H.3.
5. Add a 2-BID layup on the underside.
6. Remove the release tape from the flange after the BID layups have cured.

This completes the three 2-BID layups, for a total of 6-BID, and it creates the flange which will be used for securing the seat bottom.

Figure 15.3.H.2 Creating the 6-BID flange

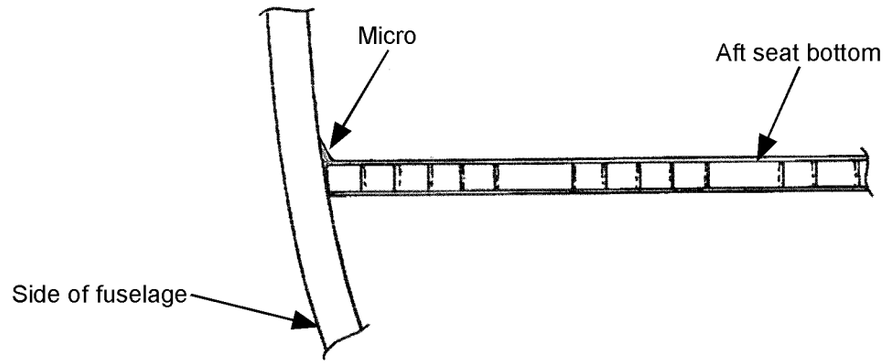
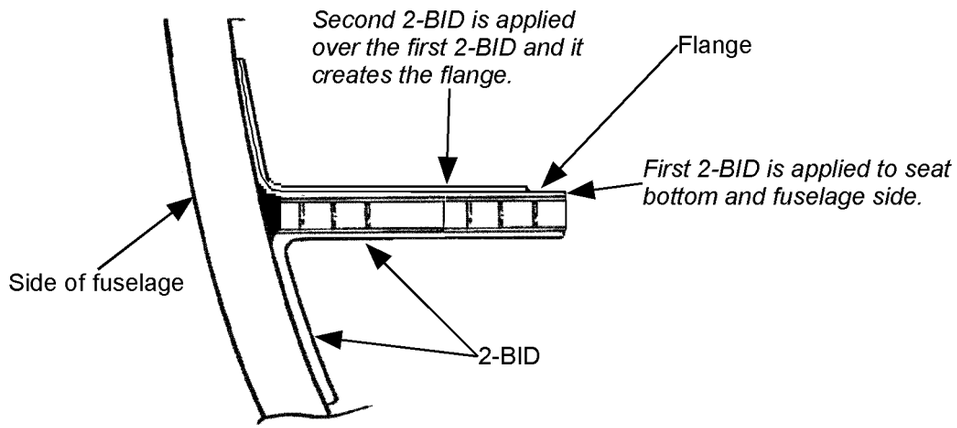


Figure 15.3.H.3 2-BID layups and flange creation



Making the Aft Flange Supports

Steps...

1. Measure from the fuselage bottom up, to the underside of the flange on the seat support.
2. Cut the flange support from 2 PPS prepreg.
3. Prep the flange support, the fuselage floor and the underside of the flange.
4. Glue the flange support in place, recessing it 1/2” (12 mm) outboard from the edge of the flange.

   If the flange support is too close to the inboard edge of the flange, there will not be room for the nutplates that secure the seat bottom.
5. Add a 2-BID layup on the fuselage floor onto the flange support. Add another 2-BID layup on the underside of the flange and onto the flange support.

Cutting the Aft Seat Belt Openings

Each aft seat belt will need an opening in the flange.

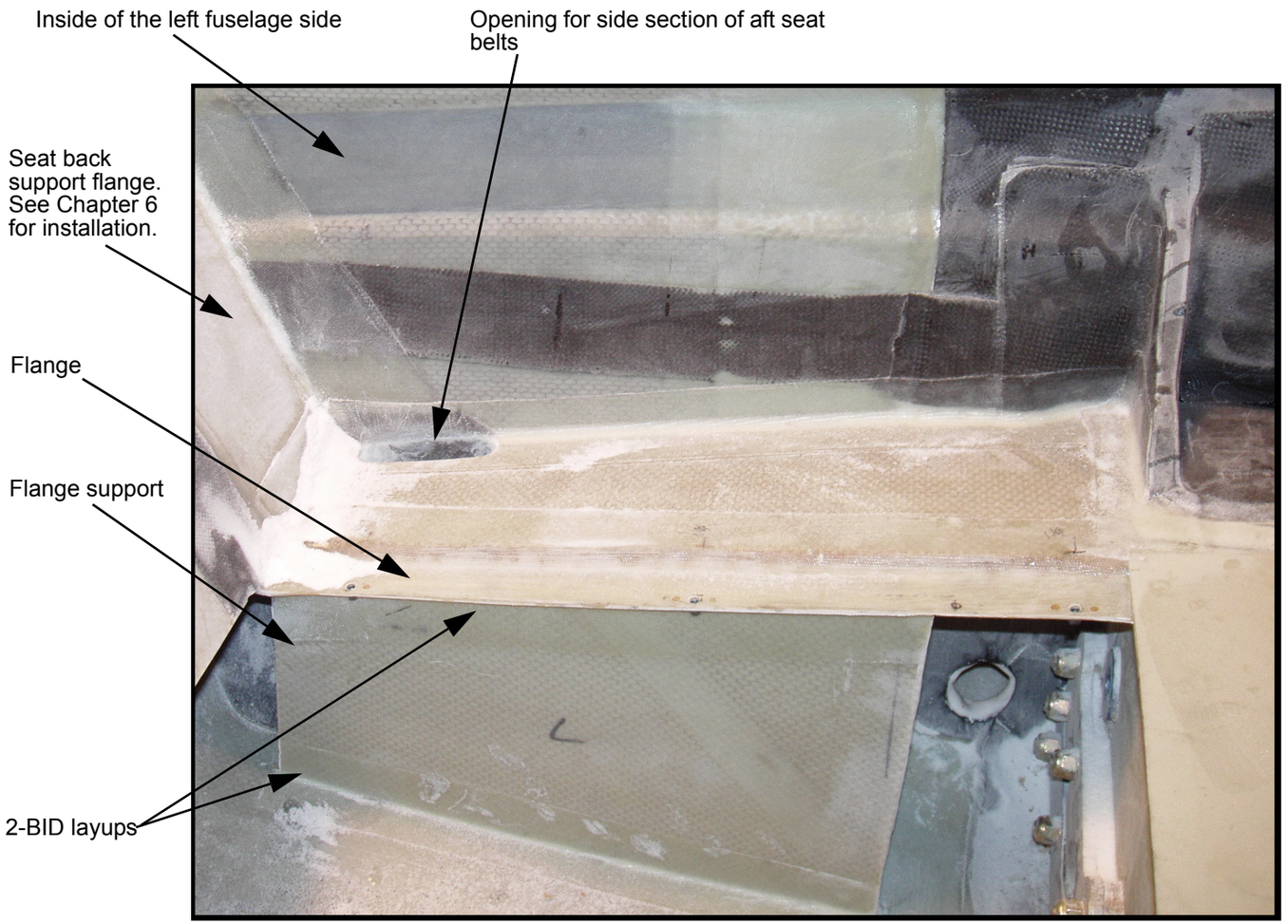
Steps...

