

SECTION/OPERATION

20

SEAT BELTS
AND
FUEL SYSTEM

<u>COMPONENT</u>	<u>PROCEDURE</u>	<u>PRINT #</u>	<u>TEMPLATE</u>
BODY, SEATS, FLOORPAN (see section 8)	Temporarily install seat backs		
SEAT BELTS	Install		
FUEL SYSTEM (E25-2000)	Fuel Tanks Mounting Straps Finger screen Fuel Sender Shielding Mounting Bracket Fuel Block Bracket Fuel Pumps Shut Off Valve	E37-2000 E25-2000	E25-1

NOTES

- SEAT BELTS: On shoulder straps use one buckle to secure both straps. It may be necessary to file the buckle opening to allow both straps to pass through.
- TANK FILTER: Make sure all seams of the screen are closed and soldered.
- FUEL SENDER: Refer to directions supplied with the sender.
- FUEL HOSES: Allow ample hose length to allow for body and engine movement.
- FUEL FILTER: Note correct flow direction.
- SHUT OFF VALVE: Fuel shut off valve should be located just forward of passenger collective.

ROTORWAY

TOOLS REQUIRED FOR OPERATION 20:

Drill bits of the following sizes:	1/8"
	3/16"
	1/4"
	5/16"
	#40
Hand drill (air or electric)	
Pop rivet gun	
Ratchet with sockets of the following sizes:	3/8"
	7/16"
	1/2"
	9/16"
Wrenches of the following sizes:	3/8"
	7/16"
	1/2"
	9/16"

SEAT BELTS



Photo #1

Parts as received from RotorWay International for the seat belts.



Photo #2

Wrap the shoulder strap around the 1-1/2" vertical airframe tube just above the drive mount tubes. Keeping the buckle location to the inside of the airframe will prevent any interference between the buckle and the gas tanks. The scribe marks on the seat back are approximately the correct location and should match closely to the buckle location. (Seats will be fitted later.)



Photo #3

Both shoulder straps are wrapped around the 1-1/2" main tube using only one buckle. This is necessary because both buckles would require too much space. It also saves weight.

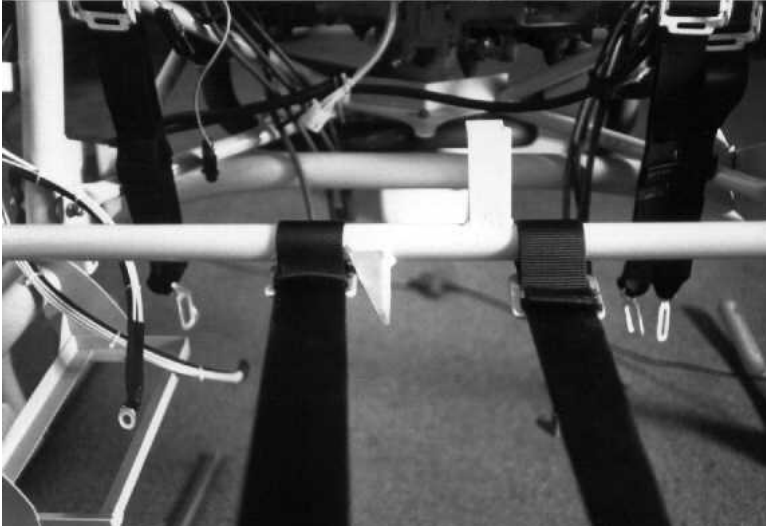


Photo #4

Wrap the inboard lap belts around the airframe cross tube in back of the seat. Be sure to route the belts so that they do not interfere with the collective control.

Important: Make sure there is no interference between the buckle and collective handle when raised. Failure to check clearance could result in control failure.

