

## **Fuselage Section**

The fuselage frame comes from the factory in two sections that bolt together aft of the cockpit area. This is done for ease of shipment. When the aircraft is complete, in addition to the bolts, aluminum skins and stringers will hold the structure together. The fuselage will no longer disassemble into two pieces.

The fuselage frame will need to be painted or powder coated prior to any assembly.

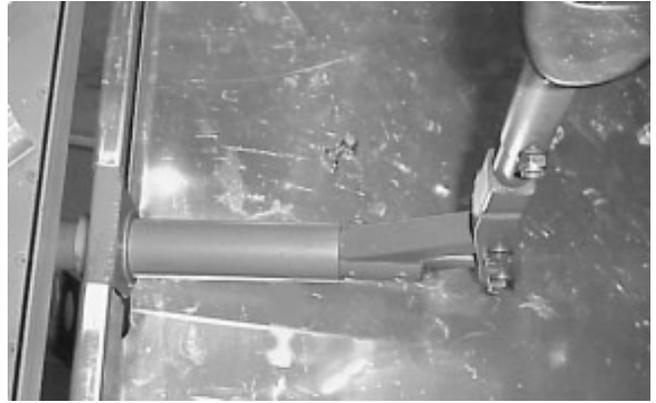
Bolt the two fuselage sections together. The fuselage frame is not a stable structure until the aluminum skins are installed. It can twist, bend, and sag at anytime. Keeping it straight during the skinning process is necessary. Once the skins are installed it becomes a semi-monocoque structure that won't twist or bend.

Setting the frame on two heavy-duty saw horses or clamping it to a wooden structure should help keep it straight. The sawhorses or supports should be placed near cross tubes so the longerons don't bend. Make sure everything is aligned and level at all times. Check level throughout the skinning process to make sure nothing twists or bends. Setting a long piece of aluminum angle on the lower cross-tubes inside the fuselage may also help the builder notice any misalignment.

Some components in the kit are either pre-assembled with nylon ties or bolted together with finger tight fasteners. Those assemblies will need to be disassembled so the parts can either be painted or powder coated. It is necessary to paint or powder coat the steel parts. Coating the other parts is optional. The fasteners will need to be tightened correctly and cotter pins should be used when necessary.

### **Control Stick Torque Tube Installation**

The control stick parts come from the factory pre-fit to the control stick torque tube. This assembly needs to be disassembled and the steel parts need to be either painted or powder coated. Refer to print *T51-03-INS-0810* for reassembly into the fuselage.



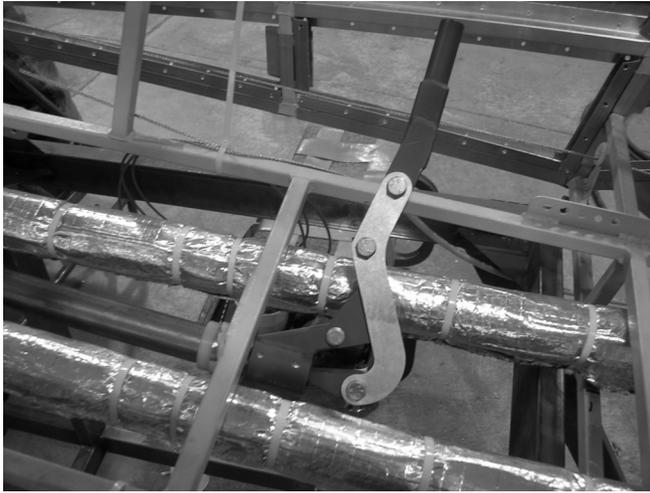
Front stick mount. Looking down from the right side. SD42BS rivets will be used to secure the forward control stick mount to the control stick torque tube.

Slide the torque tube forward from the back seat area assembling the parts as it goes in.

**CAUTION:** The aileron driver (MC02-10) should not be riveted to the control stick torque tube until the wings are installed and the aileron push/pull tubes are in place. Slide the aileron driver over the torque tube and let it swing freely for now.



Stick assembly as viewed from under the front seat looking forward from the right side. Let the aileron driver swing freely until the wings and aileron push/pull tubes are installed.



Rear control stick mount. Looking down from the left side.

### Rudder Bellcrank Installation

The rudder pedal cables drive the rudder bellcrank and then it will drive both the rudder and the tailwheel.



Installed rudder bellcrank. Looking back from the lower right side of the fuselage. (The cable tension has not been set in this photo.)

Refer to print *T51-03-INS-0811* and to the above photo. Paint or powder-coat the steel parts. Prior to painting, be sure to tape off the areas of the bellcrank shaft that will be in contact with the nylon bushings. Insert the bellcrank shaft from the top. Install the lower bellcrank (MC02-84) and bolt together with an AN3-14A bolt. The cables coming from the rudder pedals attach to the lower bellcrank forward holes. The cables that will attach to the tailwheel attach to the lower bellcrank aft holes. The cables that will attach to the rudder control horn attach to the upper bellcrank (MC02-85) aft holes. (See cable-rigging section of the manual for details.)