- Cut an opening in the flange, above the seat belt hardpoint in the fuselage. The opening should be 1/2” (12 mm) wide by 3-1/2” (87 mm) long.

  Make the slots big enough for the seat belt lugs to run through.

WARNING: Make sure there is no chance of the seat belt tangling with the flap motor or the elevator pushrod.

Figure 15.3.H.4 Support for the aft seat flange



Finishing and Securing the Seat Bottom

Steps...

1. Remove 1/8" to 1/4" (3-6 mm) of core around the perimeter of the seat bottom. Fill the trough with a thick micro mixture.
2. Fit the seat bottom in place, resting it on the flanges.
3. Mark three locations for the nutplates on the left and right sides of the seat bottom.
4. Drill a hole at only one of the marked locations. Drill through the seat bottom and the flange

   This hole is for the bolt that will go through the nutplate.
5. Drop a spare bolt through the hole.
6. Now drill the remaining locations and drop in bolts as you drill.

   This holds the seat bottom in place as you continue to drill the holes.
7. Remove the seat bottom.
8. Form hardpoints in the areas where the screws on the outside edges will be installed by removing the upper laminate and core surrounding the screw locations. Fill with an micro/flox mixture.

Figure 15.3.H.5 Hardpoint for seat bottom screws

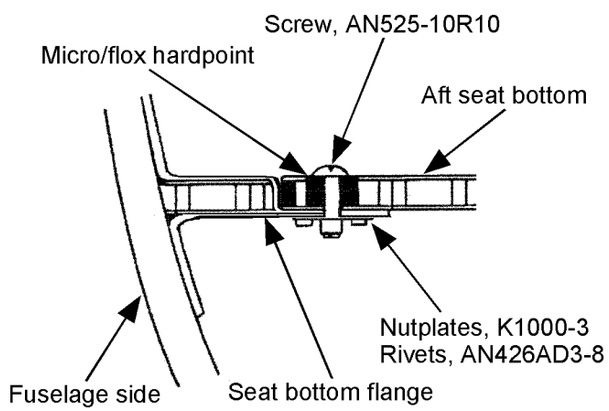
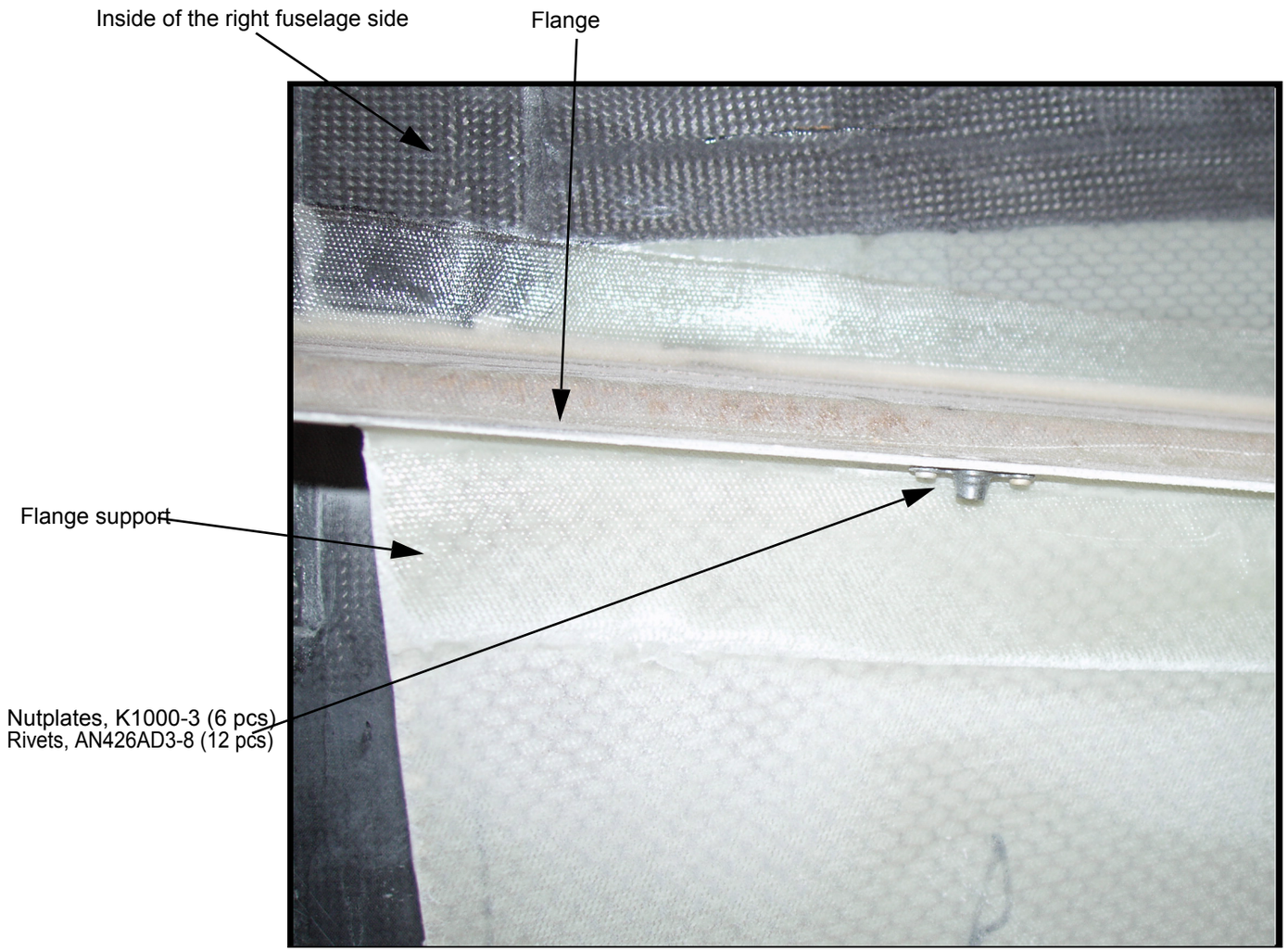


Figure 15.3.H.6 Adding the nutplates to the flange



9. Install the nutplates (K1000-3) secured with rivets (AN426AD3-8) on each of the flanges. See Figure 15.3.H.7 for locating the nutplates.
10. Remove the forward 1-1/2” (38 mm) of the upper laminate and core of the shear box closeout as shown in Figure 15.3.H.8.
11. Sand and clean the decored area.
12. Apply release tape over the decored area using three layers of duct tape.
13. Reinforce the forward edge of the seat with a 3-BID applied 1-1/2” (38 mm) onto the spar box, over the duct tape, and 1” (25 mm) onto the sea bottom. See Figure 15.3.H.8.
14. Fit the seat bottom and secure it with three screws (AN525-10R10) along each side edge.

