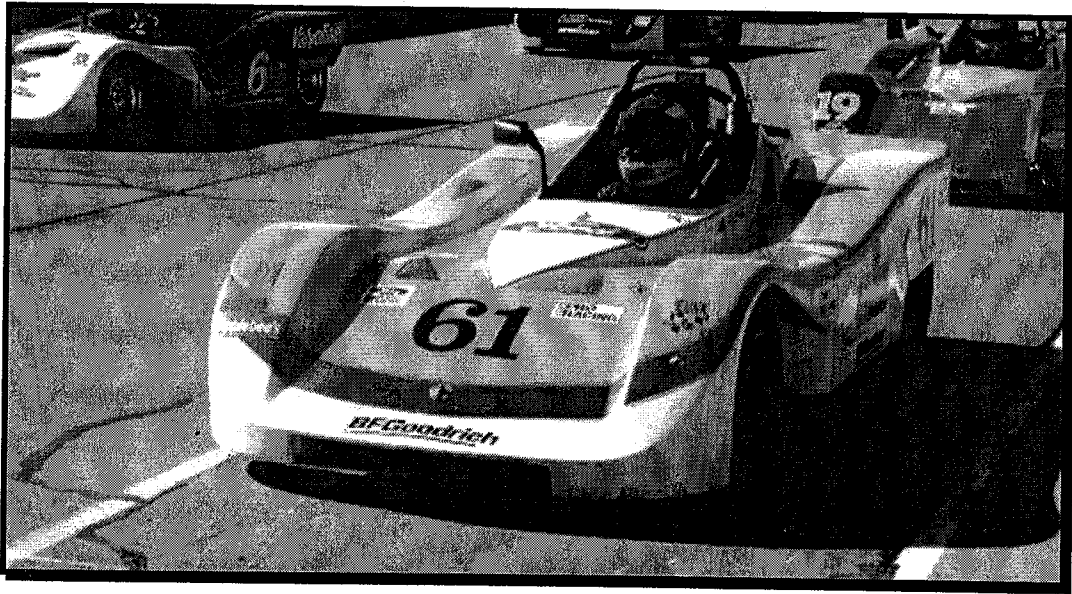




# ASSEMBLY MANUAL



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### WARNING-RELEASE

The Spec Racer Kit of parts is intended for use in high speed, high performance auto racing. It is sold without warranty, express or implied. There are risks and dangers associated with auto racing which can result in property damage, serious physical injury or death. Customer voluntarily accepts, assumes and incurs all such risks, dangers and damages incurred in the use of the aforementioned Kits or parts and by acceptance of the shipment hereby **RELEASES, WAIVER, DISCHARGES, AND COVENANTS NOT TO SUE SCCA ENTERPRISES, INC., SCCA OR IT'S MEMBER CLUBS, MEMBERS OR AFFILIATES.**



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This manual is sequenced for the most practical assembly of a Spec Racer Ford. As a result, many items are referred to in more than one section. Following is a general Table of Contents. For more specific information on any one item, refer to the Index.

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# HOW TO BUILD A SPEC RACER FORD

## **FIRST, TAKE THE TIME TO READ THROUGH THIS MANUAL**

It will help to familiarize you not only with the vehicle and its components, but the step-by-step assembly sequence you will need to follow. If you are not completely confident in your ability to assemble this vehicle, so it can be operated as safely as possible and at its highest potential performance, SCCA Enterprises would like to recommend that you have the nearest CSR (Customer Service Representative) build the car for you. For further information, please feel free to call SCCA Enterprises at (303) 693-2111.

## **TAKE AN INVENTORY AND COMPARE TO PARTS LISTS**

A shortage list is included in the kit. Those parts are on order and will be forwarded.

## **TOOLS, ETC. NEEDED**

You will need a complete set of standard and metric wrenches and sockets, ratchets, allen wrenches, screwdrivers, drill bits and drill. Also an assortment of shop tools including soft hammer, hammer, center punch, level, measuring tape, duct tape, Teflon tape, 3/8 and 1/2 in. drive torque wrenches, a press, moly grease, pliers, dykes, pop rivet tool, deburring tool, shop vac, Loctite, scissors, hacksaw and soldering iron.

Tie-wraps are provided for some of the components, but an assortment of extras will come in handy.

Before assembly, it's wise to locate all bare metal parts and paint them the color of your choice. The uprights (steering knuckles) are least likely to become chipped if the wheel bearings are pressed in prior to painting. This will be covered in the suspension section. Suspension links with internally threaded holes may need the threads cleaned prior to assembly. The use of an anti-seize type compound is recommended during assembly of all suspension adjustment links.

It is advisable to have the header and exhaust tubes treated with a high temperature coating. This should be a priority, such that no delays will be incurred later.

Everything required to operate your car is included except for fluids and a battery. The battery required is a 12 volt category U1 with sealed vents. A Sears Die-Hard stock number 9603 (or equivalent) will work well.

Throughout this book, parts will be identified by the last three or four digits of their part number. For example, a sway bar clevis R0280650 would be 650. Many Ford parts have a four-digit part number. For example, an alternator bracket F0391401 would be 1401.

You should purchase a GCR (General Competition Rules) book to use as a reference. The specific section covering the Spec Racer Ford is the SRCS (Sports Racer Category Specifications), available from the Sports Car Club of America Inc., 9033 E. Easter Place, Englewood CO 80155, (303) 694-7222. The SRCS contains all the information regarding drive train and engine management seals and the penalties regarding tampering or counterfeiting of the seals, as well as all pertinent rules.

According to the GCR, regarding SRF, "Fasteners are free" refers only to parts having a prefix "R10". This means substitution of upgraded material fasteners is allowed.

- **Note: Numerous parts on the car, including suspension arms, fiberglass and sheet metal are marked for compliance checking with reflective stickers or other identification. Do not remove these stickers or identifying markings.**

## **PRE-ASSEMBLY SETUP**



Place the frame on suitable construction sawhorses or jackstands, capable of supporting 1500 lbs. Be certain you have a method of lifting the car off its supports safely when it becomes time to put the car on the ground.

- **Note: Access to the underside of the engine compartment is very desirable during some stages of assembly. Also some access to the underneath of the car will be necessary to install the lower radiator pan and the radiator.**

A large workbench and /or table will be convenient for assembly of some components before they are installed onto the car. A vise will also be helpful for some of the assembly operations.

- **Note: The center bodywork will have a NACA duct fitted in a later step. Installing this duct may be desirable prior to painting the bodywork. The optional tail airscoop (Aero Kit pn 190000) and rear panel cutout, if desired, should also be installed/performed before painting the tail section. Please refer to the Bodywork section of this book for details on airscoop and cutout.**

The body sections will need to be fitted to each other and to the car prior to painting. If you are going to use a multi-color paint scheme, we suggest you consult with the painter in order to index the body panels together correctly.

Any type air-dry paint can be used, **EXCEPT** paint requiring an oven or lamps for drying. **DAMAGE TO THE FIBERGLASS PANELS WILL OCCUR IF PLACED IN AN OVEN OR UNDER LAMPS.**

The majority of the hardware needed to assemble the car is pre-packaged and marked. It may be helpful to organize each of these hardware packages as to their location on the car.

This manual is sequenced so the body will be fitted very early in the assembly order. The body, after fitting, can be painted while assembly continues.

Paint on the frame will often reduce the size of holes. It is advisable to check and drill out any holes that are tight for fittings. After assembly starts, some holes will be extremely difficult to get a drill into.

### **INSTALLING THE DRIVER COMPARTMENT SIDE PANELS**

Place the frame on either side pod. Make sure the correct side panel is installed on the correct side of the driver's compartment. Drivers left side (436) has three 5/8" holes at 45° near the bottom front corner. Drivers right side has two 2 1/4" holes 20" back from the front end.

Place a bead of silicone bonding agent between the panel and the frame. Position the first panel against the frame and clamp. If the panel is oriented correctly, all rivet holes will align with a frame member. Drill through a center rivet hole in the panel, with a 1/8" drill, into the frame. Install a 1/8" rivet. Working towards the front and rear, continue drilling and riveting the panel. Rivet each hole as you drill it to keep the panel from buckling.

Turn the frame over on the other side pod. Repeat the above to install the other drivers side panel.

### **INSTALLING THE DRIVER COMPARTMENT FRONT BULKHEAD**

Install the front bulkhead (439) (approx. 28" x 15") on the forward side of the front box frame. This box frame is 9 1/2" behind the front end of the frame.

Place a bead of silicone bonding agent between the panel and the frame. Position the bulkhead against the frame and clamp. If the panel is oriented correctly, all rivet holes will align with a frame member. Drill through a center hole in the panel, with a 1/8" drill, into the frame. Install a 1/8" rivet. Continue drilling and riveting the panel.

## INSTALLING THE FLOOR PANS

Make sure the bottom of the frame is clean. Turn the frame up side down or place it on either side pod. Clamp the large rear pan in position. This is the 64" x 41 3/4" sheet.

Place a bead of silicone bonding agent between the panel and the frame. The rear edge of the pan will line up with the rear side of the lateral frame member directly under the roll bar. All prepunched holes will align with a frame member if the pan is correctly turned and positioned. After aligning the pan with the frame, drill and pop rivet one corner hole at the rear of the pan. Next drill one hole in the opposite corner. Place a rivet in the hole but do not actually rivet it yet. The loose rivet is to keep the pan from shifting. Go back to the original riveted corner. Working out and across from this corner in a semi-circular fashion, drill and rivet each hole as you go. Riveting as you work out from the corner helps to keep the pan from buckling.

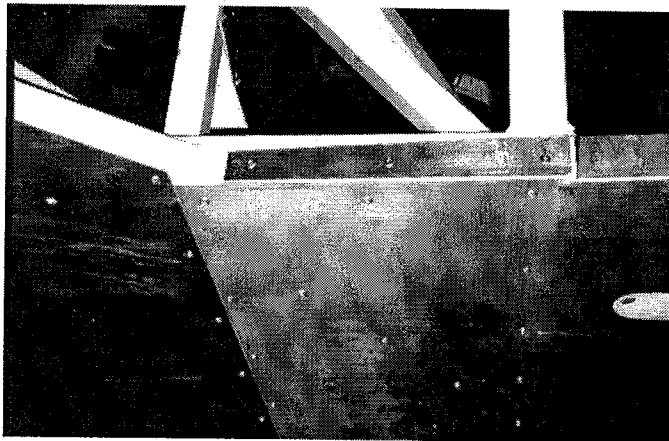
Clamp the front pan in position. This is the 64" x 24" sheet with angled sides to match the frame diagonals. The rear of this pan overlaps the front of the larger pan.

Follow the same procedure as the previous pan. Bond, align the pan, rivet one rear corner, drill and place a loose rivet in the opposite corner, rivet out in a semi-circular fashion from the first rivet.

## INSTALLING THE LOWER RADIATOR PAN

From underneath the chassis, trim the excess sealant at the leading edge of the forward bellypan. Fit the lower radiator pan (448) flush with the forward edge of the bellypan. Clamp in place and drill the chassis for rivets using the predrilled holes as a guide.

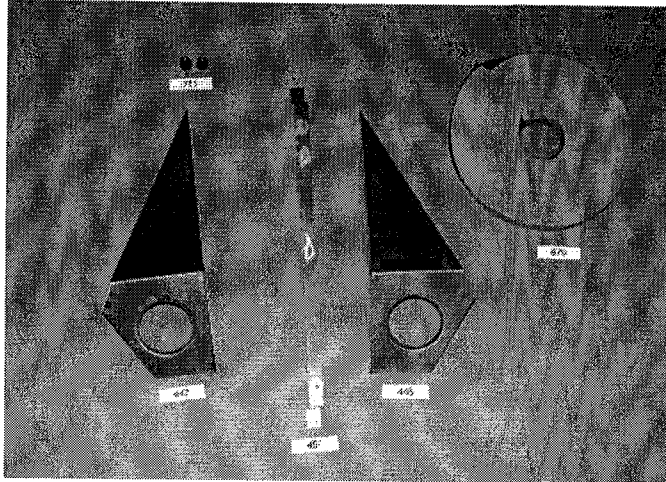
Install rivets, working out from the center. Be sure the pan is held tight to the chassis when drilling and riveting, especially at the three horizontal holes on either side of the pan.



## INSTALLING FRONT BRAKE DUCT BAFFLES

Loosely install the two radiator well-nuts (711, small round rubber bushings with threaded insert) into their holes at the forward lower suspension brackets with 5/16-18 x 1" bolts (079) and flat washers (255). Bolts are installed from underneath. These two bolts will be tightened in a later step.

Along the top edge of each baffle, stick a piece of foam tape, 13 and 1/2 inches long such that the tape begins 1 and 7/8 inches from the top of that flange. The tape should extend slightly beyond the bottom corner of the baffle. A slight bevel cut at the upper edge of the foam tape will make the radiator easier to fit.

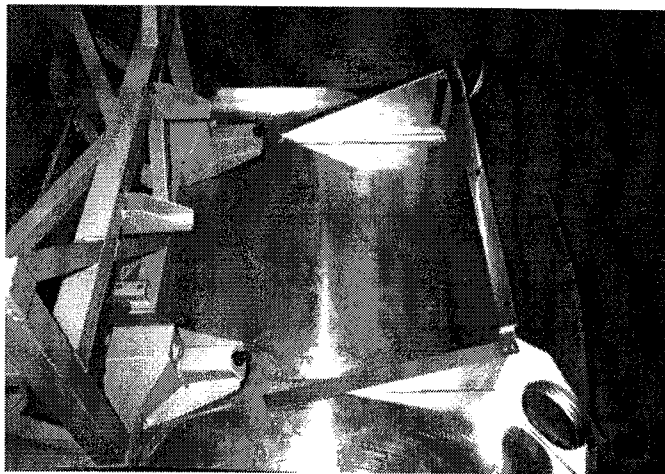


Position the brake duct baffles onto the lower radiator pan with the long sides parallel to each other and with the forward corners extending 1/8 to 1/4 inch from touching the forward corners of the radiator pan.

Bolt the radiator support strap (454) to the radiator using two ~~1/4-20 x .75~~ <sup>8 x 1.25 x .20 #1001160</sup> bolts with flat washers and split-lock washers. Position the radiator on the well-nuts and lower the radiator onto the baffles.

Placement of the baffles can be adjusted so the outer edge of the radiator strap is flush with the outer edge of the flange on the baffles. The front end of the radiator side baffles should be 1/8 to 1/4" from the front corner of the radiator pan. Mark the location of the rivet holes on the baffles. Hold the baffles in place and, using a #30 drill bit, drill two holes (approx. 1 inch from each end of the flange) through the lower, forward flange of the baffles and through the pan.

Rivet the flange to the pan using two (835) rivets from beneath the pan. Remove the radiator and, with three rivets per flange, drill and rivet the long flange in place.

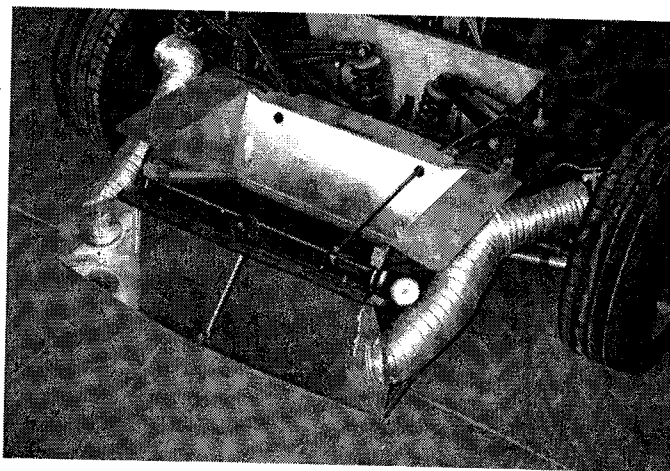
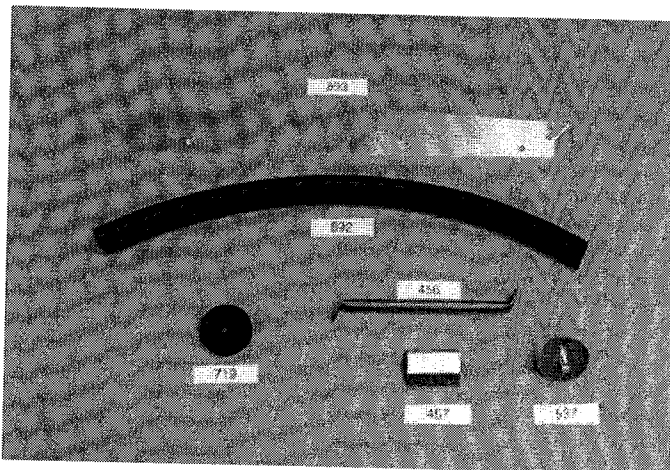


## INSTALLING THE RADIATOR

Cut a strip of foam tape long enough to fit between the baffles where the tape on the baffles is at its low point. Stick this piece to the pan. Trimming this foam with a razor blade to match the side baffle angles will help the radiator fit better. Drill the four holes marked earlier on the baffles with a #30 drill bit. Reposition the radiator on the well-nuts and, using four (835) rivets, attach the radiator strap to the baffles. Tighten the well-nut bolts installed in an earlier step.

- **Note: Make sure the radiator flange does not touch the front frame supports. Trim the flange back if required.**

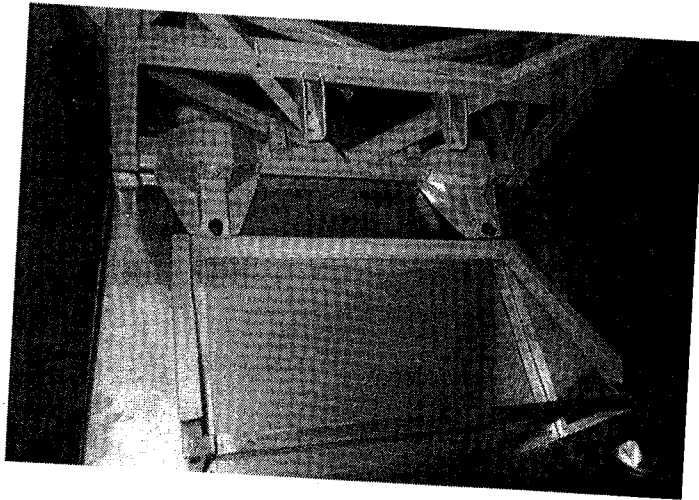
Remove the two bolts holding the radiator strap to the radiator and position forward baffle (893) between the radiator and the strap. Reinstall the bolts and place a 6mm bolt (011) with flat washer (495) through body pin bracket (457), radiator, forward baffle, strap and Z-bar (456). A hole for the Z-bar bolt will have to be drilled in the flange of the radiator on the centerline. The Z-bar angles at each end may have to be adjusted for a correct fit.



Thread a 3/8 24 nut all the way onto the short body post (537) and install post, with another nut to hold it in place.

Place flat washer (495) and nylock nut (748) on bolt and center lower end of Z-bar on the lower radiator pan. Tighten upper Z-bar bolt and then drill the lower bolt hole in the pan, using the Z-bar as a guide. Install the lower bolt (120), with flat washer (495), from beneath. Place flat washer (495) and nylock nut (748) on bolt and tighten.

Position the pre-cut rubber seal (892) onto the forward edge of the baffle. A few drops of silicone sealant or weather-strip adhesive will hold the rubber seal in place.



## **BODYWORK**

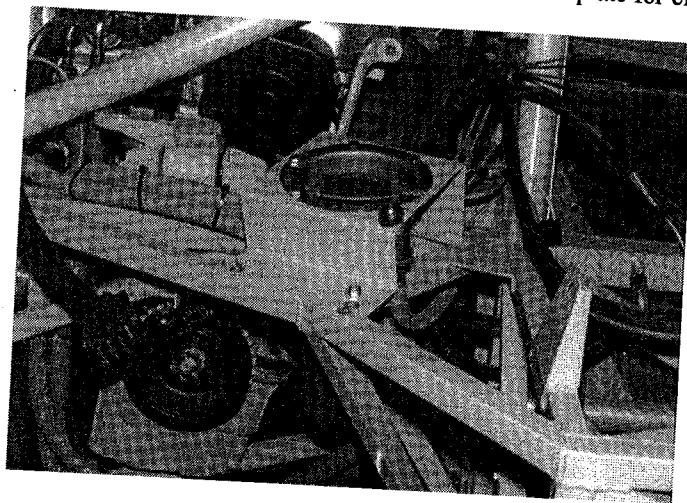
- **Note:** The bodywork needs to be fitted to the chassis before it is painted. After painting, the latches and scuff plates should be installed. Instructions are provided here for latch and scuff plate installation.

Set the center section, nose end down, on the ground. Set the tail section onto the center section. Check and mark if you need any grinding to make these two parts fit together. Remove the tail section and grind where marked. Place the tail section on the center section and again grind as required. You may have to repeat this action several times for a close fit.

- **Note:** The center body section should be handled with care. The center dash area can be easily snapped.

Place the center bodywork section on the chassis. Note: the center section will be located by the tabs on the chassis. Clamp the rear of the center section down to the chassis. Drill through the rear body mounting brackets from underneath, using the holes in the brackets for a guide. Bolt the center section rear mounting tabs to the frame. Locate p.n. 1917, filler neck bracket. Position the bracket on top of the right rear sidepod diagonal and main frame rail.

The bracket will likely interfere with the right rear body mounting tab on the center section, so some clearancing will need to be done. The bracket is not to be installed at this time; just used as a template for clearancing the bodywork.

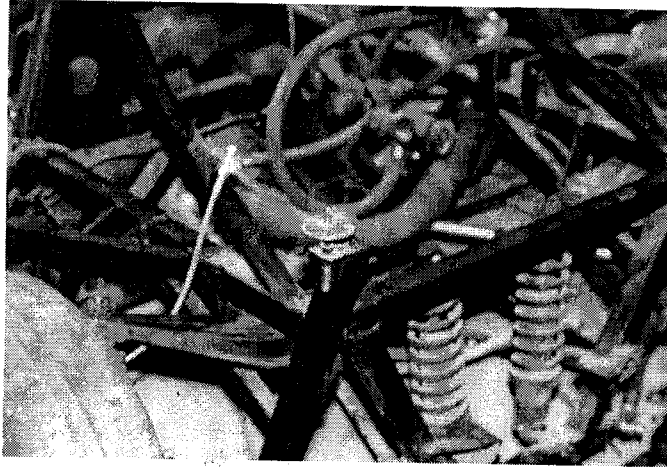


Reach inside the sidepod on each side of the car and mark the center body section through the hole in the upright bracket on top of the sidepod tube at the rollbar. Remove the center section and drill a 1/2 inch hole at each mark. Do not drill

the two forward holes yet. Reinstall center section. Check location of holes just drilled and open up holes to match bracket holes, if necessary.

The original car had all gauges and switches mounted in the center fiberglass section. This made it difficult to remove the center section. An upgrade dash has been provided which requires cutting out a section of fiberglass for installation. Instructions are included with the dash kit.

Thread a 3/8 24 nut all the way onto each body post. Install tail body mounting posts (538) in holes at rear of frame. Thread another nut onto the post from beneath the mounting bracket. Leave the nuts untightened so height adjustments will be more easily made.



Put tail on chassis and check fit. Pay attention to where the tail section fits around the roll bar. Clearancing of the mating areas of the two sections may be necessary for a proper fit.

Clamp the tail to the center section to get the seam between center and tail as small as possible. Notice where the posts contact the tail section and mark the spot. Raising or lowering the posts may be necessary to help minimize the gap between body sections.

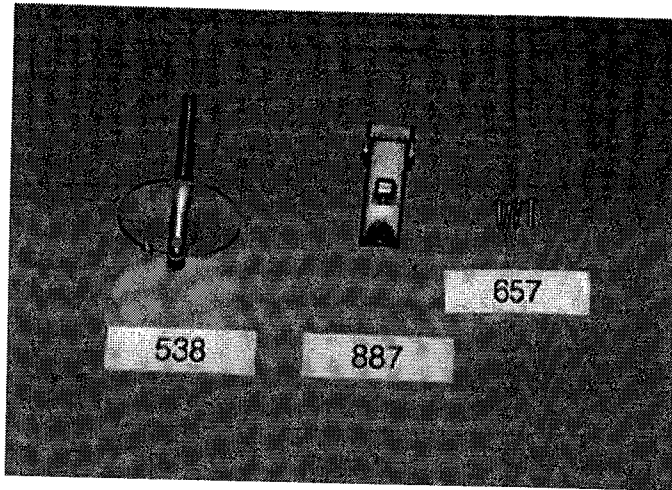
With the tail still clamped in place, reach under the bodywork and locate the previously drilled holes at the upright brackets in the rear of the center section. Mark the tail section carefully, through each hole, as the forward-pointing alignment pins will be located from these marks.

Remove the tail and drill the holes where the rear posts will go through the bodywork. Using a small drill size can be helpful in locating these holes prior to drilling the necessary 3/8 inch holes. At this time, also drill and tap 3/8-24' holes at the leading edge of the tail section to accept the alignment pins (671).

Install the alignment pins and reinstall the tail. Install locking latches (887) and hooks (656) in the tail and center, respectively. The hooks and latches should be located so there will be a light pre-load on the latches, pulling the seam closed.

- **Note:** Installing the latches now will help in fitting the body sections but you may want to wait and install the latches and scuff plates after the body sections are painted.

Also install the foam body cushions on the rear body posts, but do not remove the paper backing.



- **Note:** A small amount of adjustment is provided in the latch mechanism. Turning the threaded clasp extends or shortens the reach of the latch as necessary.

Place the scuff plates on the tail section, and over the rear body posts. Drill four holes for pop rivets. Attach the scuff plates after painting the body. Install the body retaining clips (hoodpins) and check for vertical movement of the tail. The body cushions, when installed, should be just thick enough to allow the body retaining clips to be installed and not allow vertical movement of the tail. When the correct body cushions are chosen, remove the paper backing and affix the cushions to the disc portion of the body posts.

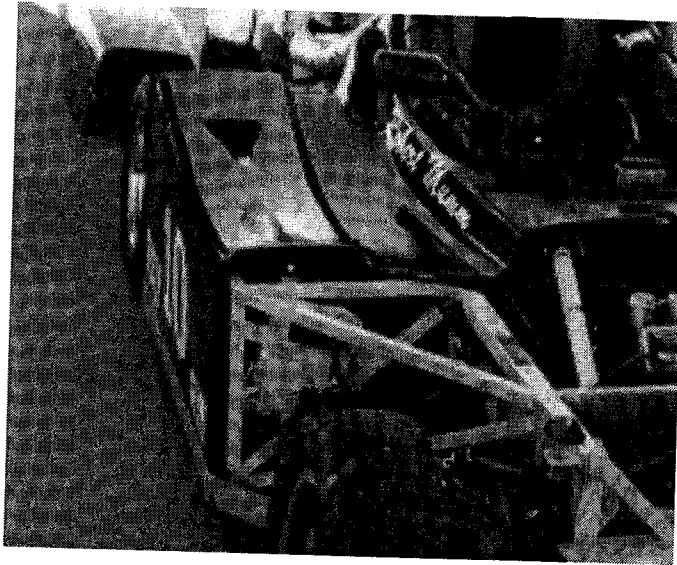
Place nose section on chassis. Some grinding may be necessary for best fit. Check the gap between nose and center section at bottom edge of both parts. This is the amount necessary to shim up each side of the center section. Flat washers work well as shims.

Remove the nose section. Place the correct amount of flat washers holding each side of the center section off of the frame, drill back through the body, using the bracket hole as a guide. Then bolt the forward edge of the center section to the chassis.

Install body posts (538) at the brackets near the forward end of the main frame rails. Replace the nose and mark where the posts contact the underside of the bodywork. Drill holes and adjust body posts height for best fit. Install locking latch (887) and hook (656) at the indentation at the seam between the center and nose.

- **Note:** Installing the latches now will help in fitting the body sections but you may want to wait and install the latches and scuff plates after the body sections are painted.

Install scuff plates and cushions as per above.



#### OPTIONAL BODY MODIFICATION

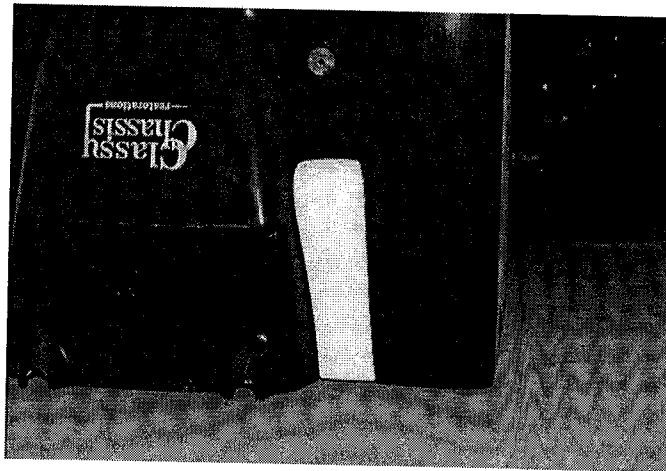
Viewing the tail section of the car from behind, draw a vertical line at the left and right ends of the outer vents from the bottom edge of the bodywork up to a point two (2) inches below the crease at the lower edge of the vented panel. Make a vertical cut at each line. The horizontal cut is to be one (1) inch below the crease at the base of the vented panel. Leave a one (1) inch radius at each corner.





Air scoop pn. 190000 must be installed in conjunction with the rear panel cutout. The scoop is to be mounted with the leading edge of the scoop even with the forward surface of the tail bodywork.

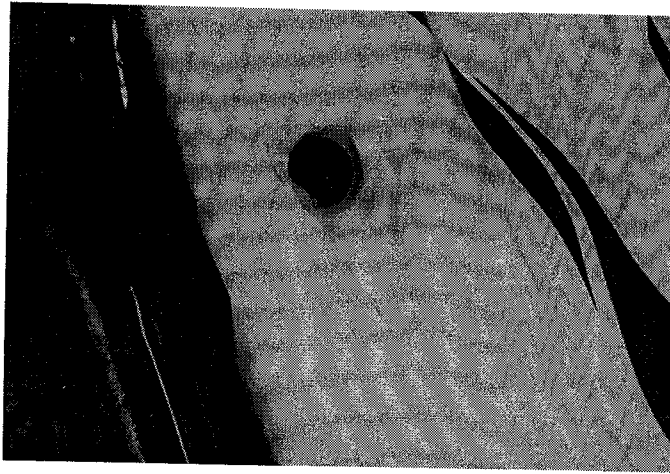
The opening for the air scoop is to begin one inch back from the forward edge of the tail. The forward end of the opening is to be three inches wide, gradually widening to five inches wide at the opposite end. This opening will be twenty inches long.



#### NACA DUCT

Trim excess plastic from the NACA duct mounting flange, leaving a 1 inch border around the duct.

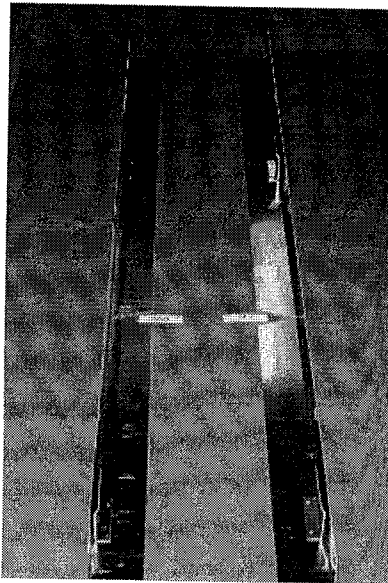
Place the NACA duct upside down on the right side of the center bodywork. Trace the outline of the duct with a felt pen or crayon. The front edge of the duct should be 19.5 inches (+ or - 2 inches) from the back edge of the bodywork and centered on the right side raised section.



Cut an opening 1 inch inside of the line and trim as required. Pop rivet, glue or bond the duct securely in place.

#### RUB RAILS

- **Note:** The rub rails (557 and 558) are manufactured and shipped as straight parts. They will need to be bent to fit the chassis, at the v-shaped notch approximately 27 inches from the forward end.



The rub rails should be positioned so the bodywork will fit into the tabs on the inner side of the rails. Also, the sides of the bodywork should be vertical and the gap (approximately 1 inch from the frame to the inside edge of the rub rail) from frame to rub rail should be even down the length of the rail.

Clamp the rub rail to the frame and position each rub rail as described above. Drill and pop rivet the rub rails to the frame. It is important for durability that the rivets go into the frame and not just through the floor pan.

