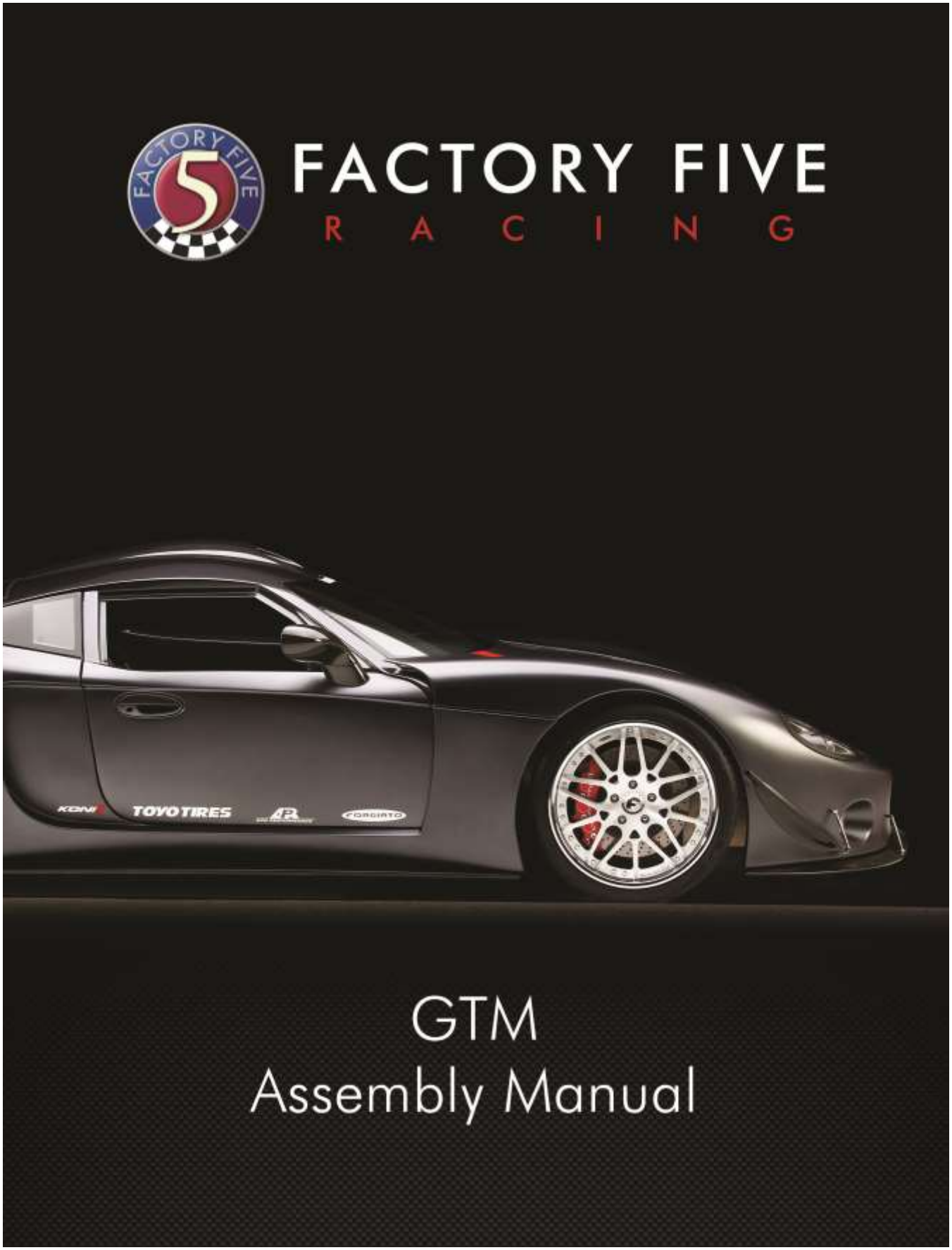
FACTORY FIVE RACING



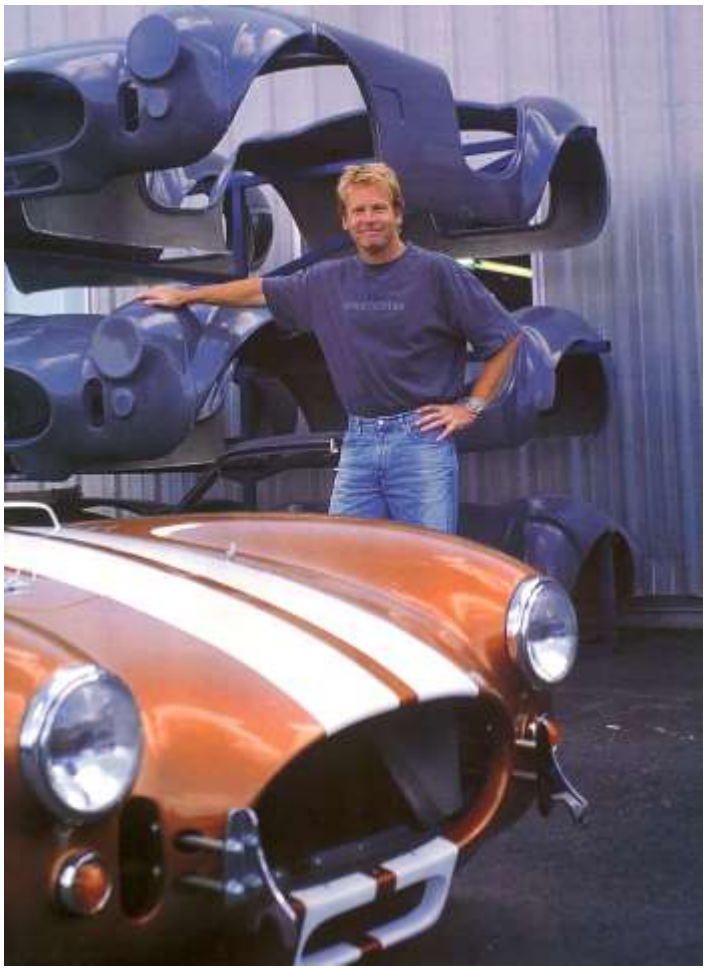
GTM Assembly Manual

Revision 2H, December 2018

Chapter 1

General Information

Foreword



If you are reading this, you are embarking on a mission to build your own car, or at least considering doing so. I wanted to share with you some of my experiences and lessons learned while working with literally thousands of people who have completed this undertaking with us. The lessons learned here are important and will hopefully help with your decisions as well as with the project and the completed car. First of all, the idea of building your own car is NOT for everyone. It is a serious endeavor that should be undertaken with care and consideration. The desire to build your own custom car goes way back. It is part of our uniquely American car-centric culture, and those who build their own cars are at the very center of this. Since the earliest days of Hot Rodding, literally tens of thousands of people have built their own cars. Even more have done restorations and major customizations to existing cars. As fun as this project is, a person should be candid about their abilities turning a wrench. This is not a place for novices. That is even truer in racing, where danger and risk are part of the very definition of always trying to go faster. The late Carroll Smith wrote something I really loved that speaks to this point.

"There is no magic! The one basic truth of successful racecar preparation bears repeating. There is no magic. There is only logic, common sense, forethought, vast amounts of hard work, and a fanatic dedication to the task at hand".

Carroll Smith

"Prepare to Win"

I can't think of anything more appropriate to say about the right way to approach the serious work of building your own car. Carroll passed away not too long ago, but his accomplishments behind the Ford

Lemans victories and his contributions to the motorsports community continues in his writings that are all at the top of my list of recommended readings for the car builder or racer.

After being honest about the skills, responsibility, and dedication required to build a car, I feel the need to talk about the PROCESS of building a car in an equally candid manner.

The process of building a car is a lot like the process of having kids. As a matter of fact, it's absolutely the best analogy I can find (apologies in advance to all of you without kids, try and bear with me). Both things are easy to get started. With a car project you order a manual, talk to car guys, get all excited over glossy photos and perhaps order a kit from us. With the whole pregnancy thing, well for most folks that's even easier to get started…

When my wife was pregnant with our first daughter I was sure we would never have any more children. From the swollen ankles to the morning sickness, to the delivery room scene from the movie "Alien", the whole process was difficult, and while she didn't complain too much thru the nine months, it was obviously hard work. Another thing, she wouldn't have been the best salesman for others considering getting started on the baby thing.

When it comes to the car project, once the kit arrives and the process begins it is much the same as pregnancy. Frankly the degree to which a person breezes thru the project or languishes is commonly a factor of skill, but still, building a car for anyone is a tough job and there are inevitably issues. How many times have you gotten the wrong part at NAPA, gotten home to realize the alternator has a six ribbed pulley not five…? You will meet challenges building this car and you will be frustrated at times. Thankfully there are internet discussion forums where you can vent your frustrations and complain about the idiots who designed this kit. We smile when reading these posts because we know that while the pregnant woman complains, the mother loves her children in an unreasonable and perhaps even undeserved way!

All the way thru the process, as you build your car, the seasoned guys at Factory Five in tech support will help you. The larger community of Factory Five customers will also be there for you, as the one thing that really sets us above the crowd of other companies is the size, competence and enthusiasm of our customer community.

When the baby arrives and when your car is done, there will still be more work. With babies, it's up all night, diapers, and strange maternity contraptions that men don't speak of in the light of day… With the car it will be other challenges. Registration and licensing can be frustrating and laws vary from state to state. A wrench dropped from 25 feet away will inexplicably shoot sideways into any freshly painted surface and my favorite was my own engineers who felt the need to test out how long an 8.8" rear diff can run on a track without gear oil (answer, about three laps before deciding to stop moving).

There will be highs and there will be lows, but in the end, there are few parents who don't treasure their children more than life itself, and there are few Factory Five owners whose lives remain unchanged by the experience and the artwork they have crafted.

It's one of the greatest experiences in the world to raise children. It's also one of the most rewarding things I know to build your own car. Even today at car shows, open houses, and events wherever Factory Five cars are found, I smile to hear the inevitable first words every guy says to me… "Let me show you what I've done".

The cars that we build are more than cars. They are a reflection of us. The badge of honor that comes with having built your own car is a special one indeed. You will join a community of others who have earned their own… and THAT is the story of Factory Five Racing and that is what awaits you in this process.

David Smith
President

Safety Notice

While there are many things to love and be proud of in our country today there are a few things that we wish were different. With regret and a small amount of resentment we include the following warning and statement of non-liability at the advice of men with soft hands and necks the size of pencils.

Motorsports involves the operation of machines and materials near the limits of performance. Racing involves an inherent amount of risk. Any decision to proceed in the project of building one's own racecar must be made with the acceptance of personal responsibility. If, while building, driving or racing this Factory Five Racing kit, should you become injured or die, it will be the result of your own conscious decision and we at Factory Five Racing, Inc., disclaim any responsibility of any kind.

The procedures and recommendations contained in this book are to be used as a guide with the ultimate determination of safe construction and race-worthiness to be made by you. If you feel uneasy about whether you have the skills to build your own vehicle, DO NOT PROCEED. This project involves building a car from the bare frame all the way up to a finished vehicle. It is intended for individuals who have the skills and abilities commensurate with the scope of a project of this magnitude.

This kit is only a collection of parts designed for use primarily as a race car. Factory Five Racing does not build completed or partially completed vehicles. You are responsible for ensuring that the vehicle you build complies with all Federal, State and local laws regarding its use. Except as may be specified in writing, Factory Five makes no warranties, expressed or implied, on the products (parts, or kits) offered for sale. All implied warranties of merchantability and fitness for a particular purpose are expressly disclaimed by Factory Five.

While Factory Five products are thoroughly tested under actual race conditions, Factory Five cannot control the quality of the installation or application of these products. The products offered for sale are true race car components, the installment of which often requires considerable time and fabrication skill. Before attempting any installation or assembly, the purchaser should determine the suitability of the product for the intended use, the time, and level of skill necessary for correct installation or assembly.

Factory Five does not make any warranty, expressed or implied. Purchaser expressly ASSUMES THE RISK of all personal, property and economic injury, damage or loss, either direct or indirect, arising from the use, misuse, or failure to determine the appropriate use of any Factory Five product.

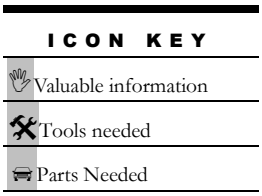
Safety Tips

- Read the manual. It is at least a good guide and place to start.
- Don't take short cuts.
- Before starting work, make sure you have the proper tools, the required parts, and sufficient space for the job. If you damage any parts, it will probably be because they were either not stored properly or, the wrong tool was used to install them.
- Don't work when you're too tired or upset. The car you will be building is capable of supercar levels of performance, and your life depends on the quality of your workmanship.
- Never work under a raised car unless it is well supported by stands intended for that purpose. Never work under a car supported by a jack.
- Always observe good safety practices such as the use of eye protection, protective clothing, and gloves.
- Keep the battery disconnected whenever you work on fuel or electrical systems and always keep a fire extinguisher handy.
- Don't allow children in the work area.
- Partially assembled cars attract a crowd. Keep garage doors closed or mark off work areas.
- Make sure that all electrical equipment is grounded. If working alone, have someone check on you periodically.
- When using an engine hoist, make sure that the working load rating is correct for the weight.
- Work in a well-ventilated and well-lighted area.
- Use portable safety lights for under-carriage work. Never use an exposed bulb type light.
- Be mindful of the environment. Avoid spills of solvents or engine fluids. If a spill occurs, clean up immediately and dispose of it in hazardous waste containers
- Never let a friend or someone else drive your car.
- Always wear your harnesses.
- Clean your build area after each assembly is completed. This will speed your build process as it ensures that you know where your tools are and prevents tripping injuries.
- It is impossible to anticipate all of the possible hazards. Care and Common Sense will prevent most accidents

How to use This Book

This Assembly manual is intended to help you build your Factory Five Kit. This book will not explain such things as engine or transmission building. A secondary purpose of this book is to use it as reference for owners that want to do maintenance work on their cars or for those that purchase finished cars, to understand their cars better.

This manual was written with the average weekend mechanic in mind. It is best to follow the manual step by step but if there is a part missing from the kit move to the next section and come back to it late when the part is available. If the instructions are followed then the resulting car should be a great handling sports car.



We have included an Icon key as the beginning of each section that contains useful information for each assembly that details the tools needed for that assembly, what assembly in the kit parts are packaged in that are needed for that step and any useful information or warnings.

What You Get

The Factory Five GTM kit is engineered to be built as a chassis kit by a car guy at home with regular tools. The GTM kit gives you everything you need to build your car, except for select running gear parts taken from a 1997-2004 Chevrolet C5 Corvette. We include everything from the frame, body, complete interior, and all trim down to the smallest details like correct fasteners, brackets, and badges. We make it easy for you to use the engine of your choice with a list of available exhaust and motor/trans mount choices (no charge). For a complete packing list, see the Appendix.

Frame: Complete jig-welded Powder coated space frame.
Body: Hand laid 3/16" laminate composite body and panels made with vinyl ester resin.
Chassis Aluminum Panels: Laser cut, pre-formed 6061-T6 and 5052-H32 aluminum panels for cockpit, nose, and engine bay. 1200 pre-packaged rivets.
Front Suspension: Koni™ brand high performance mono-tube, rod-end shock absorbers, Custom Spindles, Hubs.
Rear Suspension: Koni™ brand high performance mono-tube, rod-end shock absorbers, Rear CV components, including CV shafts, inner and outer boot kits, wheel spacers and lugnuts.
Brake System: Wilwood™ master cylinders, stainless braided brake lines, clutch slave cylinder, fasteners, pre-flared 3/16" brake lines.
Steering System: Manual steering rack, polyurethane bushings, nickel plated lower steering shaft, steering wheel w/adapter, steering bearings, tie rod ends.
Fuel System/Parts: Fuel tank mounting hardware, fuel filler neck and fasteners, pre-flared fuel lines w/unions, barbs, hose clamps and high press flex lines, fuel filler cap with gasket, ground strap.
Cooling System/Parts: Stainless steel radiator hose kit including adapter kits, fasteners, overflow tank w/cap, hoses, hose clamps, mounting hardware.
Engine/Exhaust: Complete exhaust system, 1990-1998 G50-LS1 Transaxle adaptor kit, Engine mount components, engine mount spacer, oil temp bypass, oil temp block-off, fasteners, Air filter components, air filter, hose, hose clamps, and silicone reducer
Gauges and Dash and Electrical Assembly: Chassis wiring harness, ignition switch, dash indicator lights, insulated line clip hardware, Cable ties, battery ground strap, custom gauges.

Complete Interior Accessories: Bucket seats, carpet set, emergency brake boot, interior rear view mirror w/fasteners, door latches, Wilwood™ pedal assembly, accelerator pedal, accelerator cable, adjustable door hinges with bronze bushings and shifter boot.

Exterior Accessories and Lighting: DOT approved windscreen, License plate lights, Ceramic Factory Five nose badges, DOT approved headlights, turn signals, and tail-lights.

Assembly Manual: Bound assembly manual that is full of pictures and diagrams.

Fasteners: Over 1500 top quality zinc plated, chrome and stainless steel fasteners, numbered and packed individually by assembly.

What You Need

Engine: LS series engine

Transaxle: Porsche Transaxle Parts from 1990-1998 2-wheel drive 911 models including clutch disk, pressure plate, throw-out bearing, inner CV joints and starter.

Fuel tanks: 1997-2004 Corvette C5 fuel tanks with pump and flexible lines

Paint: Most customers will send out the body and paint work to a professional body shop.

Battery: We recommend a battery sized for a Corvette.

Wheels and Tires: See the appendix for complete recommended sizes.

Serial Number Identification

Factory Five Racing has included a Certificate of Origin along with a Nameplate for your kit. The serial number from the Certificate of Origin matches the number engraved on the 2”x 2” tube going across the car at the front of the cockpit. Below is an example of how the nameplate looks. The VIN number space is provided so that your state issued VIN number can be engraved if you so desire. This can be engraved at any Trophy or mall engraver.

Tools List

The following lists detail the tools and supplies that are needed to build your kit. The "helpful" items are not crucial to the assembly but make life easier. Home Depot HUSKY®, Sears CRAFTSMAN®, and Snap-On® tools are all guaranteed for life and we've found them to be more reliable over discount tools.

Storage shelves for kit and running gear parts
Body storage area (can be outside)
SAE and metric socket set, a 52-piece set that includes an 18mm is a good choice
Deep sockets for some common sizes are helpful.
SAE Combination wrench set (3/8" – 15/16")
Metric combination wrench set (10mm – 18mm)
Full set of standard and Phillips head screwdrivers
Standard Hex key set
Long nose pliers, 4.5"
Snap ring pliers
Pop rivet tool with 1/8" and 3/16" heads
Drill
Drill bits (3/32", 1/8", 9/64", 3/16", 7/32", 5/16", 7/16", 1/2")
Caulk gun
24 oz. Plastic Dead Blow hammer
Razor knife
Wire stripper/crimping tool
7/8", 1¼" and 2¼" hole saws (Body cut outs)
Bench top vise
Tape measure or straight edge ruler/T-square
Hydraulic floor jack
Work Bench or 2 Saw horses with 4'x 8' ¾" Plywood Top
Engine hoist
6' 5/16" chain (to lift engine)
4 Jack stands
Hack saw (metal blade)
¼" & 5/16"Fuel/brake line bender (hand held)
Jig saw (Body cut outs)
Torque wrench (Click style, 3/8" drive)
Eye protection
Gloves
The thing between your ears

Required Supplies

Stick with name brand products like Eastwood®, 3M®, and Duplicolor®. The Eastwood brand coatings are great for bringing weathered and oxidized parts up to show quality. PPG brand and DuPont brand paints are excellent.

_____ Engine degreaser
_____ Silicone Door and window sealant, GE Silicone II or equivalent - 4 tubes
_____ Coolant – 2 gallons of concentrate
_____ Engine oil, 10W-30 – 5 Qts
_____ Gear oil, 80W-90 (for rear end) – 2 Qts.
_____ Transmission fluid, Mercon automatic Trans fluid – 4 Qts.
_____ Brake fluid, DOT 3 – 1 Qt.
_____ Oil filter
_____ Fuel filter
_____ Battery
_____ Spark plugs
_____ 5 minute epoxy glue
_____ Black permanent marker with pointed tip – 2 ea
_____ 2" Masking Tape – 1 roll
_____ Duct tape
_____ Electrical tape
_____ Bodywork supplies
_____ Rags
_____ Gojo® pumice hand cleaner
_____ Spray paint (for donor parts, pick a color)
_____ Acetone, carburetor cleaner, or other solvent
_____ Aluminum polish/cleaner
_____ 3M Super 77 spray adhesive – 1 large can

Helpful Tools

_____ #8 hex driver attachment for cordless drill
_____ Adapter for cordless to use ¼" socket driver
_____ Wire brush or wire wheel attachment for drill
_____ Flare nut wrenches (⅜" x 7/16")
_____ Flat file and round file
_____ Scissors
_____ Aluminum snips
_____ Friends

Chapter

2

Donor Parts and Parts needed

This chapter deals with the donor parts needed in addition to the parts that we included with our kit. Many people choose to use parts from a single Corvette donor. If you are not going to use a donor car but choose to acquire parts separately, this section may still be useful. The complete list of parts required to build the FFR GTM is included in the Appendix of this manual. For specifications on the Corvette donor by year, see the Appendix.

The fifth generation Corvette (the C5) was introduced by GM in 1997 and produced until 2004. Any C5 Corvette (standard or Z06) can be used as the donor for the FFR GTM.

The transmission you will use for the GTM is the Porsche 911 G50 series gearbox. These transmissions can be found in 5 or 6 speeds and with various gear ratios. For example, the Porsche 993 used a 6 speed G50. Factory Five supplies an adapter kit for 1990-1998 G50-03/05, G50-20 and G50-52 Transaxles. For other styles, years and brands see the Appendix

Donor Part Selection Tips

Where to look

- Junkyards – If they do not have one on the lot, usually they go to auctions weekly and can get what you want.
- Newspaper classifieds.
- The Internet.
- Search "Factory GTM" on Ebay. There are companies that sell "GTM Corvette parts Kits" without engines for $5,000.

Below is a list that contains salvage dealer websites we have found to be useful. Many of the dealers listed often have multiple C5 Corvettes. For additional dealers, see the Appendix.

Dealer	Location	Phone	Website
Corvette Shop and Supplies, Inc.	Tampa, FL	(813) 872-6907	corvetteshoponline.com
Kim Motor Company	Petersburg, VA	(804) 732-8001	kimmotor.com
Contemporary Corvette	Bristol, PA	(800) 367-8388	contemporarycorvette.com
Corvette Salvage. Com	Picayune, MS	(888) 467-8388	corvettesalvage.com
Ebay SMC Performance Inc	N/A Aurburn Hills, MI	N/A (248) 276-0483	ebaymotors.com smcperformance.com

Price – Donor Car

Whether you're buying a complete salvage yard car or a bunch of parts, it's important to remember which parts are worth money to the salvage yard and which ones are of little or no value. The drive train, body panels and interior are of the most value. The other pieces such as the steering shaft, pedal box, and other miscellaneous pieces usually are very inexpensive for the yard to include. When negotiating the price from the parts yard, you might get a better deal if you let them have the parts you won't be using. We believe it is usually better to take the parts off yourself, because you will inevitably do a better, more careful job. If you are using parts that are already taken off, you gain the advantage of being able to pick the best of those that are available. There is a wide range in prices for donor packages depending on the type of car (Coupe, Convertible or Z06) and mileage. Keep in mind that some cars may be wrecked, but considered "repairable". A car that has been deemed "un-repairable" may be a

better, less expensive choice if the damage did not affect any of the parts on the donor list. Below are some rough price figures:

Model	Year	Mileage	Condition	Price
Coupe	1998	54,000	Repairable	$8,900
Convertible	1999	22,000	Repairable	$11,500
Coupe	1999	12,000	Repairable	$9,000
Coupe	2000	27,000	Repairable	$14,500
Convertible	2000	55,000	Un-repairable	$9,900
Coupe	2000	57,000	Repairable	$13,500
Z06	2002	6,000	Repairable	$26,500
Convertible	2003	31,000	Repairable (Almost no Damage)	$23,500
Coupe	2004	7,000	Repairable	$18,500
Coupe	2004	1,200	Repairable	$23,500

Price – Transaxle

The G50 can be found with many different gear ratios, with a Limited Slip Differential (LSD) or without an LSD all of which directly affect the price of the transmission. As always, mileage and use (street or race) plays a factor in how much you will pay for the transmission. Below is a short list of prices you can expect to pay for certain setups.

Transmission Type	Vehicle	Year	Mileage (mi)	Limited Slip (Y/N)	Price
G50/03	Porsche 911 C2	90-94	41,000	N	$3,000
G50/03	Porsche Carrera 911	1992	31,000		$3,500
G50/52	Porsche 911	1991	41,000		$3,500
G50/52	Porsche 911 Turbo	89-92	N/A		$3,000
G50/20	Porsche 993 C2	95-98			$5,000
G50	Porsche Carrera 2/C2	1992	N/A	N	$3,500

Running Gear

Make sure that the wiring harness, computer, sensors, ignition key and engine come from the same car. In order to make a wise choice on running gear, there are several things to look for. First of all make sure that the VIN numbers on the transmission and engine are present and match the numbers on the vehicle title (if available). If the numbers don't match make sure the parts yard records the new numbers on their bill of sale. In the unfortunate event that these components were stolen, you need to have documentation on the origin and sale price. Check the numbers twice. The VIN numbers are located on the back of the engine block, on a flat spot between the heads and at the apex where the bell housing meets the block. Some solvent or WD-40 can usually clean this area off enough to see the numbers. The Serial numbers on the transmission are typically stamped on a flat spot on the bottom of the housing near the middle of the transmission. Some G50's have an 8 digit code (i.e.: 1987 G50), while others have a 12 digit code (i.e.: 88-89). The first five digits in the serial number (see the table above) are what you will need to reference what the transmission has for gears, 5 or 6 speeds, and what model Porsche it came out of.

Here are some tips to follow when checking out running gear:

Corvette Parts

Examine the engine mounts. Some small splits in the rubber area of the mount are normal, but any serious splitting should be avoided.
Check the engine mount brackets for damage since these are areas that can crack/bend.

The easiest way to avoid engine work is to buy a donor car with an engine that runs. Everyone will tell you it runs, but it's best to hear for yourself. Bring a battery with you since it is usually the first thing that gets taken out. A battery also helps when some guy says, "Don't worry it runs great, but since I don't have the battery you'll have to trust me." The Corvette is computer controlled and should run well the first or second time it is turned over. If at all possible, put the car into the gear and drive it forward and backward. If you can't drive it, let it run for a moment, and then re-start it. Look for main bearing oil leaks (behind the harmonic balancer) or oil pan leaks. Leaks aren't common unless the car has high mileage.
Although you will not be using the Corvette transmission or torque tube, if they show signs of being hit, the impact may have translated to the crankshaft. Once again (if possible) start the engine and check to see if the harmonic balancer or any of the pulleys wobble or if the engine shakes violently.
If the block has been painted, it is a good indication that the engine was re-manufactured or has had some work done to it since the Aluminum Corvette block was never painted at the factory.
The front spindles and rear spindles should be clean, dry, and have decent rotors and calipers without much dirt accumulation.

Check the aluminum upper and lower control arms to be sure they are not bent or have large stress cracks.
Make sure the rear tie rods are not bent. However, if they are damaged they are easily replaced.
Take a look into the throttle body of a low mileage car. There will be some black carbon immediately behind the plate when it is opened. A throttle body with 50,000 miles of use will have a film thickness equal to that of a piece of paper.

Porsche Parts

Check the G50 transmission tail shaft for smooth, unrestricted movement back and forth as well as the ability to pivot clockwise and counter clockwise. Also, if you can obtain the correct pressure plate, slave cylinder, throw-out bearing, and clutch fork with the transmission this is a plus.
You will also need to obtain the Porsche starter, which should be bolted to the G50.

Disassembly of a Corvette Donor for Parts

General Motors designs all of their cars for rapid and accurate assembly. These cars come apart quickly and easily if you remember to look at it from the assembly point of view. The engine, torque tube, and transmission are actually bolted to the front and rear cross members, raised into place from below then fastened at 8 points (4 locations front and rear). Think of this job as a reverse assembly line and it will go faster. The Factory Service manual has quite good step-by-step disassembly instructions for each assembly. We have tried to be helpful here but the Service manual or any other quality manual will make it that much easier. Many manuals licensed by GM use excellent GM drawings, schematics and diagrams. For example, in the Corvette Service Manual every assembly with an electrical connection has a specific section named “Connector End Views.” The Connector End Views section has scaled diagrams of what each connector looks like, what each lead in the connector is for, and the color of the wire for each lead.

When in doubt, don’t throw it out. That one little OEM bolt could save you a trip to the auto parts store.

Doors

- In order to remove the windows and mirrors, you may have to move the window up and down to access certain bolts. Therefore, you will need to leave the battery connected for the following steps.
- Flathead Screwdriver, 10, 13 mm socket, T-30 Torx.
- Window mechanism, Mirrors, Exterior Door Handle

Lower the window

Remove the access panel behind the pull handle, and remove the screws behind the pull handle.

Pry up the window switch from the back and unplug the electrical connection.

Remove the inside door handle bezel by pulling the handle, then prying the upper and lower clips free.

Remove the door panel – start by prying the panel fastener at the rear of the panel near the part in the liner.

Work your way forward watching for each fastener. If you plan on reselling the doors, be careful not to break the fasteners or pull the female end of the fastener out of the door. A good way to remove the panel without breaking the fasteners is to pry between the male end and the female end. The picture below shows what each part looks like.

Lift the panel off of the top clips and set aside. Remove the Styrofoam insert.
Remove the speaker assembly (7 mm) and speaker electrical connector.

Remove the water deflector. Remove the front plug at the bottom of the door.

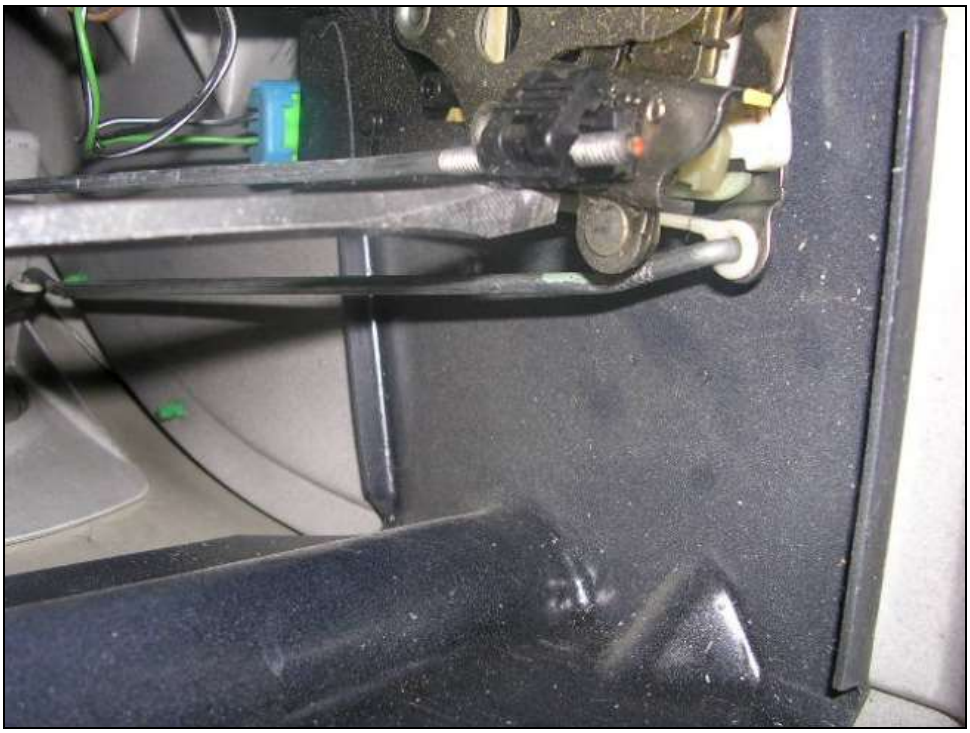
Remove the access plugs at the front and rear of the door to expose the mirror retaining nuts. Some models have plugs while others have adhesive-backed strips. If your donor has the adhesive-backed covers, they should peel off easily by hand.

Unbolt the three mirror retaining nuts (10 mm). It may help to have a magnet handy to prevent dropping the retaining nut once it is loose. Disconnect the mirror electrical plugs. Remove and save the mirrors and retaining nuts.

Reconnect the window switch. Move the window all the way up. You should now have access to the window clamp bolts.

