

## AUXILIARY STRUCTURE

### 1. DESCRIPTION

This section describes those structural components which make up the auxiliary structure including fuselage floor structure, floor access panels, entry step, and support handle.

#### A. Fuselage Floor Structure

The floor structure of the airplane consists of a forward floor and an aft floor. Both are foam core composite laminate panels designed to support flight and user loads. The front floor supports forward and aft console structures, rudder pedals, and a pulley gang assembly. The aft floor supports aft wing attachment loads, aft passenger seat loads, and cargo loads. The front floor is bonded to the sides of the fuselage and is supported by two longerons, firewall, and spar box. The aft floor is bonded to the sides of the fuselage and is supported by two longerons, the spar box, bulkhead 186, and bulkhead 222.

#### B. Entry Step and Support Handle

The entry step is constructed 0.049 inch gage streamline steel tubing. The entry step has 0.09 inch gage flanges that are welded to the tubing and secured to the fuselage belly and the aft floor. The support handle is constructed of 0.38 inch solid aluminum and secured to the top of the fuselage by screws.

#### C. Aft Tie Down and Bracket

The aft tie down is used to secure the airplane for parking, mooring, and maintenance operations that require the airplane to remain in a fixed position. It is located on the underside of the empennage directly below the horizontal stabilizer. ([Refer to 10-10](#))

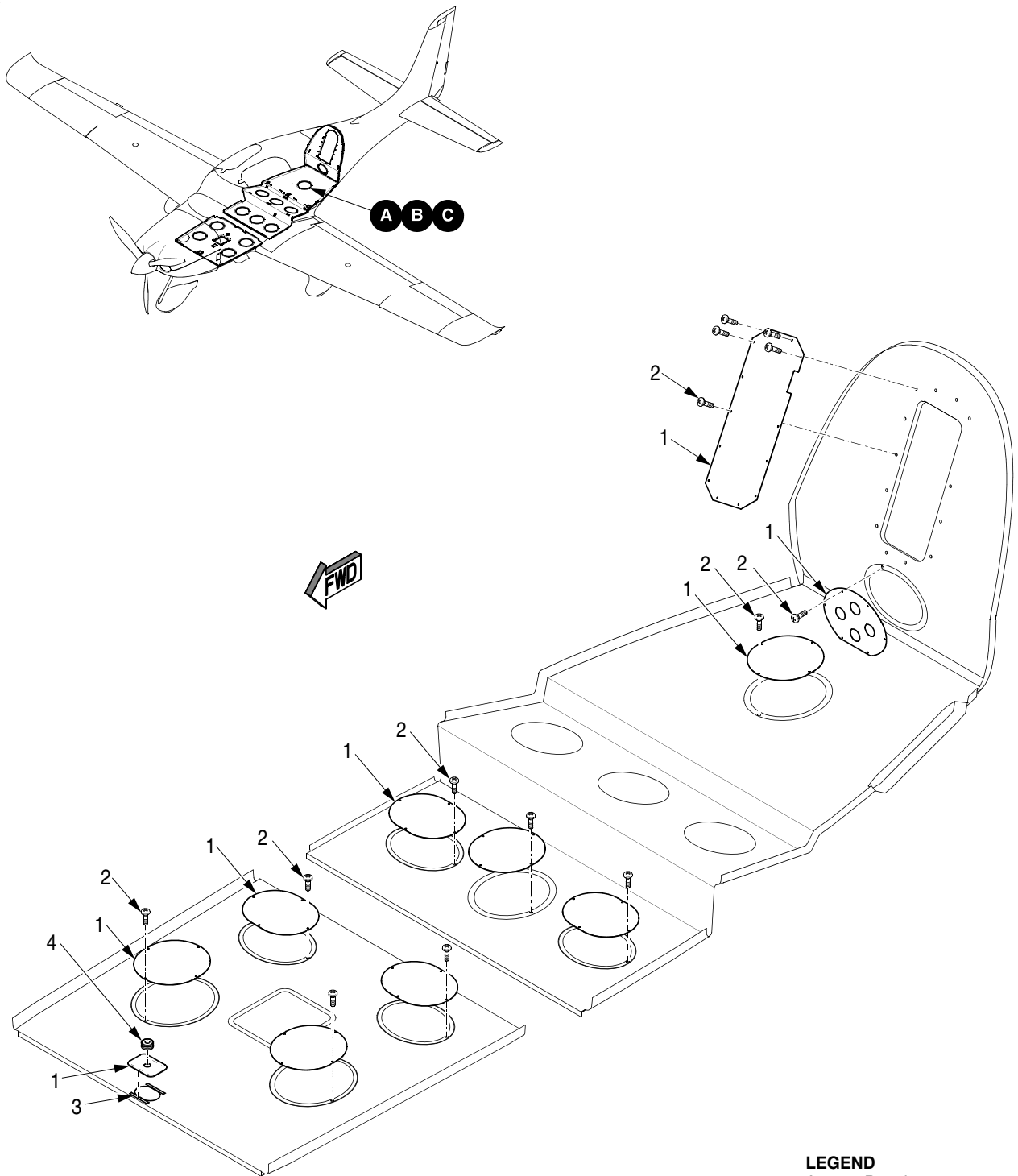
*Serials 0002 thru 1520 before SB 2X-53-03:* The aft tie down consists of an eyebolt used to attach the aft empennage to a weighted tail stand or mooring ring.

