

AA-5 SERIES
MAINTENANCE MANUAL

CHAPTER 53

FUSELAGE

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FUSELAGE — DESCRIPTION/OPERATION

1. General

The main fuselage structure (Figure 1) is a one piece bonded aluminum assembly using one-half inch thick lightweight aluminum honeycomb panels to form the cabin area. The aft section of the fuselage from the cabin area rearward is composed of sheet aluminum panels bonded together with high strength adhesive and formed to aluminum stiffeners and bulkheads. Bulkheads inside the cabin compartment provide support for the floor panels and attaching provisions for other equipment. The engine support mounts and support mount doublers are bonded to the front end of the main fuselage structure.

Most fuselage maintenance requirements will consist of removal and replacement of detachable components or structural repair as detailed in Chapter 20.

2. Fuselage Assembly Components

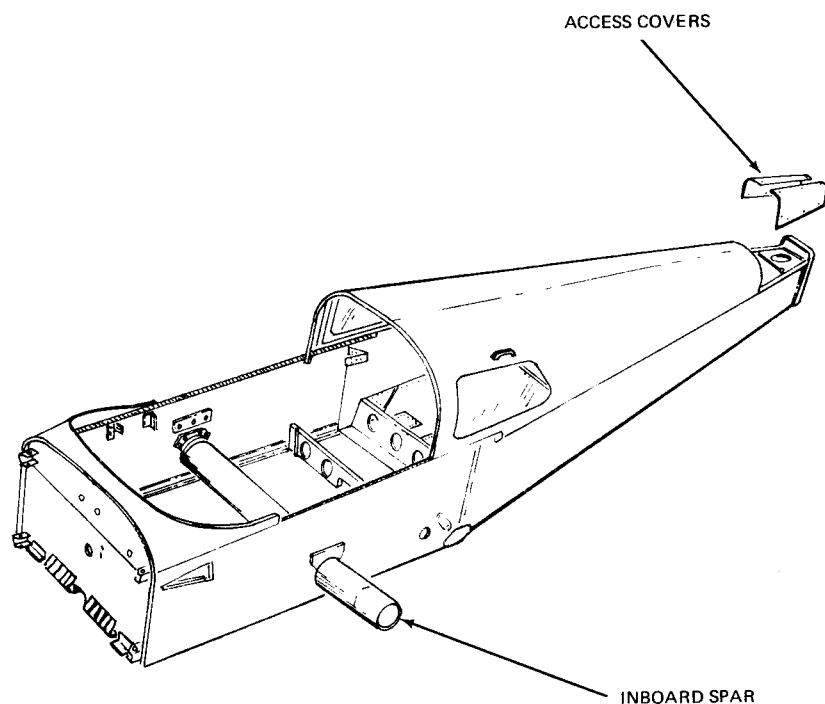
The fuselage assembly consists of the main fuselage structure, the inboard carry through spar, ventral fin (AA-5), dorsal fin, horizontal stabilizer fairing, horizontal stabilizer fillet, tailcone, aft fuselage access covers, and attach fittings and brackets for other equipment. These items are detachable and may be removed and replaced when necessary. The tubular inboard carry through spar extends through the main fuselage structure beneath the pilot and copilot's seats, and provides attach points for the wings and the main landing gear. The spar is attached to the fuselage structure with four support attach brackets. Two brackets are located above the spar on the inside of the fuselage and two are located beneath the spar on the outside of the fuselage structure. The removable attach fittings, fairings, fins, fillets, tailcone, and access covers are secured to the fuselage with screws.

The tailcone is made of thermo-plastic and consists of an upper and a lower half. Either half can be removed separately. The tail light is mounted in the rearmost part of the tailcone. The tailcone houses the rudder and elevator bellcrank assemblies.