Remove the window clamp bolts (13 mm). You do not need to keep the clamp bolts (they will not clear the glass in the GTM). Remove the glass

Disconnect the window motor electrical plug.
Unbolt the lower track, motor, and upper track retaining nuts (10 mm). Unclip the motor from the door and remove the assembly. Save the window motor, tracks and hardware.



Remove the door opening rod from the clip on the door latch – pry the clip apart by prying up at the side. Then, pull the rod out of the clip.

Remove the door lock rod from the lock cylinder lever. This works well using a pair of pliers to press on the bottom of the rod with one jaw of the pliers, and the other pressing the lock cylinder lever.

Unbolt the two outside door handle bolts (10 mm). You may have to use the key to unlock/lock the door in order for the lock cylinder lever to clear the opening in the door. Save the outside handle/rods/bolts/linkage to interior handle.

Hood

Two people are required to remove the hood.
13 mm socket, 10 mm socket, ratchet, Flathead screwdriver.
Hinge Assembly, Latches.

Remove the hood latches with the 10mm socket. Label and save the latches.

Do not open the hood all the way. This allows you to access the lower hinge bolts with the ratchet.

Disconnect the hood lamp electrical connection.

Hood lamp connected.

Hood lamp disconnected.

Remove the lower hinge bolts at the hood (13mm socket).

While one person holds the hood steady, unbolt the upper hood bolts from the hinges (13 mm) then carefully unclip the struts from the hood. Lift the hood off the hinges (one person per side).

Remove the struts, hinges, and ball studs (13 mm). Label and save the hinges.

Radiator/Coolant Reservoir

- Drain the coolant from the system into a container or bucket before removing the Reservoir and Radiator. Avoid spilling any coolant. Dispose of all coolant properly – a local garage or parts store can do this for you.
- 10 mm socket, ratchet, pliers, 5/8" wrench (Automatic), and waste container/bucket.

- Coolant Reservoir, hoses and clamps, Radiator Assembly, A/C Condenser (for Heat/AC option), Pressure Sensor (for Heat/AC option).

Coolant Reservoir

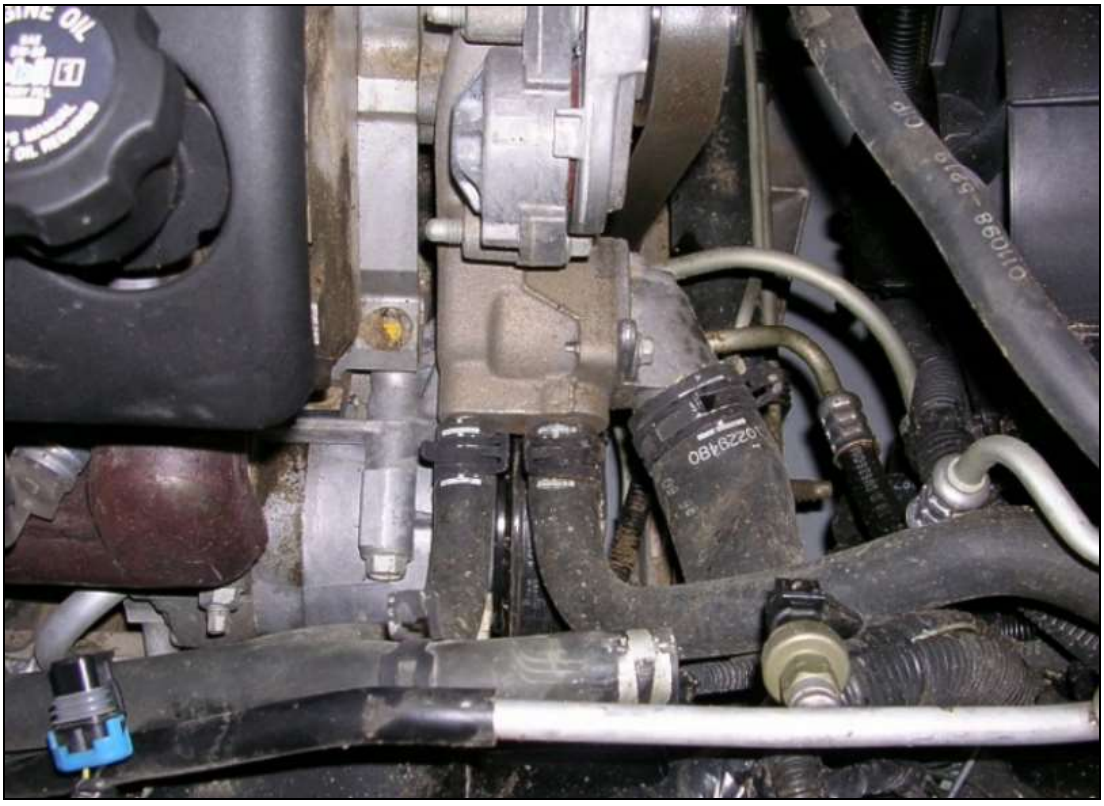
Remove the hose clamps from the lower hoses using a set of pliers. Label and save the hoses and clamps.

Remove the lower reservoir bolt using a 10mm socket.

Remove the upper tank bolts using a 10mm socket.
Disconnect the coolant level electrical connector.

Lift the reservoir out of the engine bay. Drain any remaining coolant from the reservoir. Save the reservoir.

Radiator



If you have not done so already, disconnect the inlet and outlet hoses from the radiator as well as the hoses from the expansion tank.

Remove the inlet, outlet and heater hoses from the water pump. Save the lower (the outlet) radiator hose.

If you plan to use the optional Heater and A/C unit, you will need to remove the Pressure Sensor from the refrigerant line.

- If the pressure sensor was damaged on your donor car see below for the replacement part info: OEM Corvette Pressure Sensor (with 3 wires to connect through C150 to PCM), (Part Number 22664328 (square style harness connector), or Part Number 22601619 (Round style connector)) and O ring.

For Automatic transmission cars, use a 5/8” wrench to remove the transmission coolant line from the passenger side of the radiator.

Disconnect the fan motor electrical plugs and remove the wires/wire looms from the shroud assembly. Although the radiator and fan shroud assembly can be removed as one piece, if there is not enough room to do so, pull the fan shroud assembly out of the retaining slots on the radiator.
Save the condenser radiator and fan shroud assembly (fans, motors, shroud), A/C Pressure Switch.

Horn Assembly

🛠 13 mm socket, ratchet.
🚗 Horn Assembly.

Remove the passenger side front fascia lower closeout panel.
Leaving the horn assembly electrical plug in place, snip the wires, leaving enough room to splice the connection into the chassis wiring harness supplied with the kit.

Unbolt the assembly from the skid bar (13 mm). Save the horn assembly, and wiring section with the plug.

Windshield Wiper

🛠 13 mm socket, ratchet, pry bar.
🚗 Wiper arm

Remove the wiper shroud.

Unbolt the wiper arm from the tapered shaft using a 13mm socket.
Pry the wiper arm off of the shaft.
Unbolt the wiper transmission.

Disconnect the wiper motor electrical plug.

Save the Wiper arm assembly.

Exhaust

- The exhaust pipes can be heavy and difficult to handle by yourself – having 2 people to remove the exhaust works best.
- 15 mm socket, 13 mm socket, extension, ratchet.

Before removing the exhaust pipes, remove the blue electrical plug retainers from the Oxygen sensors then unplug the oxygen sensor electrical connectors.

Unclip the Oxygen sensor wires from the aluminum shroud.

Unbolt the H-pipe from the muffler assembly flanges using a 15 mm socket.

Unbolt the H-pipe from the exhaust manifold flanges using a 15 mm socket.

Unbolt the H-pipe to Bell Housing flange bolts (15 mm socket). Unbolt the H-pipe bracket to Bell Housing bolts (15 mm).

Unbolt the H-pipe hangers with a 13 mm socket.

Remove the H-pipe.
Remove both muffler assemblies.

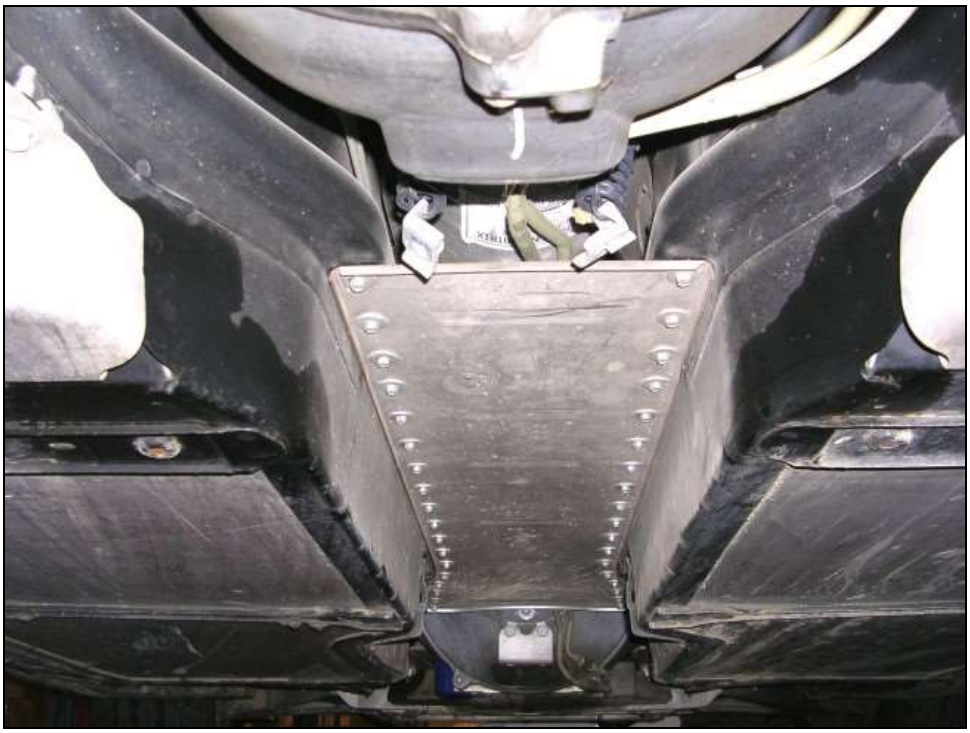
Engine Removal/Suspension/Transmission

When the corvette was assembled at the factory, the engine, suspension and transmission were installed from below as one assembly. Since most of us don't have a lift at home it will be easiest to remove the suspension and transmission from under the car, then raise the engine out of the car. The engine/cross member and transmission/cross member assemblies can be heavy and difficult to handle alone – having 2 people to remove it works best. Make sure to use an engine hoist that has sufficient load capacity for the job. Use extreme caution when moving the engine assembly. Work on a clear and level surface. When disconnecting electrical components remember to identify both ends of every connector disassembled. The easy way to do this is to tape and number each side of the connector the same. The connectors will only work if they're mated to the other similar shaped connector. Each connector is different in the car. Before disconnecting the battery, move the seats forward (this will help you remove the E-brake and seats later in the disassembly of the donor!

Engine hoist, socket set, combination wrenches, floor jack, jack stands, drain pan, 7, 10, 13, 15, 18, 21 mm sockets and/or wrenches, ratchet and/or impact gun, 5/16" socket, ¾" socket, ¾" wrench, 5/8" wrench,11/8" wrench, pry bar, flathead screwdriver, fuel fitting release tool, power steering pulley puller.

Engine, Computer PCM and TAC Module, Wiring harnesses, Front/Rear Control Arms, Brakes, Spindles, Outer CV Joints.

Engine: Under Car



Remove the torque tube pan bolts with a $^{5}/_{16}$" socket. If you own an air compressor and an impact gun or air ratchet, you'll be thanking yourself – performing this step by hand is pretty tiresome and seems to take forever!

Remove the fuel tank pans with a 13 mm socket.

Disconnect the Primary Oxygen sensors from the manifolds.

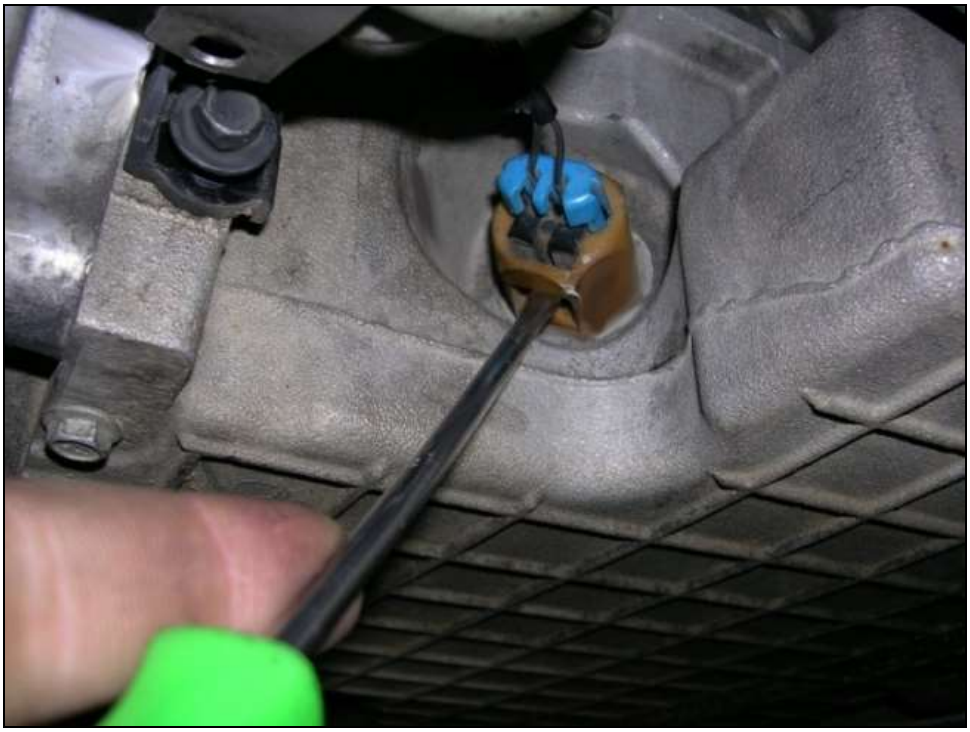
Disconnect the ground strap behind the exhaust manifold on the driver's side (15 mm).

If your donor car is an Automatic, place a drain pan under the coolant lines, then disconnect the coolant lines at the passenger side (below the starter) with and ¾" and $^{5}/_{8}$" wrenches.

Unbolt the line clamp nearest the bell housing (10 mm), and move the line to access the bolts mounting the torque tube to the bell housing. Leave room to access the Engine Oil Level sensor.

Disconnect the Engine Oil Temperature sensor.

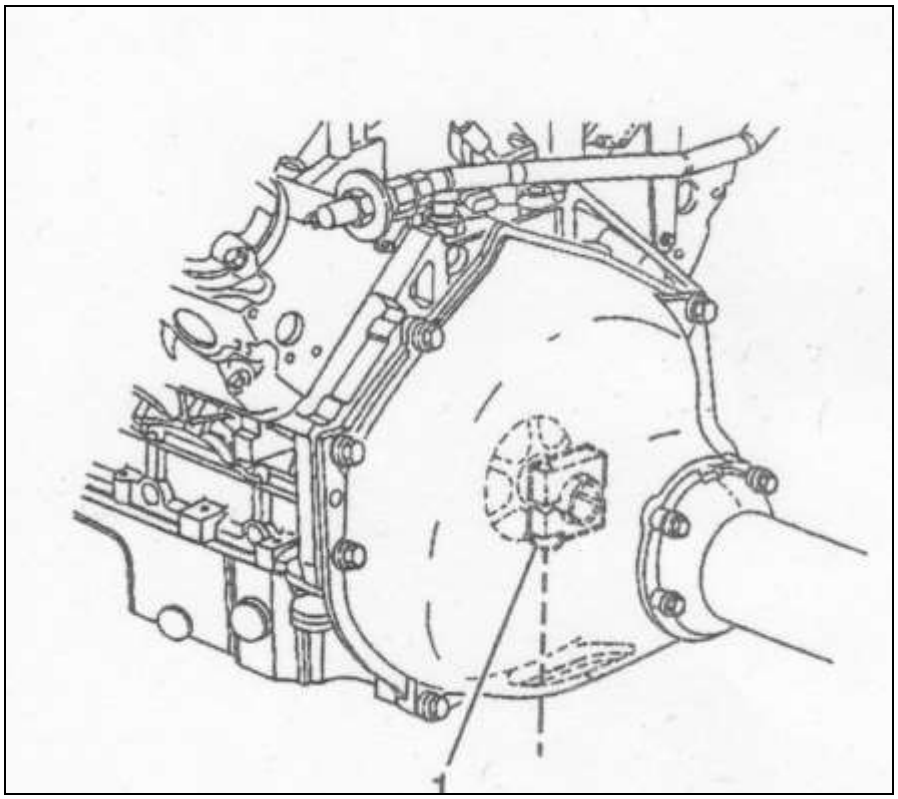
Disconnect the Engine Oil Level sensor – it may be necessary to rotate the sensor housing (1 1/8" wrench) to access the clip. Once the plug clip is pointing down it may help to use a flathead screw driver to unclip the plug.



Engine Oil Level Sensor removal.

Unbolt the motor mounts with an 18mm socket.

Brace the torque tube before proceeding any further.



Remove the flywheel access plug from the bottom of the bell housing and loosen the drive shaft clamp bolt.

Unbolt the bell housing from the torque tube. Carefully pry the torque tube away from the bell housing to break the seal – this makes engine removal easier.

Unclip the wiring harness connection at the upper left bell housing bolt.

If you haven't done so already, disconnect the battery.

Before removing the electrical connections on the starter, it may be easier to unbolt the starter, lower it slightly and support it, then remove the two connections with an 8 mm wrench and a 13 mm wrench.

Disconnect the Crankshaft Position sensor.

Unbolt the ground wire next to the Crankshaft Position Sensor (15 mm).

Unclip the engine wiring harness clamp on the driver side behind the exhaust manifold.

Unclip the wiring harness clamp at the front of the engine's left bank (driver side) in between the cross member and the leaf spring. If you do choose to unbolt the front clamp (13 mm), save the bolt – you will need it to relocate the alternator.

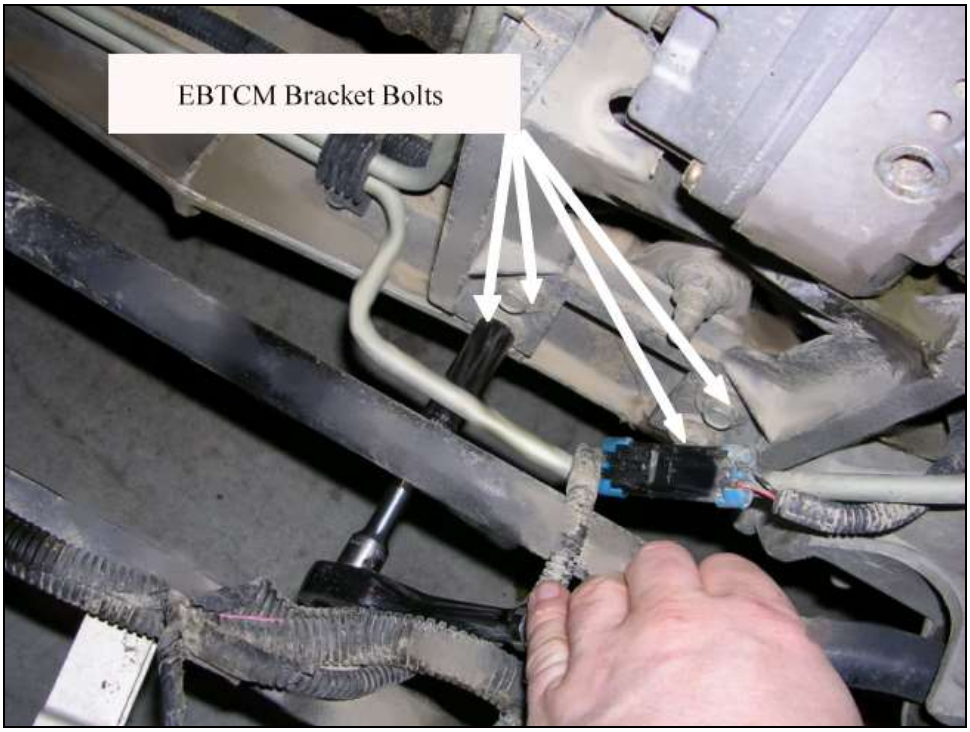
Unbolt the Air Conditioning Compressor bolts (15mm), and remove the compressor for added clearance when removing the engine. If you have trouble removing the compressor from the engine bay, you can tie it to the frame rail so it's out of the way with zip ties, a bungee cord etc.

Engine: Above Car

Disconnect the Intake Air Temperature and Mass Airflow sensors. Reposition the air intake duct and cleaner if you haven't already removed them.

Disconnect the BPMV pump motor ground wire.

Disconnect the EBTCM wiring harness connection by lifting up the metal lever. Place a drain pan under the unit and disconnect the brake lines from the unit.



Unbolt the 4 EBTCM bracket bolts (13 mm).

Unbolt the steering gear nut (18 mm) then remove the steering gear bolt. Lift the EBTCM/BPMV unit and bracket out of the engine bay.

The design of the power steering system allows you to disconnect the power steering system without causing any fluid to leak. However, it may be helpful to disconnect the power steering reservoir line, and move it out of the way. Since the EBTCM has been removed, you can place a drain pan under the car and catch the power steering fluid. Remove the reservoir cap, and drain the fluid.
Disconnect the power steering line at the steering rack (18 mm).

Using a 15 mm socket, take the tension off of the accessory belt and remove.

Remove the power steering pulley to gain access to the power steering pump bolts. To do this you will need a puller – if you do not own one, you can rent one from almost any auto parts store. If you cannot prevent the outer wrench from turning while you turn the inner wrench and the wrench is long enough, you can use the engine cross member to brace the wrench while you turn the inner wrench (See pictures below).

Using the engine cross member to brace the outer wrench.

Remove the power steering pump (13 mm).

Unbolt the power steering reservoir (15 mm wrench or socket). Move the pump and reservoir out of the way.

Unbolt the intermediate steering shaft lower bolt (13 mm). You will need a pry bar to remove the shaft from the joint.

Disconnect the power steering plug.

- Disconnect the A/C compressor electrical connection. The A/C compressor is fastened to the engine using 3 bolts and 1 stud. Unbolt the top bolts (15mm socket). Use a 7 mm wrench to advance the stud. The bolts will not come out of the sleeves in the compressor all the way, but just enough to remove the compressor from the engine. Remove the belt (15 mm socket). Move the compressor off to the side, making sure to tie it securely out of the way.

Disconnect the brake booster vacuum hose.

Disconnect the throttle body motor electrical plug.

Disconnect the alternator connections (13 mm), wiring clamp behind the alternator.

Disconnect the engine coolant temperature sensor plug.

Unbolt and remove the Alternator (15 mm). Save the 2 Alternator Bolts.

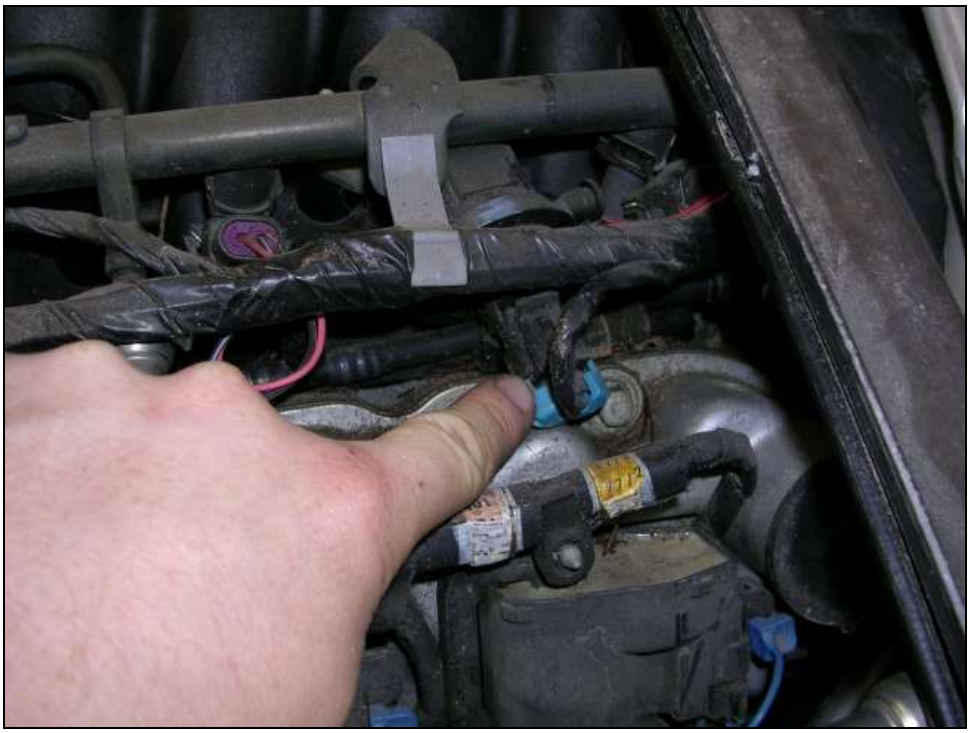
Before relieving fuel pressure in the fuel rails, have a rag ready to absorb the fuel. To relieve the pressure, unscrew the cap at the end of the rail, then press the valve in with a punch or a flathead screw driver.

Disconnect the fuel line(s) from the rail with a fuel fitting release tool (a pretty inexpensive set of plastic clips that you can find at just about any auto parts store i.e.: NAPA. These will also come in handy when removing the fuel tanks).

- 1997-1998 Corvettes have two fuel lines running to the fuel rails. In 1999, the system was changed to a return-less system. Thus, 1999 and newer corvettes only have one fuel line connecting the tanks to the rails.

Disconnect fuel injector electrical plugs and coil main connections (one on each side of the engine).

Disconnect the EVAP solenoid connection.



Disconnect the “AIR” Plug.

Disconnect the Throttle Position Sensor.

Remove the "AIR" manifolds from the exhaust manifolds (10 mm wrench or socket – socket works best on the Right side). Tie the "AIR" lines out of the way.

Remove the front wheels (¾" socket).
Disconnect the brake fluid level sensor plug from the Master Cylinder, head light harness plugs, engine ground on driver frame rail. Disconnect the ABS plugs and wiring clips from the cross member (passenger side access is easiest through the wheel well). Unclip the harness from the harness clamp

near the Driver Engine Mount. If you choose to do so by unbolting the clamp, be sure to save the bolt – you will need it to relocate the Alternator. Move the harness off to the side.

Disconnect the brake line, then the brake line bracket on both sides (10 mm socket, 13 mm wrench). Move the lines out of the way and tie back. Save the flexible lines and brackets.

Unbolt the tie rod ends from the spindle (18 mm wrench, 6 mm Hex wrench). To remove the rod end from the spindle, hit the rod end through the spindle with a dead blow hammer. If this does not work, you may need to use a ball joint fork.

Unbolt the upper control arm from the frame (15 mm).
Support the lower control arm with a jack.

Unbolt the shock from the tower (15 mm wrench). Slowly lower the jack. To move the shock out of the way it may be necessary to pry the shock out of the tower the rest of the way.

Brace the engine as far forward as possible with a jack stand. CAUTION: The Corvette Aluminum oil pan is a structural component of the engine, and should NEVER come in contact with a jack/jack stand. Place something in between the jack stand and the pan that will not damage the oil pan while the engine is supported by the jack stand (i.e.: a piece of plywood or a 2x4).

Hook the engine hoist to the engine block. A common way is to bolt a chain to the engine heads, one bolt at the front of the left or right head, and the other in the rear of the opposite head. Raise the hoist just enough to place tension on the chain, just enough to support the weight of the engine.

Place jack under Cross member and unbolt (21 mm).

Lower the jack and remove the Cross member/Front Suspension Assembly out from under the car.

Make sure the chain you are using to lift the engine will not break anything such as the fuel lines, coil packs etc.

Lift the engine up and out slightly to gain access to the electrical plugs/grounds/wire looms at the rear of the engine – 2 passenger looms, 1 driver harness loom, 1 ground (driver). Harness Connection on passenger side shown.

Ground and harness Clamp at rear of Driver Side.

Unplug the knock sensor.

Unplug the Engine Oil Pressure Sensor (EOP).

Unplug the Camshaft Position Sensor.

Unplug the Manifold Absolute Pressure Sensor (MAP).

Route the harness away from the engine.

Slowly lift the engine OUT (not up).

The engine must be OUT far enough so the drive shaft is all the way out of the bell housing before lifting the engine up and out of the engine bay.

Move the A/C compressor off to the side if you haven't done so already. Check for any fuel lines, EVAP lines, or electrical wires/components that are still connected or in the way.
Once you are sure nothing is preventing you from removing the engine, you can lift the engine completely out of the engine bay.

Cross Member/Front Suspension Tear-Down

Disconnect the sway bar from the Control Arm. You will need an 18 mm wrench and possibly a 6 mm Hex key to hold the rod end steady while you loosen the nut. The ball joint may need some convincing to come out of the Control Arm. If you plan to sell the sway bars, be careful not to break the links as they are only plastic.
Unclip the ABS from the Cross member. Unbolt the Lower Control arm nut and remove the bolts. Save the Control Arms, Spindles, Brakes, and all nuts and bolts.
Unbolt the shock (13 mm deep socket).

Rear Suspension/Transmission Removal

✋ Support the Transmission/cross member at the front, rear and at the sides to keep it from tipping.

Unbolt the Upper Control Arm using an 18 mm socket on the head of the bolt. The nut at the end of the bolt is a welded nut so all you need to remove the bolt is an 18 mm socket.

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Disconnect the rear harness connection (Passenger Side) from the E-brake line. Move the rear harness connection out of the way. Disconnect the ABS plug from the hub

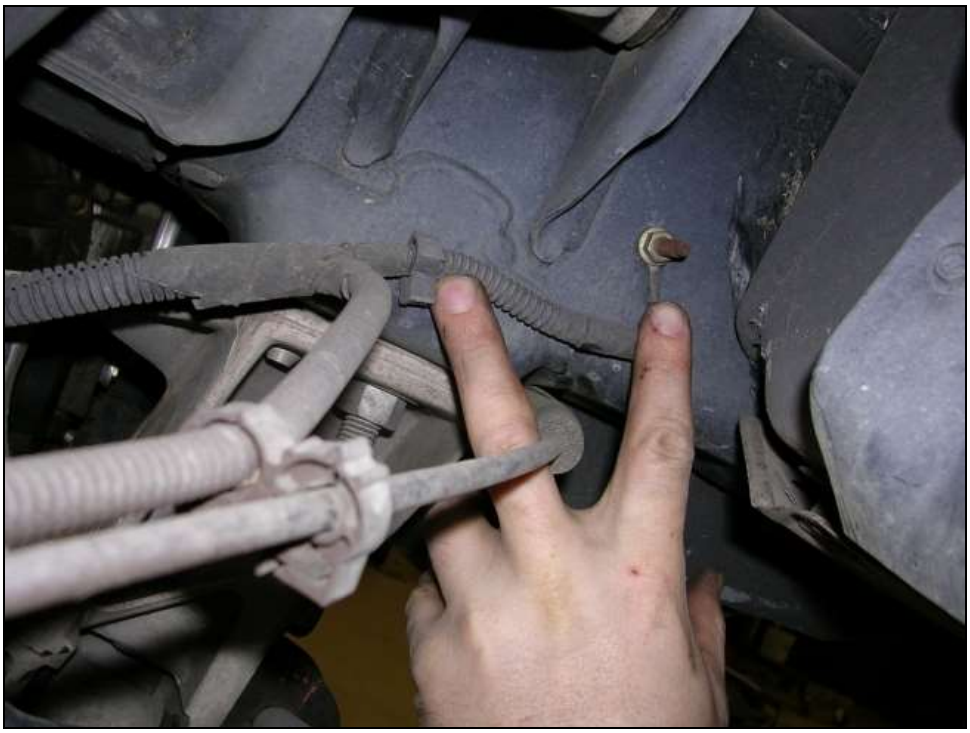
Unbolt the shock (13 mm socket). The shock also uses a welded nut on the back, so all you need to do is loosen the bolt head with the 13 mm socket. The shock may pop up as you finish unbolting it. Disconnect the brake line from the unions above the transmission.

Following the same procedure as in the front of the car, disconnect the brake line then unbolt the line clamp.

Remove the lock washer on top of the stud holding the leaf spring to the control arm. Unbolt the bracket/cross member bolts (15 mm).

Unbolt the leaf spring from the control arm (21mm nut, 18mm bolt).