*Serials 1521 & subs, Serials 0002 thru 1520 after SB 2X-53-03:* The aft tie down consists of a contoured rubber bumper with a hole used to attach the aft empennage to a weighted tail stand or mooring ring.

The aft tie down bracket secures the aft tie down to the underside of the empennage. It is constructed of solid aluminum and secured to the aft spar of the vertical stabilizer by screws.

**2. MAINTENANCE PRACTICES****A. Fuselage Floor Access Panels (See Figure 53-201)**

- (1) Removal - Fuselage Floor Access Panels
  - (a) Remove carpeting covering access panel. (Refer to 25-10)
  - (b) Remove seat covering access panel, if necessary. (Refer to 25-10)
  - (c) Remove fasteners securing access panel to fuselage floor.
  - (d) Remove access panel.
- (2) Installation - Fuselage Floor Access Panels
  - (a) Position access panel to floor access hole.
  - (b) Install fasteners securing access panel to fuselage floor.
  - (c) Install seat, if necessary. (Refer to 25-10)
  - (d) Install carpeting. (Refer to 25-10)



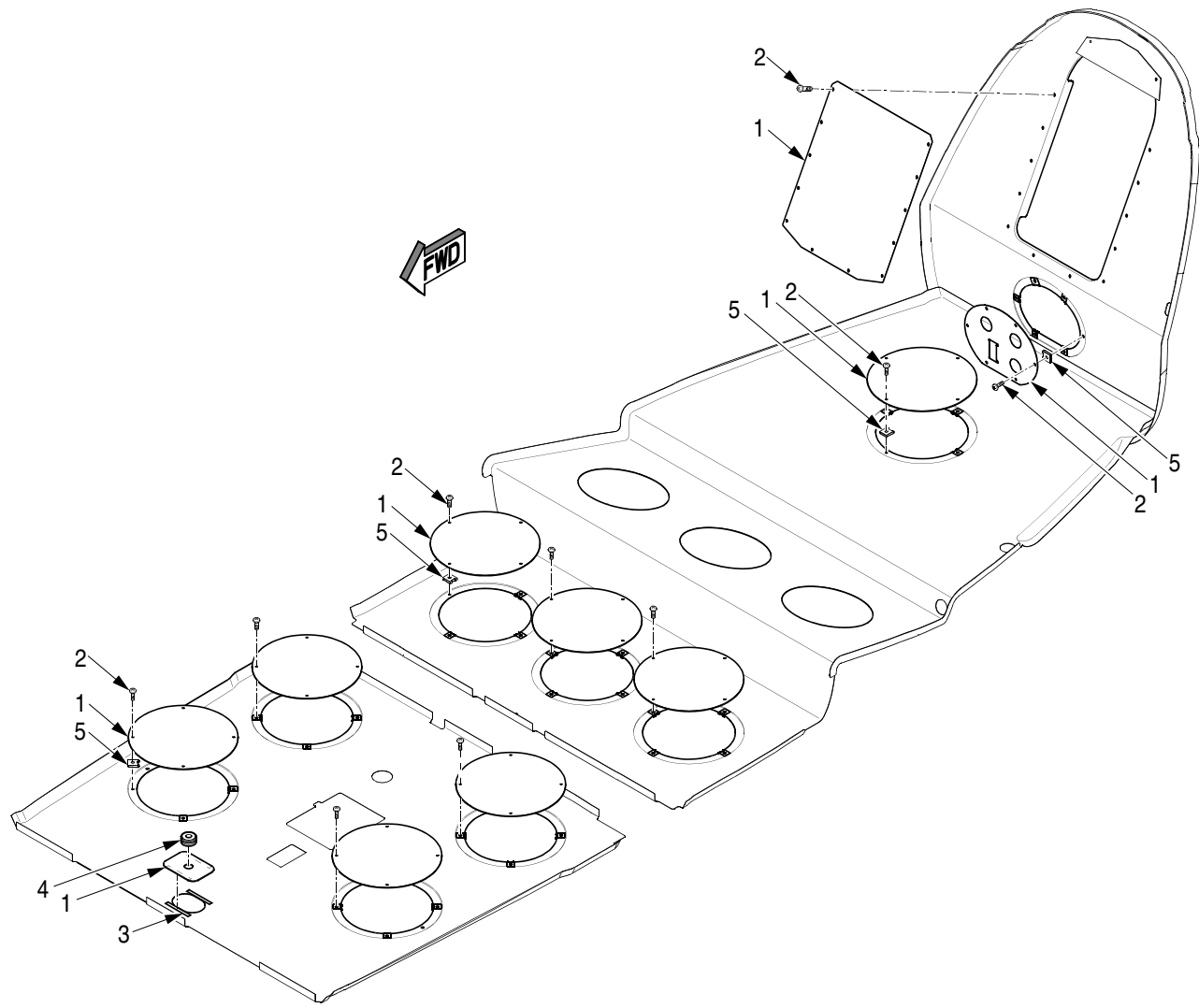
Serials 0002 thru 0820.

**DETAIL A**

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**Figure 53-201**  
**Access Panels, Cabin - Serials 0002 thru 0820 (Sheet 1 of 3)**