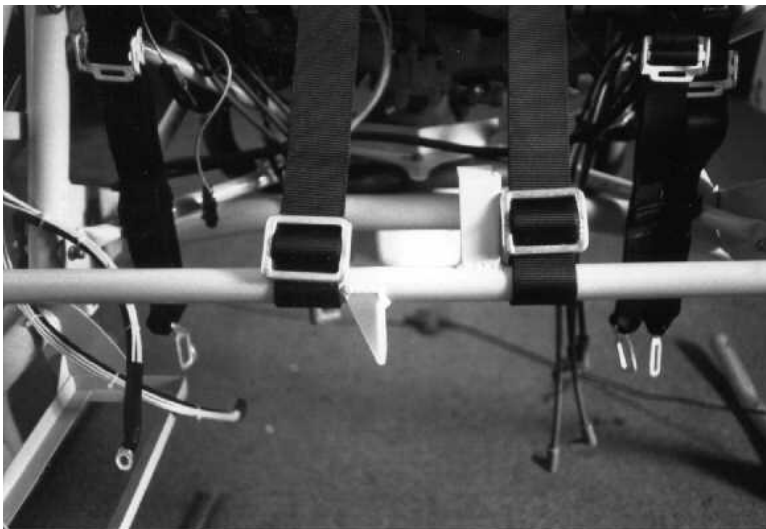


Photo #5

Fit the seat backs according to section 8 - Body Details.



Photo #6

The outboard lap belts are bolted on the passenger side. This bolt will also hold the fuel pump bracket which will be installed later.

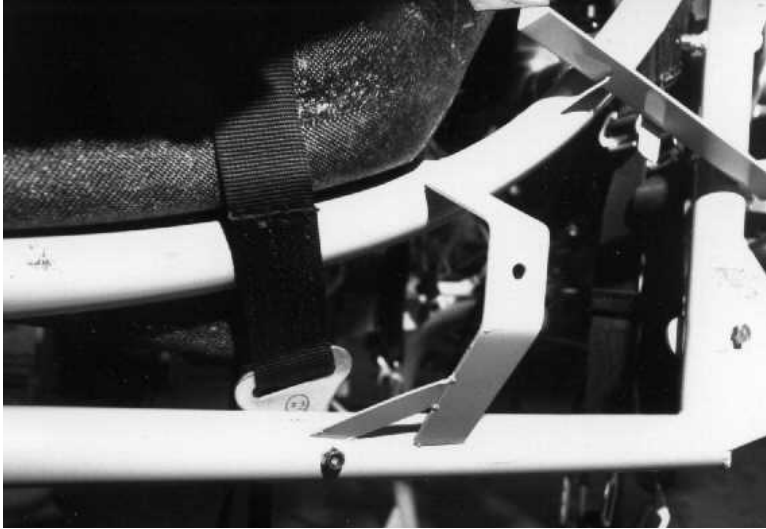


Photo #7

On the pilot side, drill a 1/4" hole in the airframe in approximately the same location as the bolt hole for the passenger belt.

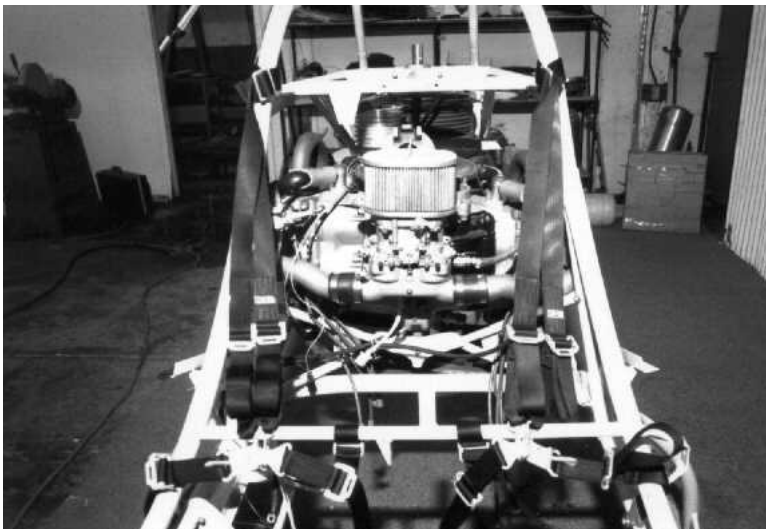


Photo #8

Overview of the seat belts and shoulder harness.