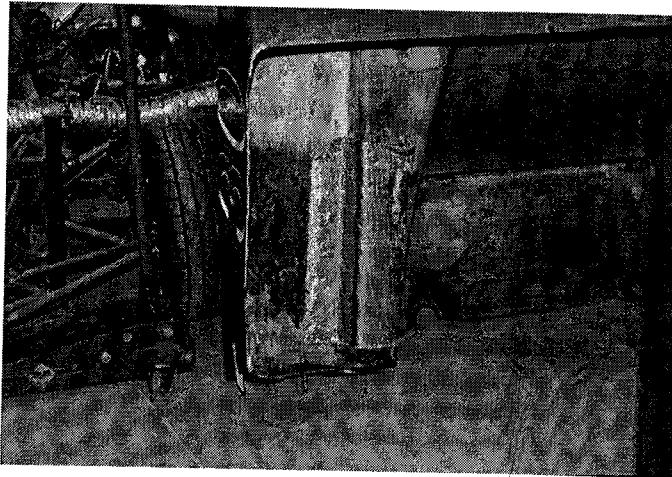
Five or six equally spaced rivets will be needed for the long side and three rivets for the short, forward end.

Mark and drill all holes for the Dzus fasteners using the installed rub rails as a guide. Remove the bodywork and pop rivet the Dzus springs to the inside of the center and nose sections. Next, pop rivet the Dzus fasteners to the rub rails. It may be necessary to flatten the inner end of the rivets on the rub rails, to allow the body to fit well.

A spring type fastener is positioned behind the front wheels on each side of the front body piece. The spring mounts on the fiberglass and the hook mounts on the rub rail. Place the spring hook approximately 4" forward of the bend in the rub rail. Again, you may want to wait and install the spring hook after the body is painted.

### **BODYWORK HEAT SHIELD**

The body heat shield is a piece of aluminum/ceramic cloth. It is mounted to the underside of the rear body panel over the exhaust pipe.

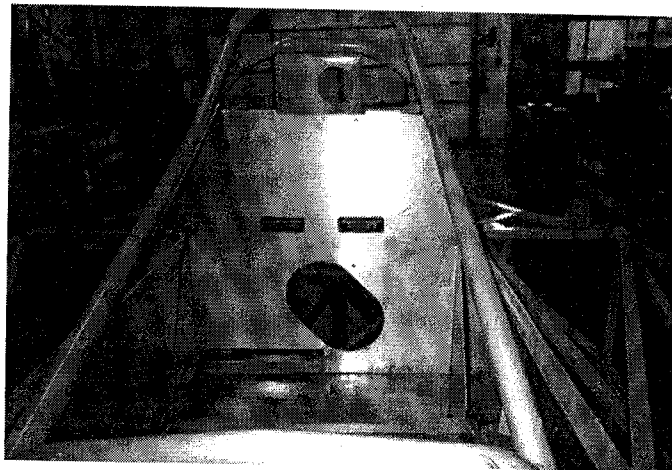


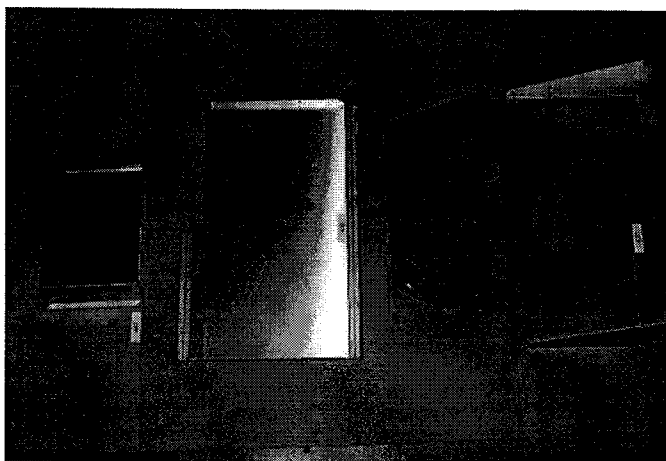
Spread high temperature silicone on the non-reflective side of the cloth. Start at the front edge of the bodywork and place the cloth firmly in position along the portion of the body closest to the exhaust.

Retain the cloth with tape until the silicone is dry. Trim the heat cloth around the opening under the new body scoop (if installed). The edges of the cloth can be folded around the body opening.

### **INSTALLING THE FIREWALL**

Position the firewall (437) as in the photograph. Using a #30 drill bit, drill and install two rivets (068) to hold the firewall in place while you install the remainder of the rivets.

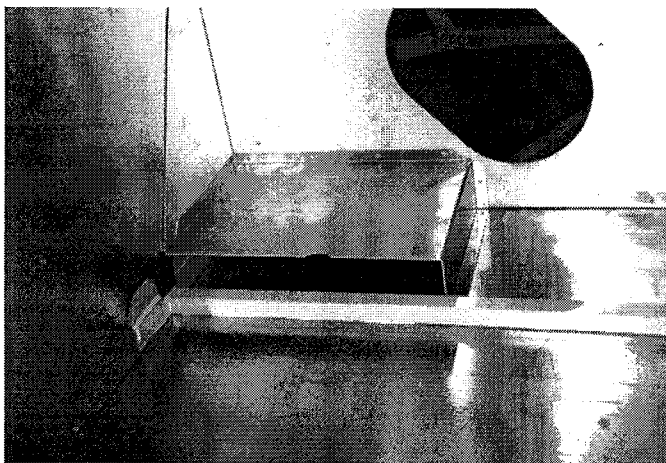




### **INSTALLING THE STEP PANEL**

Pre-drill the rivet holes in the step panel flanges with a 1/8 drill. The short vertical flange has one hole. The two side flanges have three holes each. The longest rear flange has four holes. Deburr the holes, Position the step panel (441) as shown in the photo, drilling the holes completely through, with the flange holes as a guide and rivet in place.

- **Note: The rivets should be installed from the inside of the car so that the rivet heads present the smallest interference possible with the surface of the fuel cell.**

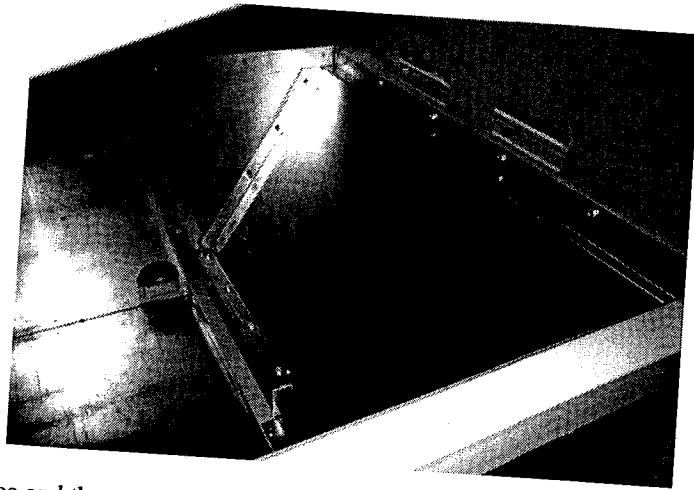


### **PREPARING AND INSTALLING THE FUEL CELL**

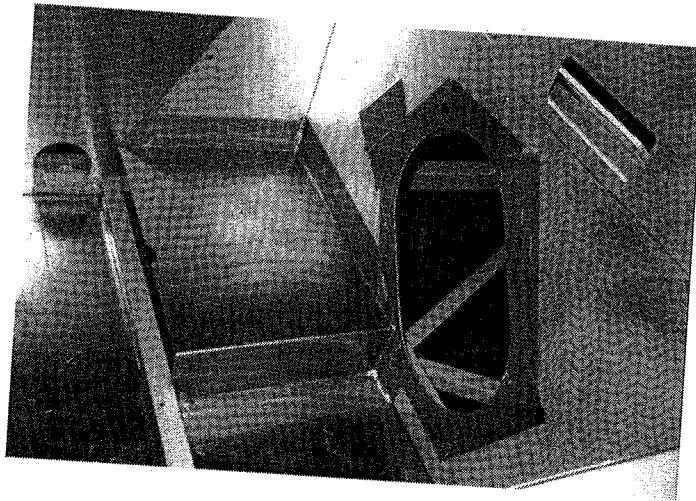
**WARNING: ALL PROCEDURES INVOLVING THE FUEL SYSTEM MUST BE COMPLETED WITH CARE AND ATTENTION TO DETAIL IN ORDER TO INSURE A LEAK PROOF AND CORRECTLY FUNCTIONING SYSTEM.**

There are water drain holes in the pan under the fuel cell. You may wish to drill drainage holes in other areas.

Position the fuel cell cover (438), drill through the prepunched holes (1/8" in the top and bottom flanges, 1/4" holes in the side flanges and short bottom flange), remove cover and deburr holes.



Thoroughly clean the cell area and then tape over all exposed rivet heads with two layers of duct tape. Tape around the edge of the hole in the firewall as shown in the photograph.



Carefully remove the fuel cell fill plate. Clean out the cell completely and blow out each piece of foam to remove any dirt or small particles that could plug the fuel filter.

Check each of the circlips in the check valves to be sure that the sharp edge of the clip faces away from the ball. In place of the circlips, a braided strand of safety wire may be run across the end of the valve. If this is done, be sure the balls will still travel to their designed positions.

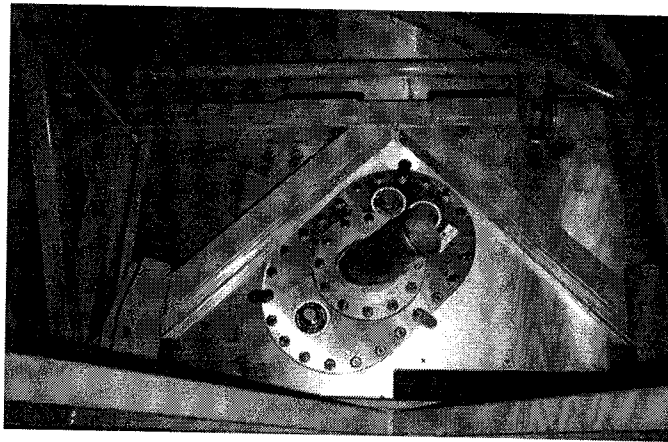
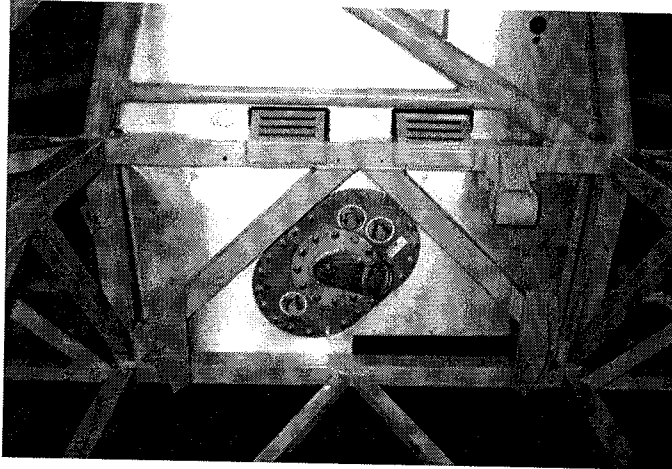
Check all fittings for tightness and locate the surge box in the cell. Trim the foam for clearance for the surge box but leave enough foam to snugly hold the surge box in position. Place the side of the box having no check valve towards the rear of the car. The box should be in the low side of the cell, approximately centered. The return line should be directed into the box right next to the pick-up line and zip tied to it.

- **Note: On re-assembly, be sure the fittings on the plate are correctly marked as to pickup, return and vent. Any of the hoses being crossed will lead to running problems later.**

SCCA Enterprises recommends removing the "sock" filter from the pickup line in the surge box otherwise the fuel cell will have to be removed later to clean the sock

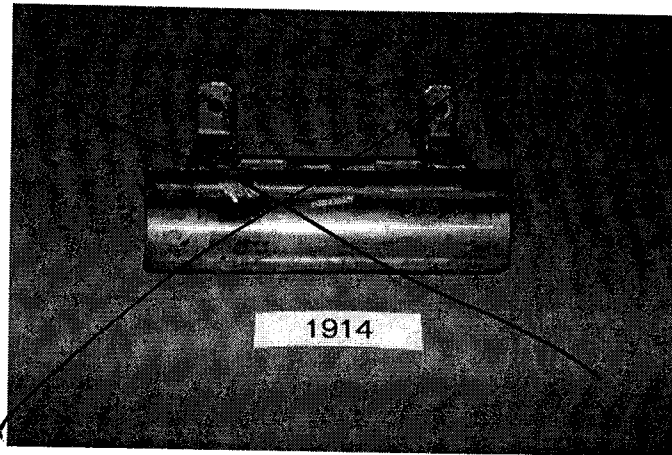
Re-assemble the fill plate with the neck opening pointing towards the right side of the car. Check the gasket for damage; if it has been damaged, it needs to be replaced. Tighten the bolts to 14 in. lbs. DO NOT OVER TIGHTEN. USE A NUT DRIVER AND TWIST BY HAND. DO NOT USE A RATCHET.

Reinstall the fuel cell cover onto the fuel cell using 1/4 20 bolts and (666) sheet metal screws. It is permitted in the rules to place an additional layer of insulation material (like the reflective cloth provided with the car kit) on the fuel cell bulkhead. Install the fuel cell to the fire wall with the three tabs provided. Evenly position the tabs at the 12:00, 4:00, and 7:00 positions on the fuel cell cover.



~~**FUEL PUMP BRACKET: location only**~~

~~Locate the fuel pump bracket (1914) on the engine bay "X" members to the rear of the fuel cell. Place the bracket so the mounting holes are centered on the "X" members. The mounting tabs face rearward and the cradle should be as close to the firewall as possible. Mark and drill two 8mm holes all the way through the frame tubes for the mounting bolts. Do not bolt the bracket in place at this time. The bracket may become damaged during engine installation.~~



## **BRAKE AND CLUTCH HARD LINE INSTALLATION**

- **Note:** Refer to photographs for parts identification and location.

**CAUTION:** All lines are pre-formed and do not require re-shaping. If re-shaping is required, recheck part number for correct location.

- **Note:** All fittings in this section should be initially installed only finger tight to confirm correct fit. Final tightening will be done after the pedal assembly is installed.

Insert the front brake hose (415), rear brake hose (423), and clutch hose through the holes in the left bulkhead and install three retainers (774) as shown in the photograph. Some filing of the bulkhead holes may be necessary.

Connect rear brake line (140) to rear master cylinder brake hose at the bulkhead. Connect front brake line (136) to front brake hose at the bulkhead and center port of the front "tee" (430). Connect left front brake line (137) to the rear port of the front tee (430).

Position forward right front brake line (138) across front of frame and connect to front port of front tee. Connect rear brake line (140) to front port of rear tee (430). Position left rear brake line (141) and connect to the center port of the rear tee.

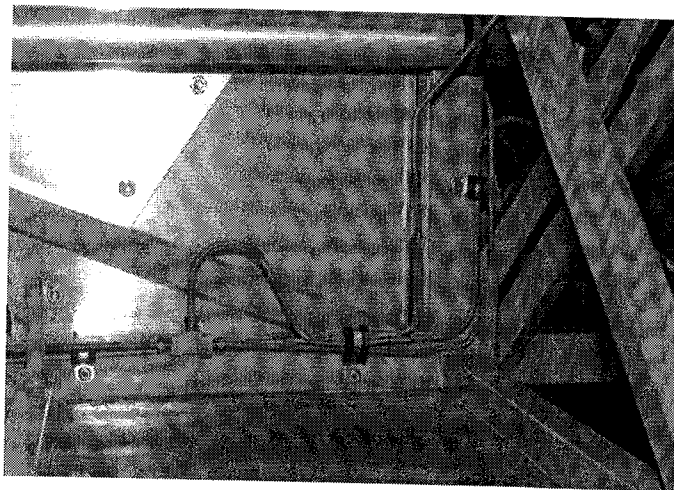
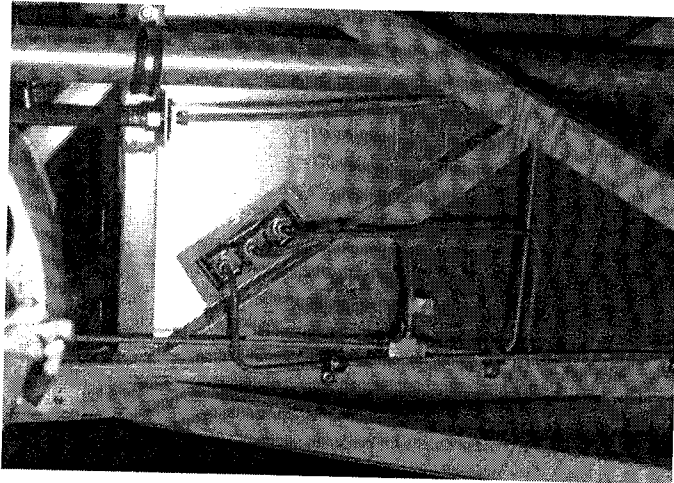
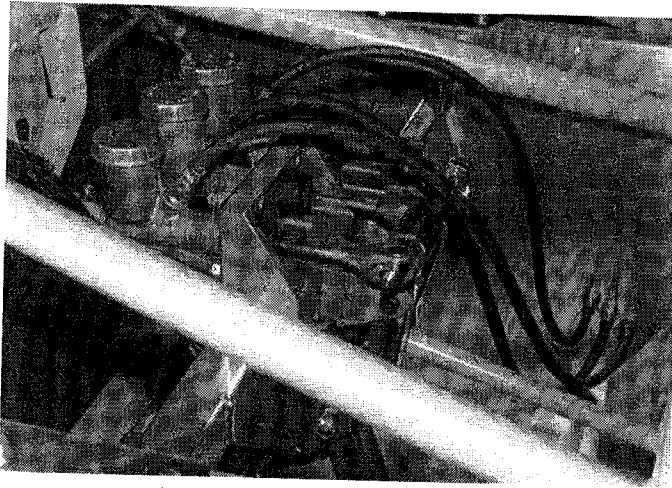
Position and connect clutch line (143) to the clutch hose at the bulkhead. The rear brake line and clutch line will have to be fed carefully underneath the fire bottle tray.

Position right rear brake line (836) across the rear of the frame and connect to the rear port of the rear tee (430). Connect the aft right rear brake line to the forward line with union (837).

Re-check line routing; lines should not contact any sharp edges.

Ten (10) ¼" P-clips (557) and ten (10) 3/16 dia. pop-rivets are used to secure the lines in place. Locate the eight (8) pre-drilled holes in the side and rear frame members, install P-clips over the lines and pop rivet in place. Rivet holes may need to be cleaned out with a drill bit to remove excess paint.

Two (2) 1/8 inch holes will need to be drilled for the front brake line (138). Locate p-clips on the front brake line approximately 5 inches outboard the center of the front shock absorber mounting holes. Drill holes and install p-clips.

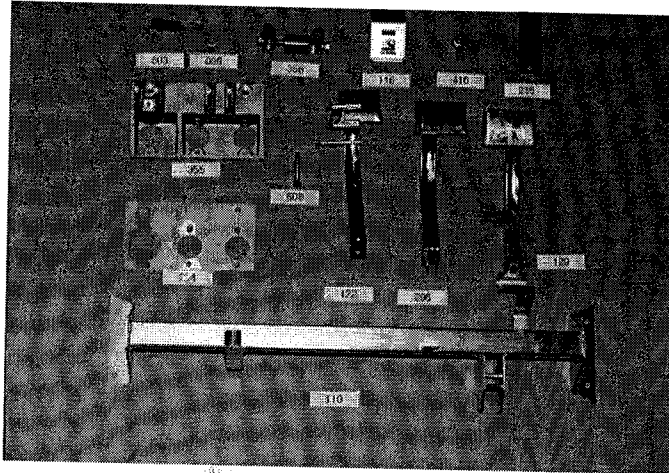


**INSTALLING PEDALS AND MASTER CYLINDERS**



- **Note: The pedal assembly uses hardware packaged in labeled bags in the bolt kit, with the exception of the pivot bolts.**

Position the pedal support bar (110) onto the frame and bolt into place using the backing plates (235). For assembly purposes, the support bar can be positioned at any of the available holes. Final pedal position will be determined by driver size when necessary.



Examine each master cylinder at the mounting holes for excessive material at the casting seam. Any excess material should be lightly filed smooth at the area where the mounting bolt washers will contact the master cylinders.

Place washers on each bolt and install the bolts through the master cylinders, sandwiching the support plate (355) between the cylinders and the pedal casting (354), finger tight only.

Position the assembly on the pedal support bar and install the through-bolts, washers and nuts. Tighten through bolts and master cylinder bolts. The master cylinder bolts are drilled for safety wire and may be loctited as well.

Install jam nut on clutch pedal stop bolt and install bolt w/ nut in pedal casting. Install jam nuts on each push rod. Install the clutch master cylinder rod end (416) onto the push rod. Thread the rod end until it bottoms, back off 1/2 turn, and tighten jam nut down to rod end.

Install clutch pedal (296) to the pedal support assembly using shoulder pivot bolt (608), washers and nut. With the bolt snugged, the pedal should move freely. Attach the master cylinder rod end to the pedal using a nut, bolt and washers.

Remove one jam nut and swivel assembly from the balance bar (356) and slide the sleeve off the balance bar before inserting the balance bar into the brake pedal (129). The balance bar must move freely across the bushing. Reinstall the swivel and jam nut. Final adjustment will be made later.

Install the brake pedal to the pedal support assembly using pivot bolt (608), washers and nut. With the bolt snugged, the pedal should move freely.

Reinstall the swivel and jam nut on the balance bar. Thread the brake master cylinder push rods into the balance bar swivels until the ends of the push rods are even with the end of the swivel threads.

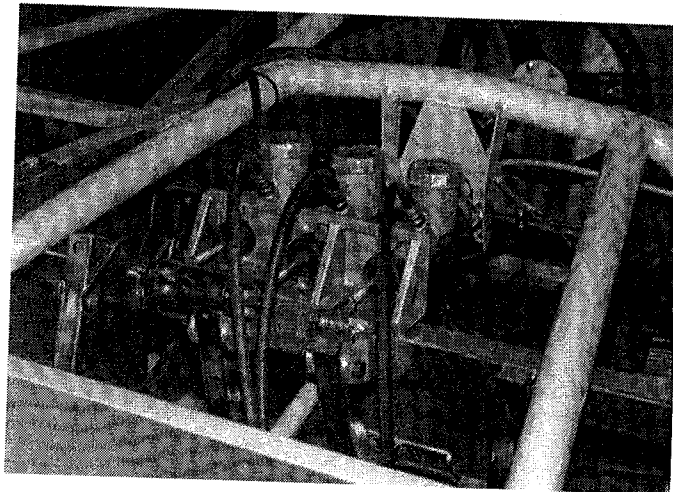
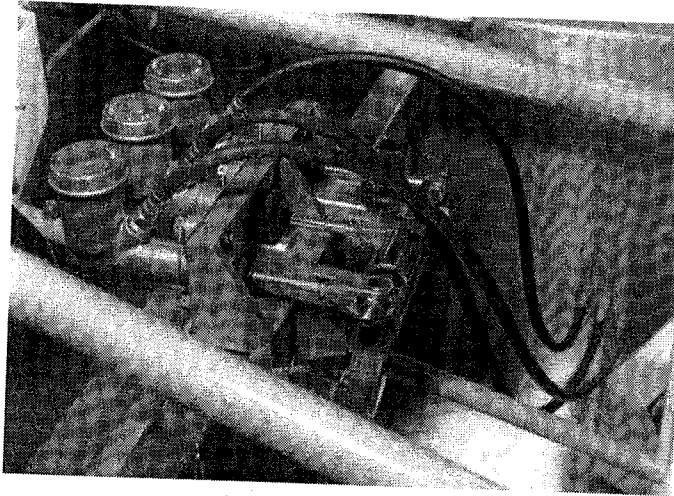
Install the foot rest pedal (116) and jam nut to the bracket located left of the clutch pedal.

Install the brake light switch (503) in the pedal support bracket, using retainer (036).

- **Note: Pedal travel will be adjusted during the brake and clutch fill and bleed steps.**

At this time, install the brake hoses attached at the bulkhead to their respective master cylinders and tighten.

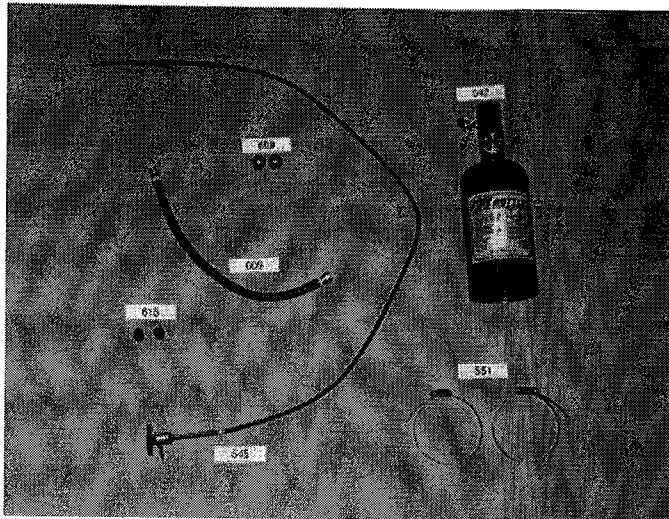
- **Note: Tighten each of the fittings in the system assembled to this point.**



### **FIRE EXTINGUISHER SYSTEM INSTALLATION**

**CAUTION: FIRE BOTTLE IS EQUIPPED WITH A SAFETY PIN. DO NOT REMOVE PIN UNTIL SYSTEM INSTALLATION IS COMPLETE. FIRE BOTTLE WILL DISCHARGE IF PIN IS REMOVED PREMATURELY!**

Feed the two hold down straps (551) through the mounting bracket welded in place in the floor of the left-hand sidepod. Place the bottle (542) on the bracket with the outlet end of the bottle towards the rear end of the car, with the cable fitting pointing upwards. Connect the straps and tighten.



Uncoil the distribution line provided in the fire bottle box. Cut a section of line approximately 16" long and attach to the tee provided. Attach the other end of the line to the fire bottle, directing the line vertically with the tee at the top with each end of the tee pointing fore and aft.

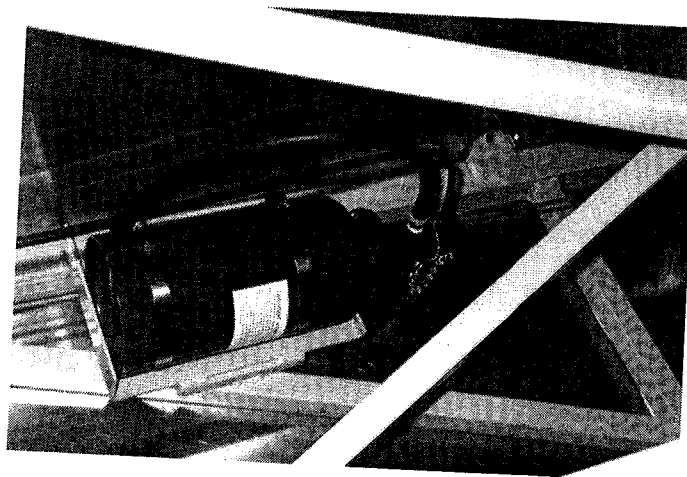
Install a 3/8 ID x 5/8 OD grommet (699) in the upper hole on the left driver compartment bulkhead. Route another piece of distribution line from the tee through the grommet so the nozzle end of the line can be tie-wrapped to the steering shaft bracket. Install this line to the forward port of the tee.

Route the final piece of distribution line from the engine compartment to the rear part of the tee.

Connect red spray nozzles (615) to the end of the rear engine compartment line and the end of the driver compartment line. The rear line may be attached to the heat shield during the heat shield installation. Nozzle outlet holes should point to the engine and driver respectively.

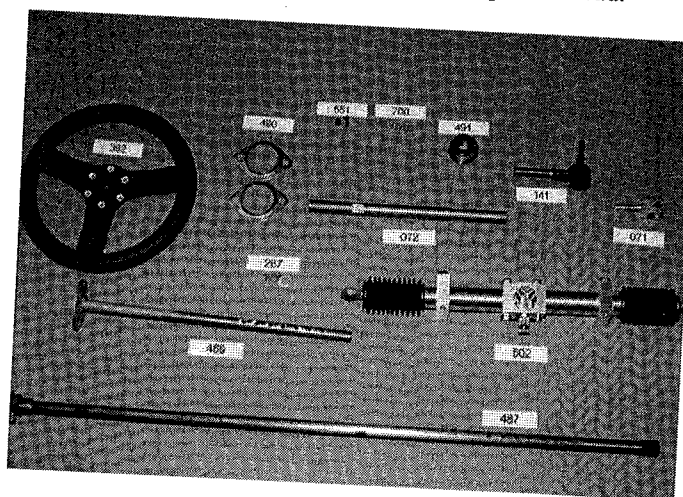
Install grommet in lower left side bulkhead hole and then route the cable provided in the fire bottle box through mounting hole, through grommet in bulkhead and attach to extinguisher bottle.

Tighten cable attachment nut at point of attachment, whether this is at the dashboard or a bracket on the left roll bar brace. Attach the other end of the cable to the handle on the fire bottle so that when the cable is pulled out, the fire bottle handle is squeezed.



## STEERING INSTALLATION

Insert the lower steering shaft (487) through the slot in the forward cockpit bulkhead.



Install jam nuts on clevises (071) and on tie rod ends (141). Install grease fittings provided with tie rod ends. Install clevises and tie rod ends on toe links (072).

- **Note: Forward toe links are the short links, rear toe links are longer. Alignment will be aided if both left and right steering toe links are assembled to begin at the same length.**

Position steering rack assembly (502) to the mounting brackets on the frame, with two shims (287) per side between the rack and the brackets. Install bolts, with flat washers and lock washers through the brackets, shims and rack. Carefully finger start all bolts before tightening. Torque bolts to 18 ft. lbs.

Loosen the two (2) bolts on the front of the rack to permit the rack to rotate when installing the steering shaft. Attach the clevis end of the assembled toe links to the steering rack, using the bolts, nuts and washers.

- **Note: Centering the steering rack at this time will aid in steering wheel installation, positioning and alignment later.**

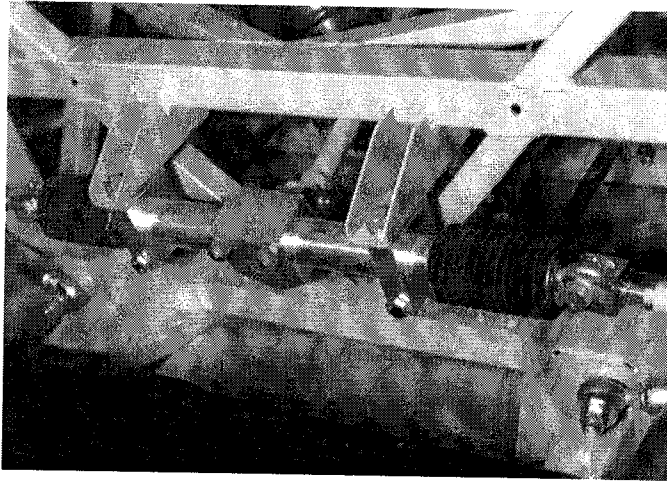
Position the lower steering shaft on the splines of the rack pinion shaft. Install the retaining bolt, washers and nut, but do not tighten at this time.

Slide one bearing retainer (490) over steering shaft. Slide the bearing and retainer assembly (491) over the steering shaft. The small retainer must face forward. Slide the remaining retainer (490) over the steering shaft.

Bolt the steering shaft bearing assembly to the steering shaft bracket, only finger tight at this time. Attach the steering wheel (392) to the upper steering shaft (469) with screws (581) and nuts (700). Insert the upper steering shaft into the lower shaft and install through bolts, nuts and washers.

- **Note: Final tightening of steering shaft and related components will be done after the alignment has been performed.**

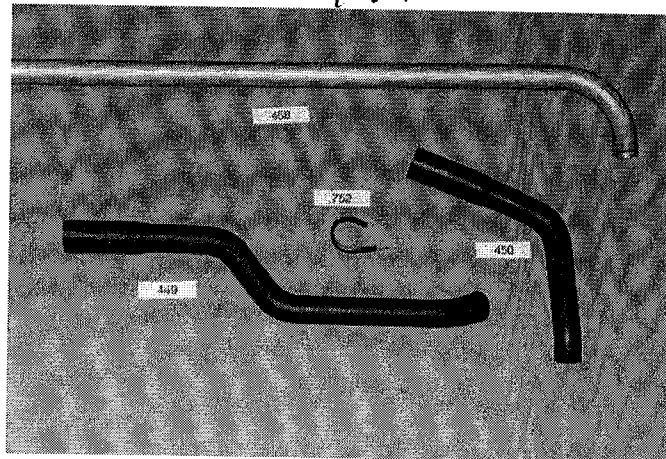
Bolt tie rod assemblies to rod ends on steering rack using designated hardware. Torque nuts to 20 ft. lbs.