The horizontal stabilizer fairing on the AA-5A and AA-5B aircraft and the dorsal fin on aircraft AA5-0406 and subsequent, AA-5A and AA-5B are made of thermo-plastic. They are attached to the main fuselage structure with screws and clips. The horizontal stabilizer fillets on AA-5 aircraft and the dorsal fin on AA5-0001 through 0405 are made of sheet aluminum and attached to the fuselage structure with screws.

The access covers on the aft section of the fuselage on all models are made of aluminum and attached with screws. The ventral fin is made of 1/2 inch lightweight aluminum honeycomb, and is installed on AA-5 aircraft only.

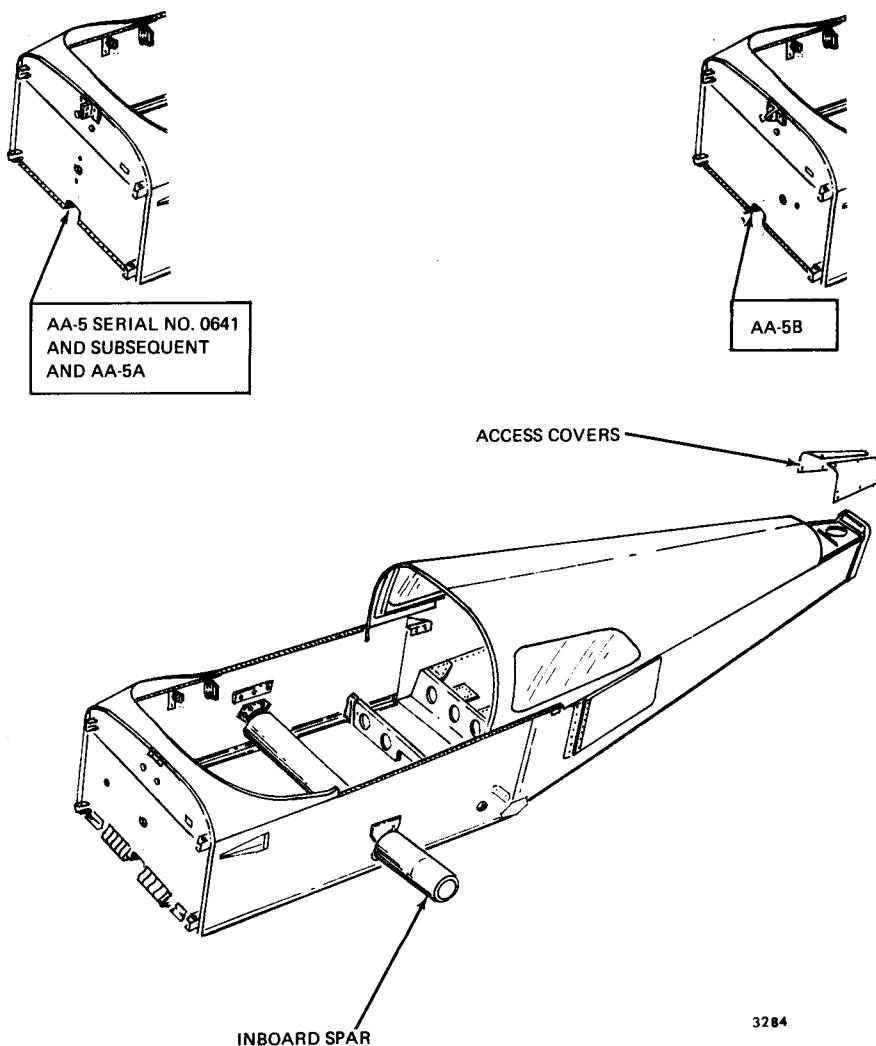
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Fuselage Assembly - AA-5 Serial No. 0001 Thru 0405
Figure 1 (Sheet 1 of 2)

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Fuselage Assembly - AA-5 Serial No. 0406 and Subsequent, AA-5A and AA-5B
Figure 1 (Sheet 2 of 2)