FUEL SYSTEM

Preface: The fuel system used in the RotorWay Exec 90 employs left and right fuselage tanks which are connected together and drain simultaneously. It would be undesirable to use a selector valve to drain each tank independently as this would adversely affect the lateral center of gravity of the helicopter. The material used in the Exec 90 fuel tanks is a cross-linked polyethylene plastic noted for its durability. These fuel tanks are made from the same material and by the same process which Chrysler uses to make the fuel cells for the latest design U.S. Army XM1 battle tank. Thickness of the fuel tanks varies from approximately 1/8" to 3/16". A similar fuel tank made from aluminum would be 10 to 15% lighter, however there would be no comparison in durability.

The tanks are pressure tested between 3-5 PSI prior to shipment; however it will be the responsibility of the builder to check for leakage, especially around fittings, upon final assembly of the tanks.

IMPORTANT: be sure that the heat shielding material has been applied to the fuel tanks and that before operation the engine exhaust manifold shielding has also been properly installed. Excessive fuel temperature can cause vapor lock with subsequent engine shutdown. Extended hovering maneuvers, such as those which will be performed during your initial learning to hover stage, should be done with the lower fuselage cowlings removed to ensure a continuous ambient fuel temperature. During cruise flight sufficient air is circulating around the fuel tanks with the cowlings in place.

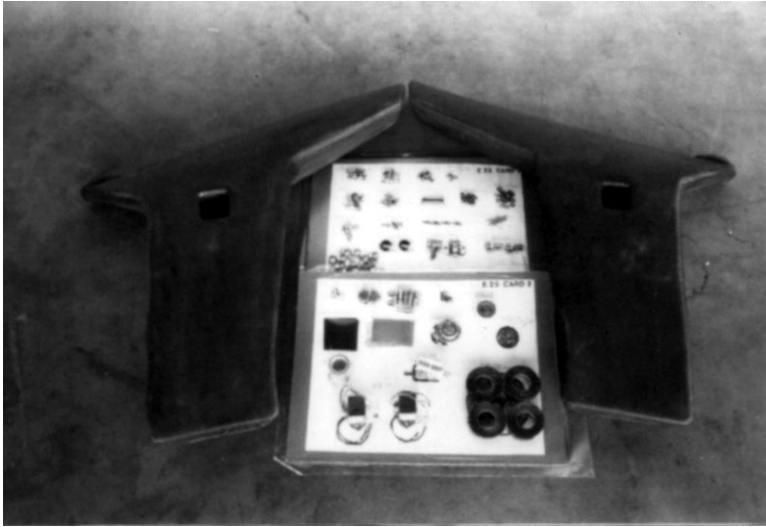


Photo #9

Use print E37-2000 and Template E25-1 when constructing this assembly.

Parts as received from RotorWay International for the fuel system.