### COOLANT TUBE AND FORWARD RADIATOR HOSE INSTALLATION

Route coolant tubes (458) through frame; curved ends point inboard toward engine compartment. Position three (3) p-clips (752) over each tube. Attach tubes to frame using screws (726) and washers (068).

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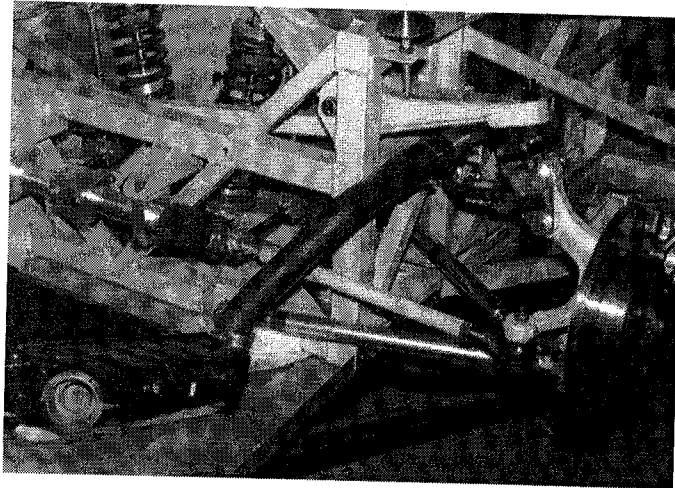
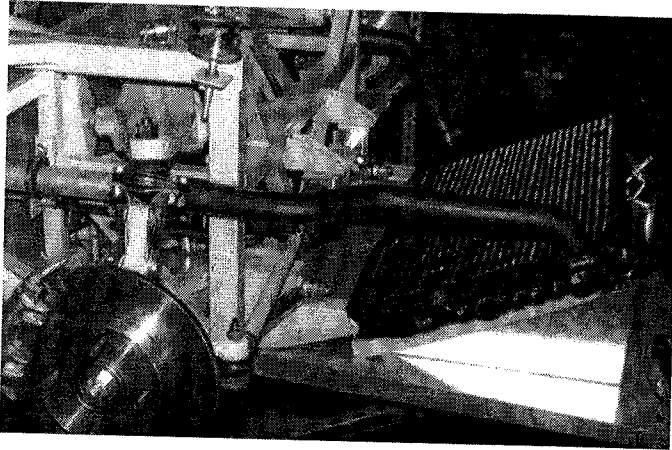


- **Note: Holes for screws are pre-drilled and located just above mid-point on the frame front, center and rear vertical tubes. Screws will need to be tightened only after the final tube position is determined.**

Install right radiator hose (449) to front of right coolant tube and right radiator connection. Secure with two hose clamps (658).

Install left radiator hose (450) to front of left coolant tube and left radiator connection. Secure with two hose clamps (658).

- **Note:** When installing the hose clamps, position the clamps so they may be tightened or removed after vehicle assembly is complete, for ease of maintenance.



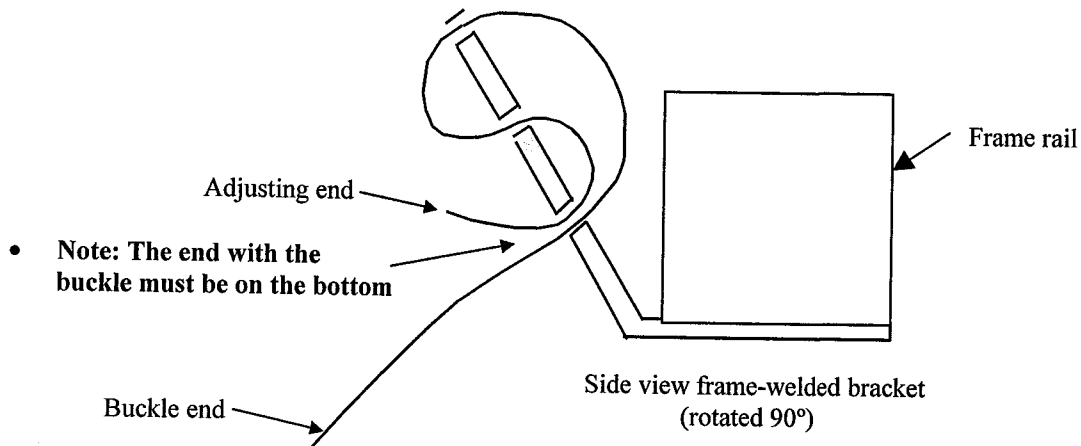
### **SEATBELT INSTALLATION**

Bolt the lap belts to the frame brackets with bolts (774), washer (396) and nuts (602). Bolt holes in the belts may need to be filed.

Slide the submarine belt through the adjustment bracket then route the strap around the 1" square tube that is just under the front edge of the seat. Then route the strap back through the adjustment bracket to secure.

Weave the shoulder straps through the frame-welded brackets.





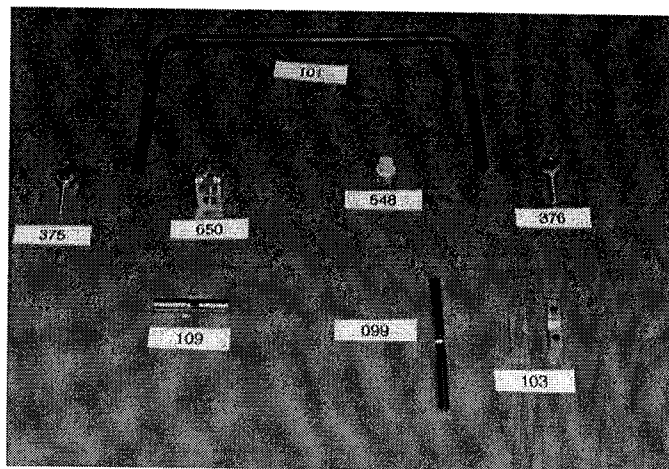
Select the correct pair of holes in the firewall to thread the shoulder belts through. Taller drivers should use the higher pair with the belts wrapped over the 1" dia. Horizontal tube. Use the flexible polyurethane grommet in the two selected holes to protect the belt.

- Note: After the seat is installed check the seat belt for any rubbing points. Holes in the seat may be enlarged.

## FRONT SUSPENSION INSTALLATION

### STABILIZER BAR INSTALLATION

- Note: Due to the similarity of front and rear stabilizer (sway) bars, these instructions will cover front and rear stabilizer bar installation. However, rear bar installation is not to be done at this time.
- Note: The long stabilizer links are used in the front stabilizer assembly



Install jam nuts on rod ends (375 & 376). Install rod ends on stabilizer links (099 & 109). Adjust rod ends so only eight to ten threads protrude from stabilizer links.

Position clevises (650) on the stabilizer bars approximately 1 and 1/2 in. from the end of the stabilizer bars (101). The straight edge of the clevis faces rearward on the front stabilizer bar and forward on the rear stabilizer bar. Secure each

clevis to the stabilizer bar with bolt heads outward. The links should be installed in the upper clevis bolt holes, left hand threaded rod ends in the clevis, bolt heads outward.

- **Note: Do not torque the link or clevis bolts at this time.**

Position bushings (548) on the stabilizer bar. Bushing flanges must face inboard. Position stabilizer mounting block halves (103) on mounting brackets. Set the stabilizer bar in the mounting block halves. Bushing flange must be positioned so flange is contacting mounting block.

Install top mounting block halves with designated nuts, bolts and washers. Keep mounting block halves in line while tightening to assure free rotation of stabilizer bar.

Install split locating collars (two per bar) with grooves facing bushing lips. Lightly press collar against bushing flange while tightening. Torque mounting block halves to 18 ft. lbs. Check for free rotation of stabilizer bar.

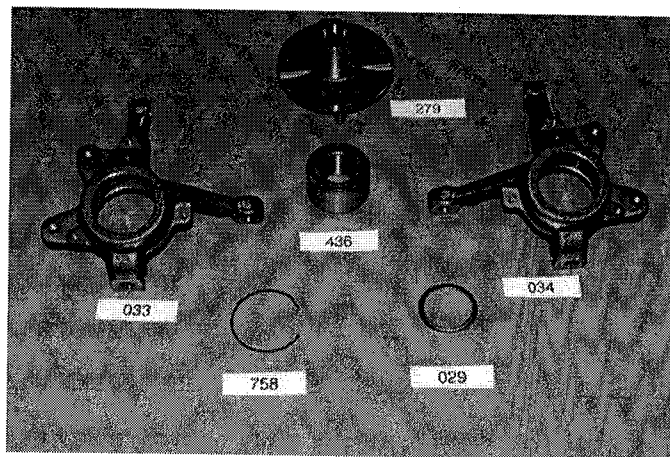
### PRELIMINARY ASSEMBLY: "UPRIGHTS"

- **Note: Because the installation procedures are common to all four wheels and virtually identical front to rear, detailed assembly of one "corner" will be covered here; the assembly of each other corner will logically follow similar procedures. Rear suspension installation will take place after the majority of the engine installation is complete. This will be covered in a later section of the manual.**
- **Note: Some of the suspension parts are assembled together using a mild interference or "press" fit. The use of a press is necessary for the upright assembly. Some press fixtures, mandrels or appropriate tools will aid this assembly.**

**WARNING! Incorrect use of a press will damage parts and is potentially harmful to the press operator and other persons in the vicinity. EXTREME CAUTION MUST BE EXERCISED IN THE USE OF A PRESS!**

- **Note: Uprights with part number 034 are LF and RR. Uprights with part number 033 are RF and LR.**

Locate one upright and clean bearing bore thoroughly. Take one wheel bearing (436) and lightly coat the outer surface with an anti-seize compound. Also apply this compound, lightly, to the inner surface of the wheel bearing locating bore in the upright.



Position the upright on the press so the bearing can be pressed squarely into place. Position the wheel bearing in the locating bore and carefully press the bearing into position, without using the inner race or seal to press upon.



Once the bearing is fully in place (seated against the lip at the base of the bearing locating bore), install the retaining clip (758), making sure the clip is fully engaged in the groove at the top of the bearing locating bore. At this time, if desired, the upright can be painted. Masking off the bearing from any contact with paint is recommended.

Each hub (279) comes with a stamped metal ring known as the axle deflector (029), which should be installed onto the hub before the hub is installed in the wheel bearing/upright assembly. The axle deflector can be gently pressed on or lightly heated and slipped on. The flange on the axle deflector will face inboard.

- **Note: On the back side of each hub the base flanges of the wheel mounting stud are clearly visible. Due to slight production variation of parts involved, after the hub is positioned in the wheel bearing, sometimes an interference with the upright is possible. To reduce the chance of this occurring, it may be necessary to slightly file or grind the corner of the stud flange closest to the center of the hub. SEE PHOTOGRAPH.**

Position the upright and bearing assembly on the press so that the hub can be pressed squarely into place. Lightly coat the outer shaft surface of the hub with an anti-seize compound and also apply this compound to the inner surface of the wheel bearing race.

- **Note: The inner race of the wheel bearing must be supported from the back while installing the hub into the wheel bearing. FAILURE TO SUPPORT THE INNER RACE WILL CAUSE DAMAGE TO THE WHEEL BEARING.**

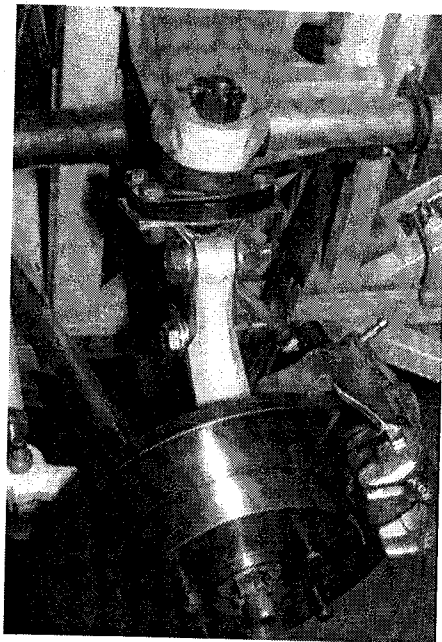
Carefully press the hub into the upright/wheel bearing assembly, while supporting the back side of the inner wheel bearing race. Check for free rotation of the hub, with no contact to the upright.

If desired, all four upright/wheel bearing/hub assemblies can be completed at one time for use as needed.

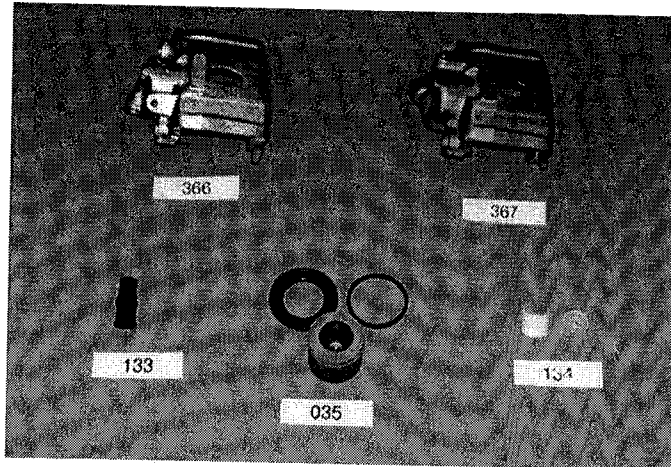
#### PRELIMINARY ASSEMBLY: FLOATING BRAKE CALIPER

**WARNING! THE BRAKE SYSTEM MUST BE ASSEMBLED WITH CARE TO INSURE PROPER FUNCTION! CLEANLINESS OF ALL PARTS AND CAREFUL ATTENTION TO FIT ARE CRITICAL!**

- **Note: Locate the desired floating side of caliper to be assembled.**



- **At the front of the car, the caliper piston will be behind the front axle, with the brake hose attachment hole and bleeder valve hole at the top of the caliper. At the rear axle, the caliper piston will be forward of the axle, also with bleeder valve at top of caliper.**



Thoroughly clean and blow dry the entire caliper, paying special attention to the piston bore, piston seal groove and the ports to the brake hose and bleeder valve. **NO CONTAMINANTS CAN BE ALLOWED TO BE PRESENT DURING ASSEMBLY!**

Lightly lubricate the piston seal O-ring with brake assembly lube and carefully fit it into the machined groove in the caliper piston bore. Be sure the O-ring is properly seated in its groove. Clean the caliper piston and position the dust seal on the piston.

Lubricate the piston and bore and carefully position the piston into the bore. Correct alignment of the piston into the bore will ease assembly and lessen the likelihood of damaging the piston or bore.

Gently press the piston into the bore until the seal is almost contacting the caliper. The use of a compressing tool may be necessary to install the piston. The piston will offer mild resistance on installation and will move slowly, but steadily, if it is being installed correctly. Any binding or seizing of the piston is cause for disassembly and inspection before reassembly is attempted.

With the piston dust seal almost contacting the caliper, push the dust shield down into its bore and work the seal around and into the bore. This should be a slow and careful procedure to insure a good fit of the dust seal. Once the seal is in place, push the piston the rest of the way into the bore, so the piston is retracted enough to allow later assembly with the brake pads in place.

Insert rubber sleeves (133) into caliper locating bores with the tapered end of the rubber sleeve pointed inboard toward the center of the car. Installation of the rubber sleeve can be made easier with the careful use of a medium-small screwdriver, working the sleeve gradually into the bore. The retaining lip at either end of the sleeve will fit just adjacent to either end of the sleeve bore.

Once the rubber sleeves are in place, install the Teflon sleeves (134) inside the rubber sleeves. To position the Teflon sleeve, roll the sleeve loosely between thumb and forefinger, overlapping the ends slightly.

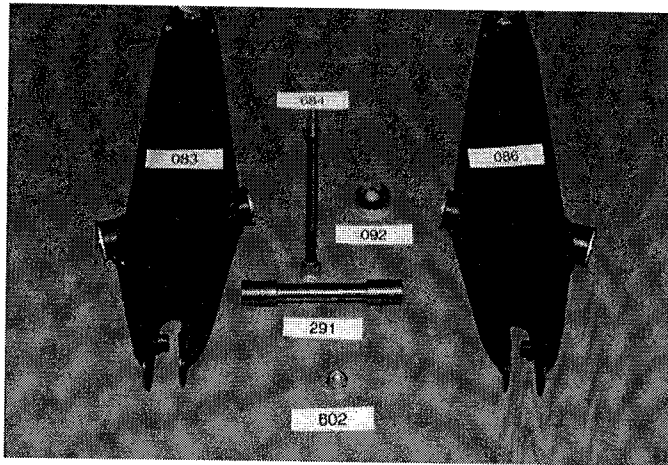
Place the Teflon sleeve, in this position, inside the rubber sleeve. The Teflon sleeve will expand into place, and may need to be gently pushed into fore and aft position in the rubber sleeve. The inside of the rubber sleeve is shaped to hold the Teflon sleeve.

Next, examine the ends of the Teflon sleeve. The ends should butt up to each other exactly flush, with no overlap of the two ends. If the ends do overlap, use the tip of a small screwdriver to push the overlapping end into position. This must be done carefully to avoid damage to the delicate Teflon sleeve.

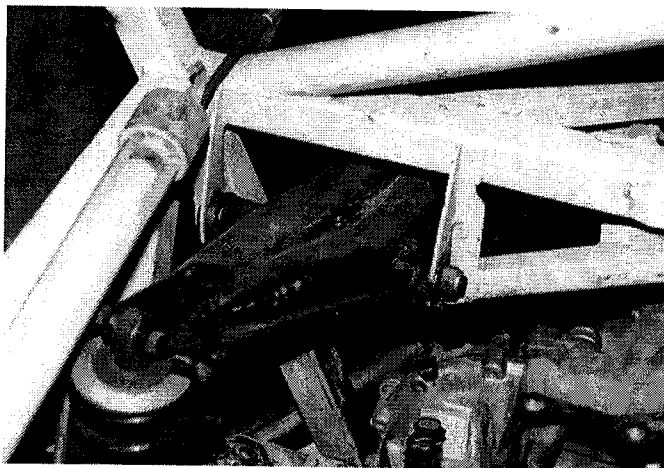
- **Note: If desired, all four caliper/piston assemblies can be completed at this time for use as needed. If so, store the rear calipers in sealed containers (zip-lock bags for example) to keep out any dirt.**

#### UPPER CONTROL ARMS (UCA)

Install crush-tube (291) through bushings in upper control arm (086 & 083). The use of a moly grease is recommended for bushing lubrication.

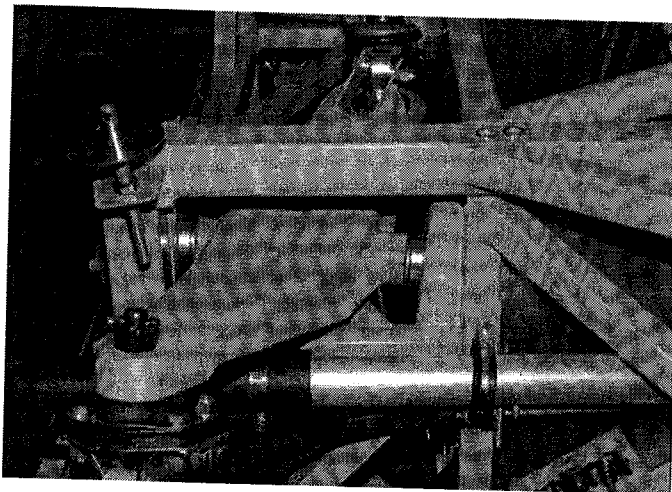


Position the UCA assembly between the mounting brackets on the frame. Position the UCA pivot bolt (684), with washer into the forward UCA bracket just far enough to allow one UCA shim (092) to be positioned on the threads.



Hold the UCA assembly up against the shim and slide the bolt through the shim and into the UCA assembly. Position another UCA shim between the UCA assembly and the rear UCA bracket and then push the bolt through the rear shim and rear bracket.

Install another washer and the nylock nut (602) onto the UCA pivot bolt and tighten the nut. Torque to 50 ft. lbs. Check to see the control arm moves freely.



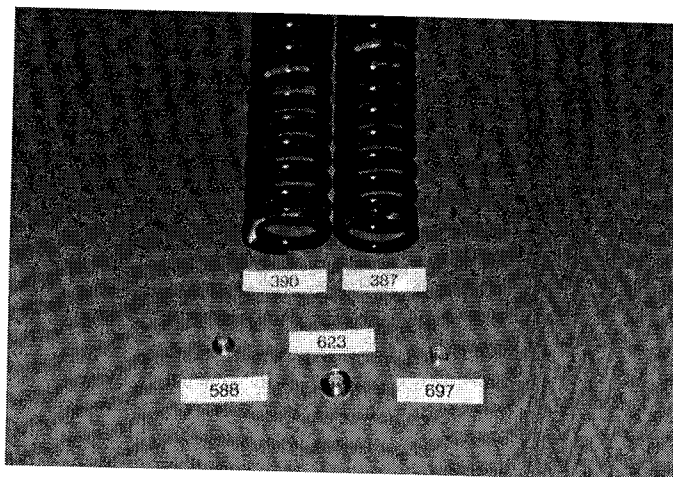
## COIL SPRINGS AND SHOCK ABSORBERS

- **Note:** All four shock absorbers are identical, however the front springs and rear springs are 275 lb. rate and 425 lb. rate respectively. The rear springs are marked “425” on one end, at the flat ground end of the spring or they are printed on the side with a “425”.

Assemble the “coilover” by fully extending the shock, installing the upper spring perch (perch may come already on shock) and then positioning the spring onto the shock. Next, thread the lower spring perch onto the shock body.

Wind the perch up the threads so that one to two inches of threads are showing beneath the perch. Final adjustments will be made in the alignment section.

- **Note:** When installing the shocks, be aware of the adjustment hole on the shock eyelet and face this hole towards the center of the car, for best access.

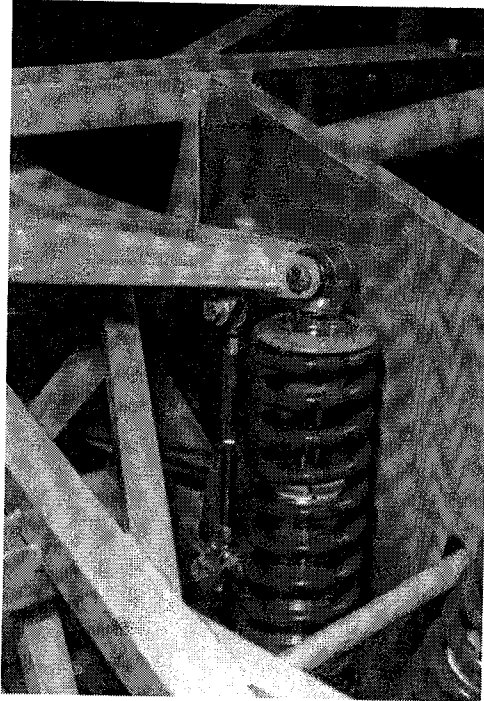


Insert the lower shock absorber bolt through the lower shock mounting bracket from inside the driver compartment. Install spacer (697) over bolt, position shock absorber on bolt and install special shock washer (623) and nut on bolt. Shock washer must be installed with small end toward shock. Torque nut to 35 ft. lbs.

Position upper shock spacers (588) on upper shock spherical bearing. Slide shock, with spacers, into position at inboard end of UCA. Some deburring of the inside of the mounting holes may be necessary.

- **Note:** Occasionally, due to minor production variations, the ears of the UCA may need to be spread slightly to fit the shock.

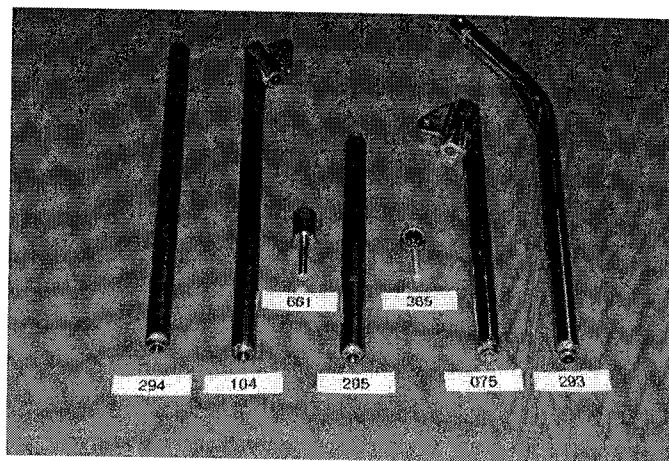
Insert the bolt and washer through the UCA and shock, place washer and nut on bolt and torque to 30 ft. lbs. At this time the stabilizer bar links can be bolted to their mounting tabs on the upper control arms.

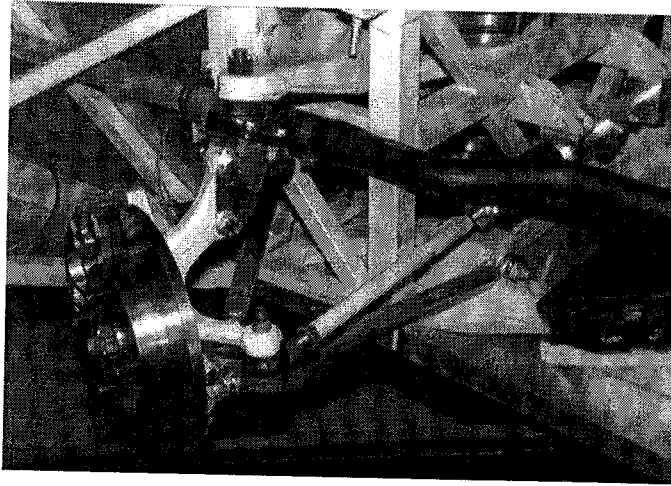


### **LOWER CONTROL ARMS AND CASTER RODS (struts)**

**Note:** When assembling the suspension links, arms and rods, match lengths left to right to simplify the alignment later.

Install jam nuts on rod ends (365). Install rod ends into control arms (075) and caster rods (295).





### CASTER RODS

Position caster rod, with rod end, into frame brackets. Caster rod bolt, with washer, is inserted from drivers compartment. Caster rods are the rear rod at the front suspension and the forward rod at the rear suspension.

- **Note: Centering of rod end in brackets can be aided with the use of a tapered drift or punch, inserted into the bracket and through the rod end.**

When bolt is in place, install nut and washer. Torque nut to 35 ft. lbs.

### LOWER CONTROL ARMS

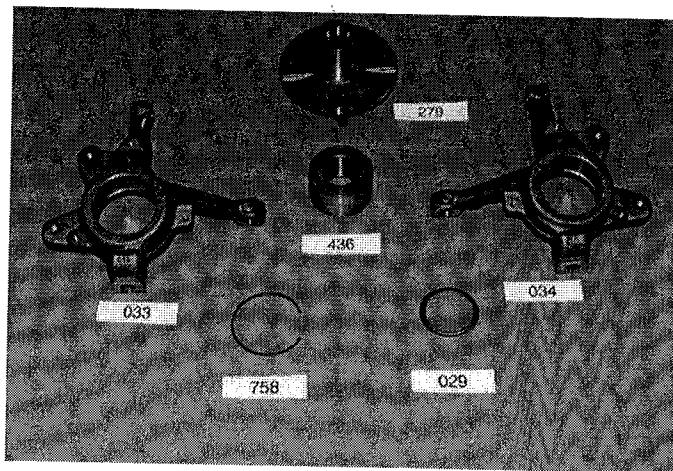
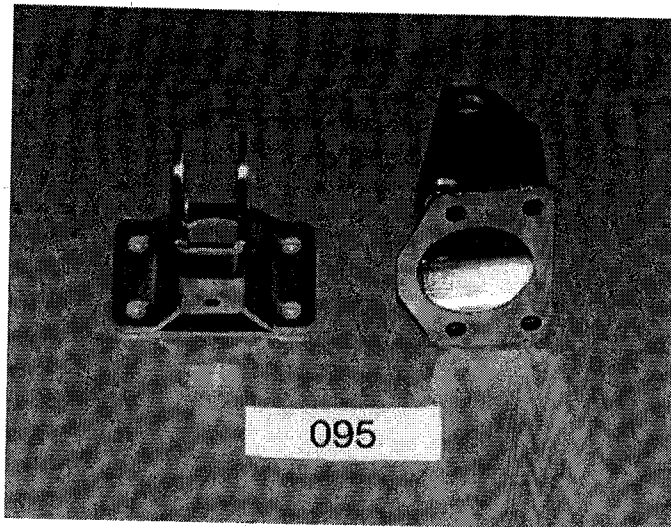
Insert designated bolt and washer into LCA bolt bracket. Install LCA rod end onto bolt. Place stepped washer onto bolt. Install nut and torque to 35 ft. lbs.

Install jam nut on clevis (661) and thread clevis into caster rod. Using designated hardware, bolt clevis to lower control arm.

Thread jam nut on 5/8 in. rod end and thread rod end into lower control arm.

### UPRIGHT ASSEMBLY INSTALLATION

Insert LCA stud into upright assembly at the bottom of the upright. Install pinch bolt (~~128~~), washers (~~394~~) and nut (~~274~~)  
~~1080130~~ 1080130 1053409 1034039



Place an upper ball joint (UBJ) bracket (095) on the upright and bolt in place using 12mm bolts (541), washers (257) and nylock nuts (105). These are easier to tighten once the uprights are in place. Torque to 55 ft. lbs.

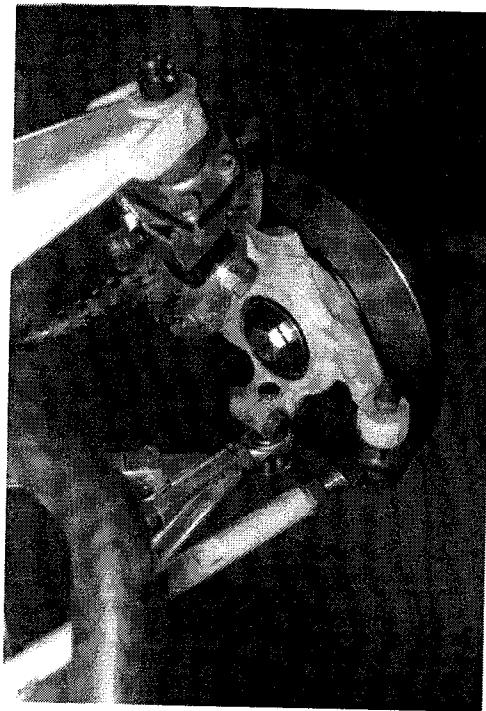
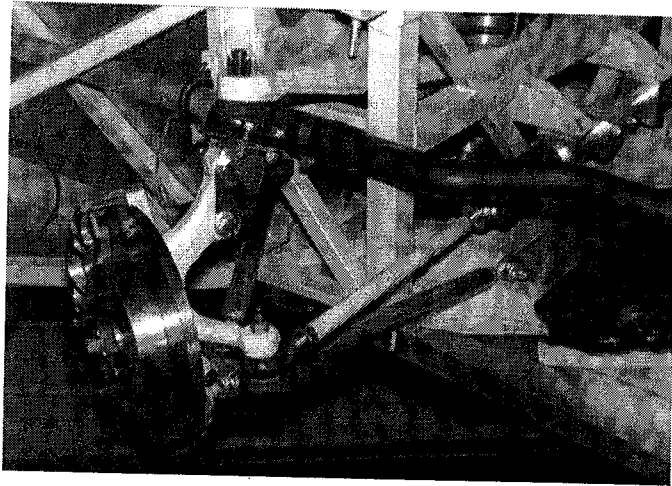
- **Note: The UBJ has a threaded hole in the bottom side for maintenance lubrication. This hole must be plugged while the car is in service.**

Place an upper ball joint sandwich plate onto the UBJ to hold the rubber boot captive. Insert the UBJ stud up into the hole at the outer end of the upper control arm and install the castle nut provided. Position the UBJ bracket (already bolted to the upright assembly) up against the UBJ and bolt together using the designated nuts, bolts and washers.