Disconnect the E-brake clip from the spindle, and unbolt the bracket (15 mm).



Disconnect the ground, and line clamp on the driver side from the frame.

For Automatic Transmission donors: Unbolt the shifter cable bracket (15 mm).

Unbolt the cable retaining bracket (13 mm).

Remove all electrical connections from the shifter box, the Main Harness 20pt Plug, and harness clips from the transmission and cross member before lowering. Transmission harness Clip shown.

Transmission Main Harness Connection.

- Before unbolting the cross member bolts, be sure the weight of the assembly is still supported by the jack stands.

Place a transmission jack or a floor jack with cup under the assembly. Unbolt the cross member (21 mm deep socket).

SLOWLY lower the transmission/torque tube/cross member assembly checking that all brake lines and wiring have been disconnected.
Unbolt the tie rod from the spindle (18 mm), then from the cross member (24 mm). Save the Tie Rod Assemblies and hardware.
Remove the half-shafts from the transmission. You may need to pry them to get them started. You will not need the shafts (included with the kit), but do save the outer CV Joints and hardware.
Unbolt the shock from the control arm.
Unbolt the sway bar from the control arm (T-40 Torx, 18 mm wrench). Unbolt the control arm (Rear Bolt: 15 mm – head, 18 mm – nut/Front Bolt: 19 mm – head, 21 mm – nut). Save the Control Arms, Spindles, Brakes, and all nuts and bolts.

Electrical

Disconnect the Oxygen Sensor connections from the driver and passenger frame rails. Separate engine harness clip from ABS sensor line clip on the driver side.
Disconnect the Pink, Blue, White, Dark Green, and Light Green main harness connections.
Feed the harness coming through the tunnel behind the battery tray.

Disconnect the battery and Ground from the "Under hood Fuse Box". Remove the section of wiring.

Remove the battery tray.

Fuel Tanks

If there is still fuel in the tanks, use caution not to drop them as you lower them out of the car.
Fuel line disconnect tool (5/16", 3/8"), Flathead Screwdriver
Fuel tanks, lines, filter, cross-tube.

Passenger

Disconnect tank cross over hose using a flathead screw driver to loosen the clamps. After removing the hose, be sure to cover the opening in the tanks to keep dirt and debris out of the tanks.

Make note of the color codes on the fuel lines at the tank for later identification.

Disconnect the quick connect fuel sender fuel feed pipe (lower, marked in blue) and fuel feed rear cross over hose (upper, marked in black) at the tank, using a ⅜" and 5/16" fuel line disconnect tool, respectively.

Unplug the fuel sender electrical connection (already unplugged in previous pictures).
Disconnect the fuel tank vapor line. Some Corvettes have a quick connect fitting, others you may have to cut the line.

Slowly lower the tank. This may take some effort as the tank is wedged tightly into place. You may have to pry (carefully!!) the neck away from the frame to get the tank out.

Driver

Disconnect quick connect fittings at the tank. Use the ⅜" disconnect tool to unsnap the fuel sender feed (the upper line marked in green) and the fuel feed line (the lower line marked in black). The fuel return line (blue) can be unsnapped with the 5/16" disconnect tool. Be sure to take note of the colors used to distinguish the lines, or make your own labels to hook up the lines properly later in the build.
Unplug the fuel sender electrical connection.
Disconnect the fuel vapor line.

Remove the fuel filler neck and ground strap. Cover the tank opening to keep any dirt or debris out of the tank.

Slowly lower the tank.

Remove the fuel lines and filter. It's a good idea to reconnect the lines to the tank while it is fresh in your mind where each line connects to the tanks.

Unclip the fuel tank wiring harness from the frame.

Emergency Brake

🛠 Flathead Screwdriver, 10, 13, 15 mm socket, 13 mm wrench
🚘 Emergency Brake handle, cables, Seat Belt Buckle.

Convertible Donor

Remove the folding top stowage compartment lid extension panel. Open the folding top stowage compartment lid.
Remove the upper and lower screws from the extension panel.
Lift the panel up off the bracket.

Coupe Donor

Remove the traction control panel by opening the console door, then lifting up the panel at the back.

Disconnect the electrical connection.

Remove the caps covering the retaining nuts at the rear of the console and remove the nuts (10 mm).

Remove the retaining nuts at the front of the console.

Lift the trim plate up at the back and slide slightly rearward to expose the electrical connections. Unplug the fuel door switch and accessory outlets.

Remove the push pins and covers from the Passenger seat front adjuster legs (slide them forward).
Unbolt the front adjuster legs (15 mm).

This is where moving the seat forward before disconnecting the battery will save you time. If you have the ability to put power to the seat motor, do so and move the seat forward to access the rear seat bolts. If you cannot move the seat forward, you can still gain access to the rear bolts by performing the following steps:
Remove the recliner handle (Flathead screwdriver).
Remove the seat trim panel screws (2) (Phillips screwdriver). Move the panel side to side to work the barrel post clip out from the seat frame.

Unplug the seat adjustment electrical plug.

Cut the seat cover tie string under the front of the seat, at the middle. Pull the cover and foam up to gain access to the rear seat frame bolts. Remove the seat. Remove the memory seat module. Disconnect the electrical harness at the side.

Disconnect the seat belt harness clip.
Unbolt the track and remove. Unbolt and save the Seat Belt Buckle.

Pull the carpet away from the E-Brake handle. Unbolt the E-brake (3 Torx T-40 bolts).

Unbolt the E-brake boot retaining nuts (10 mm).

Unclip the electrical connection.

Disconnect the rear cables from the retaining clip.
Press in the clips on the front cable and slide the cable through the E-brake bracket, lifting the cable through the slot.

Drill out the rivets holding the bracket (Picture shows cables still attached (it is easier to leave the bracket riveted in place to remove the cables, but you can still remove the cables if you have already removed the bracket from the frame.)

Pull the E-brake forward, out of the car. Save the E-brake handle and cables/brackets.

The following steps are required to remove the remaining wiring/components from the car. Labeling each connection as you disconnect them will help you to recognize what you need/don't need when you get to the wiring stage of your GTM build.

Trim Plate – IP Accessory

Flathead Screwdriver, T-15 Torx.

Shift into 2nd (Automatic) or 4th (Manual) for more clearance.
Pull boot in towards the shifter (M/T) to release the tabs. Lift away from the trim plate.
Remove ash tray.

Remove grill plate using a flathead screw driver.

Unscrew retainer screws next to the lighter, behind the grill plate, and behind the ashtray (T-15 Torx). Pull the trim plate rearward. Disconnect the electrical connection from the lighter. You may need to lightly pry the plug clips past the rib on the lighter to remove the plug.

Remove console and trim plate.

Knee Bolster

🛠 Flathead Screwdriver, T-15 Torx.

Remove the Fog lamp/Trunk Release switch – pry at the bottom to release. Disconnect the electrical plug.

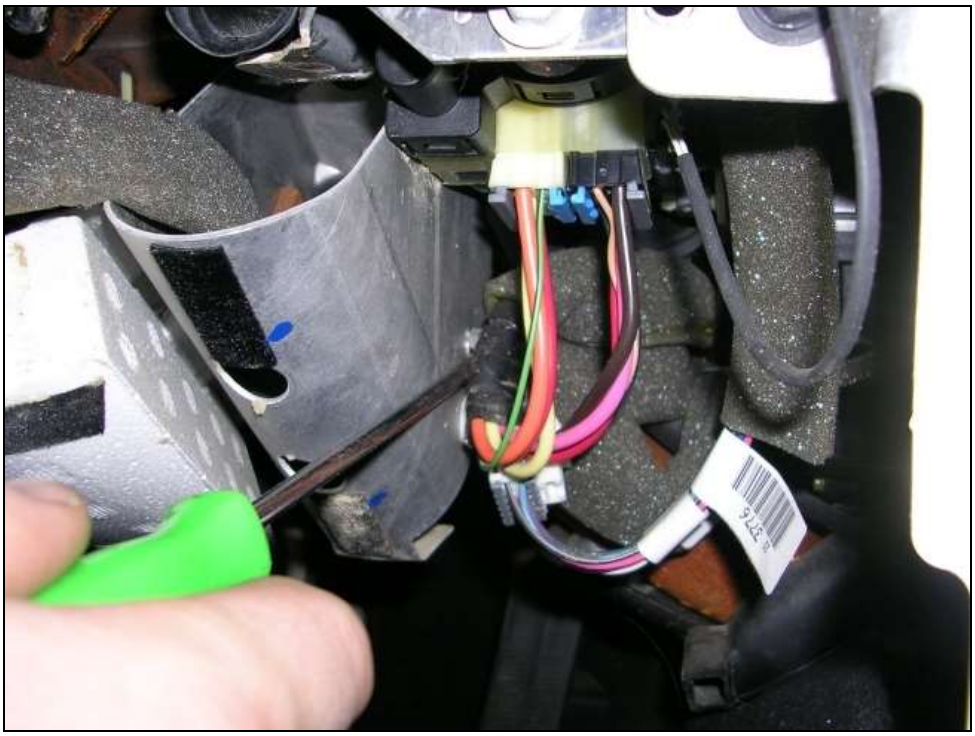
Unscrew the retaining bolt behind the switch, and the two screws under the knee bolster (T-15 Torx). Lift firmly at the sides pulling rearward.

Disconnect the Inside Air Temperature sensor (if equipped).

Remove the Knee Bolster.

Steering Column

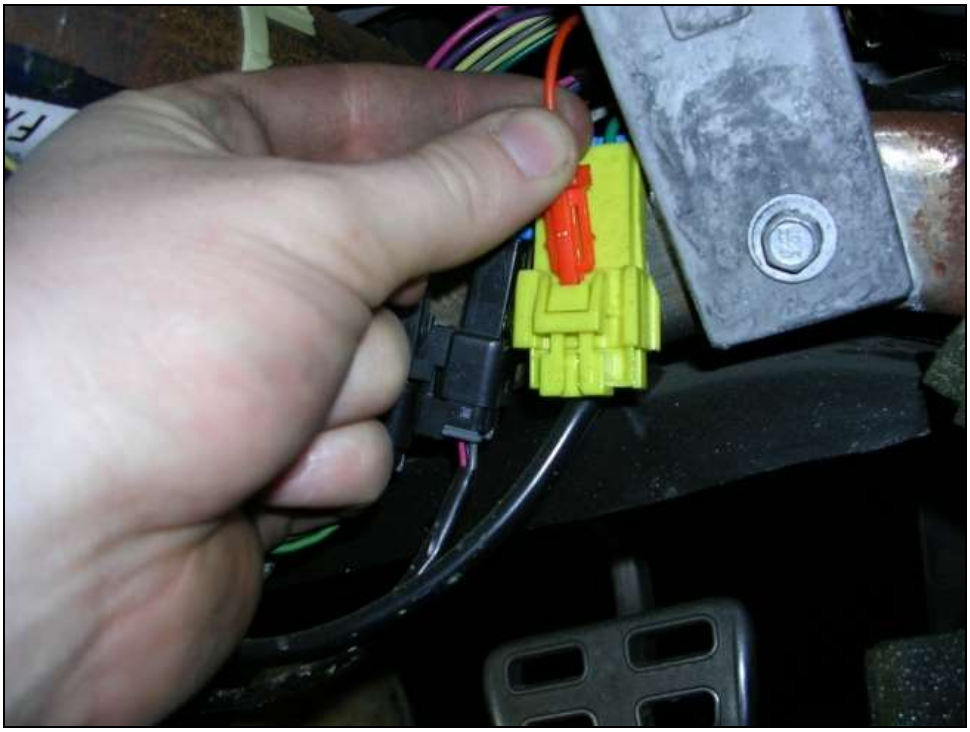
- If the airbags have not been deployed on your donor, follow the disassembly instructions to avoid causing the airbags to accidentally deploy. The airbags deploy quickly with a lot of force so you do not want to have your head or any body part near the airbag if it deploys without warning.
- 7, 11 mm socket, 13 mm deep socket, extension, pry bar, flathead screwdriver, T-25, T-30.
- Steering column and shafts, wiring.



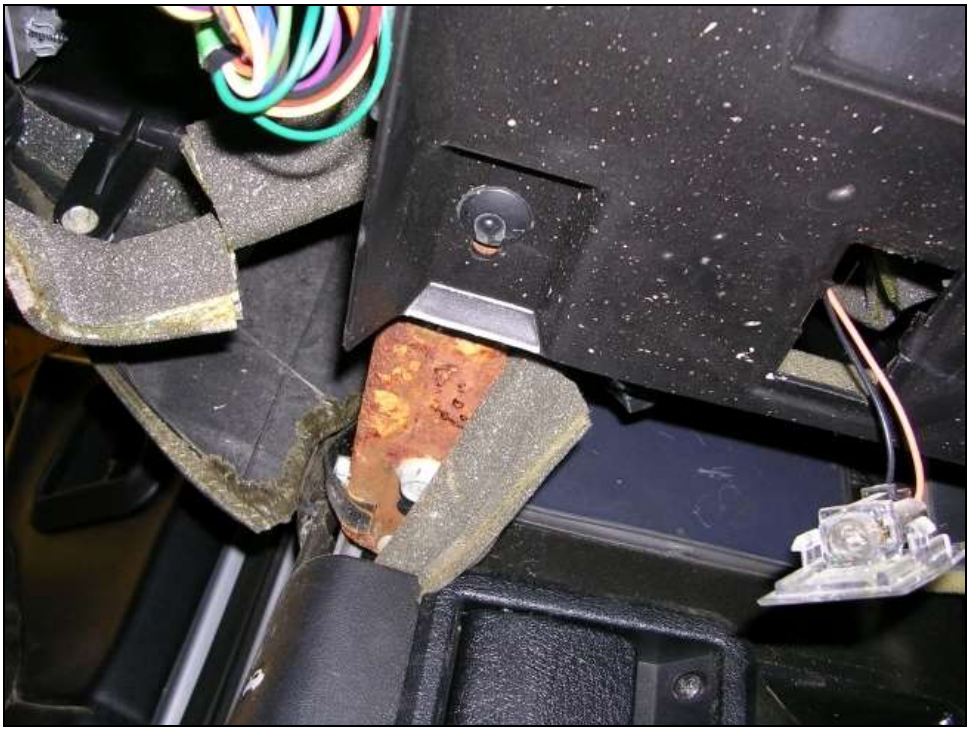
Remove the ignition and hazard harness connectors from the knee bolster bracket.

Remove the bolster bracket screws by sliding a socket (7 mm) with extension through access holes in the bottom of the bracket. Remove the bracket.

Unbolt upper steering shaft coupling bolt (11 mm). Remove upper shaft. You will have to pry it off.



Disable SIR – Remove the positive connection clip from the yellow connector at the base of the column, then unplug the connection.



Remove courtesy light. Pry the Sound Insulator Panel front clips loose, then, with a short screwdriver pry the retaining washer off.

Remove panel.

Unplug the yellow plug behind the steering column brace.

Unplug the SDM fuse (#16 in IP fuse block under passenger kick panel). This is a safety feature to prevent the air bags from deploying.

Remove the airbag – unscrew the bolts holding the restraint module to the steering wheel (T-30). You may need to have someone hold the wheel or lower shaft to the break the two screws loose. Or if you do not have an extra set of hands available, you can hold the Torx screwdriver with a set of locking pliers, and steady the wheel with your other hand. The airbags are definitely parts you will want to resell as you can get several hundred dollars for them (if they were not deployed).

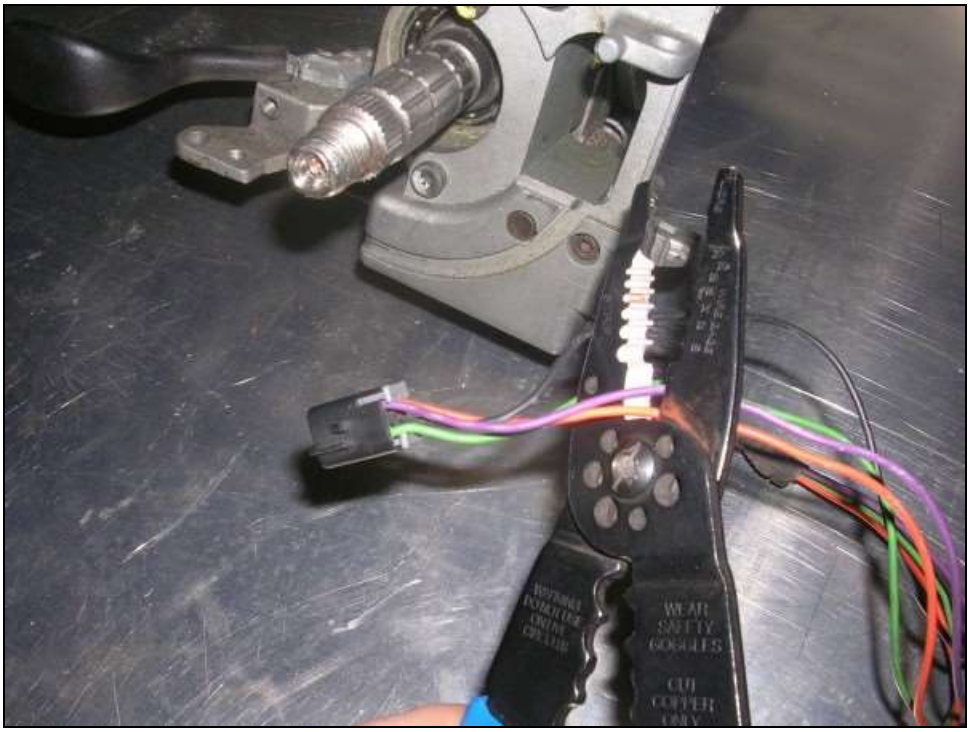
After removing the connection position assurance clip (CPA), unplug the module electrical connection.

Unscrew the ground connection (T-25). Unscrew the horn connection.
Disconnect all electrical connections under the column, attached to the column brace.

Unbolt the lower steering column nuts (deep 13 mm).

Remove console and trim plate if you haven't done so already.

Pull the column towards you, rotating clockwise to allow the lower bracket and telescoping motor (if equipped) to clear the column brace. Save the column, including all wiring, and the upper shaft. Now you will need to disable the column lock pin to allow the wheel to rotate freely.



The first step is to cut the purple and orange wires leading to the lock module on the column.

Strip a small section of insulation off the orange and purple wires (the end of the wire leading to the column, not the plug) then simultaneously touch the purple wire to the positive side of a battery and the orange wire to the negative side of the battery. This will retract the pin into the module housing.

IGNITION

🛠 7, 10 mm, Flathead Screwdriver.
🚗 Ignition Module, wiring, Ignition key.

Unbolt the screw to the left of the Ignition (7 mm). Unbolt the 2 bolts connecting ignition to stereo bracket (10 mm).

Automatic donors – Disconnect the park cable by inserting the key, turn the ignition to ON, and use a screw driver to release the lock tab at the underside. Pull the cable connection out of the ignition. Save the Ignition key – you won't need the ignition itself as there's an ignition switch supplied with the kit, but you will need the Corvette key to open the doors.

Shifter (Automatic)

🛠 Flathead Screwdriver, 10 mm socket, ratchet.

Remove the four retaining nuts holding the shifter assembly to the tunnel.

Disconnect the park electrical connection from the front of the shifter.

From under the car, unclamp the shifter from the tunnel wall. Press the clamp arms inward while pulling back. Pull the cable out of the bracket by sliding the cable through the slot in the bracket.

Upper Dash Pad

🛠 7, 10 mm socket, Flathead Screwdriver

Remove the Glove Box: Open box, reach behind it and push the plugs through the access lower bolts. (10 mm). Unbolt side and top screws.
Slowly drop the box down enough to remove the light plug. Remove the Glove box.

Remove the Windshield Defroster grille by prying up with a screwdriver. Unplug DRL and Sunload sensor (if equipped) by twisting it out of the grille.

Remove the pillar moldings.
Remove all screws holding the pad in place: corners of the Defroster grille (7 mm), at the pillars (7 mm), the 3 screws at the center support bracket (7 mm), knee bolster side bracket (7 mm), 2 screws at the Instrument Panel (IP) cluster (T-15).
Pull the dash pad out slightly by first pulling at the dash handle (Passenger side) to access the hazard light switch plug.

Unplug the hazard switch.

Remove the dash.

Passenger Air Bag

🛠 10 mm socket.

Disconnect the electrical connection.

Unbolt the 4 retaining nuts (10 mm). Remove the air bag.
To remove the bracket, unbolt the 9 bolts holding it in place.
Unclip the heater hose (2 locations).

Stereo and Heater Controls

🛠 10 mm socket.

Unbolt the 4 bolts holding the Aluminum center bracket in place (10 mm). Slide the bracket out of place.

Disconnect the line clamp from the bottom of the bracket. Remove the airbag CPA, and unplug the connection. You may have to unbolt the module to make the process easier.

Disconnect the stereo and heater electrical connections.
Lift the radio out of the car.

Dash Cluster

🛠 7 mm socket.

Unscrew the 2 retaining bolts at the bottom of the gauge pod (7 mm). Lift the pod away from the pedal bracket.
Unplug all electrical connections.

Pedal Bracket

🛠 7, 10, 13 mm socket, extension, Flathead screwdriver.
🚘 Throttle pedal, Brake Light Switch/wiring.

Remove the driver side window defroster duct.
Unplug the throttle plug at the top of the pedal.

Remove the 2 retaining screws holding the Bose Module to the bracket (7 mm). One screw is above the throttle pedal, the other mounts through the pedal box.

Lower the Bose Module.

Unbolt the throttle bolts (13 mm). Remove the pedal and save.

Disconnect the Master Cylinder pushrod by removing the clip on the inside of the pedal, then push the pin through (towards the outside of the car).

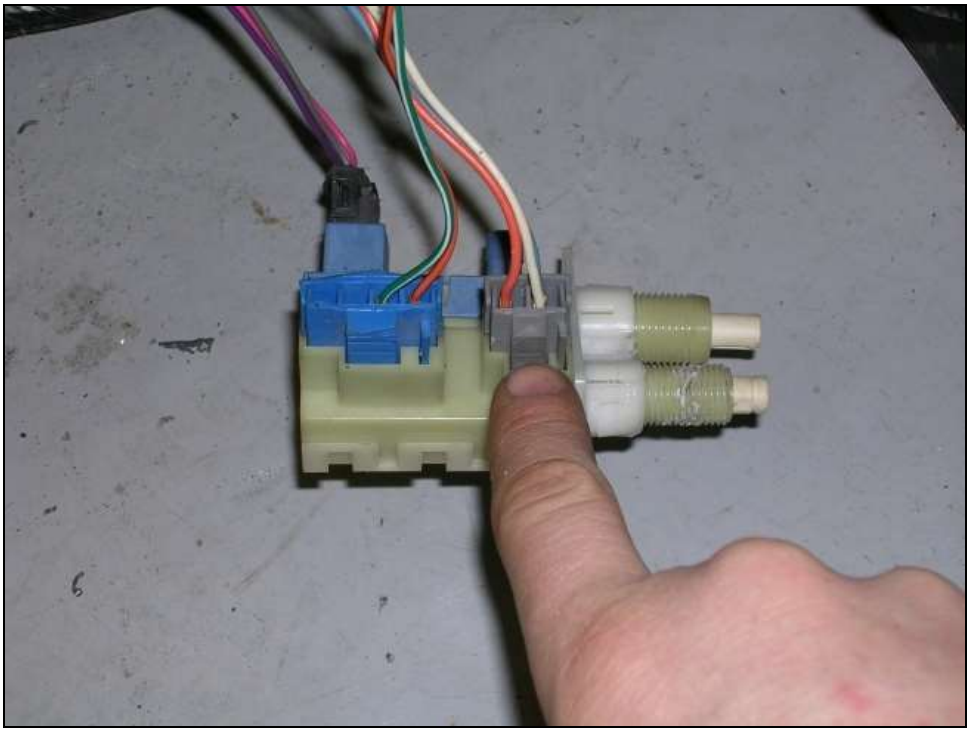
Unplug the brake pedal sensor. This plug is a little stubborn, so it may take some effort. Label and save the switch and wiring.

For Manual Transmission donors:

Remove the cruise control release switch bracket bolts. Move the switch and bracket out the way.
Disconnect the clutch Master Cylinder push rod from the pedal.
Unbolt the clutch pedal bracket retaining nuts.
Remove the clutch pedal bracket stud plate.
Unbolt the 4 brake booster mounting nuts (13 mm).
Unbolt the Pedal Box bracket from the upper and lower Instrument Panel Braces.
Pull the Pedal Bracket out enough to expose the upper brake pedal pivot bolt. This will take some shifting of the bracket to make it past the lower brace.

Remove the brake pedal – unbolt the top pivot bolt (bolt head – 13 mm, nut – 15 mm).

Pull the pedal out through the bottom.
Rotate the pedal bracket and lift it out of the car.



Remove the Brake Light Switch (the lower switch) from the pedal box by removing the lock washer, pressing the tabs on the switch in and pushing it through the pedal box. Save the switch and the grey plug/wires.

Hood Release Handle and Cables

🛠 Phillips screwdriver, T-15 Torx.
🚗 Hood Release Handle and Cables, screws, Latches.

Unscrew the 2 screws at the front of the handle (Phillips screwdriver).
Unscrew the 1 screw behind the handle (Pull handle to gain access) (T-15).
Unbolt the hood latches.

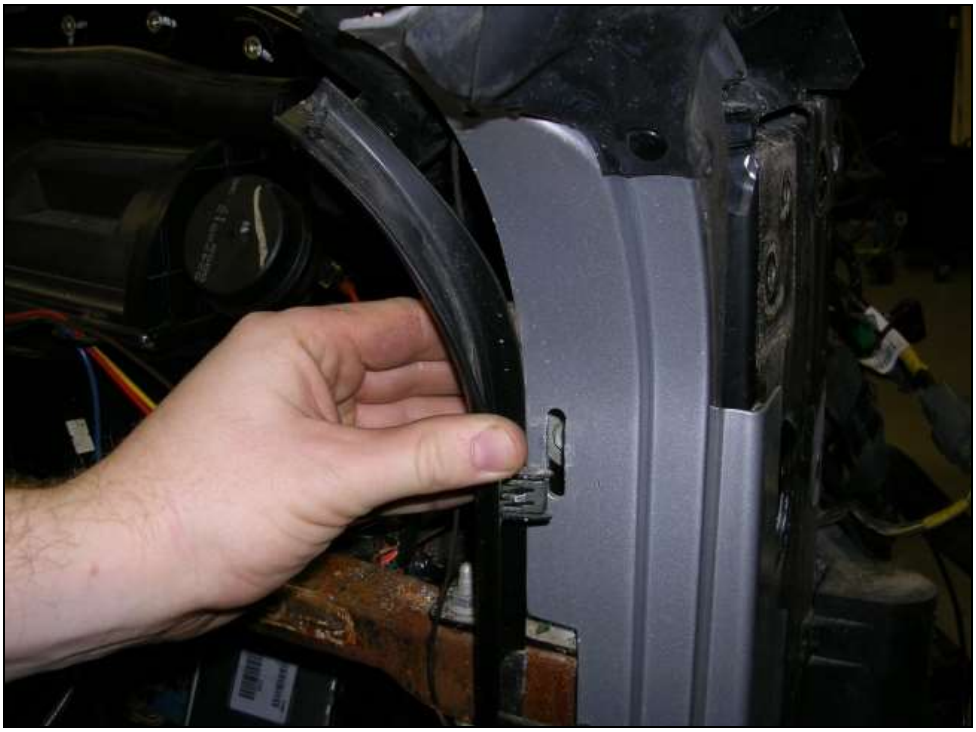
Remove the cables from the latch – make sure to label them! To remove the cable, relieve the tension on the cable by pulling the arm in, then, remove the cable (See picture).

Pull the handle and cables out of the car by pulling the handle backwards, drawing the cables through the firewall. Save the Handle/cable assembly and the latches.

Trim Panels

- Flathead Screwdriver, T-50 Torx
- Seat Belts.

Door Sill



Remove the door opening panel by prying the 2 clips free.

Unsnap the 3 clips holding the door sill panel to the doorsill.
Remove the panel.

Side Panel (Coupe)

Pull the panel away from the sill by prying up with a screwdriver.

Slide the seat belt through the slot in the panel.
Carefully pry the remaining clips and remove the panel.

Upper Roof Bow Panel (Coupe)

Remove the retaining pins from the outside edge of the panel.
Starting at the center of the panel, pry the clips free.
Remove the panel.

Rear Compartment – Front Side (Coupe)

Unbolt the seat belt upper guide bolt (T-50). Pry cover from the seat belt side to gain access to the bolt. Remove the bolt. Unbolt the lower Seat Belt retractors. Save the Seat Belt Assemblies.

Remove the upper retaining pin.
Pry the panel away from the door sill lip.
Remove the speaker cover by prying CAREFULLY at the top or bottom center, working your way around the cover. Remove the retaining pin.

HVAC Unit

- The procedure for removal of the HVAC Unit differs between Automatic and Manual Transmission cars.
- deep 10 mm socket, 7/32" socket
- Accumulator canister, A/C compressor.

If you haven't done so already, recover the refrigerant in a safe, environmentally friendly manner.

Remove the heater pipe bracket clamp nut (10 mm).

Unbolt the heater pipe to core bolt (10 mm).

Snip factory zip tie, and remove lines.

Remove the accumulator hose to evaporator bolt (13 mm).

Remove the canister retaining nuts (deep 10 mm socket). Remove the A/C Compressor. Save the A/C compressor and Accumulator canister if you plan to use the optional Heat/AC option.

Remove the rubber drain tube protruding from the firewall.

Remove the Right hand lower closeout panel in the Passenger Cockpit.

Remove the Left hand side window defroster duct if you haven't done so already, the Inside Air Temperature duct, and the Inside Air Temperature duct muffler (twist off).

Unplug the DRL.

Remove Left hand floor heater duct bolts (7/32”). Remove Duct.

Remove lower floor duct – Passenger side (twist ¼ turn clockwise).

Remove Right hand side window defroster duct by prying the clips out.

Unclip sun load sensor from right hand side of defroster duct (if equipped). Remove temperature valve electric actuator connection.

Remove lower floor heater duct – Passenger.

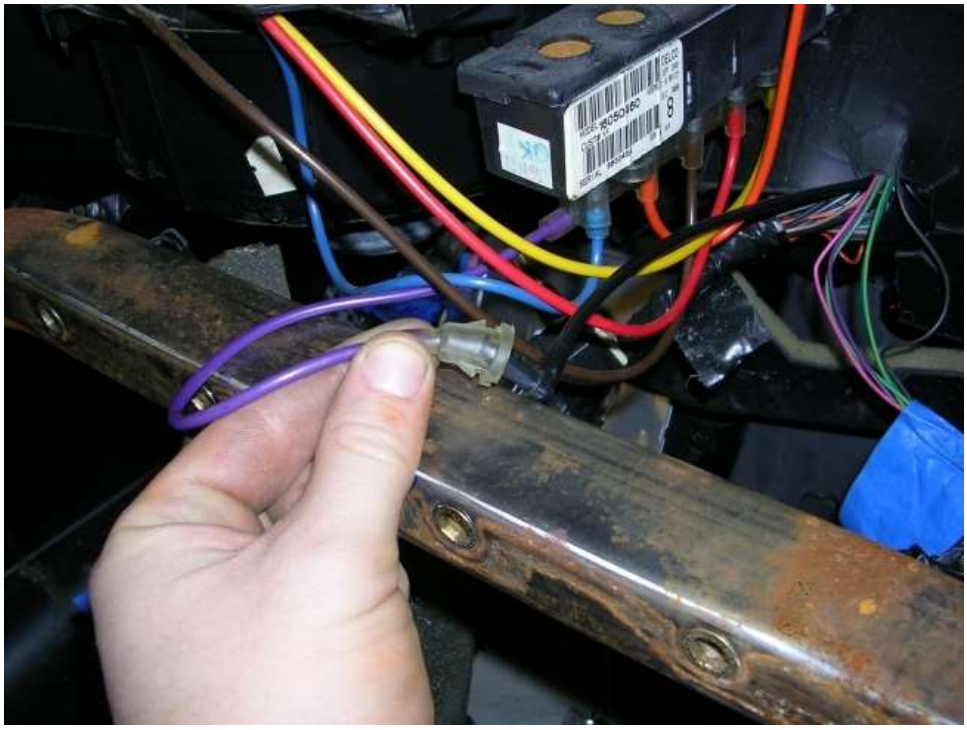
Remove lower portion of the floor heater, then unscrew the retaining screws. Remove the duct.

