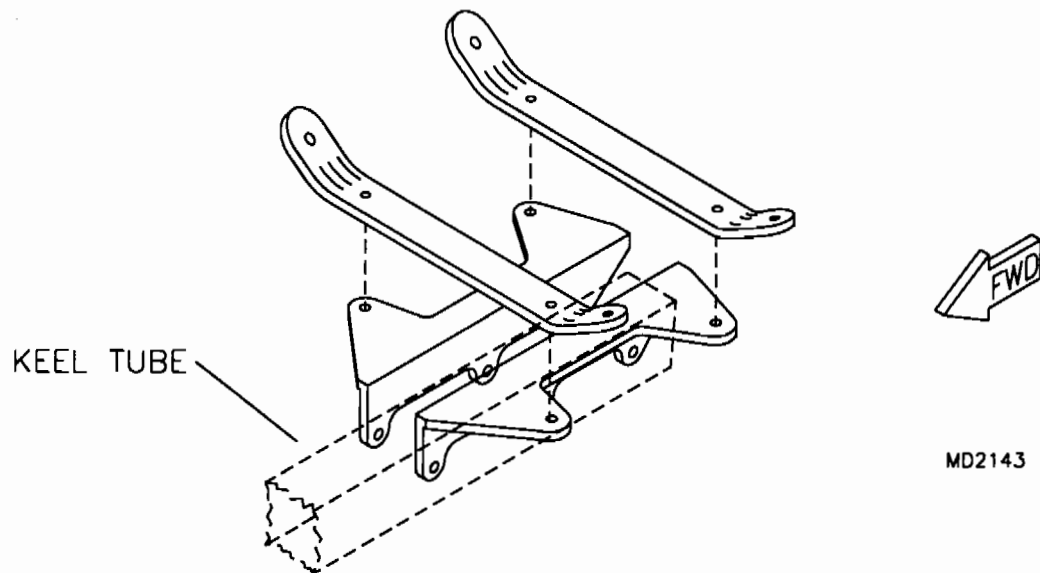


503 ENGINE MOUNT ASSEMBLY

1. Select the parts shown in the parts manual.
2. Bolt the left and right engine mount angles to the keel using the hardware shown. Install the stainless steel "U" bracket in the aft engine mount hole as shown on the parts drawing. Size drill the keel to the hardware shown.
3. Bolt the lower focal mount plates to the engine mount angles as per **Figure 04-03**.

FIGURE 04-03

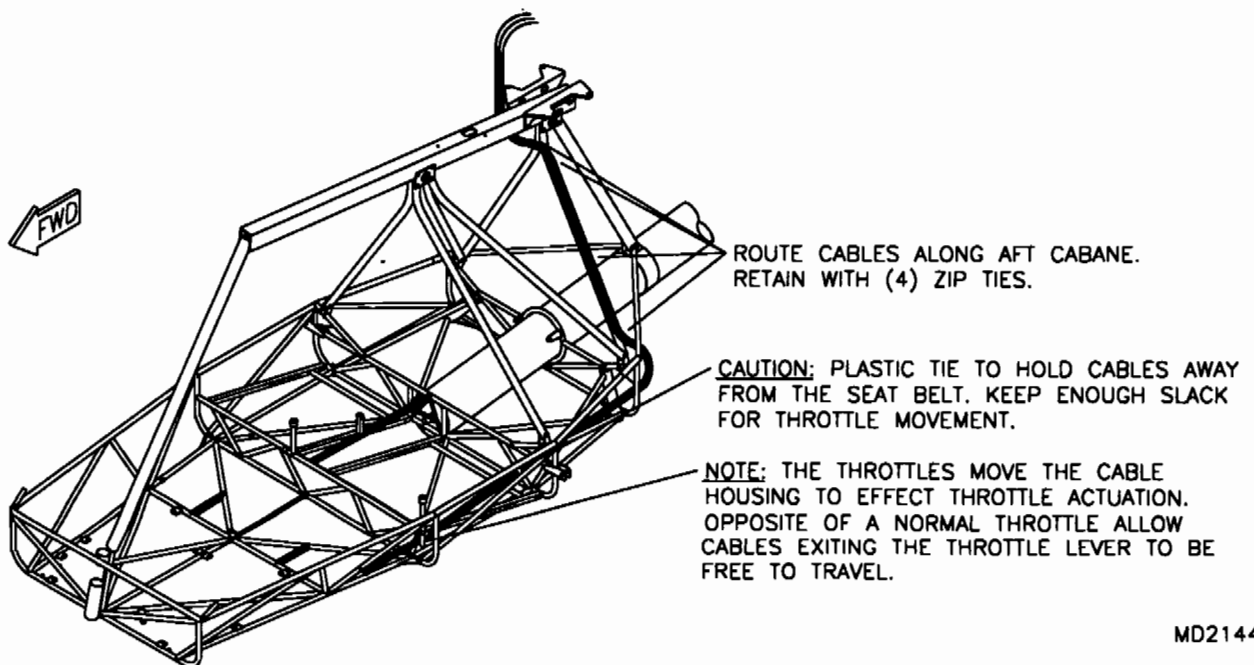


4. Assemble the Barry mounts and upper focal mount plates to the lower focal mount plates as per the parts manual. Use a silicon spray lube to help install the mounts.

503 SINGLE CARB ENGINE INSTALLATION

1. Collect the parts shown in the parts manual
2. Put a stack of three (3) 3/8" washers over each mount hole where the engine studs will insert. Use super glue to hold the washers in place. Place the engine in position and install the loc washers and nuts. **PLEASE** get help lifting the engine into position. It is not a good idea to lift the engine alone. Torque the engine mount nuts to 15 ft/lbs. Inspect all the bolts on the engine mount for security.
3. It is necessary to remove the top plate of the carburetor to install the throttle cable. Remove the carb's top plate and the spring just underneath. Remove the white plastic spring clip, which sits just below the spring. Feed the cable through the top plate, spring, and spring clip. Insert the end of the cable into the "keyhole" shaped hole. Make sure not to dislocate the metering needle of the carb. Reinstall the white plastic spring clip, the spring, and the top plate. Notice that the top plate's hole is not in the center of the carb barrel. Orient the top plate to be in line with the cable and reinstall.
4. Attach carburetor to engine as shown. Make sure that the carb is complete seated in the boot and the carb clamps are tight. Attach air filter to carb as shown.
5. Route the cable and housing, including cable ferrule caps, to the throttle lever. Follow the route shown in **Figure 04-05**. Connect to throttle cables to the throttle lever as shown in the Internal Systems section of the manual.