For ease of assembly, these bolts should be tightened after the upright's LBJ stud is inserted into the rod end already threaded into the LCA.

Insert the tie rod end stud into the steering arm on the upright, install nut provided and torque nut to 26 ft. lbs.

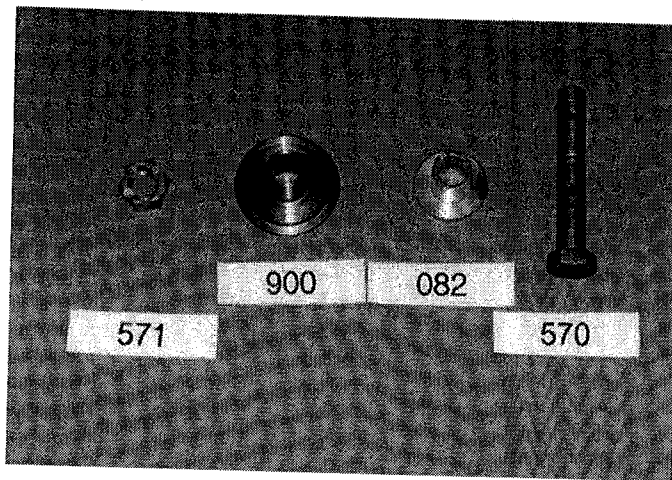
Once the UCA, upright assembly and lower control arm assemblies are bolted together, all of the fasteners can be tightened. Torque UBJ stud nut to 60 ft. lbs. and LBJ stud nut to 40 ft. lbs. Install cotter pin, or further tighten nut until cotter pin can be installed.



### **FRONT WHEEL BEARING RETAINER INSTALLATION**

Place a front inner wheel bearing retainer flange (900) into the front wheel bearing from the inboard side.  
Place a front outer wheel bearing retainer (082) into the front wheel bearing from the outboard side.

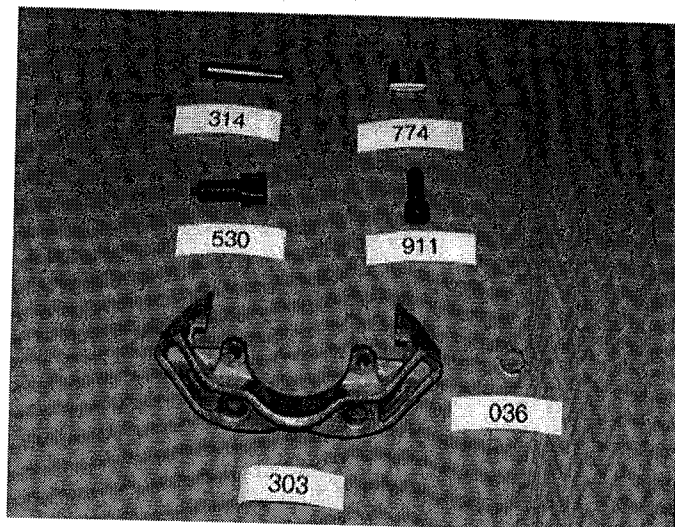




Install front wheel bearing retainer bolt (570) through wheel bearing retainers, with the head of the bolt on the Inboard side. Install nut and torque to 55 ft. lbs. Check for cotter pin alignment. Install cotter pin, or further tighten nut until cotter pin can be installed.

### BRAKE CALIPER AND ROTOR INSTALLATION

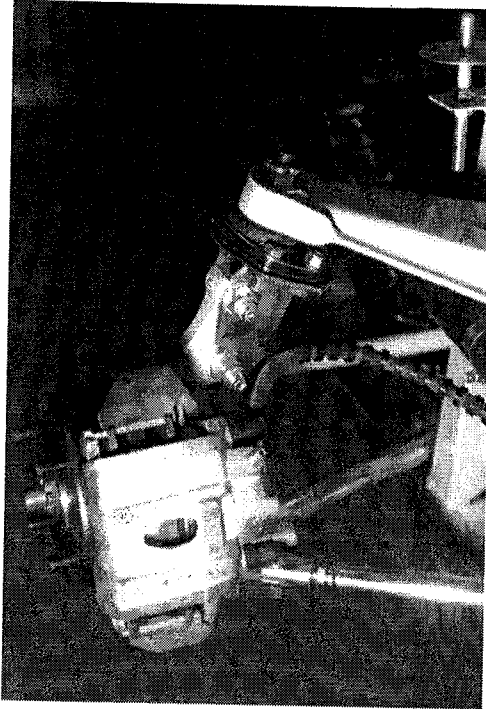
Bolt the inner caliper bracket (303) to the upright using caliper bolts (911). Torque bolts to 70 ft. lbs. Use Loctite or similar thread locker. **THOROUGHLY CLEAN** brake rotor and place in position on wheel studs. A lug nut (530) can be used to temporarily hold the rotor in place. Place one brake pad on either side of the brake rotor, using the inner caliper support as a guide.



Place the appropriate left or right caliper assembly in position onto the brake pads. **Remember: the bleeder hole has to be at the top of the caliper!** Using a Teflon-based spray lubricant, lube the slide surface of two brake caliper slide bolts (314) and carefully push them into the guide sleeves previously installed, threading the bolts into the inner caliper support. Torque caliper slide bolts to 25 ft. lbs.

Install a brake bleeder screw (036) into the caliper. **DO NOT OVER TIGHTEN!** Install a bleeder screw cover on each bleeder screw.

Install the two forward brake hoses. These hoses are tightened, first, at the caliper, then at the hard line. The hose is retained to the bracket at the end of the hard line, with a clip (774).



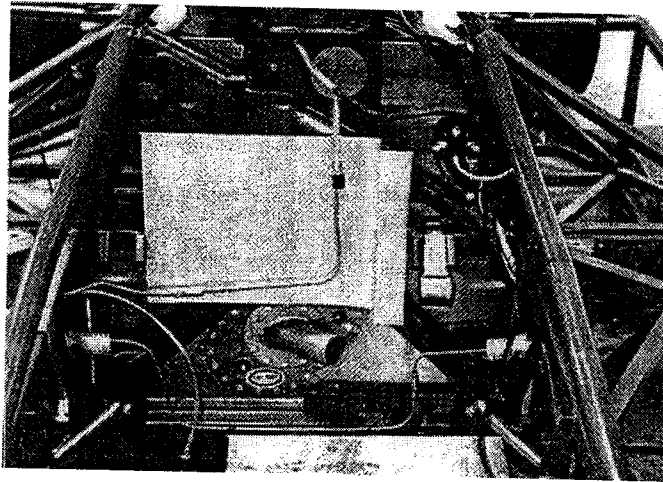
## **HEAT SHIELDING**

Pn.1610 is a 12 by 16 inch piece of aluminized rigid heat shield, that is installed to the roll bar support tube just below the shoulder harness mounting brackets with two 3/16 in. pop rivets. Another rivet may be installed higher up on the heat shield, into the roll bar support.

Leave the right side 5 inches of heat shield loose so the reservoir hose can be routed behind it. The heat shield should be bent (as shown in the photograph) away from the firewall to allow the hose to more easily pass by.

### **Note:**

- **1. The lower edge of the shield should not cover any of the fittings on the fuel cell. Additional heat protective material can be added behind the heatshield to protect the seatbelts. Heat reflective paint or cloth can be added to the panel between the fuel cell and engine.**
- **2. The rear fire bottle hard line may be attached to the heat shield.**



### **FUEL FILL HOSE**

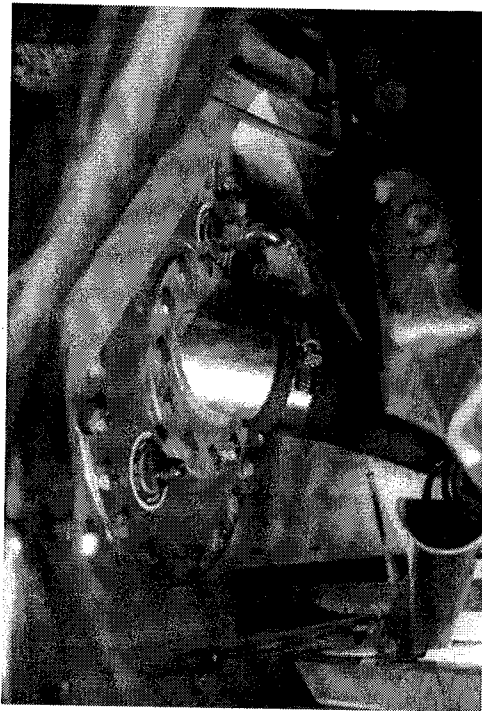
- **Note:** The fuel fill hose runs between the fuel cell and the filler neck. The filler neck is mounted to the filler neck bracket, which, in turn, is mounted to the frame. It is not possible to drill the engine mount bolt holes in the upper right frame rail brackets with the filler neck bracket permanently in place.

The fill hose is much easier to install with the engine out of the car, however, the hose will need to be of sufficient length to not interfere with the two forward engine mounting plates. Trial fitting of the hose, filler neck and filler neck bracket is recommended. During trial fitting, the hose may need to be trimmed to length.

- **Note:** Once installed, excessive length of the fuel fill hose may create undesirable pressure on the fuel filler neck and fuel cell.

Carefully check both ends of the fuel fill hose for sharp ends of the internally-wound wire and trim as necessary. Clean out the fill hose as small bits of debris may be present inside the hose. Position one end of the fill hose over the neck at the fuel cell, first being sure to remove any plug or cover on, or in the neck.

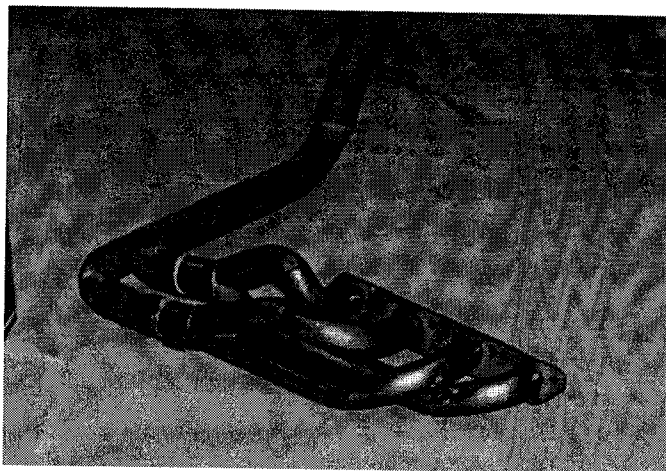
Install two 2 and 1/2 inch clamps on the hose to secure the hose to the fuel cell neck. These clamps should be positioned so that the clamps can be tightened or removed for serviceability. The other end of the fill hose will be attached to the filler neck during a later step. Tape over the end of the hose so nothing will enter the fuel cell until the hose is connected to the filler neck.



### **ENGINE PRE-INSTALLATION PREP**

#### **EXHAUST HEADER**

**CAUTION: NEVER USE A SILICONE BASED SEALER AS A HEADER GASKET, THE SILICONE DESTROYS THE OXYGEN SENSOR IN THE EXHAUST PIPE.**



#### **Note:**

- **1. It is advisable to have the header and exhaust tubes treated with a high temperature coating. Header wrap is also allowed in the rules.**
- **2. The header can (and for ease of assembly, should) be installed prior to engine installation without the remainder of the exhaust system. The use of exhaust gasket, Ford part number FOFZ 9448 A is allowed in the rules.**

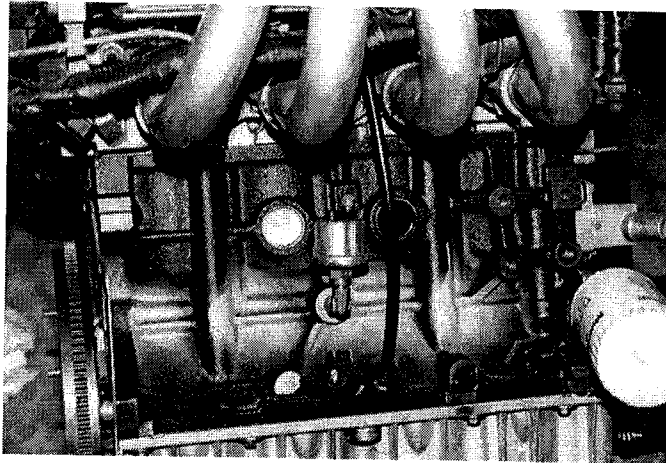
- 3. The header bolts on the engine so its exit will be on the left side of the chassis.

Remove the production studs and mount the header to the engine with eight M8x1.25x25mm bolts and flat washers. Use an anti-seize compound on the threads. Torque bolts to 18 ft. lbs.

Drill a 1/4 inch dia. hole in the header flange at each spark relief area to allow dirt and moisture to drain. These holes should be centered at the base of each spark plug relief area.

#### OIL PRESSURE SENDER

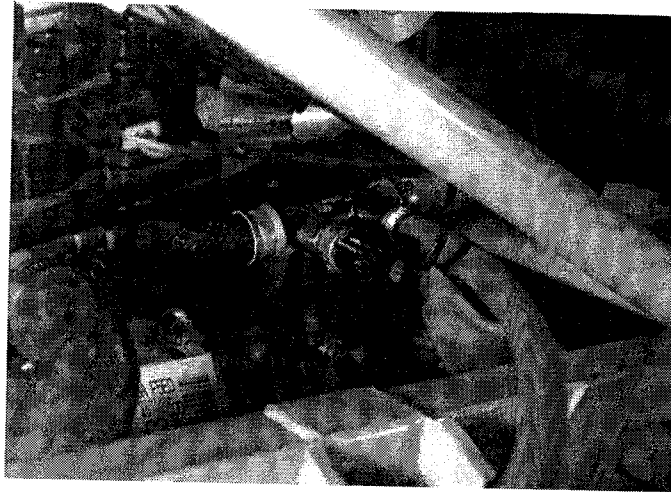
Remove the production oil pressure sender from the engine block. (Threaded into the block between the oil pan and intake manifold, approximately centered in the block) Install the fitting and adapter in the production oil pressure sender location.



Orient the 90 degree fitting so it points just to the one o'clock side of vertical. Remove any anodizing which may interfere with good electrical contact. Install the sender provided with the kit. A wire from the sender (soldered to the body of the sender) to the block may provide additional grounding.

#### COOLANT TEMPERATURE SENDER

The water temperature sender will be installed in one of two locations, according to which style of engine block you have. On some blocks, the sender is directly threaded into the block, on the header side of the engine, with an allen plug currently residing in the hole.



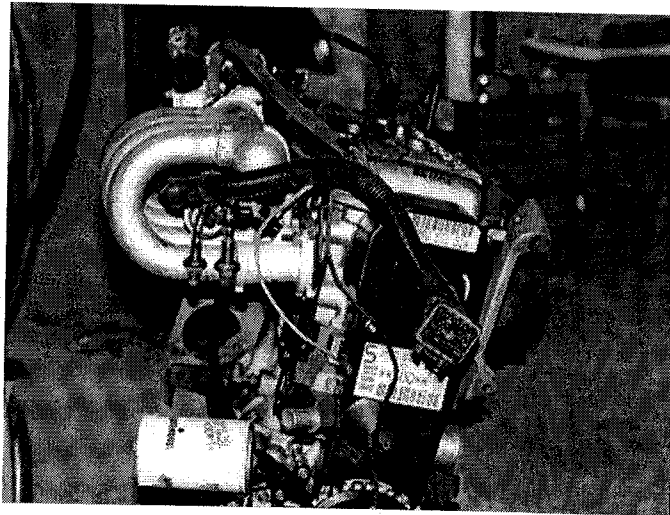
If the allen plug is not present, an alternative installation is as follows:

In the “piccolo tube”, where pn 1817 is previously installed, use a “tee” fitting with 3/8 in. NPT male threads on one end, and 3/8 in. female threads on the other two ends. Install pn 1817 in one end of the tee and route the hose as before to the expansion bottle. In the other port of the tee install a 1/8 in. female to 3/8 in. NPT male adapter. Install the temp sender into the adapter.

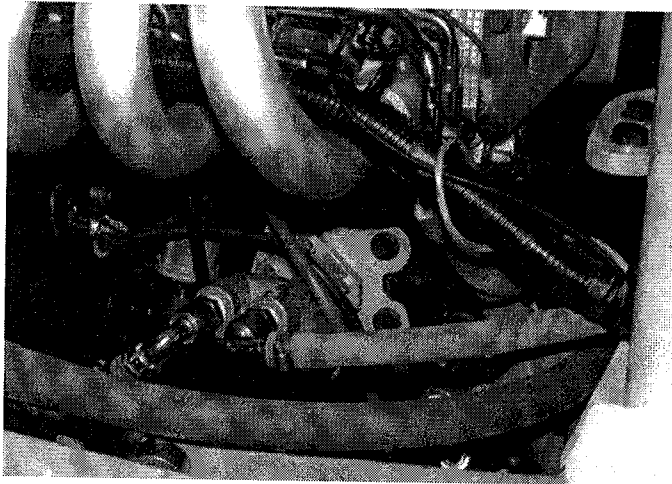
- **Note: This sender installation will be possible after the engine is installed, during the coolant hose connections.**

#### ENGINE ELECTRICAL HARNESS

Locate the engine and fuel delivery harness. Remove the production harness delivered on the engine and route the new harness through the intake manifold, with the main 60 pin connector to the right side of the engine compartment. Discard the production wire harness.



Plug in the crankshaft position sensor, cam position sensor, idle by-pass valve, throttle position sensor; the other connections will be made later. These plugs are keyed to prevent them from being installed on the wrong plug. The ground eyelet should be attached to the engine block with the lift bracket bolt.



## OIL LINE ADAPTERS

Remove the oil filter installed on the engine and, in its place, install pn 2403. Each engine should already have threaded adapter pn. 2498A installed. This threaded adapter is recognized by it's internal hex for installation with an allen wrench as well as being threaded completely to its ends.

Be sure the o-ring remains in its proper location. Next install the remote filter bracket to the remote housing with three M6x1.0x30 bolts, 6mm nuts and washers. Install the center pipe fitting into the housing (the piece the oil filter screws on to).

Mount the remote filter housing and bracket to the engine using two of the bolts which secure the large cast engine mount to the engine. The bracket may need to be ground slightly to fit flat against the cast mount. The oil filter is then installed onto the remote filter housing using three m6 x 1 x 30 bolts.

### Note:

- 1. The only legal replacement oil filter is Motorcraft pn. FL-400 series.
- 2. Care should be taken to ensure no leaks will occur at any of these connections.

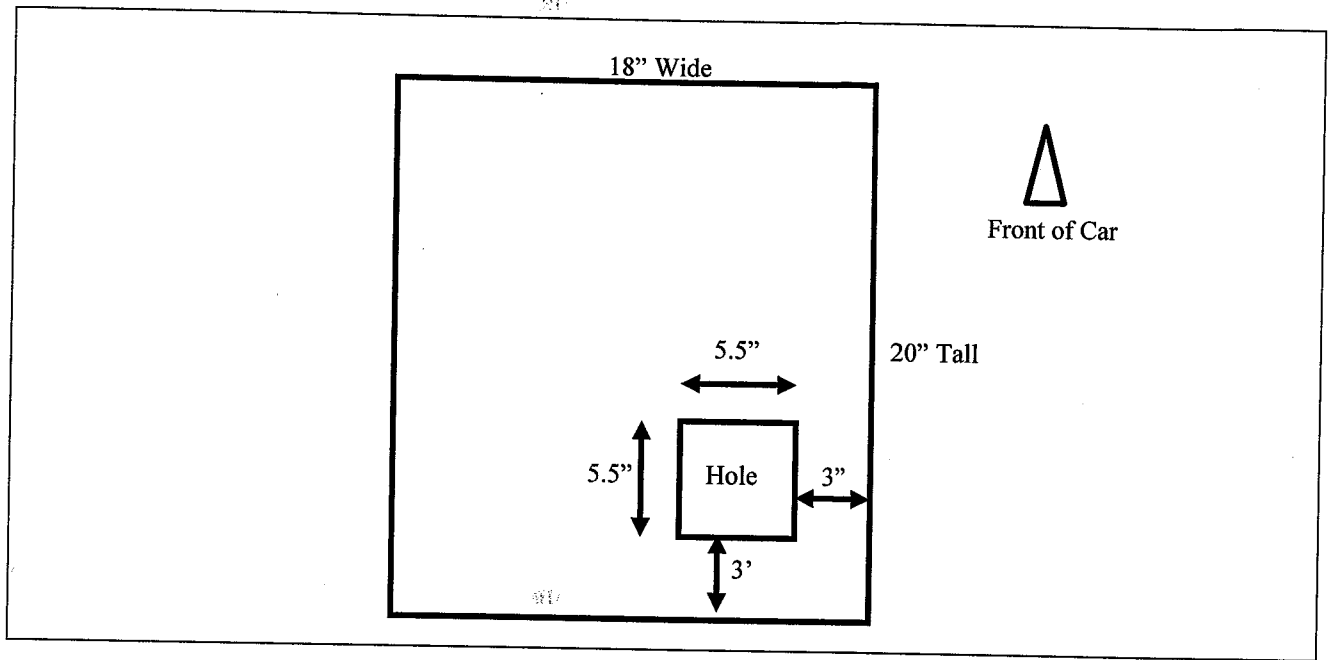
- Note: This step is normally followed if you are converting a Renault to a Ford. It is not required for assembly of a new car and is included for future reference only.

## ENGINE LOCATION

**CAUTION: THE ENGINE LOCATION STEPS ARE CRITICAL.** Failure to properly place the engine will result in several part interferences and could effect the performance of the vehicle.

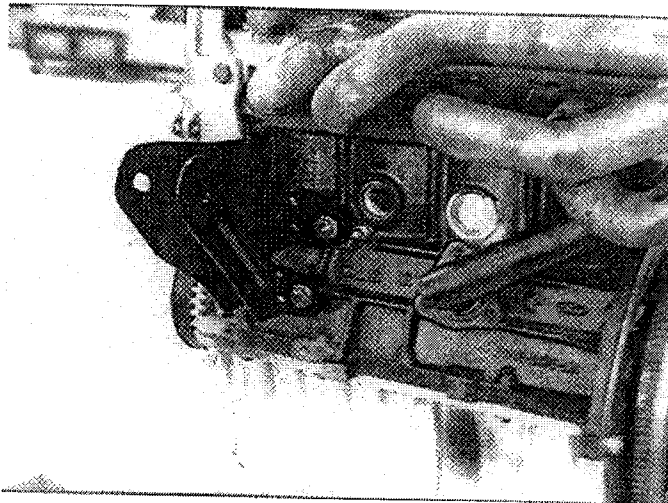
- Note: During the installation of the alternator, the rod end at the end of the alternator adjusting strut will need to fit between the ears on the alternator mounting bracket. Test fit the rod end in the mounting bracket before bolting the bracket to the engine. If the rod end will not fit, a drill bit (approx. 3/8 in.) can be used to drill a small indent where the rod end contacts the bracket.

Purchase a clean, flat piece of 1/2 inch thick plywood; measure and cut a piece approx. 18" by 20". The plywood must have a clearance hole cut in the plywood for the oil pan drain plug, so when the engine is in place, sitting on the plywood, the drain plug will not keep the engine from sitting level.



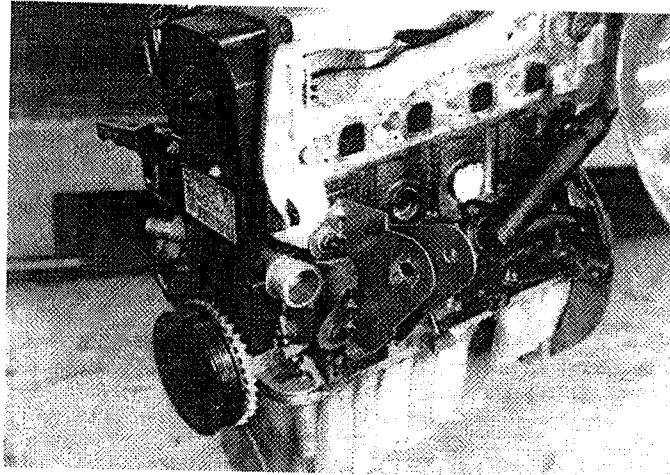
### MOUNTING ENGINE

Loosely install the front engine mounting plates (1001 & 1002) on the engine using three (3) M10x1.5x20mm bolts and flat washers. Leave the upper hole of pn.1002 empty at this time.

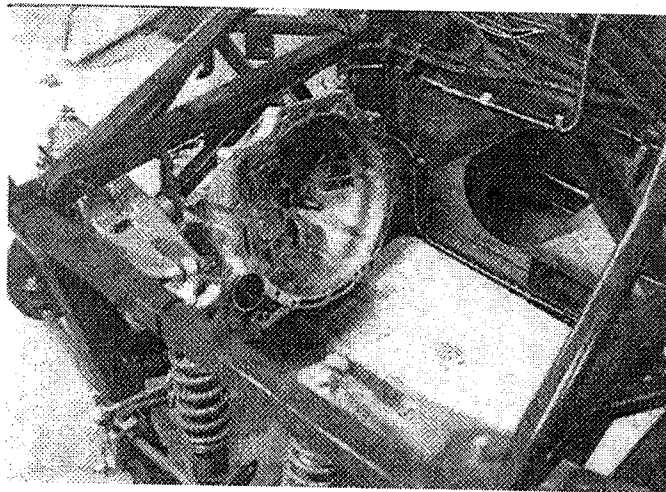


Install the alternator mounting bracket (1401) with a M10x1.5 x30 bolt and flat washer mounting the lower portion of the bracket and the engine mounting plate together. Use a M10x1.5x30 bolt and flat washer in the upper alternator mounting hole. Grade 10.9 bolts are recommended in both these locations.

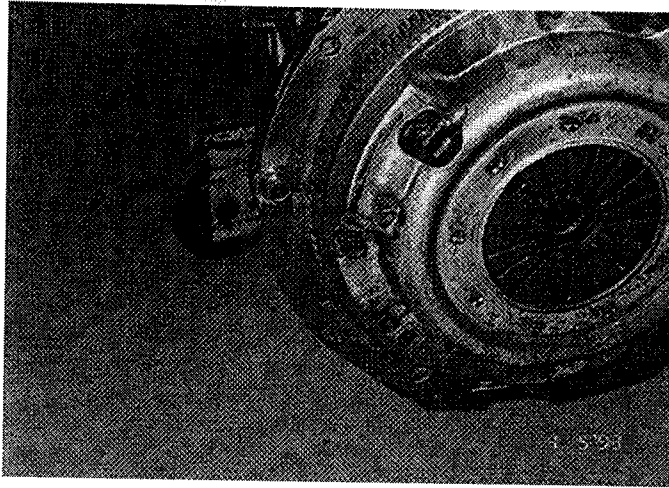




Remove the production transaxle mount from the transaxle prior to placing it in the engine bay. Set the transaxle temporarily in place, as far to the left as possible.



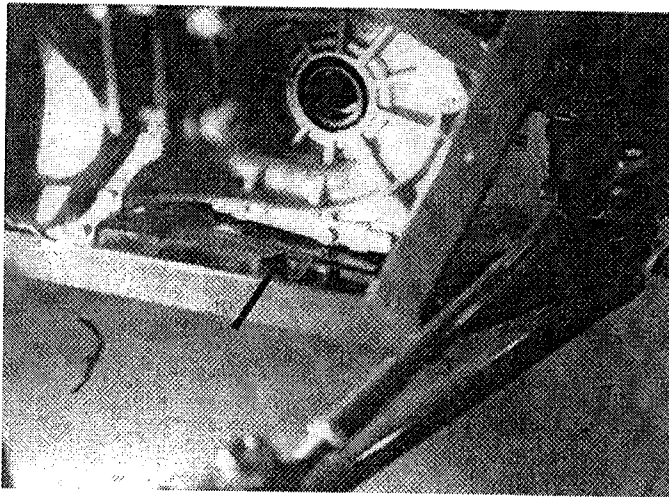
Install the rear cover plate on the engine and install the transaxle locating dowels, securing the cover plate. The plate can be worked behind the flywheel by bending one edge, inserting it behind the flywheel and rotating the plate as you feed it into place.

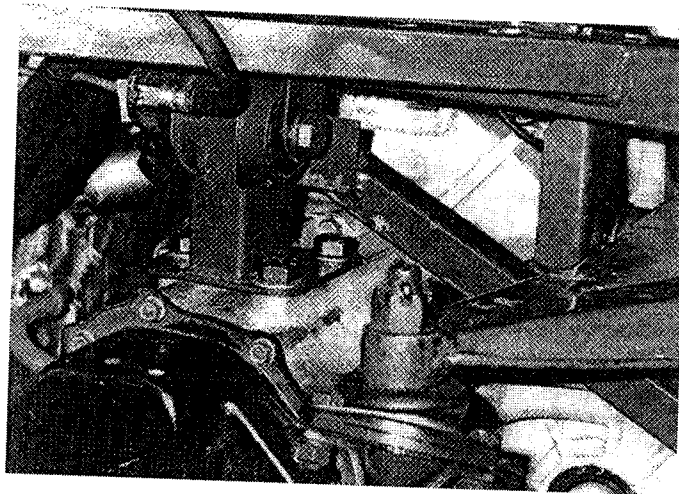


Set the engine into the chassis, lining up the slots in the front engine brackets with the front mount bushing. Install one (1) M12x1.75x 90mm bolt with washer through the front mounting bushing. Install another washer and the nylock nut. Do not tighten at this time.

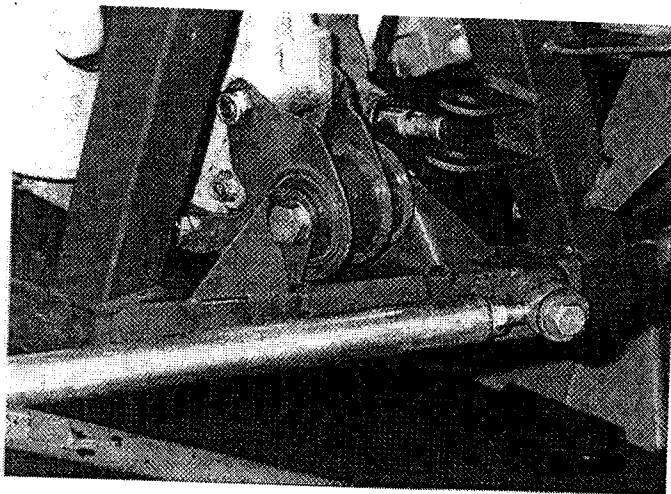
Mount the transaxle to the engine using four (4) M10x1.5x 50mm bolts, three (3) M10x1.5x 30mm bolts and flat washers. Check that the bolts match the depth of the bellhousing to insure proper placement. Be sure there is a small amount of grease on the input shaft to lube the pilot bearing.

Remove the stock transaxle studs and install the left mounting bracket (1201) to the transaxle using three (3) M12 x1.25x 20mm bolts and flat washers. Leave these bolts untightened at this time.



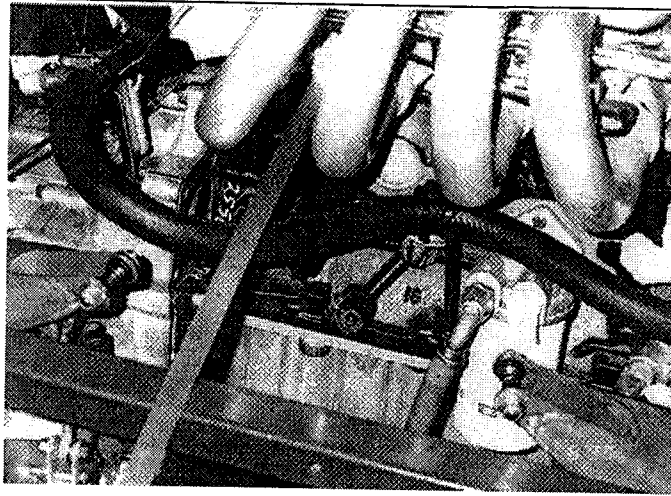


Install the rear transaxle mounting bracket (1101) on the transaxle with the bushing between the ears on the frame bracket. Two (2) M10x1.5x75mm bolts, flat washers and nylock nuts are use to bolt the mount to the transaxle. Install a M12 x1.75 x90 bolt with washer through the frame bracket and bushing. Install another washer and a nylock nut, but do not tighten at this time.