Remove the carpet outlet duct (twist ¼ turn counter clockwise).

Unclip the blower motor electrical connection (reach under the dash support beam just above the kick panel/firewall junction).

Unplug the vacuum electric solenoid connection.

Disconnect the blower motor control module plug.



Remove the Instrument Panel vacuum source connection (Purple hose connected to black elbow fitting/hose).

Unbolt the 3 motor retaining bolts (7/32”). Remove the motor with fan.
Unbolt the windshield defroster bolts. Remove the windshield defroster duct.

Unbolt the 2 retaining bolts in the cockpit.

Unbolt the 2 retaining nuts on the firewall (10 mm).

Remove the HVAC Unit.

Wiring, Computer, Fuse Panel

🛠 7, 10 mm socket, 9/32” socket and extension or deep 9/32” socket.
🚘 Computer, TAC Module, Computer Brackets, Wiring, Body Control Module, Fuse Panels.

Remove the rear compartment wiring and grounds from all clips, speakers and the roof bow if you haven’t done so already.
Unbolt antenna module (7 mm), grounds – driver and passenger side (10 mm).
Remove all electrical connections and retaining clips along the floor board, and grounds at the hinge pillars (10 mm).
Remove the upper windshield trim and sun visors. Remove the wiring and grounds from the windshield bow.

Under the passenger kick panel, unclip the Body Control Module (BCM) and the 3 electrical connections.

Unbolt the interior fuse panel (7 mm) and remove.

Unclip the diagnostic port.

Push the Wiper motor plug through the firewall into the cockpit.

Disconnect the 20 point plug with yellow tape, vacuum line, Throttle Actuator Control Module (TAC) plug, and the brown under-hood fuse panel plug (the center plug in the bottom of the panel – 9/32").

Push the wiring through the firewall.
Push the plug for the positive cable linking the two fuse panels through the firewall.

Unclip the electrical connection next to the fuse panel (kick panel). Remove the harness from the car and save.

Unscrew the vacuum canister (7 mm).

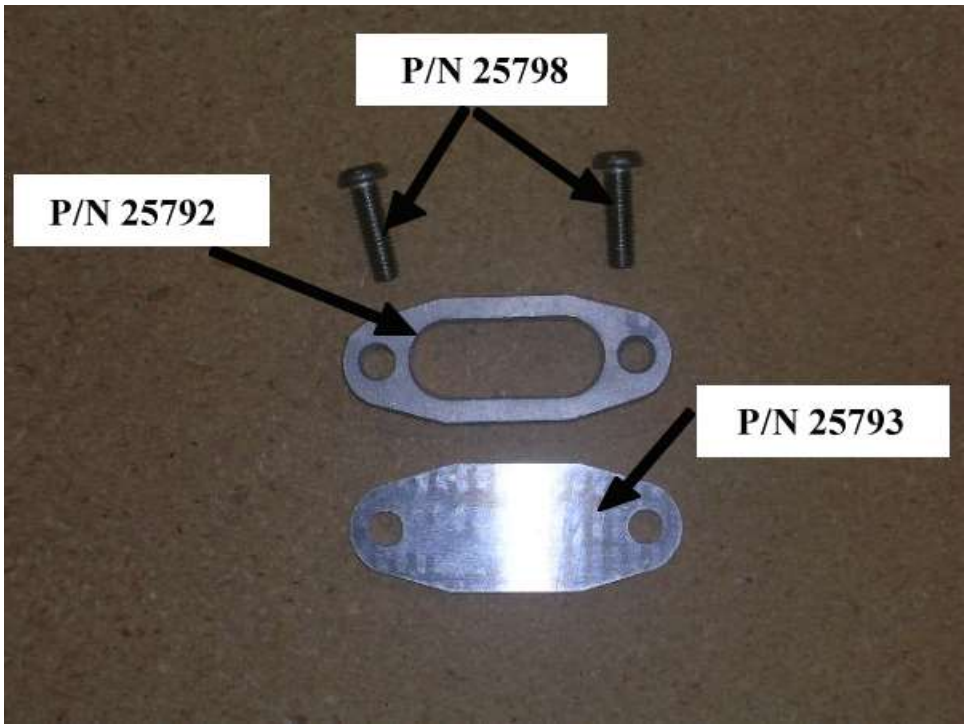
Unscrew the outer computer bracket (7 mm). Reposition the outer bracket.
Pull the computer out of the inner bracket. Unscrew the 4 bracket screws (7 mm). Remove the bracket and remaining harness from the car. Save the computer, TAC module, brackets and wiring.

Donor Part Preparation

Engine

Oil Temperature Sensor Bypass

🛠 10 mm socket, Ratchet, RTV Gasket Maker/Silicone, 4 mm Hex key.
🚘 Oil Temperature Bypass Plate (FFR# 25792), Oil Temperature Block-off Plate (FFR# 25793), 6mm Button head Screws (FFR# 25798).



Unbolt the Oil Temperature Sensor (10 mm).

Remove the gasket then clean and dry the machined surface of the engine block.

Apply some of the RTV to one side of the Oil Temperature Bypass Plate and place it on the engine block.

Apply some RTV to the outside face of the bypass plate, then bolt down the Oil Temperature Block-off Plate (4mm Hex).

Intake

🛠 Pliers, 8 mm socket, Ratchet, Flathead Screwdriver.
🚗 Intake Relocation Components (FFR# 25713).

- Clean the intake before removing to avoid any dirt getting in the engine through the heads, particularly the area where the head meets the intake.

Disconnect the knock sensor wiring from the fuel rail stop bracket.

Remove the PCV tube from the valve cover.

Depending on the year of your donor, you will have to either unbolt or unclip (shown) the PCV lines from the intake on the passenger side.

Remove the PCV line from the port on the passenger valve cover (rear).

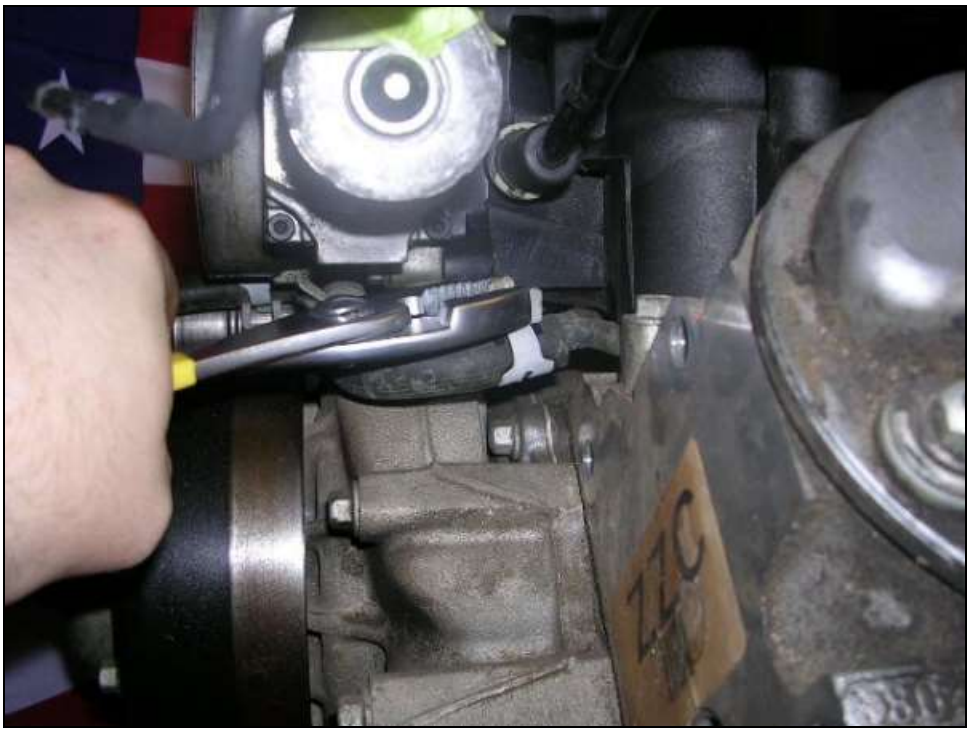
Remove the PCV line from the front of the intake just behind the throttle body. Save the PCV Line – you will re-attach it after you rotate the valve covers.

PCV Tube Removed from Engine.

Unclip the EVAP solenoid from the intake.

Unclip the EVAP line from the intake behind the throttle body by pushing down on the round section of the white clip (the other side of the clip as three tabs that will spread allowing the tube to be pulled off) and pull the line off of the port on the throttle body. **Remove the hose and save.**

EVAP Line Removed.



Unclip the vapor vent hose from the throttle body.

Remove the second PCV hose from the top, passenger side of throttle body. **Save the hose.**

Unbolt the intake manifold bolts (8 mm), leaving the fuel rail stop in place.

Turn the intake around and bolt in back on using either a clockwise or counter clockwise pattern. The factory spec is to make one pass tightening the bolts to 44 in-lb (5 Nm) then make a second pass and tighten to 89 in-lb (10 Nm).

If you didn't remove the hose leading from the MAP sensor to the brake booster when you removed the engine, remove it now. Plug the port with the supplied cap (FFR# 25711).

Remove the Vapor vent hose from under the throttle body.

Cap off the Vapor port on the throttle body with the supplied cap (FFR# 25712).

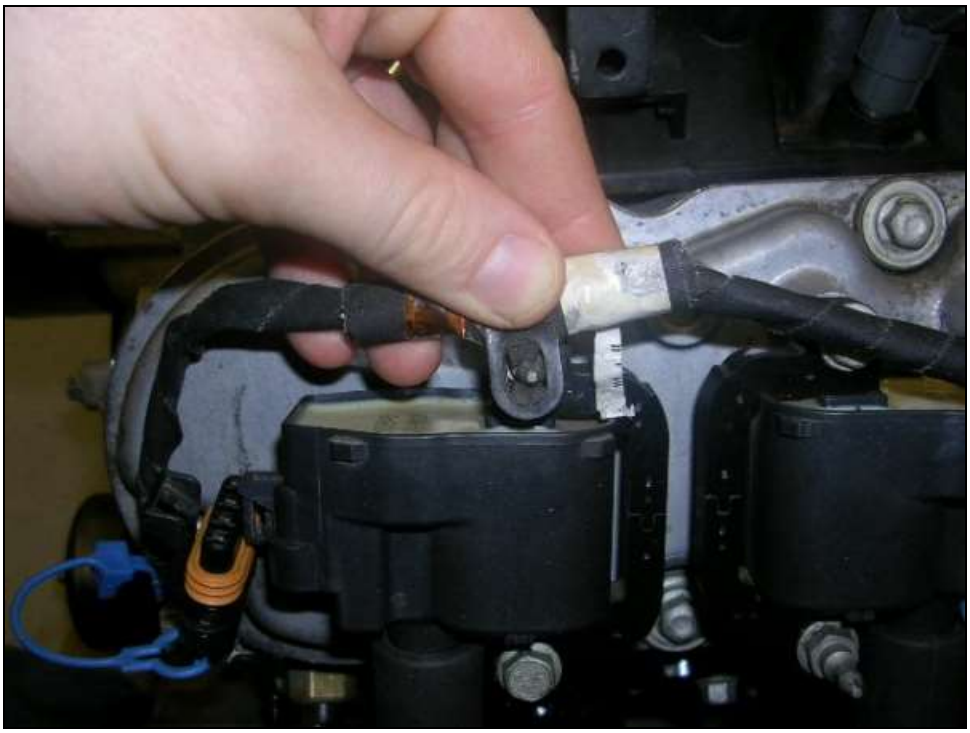
Valve Covers

🛠 10 mm socket, Ratchet.

Unplug each coil pack by first removing the Positive Assurance clip, then the plug itself. You may have to unbolt the driver rear and passenger front coil pack (97-98) the get the wiring out from between the

coil pack /PCV boss. Leave the bolts loose for replacing the wires once you have switched the valve covers.

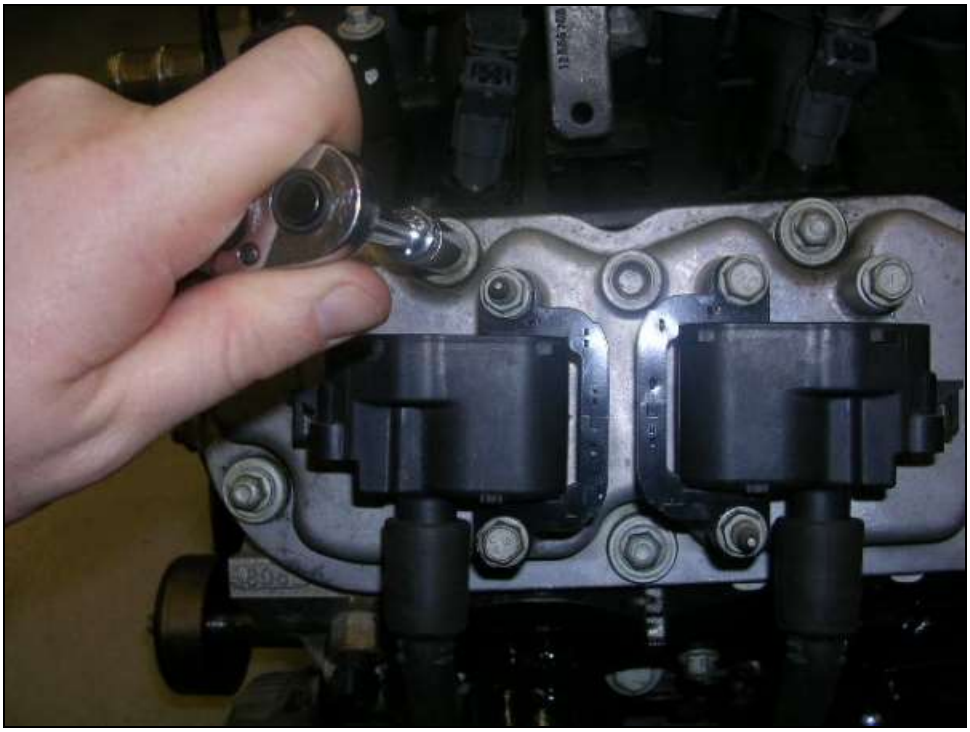
Unbolt (97-98 Corvette - 10 mm) or unclip (99+ Corvette) the main harness plug from the valve cover.



Unclip the harness clamps from the coil pack bolts.

Remove the harness from the engine. Be sure to label the harness.

Unplug the spark plug wires from the spark plugs.



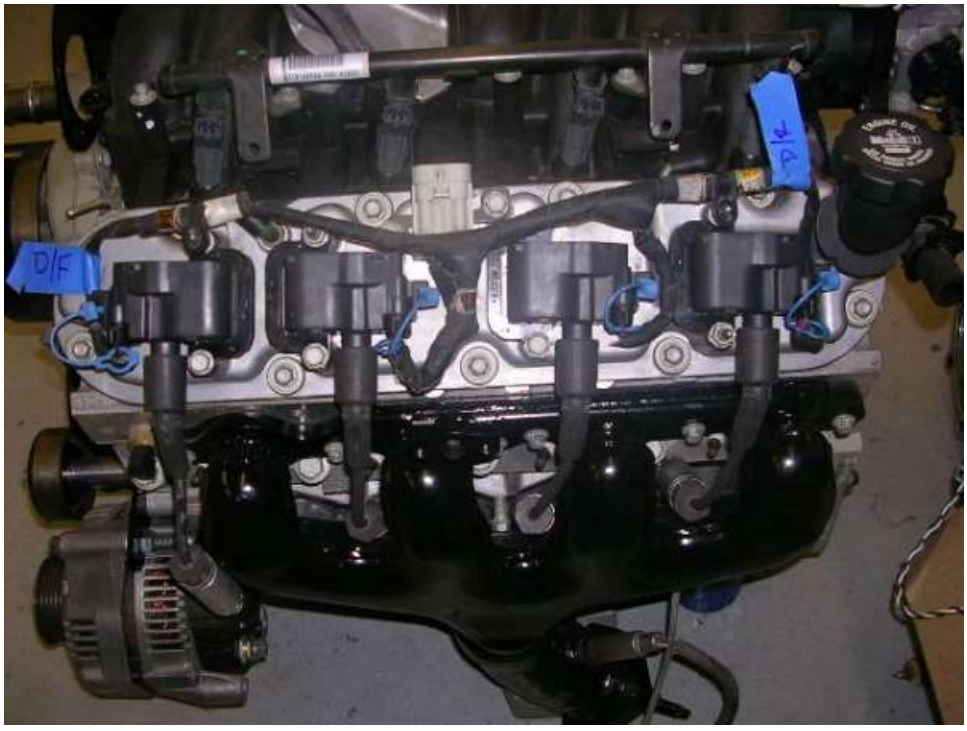
Unbolt the valve cover bolts (10 mm).

Repeat the steps for the Passenger side.

Bolt the driver valve cover onto the passenger side (the PCV boss will now be at the front of the engine).

Bolt the passenger valve cover onto the driver side of the engine (the Oil Filler Neck will now be at the back).
Reconnect the wiring harness – the driver side harness should remain on the driver side and vice versa.

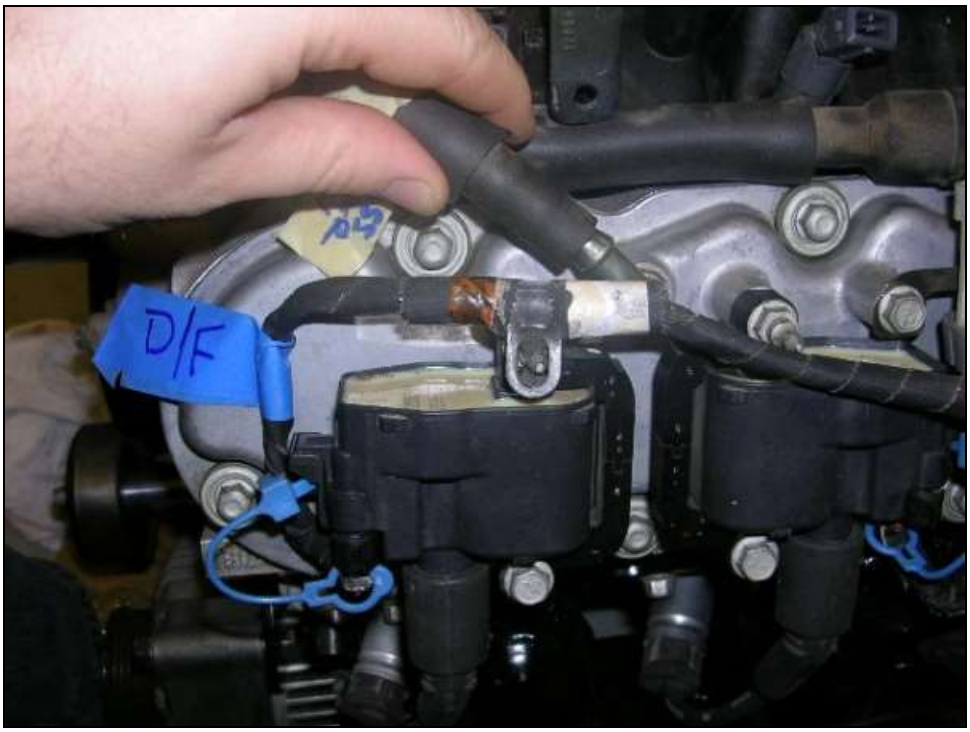
Passenger Side.



Driver Side.

Make sure you retighten the coil pack that you left loose to get the coil pack wires out in step 3.
Plug in the Spark Plug Wires.
Clip the harness back onto the valve cover bolts.

Reconnect the PCV to the front passenger port.



Reconnect the PCV to the and front port on the driver side.

Re-clip (97-98 Corvette) or bolt (99+ Corvette) the PCV line onto the Intake Manifold.

Reconnect the hose to the lower port on the Intake Manifold.

Reconnect the second PCV hose to the Valve cover, then to the upper port on the Throttle Body.

Reconnect the EVAP line to the passenger side lower Intake Manifold port (just in front of the Throttle Body).

Clip the line back into the Intake Manifold.

Reconnect the line to the EVAP modules front and rear.

Fuel Tanks

1997-2002 Fuel Tanks

🛠 7 mm socket, Ratchet, drill.

Drain the tanks.
Disconnect the quick connect fuel lines from the sender backing plate.

On the Corvette passenger side tank (the GTM driver side tank), unscrew the bolts holding the backing plate in place (7 mm).

Remove the internals from the tank, being careful not to bend the fuel level float (this will affect the accuracy of your fuel level gauge if bent).

Remove the label next to the opening in the tank.

- Before drilling the hole, make sure that the hole will allow enough room for the nut to rest flush against the inside wall of the tank once you've installed the bulkhead fitting. A good way to check is to place the nut from the bulkhead fitting against the inside of the tank to determine the best location and trace the inside diameter of the nut onto the outside of the tank. It will be a few inches up from the bottom of the tank due to the curvature of the tank.

Mark the center of the circle you traced.

Drill a hole in the back of the tank.

Clean out any remaining debris from the tank and de-burr the edges (if necessary) of the hole so the bulkhead fitting fits tightly in the opening.
Place one of the Teflon washers on the fitting, then place a small amount of RTV on the fitting to help seal the hole and insert the bulkhead fitting into the hole.

Reach into the tank and slide the washer onto the fitting then tighten the nut onto the fitting. If your arms are too big, you may have to have someone else do this for you since the opening in the tank is

only a few inches in diameter. Also, you can slide a set of vise grip pliers into the tank to hold the nut in place while you tighten the fitting.

Install the internals you removed previously and tighten the backing plate.
Repeat for the Corvette Driver side (GTM passenger side) tank.

- On the passenger side tank (the tank with three hose elbows on the backing plate) you may have to slightly bend one of the elbows to clear the fittings. You can accomplish this by using some Vise Grip pliers with some duct tape on the teeth to avoid damaging the elbow or the plastic clip on the elbow.

Cap off the port on the fuel tank that was previously used on the Corvette for the filler neck with FFR# 25989 (’04 tank shown) then clamp the cap in place using the supplied clamp (5/16” socket or flathead screwdriver).

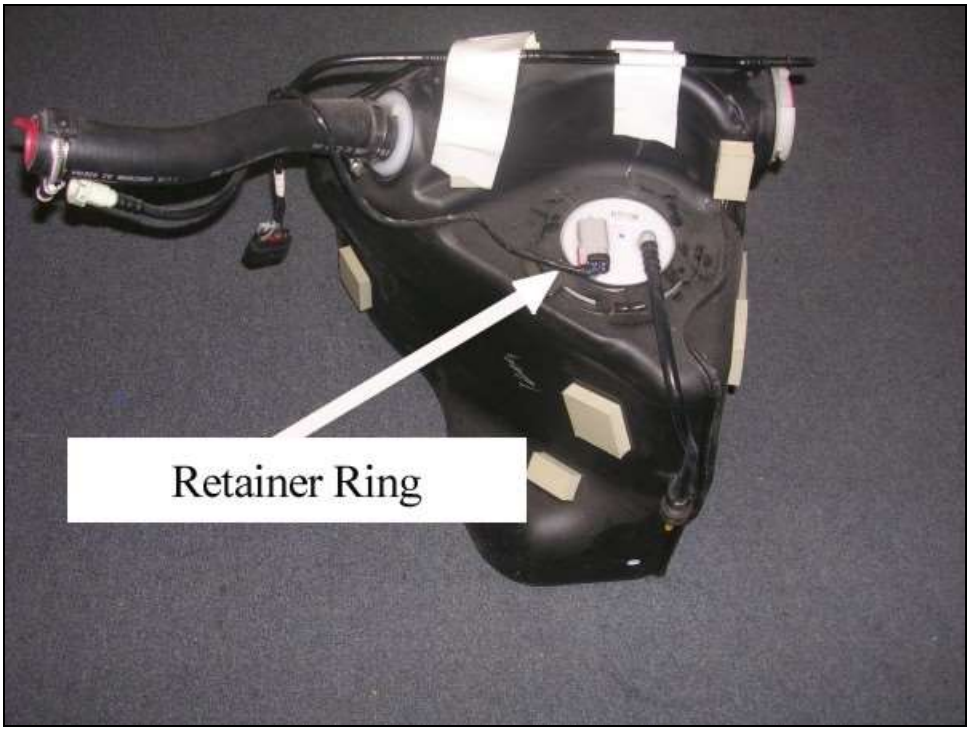
For the ’97 – ’98 tanks, you will also have to cap off the small port on the tank previously used as a vent (next to the filler port) using the supplied cap, FFR# 25990.

Clamp the cap in place using the supplied clamp, FFR# 11206 (5/16” socket or flat head screw driver

2003-2004 Fuel Tanks

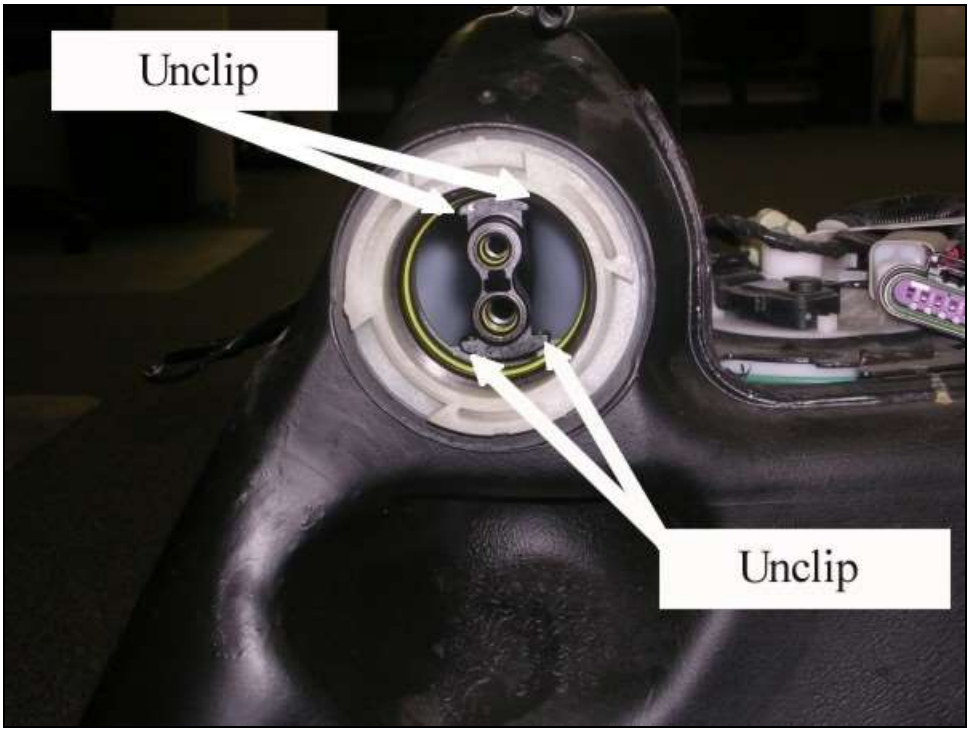
🛠 7 mm socket, Ratchet, drill.

Drain the tanks.



Remove the retainer ring from the top of the tank by rotating it out of place.

Lift the internals out of the tank, being careful not to bend the fuel level float (this will affect the accuracy of your fuel level gauge if bent).



Remove the send/return lines from the tank by unclipping them from the crossover inlet on the side of the tank.

- Before drilling the hole, make sure that the hole will allow enough room for the nut to rest flush against the inside wall of the tank once you've installed the bulkhead fitting. A good way to check is to place the nut from the bulkhead fitting against the inside of the tank to determine the best location and trace the inside diameter of the nut onto the outside of the tank. It will be a few inches up from the bottom of the tank due to the curvature of the tank.

Mark the center of the circle you traced and drill a hole in the back of the tank.
Clean out any remaining debris from the tank and de-burr the edges (if necessary) of the hole so the bulkhead fitting fits tightly in the opening.
Place one of the Teflon washers on the fitting, then place a small amount of RTV on the fitting to help seal the hole and insert the bulkhead fitting into the hole.
Insert the bulkhead fitting into the hole.
Reach into the tank from the top opening and slide the washer onto the fitting then tighten the nut onto the fitting. You may have to have someone else do this for you since the opening in the tank is only a few inches in diameter and you will have to reach towards the back of the tank.
Repeat for the other tank.

Unclip one end of the send/return lines inside the Corvette cross over tube by rotating the hose assembly clockwise and use a pair of pliers to grip the center of the molded plastic bridge between the two hoses.

Pull the hoses out of the Corvette cross over tube.

Place the Corvette Cross-over hose in a vise and trim off approximately 1.25” off of the 2.75” diameter collar. You may have to cut a small section, then rotate the hose until you cut all the way around the collar.

- When cutting, be careful not to cut too deep, thus cutting the tube inside – you only want to cut the outer collar which is only about $^{1}/_{16}$” thick.

Repeat for the other end.

Place the hose in the vise again. Using a hacksaw, cut the corrugated hose about 4 ribs up from the section you just cut.

Repeat for the other end and de-bur each end.

Press the tube/collar assemblies into the tank and lock them in place by rotating the collar into the slots molded into the tank.

Press the black plastic clip into position. This prevents the collars from rotating out of position.

Install the internals you removed previously and set the retainer ring back into place.

CAREFULLY shave away the flexible hose at the barbed elbow molded into the top of the sending unit on the Corvette driver side tank until it is just flexible enough to be removed from the barbed elbow.

DO NOT knick the barbed elbow on the sending unit or the connection may leak.

Cap off the port on the fuel tank that was previously used on the Corvette for the filler neck (’04 tank shown) and clamp the cap in place using the supplied clamp. (5/16” socket or flathead screwdriver).

Steering Column (Non-Telescoping)

🛠 Blow torch, T-25 Torx, 21 mm socket, Ratchet, Cut-off wheel/Sawzall/Hacksaw, Flathead screwdriver, Snap-ring Pliers.

🚘 Steering column, Upper steering shaft, FFR# 25459 – Steering Wheel Boss.

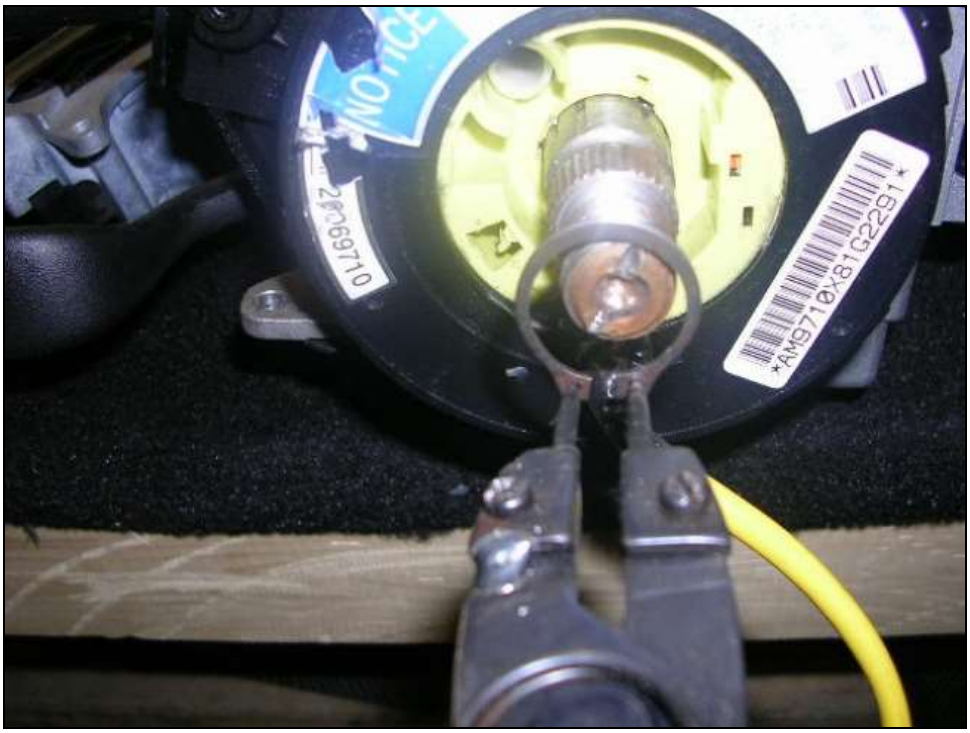
- You will need a steering wheel puller to get the wheel off the column. You can rent one at your local parts store if you don't own one. If the airbags have not been deployed on your donor and you have not already removed them, see the Steering Column section of Donor Teardown for safe removal procedure to avoid causing the airbags to accidentally deploy. The airbags deploy quickly with a lot of force so you do not want to have your head or any body part near the airbag if it deploys without warning.

Remove the airbag by unbolting the 2 screws opposite the steering wheel face if you didn't do so in the teardown process. Disconnect the harness plug.