**EFFECTIVITY:**  
 Serials 0002 thru 0820



*Serials 0821 thru 1601, 1603 thru 1820, 1822 thru 1839, 1841 thru 1862.*

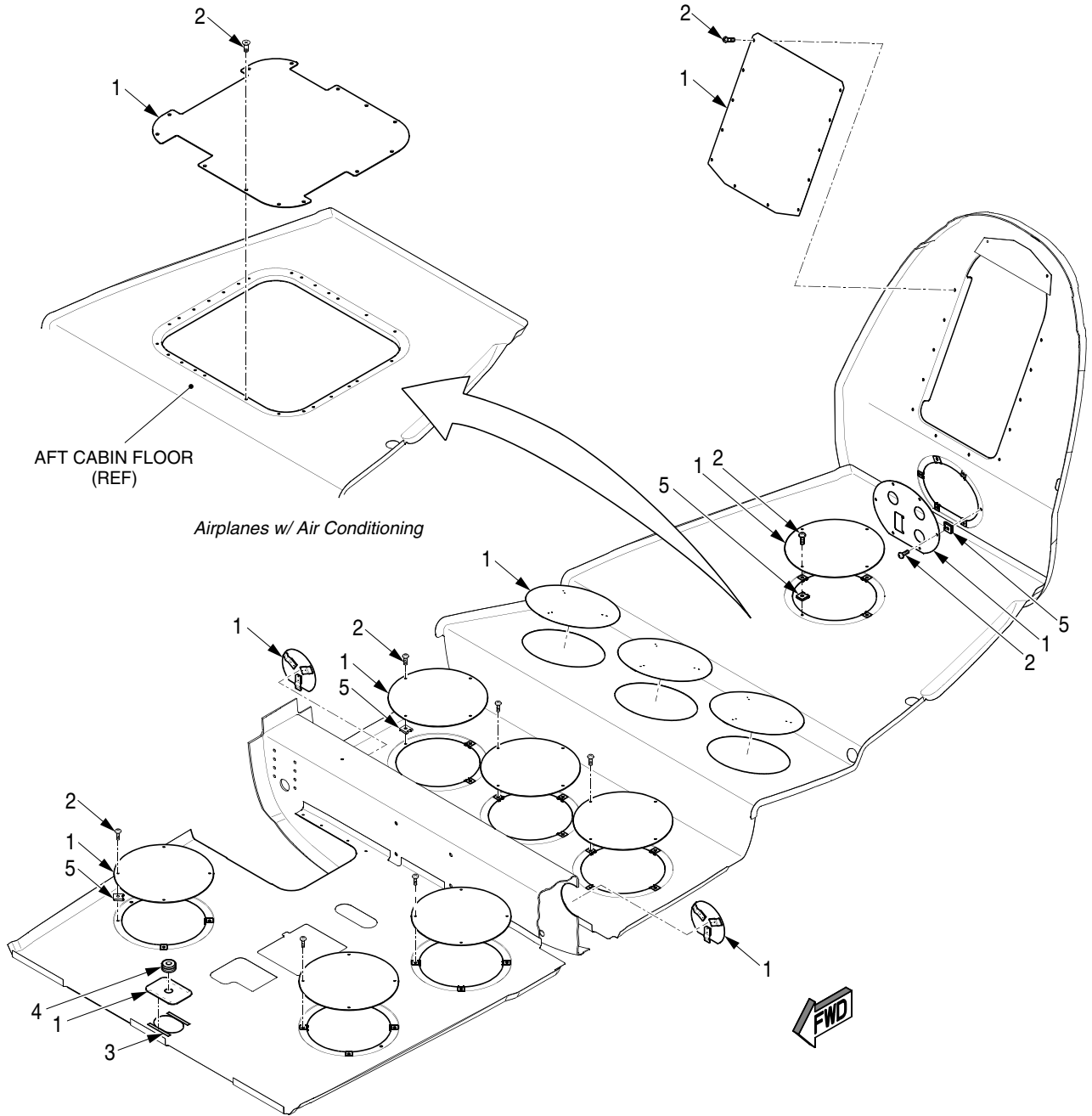
- LEGEND**
- 1. Access Panel
  - 2. Screw
  - 3. Hook & Loop
  - 4. Grommet
  - 5. Fastener

**DETAIL B**

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**Figure 53-201**  
**Access Panels, Cabin - Serials 0821 thru 1862 (Sheet 2 of 3)**

EFFECTIVITY:  
 Serials 0821 thru 1862



Serials 1602, 1821, 1840, 1863 & subs.