FUSELAGE — MAINTENANCE PRACTICES

1. Removal/Installation of Inboard Spar

A. Remove Inboard Spar (See Figure 201.)

- (1) Remove wings and wing roots. (Refer to Chapter 57.)
- (2) Remove main landing gear. (Refer to Chapter 32.)
- (3) Remove seats and upholstery as necessary to gain access to support brackets. (Refer to Chapter 25.)
- (4) Remove trim console attach screw and rear seat support brackets from inboard spar.
- (5) Remove sealant from around spar at fuselage structure.
- (6) Remove bolts that attach support brackets to spar on outside of fuselage structure.
- (7) Remove bolts that attach support brackets to spar and that attach support brackets to fuselage, on inside of fuselage structure and remove support brackets.
- (8) Slide inboard spar out of main fuselage structure.

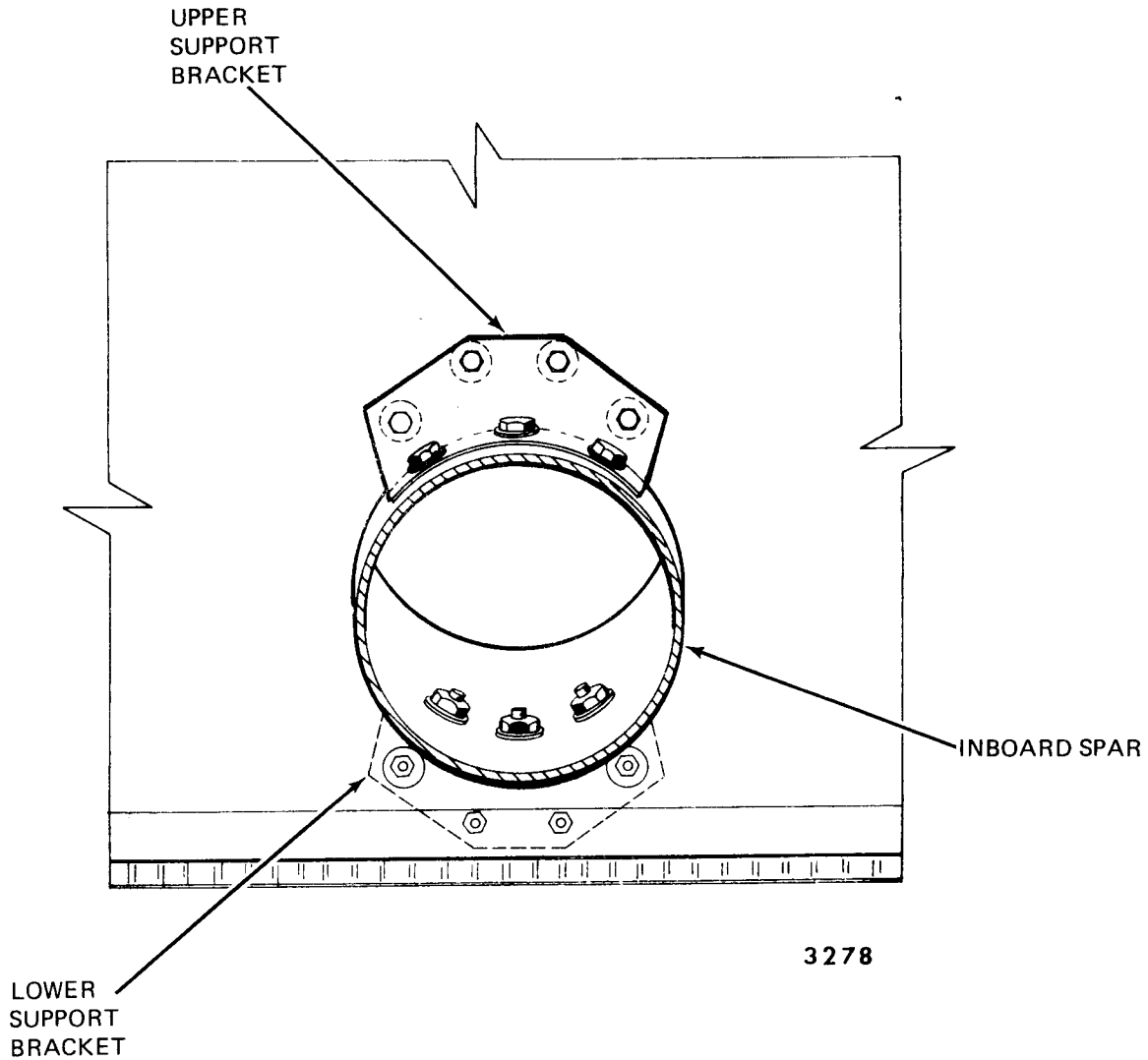
B. Install Inboard Spar

- (1) Slide inboard spar through main fuselage structure and line up bolt holes with bolt holes in lower support brackets.
- (2) Install bolts, washers, and nuts that attach lower support brackets to inboard spar but do not tighten nuts.
- (3) Position upper support brackets in place and secure to fuselage structure with bolts, screws, washers, and nuts. Torque nuts to 60-70 inch pounds.
- (4) Align holes in spar with holes in support bracket and install shims as required, bolts, washers and nuts. Torque all spar attaching bolts to 340-360 inch pounds.
- (5) Apply Presstite soft putty sealant around spar on outside of fuselage structure.
- (6) Install rear seat support brackets and connect trim console to inboard spar.
- (7) Install seats and upholstery removed at spar removal. (Refer to Chapter 25.)
- (8) Install main landing gear. (Refer to Chapter 32.)
- (9) Install wing roots and wings. (Refer to Chapter 57.)