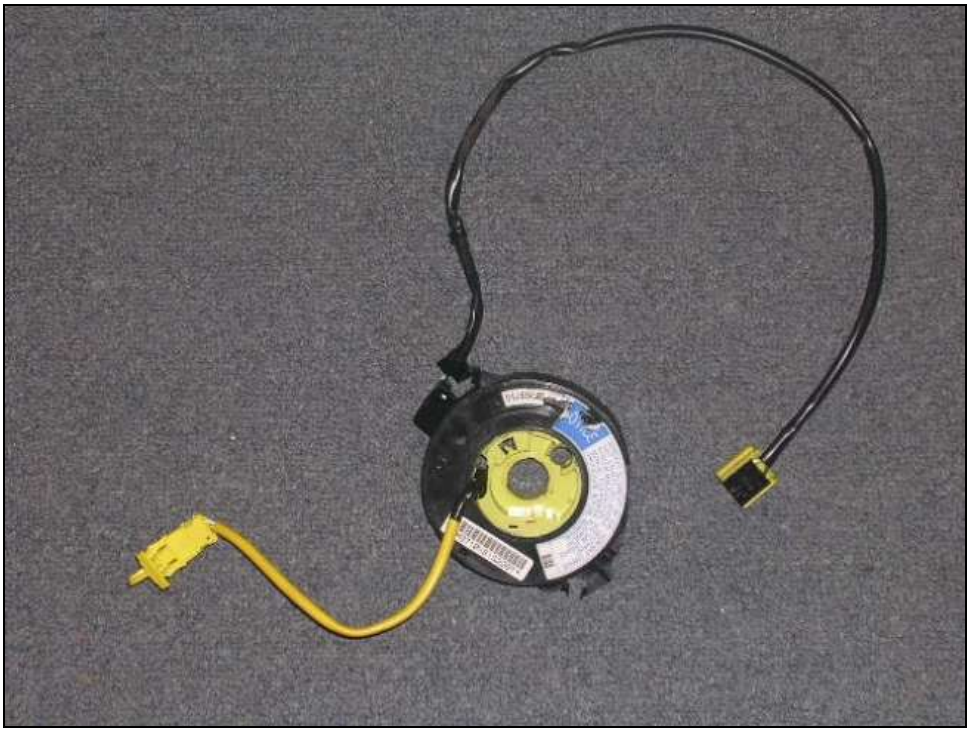
Unbolt the 2 Torx screws underneath the column cover (T-25).

Slide the lower cover over the tilt lever. The easiest way to remove the lower cover is to tilt the front edge of the cover down so the slot for the tilt lever is vertical (see photo). Then slide the cover over the tilt lever. Remove the upper cover.

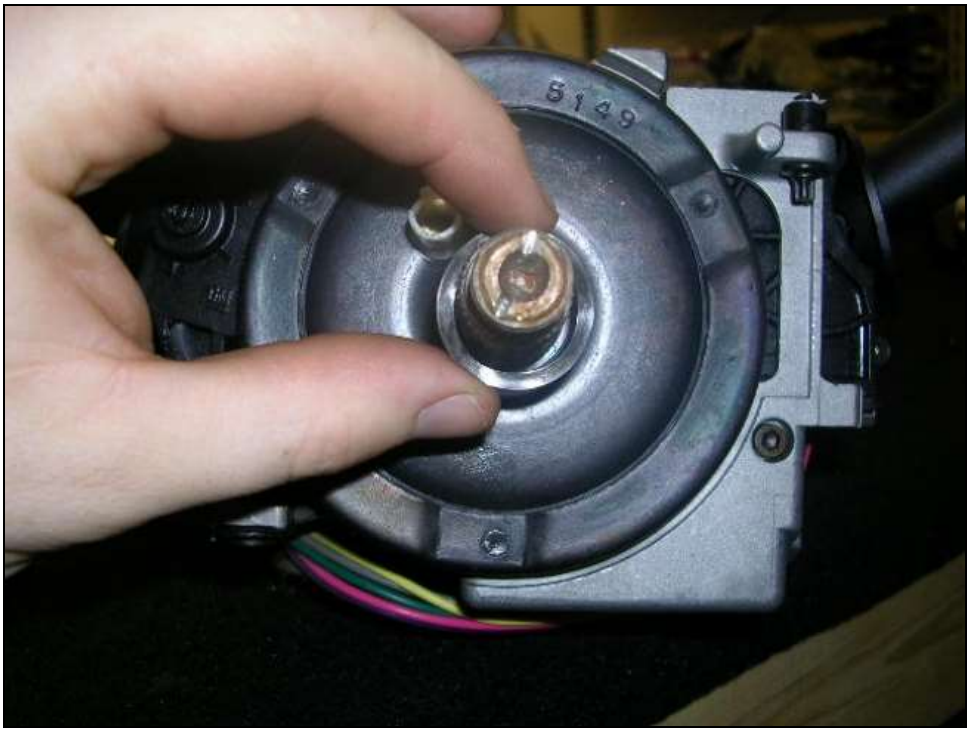
Remove steering wheel lock nut (21 mm). This will require some force.
Use the steering wheel puller to remove the Corvette wheel.



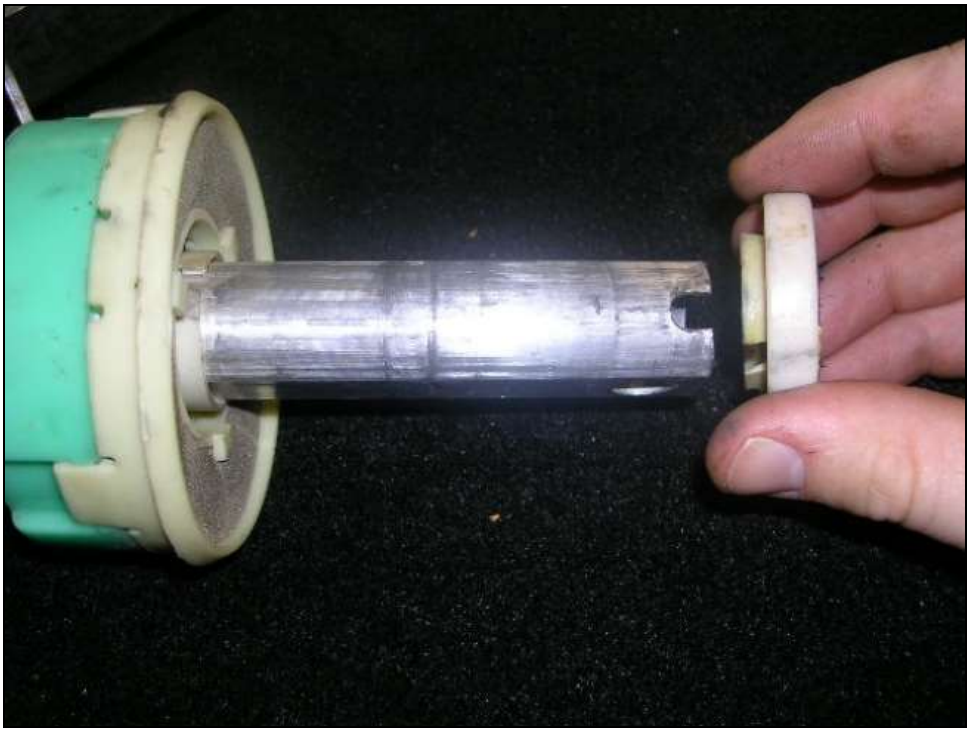
Carefully remove the snap ring located in front of the plastic SIR coil assembly. Clip the wire ties holding the column harness sections to the column.



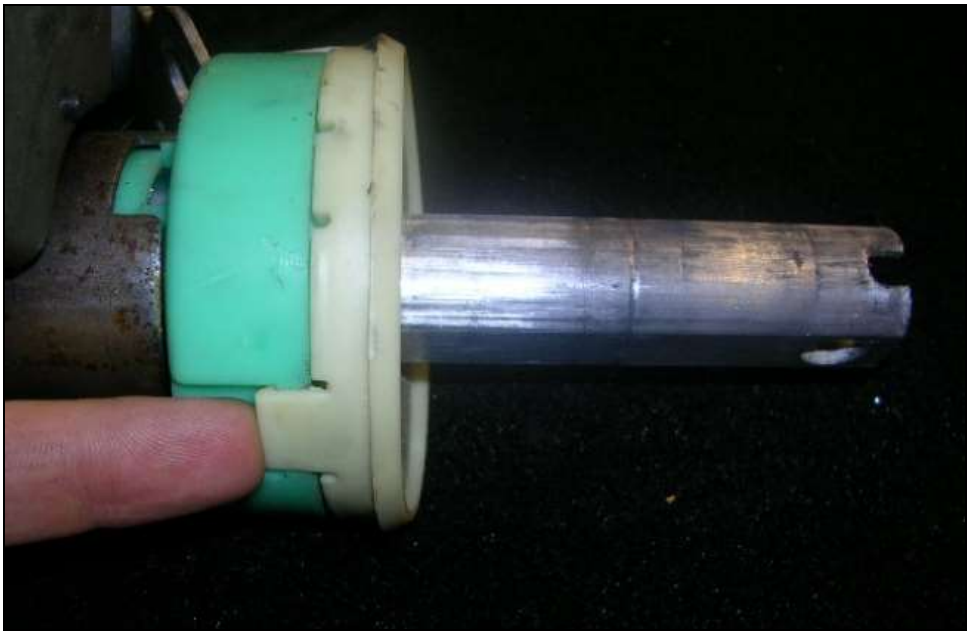
Remove the coil assembly.



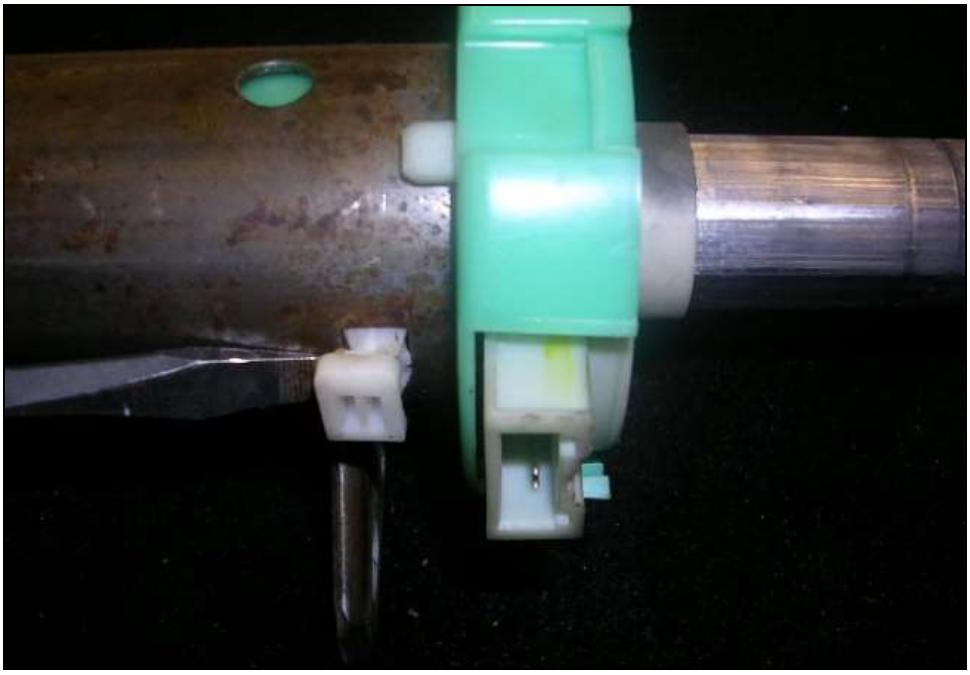
Remove the thin washer behind the coil assembly.



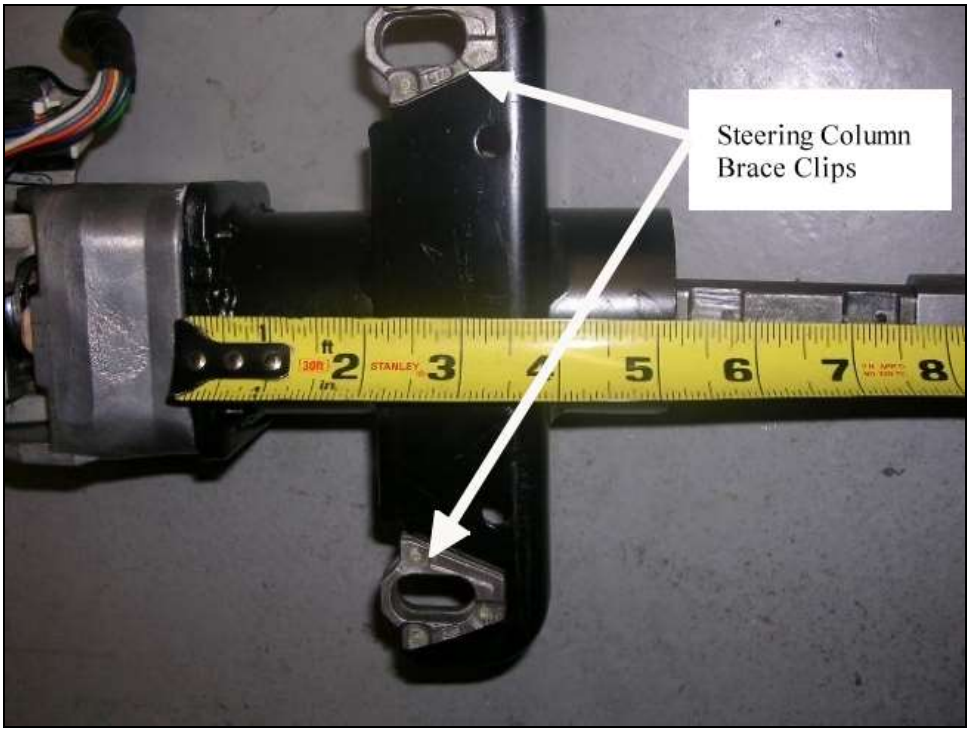
Remove the steering shaft seal – discard.



Remove the sensor retainer (unclip it from the bearing assembly – this can be done by hand), then the steering wheel position sensor (if equipped) - discard.

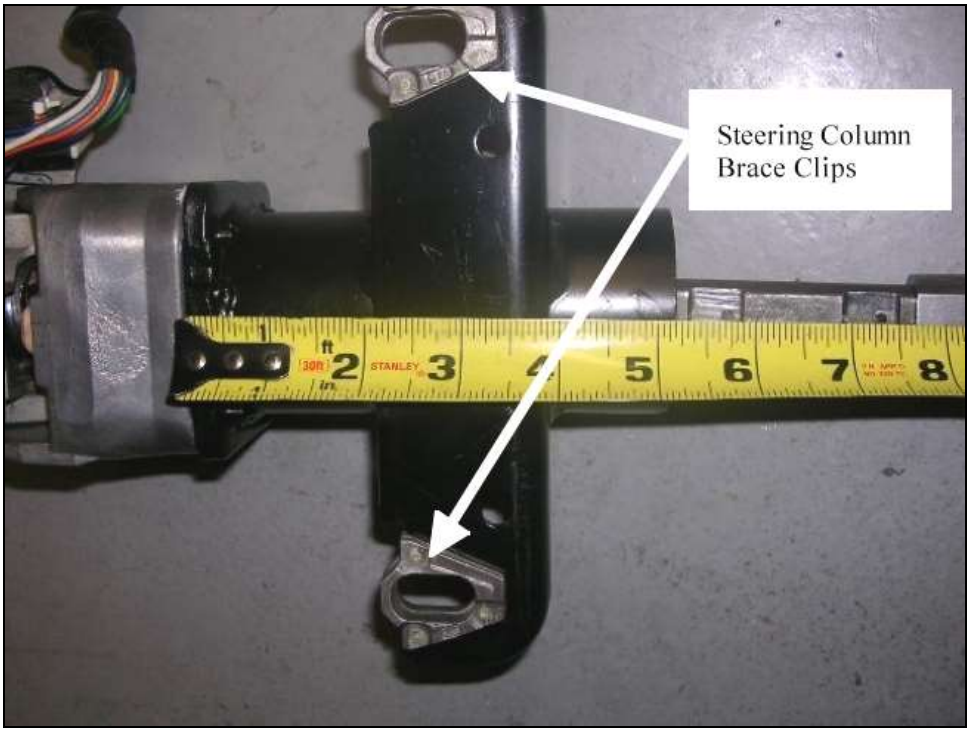


Remove the plastic retaining clip holding the adapter and bearing assembly with a flathead screwdriver (you will not need it). Pull the adapter and bearing assembly out of the end of the column jacket - discard.



Now you will need to shorten the steering column jacket. Cut the jacket, leaving 5.25" (measured from the junction of the column jacket and the tilt head assembly - see photo). **Be careful not to cut the shaft inside the column jacket.**

The column jacket will also need a groove cut along the passenger side 1” in height and end approximately 3.75” from the junction of the column jacket and the tilt head assembly (See Photo). **Be careful not to cut the shaft inside the column jacket.** Remove the excess column jacket – you will not need it.



Remove the Steering column brace clips by tapping them out of the slots in the column brace (See photo).

Remove the lower column by heating the lower portion with a torch until the injection molded plastic pours out, then pull the lower shaft off of the upper shaft (you do not need the lower shaft).

To fit under the dash in the full up position, the top section of the cover will need to be trimmed roughly 1 7/16" in from the rear edge of the cover (See photo).

Steering Column (Telescoping)

🛠 T-25, T-40 Torx, ¼"-12 point socket, 15mm wrench/socket, 21 mm socket, Ratchet, Cut-off wheel/Sawzall/Hacksaw, Flathead screwdriver, Snap-ring Pliers, ⅜" drill bit, drill, punch, vise grip pliers.

🚘 Steering column, Upper steering shaft, FFR# 25459 – Steering Wheel Boss.

✋ You will need a steering wheel puller to get the wheel off the column. You can rent one at your local parts store if you don't own one. Be sure to get a puller kit that has the necessary tools for a tilt column – you will need them to remove the tilt pins from the column. If the airbags have not been deployed on your donor and you have not already removed them, see the Steering Column section of Donor Teardown for safe removal procedure to avoid causing the airbags to accidentally deploy. The airbags deploy quickly with a lot of force so you do not want to have your head or any body part near the airbag if it deploys without warning.

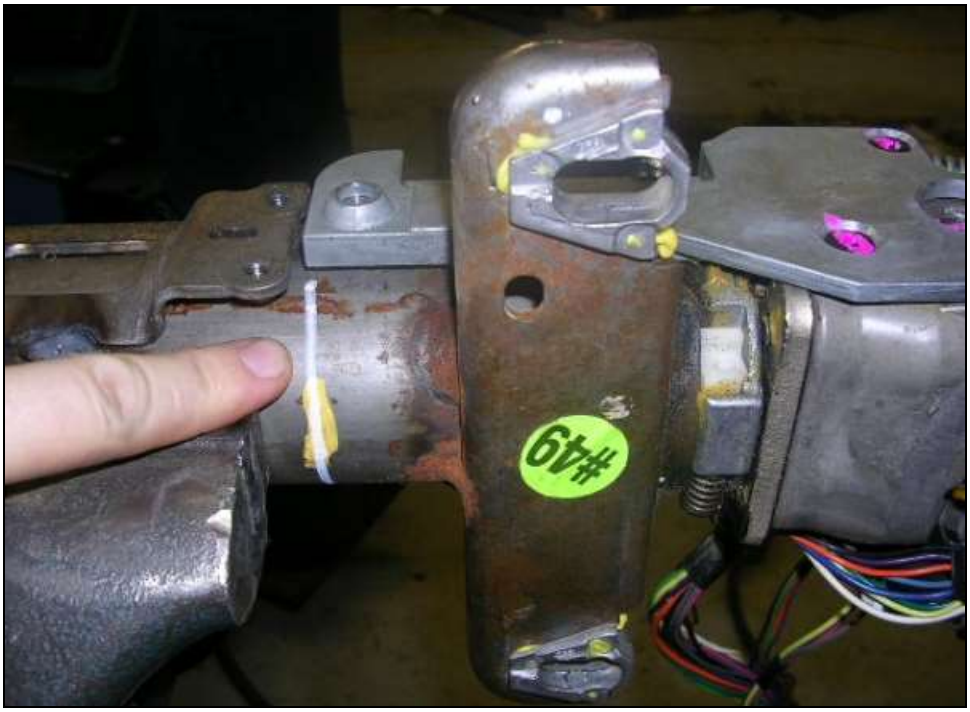
Follow steps 1-10 for the Non-Telescoping Column.

Unbolt the telescope motor from the lower bracket on the column jacket.

Untie the safety wire holding the motor to the bracket.

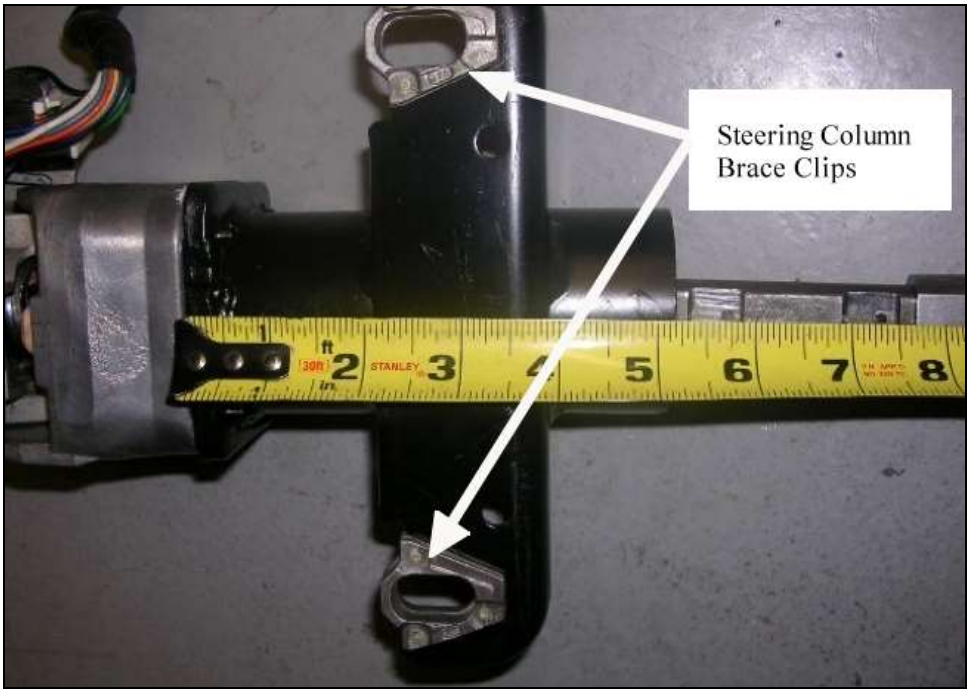
Remove the four Torx head bolts holding the actuator to the column jacket. If you do not have an inverted Torx, you can use a ¼”-12 point socket. Pull the actuator off of the drive ball. Save the Actuator and motor assembly.

Bend the side tabs of the motor mount bracket to about 45 degrees from the mounting face of the bracket.

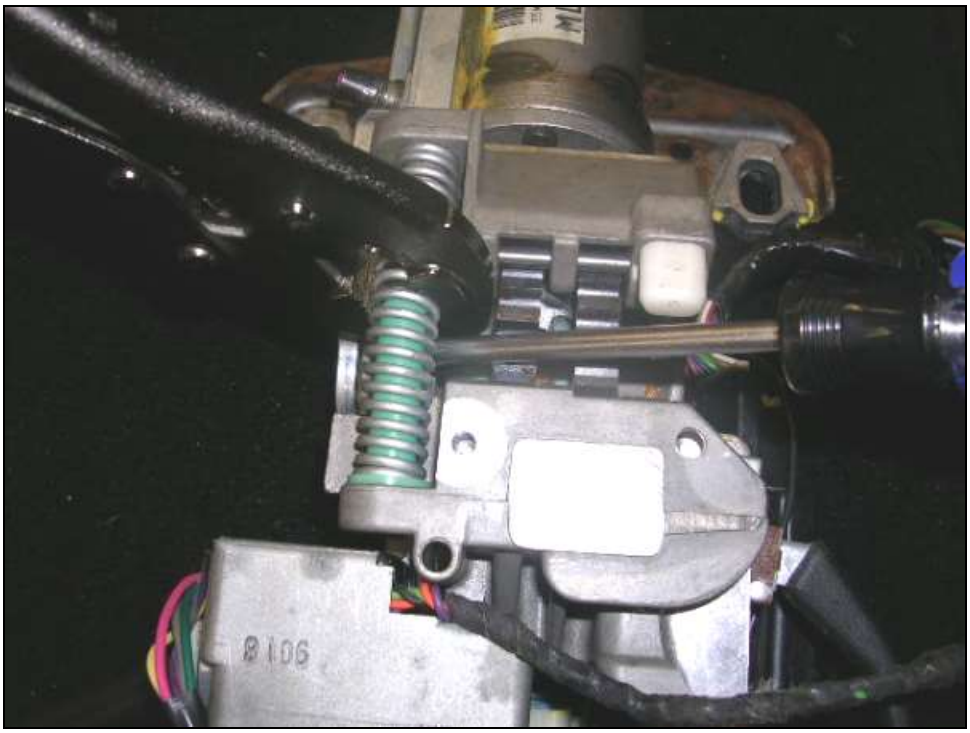


Now you will need to shorten the steering column jacket. Cut the jacket just after the telescope slider and remove the lower portion of the jacket – you will not need it.

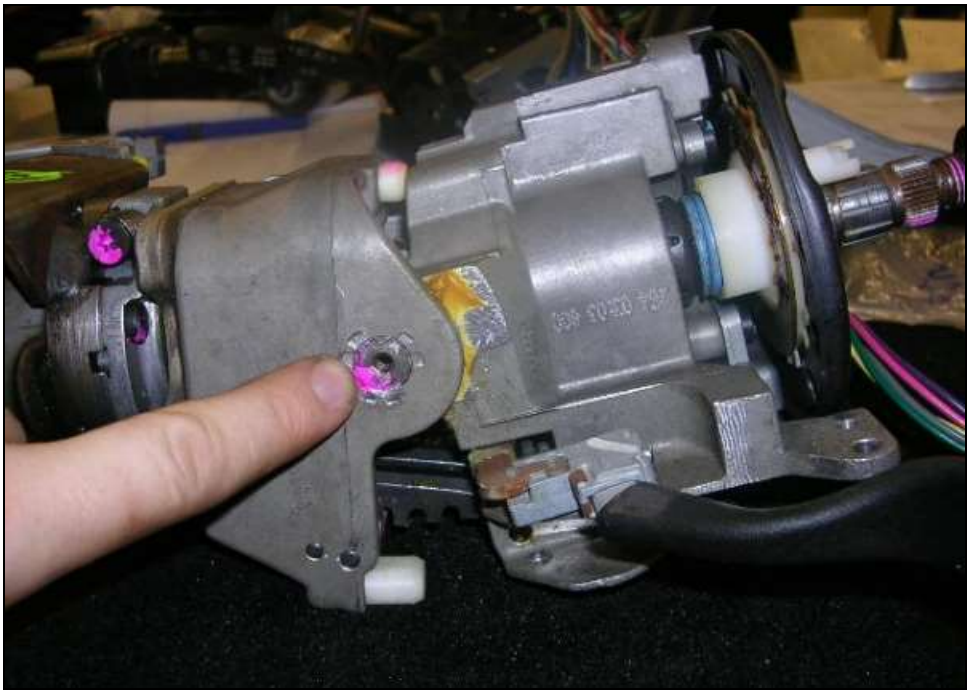
- Be careful not to cut the shaft or the telescoping sleeve inside the column jacket. Do not allow the blade/cutting disc etc. to go into the column much further than the thickness of the outside jacket.



Remove the Steering Column Brace Clips by tapping them out of the grooves in the column brace (See Photo: Non-Telescoping Column shown).

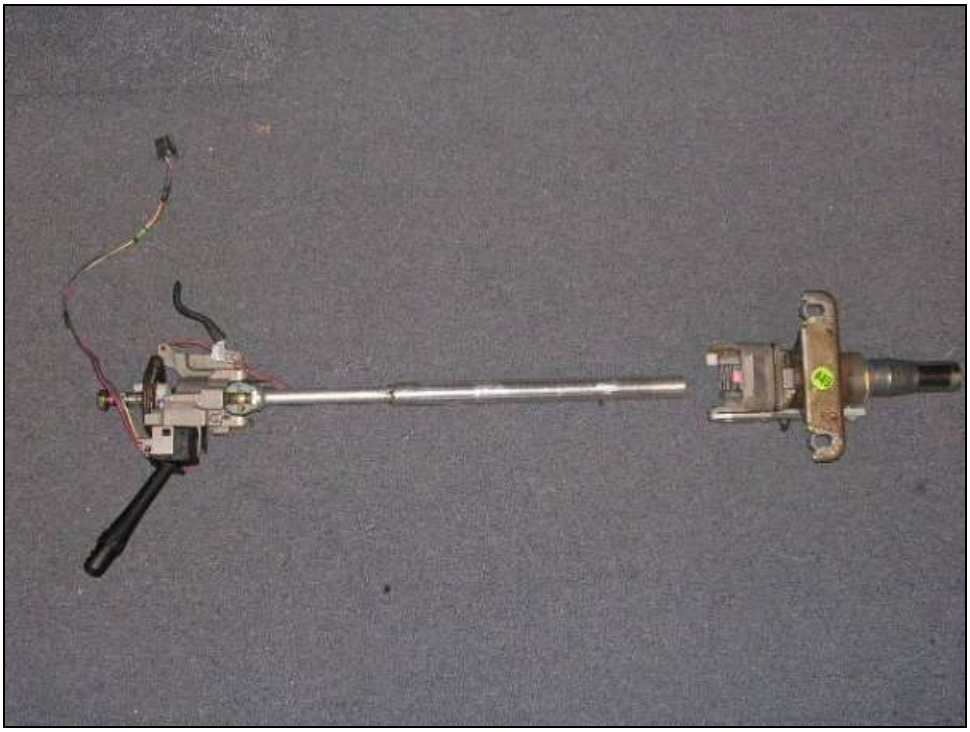


Remove the tilt spring. To avoid shooting the spring across the room, use a pair of vise grip pliers to hold the spring while you pry the spring out of position.



After the tilt pins are pressed in at the factory, the tilt head is punched, pressing a small amount of material over the tilt pin – you will have to punch/press/scrape it back to pull the pin out.

Thread the tilt pin removal tool supplied in the puller kit into the pin. Then hand-tighten the nut until the sleeve contacts the tilt head. Using a wrench or socket on the end of the tool and a wrench for the nut, continue tightening the nut until the pin is out. Repeat for the other side.



Pull the Tilt head and shaft assembly out of the telescoping sleeve.

Before removing the telescoping, internally splined shaft you will have to pry the stop pressed into the shaft at the factory out of the way. Once you have done this, you can slide the shaft over the Teflon coated lower portion of the upper shaft.

Now you will need to shorten the lower shaft. However, before doing so be sure to take note of where in relation to the internal splines the stop was made because you will have to re-create this feature after you cut the shaft. Measure 5½" from the top of the shaft, mark the location and cut the shaft – keep the lower portion.

Measure 3½" from the bottom end of the shaft, mark the location and cut – discard the 3½" section.

Drill a ⅜" hole through the flat faces of the shaft ½" in from the end of the shaft.
Slide the lower shaft back over the upper shaft and re-create the factory stop.