### Elevator Bellcrank Installation

The push/pull tube that attaches to the rear control stick drives the elevator bellcrank. The elevator bellcrank drives a push/pull tube that attaches to the elevator control horns. It also reverses the direction of the push and pull.

Refer to print *T51-03-INS-0811* for details. Match drill the six #30 holes from each elevator bellcrank arm (MC02-81) into the elevator bellcrank pivot assembly (MC02-86). Disassemble, deburr, and paint the parts as desired. Reassemble using SD43BS rivets. Insert the MT03-137 bushings. The elevator bellcrank is installed in the frame just ahead of the rudder bellcrank. Secure with an AN4-23 bolt, AN960-416 washers as necessary, AN310-4 castle nut and AN380-2-3 cotter pin.



Looking forward and down from the left side of the fuselage. Shows elevator bellcrank (dark green) and tailwheel hydraulic cylinder.

### Tailwheel Installation

The tailwheel assembly can be disassembled and painted if desired.



Tailwheel installation.

Refer to print *T51-03-INS-0816*. Assemble the tailwheel spring MG01-6 to the tailwheel assembly MG03-156 and to the tailwheel spring bracket assembly MG01-11. Attach the entire assembly to the fuselage frame with an AN4-45A

bolt, AN960-416 washers as needed, and AN365-428 Locknut.

### Fuselage Hat Section Installation

The fuselage skins and inner panels will be attached to aluminum hat sections MF02-109, use titanium silicone (MF05-447) to bond hat sections to steel frame. After skins are installed this will provide a very rigid structure with a barrier between the aluminum and steel.



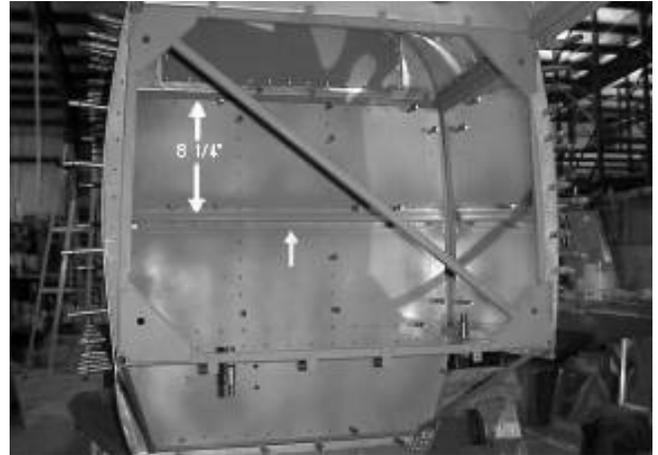
Shows hat section fit from the inside of the frame.

Refer to print *T51-03-INS-0963* and photos for hat section locations. Hat sections will be fit to all the square steel tubes that support exterior skins plus the locations shown on the print. A band saw, tin snips and files are good tools to use when fitting the hat sections. As the hat sections are fit, they should be left in place on the frame so adjacent hat sections can be fit. Inner panels are attached to the structure with channels made from hat sections. Bond all the unmodified hat sections in place first with titanium silicone. Then fit the exterior skins, drill, and cleco in place. Fit the inner panels & match drill using the exterior skin holes as guides.

The skins will be bonded in place later. For now, they can be left clecoed in place and removed as necessary to gain access to components during assembly.

### Center Bulkhead #3 Installation

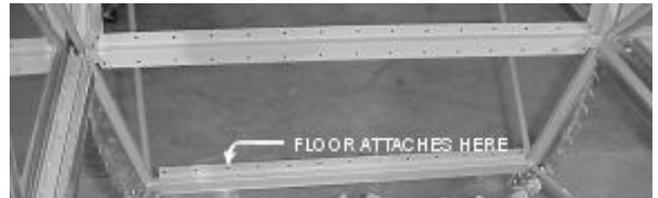
Center bulkhead #3 MF03-197 is the wall between the pilot's feet and the firewall. This bulkhead must be trimmed to fit. It will be attached to the frame by hat sections as shown in print *T51-03-INS-0820*. Several parts will be attached in this area. All the parts should be fit prior to the final assembly of this bulkhead.



Looking back from the engine compartment at center bulkhead #3. Arrow shows the location of the center bulkhead stiffener below the hat section. Dimension shows 8 1/4" from the bottom of the fuselage tube to the top of the hat section stiffener.