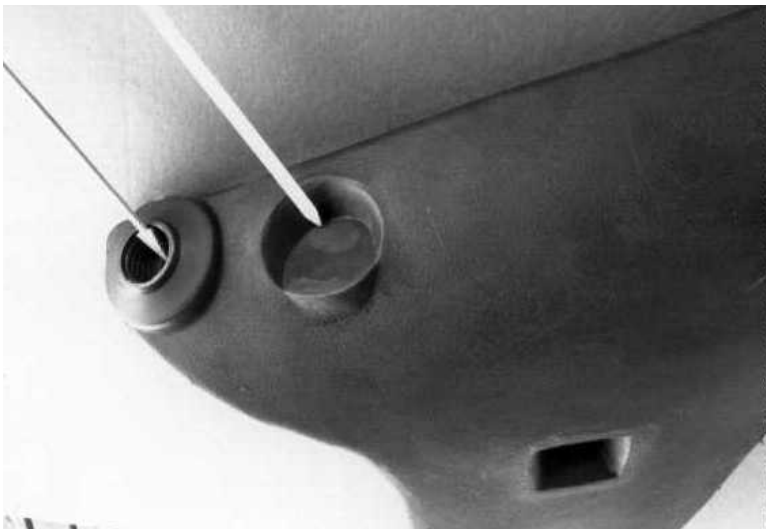


Photo #10

Using a 1/4" drill, remove the excess material in the gas tank opening where the gas cap and fuel gauge sender will go. The material is approximately 3/16" thick at these locations. Be careful not to gouge the fuel tank wall directly below the filler cap holes as the drill bites through. After drilling, trim out the excess material with a knife, small hand grinder, or file.



Photo #11

Use Teflon tape in all fittings. Solder the finger screen (fuel tank strainer) in the fitting before installing it in the tank.



Photo #12

Glue the rubber on the airframe and gas tank bracket.

Note: Leave a space in the rubber for the shoulder strap at the drive tube area.

It will be necessary to clearance an area for the lower fitting and hose so that it will not rub against the bracket.

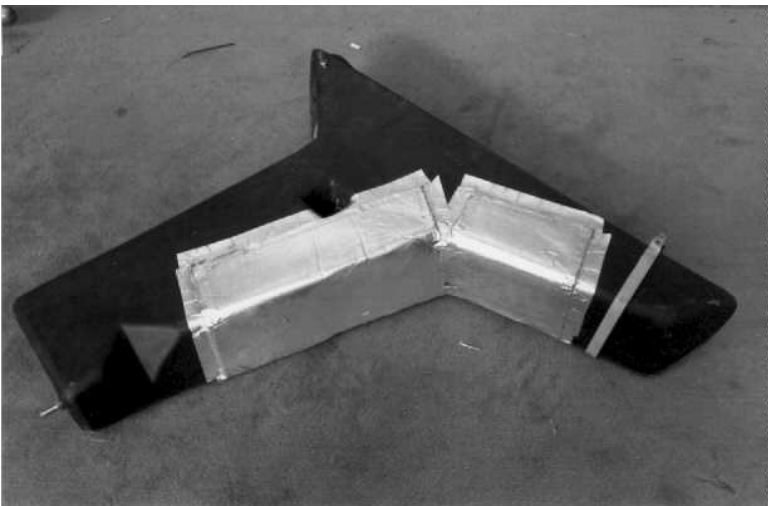


Photo #13

A view of the tank with fitting, heat shielding, and the rear mounting bracket.



Photo #14

The gas tank on the bottom mounting bracket with the fuel line connected.



Photo #15

It is a good idea to hold the tanks in the required position with duct tape and safety wire prior to permanently fitting them. Allow 1/2" clearance between the seat back panel and the fuel tank.



Photo #16

Position the top edge of the fuel tank filler nipple 1/2" to 5/8" below the fiberglass cowling.