**LEGEND**

- 1. Access Panel
- 2. Screw
- 3. Hook & Loop
- 4. Grommet
- 5. Fastener

**DETAIL C**

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**Figure 53-201**  
**Access Panels, Cabin - Serials 1863 & subs (Sheet 3 of 3)**

**EFFECTIVITY:**  
 Serials 1863 & subs

**B. Entry Step (See Figure 53-202)**

- (1) Removal - Entry Step
  - (a) Remove access panel CF5. ([Refer to 06-00](#))
  - (b) Remove nuts, washers, and bolts securing entry step to baggage compartment floor.
  - (c) Remove nuts, washers, and bolts securing step to fuselage belly. Remove entry step from airplane.
- (2) Installation - Entry Step
  - (a) Position entry step to baggage compartment floor and fuselage belly.
  - (b) Install bolts, washers, and nuts securing entry step to baggage compartment floor and fuselage belly.
  - (c) Install access panel CF5. ([Refer to 06-00](#))

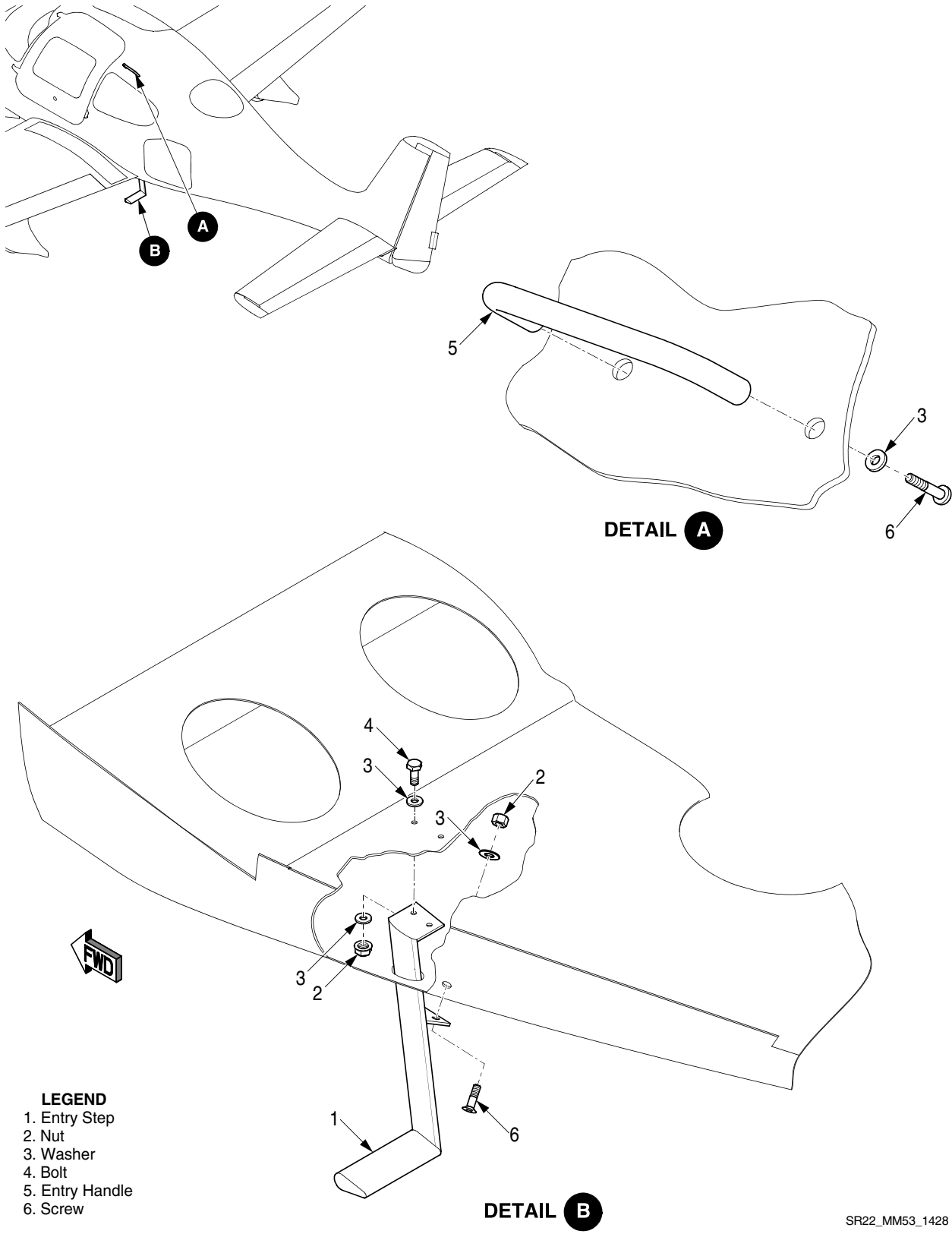
**C. Support Handle (See Figure 53-202)**