Figure 15.3.H.7 Securing the seat bottom

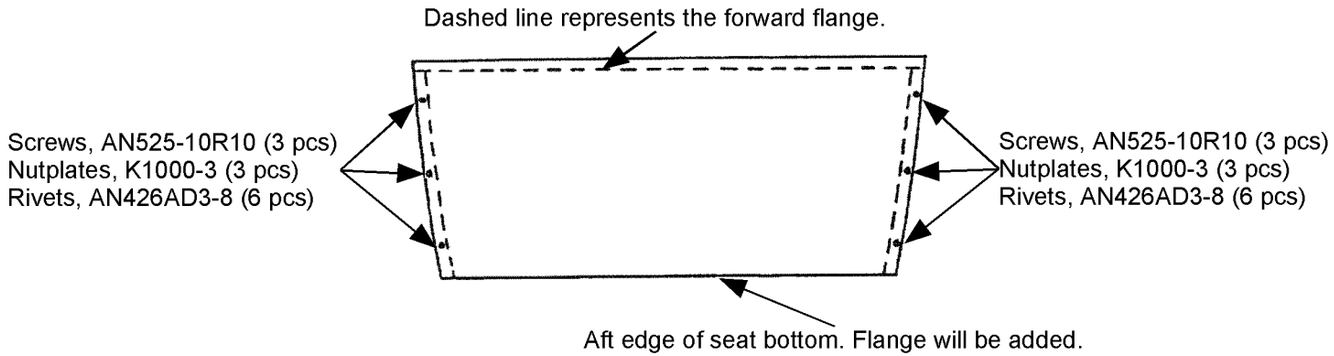
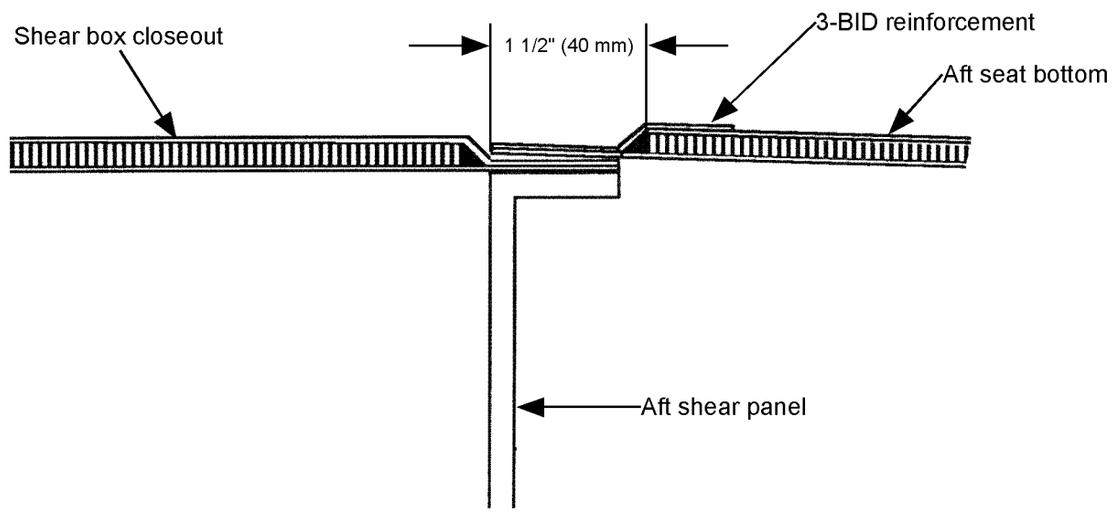


Figure 15.3.H.8 Forward flange on the aft seat bottom



15.3.I Making the Torque Tube Cover

The lower portion of the seat back will permanently bond to the piece that spans across the bulkhead. This assembly will collectively be referred to as the torque tube cover.

Steps...

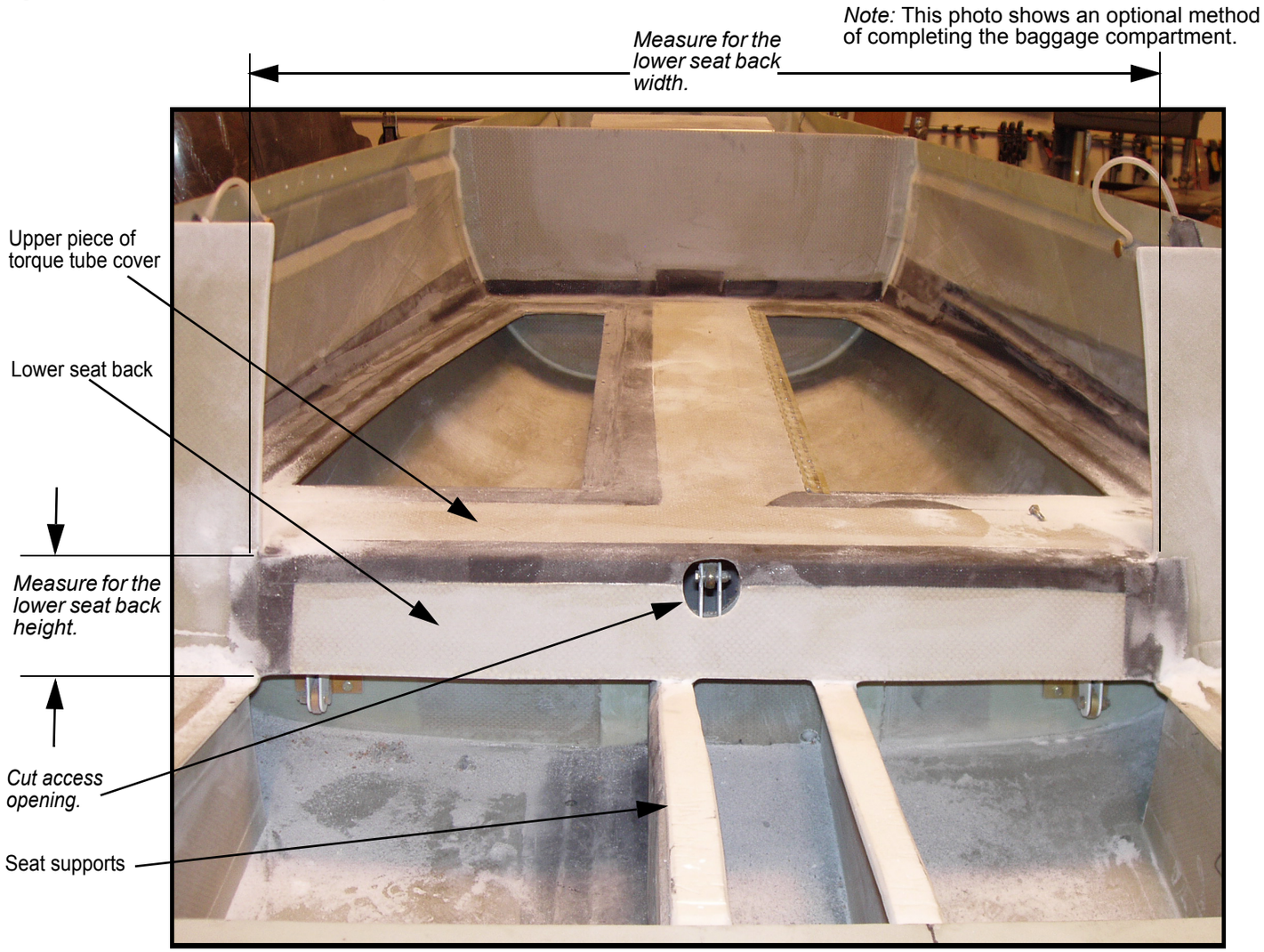
1. Remove the upper 1-1/2" (38 mm) of the aft laminate and core of the bulkhead.
2. Reinforce with 2" (50 mm) wide 3-BID. See Figure 15.3.I.2.