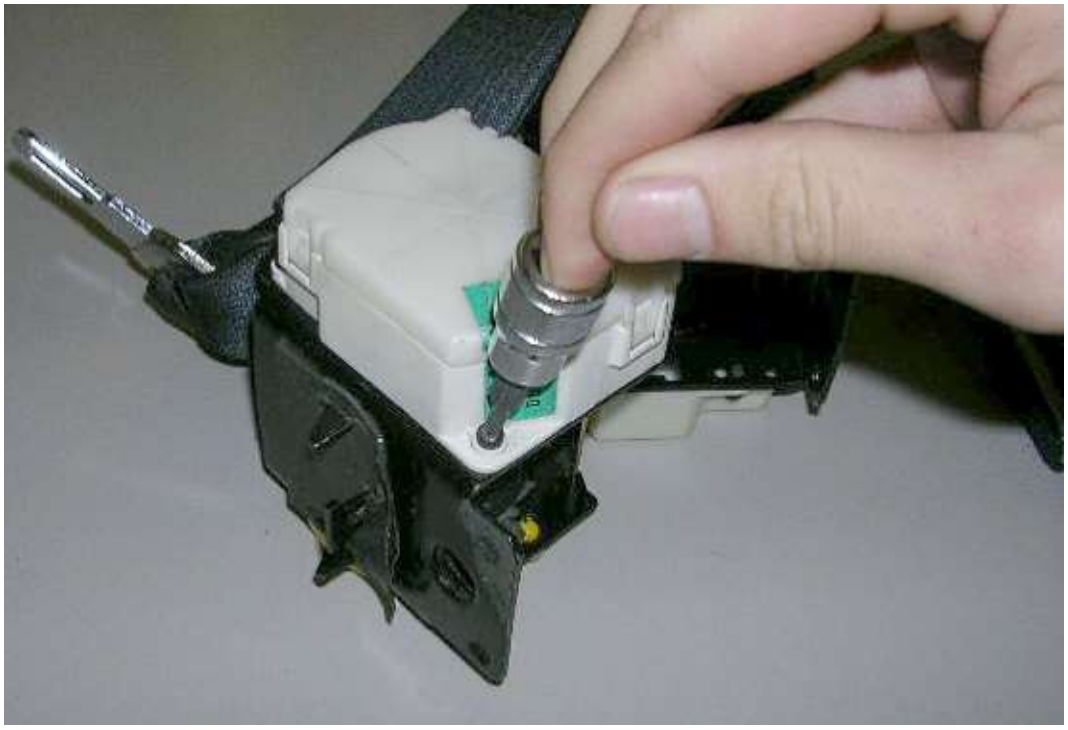
If you are preparing the donor parts before receiving your kit, the following steps can be done once the column is in the car, but it is easier to perform them with the column off the car.

Put the Tilt head and shaft assembly back into the telescoping sleeve.

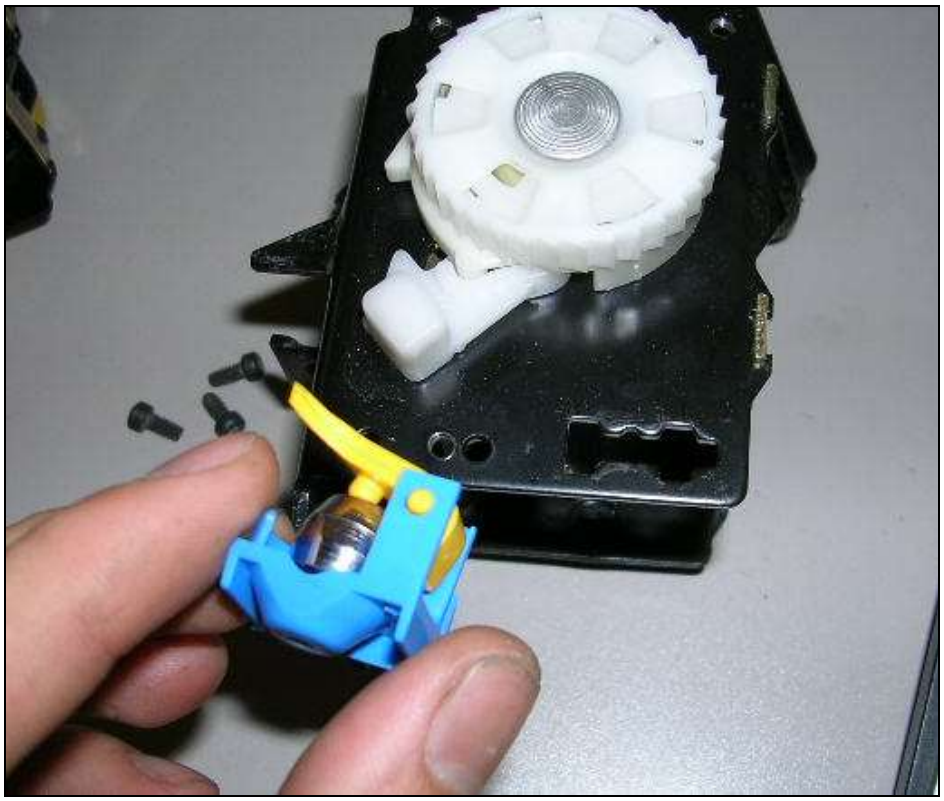
Install the tilt pins using the opposite procedure of when you removed them (including pressing the material slightly over the face of the pin with a punch/chisel).
Install the tilt spring.

Seat Belts

Razor, 18 mm wrench or socket/ratchet, T-15 Torx, ½" drill bit, drill.
Seat Belt Hardware (FFR# 25415), Passenger and Driver Seat Belt Assemblies.
Prior to using a donor mechanism, inspect the seat belts themselves. Do not use the seatbelt if the stitching is badly worn, weakened or torn.



There are white plastic caps covering the seatbelt retracting mechanism. Remove the caps by unbolting the three small Torx bolts with a T-15 Torx bit.

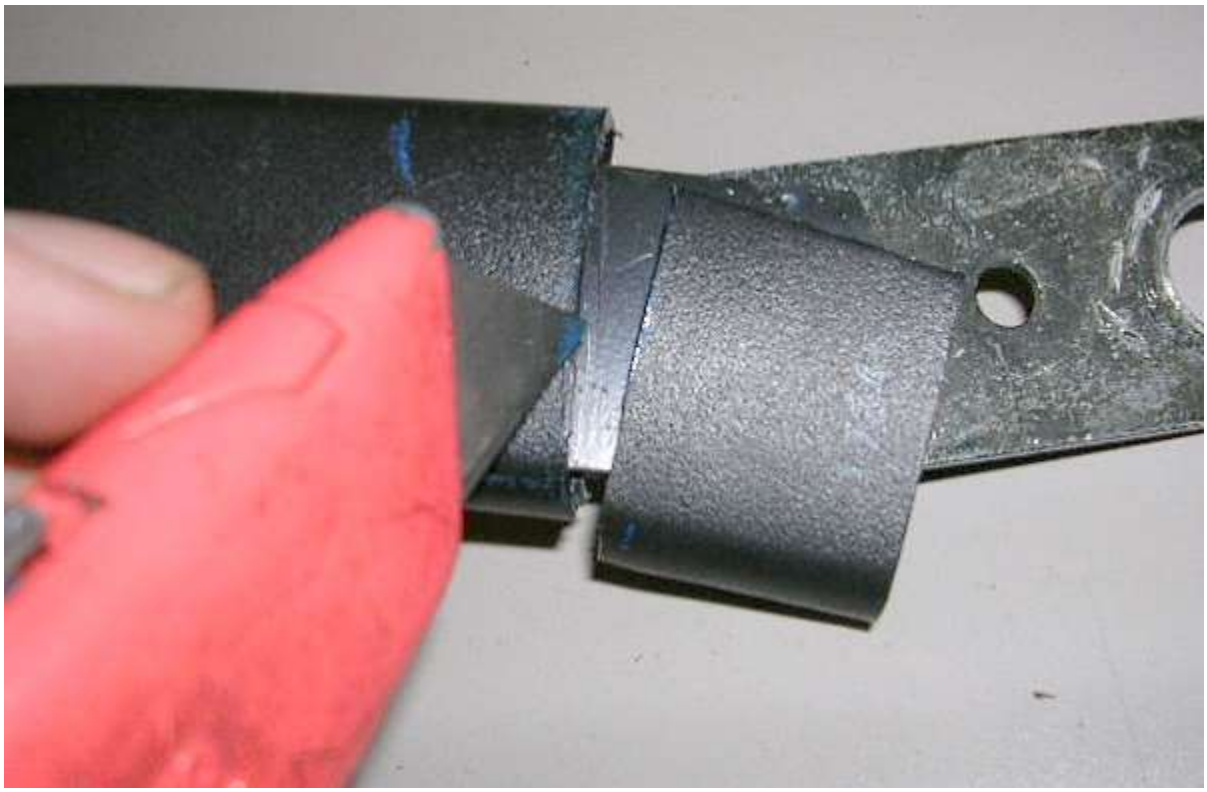


Inside of each belt retracting mechanism there is a plastic stopper (See photo). Remove these stoppers by squeezing the two plastic tabs external of the retracting mechanism or by pushing the plastic stoppers towards the large bolt hole.

Now check that a quick, hard jerk on the belt will lock the seatbelt mechanisms.

Reattach the white plastic covers with the 3 Torx screws.

Remove the buckle and stalk from the seat track using an 18mm wrench. It may be difficult to loosen, which is normal.



The stalk must be shortened to operate in the GTM. There is a large rivet just inside the plastic covering of the stalk. Mark a line of the plastic approximately 1½" to 2" from the bottom of the plastic.

Trim the plastic very carefully using a razor or tin snips. Be extremely careful not to cut into the thin metal stalk.

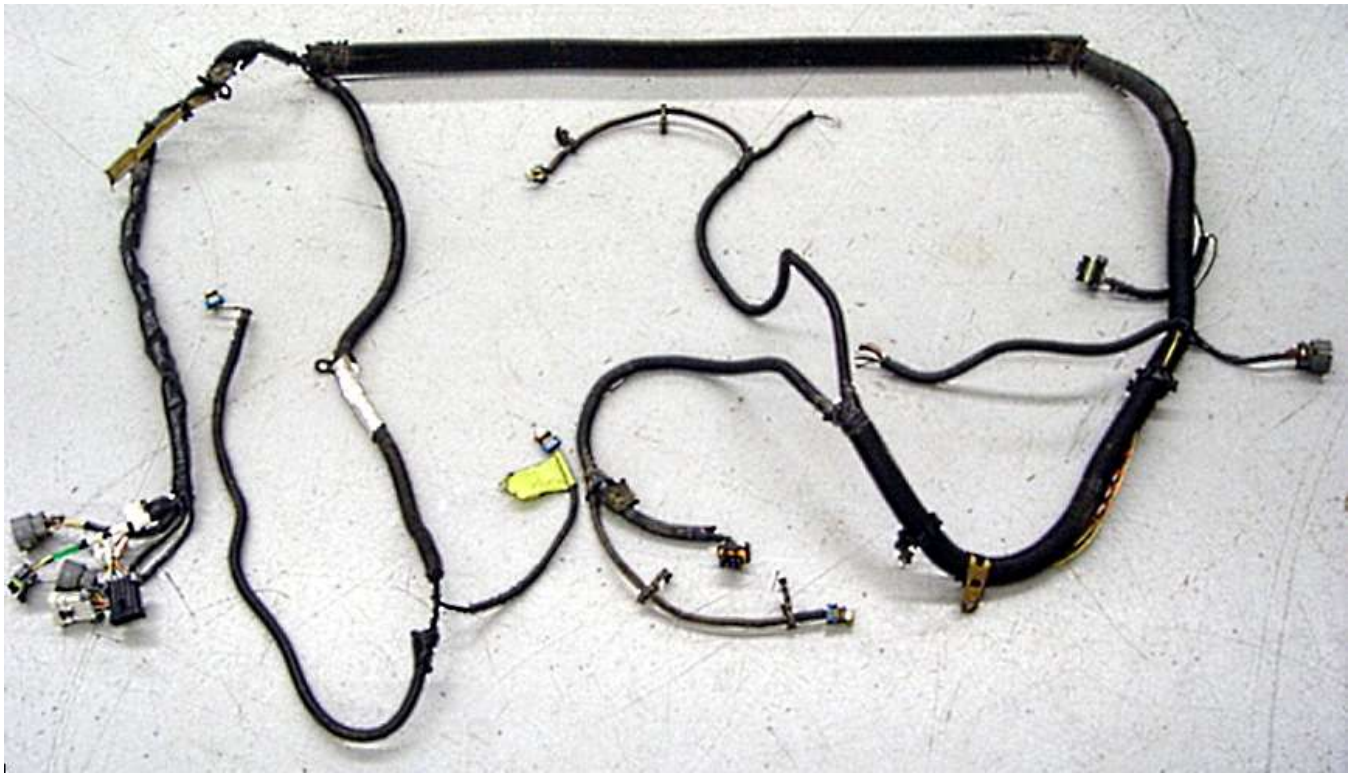
Now that the rivet is exposed it must be removed. Be extremely careful removing the rivet, taking care not to scratch or puncture the metal stalk. To remove the rivet, use a center drill or small diameter bit to drill a guide hole in the center of the rivet. Then work up in bit sizes until you can shear one of the rivet sides. Use a ½" bit.

Once the rivet is sheared off, do not be alarmed if the hole in the metal stalk appears elliptical, this is normal.

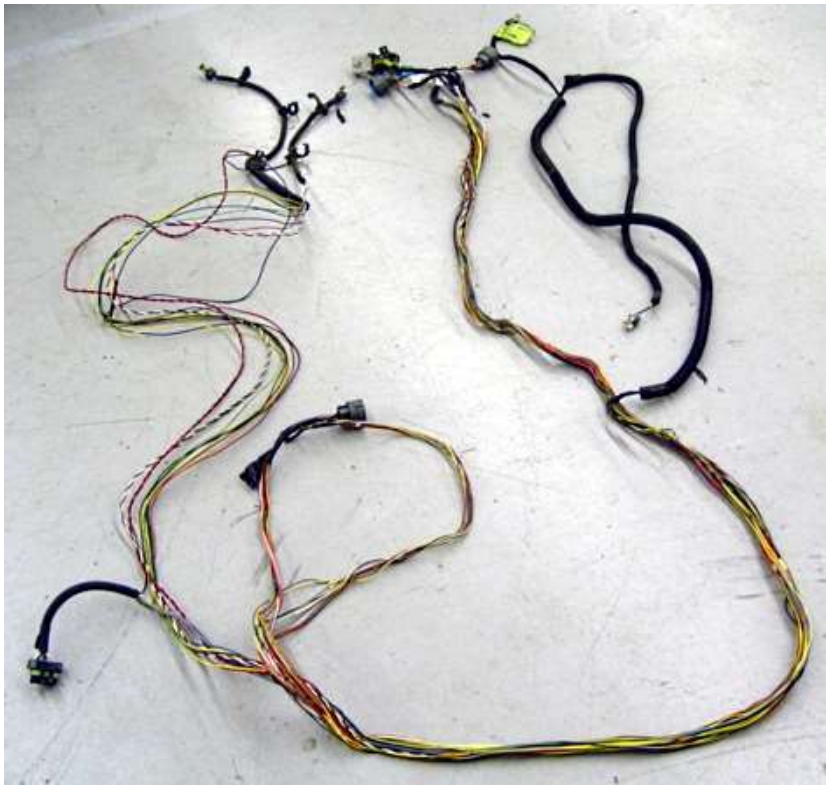
Wiring Harness/Computer

- Razor knife, wire snips, saw and/or grinder.
- Complete Donor wiring harness.

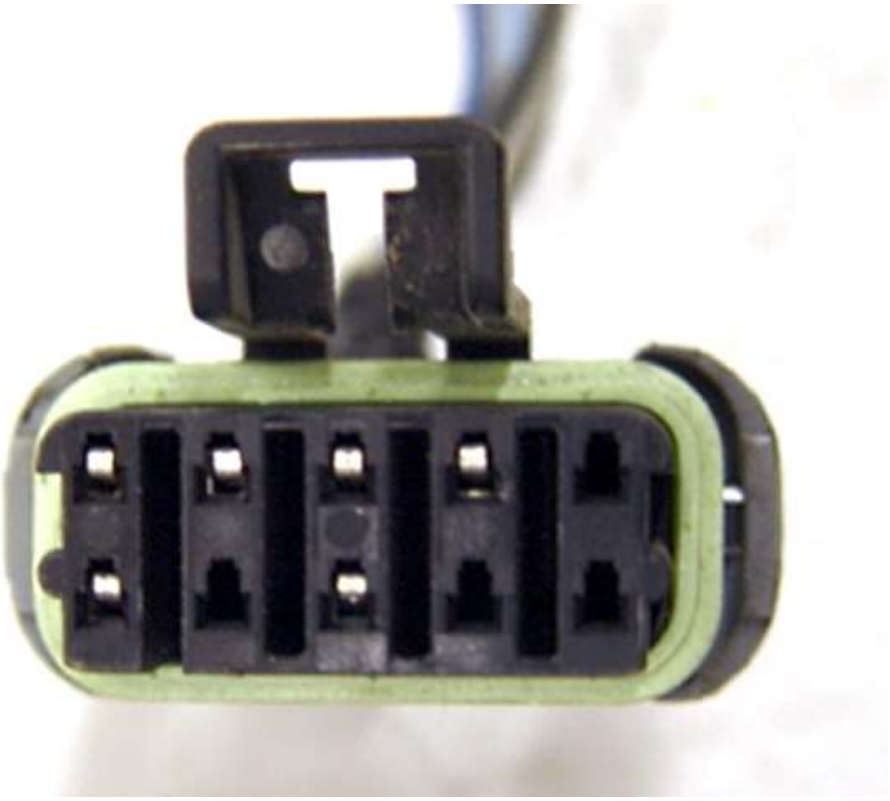
Transmission Tunnel Harness



On a clear work surface or section of floor stretch out the harness that runs down the length of the donor driveshaft tube. It is easily identifiable by the 3 foot long plastic sheath that covers the middle section.

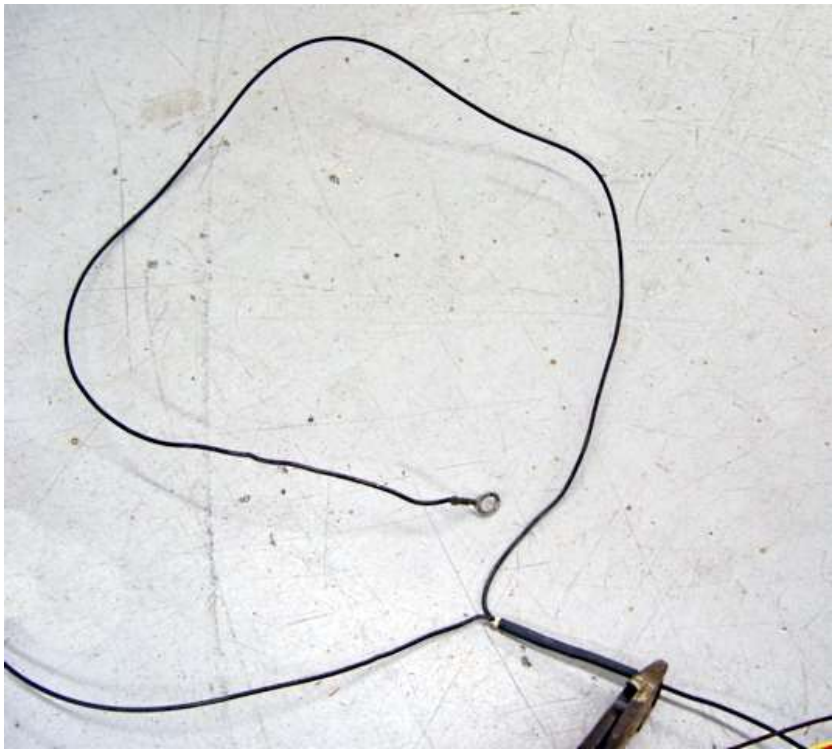


Strip the tape and sheathing off of the length of the harness.

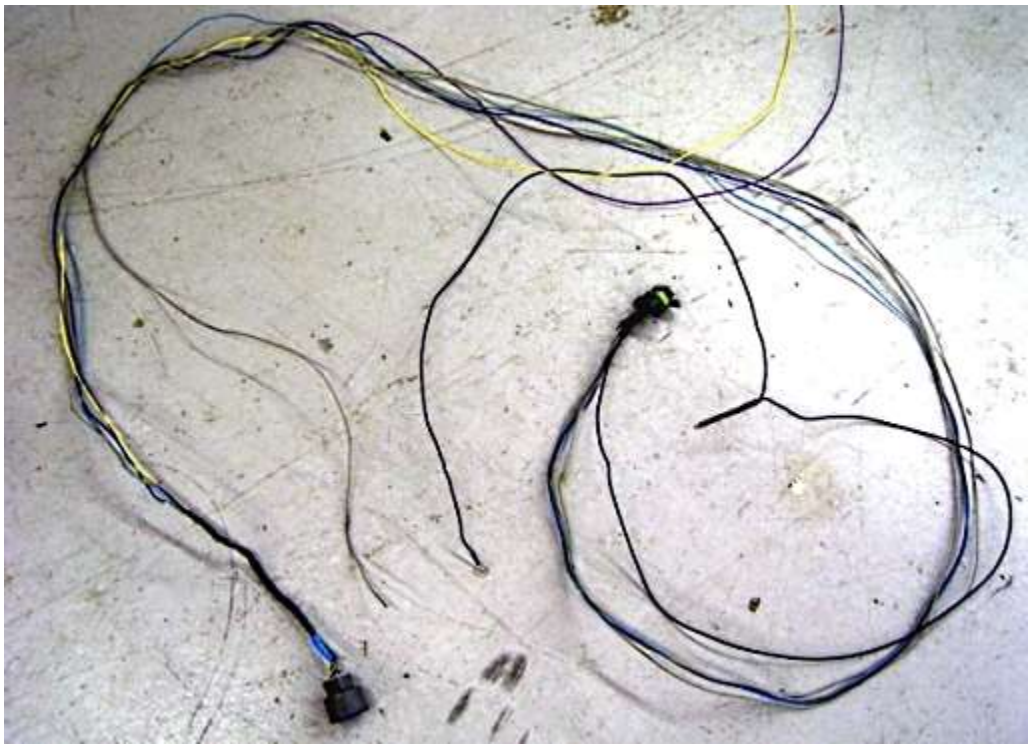


Starting at the plug that connects to the fuel tank harness separate the harness that connects the fuel tank to the main engine harness.

The ground wire from this plug runs through a junction before continuing to the loop connector. Trim the extra wire off of the junction leaving enough wire for a splice.



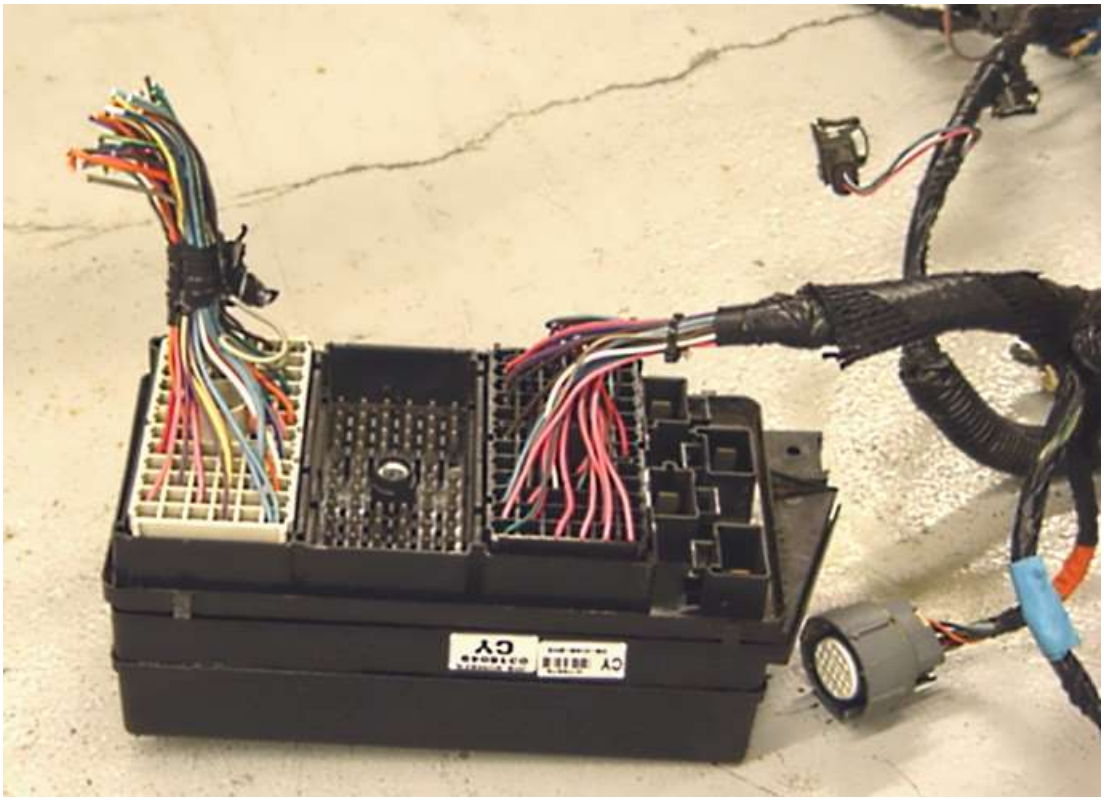
On the round connector, there is a thin grey wire at terminal “S”. Follow this wire back the same length as the junction and splice it in from the tank side. The wire will now connect from the tank plug to the chassis ground.



All of these wires except one grey wire run into a large round plug. Trace the solid grey wire that runs apart from the others back to the plug it runs into and trim it a couple inches from the end. The remaining harness is what will be used.

The wires for the vehicle speed sensor (which plugs into the differential) also run into this plug and should be kept attached (See photo for detailed view of the vehicle speed sensor).

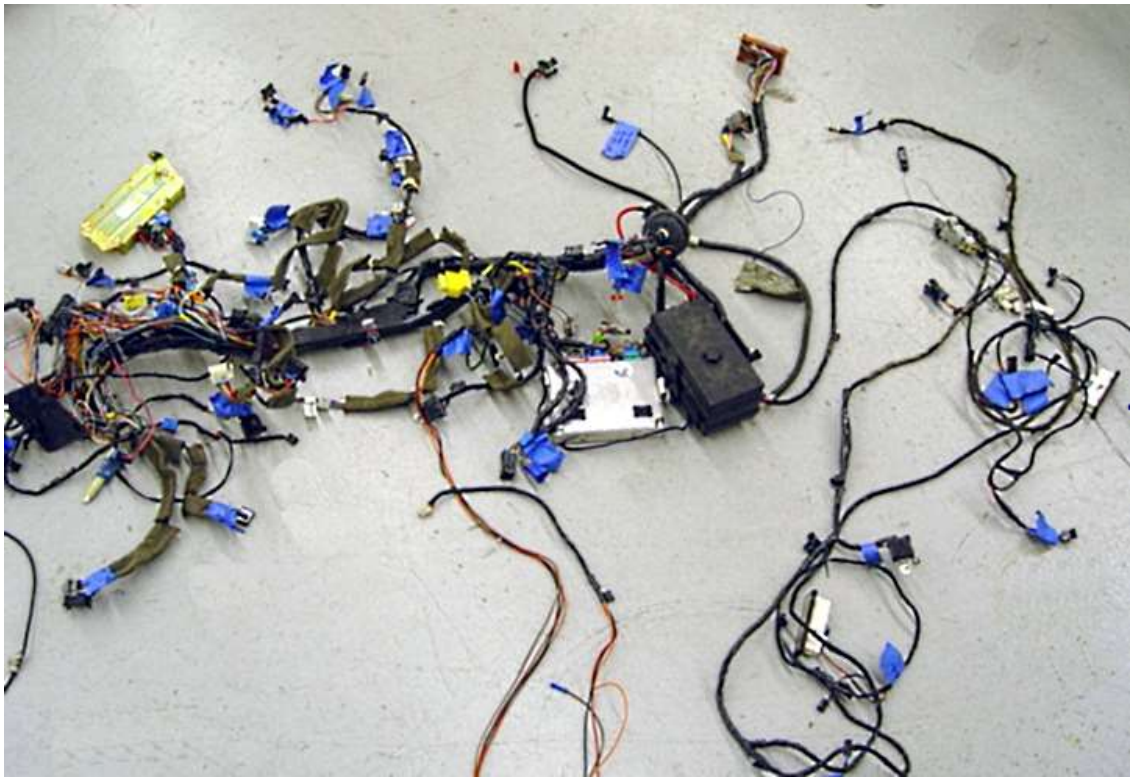
Front End Harness



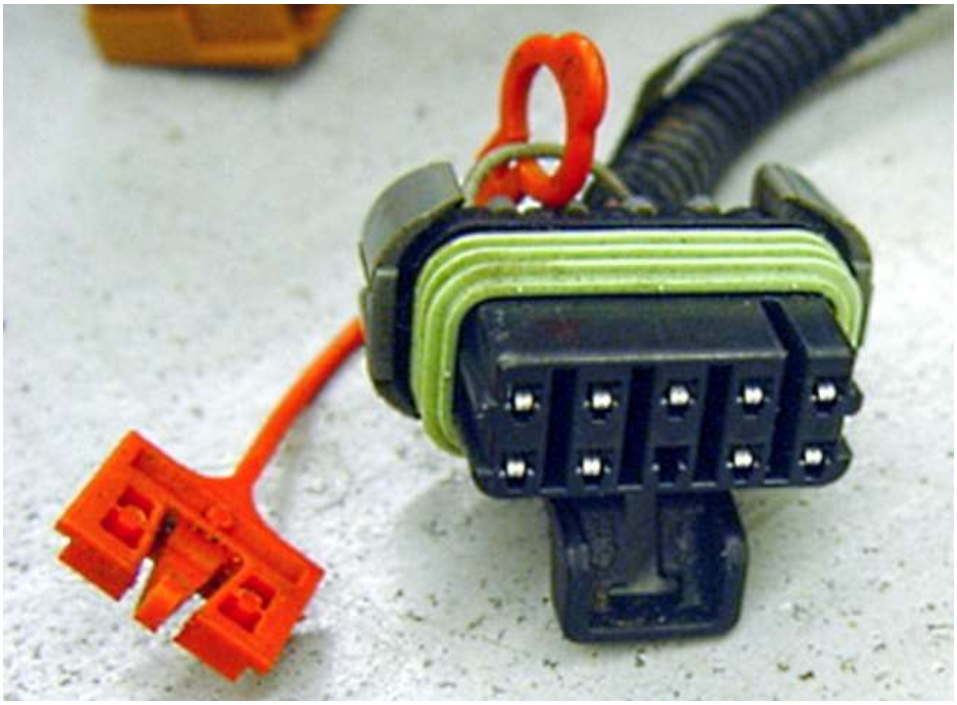
The front end harness needs 3 plugs clipped off of it. It does not need to be stripped for this process. First cut the fuse box plug off of the harness. Leave about 8 inches of wire so you can easily splice the harness back together.

Cut the two Fan plugs from the Harness about 4 inches into the harness. Set the plugs aside.

Dash Harness

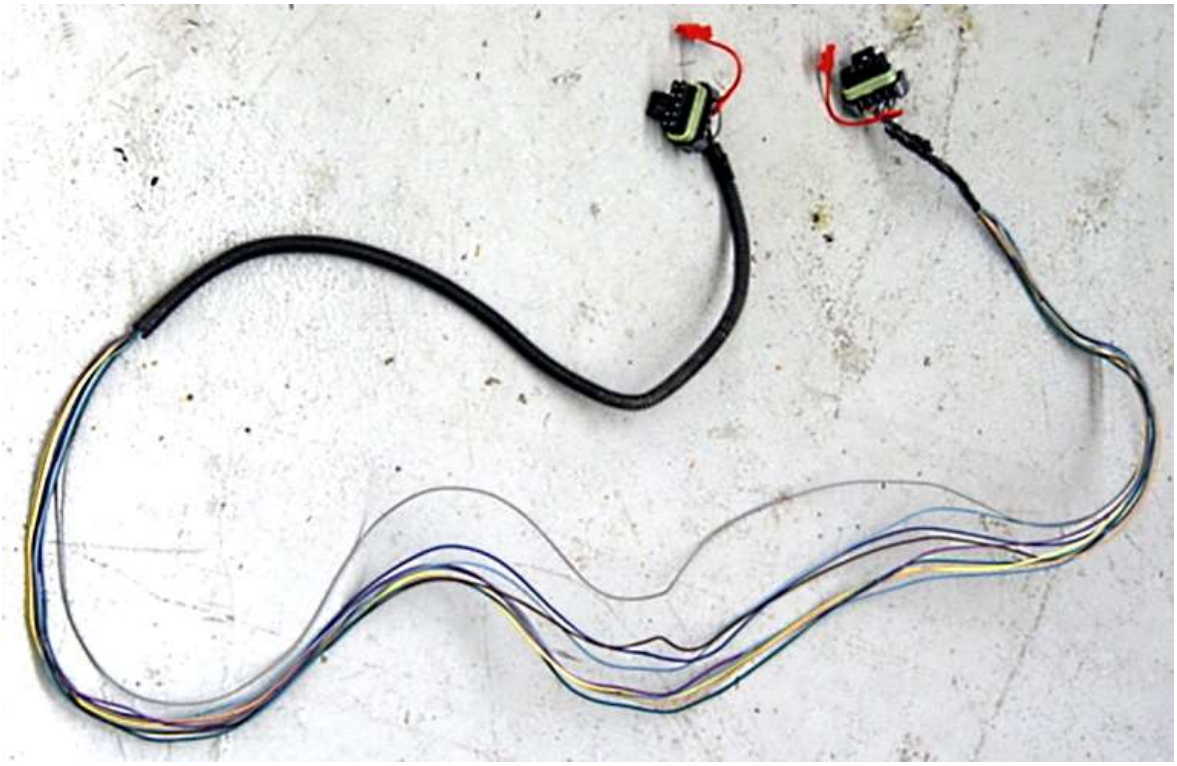


Lay the Dash harness out on your work surface and spread it out with the fuse box in the middle.