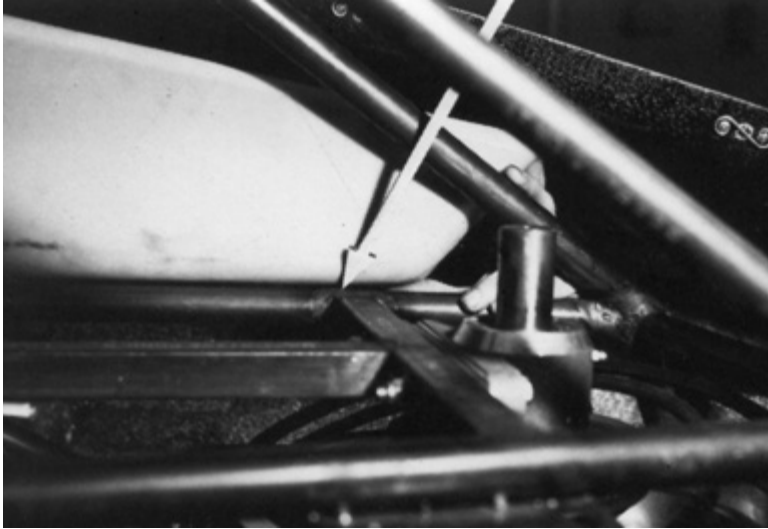


Photo #17

Position the bottom of the rear portion of the fuel tank 1/8" above the top of the mounting tube as shown.

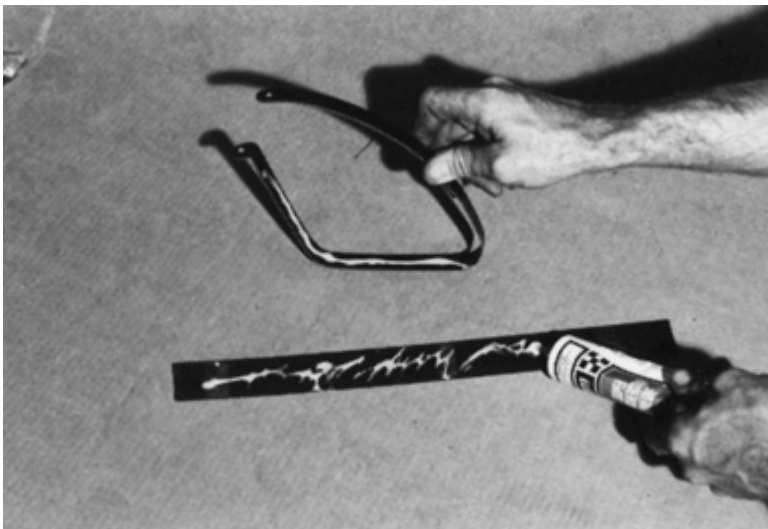


Photo #18

Use weatherstrip adhesive to attach the rubber stripping to all retention straps. When forming the retention straps, be sure to allow 1/8" clearance for the thickness of the rubber stripping.

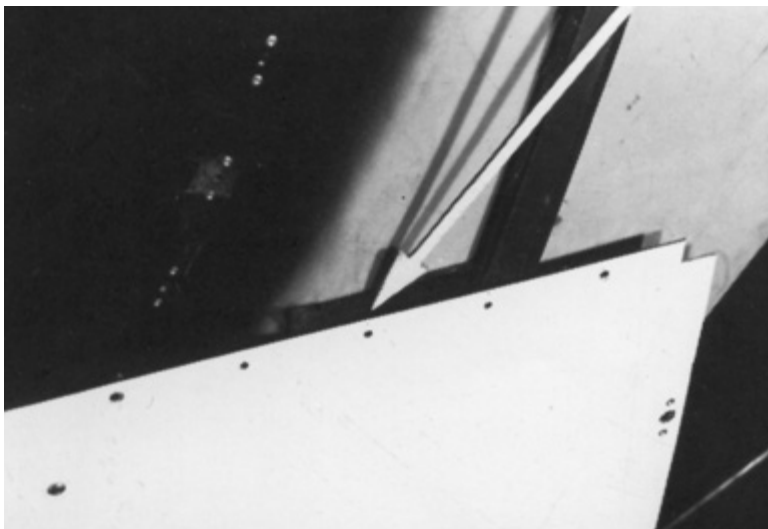


Photo #19

If there is any place where a nut plate may come in contact with the fuel tank, shield that particular area by gluing a small piece of rubber stripping to the fuel tank.



Photo #20

The gas tank mounted to the airframe. This is the rear of the gas tank.



Photo #21

The main mounting strap holding the gas tank to the airframe.



Photo #22

Note the clearance between the gas tank and the body.