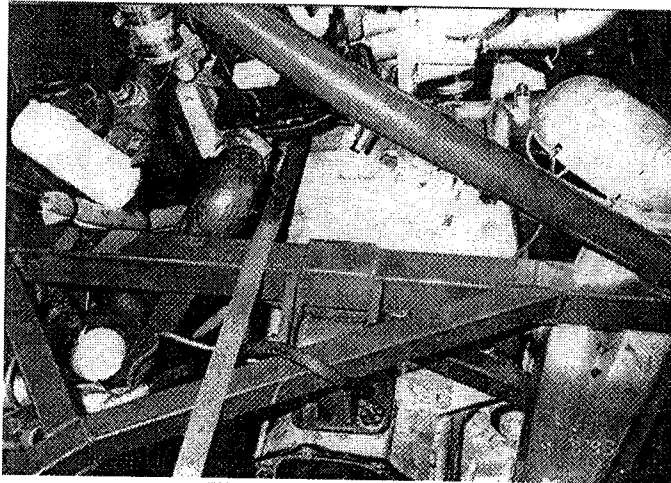


- **Note:** This step is normally followed if you are converting a Renault to a Ford. It is not required for assembly of a new car and is included for future reference only.

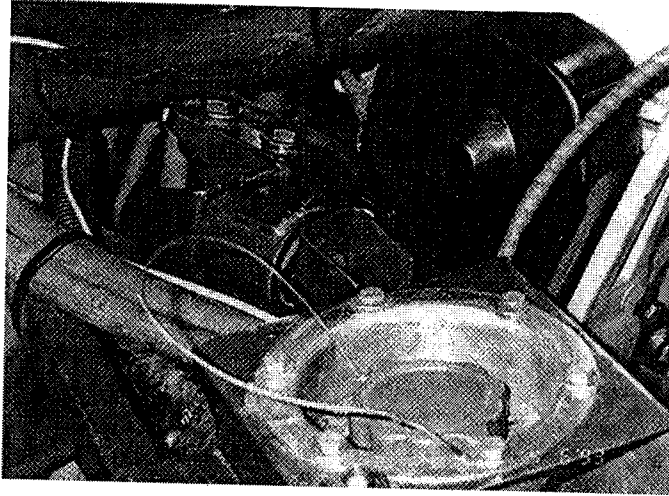
Measure the distance between the lower edge of the intake flange to the rear edge of the upper rear frame rail as shown. This dimension **MUST** be between 14.0 and 14.125 inches and maintain an even distance on both sides.



Carefully move the engine/transaxle as necessary to achieve the recommended measurement. Check the valve cover and frame rail to make sure they are level and parallel to each other. Measure from the rear face of the block (above the transaxle) to the inside of the left frame rail. This should be 7 3/4 inch to 7 7/8 inch; the closer to 7 3/4 inch the better.



Install the right mounting bracket (1301A) to the cast mounting bracket on the engine, fitting the bushing end of the mount between the right side upper engine brackets on the frame, using two (2) M12x1.25x30mm mounting bolts. Tighten the bolts.



Tighten each of the 12mm through bolts at the mounting brackets and all of the other related hardware.

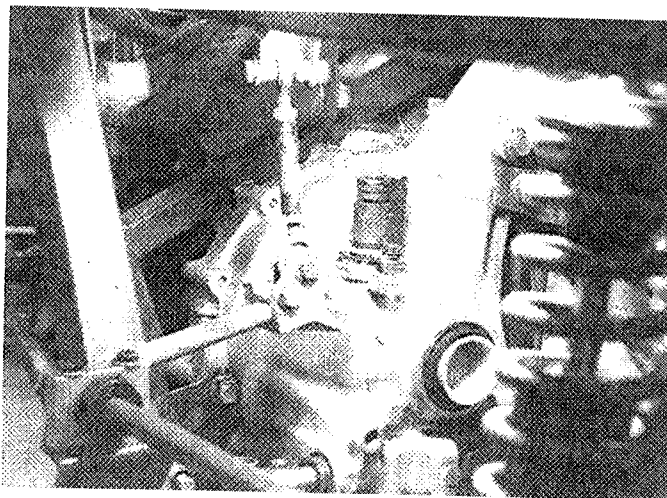
A length of flat, braided cable is provided and should be installed with one end bolted to the transaxle and the other end connected to the chassis. This cable provides additional engine to chassis grounding.

#### CLUTCH SLAVE CYLINDER AND TRANSAXLE FILLER PLUG

Install the clutch slave cylinder to the transmission using two M8 x 1.25 x 30mm bolts and two flat washers. Torque to 18 ft. lbs.

Install the stainless steel flex hose (in the brake kit) to the slave cylinder. Install 10mm to #3 male adapter in the slave cylinder. Tighten the end of the hose at the slave cylinder first, then tighten the fitting to the hard chassis line. Install a length of fire sleeve to insulate this hose.

The transaxle filler plug (speed sensor in road car application) is retained with the fork and bolt provided. Instructions showing the proper transaxle fluid level are cast into the transaxle. The gear at the end of the fill plug / speed sensor may be removed from its shaft with the removal of the circlip.



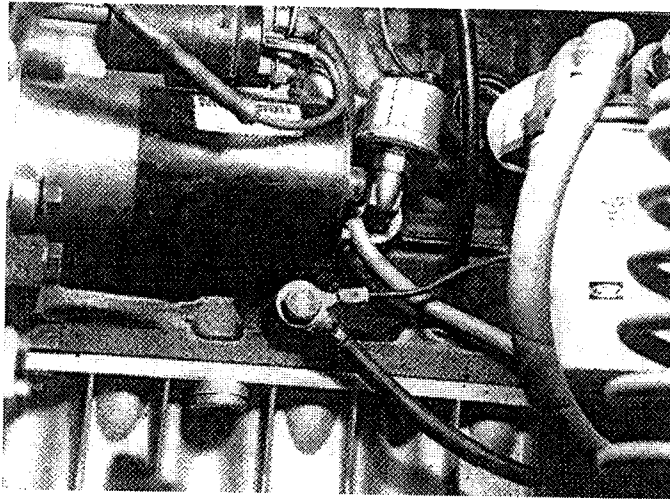
- **Note: Do not add transaxle fluid at this time.**

Bleed the clutch system. Next, adjust the clutch pedal stop to contact the pedal just after fully disengaging the clutch. DO NOT overstroke the clutch. There is far more travel in the pedal than what is required to operate the clutch. When the pedal effort diminishes, the clutch is fully dis-engaged.

- **Note: If the wheels continue to turn with the engine running, the rear of the car jacked up and the clutch depressed in gear, the clutch is being overstroked. Adjust the stop to just disengage the clutch or stop the wheel movement, when the car is in gear.**

## STARTER

The starter is installed to the transaxle with the two bolts and one stud-ended bolt supplied with the Ford parts. The two bolts secure the starter from the transaxle side (bell housing) and the stud-ended bolt (through the bell housing bolt hole furthest to the rear of the car) also secures the coolant by-pass tube (Piccolo tube).



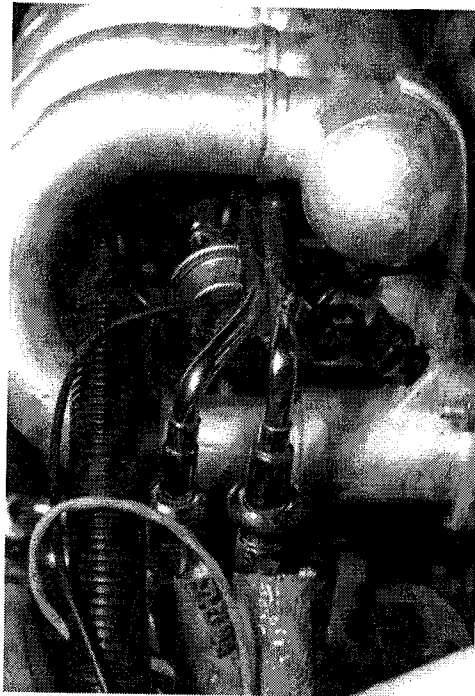
## FUEL SYSTEM

**WARNING: ALL PROCEDURES INVOLVING THE FUEL SYSTEM MUST BE COMPLETED WITH CARE AND ATTENTION TO DETAIL IN ORDER TO INSURE A LEAK PROOF AND CORRECTLY FUNCTIONING SYSTEM.**

### FUEL HOSE ASSEMBLY

Note:

- **1. Heat insulating sleeve covering the fuel lines is allowed in the rules and recommended for safety and proper performance.**
- **2. In this section, the fuel lines will be assembled and some of the fuel system partially fitted together for reference and later, final assembly. Only install fittings finger tight; if fitting to fitting connections are tightened now, they may need to be disassembled and reinstalled later.**
- **3. A pre fuel pump filter will extend the fuel pump life. If using a pre-pump fuel filter, allowances will have to be made in the assembly of the fuel pump inlet hose.**



All pressure hoses use socketless fittings. Simply cut the hose to length and fully insert the barbed end of the fitting into the hose. According to the manufacturer, no clamp is required, however, clamps may be installed at the discretion of the owner.

- **Note: It may be helpful later to mark each fuel hose regarding its description. Eg.: Fuel pump inlet hose.**

Assemble and install the fuel ~~pump inlet~~ hose using one (1) 90 degree -6AN fitting at the fuel cell end, a ~~12 inch~~ length of FBV0600 hose, and one (1) straight -6AN fitting at the fuel pump.

~~Assemble and install the fuel pump outlet hose using two (2) straight -6AN fittings and a 12 inch length of blue AeroQuip FC332-06 hose. Connect one end to the fuel pump outlet and the other end to the fuel filter.~~  
Assemble and install the fuel pump outlet hose using two <sup>1</sup> straight -6AN fittings and a <sup>24</sup> inch length of blue AeroQuip FC332-06 hose. Connect one end to the fuel <sup>cell</sup> outlet and the other end to the fuel filter.

Assemble the fuel pressure hose using a straight -6AN fitting, a 45 degree -6AN fuel rail fitting, and a 24 inch length of blue AeroQuip FC332-06 hose.

Connect the straight fitting to the fuel filter; the other end will be later connected to the large fuel rail connector.

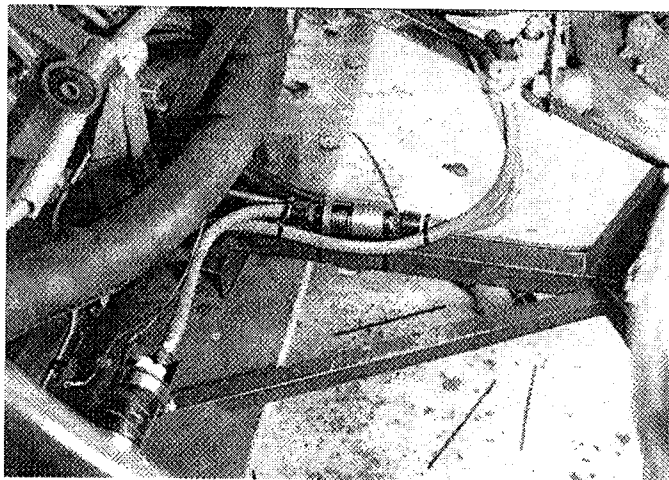
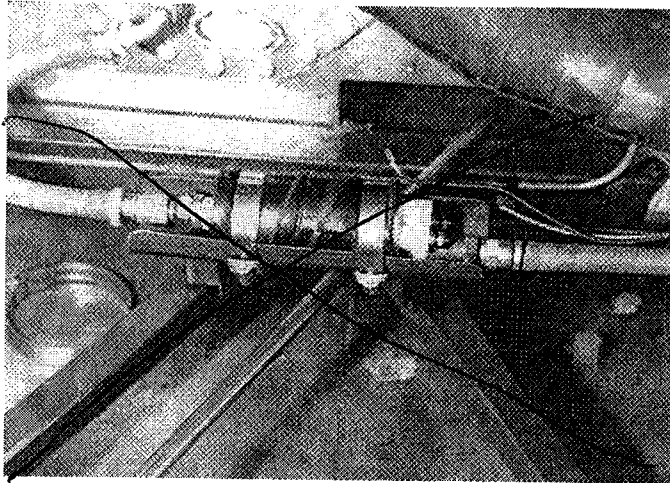
Assemble the fuel return line using a 90 degree -6AN fitting, a 44 inch length of blue AeroQuip FC332-06 hose, and a 45 degree -6AN fitting. The 90 degree fitting will be attached to the return fitting on the fuel cell and the to the small fuel rail connector.

Assemble the vent hose using the 45 degree -6AN fitting at the fuel cell end, a 24 inch length of hose and a straight -6AN fitting at the other end. This hose will be installed in a later section.

Set the assembled lines aside in a location where they will not be exposed to dirt.

## FUEL PUMP AND LINE INSTALLATION

~~Bolt the fuel pump bracket to the frame using 8x1.25x 40 bolts in the holes drilled earlier. The bracket may also be welded to the frame. It is recommended to have the bolt heads beneath the frame; the nuts on top of the bracket.~~



~~Locate the fuel pump and wrap it with the two strips of rubberized tape, being sure to note the direction of flow.~~

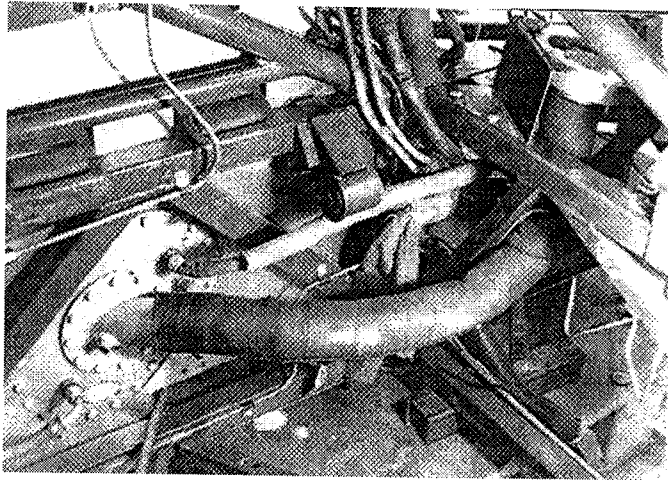
~~Install the fuel pump inlet hose with the 90 degree fitting at the fuel cell and the straight fitting at the fuel pump. Connect the fuel pump outlet hose to the fuel pump (outlet side) at one end and the inlet side of the fuel filter with the other. Place the fuel pump in the bracket and install two hose clamps to hold the pump to the bracket.~~

~~The wires for the fuel pump will be installed later. The hose clamps must be readily accessible, in case the pump needs to be relocated to install the wiring.~~

Connect the straight fitting end of the fuel pressure hose to the fuel filter and the 45 degree end to the large fuel rail disconnect fitting pn. 1911. The hose routes along the top of the lower frame rail and then up to the large fuel rail fitting. Connect the large fuel rail disconnect fitting to the fuel rail.

There are two p-clamps provided for mounting the fuel filter to upper side of the lower frame rail, but other methods of attachment are allowed, provided the location of the filter remains the same.





Location should be approximately eleven inches from the firewall to the forward edge of the filter. This location should allow a smooth bend of the hose, without kinking.

The fuel return line attaches to the fuel cell with the 90 degree fitting; the other end (45 degree fitting) attaches to the small connector fitting, pn. 1925. The fitting is then connected to the smaller of the two ends at the fuel rail. This line is routed alongside the fuel pressure hose and filter; tie-wrap or p-clip this hose as needed.

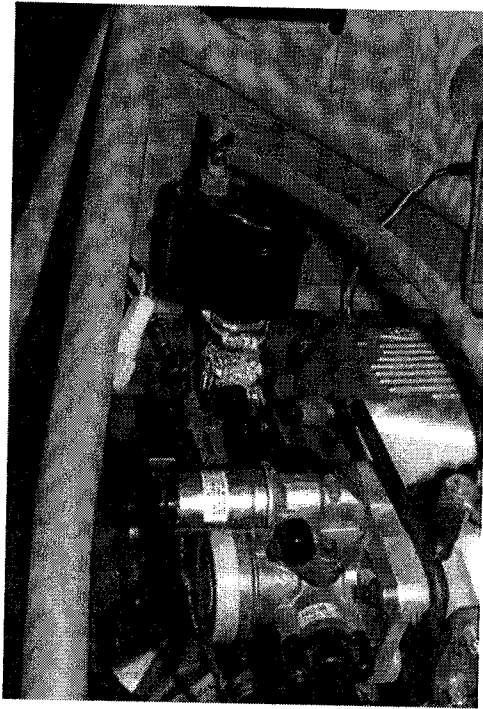
- **Note: Only when routing and positioning of the fuel lines is satisfactory, should the connections be tightened. Care should be taken to not put strain or twist loads on the hoses.**

Be sure all connections installed to this point have been tightened.

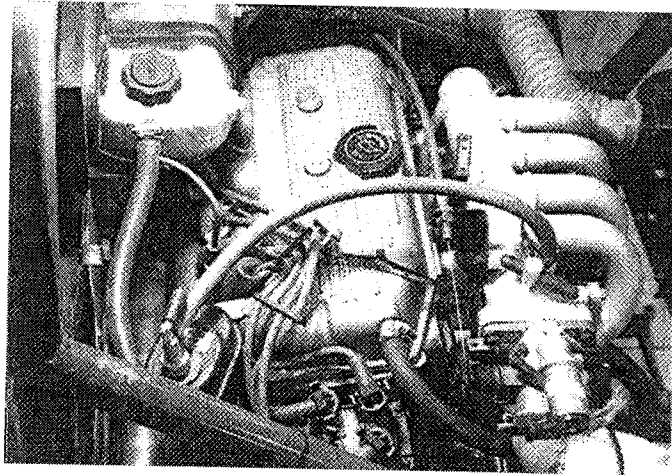
### **PCV SYSTEM INSTALLATION**

Install the four inch length of one and 1/2 inch o.d. silicone hose to the lower end of the oil separator. Be sure the rubber plug has been removed from the PCV tube before installing hose. Secure hose with a 1 and 1/2 inch hose clamp.

Install the separator assembly in place on the PCV tube. The hose may need to be trimmed to allow the separator to nearly contact the PCV tube. Secure the hose with a 1 and 1/2 inch hose clamp.



Install the PCV into the separator. Cut a twenty inch length of FC322 hose and install one end into the vertical 3/8 inch nipple near the throttle body. The other end is connected to the PCV. Use hose clamps at both connections.



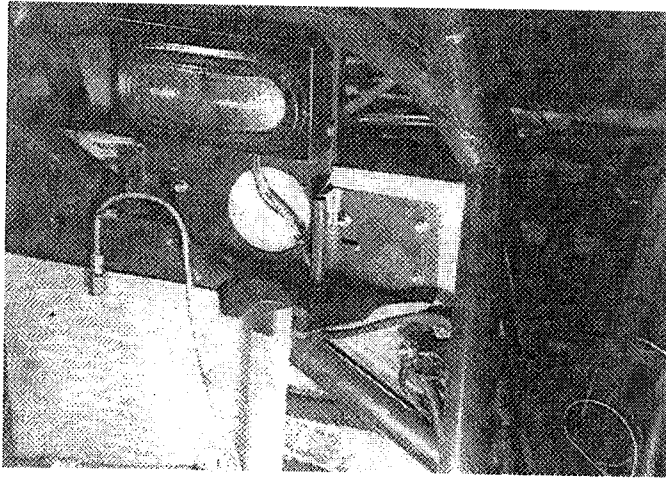
**Note:**

- **1. Only the port designated for the PCV is to be used for the PCV hose. All other open vacuum ports must be plugged, including the one in the bottom of the throttle body. The use of small hose clamps is highly recommended to retain the plugs.**
- **2. It is important that the separator is secure. A fire can result if excess oil contacts a hot header. Service the separator regularly, keeping it clean and free of oil.**
- **3. Make sure that the PCV system does not have any vacuum leaks. Any vacuum leaks will reduce the effectiveness of the system, can damage the engine and may allow oil to run into the breather hose or the air box.**

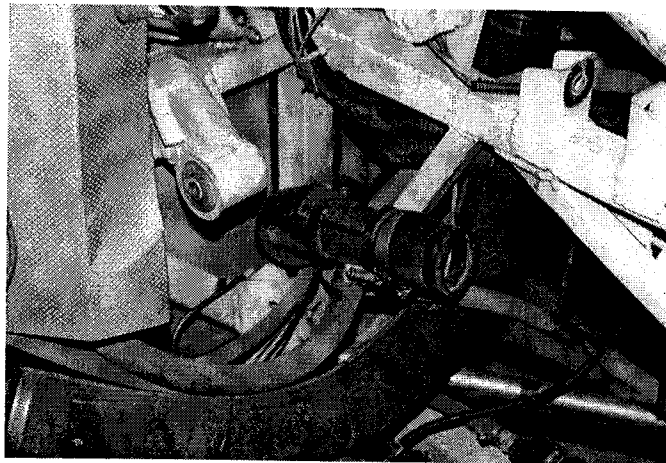
- 4. It is recommended to insulate the hose between the separator and the tube that attaches it to the engine block. The hose is in close proximity to the header and should be regularly checked for heat deterioration.

### ENGINE COOLANT SYSTEM

Locate and drill three 6mm holes for the coolant reservoir mounting bracket. The bracket mounts flush with the right edge of the headrest support bracket and the top edge lines up with the top 45 degree corner of the headrest bracket. The coolant reservoir bracket may need to be trimmed slightly to fit flat against the bulkhead. Mount the bracket using three M6x1.0x20mm bolts, nuts and flat washers (both sides).

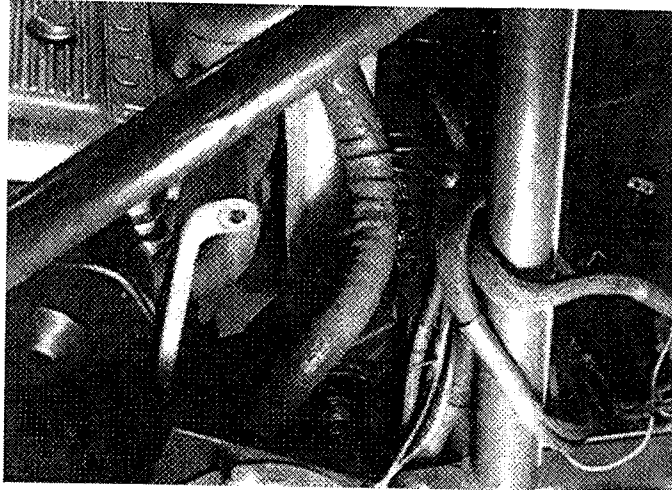


- **Note:** Locate the right side radiator tube hose (at the engine). Notice the end of the hose maintains its diameter near the engine. The “T” adapter will be installed into the hose, necessitating the hose be cut to leave approximately a three inch long piece between the water pump and the “T” adapter. The 3/4 inch port of the adapter tube will be used to connect to the coolant reservoir. Some trial fitting of the hose and adapter is recommended.



Assemble the “T” adapter (1899) and hoses and install between the water pump and coolant tube. Use hose clamps at all connections.

Cut a 17 inch length of 3/4 inch I.D. rubber hose. Connect and route the hose from the adapter up to the nipple on the #12 AN fitting which screws onto the bottom of the aluminum coolant bottle (800). Install hose clamps and then install the coolant bottle to the bracket with the rubber strap (715).



**Note:**

- **The routing of this hose should position it behind the heat shield and away from the header as much as possible. Pay attention to the location of the coolant bottle and position a short piece of slit hose on the flanges which may rub the bottle. Insulating the underside of the bottle is recommended.**
- **Locate the “piccolo tube” and trial fit into position at the stud-ended bolt at the transaxle. Note the formed hose at the forward end of the tube will fit onto the thermostat housing. The hose at the opposite end of the tube (if present) will need to be removed.**

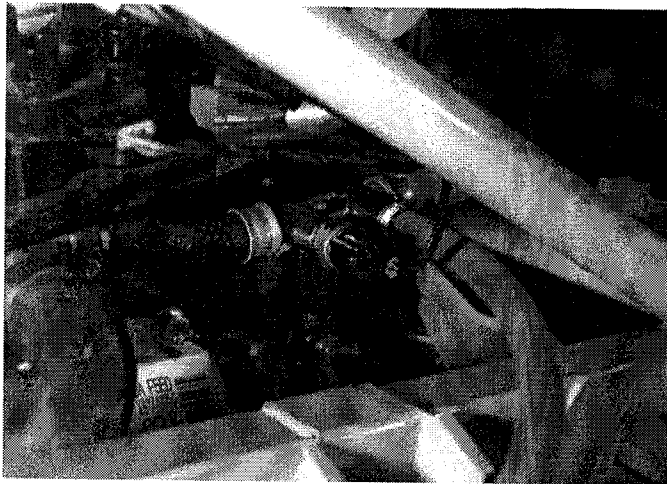
Install the “piccolo tube” (1814) with a nut and washer at the starter stud. The formed rubber hose will connect to the thermostat housing using a hose clamp.

The overflow nipple, pn 1817, is installed into the forward port of the piccolo tube. Use Teflon tape on the threads. If you have had to use the coolant temp adapter mod (outlined in the Coolant Temp Sender section of the Engine Pre-Installation Prep section), the overflow nipple is installed into the adapter previously described.

#### COOLANT TEMPERATURE SENDER

- **Note: You were given the option of installing the temperature sender earlier in the assembly process so this step may have already been performed.**

The water temperature sender will be installed in one of two locations, according to which style of engine block you have. On some blocks, the sender is directly threaded into the block, on the exhaust header side of the engine, with an allen plug currently residing in the hole.



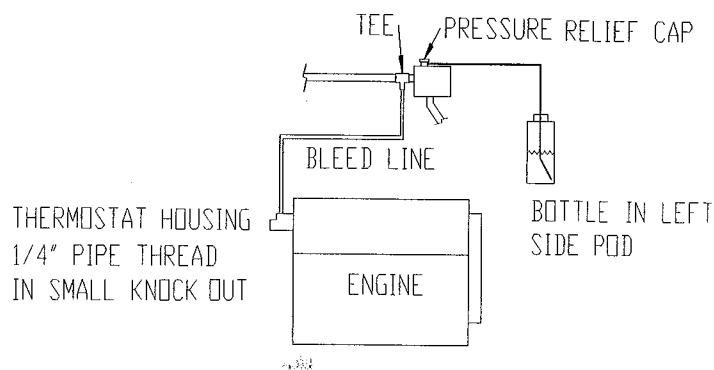
If the allen plug is not present, an alternative installation is as follows:

In the “piccolo tube”, where pn 1817 is previously installed, use a “tee” fitting with 3/8 in. NPT female threads. Install one end of the tee to the “piccolo tube” with a 3/8” NPT nipple. Install a 3/8” NPT fitting with a 1/2” barb in the opposite end of the tee. Install pn 1817 in one end of the tee and route the hose as before to the expansion bottle. In the side port of the tee install a 1/8 in. female to 3/8 in. NPT male adapter. Install the temp sender into the adapter.

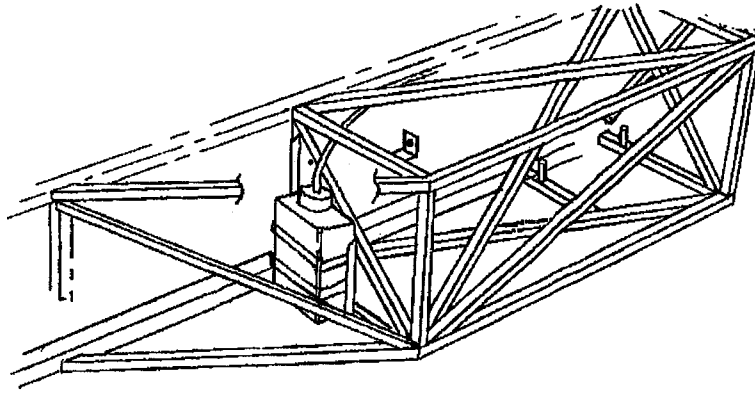
Install a 34 inch length of 1/2 inch I.D. rubber hose from the overflow nipple to the open nipple on the Aluminum coolant tank. Retain each end with a 3/4 inch hose clamp.

Remove the thermostat housing from the engine. Remove the smaller (7/16”) frost plug in the top of the thermostat and thread that hole for a 1/4” pipe thread. Install a 1/4” pipe x 3/8” hose barb in the thermostat and re-install the thermostat on the engine.

Install a tee (two 1/2” hose barbs and one 3/8” hose barb) in the 1/2” line going to the aluminum coolant tank. Connect this tee and the thermostat fitting with a piece of 3/8” hose.

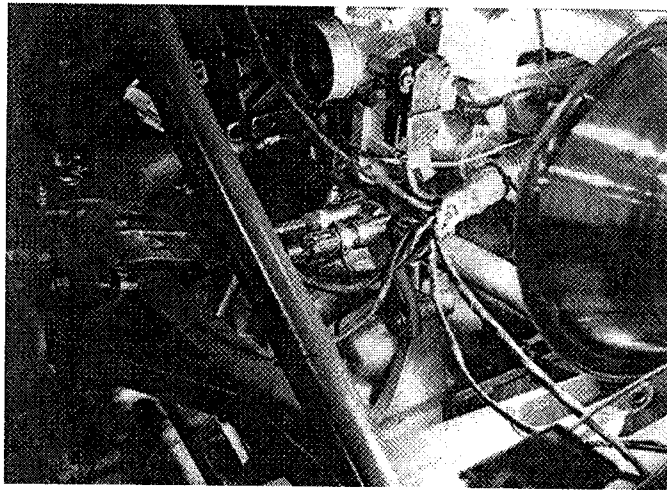


Rivet the aluminum bracket for the plastic catch bottle to the left front side pod with six 3/16” rivets. Run the 1/4” yellow hose from the barbed pressure relief cap fitting to the plastic overflow bottle using the tie-wraps provided. Be sure the yellow hose extends to the bottom of the plastic bottle.



Left Side Pod – Looking Towards Rear

Plug the harness connector into the coolant temp sensor.



Install a 32 inch length of 3/4 inch I.D. rubber hose at the open end of the piccolo tube, across to the port near the water pump. Route the hose under the intake manifold. Install hose clamps at each end.

Locate the left radiator hose, pn 1801. Note the hose position between the left radiator tube and the thermostat. The hose should be trimmed 5/8 inch shorter at the thermostat end so the frame and hose will not rub. Install the hose and retain at each end with a 2 inch hose clamp.

The left rear side pod cover should be installed at this time.

### **ELECTRICAL/ WIRING**

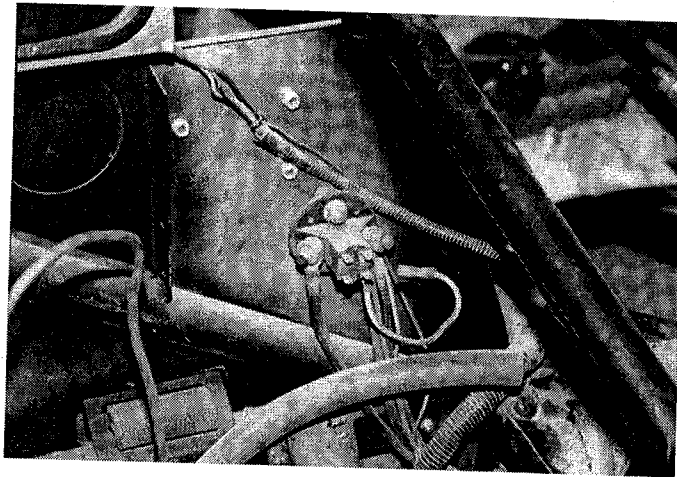
#### **Note:**

- **1. This system MUST have good electrical grounds. Every precaution should be taken to insure that all electrical system grounds are secure and functional. Use the wiring diagram provided to check for continuity from the harness to its ground. Always remove paint from frame at contact points for grounds.**
- **2. This system MUST have at least eleven volts to operate. A low battery or defective charging system may cause ignition failure or poor engine performance.**

- 3. Turn off the main kill switch whenever the car is expected to sit for any period of time. With power on the battery will discharge slowly through the EEC system.
- 4. A shorting plug has been provided to adjust ignition timing for lower than recommended octane fuels. This plug is located near the EEC module and has two wires running to it. These wires should be Red w/ Black tracer and Gray w/ Pink tracer. If any indication of spark knock is present, remove the gray shorting plug to reduce the ignition timing by three degrees. For optimal performance on recommended octane fuel, this plug should remain in place.
- 5. The computer is capable of diagnosing many ignition and fuel related problems. Procedures for conducting these tests are provided in this manual.
- 6. **ALWAYS DISCONNECT THE EEC PLUG, MAIN ENGINE PLUG AND BATTERY CABLES WHEN WELDING ON THE VEHICLE.**
- 7. Pin #9 of the engine harness (see wire diagram) is the main ground for that harness. It should be possible to read continuity between pin #9 and any part of the engine block. This pin should also show continuity to the chassis. Always look for this ground when troubleshooting the electrical system.