   This creates a flange that the torque tube cover will fit over when it is completed.
3. Measure the height and width for the lower seat back and cut a cardboard pattern. Fit the pattern into its position until you have a snug fit.

   Size the lower seat back so the height is 1/4" below the top of the torque tube mounting bulkhead.
4. Using the pattern, cut the seat back from 2 PPS, 1/4" (6 mm) thick piece of prepreg.

   Cut clearance holes as necessary for the elevator pushrod.
5. Temporarily superglue the seat back in place, tilted at approximately 27°.
6. Cut and fit the upper piece of the torque tube cover from 2 PPS prepreg. Size the piece to span the gap between the lower seat back and the bulkhead. Refer to blueprint 3301 for the following steps.)
7. Remove the aft 1-1/2" (38 mm) of laminate and core from the aft portion of the torque tube cover.
8. Reinforce the underside with a 2" (50 mm) wide 3-BID. See Figure 15.3.I.2.
9. Superglue the torque tube cover in place.

Figure 15.3.I.1 Lower seat back and torque tube cover



10. Bond the torque tube cover to the lower seat back with an epoxy/flox mixture. Smooth the bond so it has a smooth transition. See Figure 15.3.I.2.
11. Apply a 3" (75 mm) wide 4-BID over the bond.
12. Release tape the top section of the bulkhead.
13. Create a flange by applying a 4-BID over the aft section of the torque tube cover and the release tape.
14. After the flange has cured, drill five evenly spaced #19 holes through the flange and the bulkhead.
15. Carefully remove the torque tube cover.
16. Install five nutplates (K1000-08) along the flange of the bulkhead using AN426AD3-8 rivets. Secure the torque tube cover with the AN525-832-R8 screws.
17. Reinforce the transition joint between the lower seat back and the torque tube cover by removing the upper 1-1/2" (38 mm) of the laminate and core on the inside of the cover.
18. Reinforce with 3" (75 mm) wide 3-BID.
19. Install the completed torque tube cover.
20. Locate and cut an access opening for the elevator torque tube to pushrod connection.

Figure 15.3.I.2 Decore and layups for building the seat back/torque tube cover

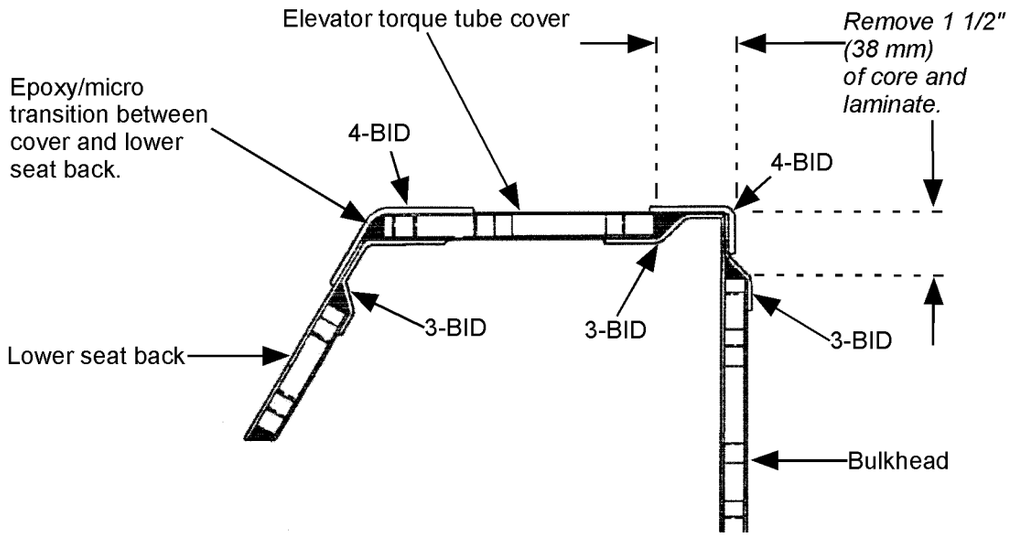
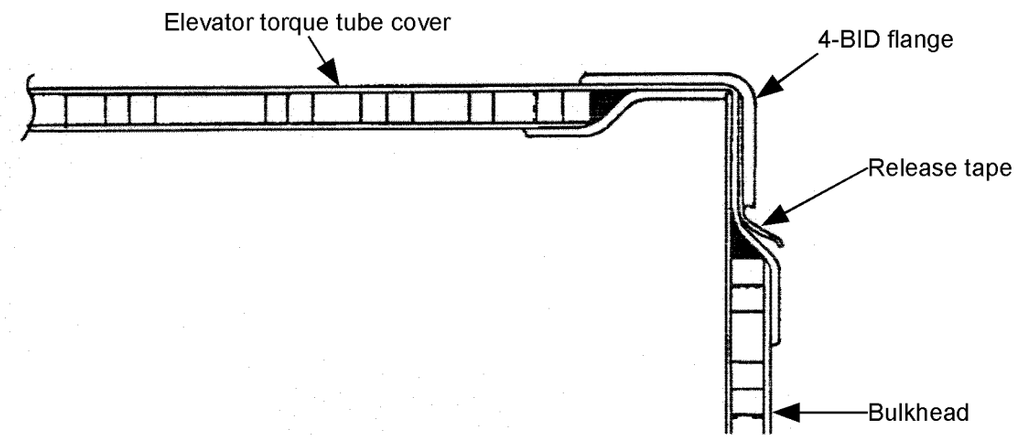


Figure 15.3.I.3 4-BID flange for fitting torque tube cover over the bulkhead



15.3.J Finishing the Seat Bottom

With the torque tube cover installed and the seat bottom secured in place, you will form the seat bottom rear flange followed by the front flange. Then you will build up the seat supports so the seat bottom can rest on them.

Steps...