FIGURE 04-05



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6. Drill 1/4" holes and install the rivet nuts to the bottom of the keel at the locations shown in **Figure 04-06**. Install the fuel pump overflow to the bottom of the fuel pump as shown in **Figure 04-06A**. Use a heat gun to activate the heat shrink. Mount the fuel pump to the underside of the keel using the hardware shown in the parts manual. Route the pressure line to the fuel pump. Route the output of the pump to the carb. Be sure to include the "Y" in the line as shown in the parts manual.

FIGURE 04-06

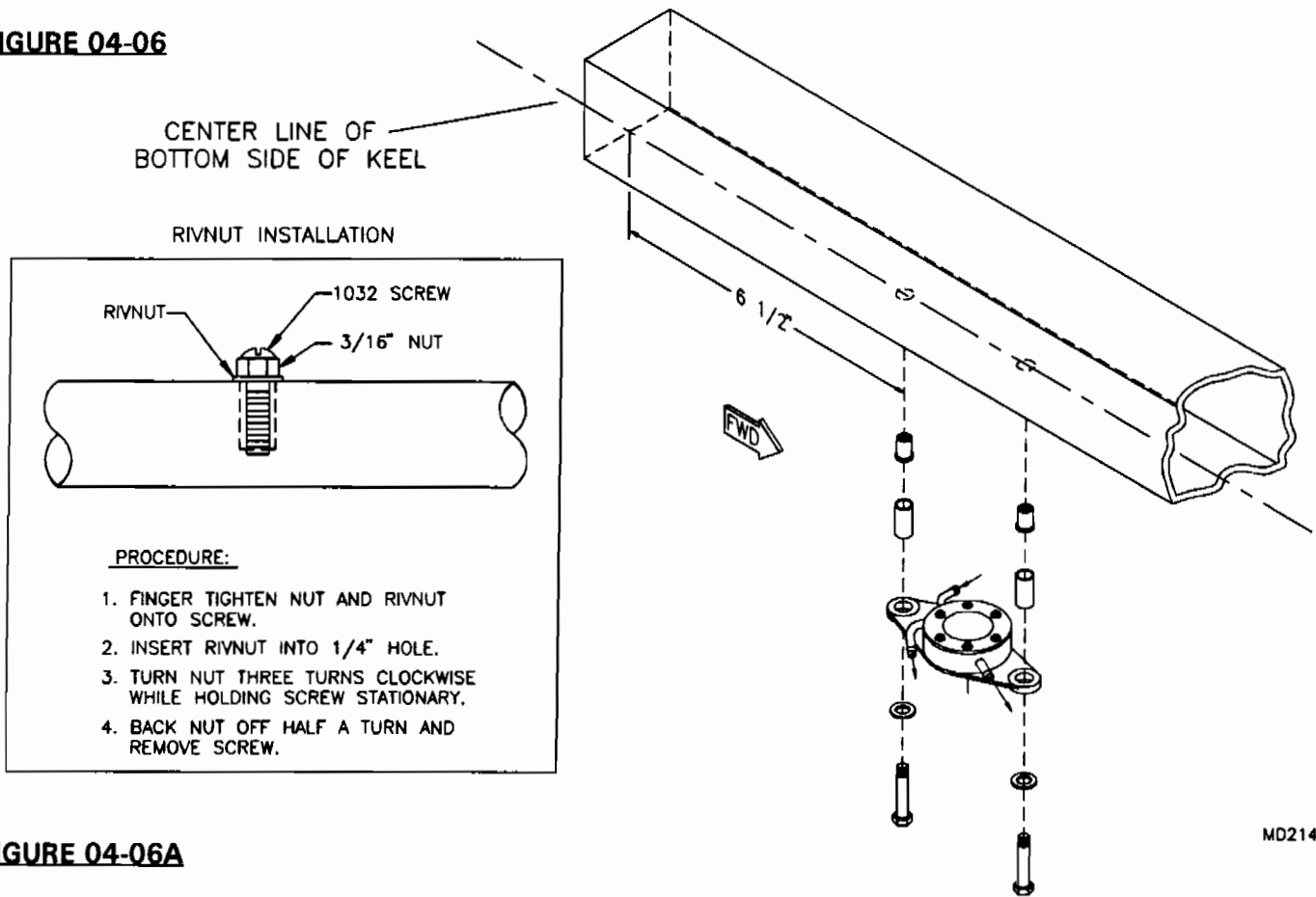
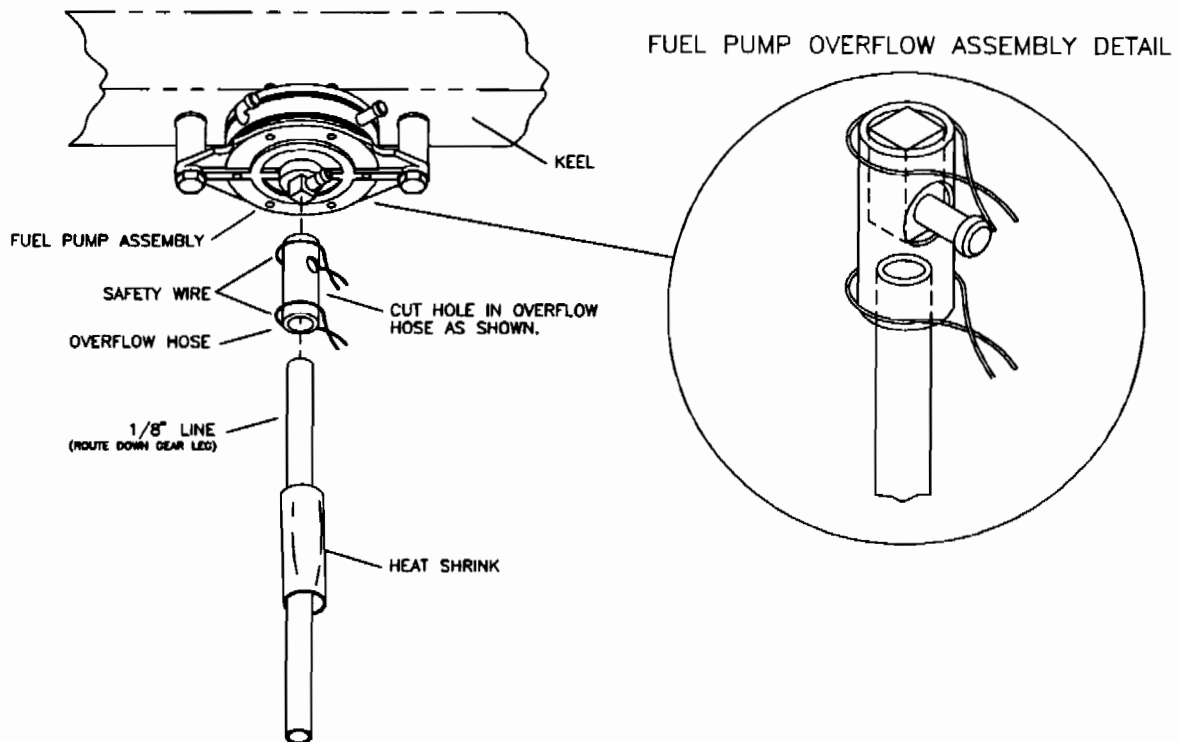