### MASTER (KILL) SWITCH

The master kill switch mounting holes are located on the rear bulkhead, just above where the driver's right shoulder would be. Insert the master switch (516) through the bulkhead so the key-way for the switch handle is up. Bolt the master switch to the bulkhead.



The key to the master switch is provided with the switch. It is wise to tether the key to the bulkhead at, or near the master switch. Leave the key out of the switch during assembly (in the OFF position).

### WIRING HARNESES

Install the two rubber grommets (204) in the right cockpit aluminum panel in the holes beneath the front roll bar hoop. The grommets may be slightly oversize for the holes. If this is the case, radially slit and trim the grommets to fit the holes, while still providing adequate protection for the wiring harnesses. Feed the fuse panel harness and brake light harness through the upper hole. The grommet may have to be removed and reinstalled while feeding the panel and its harness through the hole.



Using the fuse panel as a template, position the fuse panel so the top mounting hole is 1&1/2 inch below the bulkhead pop-rivet located just below the front roll bar attaching tube. Drill two 3/16 inch holes and secure fuse panel with two #12 sheet metal screws.

- **Note: The panel could conceivably be mounted either-way up, so it is important to note the wire colors and top to bottom order. The fuses will correspond to the following wires at the fuse panel: large yellow & small blue: 5 amp. for alternator; Pink: 10 amp. for gauges; Blue: 15 amp. for rain light; Pink and red: 20 amp. for ignition.**

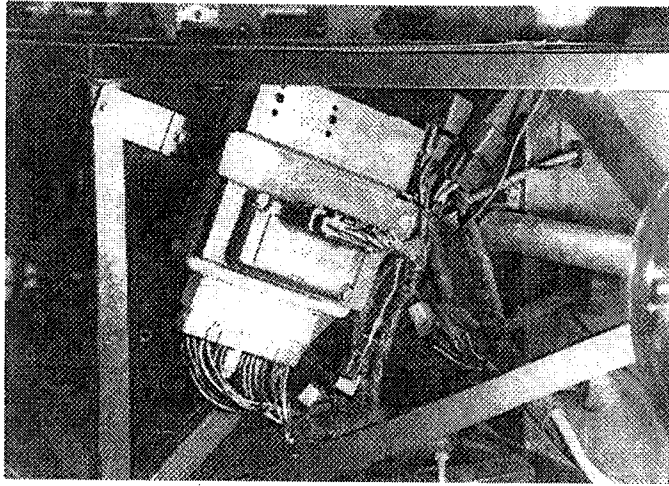
Route the fuse panel and battery harnesses together along the right side frame between the coolant tube and upper frame rail. The battery (forward) end of the battery harness is the end with only two connectors and is the longest end.

Install three insulated 1 1/2" p-clips over the harnesses, located at the three pre-drilled holes in the upper right main frame tube. Screw the clips to the frame, hanging the harness from the clips.

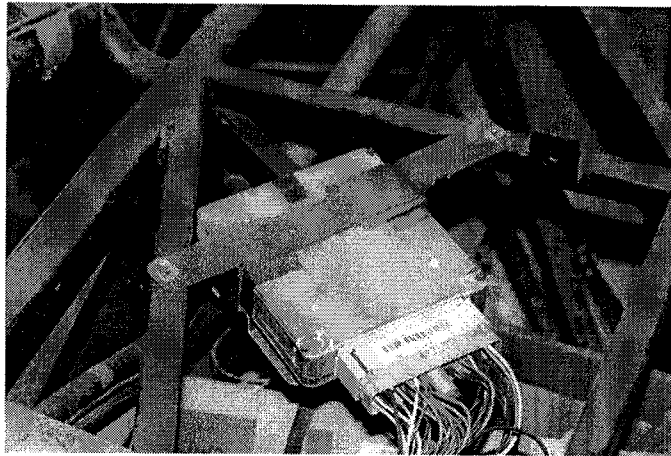
Locate the EEC module and its brackets p.n's. 2001 and 2002. The EEC module will fit into the brackets very snugly after wrapping two pieces of rubberized tape around the sides of the module. Center the unit making sure the rubber tape is clamped between the EEC module and the bracket. The two sides of the bracket can be bolted together with 6mm bolts.

Mount the EEC assembly to the frame just behind where the battery will go; right side forward end of the side pod. The EEC can be mounted either forward of, or behind the side pod diagonal. The assembly should be mounted with the EEC plug pointing down, with enough clearance to permit attaching the chassis harness plug. Secure the assembly to the frame with two large head pop rivets (936). Plug in the EEC module using the center retaining bolt. **DO NOT OVER TIGHTEN!**





The EEC module may alternately be mounted horizontally on the top side of the frame as pictured.



**Note:**

- **1. The EDIS module may be mounted to the frame or EEC bracket. The two relays (EEC and fuel pump) can be tie-wrapped in place or mounted to the frame. A vibration insulating mounting is preferred.**
- **2. These components and connections can be sensitive to water. The use of a plastic bag or similar covering, although not specifically recommended by Roush, can help these units stay dry. Allow adequate venting.**
- **3. The plug with the cover marked "EEC TEST" is used to plug diagnostic testing equipment into. This plug should be accessible with only the removal of the nose bodywork.**

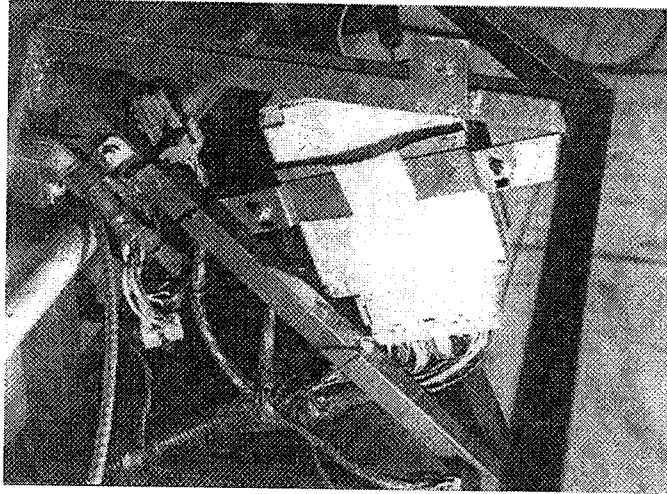
Route the brake light harness along the forward roll hoop, secured with tie-wraps, and plug into brake light switch. It makes no difference which color wire goes to which terminal. Keep brake light switch wires away from foot area.

Route the Ford chassis harness through the right side pod from the EEC module to the engine bay along the main frame rail. The harness may be secured in the side pod with P-clips or tie-wraps as required.

Locate the individual RED and BLUE wires near the EEC main plug. Route these wires through the rubber chassis grommet just below the fuse box. Secure the red wire, with its end towards the left side of the cockpit and temporarily out of the way.

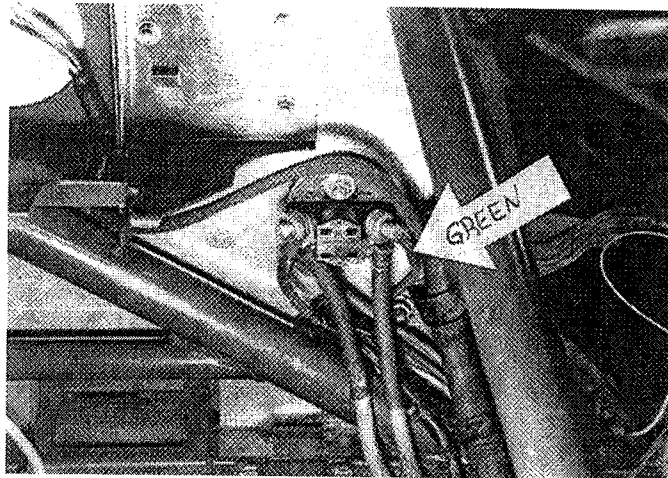
- **Note: The RED wire (with eyelet) will be spliced to the yellow wire “key on” power side of the ignition switch. The BLUE wire (with spade connector) will be spliced to the brown tachometer wire..**

Plug in the EEC relay (BROWN) and fuel pump relay (GREEN) and EDIS module. The plugs are keyed to prevent them from being installed incorrectly.

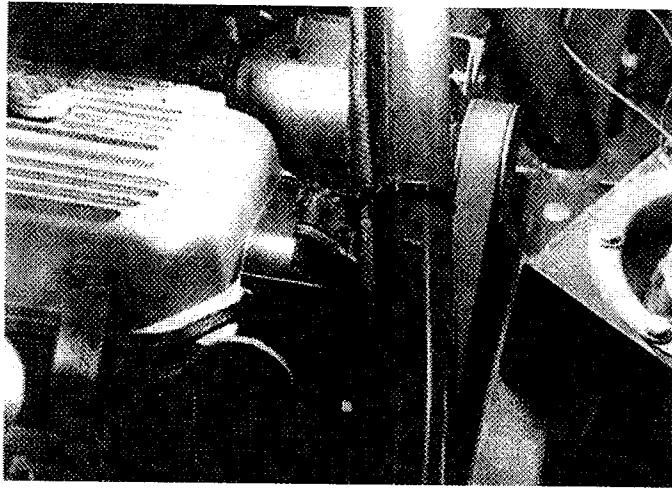


At this time, locate the two, black ground wires near the EEC. One comes from the EEC harness and the other from the fuse panel harness. Ground these black wires securely to the chassis. Use a ¼-28 x 1 ½” bolt, 2 washers and a nylock through the eyelets and be sure to clean the paint from the chassis at the point of contact.

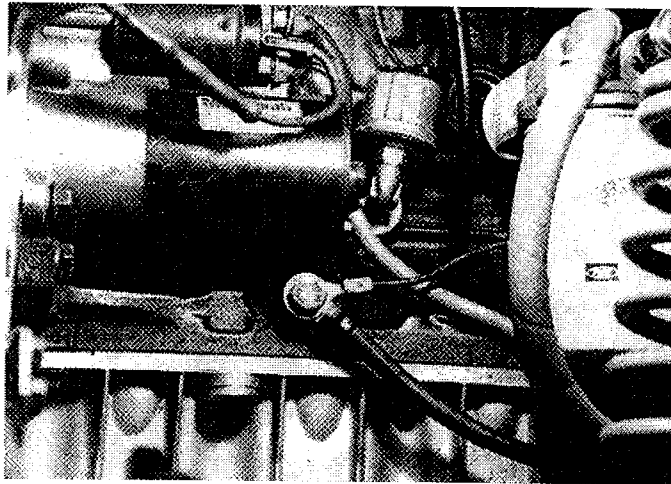
Route the EEC power wire (long, black-taped wire which separates from the harness near the engine bay end of the harness now laying in the sidepod floor) up to the main kill switch.



Route the main power cable up to the master switch and connect this red cable to the inboard post on the master switch. The EEC power wire (mentioned in step previous) should also be installed on the same post.



The ground cable from the battery should be bolted to the engine block, at the lug beneath the starter. If this lug is not drilled, bolt the cable to the lowest bolt on the large, cast engine mount.



The red starter power cable (with yellow band) and green alternator wire should be connected to the outboard master switch post. The other end of the starter cable is connected to the post on the starter solenoid.

The green #10 wire coming out of the chassis wiring harness should be connected to the outboard side of the master kill switch mounted on the fire wall.

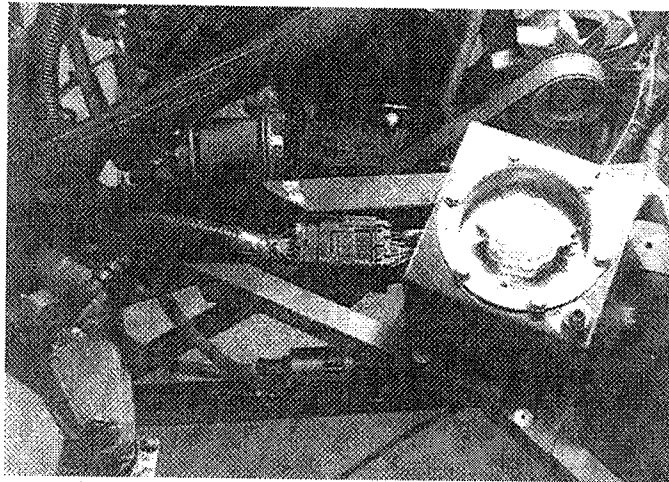
Use the white jumper wire to connect the inboard post on the master kill switch (mounted on the fire wall) to the inboard lower spade terminal on the same switch. The red #10 wire with spade end will connect to the other outboard, lower spade terminal on the master kill switch

The light green wire that comes out in the engine compartment connects to the coolant temperature sensor. Tie-wraps should be used to secure these cables to the frame as necessary, using care to route the cables away from moving parts or potential chafing points.

Install the fuel pump leads to the connections on the pump. The green wire, with yellow tracer, connects to the ( + ) positive and the black wire connects to the ( - ) negative.

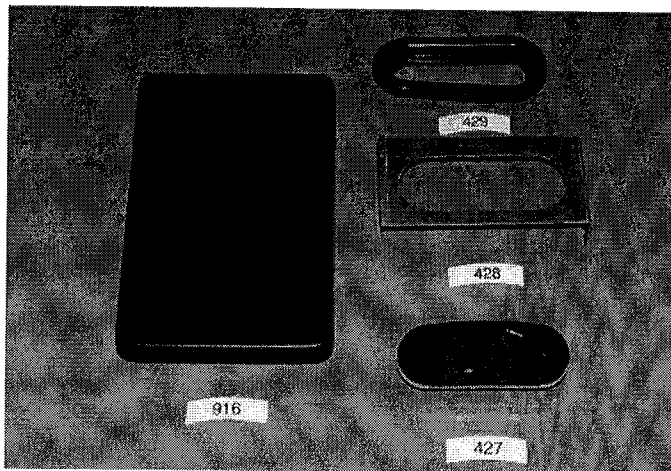
The Blue starter solenoid wire connects to the starter at the solenoid connector. Tie-wrap the wire to keep it in place on the solenoid.

Route the 60 pin connector from the engine wiring harness under the roll bar down tube near the right engine mount. Plug the 60 pin connector to the Ford chassis harness using the center retaining bolt.



### **HEADREST and TAILLIGHT**

Install headrest (916) to the plate located near the top center of the rollbar using two 1/4 20 x 3/4" bolts, with both a flat washer and a lock washer.



Locate the taillight (427), taillight housing (428) and grommet (429). Install the grommet fully around the taillight. Then, take the light and grommet and install into the taillight housing. A silicone spray lubricant will ease the installation.

Attach the taillight wire harness connector to the taillight. The wiring harness for the taillight will need to be routed behind the coolant bottle.

Attach the taillight housing assembly to the frame, on the rear side of the rollbar, at the bracket provided, using four sheet metal screws (666).

### **ALTERNATOR**

Remove the alternator pulley and install the new larger pulley provided.

- **Note: Alternator belt tension adjustments will be accomplished more easily if wrench-sized flats are carefully filed or ground into the alternator strut at the end of the strut installed closest to the alternator..**

Locate the alternator adjusting strut, pn 1403. Thread a jam nut onto one each L and R handed 5/16 inch rod end. Install one 5/16 inch rod end (w/ jamnut) in each end of the strut. **BE CAREFUL** to not cross thread the rod ends on the strut.

Install the adjusting strut to the alternator ear with a M10x1.25x40 bolt, locknut and flat washers.

Place the alternator approximately in its installed position, to allow the wiring to be connected. Attach the brown wire and yellow wire (with push-on connectors) to the spade terminals on the alternator. Connect the green wire to the alternator "B+" post, install nut and tighten. Connect black wire to alternator "B-" post, install nut and tighten.

The black pigtail wire (with loop connector) should be grounded to the alternator bracket.

Install the alternator to the alternator bracket using a M10x1.5x120mm bolt, locknut and washers. Do not tighten at this time.

Install the loose end of the adjusting strut in the slot provided on the alternator bracket and retain it with one M8x1.25x40mm bolt, lock nut and flat washer.

Position the alternator belt on the crankshaft pulley and alternator pulley. Turn the adjusting strut until the desired tension on the belt is reached. Tighten the jam nuts against the adjusting rod. Tighten long alternator bolt (alternator to bracket).

## **FUEL FILLER**

- **Note: Locate the fuel filler neck, pn. 643. The neck has a small drain tube at the base of the neck. This tube is prone to plugging with tire debris, due to its small diameter. Drilling a 1/4 inch hole at the drain tube location, thereby eliminating the tube, will allow excess fuel to drain.**



Bolt the filler neck assembly to the filler neck bracket, pn 1917. Orient the neck in the bracket so the drain hole will be at the lowest possible point, once the neck and bracket assembly is attached to the frame. The fuel filler cap has a lanyard, which should be secured at one of the bolts. Install cap on filler neck.

Position the filler assembly onto the frame; note the angles cut in the bracket match the frame tubes. Drill and pop rivet the assembly in place, using large head pop rivets (936).

Install the filler hose to the filler neck, (after removing tape over end of hose installed earlier) routing it under and around the frame tubes. Retain the hose to the filler neck with two 2 and 1/2 inch hose clamps.

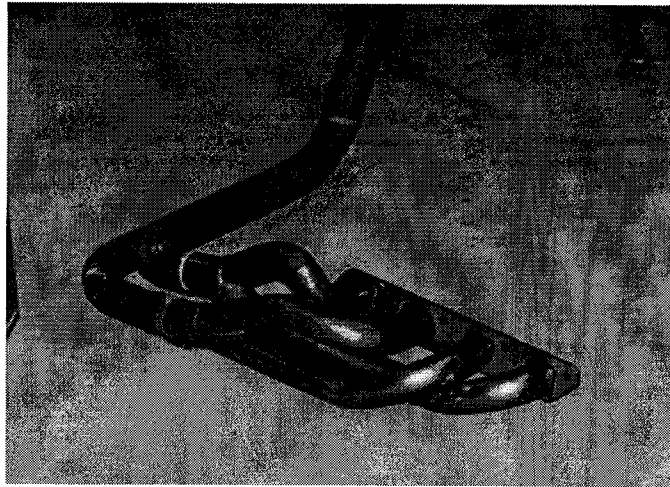
Install the vent hose (assembled in an earlier step) with the 45 degree fitting at the vent fitting on the fuel cell.

Install the rollover valve to the vent hose. The arrow (if present) on the valve must point toward the fuel cell.

- **Note: Be sure you can blow into the fuel cell through the rollover valve.**

## EXHAUST SYSTEM

Install the oxygen sensor, pn 1608, into the boss provided in the header. Plug the harness connector into the oxygen sensor.



- **Note: The threads in this boss may need cleaned to allow the sensor to be fully threaded in. It is recommended to use a small amount of anti-seize on the threads.**

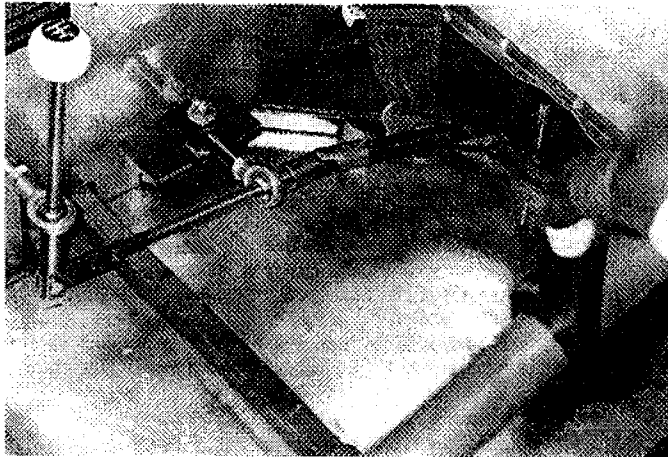
Install the exhaust and tail pipes, sliding them together until the tabs line up. Retain with the lock nuts and bolts provided. It is recommended to safety wire the locknuts.

- **Note: The tail pipe should be approximately level and parallel to the frame. If it is not, apply pressure to the end of the pipe to reshape the header tabs.**

~~The rubber tailpipe isolator should be cut in half lengthwise at this time.~~ Install the ~~1/2~~ isolator between the stud on the tailpipe and the stud on the frame.

**Note: The oxygen sensor connector has four wires going to it. One wire (gray w/ yellow tracer) is the power wire for the heater element in the sensor. Powering the heater element will drain the battery when the car is not in use. To eliminate this problem, cut the gray w/ yellow tracer wire flush with the O2 sensor and then tuck the wire back into the wire cover for protection.**

## SHIFTER ASSEMBLY

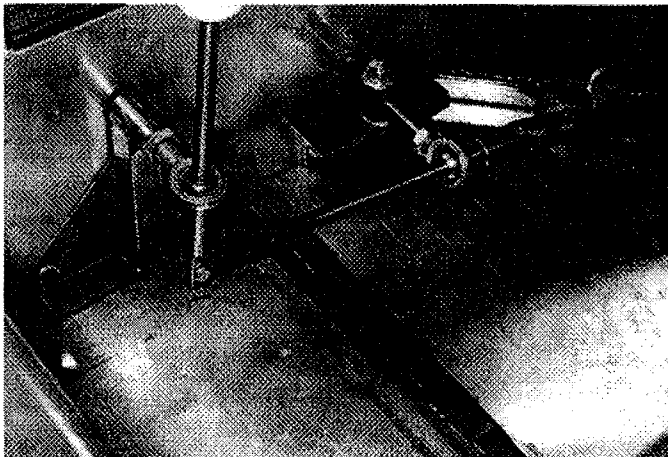


Install a jam nut , pn 2501, onto each rod end, pn 2525. Thread each jam nut completely onto the rod end.

Thread one rod end into the shifter support bracket, pn 2546, until approximately 1/4 inch of the threads are exposed.

Install the shift lever, pn 2541, into the shifter support bracket rod end so that the shift lever seats against the bottom of the rod end.

Slide a metal bushing, pn 2505, over the threaded end of the shift lever and position it in such a manner that the lower half of the bushing is contained in the rod end sphere. Install a metal snap ring, pn 2524, in the exposed shift lever snap ring groove to "lock" the shift lever into the rod end sphere.



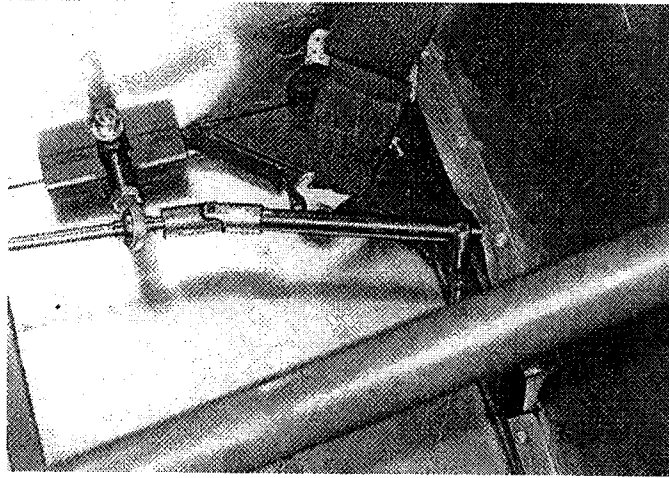
Mount the shifter support bracket to the forward set of holes in the lower frame rail using the hardware provided. Make sure you have installed the backing plate before tightening the nuts.

Install a snap ring, pn 2524, into the second snap ring groove on the forward shift rod, pn 2542. Slide a bushing, pn 2505, onto the forward shift rod so that it is positioned against the snap ring that was just installed.

Insert the forward shift rod (with snap ring and bushing installed) into the second rod end. The shift rod should be positioned so that the bushing is retained by the snap ring on one side and inserted into the rod end sphere on the other.

Slide a bushing, pn 2505, onto the forward shift rod so that it is inserted into the other side of the sphere. Secure the entire assembly by installing a snap ring into the first snap ring groove.

Install the front universal joint, pn 2502, onto the rear of the forward shift rod. Position the u-joint so the holes for the roll pin line up with the holes in the shift rod. Secure the u-joint to the forward shift rod by installing a roll pin, pn 2510.



Install the rear shift rod, pn 2504, into the other end of the u-joint, aligning the roll pin holes in the rod to the holes in the joint. Install a roll pin. Install the rear u-joint and roll pin to the rear shift rod.

Install the shifter pivot arm (2540) onto the rod end that contains the forward shift rod. The rod end should be threaded in until approximately 5/8 inch of the threads are exposed.

Install a washer, pn 2511, onto the stud of the pivot support bracket, pn 2545. Install a nylon bushing, pn 2536, into both ends of the shifter pivot arm, pn 2540. Insert metal crush sleeve bushing, pn 2513, into the shifter pivot arm.

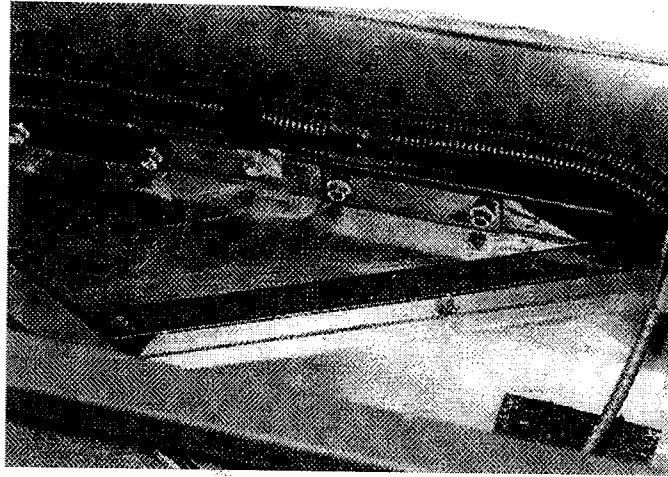
Slide the entire shift rod assembly into place in the car, feeding it in from the drivers compartment, through the hole under the fuel cell, and underneath the engine. Be careful not to hit any parts already in place in the engine compartment.

Slide the shifter pivot arm (with bushings and crush sleeve installed) onto the stud of the pivot support bracket.

Install a washer, pn 2511, and a lock nut, pn 2512, onto the pivot support bracket stud and tighten sufficiently to provide a snug fit, but not so tight as to prohibit the shifter arm from pivoting on the shifter pivot stud.

Mark and drill two holes (5/16 in. dia.) in the frame rail in order to mount the pivot support bracket. The center lines of the holes should be 5 1/2 inches and 9 1/2 inches rearward of the center line of the rear bolt of the shifter support bracket.



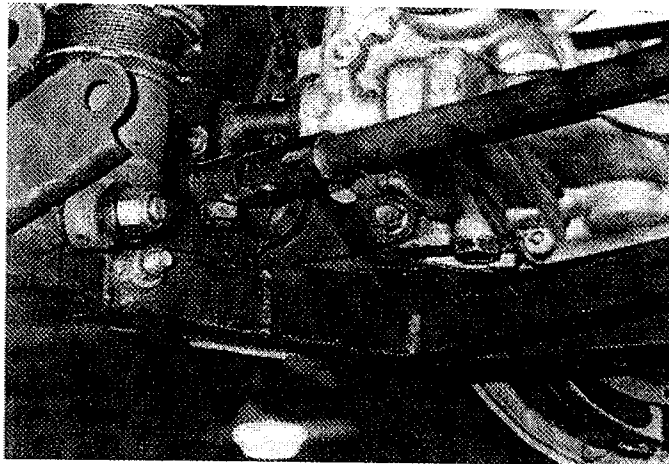


Mount the shifter pivot support bracket to the frame using nuts, bolts, washers and backing plate, pn 2508. Tighten these bolts.

Install the metal bushing, pn 2514, into the front hole of the forward shift rod and rotate the shift rod so that it can be inserted between the legs of the shift lever. Align the holes in the shift lever with the hole in the bushing.

Insert the bolt, pn 2515, through the aligned holes and install the lock nut, pn 2517. Tighten the bolt sufficiently to provide a snug fit, but not so tight as to prohibit the shift lever from pivoting relative to the front shift rod.

Install the shift shaft bolt through the tube on the end of the selector shaft at the transaxle. Slide the fishmouth washer up the bolt and then position the rear u-joint so the bolt goes through the hole. Install the washer, nylock nut and tighten the nut.



Thread the shift lever jam nut, pn 2526, and shift knob, pn 2599, onto the shift lever. Tighten the jam nut against the shift knob.

Test the shift pattern and make any adjustments for gear selection and personal preferences with regard to shifter effort and feel.

Tighten jam nuts on both rod ends. Make sure the rod ends are positioned so that shift lever travel is not inhibited.

- **Note: It is recommended to remove excess lengths of the installed roll pin so that the ends are flush with the outside of the u-joint to avoid snagging anything on the roll pins. Safety wire or tack welding of the roll pins is recommended to keep the roll pins in place. Periodically check the roll pins and u-joints for wear. Any looseness in the linkage will cause gear selection difficulty.**

## **SEAT INSTALLATION**

Edges of the seat belt holes in the seat must be smooth to prevent cutting of the seat belt. It is recommended that 1/4" or 5/16" Dia. rubber hose be split and fitted around the inside edges of the holes.

Set the seat and seat supports in the car. Mark holes to be drilled in the seat from the holes in the aluminum support brackets. Remove the seat and drill the holes.

Position seat (272) in the drivers compartment. Feed the seatbelts through the slots in the seat.

Rivet the support securely to the seat using 4 - 3/16 large head rivets and backup washers.

With the seat firmly positioned against the rear bulkhead, locate the three predrilled 1/4 inch holes in the R.H. diagonal frame tubes. Using these holes as pilots, drill through the sheetmetal, seat flange and the seat support.

Fit the 1" x 14" x 1/8" aluminum strap flush with the top edge on the right side flange of the seat. Insert the six hex head bolts (731) through the holes previously drilled and install flat washers, lock washers and nuts (392, 380, &375). Do not tighten at this time.

Drill two 1/4 inch holes through the top rear seat flange and frame cross tubes.

- **Note: Locate the left top seat flange hole as far to the left (outboard) of flange as possible**

Install bolt (574) through the flange and tubes using flat washer and nut (392 & 577). Using care, tighten rear and side mounting bolts slowly to allow the seat to take a set.

Tighten left side mounting bolts.

Drill a 1/8 inch hole through the left side lower seat flange and top surface of the crotch seat belt attaching frame tube. Install washer and screw (068 & 726) through the flange and into the frame tube.

Check installation carefully for loose fasteners. Check seat belt position for chafing.

## **ENGINE & PERIPHERAL SYSTEMS**

### **OIL COOLER SYSTEM**

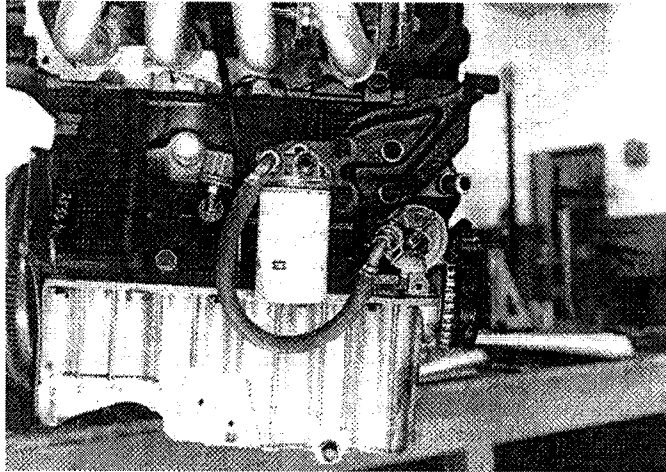
- **Note: All pressure hoses use socketless fittings. Simply cut the hose to length and fully insert the barbed end of the fitting into the hose. According to the manufacturer, no clamp is required, however, clamps may be installed at the discretion of the owner.**

Install two 3/8NPT to -8AN fittings into the remote oil filter housing. Use Teflon tape.

Install the 1/2NPT to -8AN 45 degree fitting into the "IN" marked side (the one closest to the center) of the oil filter spin on adapter.