- (1) Removal - Support Handle
  - (a) Remove cabin headliner. (Refer to 25-10)
  - (b) Remove screws and washers securing support handle to fuselage. Remove support handle from airplane.
- (2) Installation - Support Handle
  - (a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Loctite	242 Blue	Loctite Corp Newington, CT	Sealant.

- (b) Apply Loctite to support handle studs.
- (c) Position support handle to fuselage and secure with screws and washers.
- (d) Install cabin headliner. (Refer to 25-10)

EFFECTIVITY:  
All



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**Figure 53-20**  
**Entry Step and Support Handle Installation**



**D. Aft Tie Down (See Figure 53-203)**

(1) Removal - Aft Tie Down

- (a) *Serials 0002 thru 1520 before SB 2X-53-03:* At aft bottom of fuselage, remove eyebolt and jam nut secured to aft tie down bracket.
- (b) *Serials 1521 & subs, Serials 0002 thru 1520 after SB 2X-53-03:* Remove aft tie down bumper.

1 Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Blunt-Edged Non-Metallic Chisel	-	Any Source	Removal
Plastic Wedge	5 inches (13 cm)	Any Source	Removal
Plastic Scraper	-	Any Source	Removal
Cotton Cloth (clean, lint free)	-	Any Source	Cleaning
Isopropyl Alcohol	TT-I-735 grade A or B	Any Source	Cleaning

2 At aft bottom of fuselage, remove bolt securing aft tie down bumper to aft tie down bracket.

3 Use chisel to carefully cut seam between aft tie down bumper and empennage.

4 Position cutting end of wedge at seam.

5 Strike back of wedge until aft tie down bumper is loosened from the empennage.

6 Use plastic scraper to remove adhesive residue.

7 Solvent clean faying surface on empennage. (Refer to 20-30)

(2) Installation - Aft Tie Down

- (a) *Serials 0002 thru 1520 before SB 2X-53-03:* At aft bottom of fuselage, install eyebolt and jam nut to aft tie down bracket.

- (b) *Serials 1521 & subs, Serials 0002 thru 1520 after SB 2X-53-03:* Install aft tie down bumper.

1 Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Masking Tape 3.0 inches (7.6 cm)	-	Any Source	Masking/ Sealing
Aluminum Oxide Paper	60 to 80 grade	Any Source	Abrasion
Cotton Cloth (clean, lint free)	-	Any Source	Cleaning
Isopropyl Alcohol	TT-I-735 grade A or B	Any Source	Cleaning

EFFECTIVITY:  
All

Description	P/N or Spec.	Supplier	Purpose
Adhesion Promoter	94	3M Company St. Paul, MN 55144 888-364-3577	Bonding
Adhesion Promoter (alternate)	AC-145	AC TECH Garden Grove, CA 92841 714-373-2837	
Sealant, Epoxy Cured Polythioether	PR-1829 CLASS B, 1/2	PRC-DeSoto International Glendale, CA 91209 818-240-2060	Adhesive
Sealant, Polysulfide (alternate)	MIL-S-8802F or AMS-S-8802 Type II, Class B	Any Source	
Tie-Down Strap (ratcheted, vinyl coated hooks)	-	Any Source	Fixture

- 2 Remove LH and RH empennage access panels. (Refer to 53-30)
- 3 To determine fuselage faying surface, position tie down bumper to fuselage at aft tie down bracket and align along BL 0.00 ±1°. Apply masking tape to fuselage skin surrounding tie down bumper. Remove tie down bumper.