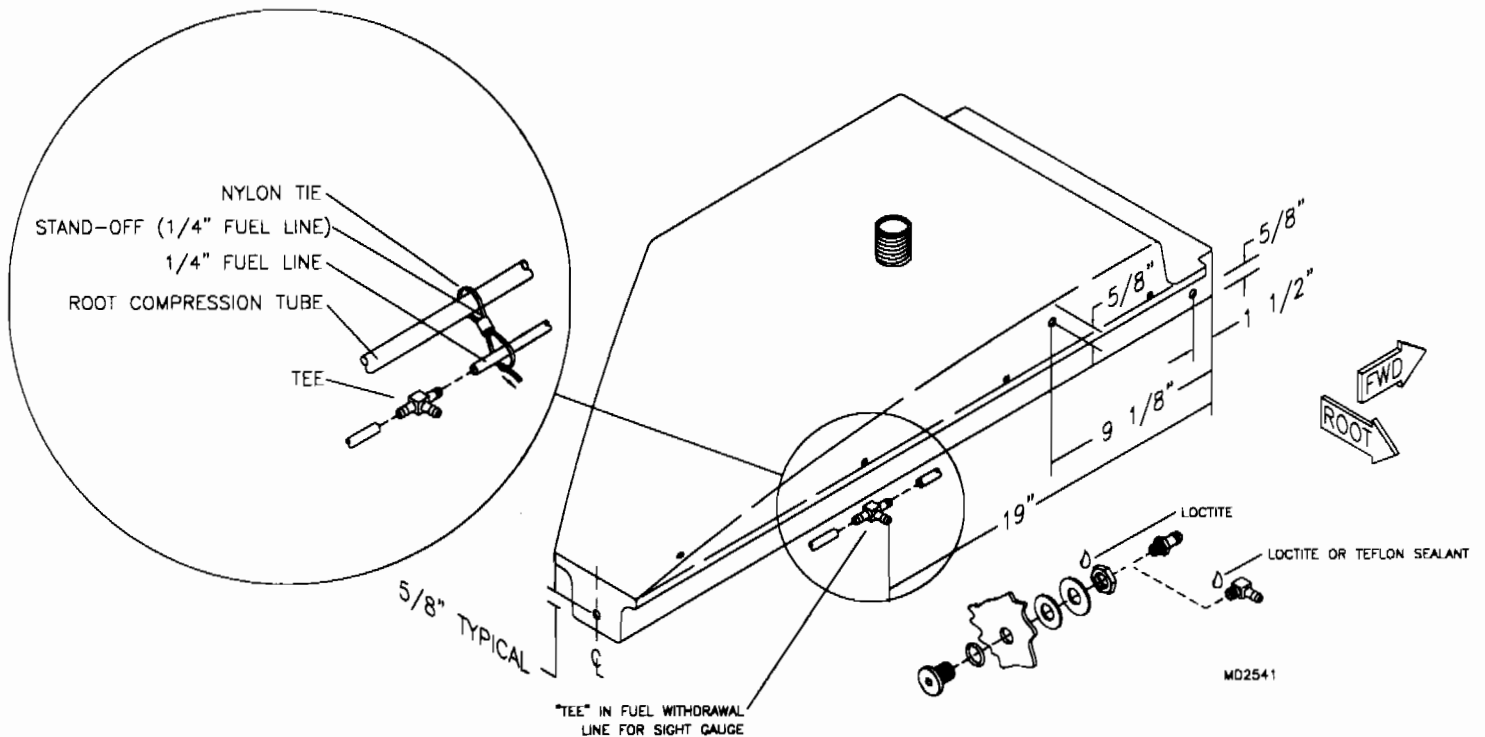
FIGURE 04-06A



FUEL TANK ASSEMBLY

1. Locate the fuel tank(s). See wing frame assembly for part numbers.
2. The fuel tanks are leak tested from the supplier and guaranteed leak proof. You, however, may want to perform a leak test, especially after installing the fuel fittings. If you desire, fill the tank(s) with water and let it sit for approximately 48 hours. Locate (3) 1/2" diameter holes for the fuel fittings at the locations shown in **FIGURE 04-02**. **IMPORTANT:** These measurements are very critical for proper clearance of the Tank Withdrawal Fittings. **HINT:** A UNIBIT step-drill makes a very clean, accurate hole. All fittings are located on the inboard side of the wing tank (see parts manual for orientation). Debur all holes. **NOTE:** Mark on the tank the position for the 1/4" Tee (lower sight gauge attachment). Secure the Tee to the Root Compression Tube when installing the tank in the wing. Remove **ALL** shavings and loose debris from the interior of the tank. Use a vacuum to assist in removal.