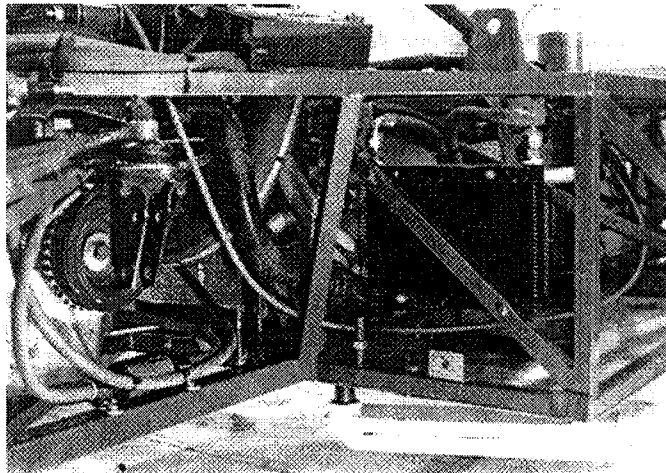
Install the 1/2NPT to -8AN straight fitting into the “OUT” marked side of the oil filter spin on adapter.

Use a 15 inch length of blue AeroQuip FC332-08 hose and two 90 degree fittings to connect the “IN” marked side of the remote filter housing to the “OUT” marked side of the oil filter spin on adapter. The hose will loop down from the oil filter housing and will have to clear the right side half-shaft, to be installed later.

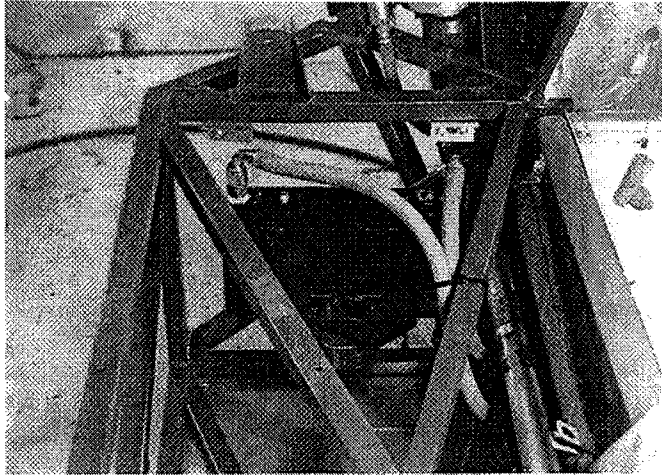


Install two 1/2NPT to -8AN fittings into the oil cooler. Care should be taken to not damage the oil cooler. Use teflon tape.

Mount the cooler to the diagonal frame brace in the rear of the right side pod. Trim the cooler duct to fit over the cooler. Position the cooler duct and mark the mounting holes for the duct location.



Drill the holes and secure the duct with the same bolts that mount the cooler. The cooler duct will need to be trimmed to fit against the oil cooler. The cooler may be mounted to the frame in such a manner as to isolate the cooler from vibration.

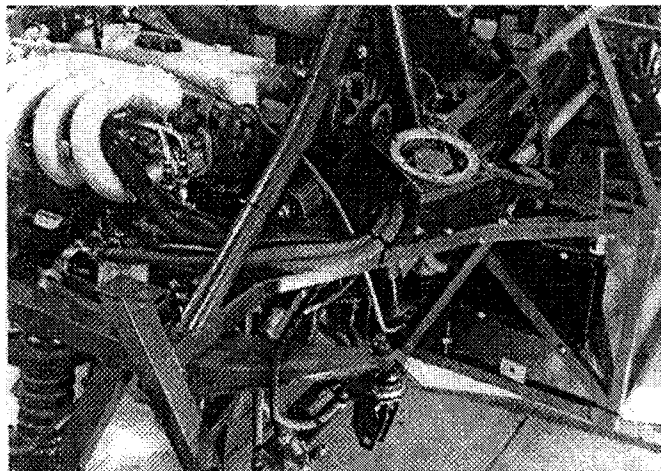


Install a 24 inch length of three inch I.D. flexible hose to the duct with a hose clamp. The other end of the hose will connect to the NACA duct in the body center section.

At the “OUT” marked side of the remote filter housing, install a 60 inch length of blue AeroQuip FC332-08 hose, with a 90 degree fitting at each end. The other end of this hose should be connected to the oil cooler. Route the hose along the upper right frame rail, under the fuel filler.

At the “IN” marked side of the oil filter adapter, install a 50 inch length of blue AeroQuip FC332-08 hose, with a 90 degree fitting at each end. The other end of this hose should be installed to the oil cooler. Route the hose alongside the other oil cooler hose. Retain both hoses with tie-wraps or p-clips.

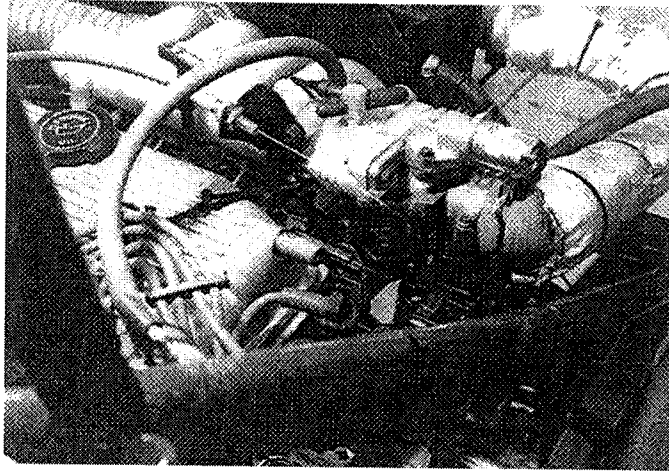
Be sure all oil line connections are secure before continuing assembly.



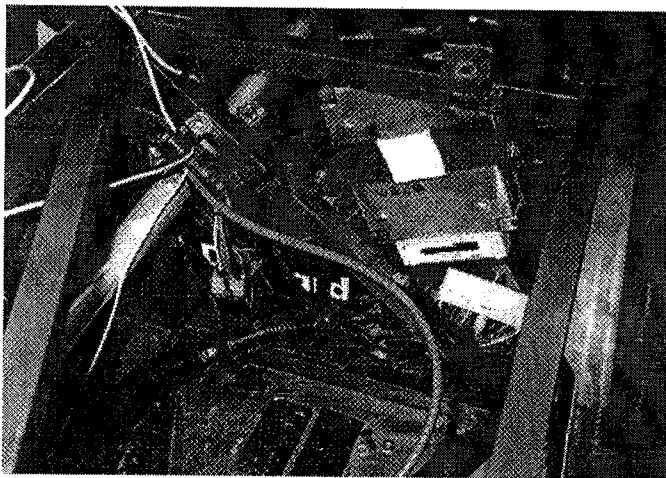
Cut an opening in the right rear side pod cover (approx. 8 high x 9 inches wide maximum) directly behind the oil cooler. Install the oil cooler panel (PN 480505) over the hole and flush with the bottom of the side pod cover. Install rear sidepod cover with pop rivets.

## **THROTTLE CABLE**

Install the throttle cable barrel in the cam lever on the throttle body. Route the cable over the top of the cam. Mount the cable in the bracket provided with one lock nut on each side of the cable. Temporarily finger tighten the nuts.



Route the cable under the rear roll bar and through the clearance slot in the right rear side pod cover. Continue to route the cable along the frame, through the hole in the side panel (above the fuse box) and to the accelerator pedal. Secure the cable in the bracket provided with one nut on each side of the bracket.



Install the jam nut and rod end on the pedal end of the cable. Secure the rod end to the pedal. Cleaning the threads on the pedal may be necessary to install the nut.

Adjust all the slack out of the cable near the throttle body, using the nuts at each end of the cable.

Adjust the pedal stop to contact the pedal just as the throttle butterfly reaches full open. The cable should not be stretched. Tighten all adjusting nuts.

## **AIR BOX INSTALLATION**

Locate the air box and air box mounting bracket, pn 2202. Refer to photographs for air box and bracket orientation. Note the position of the bracket on the air box.

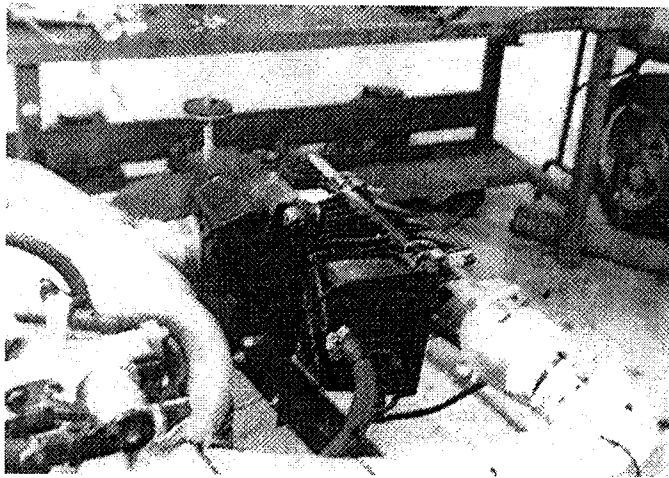
### **Note:**

- **1. The box has a mounting tab on its upper surface which will need to be cut off to clear the bodywork. Also, the fins around the inlet snorkel of the air box will need to be cut away to allow the inlet air hose to be installed in a later step.**

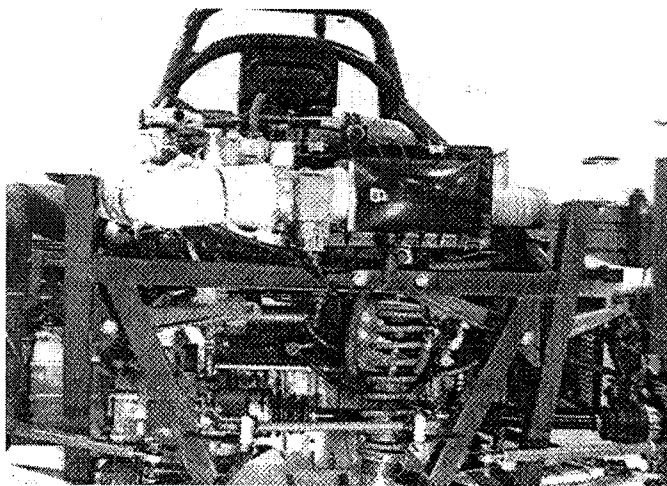
- 2. The air box may be painted any color, however, insulation, coatings or other modifications are not allowed.
- 3. It is recommended to drill two 3/16 inch holes in the floor of the airbox to allow water to drain. These holes should be drilled behind the lower clips, so the clips cover the holes, but will not prohibit drainage. The holes must be on the intake side of the filter, not the exhaust side.
- 4. The only legal replacement air filter is a Motorcraft pn. FA-1031

Install the mounting bracket on the air box with two M10x1.50x30mm bolts, locknuts and flat washers. The support ribs on the bracket face away from the air box.

Locate the air box bracket on the inside edge of the rear frame rail. The right end of the air box is to be no less than 5 inches from the inside edge of the right frame rail, and as low as possible. AIRBOX LOCATION IS A COMPLIANCED DIMENSION.



Drill two 8mm holes through the rear frame rail and mount the bracket using two M8x1.25x60mm bolts, locknuts and washers.



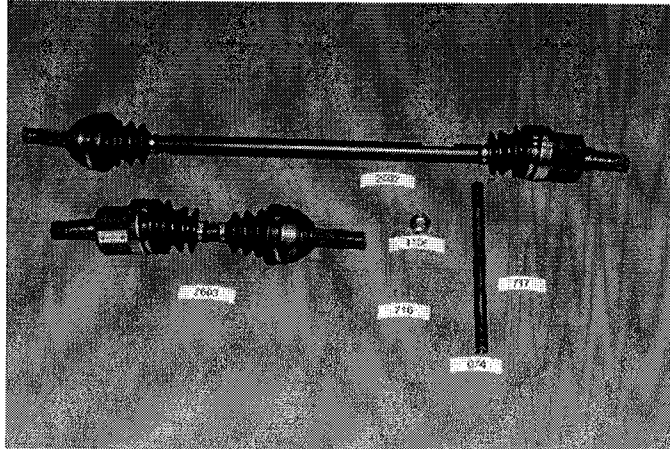
Plug in the air meter (at the air meter) and air temp sensor (at the bottom of the air box) connections and secure the wiring to the frame rail with tie-wraps.

## ENGINE BREATHER SYSTEM

Cut a length of 5/8 inch I.D. hose. Insert one end of the hose on the open nipple of the engine valve cover and retain it with a 1 inch hose clamp. Route the hose so it travels up and loops back to the airbox nipple, to form an oil trap in the hose. Retain the hose at the air box with a 1 inch hose clamp.

## REAR SUSPENSION

- **Note: Refer to front suspension section for assembly and location of major components. Right rear components install essentially the same as left front and left rear as right front.**



The rear axles will have to be installed during the assembly sequence, before the lower ball joint stud is installed into the lower control arm rod end.

Tap lightly on the inner CV joint with a soft mallet if necessary, to seat the shaft completely into the transaxle.

Before completing the upright-to-lower-rod-end step, install the outer end of the axle through the hub and install (507) washer and (1106) nut. Torque rear axle nut to 150 ft. lbs.

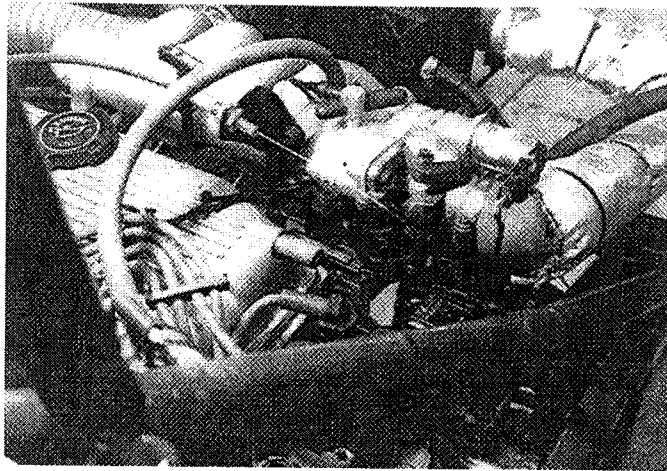
Rear toe links (074) use rod ends instead of clevises where the link attaches to the frame. Bumpsteer is set using combinations of washers (716 and 717). The outer end uses tie rod ends attached as in the front suspension.

- **Note: The transaxle filler plug (speed sensor in road car application) is retained with the fork and bolt provided. Instructions showing the proper transaxle fluid level are cast into the transaxle. The gear at the end of the fill plug / speed sensor may be removed from its shaft with the removal of the circlip.**

The transaxle can now be filled with fluid. Dextron II fluid is recommended. (3 quarts)

## AIR INTAKE

Locate the air inlet scoop, pn. 2803, and mount it to the right air inlet duct with two pop rivets. Install the inlet hose (2212) between the air box and scoop with two 2 1/2" hose clamps. Install the other air hose (2209) between the mass air meter and the throttle body with a 2 1/2 " hose clamp and a 3" hose clamp. The tight 90 degree bend end mounts on the throttle body.



**Note:**

- **1. Adding heat reflective material to the hose from the mass air meter to the throttle body is permissible and strongly recommended. It is also recommended to add protection to the inlet hose to prevent damage from the body. DO NOT SHORTEN THIS HOSE.**
- **2. The only legal replacement air filter is Motorcraft part number FA-1031.**

#### **GAUGES AND SWITCHES INSTALLATION**

- **Note: Use caution when installing instrument panel components to protect the painted body section. The center section of the body will need to be in place on the car to make the electrical connections.**

Mount the ignition switch (476) into the opening on the left side of the instrument panel (I/P). Install switch guard (475) on the ignition switch.

Install the oil pressure gauge (477) in the opening on the left side of the I/P. Install the tachometer (480) in the center opening and the water temperature gauge (479) in the right side opening.

Install the starter button (481) in the lower opening on the right side of the I/P. Install the alternator charge light (480) in the upper opening on the right side. The light is held in place with a small clip (provided) pressed into place from behind the I/P.

Install the rain light switch in the lower left hand corner of the I/P. You may need to drill the hole out to fit the switch.

Starting at the alternator charge light (480) and working your way across the I/P, connect the I/P harness as follows:

1. Brown and blue wires go to the alternator charge light. Both wires coming from the charge light are yellow. The brown and blue wires are not particular to either yellow wire.
2. Heavy gauge red and blue wires with eyelets go to the screw terminals on the starter button. Tighten screws securely.
3. On the water temperature gauge, the black wire goes to the ground (-) terminal, pink wire goes to the positive (+) terminal and the light green wire to the signal (S) terminal.
4. On the tachometer, the black wire goes to the ground (-) (#3) terminal, the pink w/ black trace wire goes to the positive (+) (#2) terminal. The brown wire in the I/P harness goes to the signal (S) (#4) terminal. The light blue wire



from the EEC harness must be fed through the grommet alongside the I/P harness and goes to the signal (S) (#4) terminal or is spliced into the brown wire which goes to the (S) (#4) terminal.

5. On the oil pressure gauge, the black wire goes to the ground (-) terminal, the pink with black trace wire goes to the positive (+) terminal and the tan wire to the signal (S) terminal.

6. The remaining pink wire connects to the ignition switch (516) on the “key-off” side of the switch. The yellow wire, previously routed from the EEC harness to the I/P area should now be located and spliced to the red wire. The red wire is connected to the “key-on” or “switched” side of the ignition switch. The green wire and the light blue wire connect to the rain light switch. Tie-wrapping the entire I/P harness in place is recommended.

## CLUTCH AND BRAKE BLEED

There are several methods to fill and bleed the hydraulic control systems (brake and clutch). If you have access to a pressure or vacuum bleed system, follow the manufacturer’s instructions. If the above equipment is not available, two ( 2 ) people will be required when bleeding and adjusting the clutch and brake systems.

A section of 1/4 inch clear vinyl tubing 12 to 18 inches long (available at most auto parts and hardware stores) and a clear container to catch the fluid during bleeding will be needed to catch excess fluid. Always use the boxed end of the wrench when turning bleeder screws.

Fill both front and rear brake master cylinders. Install two lug nuts (530) on each hub assembly to position the disc brake rotors on the hubs. Attach the clear tube to the right front caliper bleeder screw.

Fill the clutch master cylinder with brake fluid and bleed the system. Adjust the clutch pedal stop to contact the pedal just after fully disengaging the clutch. DO NOT overstroke the clutch. There is far more travel in the pedal, than what is required to operate the clutch. When the pedal effort diminishes, the clutch is fully dis-engaged.

- **Note: If the wheels continue to turn with the engine running, the rear end jacked up and the clutch depressed in gear, the clutch is being overstroked. Adjust the stop to just disengage the clutch or stop the wheel movement, when the car is in gear.**

With the clutch pedal fully depressed, check the clutch line connections at the master cylinder, bulkhead, rear line to slave cylinder hose and the slave cylinder for any signs of leakage. Correct as required.

## ALIGNMENT

Place the car on a level surface, preferably with scales under each wheel. Set the shocks at full soft. Turn the adjuster in the eyelet clockwise until it stops (full hard setting). Turn the adjuster counter clockwise three turns (18 flats) to the full soft setting. Disconnect one link on each swaybar. Lock the steering in a centered position.

Every track and driver uses different settings. The following suggestions are to establish a starting point.

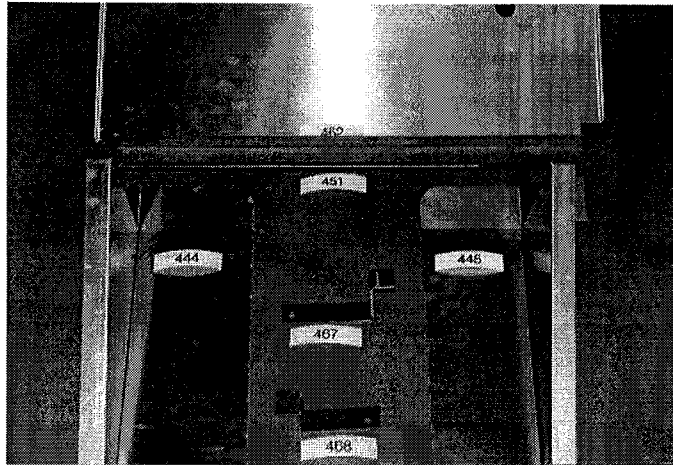
Front ride height (front corner of frame)	2 ¾” minimum to 3 ¼”
Rear ride height (rear corner of frame)	3” to 4”
Front toe	1/32 toe out
Rear toe	1/32 toe in
Camber	3° negative
Caster	2° negative
Tire pressure	24 PSI cold

Reconnect sway bars and “zero” them to remove any preload.

**Note: All suspension and steering fasteners should now be tightened and rechecked for tightness.**

## RADIATOR BAFFLE INSTALLATION

Install the one inch foam sealing tape to the top side of the left and right radiator tank and the aft radiator core. Position the right side baffle (444) to the rear baffle (462). Hold in position with vice grips pliers. Using the predrilled holes as a template, drill and then pop rivet the three baffles together.



Position the baffle assembly onto the radiator. Install the radiator support rods (451) (threaded ends) through the holes in the rear baffle and through the frame. Position the right and left radiator support brackets (467 and 468) between the radiator core and support rods.

Position and align the rear baffle flange against the upper frame tube and drill four 3/32 holes through the baffle and frame tube. Secure the baffle to the frame tube with four screws (666).

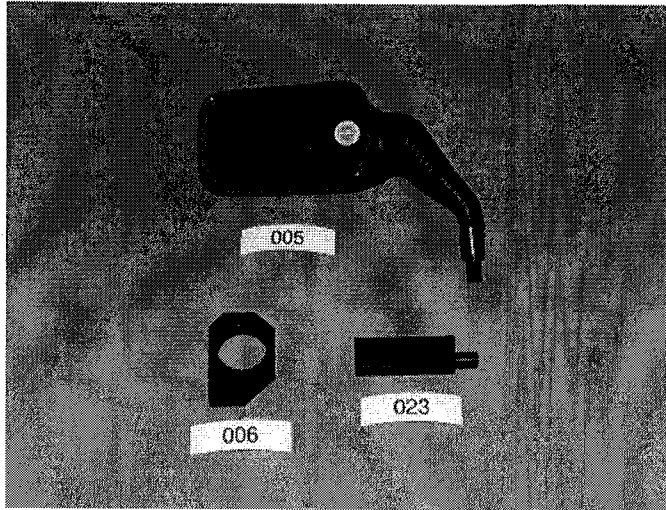
Position and align the right support bracket over the right side baffle. **CAREFULLY** drill two 1/8 inch holes and pop rivet in place. Repeat the process for the other side.

**Note: Use care when drilling these holes so that you do not drill into the radiator tanks.**

Tighten the two bolts on the well nuts holding the aft radiator core to the chassis extensions. These are accessed from underneath the vehicle.

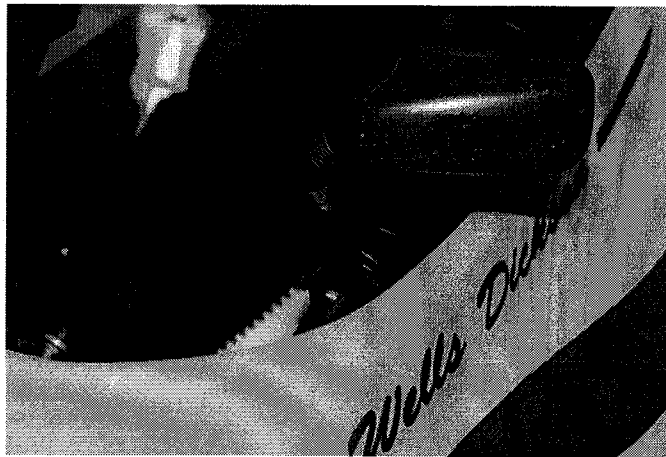
## MIRROR INSTALLATION

Place one each inner and outer mirror bracket (006) around each forward rollbar down-tube. The brackets should be oriented so the long ends are up, the mirror post hole is up and the clamping screws will be threaded in from the center of the car.



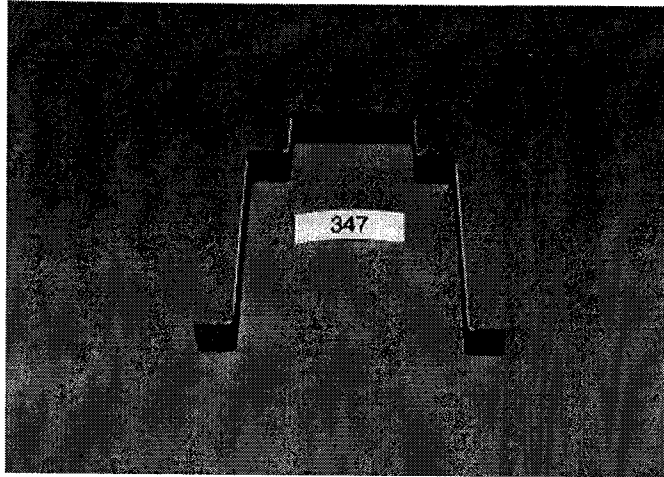
Allen bolts are used to clamp the brackets together and allen screws clamp the extension (023) to the brackets and the mirrors to the extensions.

Do not final tighten these brackets at this time. Next, place a mirror extension into each of the upper holes and then position the mirrors onto the extensions. Move the brackets, with mirror (005) in place, to the desired location, up or down the bar. Tighten the clamping bolts evenly. Also tighten the allen screws after making any necessary adjustments.



## BATTERY INSTALLATION

Position the battery in the battery tray just forward of the EEC module. The negative ( - ) terminal should be closest to the frame. Bolt the battery hold down strap (347) to the battery tray. Bolt the battery cables to their respective terminals. Red to positive and Black to negative. Install the battery terminal covers.



## STARTUP

Pour at least three gallons of fuel into the fuel cell. Fill the cooling system with a 50/50 mixture of water and antifreeze. Add oil to the engine until it reaches the full mark on the dipstick. Approximately five quarts. Replace the oil filler cap. Add transmission fluid if you did not do it earlier. Make sure the vehicle is not in gear. Turn the master power switch on.

Press the starter button and allow the engine to build enough oil pressure to make the gauge register. Flip the ignition switch on. The alternator charge light should come on. Press the starter button to start the engine. As soon as the engine fires, bring the RPMs up to a fast idle; 1500 to 2000. Check for any oil, fuel or coolant leaks. If any leaks are observed, turn engine off and correct the leak as necessary. Make sure oil pressure is always over 25 PSI.

Remove the aluminum expansion tank cap and start the engine. **CAUTION: DO NOT DO THIS WITH THE ENGINE HOT.**

While the car is running, jack the left side of the car up as high as possible allowing air trapped in the engine head to escape through the ¼" bleeder in the top of the thermostat housing. The engine should run in the jacked up position for 20 to 30 minutes. Watch the engine temperature gauge, it should never go over 220° or you should turn off the engine and bleed air out of the system manually. After running the engine, lower the car and fill the aluminum expansion tank completely full of coolant. Re-install the tank cap. Fill the plastic over flow bottle 1/3 full with coolant.

Congratulations. You have finished building your Spec Racer Ford. We hope you feel a strong sense of accomplishment and are prepared for a great amount of fun as you compete in this car.

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## SPEC RACER FORD SHIPPING LIST

	Part Number	Description	Remarks	QTY	
<b>Box 1</b>	1004557	Clip "P" 1/4	Brake/Clutch Lines to Frame	15	
	1004557	Clip "P" 1/4	Fire Ext. Lines to Frame	6	
	1004774	Clip Hose Retainer	Brake Hose/Line To Frame	6	
	1004774	Clip Hose Retainer	Clutch Hose/Line To Frame	2	
	1080685	Washer Copper 3/8	Brake Hose To M/C	2	
	1080685	Washer Copper 3/8	Hose To M/C-S/C	2	
	1080699	Grommet 3/8 X 5/8	Accl. Cable Thru Side Panel	1	
	1080699	Grommet 3/8 X 5/8	Fire Ext. Line Thru S. Panel	1	
	1080752	Clip "P" 1 1/2	Brk/Clutch Hose To Pedal Supt	1	
	1080754	6 1/2 Hose Clamp	Fire Ext. Bottle To BRKT.	2	
	1080756	Grommet Rubber .31 X .18 X .06	Fire Ext. Cable Thru S. Panel	1	
	1090099	Pop Rivet-3/16 x 3/8	Ext. Lines & Brkt. To Frame	12	
	1090099	Pop Rivet-3/16 x 3/8	Brk/Clutch Lines To Frame	14	
	1090099	Pop Rivet-3/16 x 3/8	Brk/Clutch Hoses To Pedal Supt	1	
	180542	Fire Extinguisher System			
			Fire Ext. Bottle	1	
			Fire Ext. Cable	1	
			Hose		
			Fire Ext. Bottle To Tee	1	
	680136	Brake Line	Front Tee	1	
	680137	Brake Line	LF to F/Tee	1	
	680138	Brake Line	RF to F/Tee	1	
	680140	Brake Line	Bulk to R/Tee	1	
	680141	Brake Line	RR Tee to LR	1	
	680143	Clutch Line (Hydraulic)		1	
	680425	Stainless Steel Brake Line Kit		1	
	680430	Brake Line Tee		2	
	680836	Brake Line-RR to RR Union	Req'd w/RR Susp. Brkt Change	1	
	680837	Union-RR Tee to Rt. RR Line	Req'd w/RR Susp. Brkt Change	1	
	680838	Brake Line-Union To Rt. RR	Req'd w/RR Susp. Brkt Change	1	
	<b>Box 2</b>	1180006	Bolt Kit M/S		1
			Bolt Kit M/S List of Components List		1
		280099	Link Front Stab. Bar		2
280101		Stabilizer Bar		2	
280103		Block Stabilizer Bar Mtg.	Stabilizer Bar To Frame	8	
280109		Link Stabilizer Bar Rear		2	
280375		Rod End 5/16 Male RH	5/16 RH (Front)	2	
280375		Rod End 5/16 Male RH	5/16 RH (Rear)	2	
280376		Rod End 5/16 Male LH	5/16 LH (Front)	2	
280376		Rod End 5/16 Male LH	5/16 LH (Rear)	2	
280398		Split Collar	Frnt/Rear Stabilizer Bar	4	
280548		Bushing Stabilizer Bar Block		4	
280650		Clevis Stab. Bar Adj.		4	
<b>Box 3</b>		1000257	Washer Flat M12	UBJ Brkt. To Knuckle	8
	1001105	Nut M12 x 1.75 Nylock	UBJ Brkt. to Knuckle	4	
	1063540	12 M X 1.25-55 Hex Bolt		4	
	1080602	Nut Hex Nylock 1/2-13	UCA Pivot Bolt	2	
	1080684	Bolt Hex 1/2-13 x 8.0 GR 8	UCA pivot Bolt	2	
	1180083	UCA Assembly w/ strap LH		1	

	1180086	UCA Assembly w/ strap RH		1
	1180089	Upper Ball Joint	UCA to Knuckle	2
	280092	Shim UCA Mtg		4
	280095	Brkt. Upper Ball/Joint-Front		2
	280288	Washer Special 7/16	Front LCA to Frame	2
	280291	Tube UCA Pivot	UCA to Frame Bolt	2
	280365	Rod End 7/16 RH	Front LCA Strut to Frame	4
	280387	Front Spring		2
	280396	Penske Shocks		4
	280400	Penske Bumper		4
	280588	Spacer Upper Shock Abs.	Shock to UCA	4
	280623	Washer Special Shock Abs.	Shock Abs. Bottom Bolt	2
	280697	Spacer Shock to Frame	Shock Abs. Bottom Bolt	2
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	1020393	Washer Flat 5/16	Brake M/Cyl. to M/Cyl Brkt.	8
	1020393	Washer Flat 5/16	Clutch M/C to M/C Brkt.	4
	1020393	Washer Flat 5/16	Clutch M/C Rod End to Pedal	1
	1020393	Washer Flat 5/16	Master Cylinder Brkt. to Pedal	2
	1024920	Nut 5/16-24 Jam	Clutch M/C Rod End to M/C	1
	1080578	Nut-Hex Lock 5/16-24	Clutch M/C Rod End to Pedal	1
	1080599	Bolt Shoulder 5/16 x 18 x 1.25	Accel. Pedal Pivot Bolt	1
	1080608	Bolt Shoulder 5/16 x 18 x 1.50	Brake Pedal Pivot	1
	1080608	Bolt Shoulder 5/16 x 18 x 1.50	Clutch Pedal Pivot	1
	180110	Pedal Mounting Support		1
	180235	Reinforcement Plate	Pedal Mtg. Supt. Assby to Frm.	2
	180354	Supt. Plate Pedal Casting		1
	180355	Pedal and Master Cylinder		1
	580122	Accelerator Pedal		1
	580518	Accelerator Cable Rod End	Add Pedal to Cable	1
	780116	Foot Rest Pedal		1
	780296	Clutch Pedal		1
	780416	Clutch Master Cylinder Rod End		1
	832503	Brake Light Switch		1
	832504	Brake Light Switch Nut 16 X 1.5		2
	880129	Brake Pedal		1
	880356	Balance Bar Assby		1
	880357	3/4 Master Cylinder	1 ea Front & Rear Brake & Clutch	3
	880914	Brake Bias Adjuster		1
<b>Box 5</b>	1001835	Pop Rivet 1/8 x 3/16 Aluminum	Radiator Baffle Assembly	20
	1006658	Hose Clamp #20 1.5	Eng. I/O Tube Ends Rad I/O	4
	1011666	Screw #10 x 1/2 HEX	Rear Rad. Baffle to Frame	4
	1020151	Screw Hex Wsh. Hd. 1/4-14 x 1.75	Coolant Tube to Frame	4
	1053068	Washer Lock M6	Coolant Tube to Frame	2
	1062003	Washer M16 Copper	Radiator Plug	1
	1075129	Plug Radiator M6		1
	1080726	Screw #12-1.0 Hex Washer Hd.	Coolant Tube to Frame (Frt)	4
	1080752	Clip "P" 1-1/2" Ins. Rad.	Coolant Tube to Frame	6
	1180800	Aluminum Catch Tank Kit		1
		Aluminum Catch Tank Components list		1
	1180801	Overflow Bottle Kit		1
		Overflow Bottle Components list		1
	400715	Strap Exp. Bottle Retainer	Expansion Bottle to Frame	1