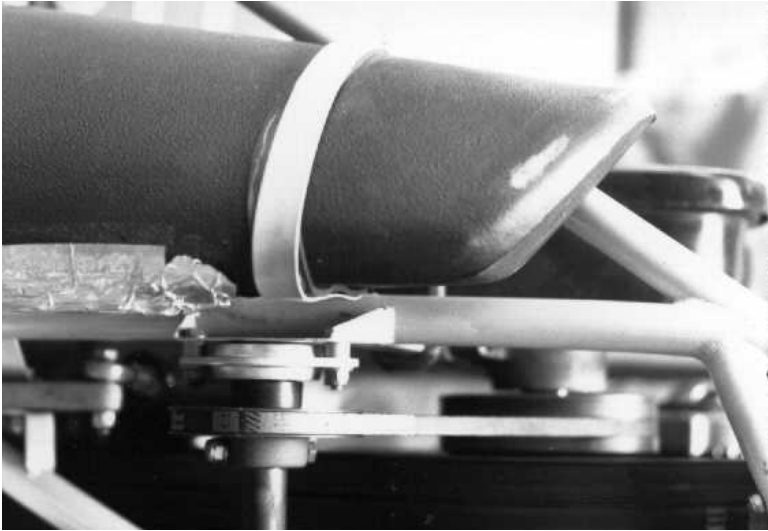


Photo #23

Be sure the rear bottom of the gas tank does not rub on the fan drive on the pilot side.

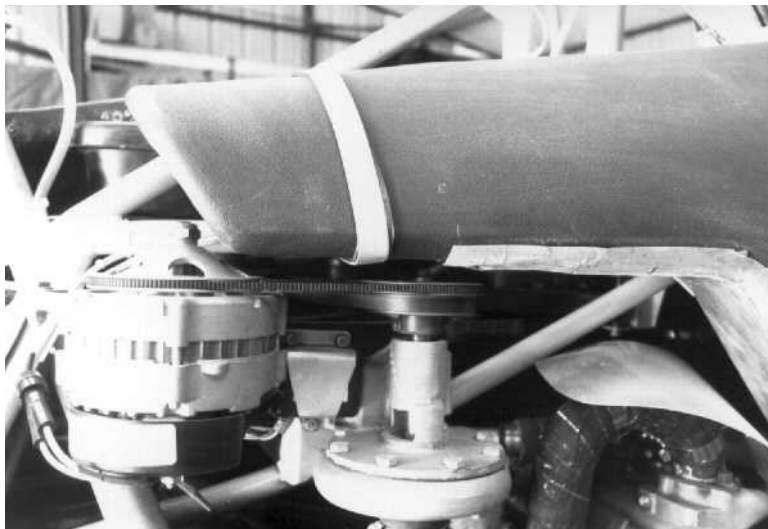


Photo #24

Be sure the rear bottom of the gas tank does not rub on the water pump or the alternator on the passenger side.



Photo #25

Note the clearance between the gas tank and the body on the pilot side. Note the wires for the fuel gauge sender.



Photo #26

The top rear of the gas tank should not rub on the body.



Photo #27

Clearance of gas tank and body.