1. Release tape the bottom 1-1/2” (38 mm) of the torque tube cover.
2. Apply a 3" wide (75 mm), 4-BID flange on the seat bottom and onto the torque tube cover. Overlap 1-1/2” (38 mm) onto the torque tube cover.
3. Remove the seat bottom.
4. Apply a 2-BID layup on the seat bottom over the hardpoints for the screws.
5. Back drill the screw holes on each side of the seat bottom.
6. Release tape the underside of the seat bottom in the area of the fuselage’s seat supports.
7. Build up the center seat supports so they are level with the flanges that support the seat on each side. See Figure 15.3.I.1.

   Mound epoxy/flox on the seat supports.
8. Put the seat bottom back in and make sure it is level from side to side.

   Firmly push on the center to level the seat bottom.

Steps after cure...

- Remove the seat bottom and clean up the edges of the epoxy/flox on the seat supports.

Figure 15.3.J.1 Seat bottom flanges

Note: This photo shows an optional method of completing the baggage compartment.

Finishing the Aft Flange

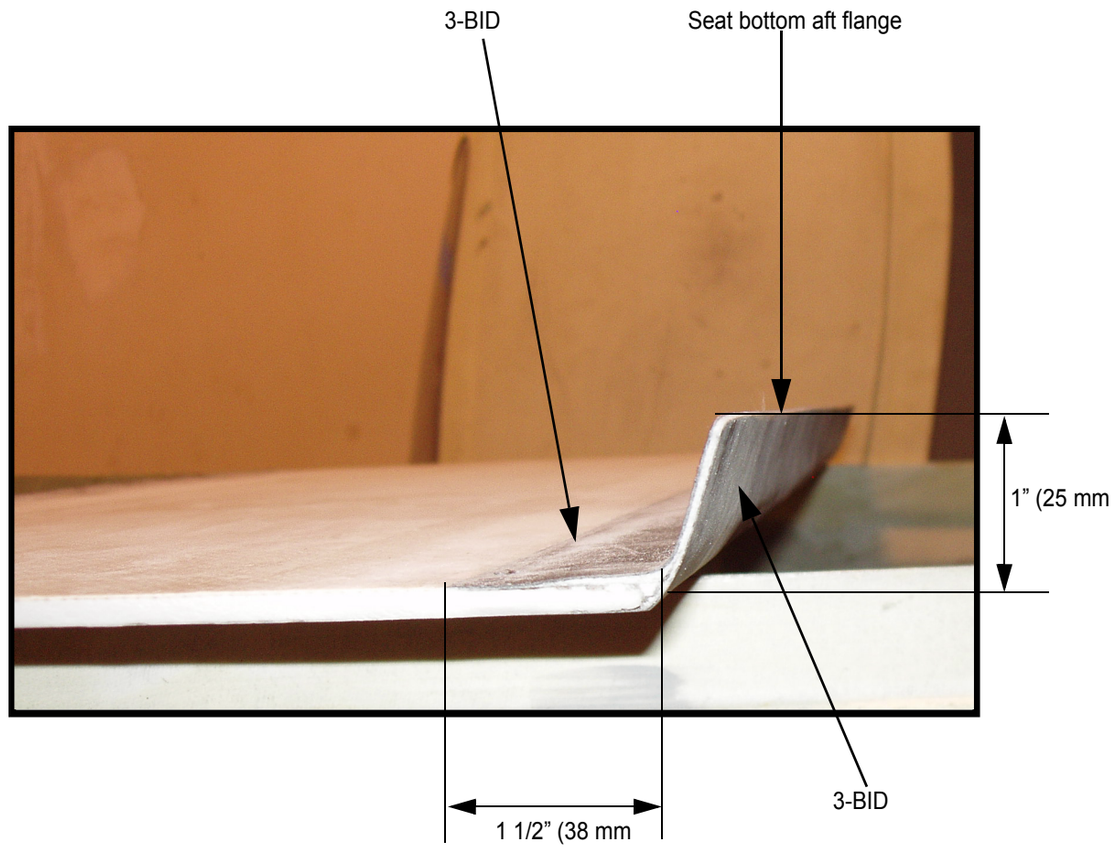
Steps...

1. Apply nine layers of duct tape to the bottom edge of the seat back.
2. Put the seat back in place.
3. Prepare the surface of the aft 1-1/2” (38 mm) of both sides of the aft seat bottom.
4. Put the seat bottom in place.
5. Apply a 1-1/2” (38 mm) 3-BID on the aft edge of the seat bottom. Overlap the BID by 1” (25 mm) onto the seat back.

   This creates the aft flange on the seat bottom.
6. Allow the layup to cure.
7. Remove the seat bottom.
8. Apply the same width 3-BID to the underside of the aft flange.

This completes the front and aft flanges on the seat bottom.

Figure 15.3.J.2 Seat bottom aft flange



15.3.K Finishing the Seat Back

In this section you will complete the aft seat back. In *Chapter 6 Closing out the Fuselage and Installing the Door* the seat back was cut and fitted.

Steps...

1. Remove 1/8" to 1/4" (3 to 6 mm) of core around the perimeter of the center seat back.
2. Fill the decored area with a thick micro mixture.
3. Remove the lower 1-1/2” (38 mm) of the forward laminate and core in the hinge mounting area.
4. Reinforce the decored area with a 4-BID.
5. Cut a 26” (610 mm) piece of MS20001 hinge.
6. With the flat side of the hinge facing back, center the hinge on the seat back and flue it in place.
7. Drill #40 holes every 3” (75 mm).
8. Secure the hinge with rivets (AN426A3-5).
9. Install the seat back on the elevator torque tube cover, with the seat back at 27°. This should be parallel to the lower seat back.
10. Install approximately four nutplates (K1000-3) secured with rivets (AN426AD3-8) evenly spaced on the torque tube cover to hold it in place.
11. Locate and drill holes for the screws (AN525-10R10) that secure the hinge to the lower seat back.