FIGURE 04-02



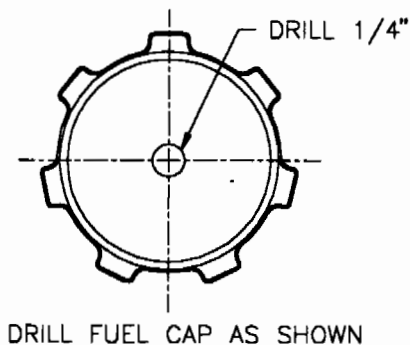
3. Refer to parts drawing, for proper orientation of parts. See wing frame assembly for part numbers.
4. Install the fittings by placing a wire in the fitting hole and up through the filler neck, attach a tank withdrawal fitting and an o-ring. Make a loop in the end of the wire to keep the parts from falling off, then pull the fitting to the hole with the threaded portion out of the tank. Remove the wire. Holding the fitting with the threaded portion extended out of the tank, thread on the rubber washer, metal washer and nut with Loctite. **NOTE:** Use a 1/4" Allen wrench to hold the tank withdrawal fitting while tightening the nut. **HINT:** Hold the metal washer with a needle-nose Vise-Grip to prevent rotation while tightening the nut. Allow Loctite to dry. Apply sealant to the straight or 90 degree fuel line fittings, and screw into the tank withdrawal fitting until snug. **CAUTION:** Do not tighten to the point the tank withdrawal fitting turns in the tank. Also do not over-tighten fuel line fittings, this may cause the withdrawal fitting to break.

FUEL CAP/VENT ASSEMBLY

1. Remove the rubber gasket and plastic baffle from the fuel cap. The plastic baffle will "snap" out of the fuel cap. A screw driver works well for the removal.

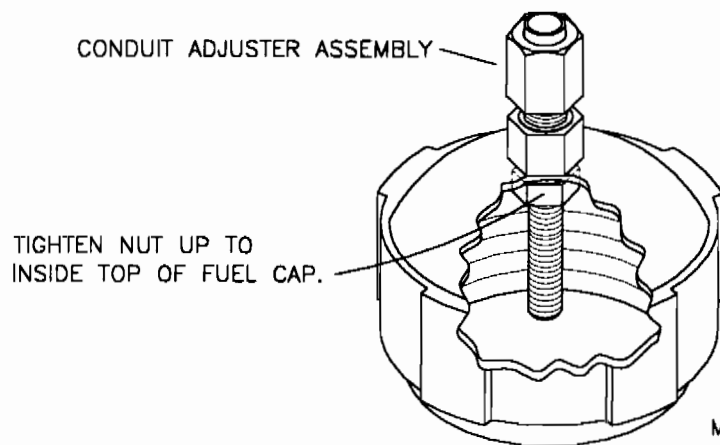
Locate and drill a 1/4" hole in the center of the fuel cap as shown in **FIGURE 04-01**. Install the conduit adjuster ferrule into the fuel cap. Apply a small drop of loctite and install the 1/4" plain nut and tighten to secure the ferrule into the cap. See **FIGURE 04-01A**.

FIGURE 04-01



DRILL FUEL CAP AS SHOWN

FIGURE 04-01A

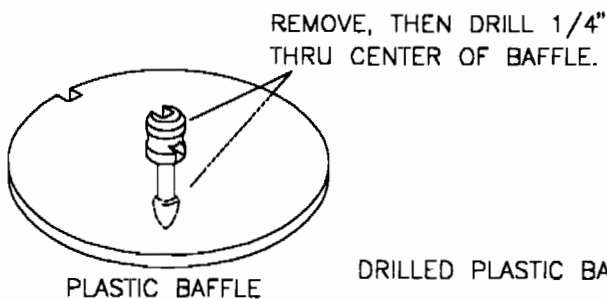


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2. With a side cutters or file remove the attach nipples from the plastic baffle. See **FIGURE 04-02**. Drill a 1/4" hole in the center of the plastic baffle and install into the fuel cap over the adjuster ferrule stem. Drill a 1/4" hole in the center of the rubber gasket and install into the cap. Note the orientation of the rubber gasket.

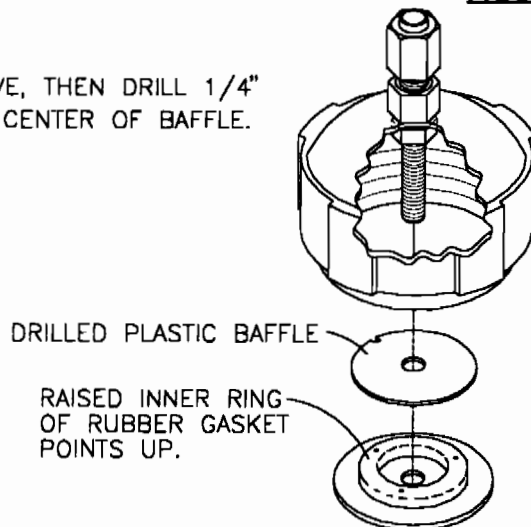
Drill the 1/4" large wood washer as shown in **FIGURE 04-02A**. Assemble the bead chain to the bead chain retainer sleeve. Install the bead chain and retainer sleeve into the #30 hole in the large wood washer. Install the washer and bead chain into the fuel cap. Install the 1/4" shear nut on the adjuster ferrule stem and tighten.

FIGURE 04-02



PLASTIC BAFFLE

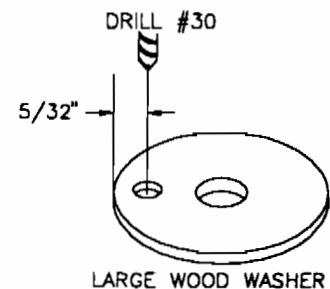
FIGURE 04-02A



DRILLED PLASTIC BAFFLE

RAISED INNER RING OF RUBBER GASKET POINTS UP.

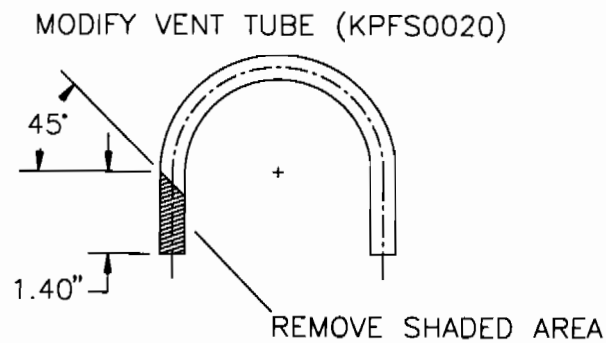
MD2918



LARGE WOOD WASHER

3. Install the bead chain end coupling onto the bead chain. Find the center of the plastic retainer and drill a #30 hole. Using the brass backing washer, rivet the plastic retainer to the bead chain. Refer to the parts drawing.
4. Modify the vent tube as shown in **FIGURE 04-04**. Install the vent tube into the adjuster ferrule. Install the fuel cap assembly onto the tank and tighten. Position the vent tube so that the 45 degree angle is pointing forward (into the slipstream) and tighten the ferrule cap to secure the vent tube.