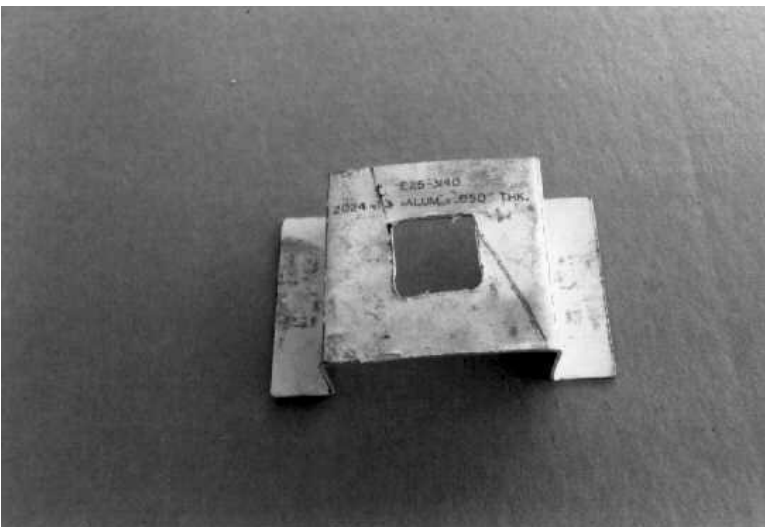


Photo #28

Using template E25-1, make the fuel block bracket. Mount the 4 way block to the bracket using the clamps provided. Mount the bracket to the tub for best alignment of fuel lines and where it would be convenient to check during pre-flight checks. (See photo #30.)

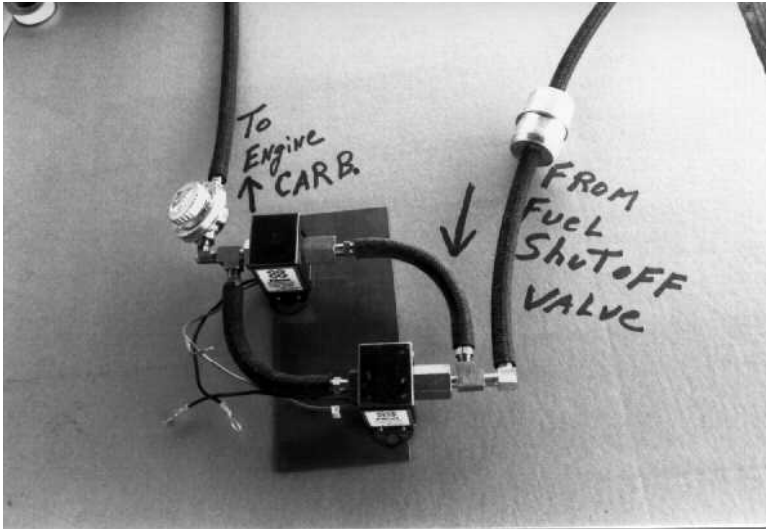


Photo #29

This view shows the routing of the fuel lines from the shut-off valve, through the filter, fuel pumps and regulator to the carburetor on the engine.

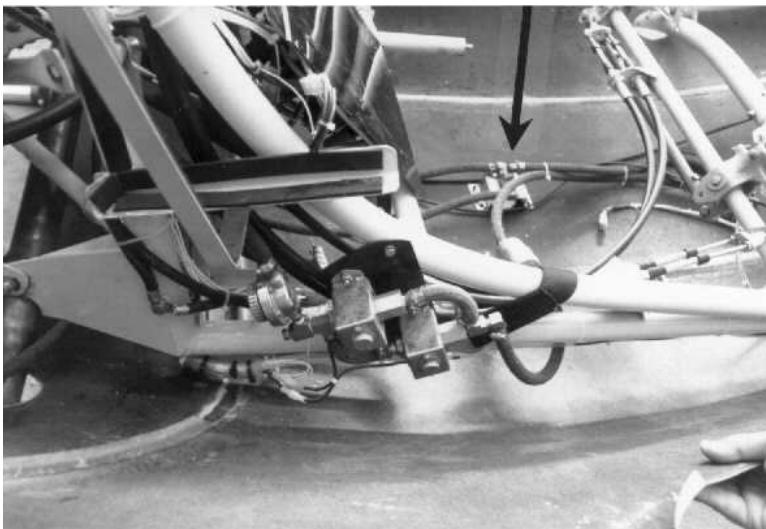


Photo #30

A view of the fuel pump bracket bolted to the airframe on the passenger side. Here the tub has been fitted to show the positioning of the 4 way block, as pointed out by the arrow.



Photo #31

Mount the fuel shut-off valve on the raised area of the floor pan approximately 3" from the instrument panel.