2. Removal/Installation of Dorsal Fin — AA5 Serial No. 0001 through 405 (See Figure 202.)

A. Remove Dorsal Fin

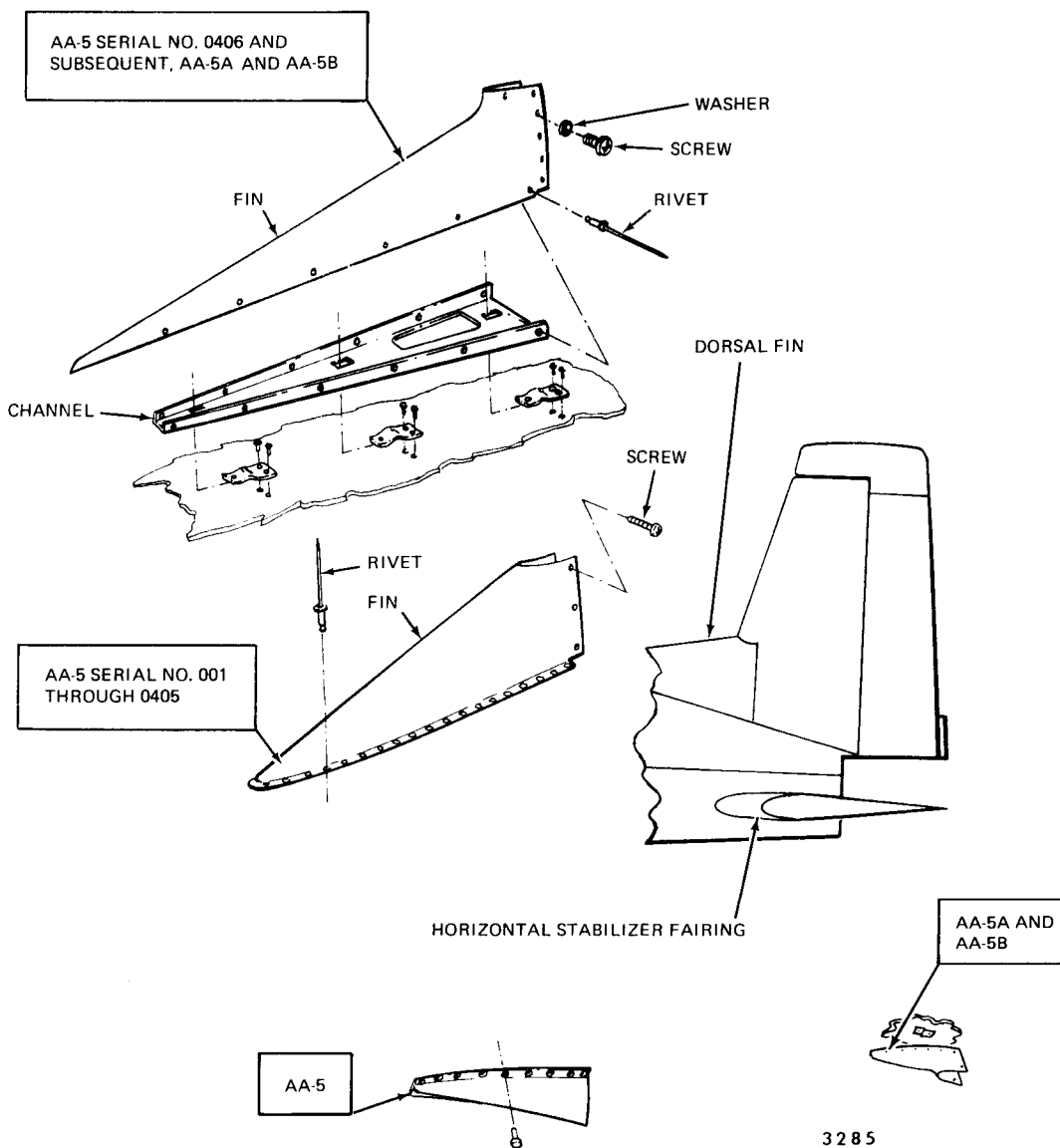
- (1) Remove screws securing fin to vertical stabilizer.
- (2) Punch out mandrel in center of rivets with a small drift punch, then drill out rivets with a No. 30 drill.
- (3) Remove dorsal fin.



Inboard Spar Installation — Inside View
Figure 201

- B. Install Dorsal Fin
 - (1) Position dorsal fin in place using a new seal at mating surface.
 - (2) Install attaching screws and rivets.
- 3. Removal/Installation of Dorsal Fin — AA-5 Serial No. 0406 and Subsequent, AA-5A, and AA-5B (See Figure 202.)
 - A. Remove Dorsal Fin
 - (1) Remove screws and washers that attach dorsal fin to vertical stabilizer.
 - (2) Slide fin forward to release channel base from clips and remove fin.
 - B. Install Dorsal Fin
 - (1) Position fin in place on fuselage and slide back to engage channel base with clips.
 - (2) Install screws and washers that attach fin to vertical stabilizer.