Figure 15.3.K.1 Seat back extruded hinge

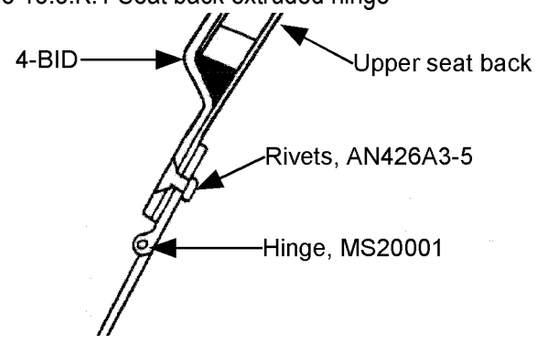
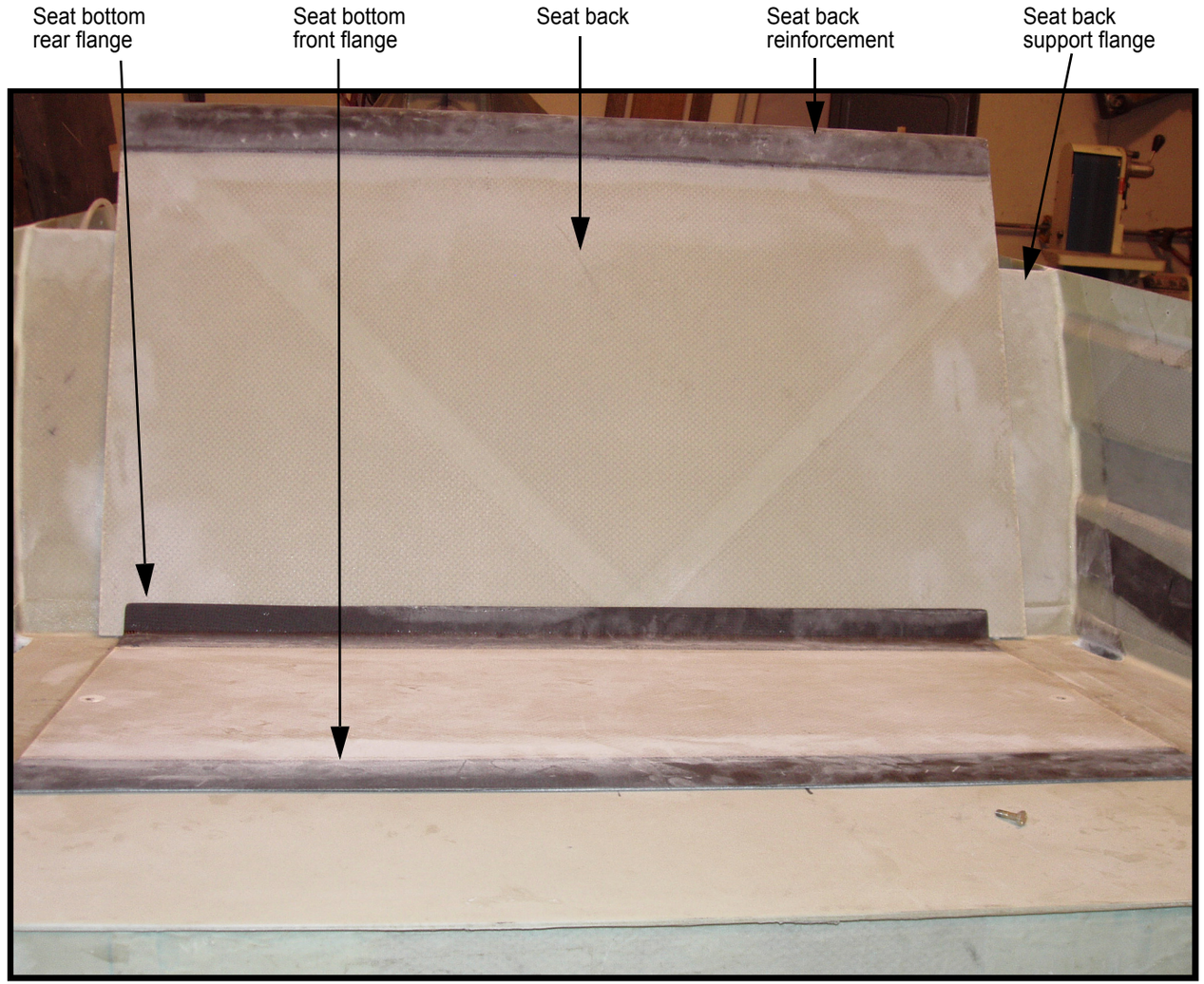


Figure 15.3.K.2 Aft seats



Installing the Latches

The seat back latches hold the seat in place in case of sudden deceleration. There are two latches, a left and a right. Familiarize yourself with the operation of the latches so you'll understand how they are installed. Make sure the latch is correctly oriented so you can work the handle properly.

Steps...

1. Prepare all the bonding surfaces on the seat back, seat back flange and the latches (3610-04, 3610-05).
2. Install the latch receptacle 2" (50 mm) below the seat back stiffener and flush with the inboard edge of the seat back flange.
3. Reinforce over the latch receptacle with a 3-BID.
4. Install the seat back latch leaving a 1/16" (1.5 mm) gap between the latch and the receiver for clearance.

   Note that a thin Hysol/flox pad is required to align the latches to the receptacle.
5. Reinforce over the seat back latch with 3-BID.

Figure 15.3.K.3 Completed aft seat latch

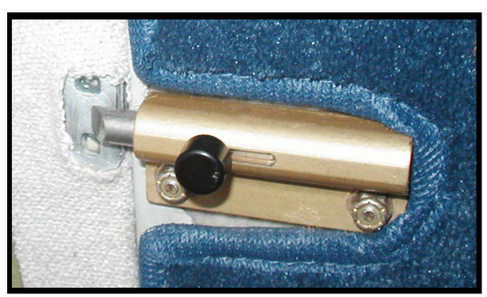


Figure 15.3.K.4 Aft view of the aft seat back and the right latch

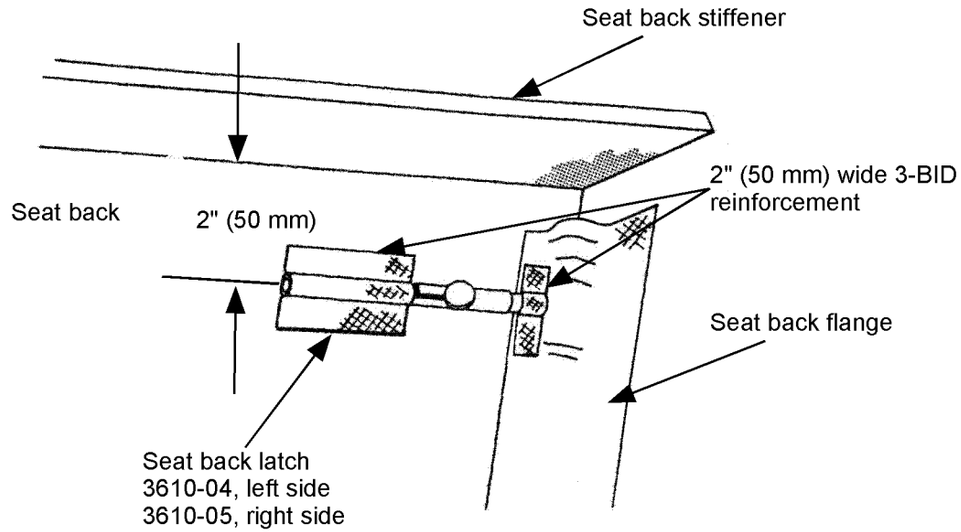
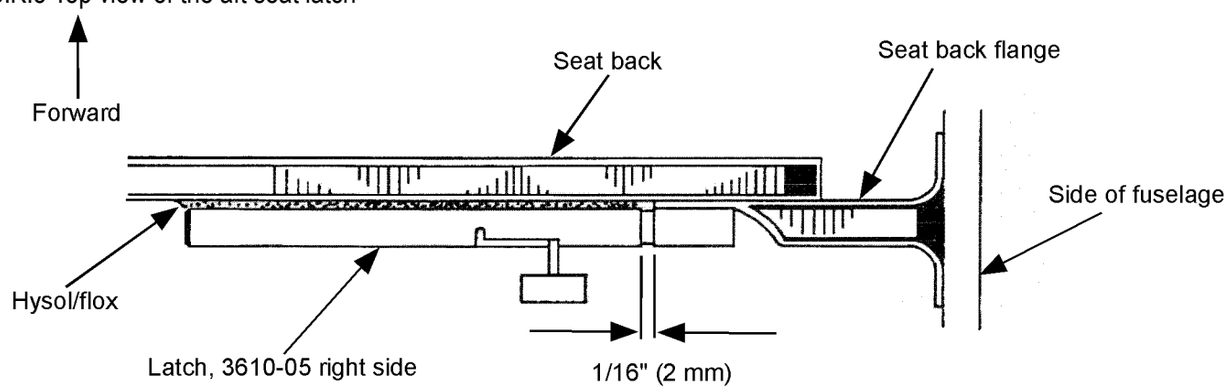