**CAUTION:** Do not abrade outside of fuselage faying surface.

- 4 At fuselage faying surface, remove surface protection by abrasion. (Refer to 51-20)
- 5 Abrade faying surface of tie down bumper. (Refer to 51-20)
- 6 Solvent clean both faying surfaces. (Refer to 20-30)
- 7 Apply adhesion promoter to both faying surfaces. Wipe off excess adhesion promoter and allow to dry for 30 minutes prior to bonding.
- 8 Follow manufacturer's instructions for mixing sealant.
- 9 Apply sealant to faying surface of tie down bumper with a bondline thickness 0.005 to 0.080 inch (0.130 to 2.030 mm).
- 10 Position tie down bumper to fuselage at aft tie down bracket and align along BL 0.00 ±1°.

**CAUTION:** Do not over-ratchet tie-down strap. Excessive tension may damage fuselage structure where tie-down strap hooks are attached.

To prevent chafing, ensure tie-down strap hooks are vinyl coated or protect hook contact point at access panel hole edges with padding material.

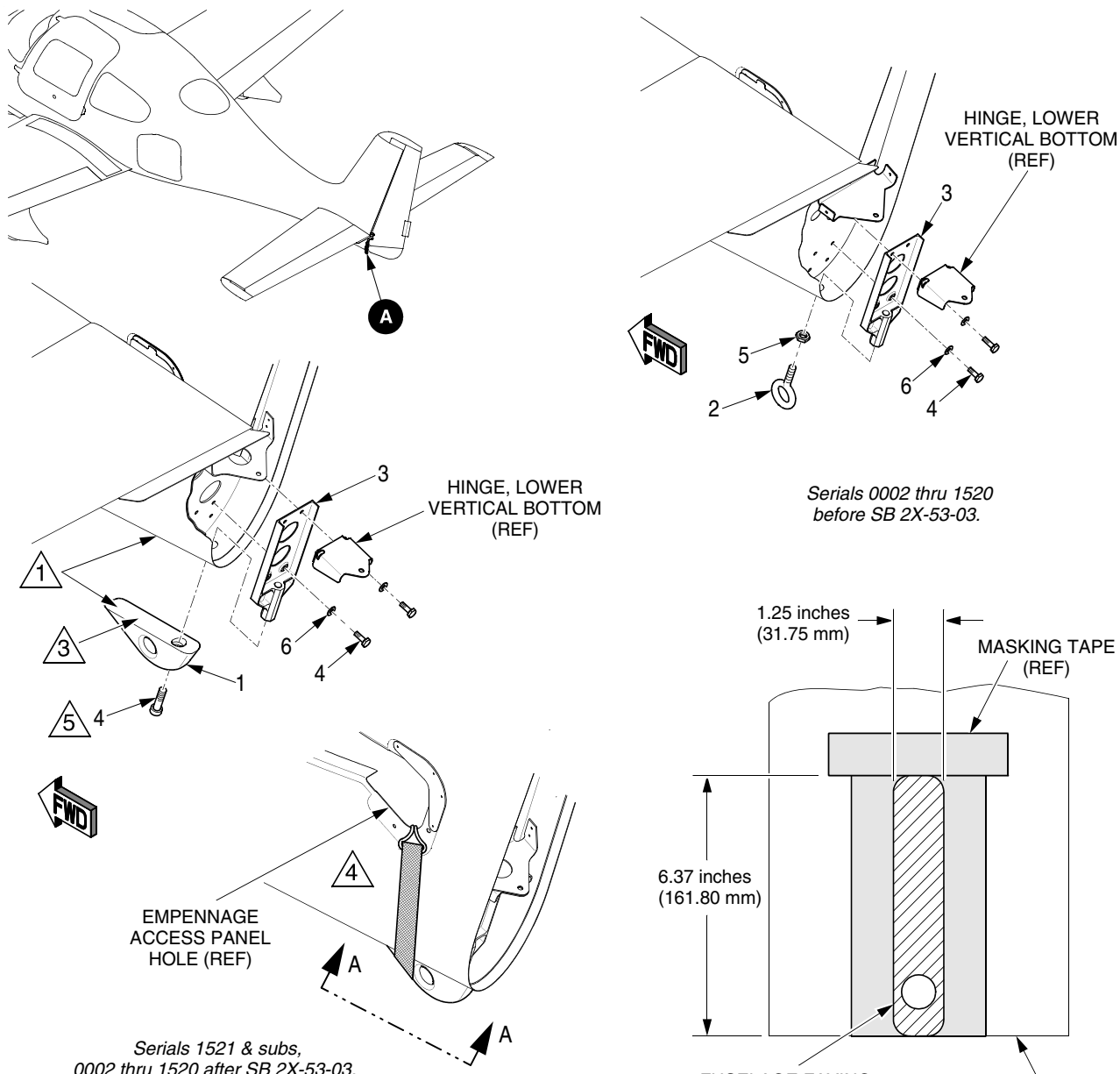
- 11 Secure tie down bumper to fuselage using a ratched tie-down strap with hooks secured to access panel holes.