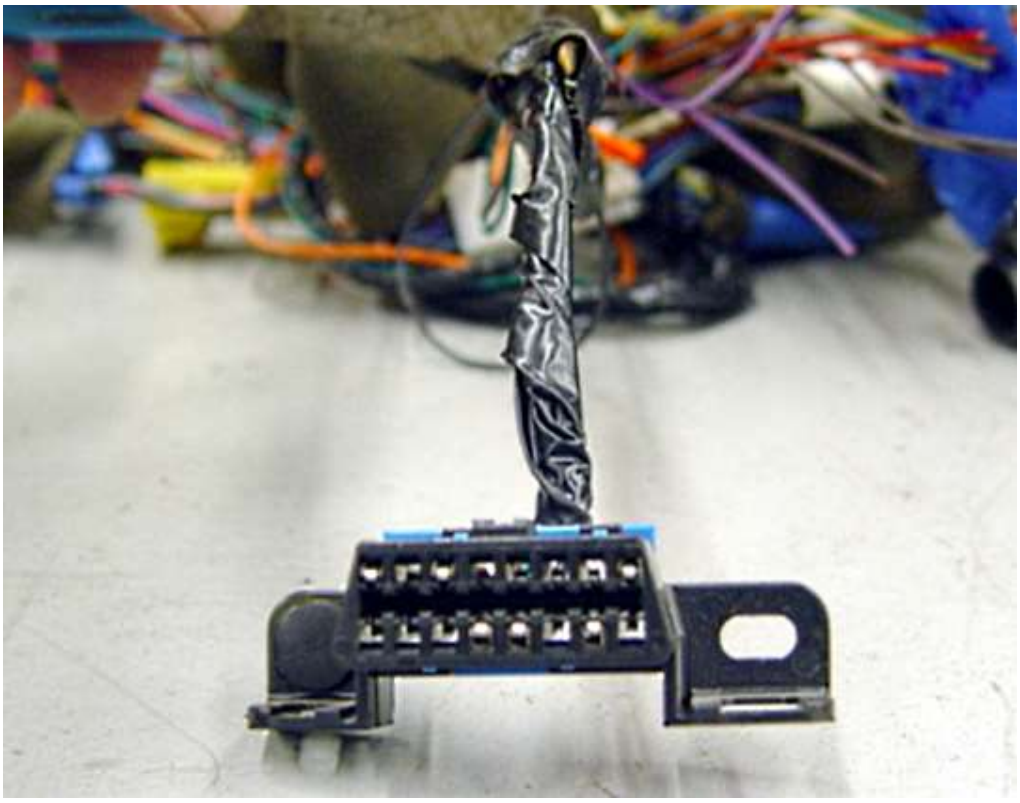


Find the Plug for the Drive by wire Throttle control – it is located near the orange/brown fuse box plug and has a plastic red tab attached.

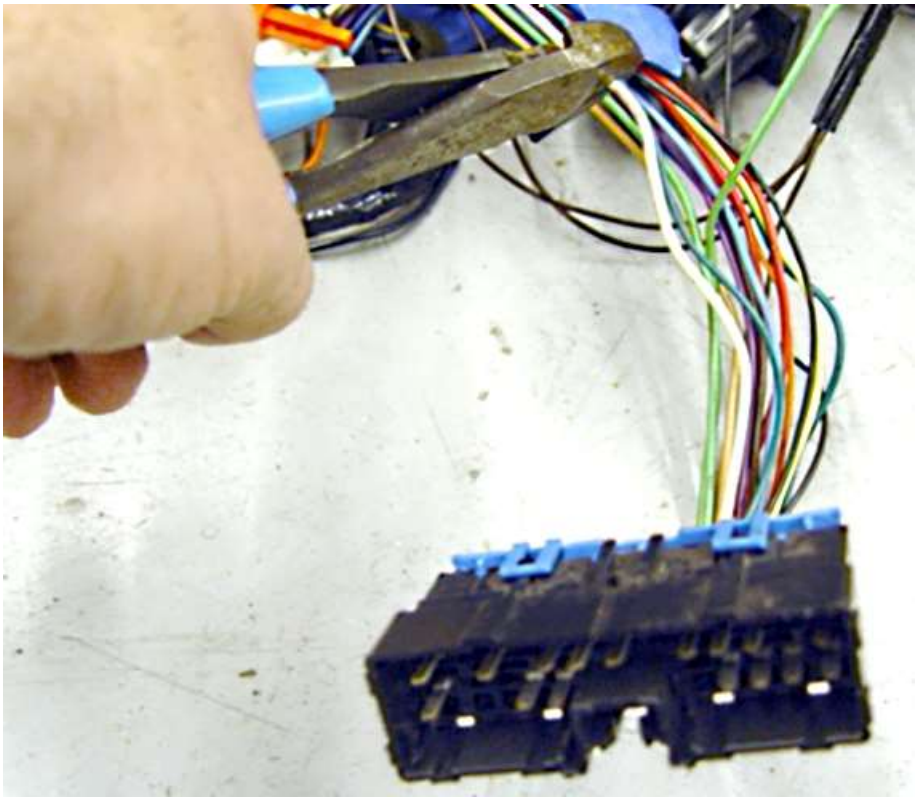
Follow this harness back into the main harness un-wrapping it and separating it as you go. You will have to cut the Firewall plug to separate the wires.



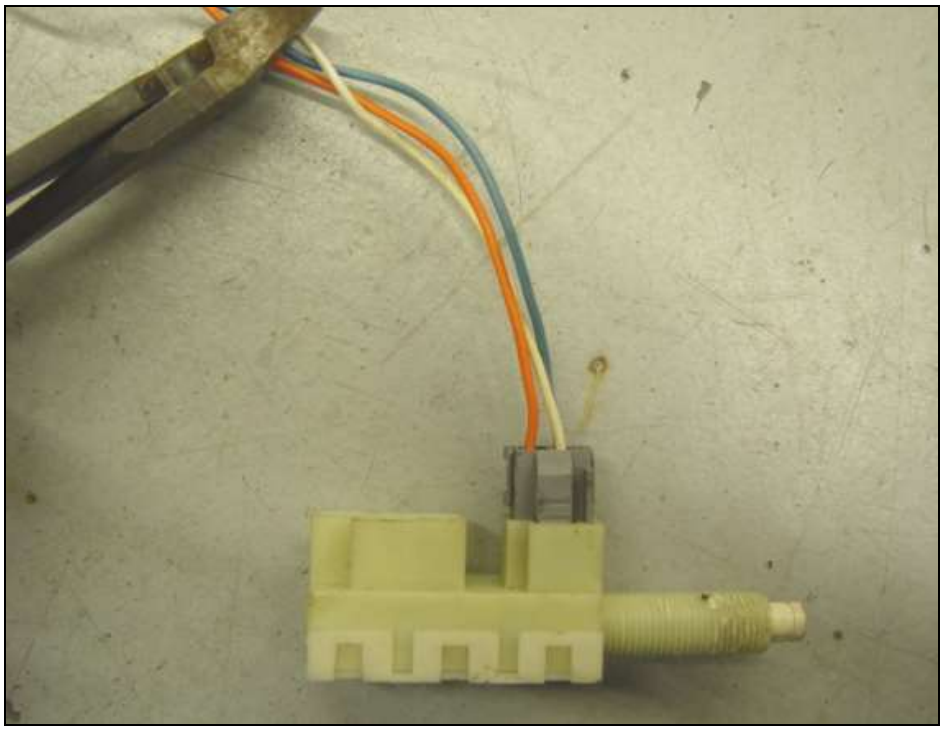
When you get to the other end there is an identical plug and the harness will separate cleanly from the main section without cutting any wires. Pull this harness out and set it aside.



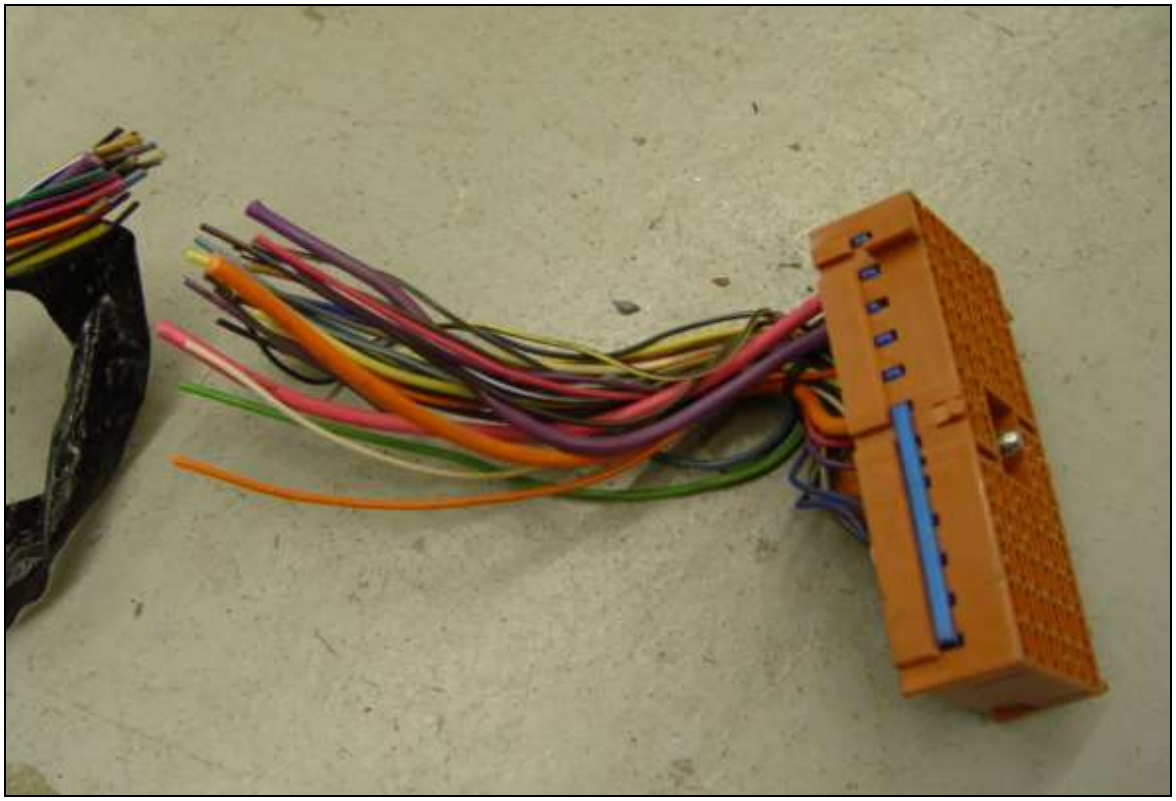
Find the OBD II/Engine Scan plug and cut it off leaving about 6” of wire.



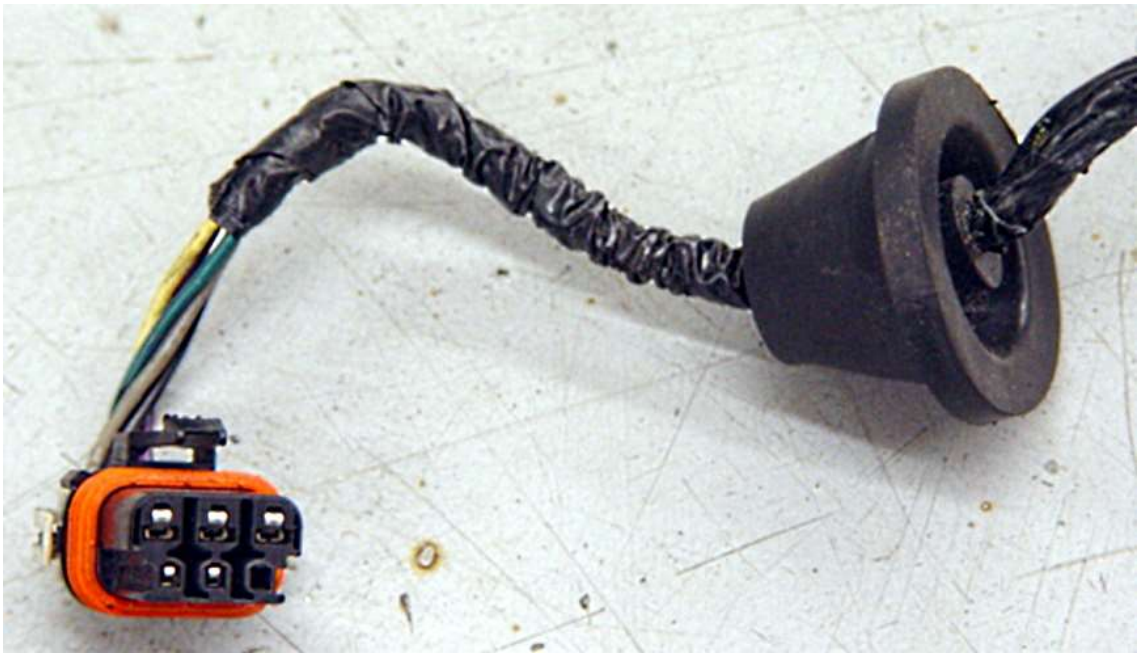
Find the headlight switch/turn signal plug. You can plug in the stalk to ensure that you have the correct one. Cut the plug off, again leaving 6" of wire.



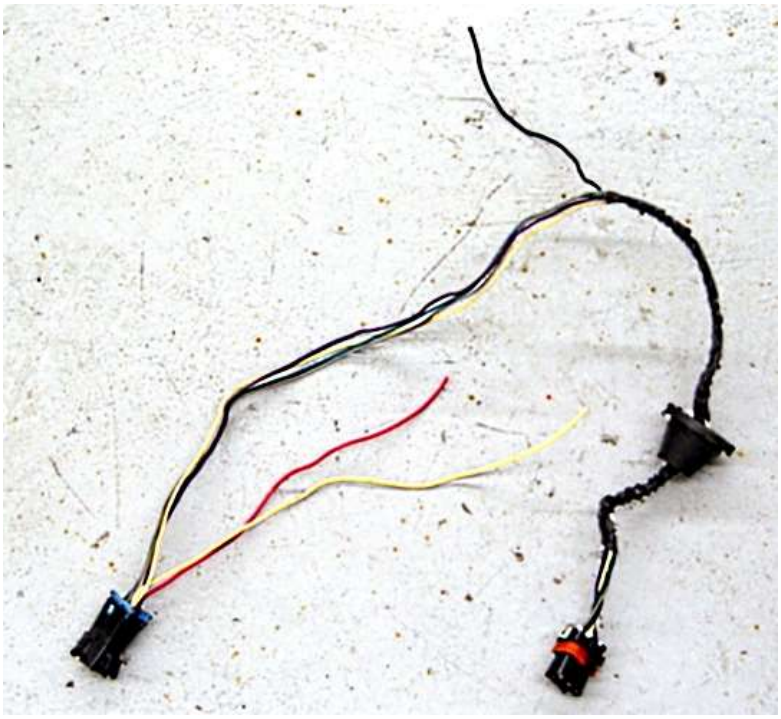
Find the brake light switch – it has two plugs and the smaller diameter threaded mount. Unplug the rear connector and cut off the front plug (toward the threaded section) leaving 6 inches of wire. Set it aside.



Cut the brown/orange fuse box plug off of the harness leaving six” of each wire and set it aside.



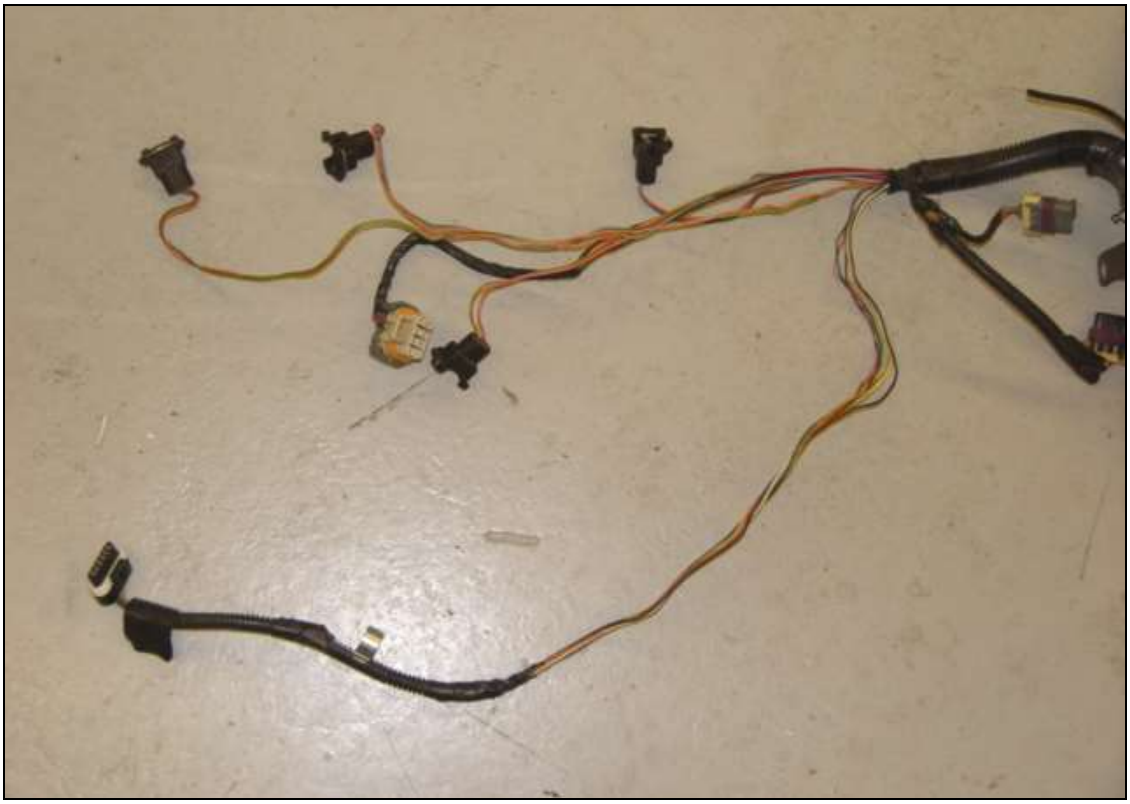
Locate the windshield wiper motor plug. It sticks out separately from the main harness and has a firewall grommet near the plug.



Trace this harness back into the main harness about 2 feet to find the plug at the column. Separate the harness from the main section by cutting the three wires that connect them. Leave about 12 inches of wire to reconnect to on the wiper harness.

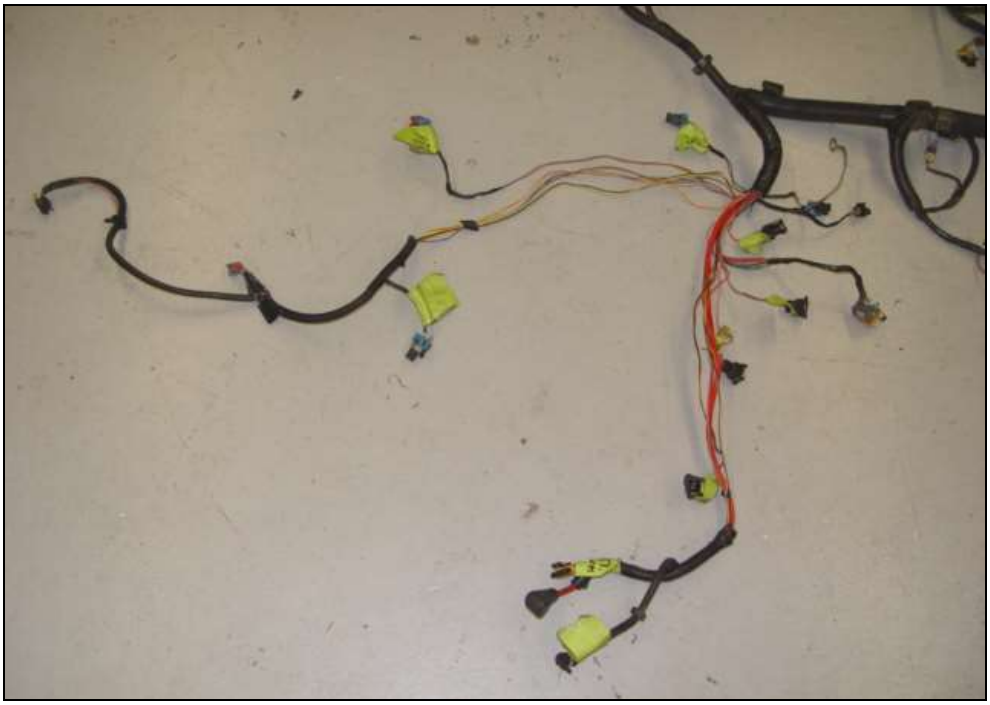
Engine Harness

The engine harness must be stripped down to allow for some of the sensors being relocated due to the intake and valve covers being flipped around to face backwards. On this harness locate the plug for the throttle position sensor, it is out at the end of one bank of injectors and has five wires.



Strip the tape off of the harness from this plug back several inches past the first injector plug.

Re-tape the harness with the throttle position sensor wires in a separate loom so it can reach back to the new throttle location.



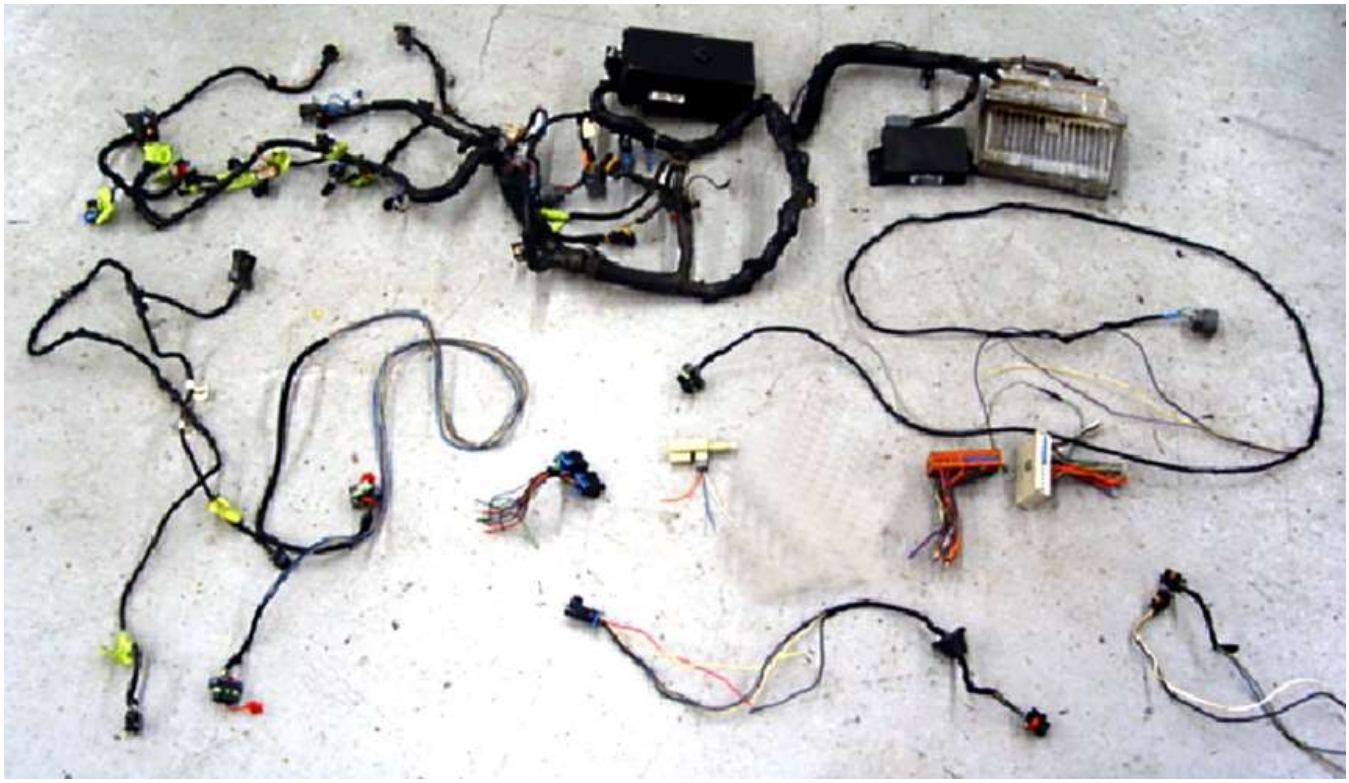
Strip the tape off of the other injector bank down past its first injector.

The throttle, air temp sender, and mass air meter wires get taped separately to allow them to reach backward to the air intake area.

The evap solenoid plug needs to be taped separate to reach the opposite side of the intake manifold as before.

The alternator wires should also be taped separate from the coolant temp sensor wires back past the last injector.

Tape off the rest of the harness and it is ready to install.



You now have all of the component plugs that you will need to complete your car, it is a good idea to hold on to the leftover harness until you are finished because it can be a good source for extra wire or plugs to make components like lights or the gauge pod easy to remove.

Computer Bracket

The computer bracket is different for 1997-1998 and 1999 and up donors. Unlike the 1999 and up computer bracket, the 1997-1998 computer bracket mounting bosses begin in different planes. Therefore, if you trim all of the 1997-1998 computer bracket mounting bosses down to the main portion of the bracket, the bracket will not mount flush to the steel brackets on the frame. Follow the directions for the specific year you have.

1997-1998 Bracket

Using the position the computer was in when mounted to the car, trim the front upper boss flush to the bracket face.

Trim the rear upper boss until it is even with the front upper section of the bracket (See Photo in Step 1).

Trim the rear lower boss until it is level with the rear upper boss.

Trim the front lower boss until it is level with the front upper section of the bracket.

1999 and up Bracket

Trim all of the bosses flush to the main section of the bracket.

Chapter 3

Disassembly of the kit

Unpacking Your GTM Kit

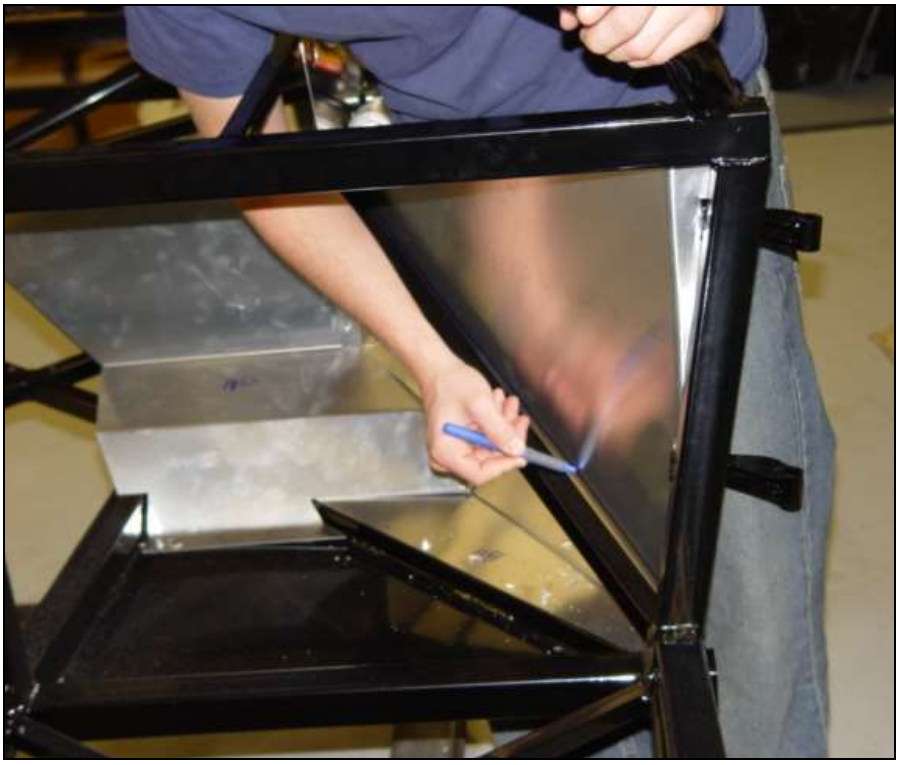
Please note that your boxes are numbered, when you read your packing list you will see that next to each assembly there is a number circled. This is the box number that the assembly was packaged into. After everything is safely in your garage, take the time to open each box and do a physical inventory of all the parts. It is a good idea to work one box at a time and replace all the contents before going on to the next box.

Removal of Body

🛠 Marker, #6 hex driver.

Three strong people can remove the body from the chassis. One person on either side located where the door openings are and the additional person at the back of the vehicle. Removing the body should be done very carefully. You might have to pull slightly on the sides of the body to clear the door hinges, door striker mount and lower tubing on the frame. Once the body is removed, it is fine to store it directly on the ground.

Aluminum Removal and Preparation

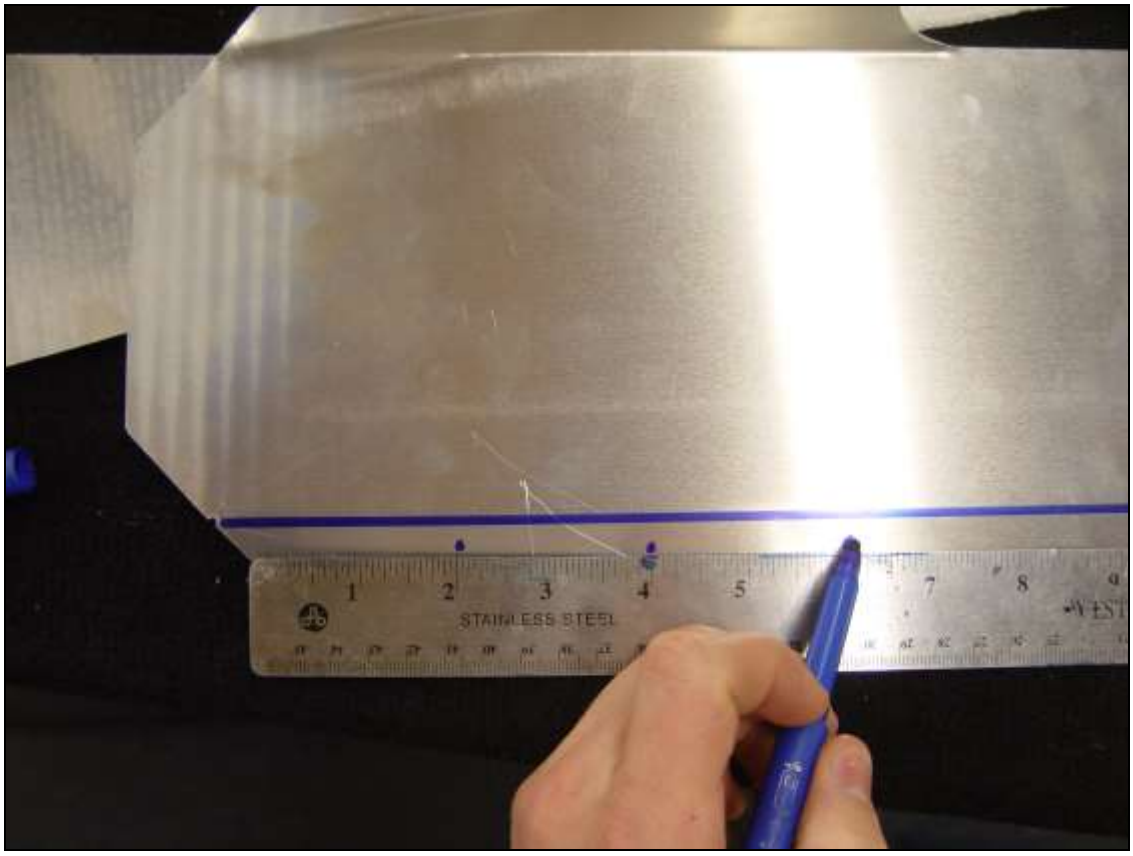


Using a marker outline the underside of each panel where it contacts the chassis. This is done to locate where to drill rivet holes when the panels are permanently mounted later on.