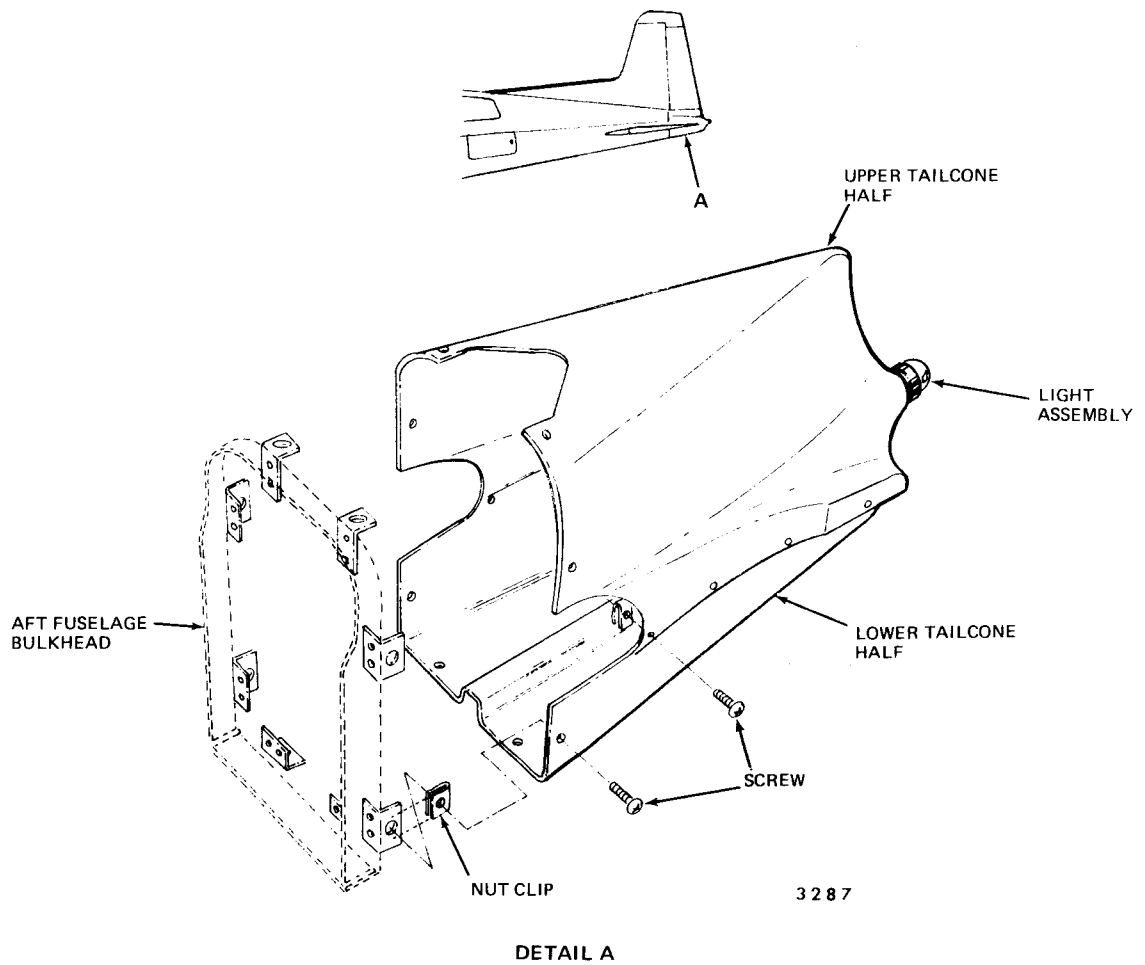
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Dorsal Fin and Horizontal Stabilizer Fairings
Figure 202