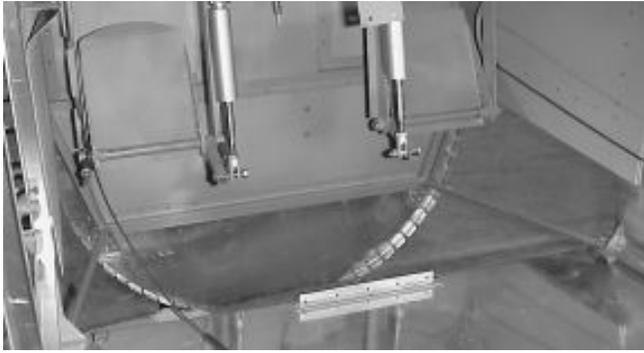
Hat section stiffener and center bulkhead stiffener nest together as shown. Note arrow showing the rudder cable anchor eyebolt from the front.



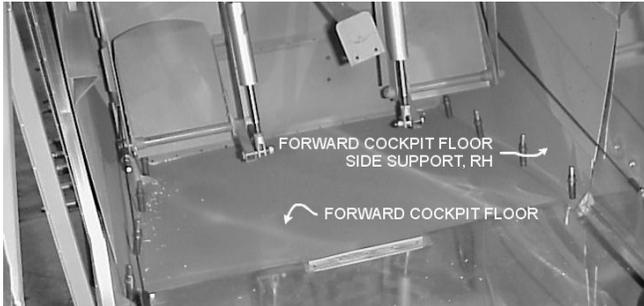
Looking forward from the front seat before the center bulkhead #3 is installed. Note the hat section locations that hold the bulkhead and forward cockpit floor in place.

The forward cockpit floor (MF03-209) is attached to the two forward cockpit floor side supports (MF03-210 & 211). The side supports are attached to channels along the lower fuselage longeron. The forward floor is also attached to the center bulkhead #3 at its lower rivet line.

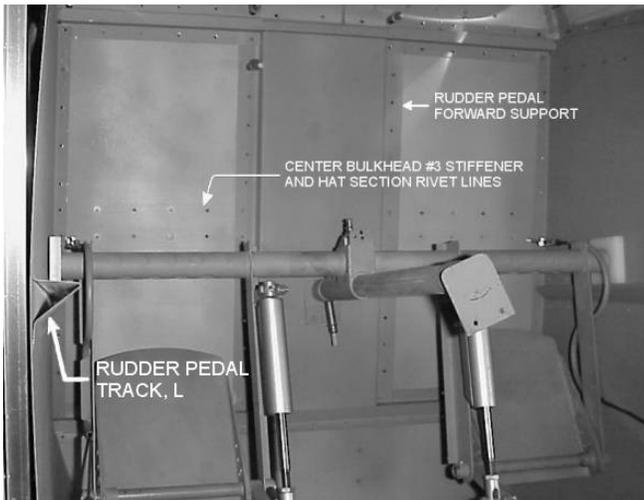
Many sheets and hat sections rivet together in this area. Leave the assemblies clecoed together and not riveted together until it is certain that all the parts are fit.



Cockpit floor area prior to floor installation. The red is padding on the sawhorse.



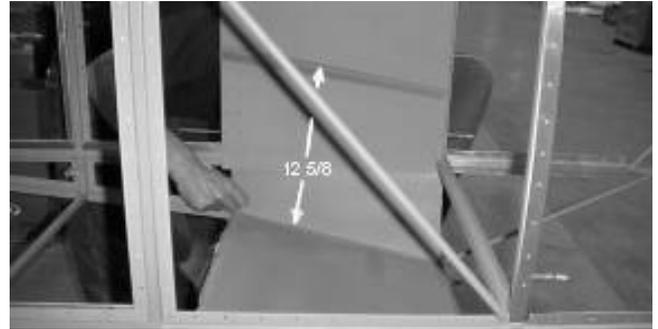
Forward cockpit floor area after floor and supports are fit.



Center bulkhead #3 and rudder pedal assembly.

The rudder pedal forward support (MF03-205) is centered on the backside of the center bulkhead #3. Drill the rivet lines with 1½” spacing.

The rudder pedal tracks (MF03-189 & 190) are installed parallel to the forward cockpit floor.



The top surface of the rudder pedal track is 12 5/8” from the forward cockpit floor and parallel to it.

Tape or clamp the tracks in place with the upper surface of the track positioned 12 5/8” from the floor. Drill two rivet lines along each track with holes spaced evenly approximately 1½” on center. Rivet the tracks in place using SD41BS rivets.

### Upper and Lower Bulkhead Installation

Most of the bulkheads are attached to small tabs that are welded to the fuselage frame and hat sections. Print **T51-03-INS-0818** shows the locations of the bulkheads by name and part number. Match drill the bulkheads to the fuselage and rivet them in place. Uralane adhesive or Titanium Silicone can be used to attach the bulkhead flanges to the fuselage frame.

By _____	_____
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