	464692	Cap Radiator		1
	480444	Baffle Radiator Upper RH		1
	480445	Baffle Radiator Upper LH		1
	480462	Baffle Radiator Rear		1
	480467	Brkt. Radiator Baffle LH		1
	480468	Brkt. Radiator Baffle RH		1
	480679	Foam Tape	Seal Up/Lwr Baffle to Rad. Bal. of Roll	1
	480892	Baffle (Rubber) Radiator Top		1
	480893	Baffle (Metal) Radiator Top		1
	680449	Hose Coolant Radiator Inlet		1
	680450	Hose Coolant Radiator Outlet		1
	680458	Coolant Tube (Aluminum)		2
<b>Box 6</b>	1001718	P Clip 5/8	Starter Sol. Wire to Engine	1
	1020380	Washer Lock 1/4	Battery Cable to Battery	2
	1020393	Washer Flat 5/16	Battery Hold Down to Frame	2
	1053068	Washer Lock M6	Alt. Grd. Wire to Alt. Pivot Brkt.	1
	1080079	Bolt Hex 5/16-18 x 1.0	Battery Hold Down to Frame	2
	1080726	Screw #12 - 1.0 Hex Wsh. Hd.	Fuse Blk. to Side Panel	2
	1080752	Clip P 1 -1/2"	Main Batt. Harness to Frame	3
	1080752	P Clip 1-1/2"	Wire Harness to Frame (Seat Bolt)	1
	1080753	Clip P .75 Dia.	Batt. Harness to Frame (Rear)	1
	1080798	Screw # <del>          </del> Hex 5/16 x 3/4	Main Batt. Harness to Frame	3
	1090099	Pop Rivet 3/16 x 3/8	Batt. Harness to Frame (Rear)	1
	1190501	Chassis Harness Assembly		1
		Chassis Harness Component List		1
	902204	Large Rubber Grommet		2
	980250	Water Temp. Sender 250		1
	980347	Brkt. Battery Hold Down		1
	980480	Alternator Charge Light		1
	980495	Oil Pressure Sender		1
<b>Box 7</b>	1000257	Washer Flat M12	UBJ Brkt. to Knuckle	8
	1001105	Nut M12 x 1.75 Nylock	UBJ to Knuckle	4
	1063540	Bolt M12 x 1.75-55	UBJ Brkt. to Knuckle	4
	1080602	Nut Hex Nylock 1/2-13	UCA Pivot Bolt	2
	1080684	Bolt Hex 1/2-13 x 8.0 GR. 8	UCA Pivot Bolt	2
	1180083	UCA Assembly w/ strap LH		1
	1180086	UCA Assembly w/ strap RH		1
	1180089	Upper Ball Joint	Upper Control Arm to Knuckle	2
	261141	Tie Rod End W/Nut	Toe Link to Knuckle	2
	280074	Link Rear Toe		2
	280092	Shim UCA Mtg.		4
	280095	Brkt. Upper Ball Joint (Rear)	Upper Ball Joint to Knuckle	2
	280288	Washer Special 7/16	Rear LCA to Frame	2
	280291	Tube UCA Pivot		2
	280365	Rod End 7/16 RH Male	Rear LCA Strut to Frame	4
	280390	Spring Coil Rear 425 lbs.		2
	280555	Rod End 7/16 LH Male	Toe Link to Frame	2
	280588	Spacer Upper Shock Absorbers	Shock to UCA	4
	280623	Washer Special Shock Absorber	Shock Abs. Bottom Bolt	2
	280697	Spacer Shock to Frame	Shock Abs. Bottom Bolt	2
	280716	Washer High Angle	Toe Link to Frame	4

	280717	Shim Toe Link	Toe Link to Frame	8
<b>Box 8</b>	1001106	Nut M20 x 1.25 Nylock	Drive Shaft to Drive Hub	2
	1010507	Washer Axle Retaining	Drive Shaft to Drive Hub	2
<b>Box 9</b>	1001120	Bolt M6 x 1.0-15	Ground to Alt. Bracket	1
	1016244	Washer Flat #10	Wire Harness to Back of Alt.	2
	1020214	Washer Lock 5/16		2
	1020392	Washer Flat 1/4 SAE	Wire Harness to Back of Alt.	1
	1053068	Washer M6 LK	Ground Bolt Alt.	1
	1053495	Washer M6 Flat	Ground Bolt Alt.	1
	1080726	Screw #12 - 1.0 Hex		2
	902129	Alternator-60 Amp.		1
	902130	Alternator Pulley Large		1
<b>Box 10</b>	1000255	M8 Flat Washer		4
	1008635	Cotter Pin 1/8 x 1-1/8		4
	1080129	M8-1.0X35 Shoulder Bolt		4
	1090051	Nut M8 X1.25 Nylock		4
	1090188	Castle Nut 1/2-20		4
	280397	Rod End Adjust LBJ		4
	296074	Stud Washer		4
	296075	LCA Front		2
	296104	LCA Rear		2
	296184	Stud (New)		4
	296293	Bent Strut (Ford)		1
	296294	Locating Arm Rear (Right)		1
	296295	Locating Arm Front		2
	296661	Clevis LH 1/2		3
<b>Box 11</b>	1080698	Grommet Polyethylene Flexible 12" lgth	Seat Belt hole protector	2
	180437	Fire Wall		1
	180438	Fuel Cell Cover		1
	180441	Shifter Step		1
	480503	Oil Cooler Assby.		1
	480504	Oil Cooler Duct		1
	480505	Oil Cooler Exhaust Panel		1
	580625	Fuel Cell Assembly		1
	591990	Fuel Surge Kit		1
	680426	Oil Cooler Duct Hose		1
	680503	Oil Cooler Fittings	1/2 to 8 AN	2
<b>Box 12</b>	1002068	Pop Rivet 1/8 x 3/16 Steel		325
	1011666	Screw #10 x 1/2 Hex		11
	1080656	Body Latch Hooks		3
	1080657	Screw #6-5/8	Pan Head Body Latches	18
	1080711	Wellnut 5/16-18		2
	1080887	Body Locking Latch		3
	180440	Side Pod Covers	Rear	2
	180537	Body Pin Mount Short		1
	180538	Body Pin		4
	180539	Thin Body Cushion		4
	180557	Rub Rail Left		1
	180558	Rub Rail Right		1

180671	Pin Locating Tail		2
180719	Thick Cushion		1
180917	Decal "E" Fire Bottle		1
180918	Decal Ign. Off		1
480446	Baffle Radiator Lower Right		1
480447	Baffle Radiator Lower Left		1
480448	Baffle Nose Pan		1
480450	Radiator Screen		1
480451	Strut Upper Radiator Rod		2
480454	Radiator Strap		1
480456	Radiator Strut	Lower Z-Bar	1
480457	Nose Pan Mount		1
480466	Radiator		1
800365	Caliper Brake Duct		1
<b>Box 13</b>			
1001835	Pop Rivet 1/8 x 3/16 Aluminum	Scuff Plate to Body	20
1011666	Screw #10 x 1/2 Hex	Brake Light Housing to Frame	4
1020380	1/4 Lock Washer		2
1020392	1/4 Flat Washer		2
1080009	Terry Springs		2
1080020	Bolt Hex 1/4-20 x .75	Headrest to Frame	2
1080688	Scuff Plates		5
1080689	Clip Body Retaining		5
1080726	Screw #12-1.0 Hex Washer Hd.	Seat Bottom to Frame	1
1080936	Rivet 3/16 x 5/8 Lg. Hd.	Seat Support Attaching	4
180038	Body Assembly - Front		1
	67x22-1/2x63 Front Section Box	creating	1
180047	Body Assembly - Center		1
180054	Body Assembly - Rear		1
	67x30-1/2x49 Center/Rear Section Box	creating	2
180272	Seat		1
180273	Seat Strap		1
180427	Brake/Tail Light w/ Gasket		1
180428	Brake/Tail Light Housing		1
180916	Headrest		1
180927	Seat Support		1
190000	Aero Kit		1
<b>Box 14</b>			
1180100	Dash Board With holes		1
	OR		
1180101	Dash Board Without holes		1
	Components list for Dash Board		1
980475	Ignition Switch Guard	Ign. And Rain Light Switch	2
980476	Ignition Switch	Ign. And Rain Light Switch	2
980477	Oil Pressure Gauge	w/ Hdwe.	1
980478	Tachometer	w/ Hdwe.	1
980479	Water Temp. Guage 250	w/ Hdwe.	1
980481	Starter Switch		1
980516	Master Kill Switch		1
980701	Battery Boot Positive		1
980702	Battery Boot Negitive		1
980703	Alternator Boot		1
980704	Master Kill Switch Boot		2

<b>Box 15</b>	1001911	Bolt M12 x 1.25-35 SOC	Caliper Bolt	8
	1197035	Hub Assby		4
	200436	Wheel Bearing		4
	277033	Steering Knuckle RF/LR		2
	277034	Steering Knuckle RR/LF		2
	277758	Retainer Wheel Bearing		4
	800033	Phenolic Piston KK-4048		4
	800035	Seals		4
	800036	Bleeder Valve		4
	800060	Rotor Brake		4
	800303	Caliper Mount Bracket		4
	800315	Locating Pin Caliper .485		8
	800366	Caliper RR/LF		2
	800367	Caliper LR/RF		2
	801133	Rubber Boot		8
	801134	Teflon Sleeve		8
	801993	Brake Pads (Set)		2
<b>Box 16</b>	1008635	Cotter Pin 1/8 x 1-1/8	Front Axle Bolt	2
	1080570	Bolt 5/8-18 x 3.75 GR8	Front Axle Bolt	2
	1080571	Nut 5/8-18 Slotted	Front Axle Bolt	2
	280082	Retainer Frt. Whl. Brg. Outer		2
	280900	Retainer Frt. Whl. Brg. Inner		2
<b>Box 17</b>	190005	Mirror		2
	1180102	Mirror Bracket Assby		2
		Mirror Bracket Component List		1
	1180103	Mirror Extension Assby		2
		Mirror Extension Component List		1
<b>Box 18</b>	1020393	Washer Flat 5/16		2
	1032074	Nut Jam M14 x 1.50	Tie Rod to Link	2
	1080581	Screw Flat Hex Sock M5 x .8-16	Steering Wheel to Shaft	6
	1080700	Nylock Nut M5 x .8	Steering Wheel to Shaft	6
	261141	Tie Rod End Kit	Tie Rod Link to Knuckle	2
	280071	Clevis Tie Rod Front		2
	280072	Link Tie Rod Front		2
	280287	Shim Steering Rack Mounting	Steering Rack to Frame	4
	280392	Wheel Steering		1
	280469	Steering Shaft Upper		1
	280487	Steering Shaft Lower		1
	280490	Retainer Steering Shaft	1 Pair	1
	280491	Bearing Steering Shaft		1
	280502	Steering Rack & Pinion		1
<b>Box 19</b>	1090530	Lug Nut for Aluminum	Wheel to Drive Hub	16
	290528	Wheel Front 13 x 5.5 Alum.		2
	290529	Wheel Rear 13 x 7.0 Alum.		2
<b>Box 20</b>	180474	Seat Belt Harness Assembly		1
	1001835	Rivet 1/8 x 3/16 Aluminum	Mounting Chassis I.D. Plate	4
		Chassis I.D. Plate		1
<b>Box 21</b>	1003748	Nut M6 X 1.0 Nylock		12
	1090021	Cable Tie 14		8

1091021	Bolt M8 X 1.25-60	2
1000255	Washer M8 Flat	18
1000257	Washer Flat M12	17
1001105	Nut M12 X 1.75 Nylock	6
1001160	Bolt M8 X 1.25-20	2
1004797	Bolt M10 X 1.5-75	2
1006658	Hose Clamp #20 1.5	2
1006660	Hose Clamp #16 1	8
1007014	Nut 1/4-20 Steel LK	1
1011666	Screw #10 X 1/2 HEX	4
1013447	Nut 5/16-18 Steel LK	4
<del>1019100</del>	<del>Bolt 1/2-13 X 2.25</del>	<del>1</del>
1020393	Washer 5/16 Flat	8
1020396	Washer 1/2 Flat	2
1024920	Nut 5/16-24 Jam	1
1027161	Bolt M10 X 1.5-125	1
1034039	Nut M10 X 1.5 Nylock	3
1053409	Washer M10 Flat	16
1053495	Washer M6 Flat	16
1078677	Bolt M10 X 1.5-30 10.9	2
1079799	Bolt 1/4-20 X 1.25	1
1080572	Nut 5/16-24 Jam LH	1
1080601	Nut 5/8-18 Jam	2
1080602	Nut 1/2-13 Nylock	1
1080603	Bolt 5/16-18 X 2.25	4
1080604	Roll Pin 3/16 X 1	3
1080624	Nut 3/8-16 Jam	1
1090010	Bolt M6 X 1.0-40	2
1090011	Bolt M6 X 1.0-20	9
1090012	Bolt M6 X 1.0-30	3
1090013	Bolt M6 X 1.0-60	1
1090020	Bolt M8 X 1.25-25	8
1090022	Bolt M8 X 1.25-40	2 X
1090024	Bolt M10 X 1.5-15	1
1090025	Bolt M10 X 1.5-20	3
1090026	Bolt M10 X 1.5-30	3
1090029	Bolt M10 X 1.5-50	4
1090030	Bolt M12 X 1.25-20	3
1090031	Bolt M12 X 1.75-90	4
1090032	Bolt M12 X 1.75-30	2
1090051	Nut M8 X 1.25 Nylock	6
1090056	Bolt M12 X 1.25-30	2
1090090	Hose Clamp #10 3/4	2
1090094	Hose Clamp #28 2	6
1090095	Hose Clamp #40 2.5	8
1090098	P Clip 1	3
1090099	Rivet 3/16 X 3/8	18
280375	Rod End 5/16 Male RH	1
280376	Rod End 5/16 Male LH	1
380405	Snap Ring Shift Link	3
380406	Gear Shift Lever Knob	1
380407	Bushing Shift Bellcrank	2
392602A	Complete Axle Long	1
392603A	Complete Axle Short	1
691701	Water Hose 5/8 X 38	1

	691804	Water Hose 1/2 X 24		1
	691805	Water Hose 3/4 X 17		1
	691818	Water Hose 3/4 X 5		1
	691819	Water Hose 3/4 X 30		1
	992103	Ground Strap 10		1
<b>Box 22</b>	1180015	Engine Assembly		1
	1180016	5 Speed Transaxle Assembly		1
		Transmission Component List		1
	1190500	Ford Engine Harness		1
	1192498	Threaded Nipple		2
	180235	Reinforcement Plate		2
	192801	Naca Duct		1
	192803	Air Scoop		1
	198000	Conversion Kit Assembly Manual		1
		Pull Sheet- Conversion Kit		1
	380231	Shift Lever Crush Tube		1
	380236	Shift Linkage Sleeve		3
	380308	Shifter Bellcrank Crush Tube		1
	380397	Rod End 5/8		2
	391001	Left Front Motor Plate		1
	391002	Right Front Motor Plate		1
	391101	Rear Mounting Bracket		1
		391004 Bushing	Installed in Bracket	1
	391201	Left Mounting Bracket		1
		391004 Bushing	Installed in Bracket	1
	391301A	Upgraded Right Mounting BRKT		1
	391502	PCV Valve		1
	391505	PCV Seperator		1
	391601	Header		1
	391602	ExhaustPipe		1
	391605	Tail Pipe		1
	391606	Hanger		1
	391610	Heat Sheild		1
	391611	Body Heat Cloth		1
391807	<del>391809</del>	Fire Wrap		1
	391810	Reservoir Support Bracket		1
	392001	Lower EEC Bracket		1
	392002	Upper EEC Bracket		1
	392403	Oil Filter Adapter		1
	392405	Remote Oil Filter Mount		1
	392411	Oil Filter Mounting Bracket		1
	392499	O-Ring		1
	392502	Front U-Joint		1
	392503	Rear U-Joint		1
	392540	Bell Crank Assembly		1
	392541	Gear Shift Lever		1
	392542	Front Shifter Link Assembly		1
	392545	Pivot Support Bracket		1
	392546	Shift Lever Bracket		1
	392547	Rear Shifter Link Assembly		1
	392601	Trans Fill Plug		1
	392611	Clutch Slave Cylinder		1
	392699	Dowel Pins		2
	392705	Engine Trans Plate		1

591901	Fuel Pump		1
591911	Large Fuel Rail Fitting		1
591913	Fuel Filter		1
591914	Fuel Pump Bracket		1
591917	Filler Neck Bracket		1
591922	Rollover Valve		1
591925	Small Fuel Rail Fitting		1
592202	Air Box Bracket		1
592209	Inlet Hose		1
592212	Air Scoop Hose		1
592230	Air Box Assby		1
	Mass Air Meter	Installed in Air Box Assby	1
592301	Throttle Cable		1
691506	PCV Separator Hose		1
691801	Left Radiator Hose		1
691802	Right Radiator Hose		1
691814	By-Pass Tube & Coolant Temp. Sender		1
691816	1/4 Pipe x 3/8 Male Barbed Fitting		1
691817	3/8 Male 1/2 BARB		1
691899	Coolant Hose Tee		1
691903	Dash 6 90 Degree Fitting		3
691909	Dash 6 Bulkhead Nut		1
691921	Dash 6 45 DEG. Fitting		2
691928	Dash 6 Straight Fitting		5
692406	Dash 8 Pipe Fitting		2
692407	Dash 8 Pipe Adapter		1
692408	Dash 8 45 Degree Pipe Fitting		1
692410	Dash 8 90 DEG. Fitting		6
692420	90 Degree 1/8 Male - 1/8 FEMale		1
692421	1/4-1/8 NPT Adapter		1
698001	Dash 6 Hose 136"		1
698002	Dash 8 Hose 125"		1
991401	Alternator Bracket		1
991403	Alternator Adjustment Strut		1
991407	Alternator Belt		1
991608	O2 Sensor		1
992006	Rubber Insulation		1
992008	EEC Relay		1
992009	Fuel Pump Relay		1
992011	EDIS Module		1
992012	EEC Module		1
992110	Plug Bracket		1
992701	Starter		1
992702	Starter Bolt		1
992706	Starter Bolt		1
<b>Box 23</b>	180033	Roll Bar Padding	2
	180262	Tube of Silacone	1
	180434	Floor Pan Front Half	1
	180434-B	Floor Pan Rear Half	1
	180435	Panel Cockpit, Right Side	1
	180436	Panel Cockpit, Left Side	1
	180439	Panel Cockpit, Front	1
	180928	Assembly Manual	1
	1180004	Frame	1
		Seal Floor Pan to Chassis	1
		With all brackets Welded On	1

	frame	
Yokohama Front Tire		2
Yokohama Rear Tire		2
Roush Racing Decal 4 1/4 x 6" Ford		4
Roush Racing Decal 2 1/4 x 12" Ford		4
SCCA Spec Racer Decal 3" x 11 1/2"		4
Yokohama 2 3/4" Decal		2
Yokohama 3 1/4" Decal		2

Box Number	Number of boxes	Description	Box Number	Number of boxes
1	1/3	Fire Bottle Box	17	1/2
	2/3	Steel Lines Kit		2/2
	3/3	Large Plastic Bag	18	1/1
2	1/1	Large Plastic Bag	19	1/1
3	1/2	Large Plastic Bag	20	1/3
	2/2	Box 26 x 8 x 8		2/3
4	1/2	Box 12 x 12 x 7 1/2		3/3
	2/2	Pedal Support	21	1/2
5	1/2	Large Plastic Bag		2/2
	2/2	Coolant Tubes	22	1/1
6	1/1	Large Plastic Bag	23	1/1
7	1/2	Large Plastic Bag	24	1/5
	2/2	Box 26 x 8 x 8		2/5
8	1/1	Small Plastic Bag		3/5
9	1/1	Box 7 x 6 x 6		4/5
10	1/1	Box 24 x 6 x 6		5/5
11	1/3	Box 18 x 10 x 34	25	1/6
	2/3	Box 11 1/2 x 11 1/2 x 11 1/2		2/6
	3/3	Large Plastic Bag		3/6
12	1/5	Box 31 x 17 1/2 x 6		4/6
	2/5	Large Plastic Bag		5/6
	3/5	Box 24 x 6 x 6		6/6
	4/5	Rub Rail left and right		
	5/5	Nose Pan		
13	1/1	Small Plastic Bag		
14	1/1	Small Plastic Bag		
15	1/1	Large Plastic Bag		
16	1/1	Box 12 x 6 x 6		

## BOLT KIT

	DESCRIPTION	SIZE	GRADE	QTY.
<b>FRONT SUSPENSION</b>				
	Front lower strut to control arm			
	Bolt Hex	3/8-24 x 1.50	8	2
	Nylock	3/8-24		2
	Washer Flat	3/8		4
	Front lower shock mount			



	Bolt Hex	1/2-20 x 5.0	8	2
	Nylock	1/2-20		2
	Washer Flat	1/2		4
Front strut & LCA rod end jam nuts				
	Nut Jam	7/16-20		4
Front camber rod end jam nuts				
	Nut Jam	5/8-18		2
Front strut L.H. clevis jam nuts				
	Nut Jam	1/2-20		2
Front lower strut to frame				
	Bolt Hex	7/16-20 x 3.5	8	2
	Nylock	7/16-20		2
	Washer Flat	7/16		4
Front upper shock mount				
	Bolt Hex	3/8-24 x 2.0	8	2
	Nylock	3/8-24		2
	Washer Flat	3/8		4
Front lower control arm to frame				
	Bolt Hex	7/16-20 x <del>2.0</del> 6	8	2
	Nylock	7/16-20		2
	Washer Flat	7/16		4
Front upper ball joint mount				
	Bolt Hex	5/16-24 x 1.0	8	8
	Nylock	5/16-24		8
	Washer Flat	5/16		16
	Cotter Pin	1.5"		2
Front stab. Rod end jam nuts L.H.				
	Nut Jam L.H.	5/16-24		2
Front stab. Rod end jam nuts R.H.				
	Nut Jam	5/16-24		2
Front stab. Rod end to control arm				
	Bolt Hex	5/16-24 x 2.0	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Front stab. Clevis bolts				
	Bolt Hex	5/16-24 x 1.5	8	4
	Nylock	5/16-24		4
	Washer Flat	5/16		8
Front stab. Mounting block				
	Bolt Hex	1/4-28 x 2.25	8	4
	Nylock	1/4-28		4
	Washer Flat	1/4		8

## REAR SUSPENSION

Rear lower control arm mount				
	Bolt Hex	7/16-20 x 4.0	8	2
	Nylock	7/16-20		2
	Washer Flat	7/16		4
Rear lower shock mount				
	Bolt Hex	1/2-20 x 5.0	8	2
	Nylock	1/2-20		2
	Washer Flat	1/2		4
Rear upper ball joint mount				
	Bolt Hex	5/16-24 x 1.0	8	8

Rear upper shock mount	Nylock	5/16-24		8
	Washer Flat	5/16		16
	Cotter Pin	1.5"		2
Rear lower strut to frame	Bolt Hex	3/8-24 x 2.0	8	2
	Nylock	3/8-24		2
	Washer Flat	3/8		4
Rear lower strut to control arm	Bolt Hex	7/16-20 x 1.75	8	2
	Nylock	7/16-20		2
	Washer Flat	7/16		4
Rear camber rod end jam nut	Bolt Hex	3/8-24 x 1.25	8	2
	Nylock	3/8-24		2
	Washer Flat	3/8		4
Rear strut & LCA rod end jam nut	Nut Jam	5/8-18		2
Rear toe link rod ends jam nuts L.H.	Nut Jam	7/16-20		2
Rear strut clevis jam nuts L.H.	Nut Jam L.H.	7/16-20		2
Rear sus.- rear stab. Clevis bolts	Nut Jam L.H.	9/16-18		1
Rear stab. Rod end to control arm	Bolt Hex	5/16-24 x 1.5	8	4
	Nylock	5/16-24		4
	Washer Flat	5/16		8
Rear stab. Rod end jam nuts R.H.	Bolt Hex	5/16-24 x 2.0	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Rear stab. Rod end jam nuts L.H.	Nut Jam	5/16-24		2
Rear stab. Mounting blocks	Nut Jam L.H.	5/16-24		2
	Bolt Hex	1/4-28 x 2.25	8	4
	Nylock	1/4-28		4
	Washer Flat	1/4		8

### MAIN CHASSIS, SEAT, TANKS

Fuel filler mounting	Bolt Hex	1/4-28 x .625	8	6
	Nylock	1/4-28		6
	Washer Flat	1/4		12
Fire bottle cable mount	Nylock	3/8-24		1
	Washer Flat	3/8		1
Oil cooler mount	Bolt Hex	1/4-28 x 1.75	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		4
Air box to mount	Bolt Hex	3/8-24 x 1.5	8	2

	Nylock	3/8-24		2
	Washer Flat	3/8		4
Center body mounting				
	Bolt Button Head	1/4-28 x .875		4
	Nylock	1/4-28		4
	Washer Flat	1/4		8
Air box mount to frame	Washer Fender	1/4 Fender		8
	Bolt Hex	5/16-24 x 2.25	8	2
	Nylock	5/16-24		2
Body mounting pins	Washer Flat	5/16		4
	Nylock	3/8-24		4
	Nut Hex	3/8-24		4
	Nut Jam	3/8-24		1
	Washer Flat	3/8		9
Seat belt mount				
	Bolt Hex	<del>1/2-20</del> <sup>3/8-24</sup> x 1.25	8	2
	Nylock	<del>1/2-20</del> <sup>3/8-24</sup>		2
	Washer Flat	<del>1/2</del> <sup>3/8</sup>		4
Exhaust pipe hardware				
	Bolt Hex SS	1/4-28 x .750	Stainless	3
	Nut Stover	1/4-28		3
	Washer Flat	1/4		6
Coolant expansion tank mount				
	Bolt Hex	1/4-28 x .625	8	3
	Nylock	1/4-28		3
Side plates to fuel cell cover	Washer Flat	1/4		6
	Bolt Hex	1/4-28 x .625	8	9
	Nylock	1/4-28		9
Radiator to front LCA bracket wellnuts	Washer Flat	1/4		18
	Bolt Hex	5/16-18 x 1.0	8	2
Radiator front strut to radiator	Washer Flat	5/16		2
	Bolt Hex	1/4-28 x .750	8	1
	Nylock	1/4-28		1
Radiator lower left front bolt	Washer Flat	1/4		2
	Bolt Hex	1/4-28 x .625	8	1
	Nylock	1/4-28		1
Radiator strut to frame	Washer Flat	1/4		2
	Nut Jam	1/4-28		2
	Nylock	1/4-28		2
Radiator strut to front porch	Washer Flat	1/4		4
	Bolt Hex	1/4-28 x .50	8	1
	Nylock	1/4-28		1
Radiator upper strut bolt to radiator	Washer Flat	1/4		1
	Bolt Hex	1/4-28 x 1.75	8	2
	Nylock	1/4-28		2
Radiator support strap	Washer Flat	1/4		4

	Bolt Hex	1/4-28 x .750	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		4
Side seat mounts				
	Bolt Hex	1/4-28 x 1.5	8	6
Side seat mounts - alum. Side				
	Nylock	1/4-28		3
	Washer Flat	1/4		3
Side seat mounts - glass side				
	Nylock	1/4-28		3
	Washer Flat	1/4		3
	Washer Fender	1/4		3
Fuel cell cover to shifter step				
	Bolt Hex	1/4-28 x .750	8	3
	Nylock	1/4-28		3
	Washer Flat	1/4		6

### PEDAL ASSEMBLY, ELECTRONICS

Pedal casting to cross member				
	Bolt Hex	5/16-24 x 2.50	8	4
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Throttle pedal to rod end				
	Nylock	10-32		1
	Washer Flat	10		1
Master cyl. Rod jam nuts				
	Nut Jam	5/16-24		3
Main switch mounts				
	Bolt Hex	1/4-28 x 1.5	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		4
Pedal mount				
	Nylock	5/16-18		3
	Washer Flat	5/16		6
Throttle cable jam nuts				
	Nut Jam	7/16-20		4
Battery cable bolts				
	Bolt Hex	1/4-28 x .750	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		4
Clutch pedal stop				
	Bolt Hex	1/4-20 x 1.0	8	1
	Nut Hex	1/4-20		1
Fuel pump mount to frame				
	Bolt Hex	5/16-24 x 1.75	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Pedal mount to frame bolts				
	Bolt Hex	5/16-24 x 2.25	8	4
	Nylock	5/16-24		4
	Washer Flat	5/16		8
Throttle pedal stop				
	Bolt Hex	5/16-18 x 1.0	8	1
	Nut Hex	5/16-18		1

Clutch pedal actuator bolt	Bolt Hex	5/16-24 x 1.0	8	1
	Nylock	5/16-24		1
	Washer Flat	5/16		2
Alternator strut rod end jam nuts R.H.	Nut Jam	5/16-24		1
Alternator strut rod end jam nut L.H.	Nut Jam L.H.	5/16-24 L.H.		1
Alternator adjusting bolt	Bolt Hex	5/16-24 x 1.5	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Throttle linkage jam nut	Nut Jam	10-32		1
EEC mount	Bolt Hex	1/4-28 x 1.5	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		2
EEC ground	Bolt Hex	1/4-28 x 1.5	8	1
	Nylock	1/4-28		1
	Washer Flat	1/4		2
EDIS mount	Bolt Hex	1/4-28 x .5	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		2
Master cyl. To casting	Bolt Hex Vented	5/16-18 x 1.0	8	6
	Head Safety Wired			
	Washer Flat	5/16		6

## STEERING AND SHIFTER

Gear shift bellcrank stud	Nylock	1/2-13		1
Gear shift pivot mount	Bolt Hex	5/16-24 x 2.5	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Gear shift lever to shaft	Bolt Hex	1/4-28 x 1.0	8	1
	Nylock	1/4-28		1
	Washer Flat	1/4		2
Gear shift mount	Bolt Hex	5/16-24 x 2.25	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Steering bearing bolts	Bolt Hex	5/16-24 x .75	8	2
	Nylock	5/16-24		2
	Washer Flat	5/16		4
Lower steering shaft bolt	Bolt Hex	5/16-24 x 1.5	8	1
	Nylock	5/16-24		1
	Washer Flat	5/16		2

Steering shaft bolts	Bolt Hex	1/4-28 x 1.5	8	2
	Nylock	1/4-28		2
	Washer Flat	1/4		4
Steering gear case bolts	Bolt Hex	3/8-24 x 2.25	8	2
	Nylock	3/8-24		2
	Washer Flat	3/8		4
Steering rack mounting bolts	Bolt Hex	3/8-16 x .75	8	4
	Washer Flat	3/8		12
Steering rack to clevis bolts	Bolt Hex	7/16-20 x .75		2
	Nylock	7/16-20		2
	Washer Flat	7/16		4
Tie rod clevis jam nuts L.H.	Nut Jam L.H.	7/16 L.H.		2
Steering rack mounting block clamps	Bolt Hex	3/8-16 x 1.50	8	2
	Washer Flat	3/8		2