FIGURE 04-04

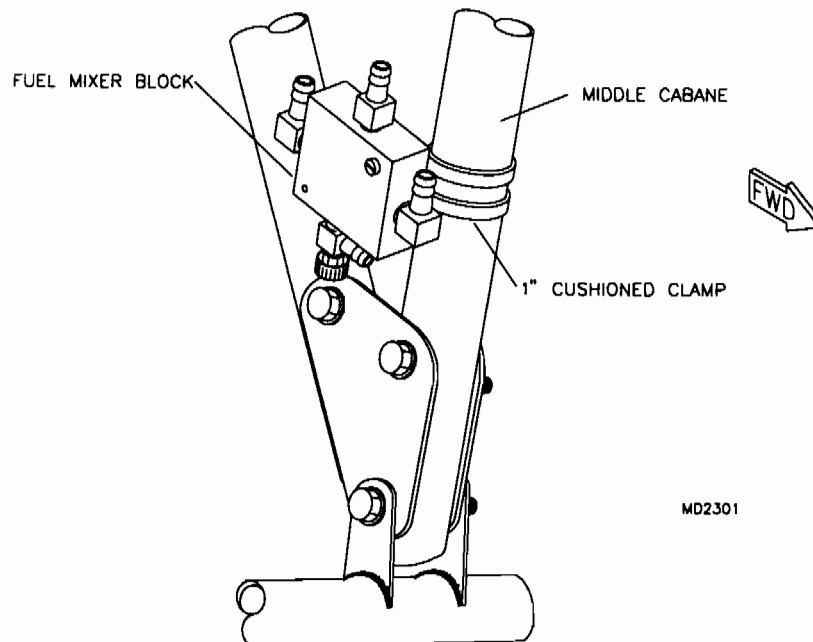


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503 FUEL SYSTEM - SINGLE WING TANK

1. Locate the parts shown in the parts drawing.
2. Route the lines as shown in the parts manual. **HINT:** For now, only tape the fuel lines in position. This will ensure proper routing without wasting zip ties. Zip tie lines in position during final assembly once satisfied with the routing. The fuel mixer block attaches to the middle cabane. See **Figure 04-02**. Route upward from the mixer block to the fuel pump. Include the fuel shut-off valve, the primer bulb, the fuel filter, and the primer line "T." This line will route to the fuel pump as shown. Route the fuel feeds from the mixer block, up the aft cabane. Leave approximately 4 feet of excess line at the keel for the forward withdrawal line and 1 foot of excess for the aft withdrawal line from the fuel tank. This will be connected to the tank during trial assembly and rigging.

FIGURE 04-02

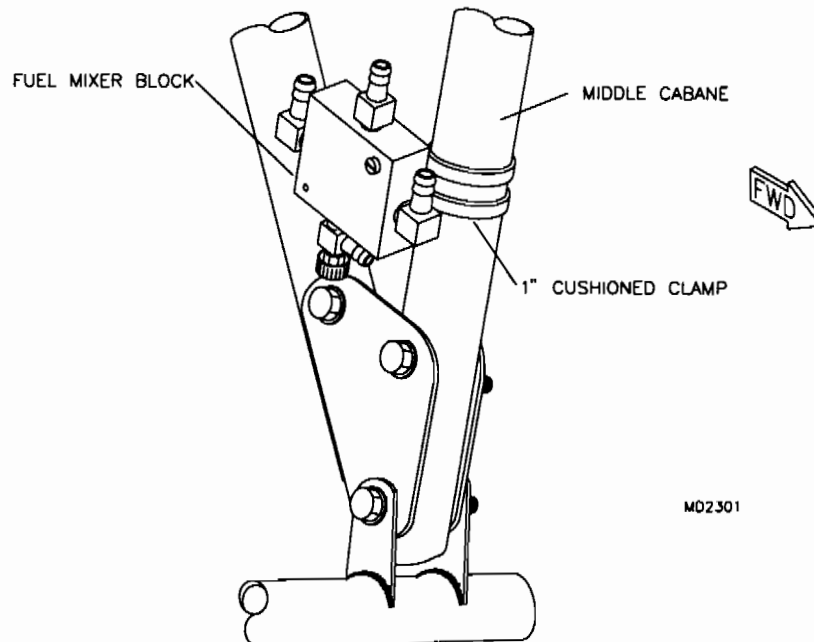


3. Once the wings are built and the fuel tank(s) in place, it will be necessary to leave fuel lines routed out the root rib. Therefore; it will be necessary to only trial fit the withdrawal lines to the fuselage. Once the wings are assembled, attach the fuel withdrawal lines to their appropriate fittings. Trial assembly and rigging will be the appropriate time for routing of all fuel lines. Remember, once the wings are covered, fuel tanks will become inaccessible.
4. Install the primer pump to the instrument panel and route the lines as shown. The angled fitting on the primer pump is the "in" (from the primer line T). The straight fitting routes to the carburetor. See engine installation for details.
5. Install the sump drain valve to the bottom of the mixer block. Route the sump drain line down the gear leg. For installation of the fuel tanks into the wing, see wing frame assembly.
6. When installing the tensioning ribs (during the covering section) it will be necessary to project the holes for the sight gauge over to the tensioning rib. Once tension ribs and wing skins are installed, locate the loop clamp at the mid-point of the sight. This will allow the turnbuckles to clear the sight gauges.