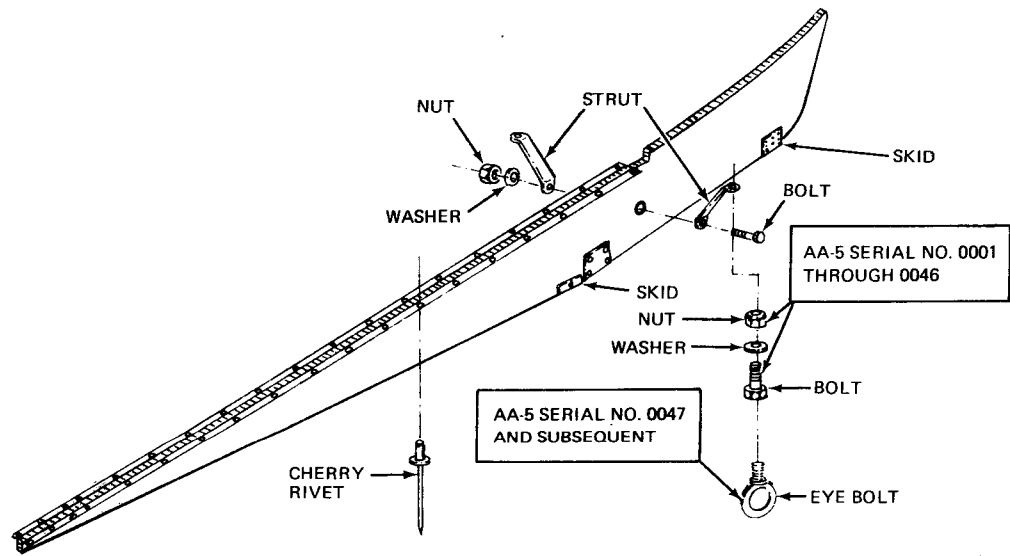
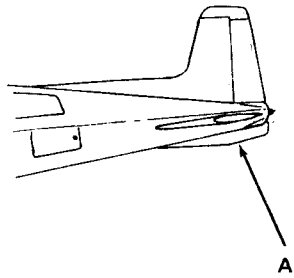
4. Removal/Installation of Horizontal Stabilizer Fillet — Model AA-5 (See Figure 202.)
 - A. Remove Horizontal Stabilizer Fillet
 - (1) Punch out mandrel in center of rivets with a small drift punch, then drill out rivet with a No. 30 drill.
 - (2) Remove fillet.
 - B. Install Horizontal Stabilizer Fillet
 - (1) Position fillet in place on fuselage.
 - (2) Install rivets.
5. Removal/Installation of Horizontal Stabilizer Fairing — Models AA-5A and AA-5B (See Figure 202.)
 - A. Remove Horizontal Stabilizer Fairing
 - (1) Remove screws and washers that secure fairing to horizontal stabilizer.
 - (2) Slide fairing forward to release channel base from clips and remove fairing.
 - B. Install Horizontal Stabilizer Fairing
 - (1) Position fairing in place on fuselage and slide back to engage channel base with clip.
 - (2) Install screws and washers that secure fairing to horizontal stabilizer.
6. Removal/Installation of Tailcone (See Figure 203.)
 - A. Remove Tailcone
 - (1) Remove screws that secure tailcone to aft fuselage.
 - (2) Slide tailcone back, disconnect tail light wires, and remove tailcone.
 - B. Install Tailcone
 - (1) Connect tail light wires at aft fuselage bulkhead.
 - (2) Perform functional check of tail light.
 - (3) Position tailcone to fuselage and install attaching screws.
7. Removal/Installation of Ventral Fin (See Figure 204.)
 - A. Remove Ventral Fin
 - (1) Remove nut, washer, and screw that secure fin to side brace struts.
 - (2) Punch out mandral in center of rivets with a small drift punch, then drill out rivets with a No. 30 drill. Remove ventral fin.
 - B. Install Ventral Fin
 - (1) Position fin in place on fuselage and install rivets.
 - (2) Install screw, washer, and nut that secure side brace struts to fin.
8. Removal/Installation of Access Covers on Aft Fuselage (See Figure 1.)
 - A. Remove Access Covers
 - (1) Remove attaching screws that secure access covers to fuselage and remove covers.
 - B. Install Access Covers on Aft Fuselage
 - (1) Position covers in place on fuselage and install attaching screws.

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Tailcone Installation
Figure 203

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DETAIL A

Ventral Fin Assembly
Figure 204

9. Removal/Installation of Brackets, Supports and Attach Fittings

Various brackets, supports, and attach fittings are considered components of the fuselage assembly. The cowling attach brackets mounted on the upper firewall, the battery support bracket mounted on the lower firewall, the instrument panel support bracket, and the shoulder harness and baggage tiedown attach fittings are secured to the fuselage structure with either screws or bolts. Removal and replacement of these items require only a simple procedure of removing screws or bolts to detach the bracket or attach fitting. Install by positioning bracket or fitting in place and installing attaching bolts or screws.