

# SECTION III

## AIR FRAME

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## 3. AIRFRAME

The airframe consists of an all-metal bonded construction utilizing one half inch honeycomb in the fuselage cabin area. The following sub-headings describe the removal of various airframe components.

### CAUTION

When installing the flap bellcrank horn, be sure the pin is engaged in the flap torque tube hole. This is essential for proper flap operation and rigging.

### A. WING REMOVAL

1. Remove the inspection cover from under the wing root.
2. Disconnect the airspeed pitot line located in the wing root (left wing only).
3. Disconnect the main fuel line and the fuel measurement gauge located in the wing root.

#### NOTE

Be sure the tank has been completely drained before attempting to disconnect the fuel lines.

4. Disconnect all wiring in the wing root.
5. Raise the baggage compartment carpet and remove the inspection plate from the compartment floor.
6. Remove the nut and bolt securing the aileron bellcrank to the torque tube and remove it from the torque tube by rotating and sliding from the end of the tube.

#### NOTE

Do not disturb cable turnbuckles or control surface rigging.

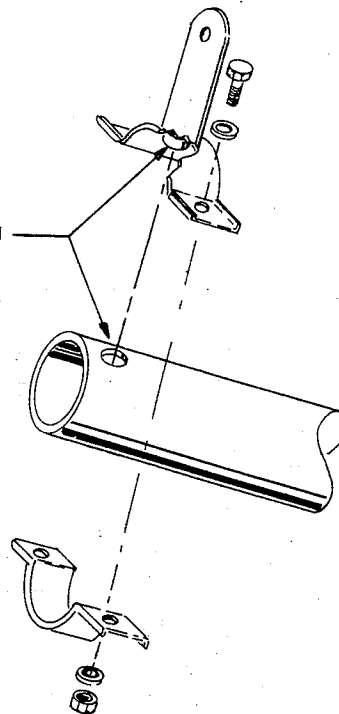
7. Remove the two bolts securing the flap bellcrank to the flap torque tube and rotate bellcrank out of way.

#### NOTE

Do not disturb control system rigging.

8. Through the wing root access opening, remove the two 3/8-inch wing lock bolts.
9. Use three men; one at the wing tip to support weight and pull; one at the leading edge and one at the rear edge to rotate wing slightly, clockwise and counter-clockwise, until the wing is free of the spar.
10. Install the wing assembly in reverse order after spraying the spar mating surfaces with a solid film lubricant\* and rubbing general purpose lubricating oil over the fuselage carry-through spar.

SEE  
CAUTION  
ABOVE



\*Approved solid film lubricants:

McLube 1708 by McGee Chemicals Co., Inc.  
Lube-Lok 5396 by Allen Aircraft Products, Inc.

### B. EMPENNAGE REMOVAL

#### NOTE

The three stabilizers are identical in construction and attachment, thus the disassembly procedures are the same.

1. Remove the tailcone as described in Section 3-E.
2. Remove the control surface as described in Section 5-G.
3. Remove the inspection covers at the base of the vertical stabilizer.
4. Remove the four bolts attaching the rear stabilizer spar to the aft bulkhead.



5. Remove the bolt attaching the forward stabilizer support to the fuselage bulkhead.
6. Before removing the vertical stabilizer, it is necessary to remove the omni antenna cable and to disconnect the flashing beacon wires.
7. Reassemble in the reverse order.

## C. CANOPY REMOVAL

1. Remove the screws on each side which attach the canopy plexiglass to the canopy slides.
2. Lift the canopy off.

### NOTE

The inner canopy tracks must be perfectly straight to ensure free movement of the canopy. If the tracks are bent, they should be straightened or replaced.

The sliding surfaces of the canopy inner tracks and the teflon glide material in the canopy outer tracks must be kept clean and lightly lubricated. Smoother operation can be achieved by cleaning the sliding surfaces with isopropyl alcohol using a small brush and then injecting a small amount of Dow Corning DC-7 Compound or silicon grease into the sliding surfaces.

If the canopy tracks are severely bound up, the canopy glass and bows must be removed from the tracks and the tracks completely removed from the airplane. Clean all sliding surfaces carefully with isopropyl alcohol or lacquer thinner, and relubricate with a thin film of DC-7 compound or silicon grease. If the teflon glide material is galled, it should be replaced with new material available from the factory.

3. Reinstall in reverse of the removal procedure.

## D. COWLING REMOVAL

1. Unlatch the four cowl latches which join the upper and lower cowl.
2. Loosen the two quarter turn fasteners which attach the upper cowl to the cowl nose cap.
3. Pull cowl gently forward and upward and remove.