**CAUTION:** Do not over-torque tie down bumper installation bolt. Excessive torque may misalign tie down bumper such that front of tie down bumper could pull away from the fuselage.

- 12 Install bolt to secure tie down bumper to aft tie down bracket. Torque bolt to 48.0 - 72.0 in-lb (5.4 - 8.1 Nm).
- 13 Carefully wipe off any excess adhesive from edges of tie down bumper.
- 14 After cure cycle is completed, remove tie-down strap.
- 15 Install LH and RH empennage access panels. ([Refer to 53-30](#))

**E. Aft Tie Down Bracket (See Figure 53-203)**

- (1) Removal - Aft Tie Down Bracket
  - (a) *Serials 1521 & subs, Serials 0002 thru 1520 after SB 2X-53-03:* Remove aft tie down. (Refer to 53-20)
  - (b) Remove rudder. (Refer to 55-40)
  - (c) Remove lower vertical bottom hinge. (Refer to 55-50)
  - (d) Remove bolts and washers securing aft tie down bracket to aft spar of vertical stabilizer. Remove aft tie down bracket.
- (2) Installation - Aft Tie Down Bracket
  - (a) Position and install bolts and washers securing aft tie down bracket to aft spar of vertical stabilizer.
  - (b) Install lower vertical bottom hinge. (Refer to 55-50)
  - (c) Install rudder. (Refer to 55-40)
  - (d) *Serials 1521 & subs, Serials 0002 thru 1520 after SB 2X-53-03:* Install aft tie down. (Refer to 53-20)



**NOTE**

- ① Abrade faying surfaces of tie down bumper and fuselage.
- ② Do not abrade outside of fuselage faying surface.
- ③ Apply sealant to faying surface of tie down bumper with a bondline thickness 0.005 to 0.080 inch (0.130 to 2.030 mm).
- ④ Do not over-ratchet tie down strap. Excessive tension may damage fuselage structure where tie down strap hooks are attached. To prevent chafing, ensure tie down strap hooks are vinyl coated or protect hook contact point at access panel hole edges with padding material.
- ⑤ Torque bolt to 48.0 - 72.0 in-lb. Do not over-torque tie down bumper installation bolt. Excessive torque may misalign tie down bumper such that front of tie down bumper could pull away from the fuselage.

**DETAIL A**

**VIEW A**

**LEGEND**

- 1. Bumper
- 2. Eyebolt
- 3. Aft Tie Down Bracket
- 4. Bolt
- 5. Nut
- 6. Washer

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**Figure 53-203  
Aft Tie Down Installation**

**EFFECTIVITY:**  
All

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