503 FUEL SYSTEM - DUAL WING TANKS

1. Locate the parts shown in the parts drawing.
2. Route the lines as shown in the parts manual. **HINT:** For now, only tape the fuel lines in position. This will ensure proper routing without wasting zip ties. Zip tie lines in position during final assembly once satisfied with the routing. The fuel mixer block attaches to the middle cabane. See **Figure 04-02**. Route upward from the mixer block to the fuel pump. Include the fuel shut-off valve, the primer bulb, the fuel filter, and the primer line "T." This line will route to the fuel pump as shown. Route the fuel feeds from the mixer block, up the aft cabane. Include the "Y" in the system. Make sure that the "Y" is mounted at least 12" below the keel. Leave approximately 4 feet of excess line at the keel for the forward withdrawal line and 1 foot of excess for the aft withdrawal line from the fuel tank. This will be connected to the tank during trial assembly and rigging.

FIGURE 04-02



3. Once the wings are built and the fuel tank(s) in place, it will be necessary to leave fuel lines routed out the root rib. Therefore; it will be necessary to only trial fit the withdrawal lines to the fuselage. Once the wings are assembled, attach the fuel withdrawal lines to their appropriate fittings. Trial assembly and rigging will be the appropriate time for routing of all fuel lines. Remember, once the wings are covered, fuel tanks will become inaccessible.

4. Install the primer pump to the instrument panel and route the lines as shown. The angled fitting on the primer pump is the "in" (from the primer line T). The straight fitting routes to the carburetor. See engine installation for details.

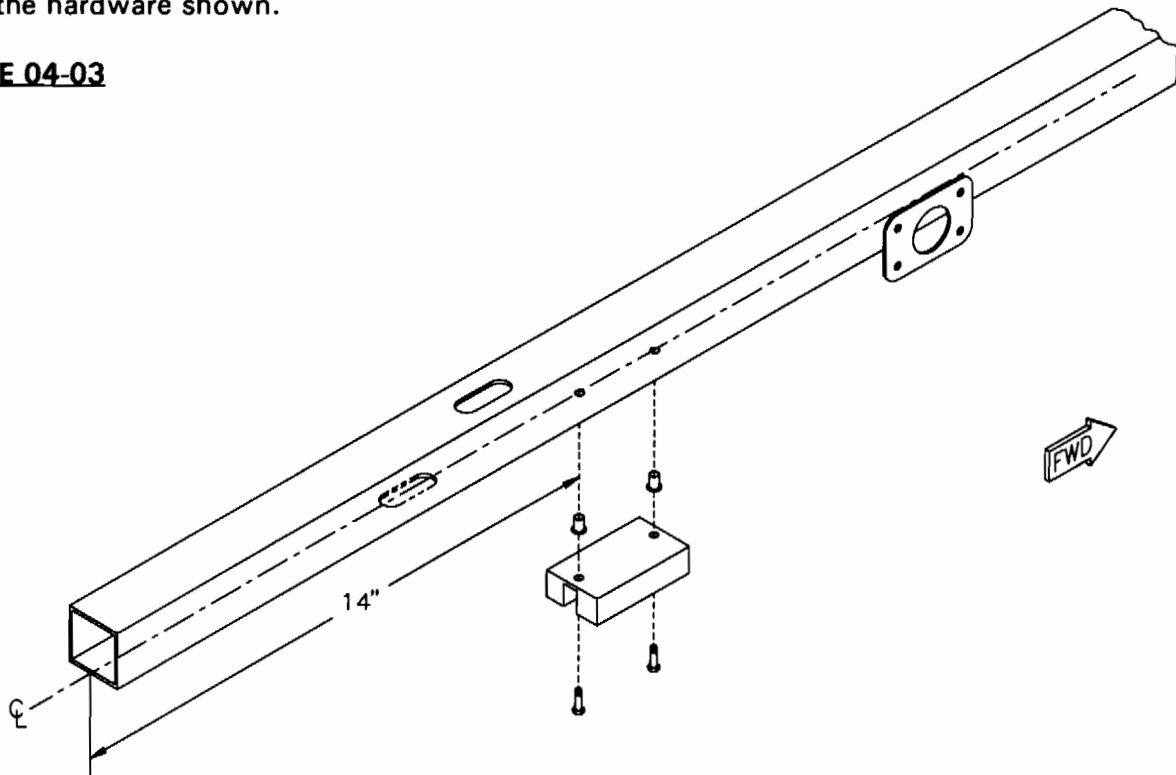
5. Install the sump drain valve to the bottom of the mixer block. Route the sump drain line down the gear leg. For installation of the fuel tanks into the wing, see wing frame assembly.

6. When installing the tensioning ribs (during the covering section) it will be necessary to project the holes for the sight gauge over to the tensioning rib. Once tension ribs and wing skins are installed, locate the loop clamp at the mid-point of the sight. This will allow the turnbuckles to clear the sight gauges.