Figure 15.3.K.5 Top view of the aft seat latch



15.3.L Installing the Seat Belts

The front seat belts mount to three points.

- The lap belt attaches to:
  – The hardpoint already installed between the seats (see 15.3.E *Creating the Center Seat Belt Attach Reinforcement* on page 15.9),
  – and also to the wing attach bracket fittings on the sides of the fuselage.
- The shoulder belt:
  – mounts to the fuselage by potting studs.

The aft seat belts mount to two points.

- the hardpoint in the seat supports in the center, and
- to the hardpoints in the side of the fuselage.

Installing the Front Seat Belts

Steps...

1. Drill two 5/16” (8 mm) diameter holes in the phenolic hardpoint. See Figure 15.3.L.1 for the locations.
   It is important that the bolt securing the seat belt is properly located on the phenolic.
2. Install the seat belt by sliding a bolt (AN5-12A) through the hole with a washer (AN970-5) on each side of the bulkhead. Then slide the front seat belt (707-01) over the bolt, another washer and secure with a locknut (AN365-524A)

Figure 15.3.L.1 Front seat belt hole drilling location

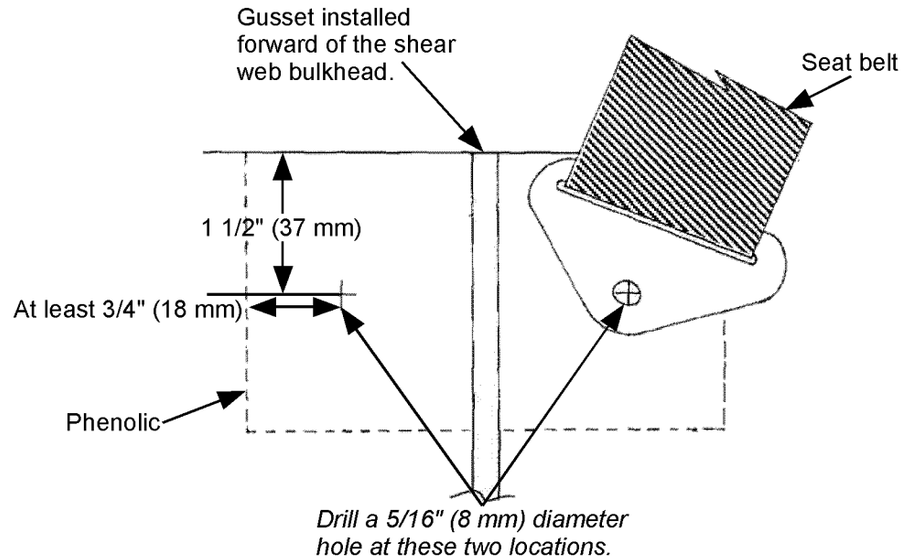
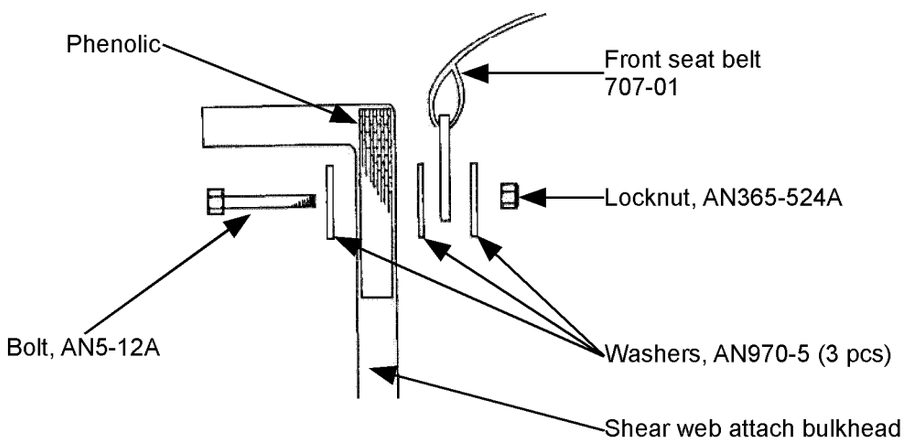


Figure 15.3.L.2 Front seat belt hardware attachments



3. Install the front seat belt side attachment by attaching it to the bolt (AN4-37A) that secures the inboard aileron bellcrank. Install a washer (AN970-4) on each side of the seat belt.
4. Locate and drill 3/8” diameter holes through the top fuselage shell at the following locations:
   - 3” (75 mm) forward of the rear window
   - 16-17” (400-425 mm) above the armrest.
5. Enlarge the hole in the outer laminate and core to accept the head of an AN6 bolt

   Tip: *DO NOT* enlarge the hole of the inner laminate. Notice that the inner laminate is thicker than the outer laminate due to a premolded roll over structure. This additional structure is handy for the shoulder belt attach points.
6. Pot the bolts (AN6-6A), using a thick epoxy/flox mixture, into the fuselage as anchor studs for the shoulder belts.
7. Body work the fuselage shell so it is smooth around the stud area.
8. Assemble the shoulder belt to each bolt using two washers (AN960-616) and a locknut (AN365-624A).