### NOTE

The above two steps describe the procedures for the removal of the upper cowl only.

4. Remove the screws which attach the lower cowl to the cowl nose cap and to the fuselage.

### NOTE

Completion of Step 4 allows easy removal of the lower cowl. To remove the cowl nose cap, it will be necessary to remove the spinner and propeller.

5. Reassemble in the reverse order.

## E. TAILCONE REMOVAL

1. Remove the 7 mounting screws which attach the tailcone to the fuselage.
2. Disconnect the taillight wires at the aft bulkhead.
3. Reassemble in the reverse order.

## F. WING TIP REMOVAL

1. Remove the 4 mounting screws which hold the scupper assembly to the wing tip.
2. Remove the 24 screws which attach the wing tip to the wing.
3. Remove the scupper drain tube from the bottom of the tip.
4. Drop the tip a few inches away from the wing in order to reach inside and disconnect the navigation light wires.
5. Reassemble in the reverse order.

## G. WING ROOT REMOVAL

1. Remove the access panel from the underside of the wing root.
2. Remove the wing as instructed in 3-A.
3. From inside the wing root, disconnect the flexible line connecting the fuel vent to the fuel gauge vent line.
4. Up to and including serial number 0067, the wing root is removed as follows:
  - a. From the inside face of the fuselage side, remove the 6 bolts which attach the wing root supporting structure.
  - b. From the exterior of the aircraft, remove the 6 screws which attach the wing root to the fuselage.
5. On serial numbers 0068 and up, the wing root ribs are separate and not required to be removed unless necessary for repair. The wing root is removed as follows:
  - a. Remove the 6 screws which attach the wing root to the fuselage.
  - b. Remove the 2 screws which attach the wing root to the rear rib. One is located under the wing root and the other at the outboard end.
  - c. The front rib is secured by 4 screws, two in the outboard end and two underneath. Remove these screws.
6. Install the wing root in reverse of the removal procedure.



## H. SEAT REMOVAL

1. Lift the seat cushion to expose the seat tracks.
2. Remove the bolts which fasten the seat tracks to the spar mounting brackets.
3. Remove the spring which is attached to the seat adjustment lever.
4. Remove the seat adjustment boost springs which are connected to the bottom of the seat and to a bracket mounted on the carry-through spar.
5. Remove the bolts which fasten the seat tracks to the mounting brackets on the bulkhead behind the seat.

### NOTE

On the later models, the aft mounting brackets are slotted in order to remove the seat without having to remove the rear mounting bolts.

6. Reassemble in the reverse order.

## I. WINDSHIELD REMOVAL

The windshield should be considered a fixed part of the airframe and should not be removed unless absolutely necessary.

To remove the windshield:

1. Remove the cowl deck
2. Remove the 12 screws which attach the windshield to the windshield bow.
3. Remove the 5 screws which attach the windshield to the windshield fairing.
4. Carefully pull the windshield out from under fairing, cleaning away the sealant as required.

To install the windshield:

1. Thoroughly clean all adhesive, sealant, dirt and grease, from the inner surface of the windshield fairing.
2. Repeat step (1) to the windshield.
3. Repeat step (1) to the windshield bow.

4. Apply a 1.00-inch by .063-inch vinyl foam tape (3M Company Y-9132D) or an equivalent to the windshield along the windshield bow mating surface.
5. Apply a 1.00-inch by .063-inch vinyl foam tape (3M Company Y-9132A) or an equivalent along the windshield on the windshield fairing mating surface.
6. Locate the windshield in its proper position.
7. Insert sealant between the windshield and the windshield fairing and apply sealant\* to the mating surfaces of the windshield bow and the vinyl seal.
8. Install the 5 fasteners to the windshield fairing and the 12 fasteners into the windshield bow.

### CAUTION

Be sure all fastener holes are aligned prior to tightening to avoid cracking the windshield.

9. Install the cowl deck.

\*Approved sealants:

576.1 by Presstite Engineering Co.  
EC 1239 and EC 1675 by EM Company  
3201 by Chemical Seal Corporation of  
America 567 by Coast Pro-Seal.

## J. CONSOLE REMOVAL

1. Remove the seats as described in 3-H.
2. Remove the microphone.
3. Remove the fuel valve handle.
4. Remove the two screws located along side the flap position indicator.
5. Remove the six screws attaching the console to the floor.
6. Remove the six screws attaching the center console to the forward console.
7. Spread the sides of the console aft of the spar, and lift up. Repeat this process to the sides of the console forward of the spar.
8. To remove the forward section of the console, remove the two additional screws from the floor and withdraw.
9. Reassemble in the reverse order.