503 INSTRUMENTS AND ELECTRICAL WITHOUT ELECTRIC STARTER

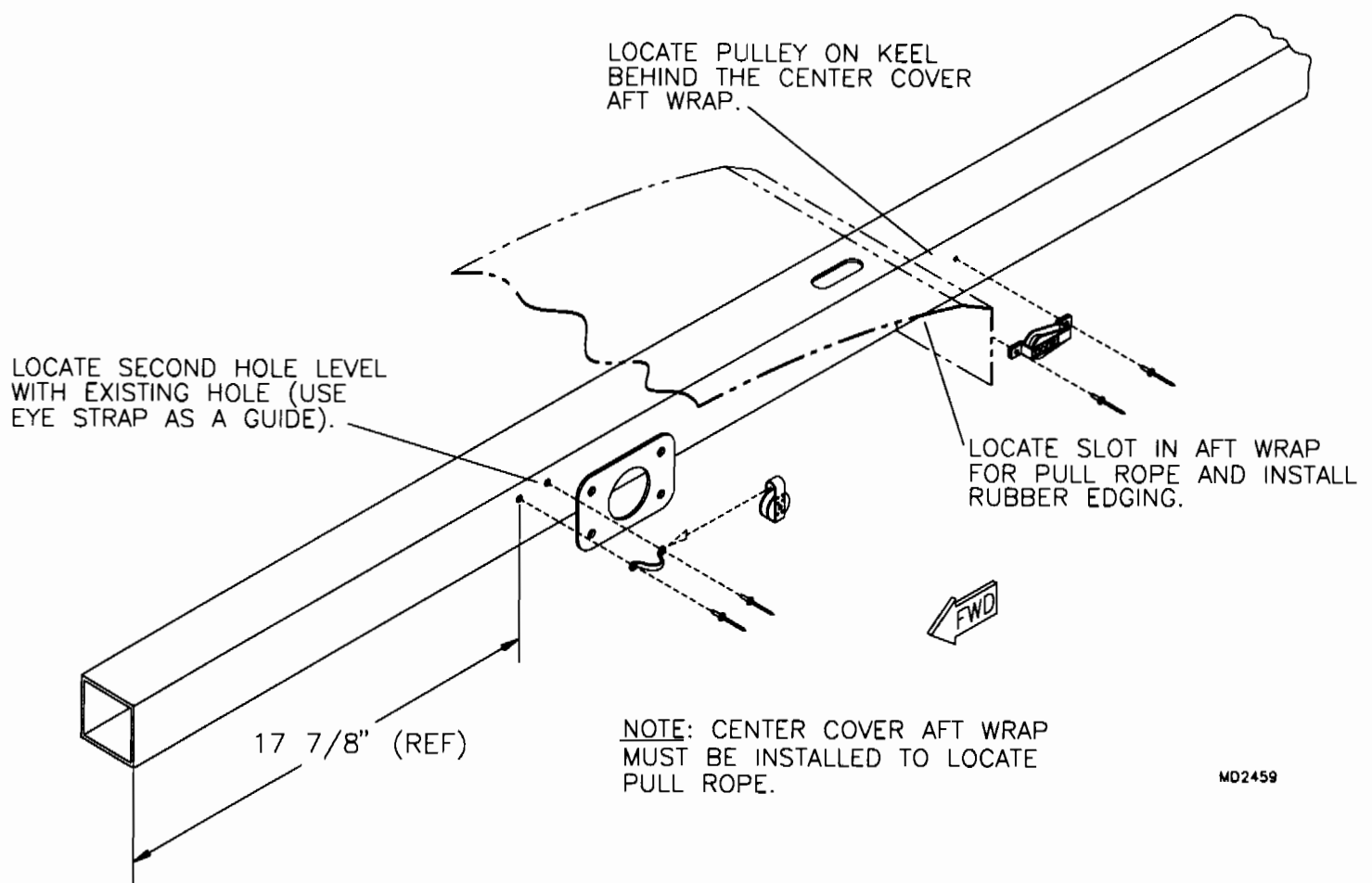
1. Locate the parts shown in the parts manual.
2. Temporarily install the aft center cover as shown in the Fuselage Enclosure section of the manual. This will help to determine the best path for the engine related wires.
3. Install the regulator/rectifier in the location shown in **Figure 04-03**. Drill as required to install using the hardware shown.

FIGURE 04-03



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4. Install instruments into the instrument panel. Study the instrument and electrical schematic very carefully. Route all wiring as neatly as possible. This will greatly ease installation and any trouble shooting, if ever required.
5. When routing pitot and static lines into the instrument panel, be sure not to kink or crush the lines.
6. Install the pulleys for the pull rope as shown in **Figure 04-06**. Locate the eye strap as shown in the figure. **Remember** to slip the pulley in position before riveting the eye strap in position. With the engine in place, locate the aft pulley just behind the center cover aft wrap. Locate to prevent chafing of the pull start rope. **NOTE:** it will be necessary to locate a slot in the center cover aft wrap for the pull rope. Slot as required and install rubber edging.

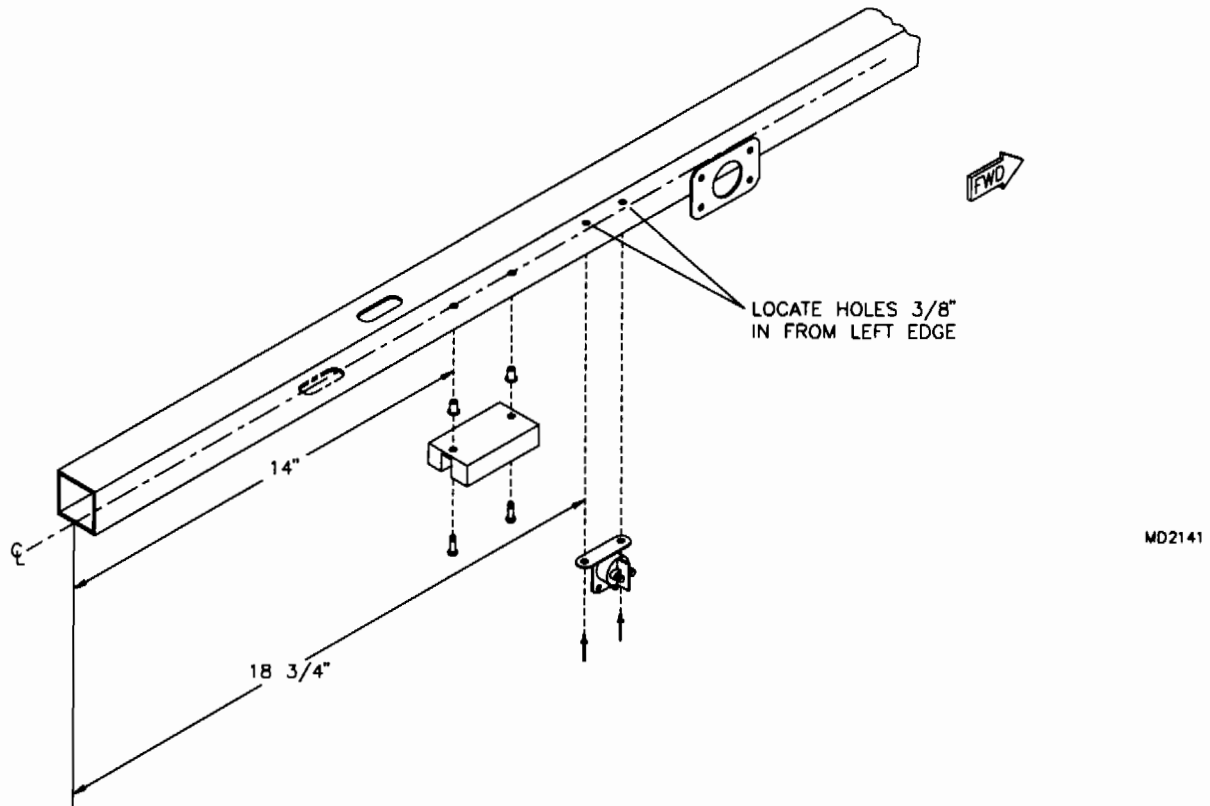
FIGURE 04-06

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503 INSTRUMENTS AND ELECTRICAL WITH ELECTRIC STARTER

1. Locate the parts shown in the parts manual.
2. It will be easier to complete wiring of the if the battery is installed. See 503 Battery Box Installation in the Parts manual.
3. Temporarily install the aft center cover as shown in the Fuselage Enclosure section of the manual. This will help to determine the best path for the engine related wires.
4. Install the regulator/rectifier and solenoid in the location shown in **Figure 04-04**. Drill as required to install the hardware shown.