Figure 15.3.L.3 Side attachment for the front seat belt

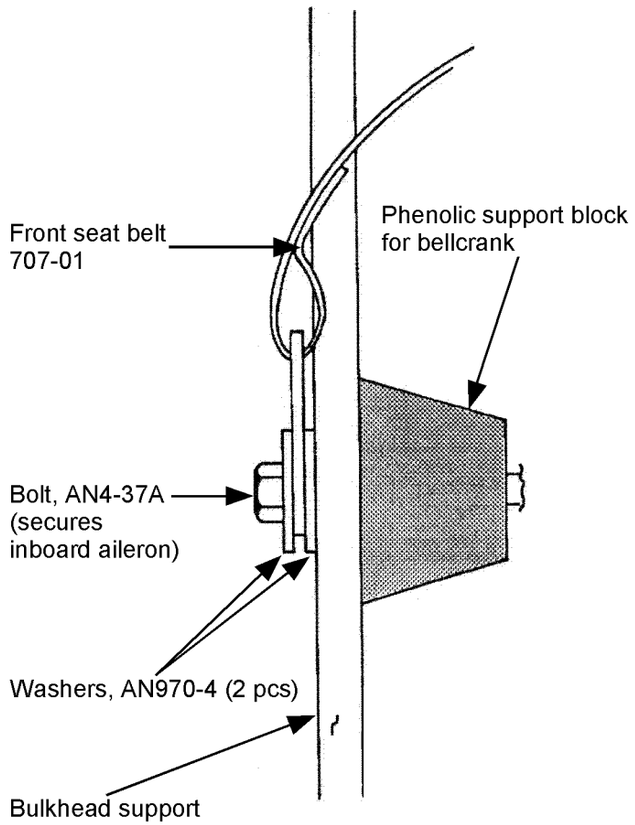
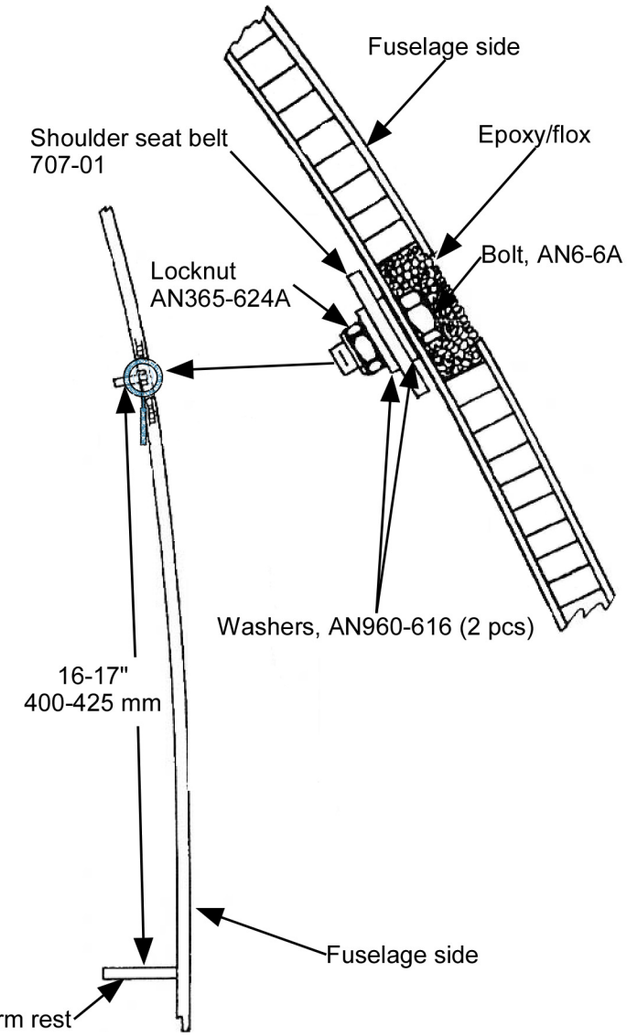


Figure 15.3.L.4 Shoulder belt attachment for the front seats

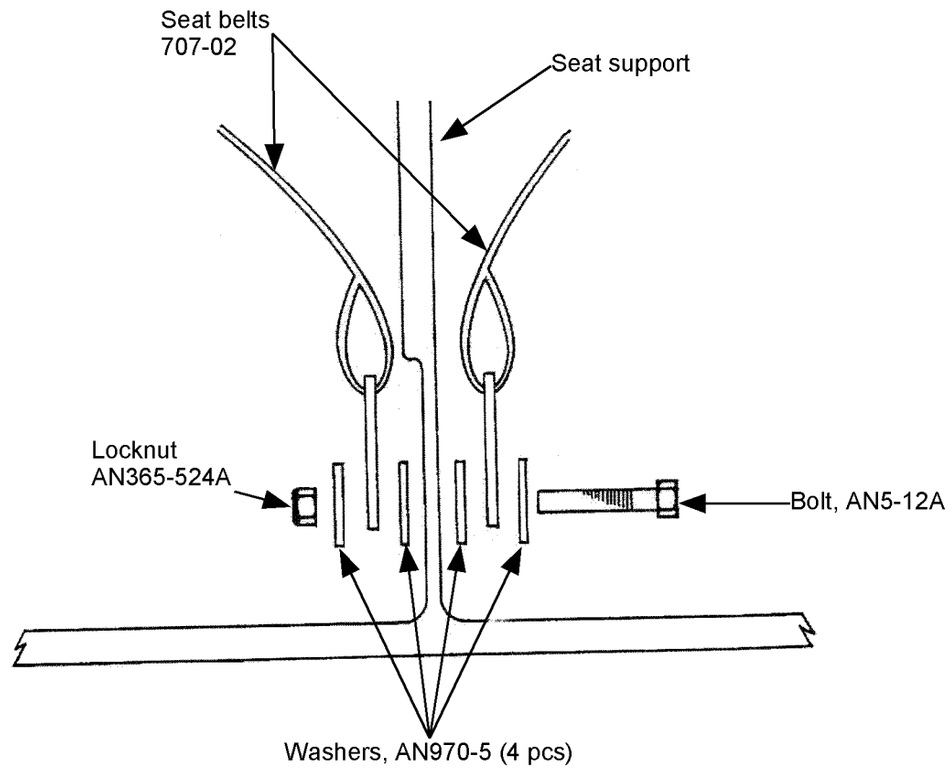


Installing the Aft Seat Belts

Steps...

1. Locate and drill a 5/16” (8 mm) diameter hole for the bolt that secures the center seat belt attachments. Center the hole in the coreless area of the seat support at the following approximate location.
   - 7-1/2” (187 mm) forward of the bulkhead
   - 2-1/2” (112 mm) up from the floor
2. Install a seat belt on each side of the seat support using a bolt (AN5-12A) inserted into the following:
   - washer (AN970-5); seat belt (707-02); washer
   - through the seat support
   - washer (AN970-5); seat belt (707-02); washer
3. Secure the bolt with a locknut (AN365-524A).

Figure 15.3.L.5 Center attachment for the aft seat belts



4. Locate and drill a 5/16” (8 mm) hole for the bolt (AN5-14A) that secures the outside seat belt attachments. Center the hole in the coreless area.
5. Install the remaining piece of the seat belt by assembling the following hardware on the bolt (AN5-14A) as shown in Figure 15.3.L.6.
   - washer (AN970-5)
   - through the fuselage
   - washer (AN970-5); seat belt (707-02); washer
6. Secure the bolt with a locknut (AN365-524).

Figure 15.3.L.6 Outboard attachment for the aft seat belt