FIGURE 04-04



5. Install instruments into the instrument panel. Study the instrument and electrical schematic very carefully. Route all wiring as neatly as possible. This will greatly ease installation and any trouble shooting, if ever required.
6. When routing pitot and static lines into the instrument panel, be sure not to kink or crush the lines.

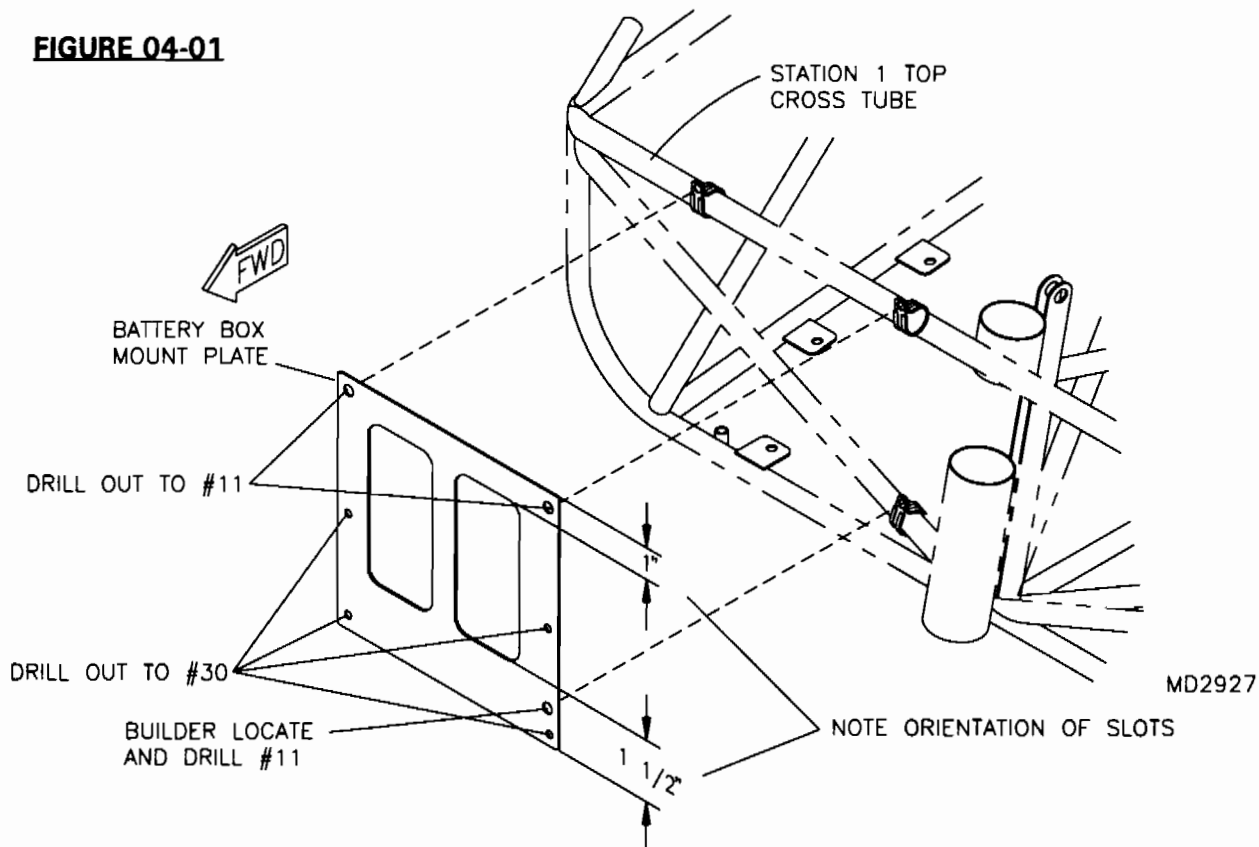
503 BATTERY BOX ASSEMBLY & INSTALLATION

1. Drill out the two pre drilled corner holes only, to #11 shown in **FIGURE 04-01**. Note the orientation of the battery box mount plate. Drill the remaining holes to #30.

Drill one hole in the support angles and the corresponding hole in the side plate to #30 and rivet the support angles to the side plate. Chase drill through the second hole of the side plate and support angle and rivet. Refer to the parts drawing.

Position one side of the side plate flush with the mount plate. Using a #11 & #30 drill bit and using the mount plate as a guide, transfer drill through the three side holes in the mount plate into the side plate. Rivet the side plate to the mount plate through the #30 hole(s) only. Slide the battery into the box and pull the opposite (loose) side of the side plate in tight to the battery. Using the mount plate as a guide transfer drill through the mount plate into the side plate with the appropriate sized bit. Install only the #30 rivet(s). The #11 holes will be used to mount the battery box.

FIGURE 04-01



2. Install the cushioned clamps onto the station 1 top cross tube and the diagonal tube as shown in the parts drawing. Note the orientation of the cushioned clamps. Bolt the battery box to the top two cushioned clamps. Slide the third clamp on the diagonal until it lines up with the battery box. Verify clearance between the battery box and the steer link rods. Mark the hole location of the cushioned clamp on the battery box and drill to a #11. Bolt box in place.

3. Install the battery, battery bar and cotter pins. Refer to the instruments and electrical section for wiring.

503 MUFFLER WRAP HEATER

503 MUFFLER WRAP HEATER IN DEVELOPMENT

TO BE RELEASED FOR PRODUCTION
AT LATER DATE.

STROBE SYSTEM SCHEMATIC

1. Locate the parts shown in the parts manual.
2. Final wiring of the strobes will be done during Trial Assembly and Rigging. For now just wire to the switch and tape excess wire in a bundle.