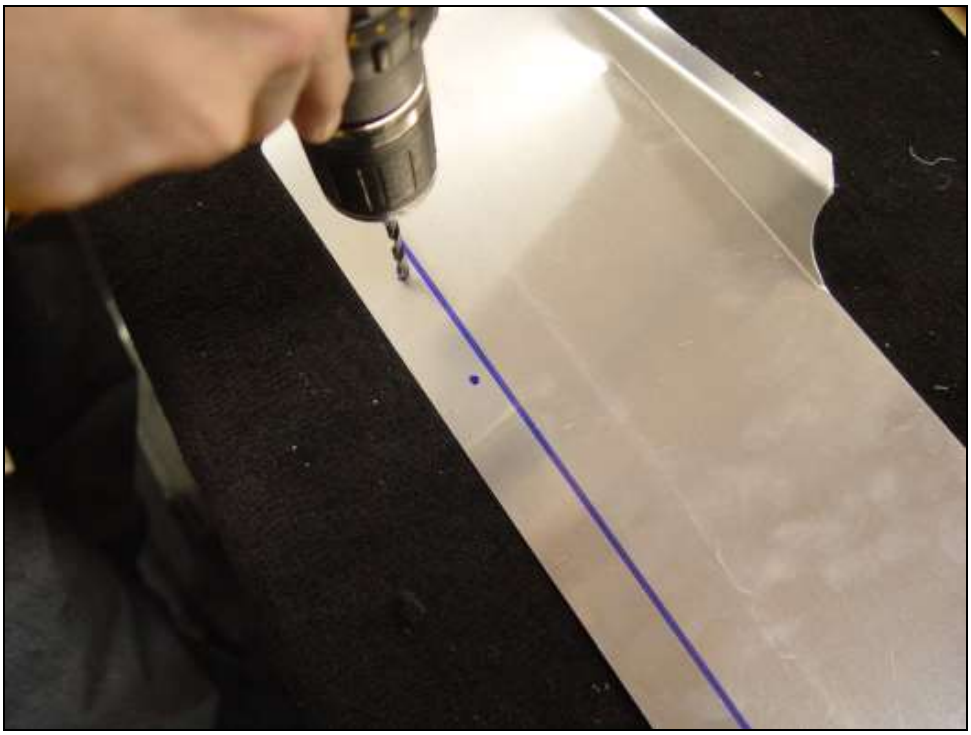
Before removing the aluminum from the chassis, mark each panel and take pictures of how the panels fit together (i.e. which is on top).

Remove any screws holding the panel to the frame and remove the aluminum panels. Keep the #6 screws to help with aluminum positioning later during build-up.

- In most cases we use a 3” rivet spacing when mounting aluminum panels to the chassis and a 2” spacing when mounting panel to panel.
- Use the ⅛” rivets for all of the aluminum panels unless otherwise directed.



Using a ruler and marker, mark the rivet spacing along the centerline of the pen outline that you made on the aluminum.



Drill the marks with ⅛” drill bit.

Position your frame in your workspace with plenty of room to move things around. Use jack-stands or 4" blocks to put the frame 4" above the ground. This is close to ride height, making the suspension easier to position.

Having disassembled the donor or obtained the individual parts and prepared and modified them, you are now ready to begin assembly of your car. We will begin with the chassis and address each assembly in a sequential fashion.

Chapter

4

Chassis Assembly

Steering Rack Installation

🛠 ¾” Socket, ratchet, ¾” Wrench.
🚘 Steering system hardware (FFR# 25545, 25524).

Install the bushings and sleeves in the steering rack.

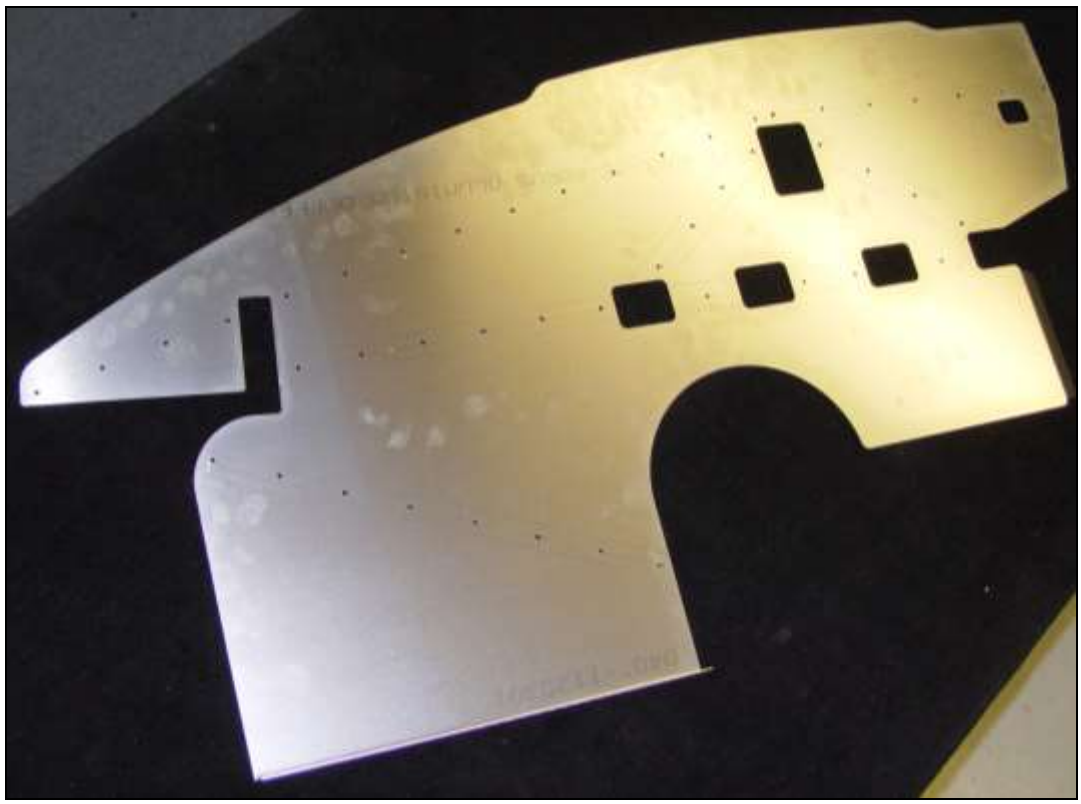
Thread a jam nut and outer tie rod end onto each of the inner tie rods (Do not to fully tighten the jam nuts against the outer tie rod until the rolling chassis is completed and it is time to align the vehicle.

Install the assembled steering rack into the chassis using the ½" hardware and extra washers in between the rack bushings and frame (slotting/elongating the driver side frame tab might be necessary). Torque to specification.

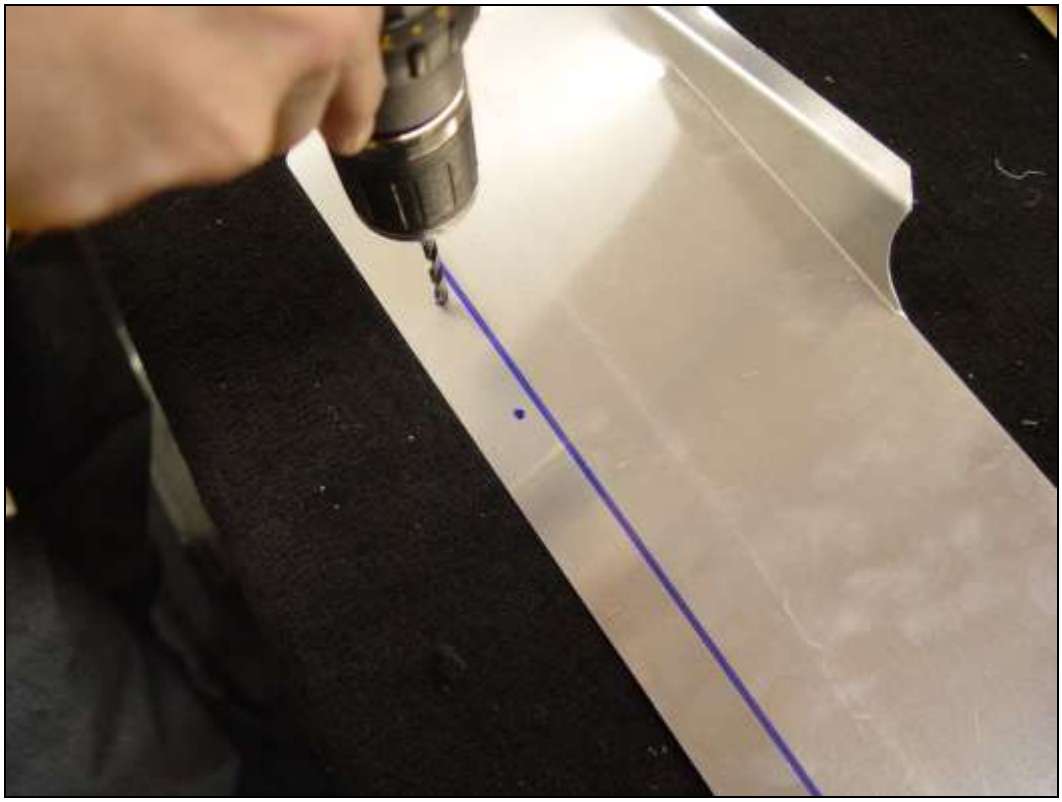
Inner Wheel Wells

🛠 Eye protection, drill w/#6 hex nut driver, ⅛" drill bits, drill, rivet gun, silicone, caulking gun.

Wheel well front inner (FFR# 25600, 25480, 25651, 25655).



Before you install the front suspension, position and install your left and right front inner wheel well aluminum. Align the panel on the frame where it was mounted at the factory. If you did not trace the outline of where the steel meets the aluminum before removal, do so now.



Using a ⅛" drill bit, drill along the center line of where you outlined the frame on the backside of the aluminum panel. Secure the panel in the original position as received from the factory using the self tapping screws.

Using the drilled panel as a template, attach it to the frame (with the self tapping screws) and drill the ⅛" holes in the frame.

Remove the panel from the frame, clean the surface and apply a bead of silicone to the frame where the panel is in contact with the frame rails.

Using the ⅛" short rivets, permanently rivet the panel in place.

- Do not rivet the rearward few inches on the driver's side panel yet. This will make installation of the pedal box easier (right around the upper square cutout in the pane – see photo below).

Using the same process, mount the rear lower splash panels on both the driver and passenger side.

- Do not drill or rivet the top edge (flanged upper edge) because the upper splash panel is later riveted in the same location.

Install the center splash panel. These have to be installed before the rear suspension because the upper control arm mounts protrude through this panel. Rivet this panel into place using the above procedure along the frame rails shown below.

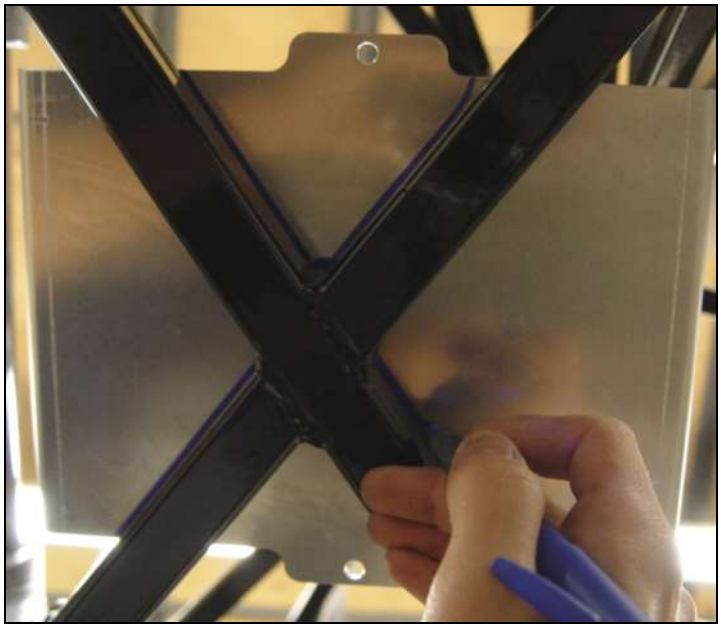
Battery Tray and Front/Center Undercarriage Aluminum

🛠 Eye protection, drill, 3/16" drill bit, rivet tool, silicone, caulk gun, 3/16" rivets.

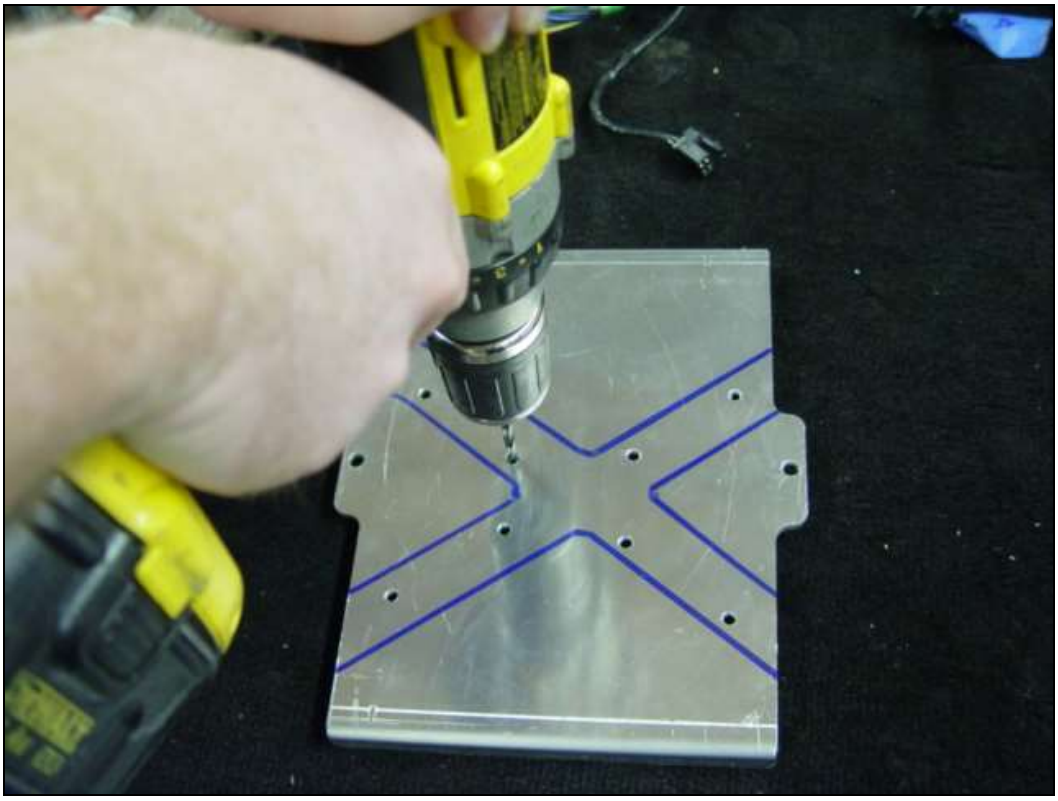
✋ Battery tray, Aluminum Panel – Undercarriage (Front, Center).

If you plan to use the optional Air Conditioning System, you will need to offset the battery to the Driver's side so the hole on the left side of the battery tray is in line with the center of the "X". If you aren't using the Air Conditioning system, skip this.

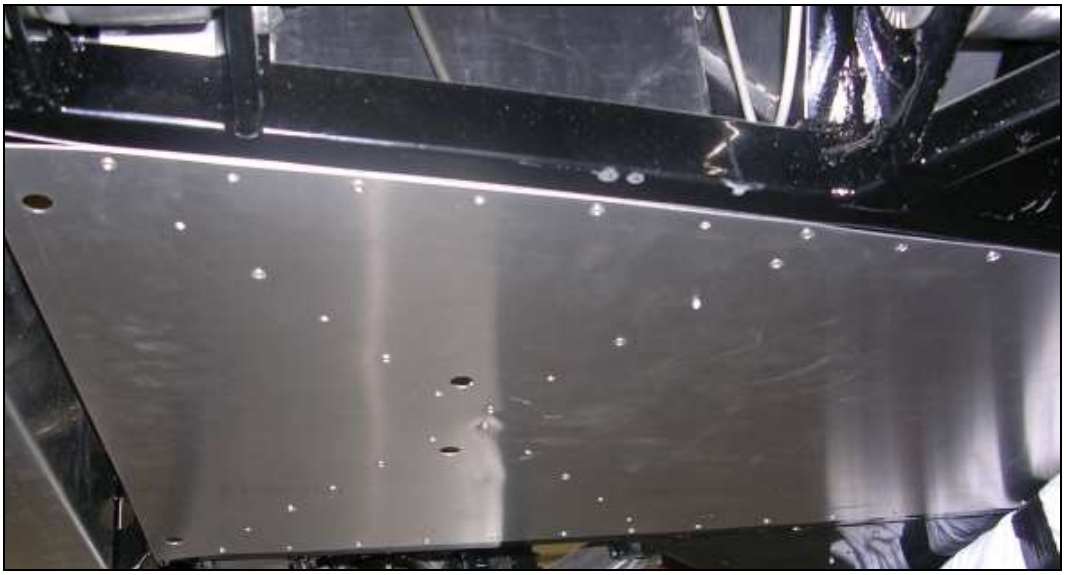
Orient the battery tray on the horizontal "X" frame member just behind the steering rack. The holes on the side of the tray should be centered in between the "X" frame. Some aftermarket batteries are larger than the stock Corvette battery, so make sure the front edge of the battery does not interfere with the steering rack.



From the bottom, mark where the 1” frame rails touch the battery tray.



Space out 8 holes and drill the battery tray out where it intersects with the frame using a 3/16” bit. Lay the battery tray back on the frame using the battery tray as a template, and drill the holes on the frame with a 3/16” bit. Remove the panel.



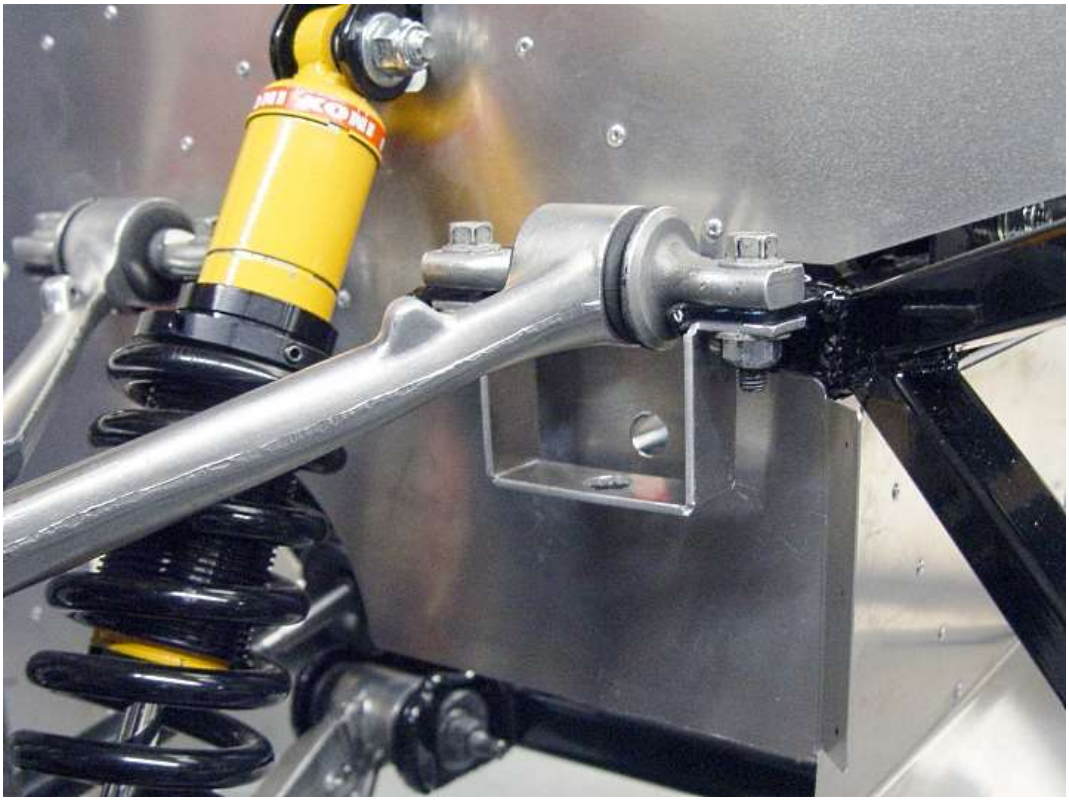
Tape the Front, Center Undercarriage Panel in place. Line up the front edge with the end of the 1.5" square tubes that the lower suspension mounts and lower radiator mount brackets are welded to (Shown in photo after the panel has been installed – you will not be installing the panel yet).

Trace the outline of the 1" and 1.5" square steel tubes. Remove the panel. Following the same procedure as in the Aluminum Panel Prep section, measure the locations for the rivets and drill out the panel. You will not mount this panel until later in the build (See photo from previous step).
Apply a bead of silicon to the frame rails the battery tray sits on and rivet the tray on with long 3/16" rivets (Non-Air conditioning build shown. If A/C were being used, battery tray would be offset to driver side – see step one).

Front Suspension

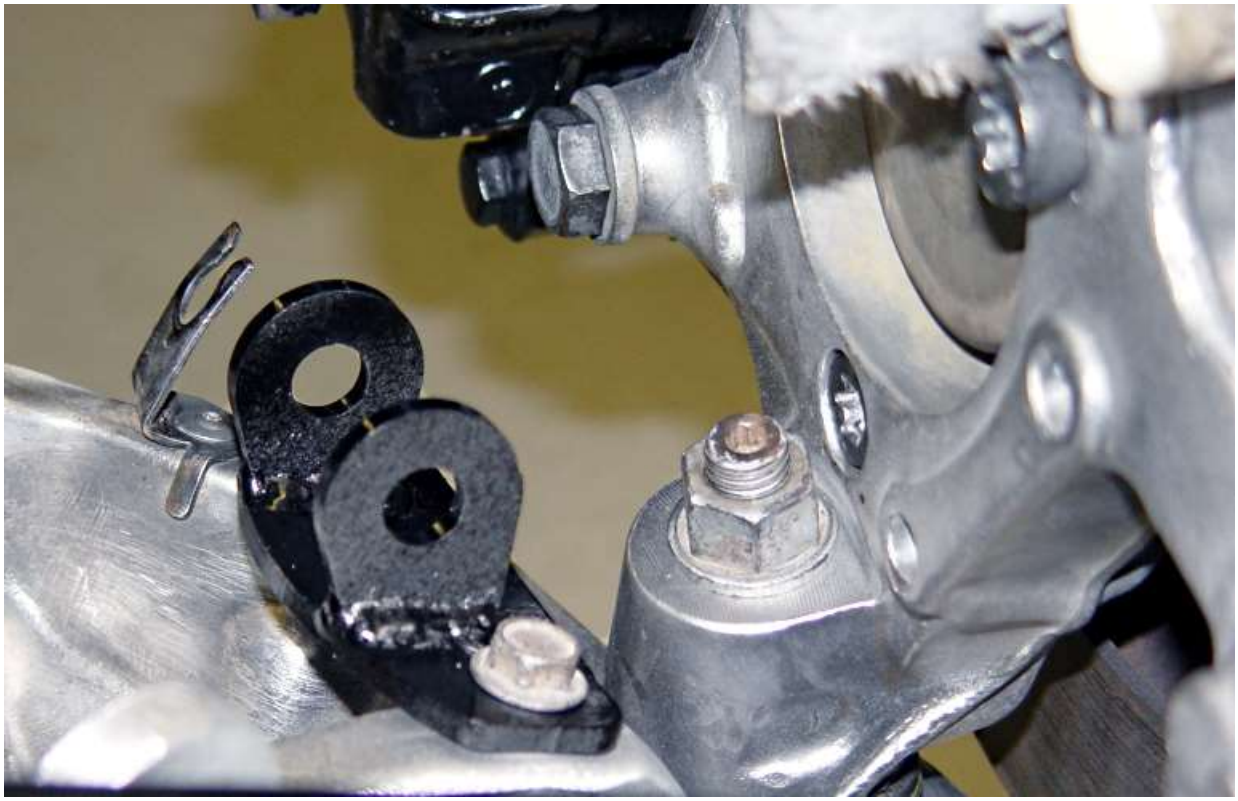
- 15mm, 17mm, 21mm, ½" sockets, wrenches and a ratchet.
- Corvette front suspension (complete) and donor hardware for front suspension, lower shock bracket hardware (FFR# 25376, 25352, 25755).
- It is helpful here to have someone help you with the installation of the front suspension, since the assembly is heavy and requires aligning the control arms with the holes on the frame.

While holding the front suspension assembly in place, install the 4 upper control arm flanged Corvette bolts. (same procedure used on driver and passenger side).



The front brake line bracket is installed below the rear of the upper control arms and fasten with upper control arm hardware. The small index faces the inside of the car. The Corvette used a washer/spacer in between the control arm and the frame. This washer is now the nut side of the upper control arm bolts before the supplied 10mm locknut (FFR# 25376). Torque to the specification listed in the Appendix (15mm – bolt head) (same procedure used on driver and passenger side).

Install the donor cam bolts on the lower control arms. Torque to the specification listed in the Appendix (21mm – bolt head) (same procedure used on driver and passenger side).



Install the lower coil-over mount on the upper surface of the lower control arm. This bracket is installed (FFR# 25714) using the Corvette 7mm shock mount hardware (this bracket is pitched inward). (same procedure used on driver and passenger side)

Coil-Over Shock Assembly

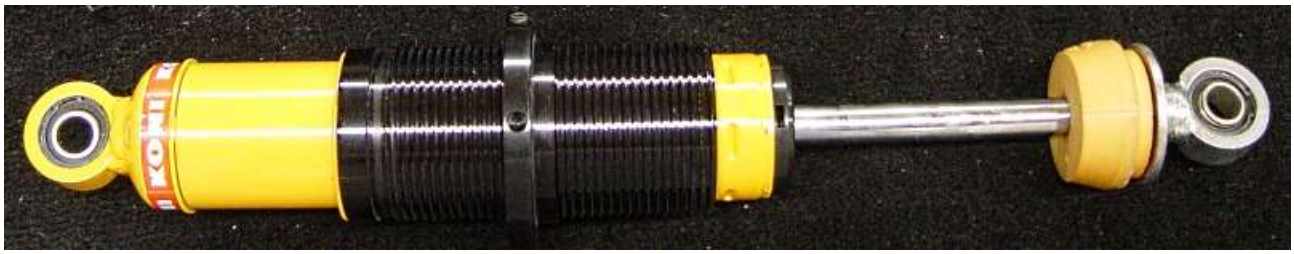
Snap ring pliers, ¾" wrench, ¾" socket, Ratchet, Torque wrench, chassis or lithium grease.

The shocks are pre-valved at the factory in compression. The shocks are not adjustable. The shocks are custom valved FSD (Frequency Selective Dampening) shock absorbers. Front springs are 450lb and rear springs are 750lb.

Coil-over parts.

Unpack the shocks, coil-over parts and hardware.

Double check the jam nut under the rod end and bump stop to make sure that it is tight.
Screw the spring seat down on the sleeve so it is closer to the unthreaded end.



Slide the coil sleeve over the body of the damper beginning at the end which has the rubber bump stop.

Place a small amount of white lithium or chassis grease on one side of the Delrin washer.

Put the Delrin spacer grease side down onto the spring seat on the threaded tube (shown without tube)

The coil-over hats have a “C” clip which affixes it into place. Remove this clip to assembly the coil over assembly.

Slide the spring over the damper, and then install the spring hat at the other end of the coil-over assembly. You may have to slide the rubber bumper down on the shaft to install the top hat. Rotate the shock collar to preload the spring. Re-install the "C" clip to the coil over top hat locking it into place.

Front Coil-Over Shock Mounting

🛠 ¾" Socket, ¾" Wrench, jack.
🚘 Assembled front coil-over (450lb springs) and coil-over mounting hardware.

Insert the coil-over assembly through the upper control arm (the body of the shock down). It is helpful at this time to jack up the lower control arm so the shock will slip in.
Attach the shock to the upper mount on the frame using the supplied hardware (FFR# 25376, 25618, 14063) and shock spacers (shock spacers for the front suspension are equal length; one is installed on either side of the rod end).
Torque to specifications.
The lower shock mount uses the same spacer arrangement as the upper mount along with the same bolt and nut. Install in a similar manner and torque to specifications (¾" wrench).

Rear Suspension Mounting to Chassis

🛠 19mm, 21mm socket, wrench and ratchet.

🚘 Corvette rear suspension complete, donor hardware for rear suspension, lower shock bracket hardware.

✋ It is helpful here to have someone help you with the installation of the rear suspension, since the assembly is heavy and requires aligning the control arms with the holes on the frame.

Install the rear upper control arm to the frame using the supplied hardware . Torque to the specification in the Appendix (21mm) (same procedure used on driver and passenger side).

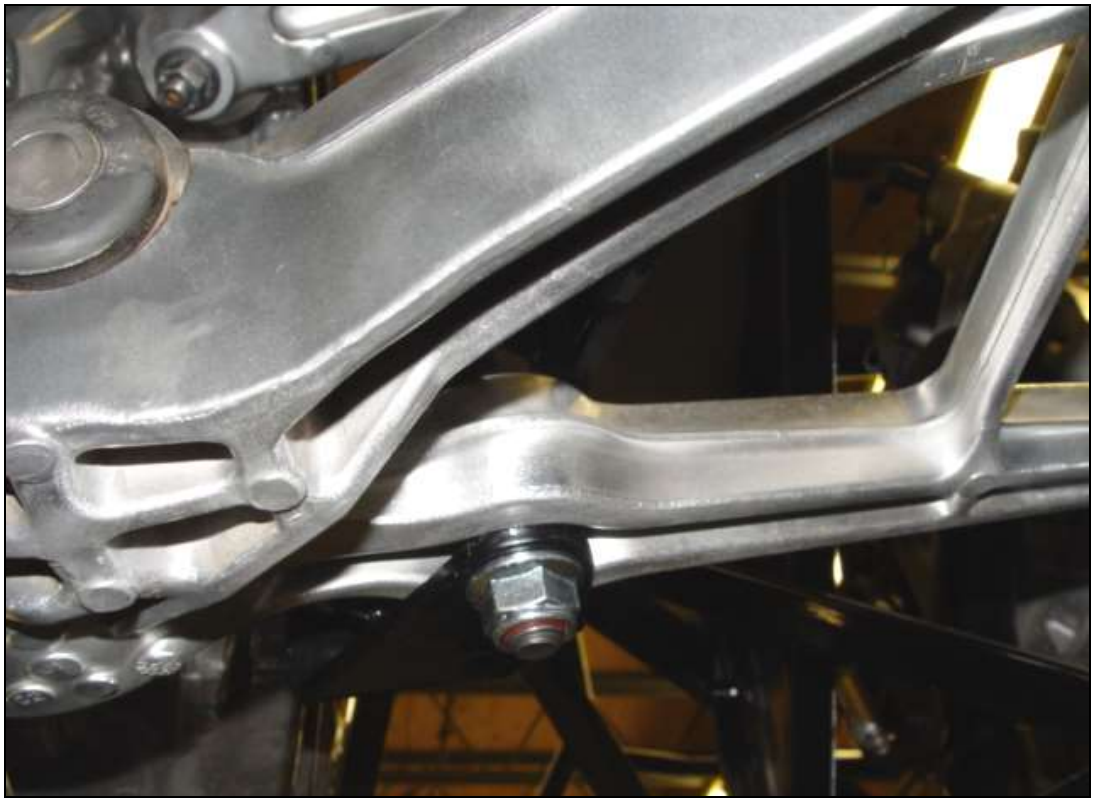
Install the donor cam bolts on the lower control arms (front mount) attaching them to the frame (21mm). The supplied hardware is for the rear lower control arm attachment point (19mm) Torque to the specification in the Appendix (same procedure used on driver and passenger side).

Rear Coil-Over Shock and mount

- ¾”, 15/16”, 18mm, 24mm socket and wrench, ratchet, jack, grinder.
- Assembled coil-over (450lb springs) and coil-over mounting hardware.
- The lower shock brackets are side specific, and mount the coil-over to the front of the lower rear control arm.

Test fit the bracket on the lower control arm. The bracket will hit the forge flashing so remove material so that the vertical bolt will fit through the mounting hole.

Place the large washer on the lower control arm in the circular recess.



Use the ⅝” flanged bolt and nut to attach the lower coil over mount to the lower control arm to the previously used lower shock mount (leave bolt loose for now).

The ½-2.25” flanged bolt and nut is used for the inboard rear mount (¾” wrench).

Rear Coil-Over Shock Mounting

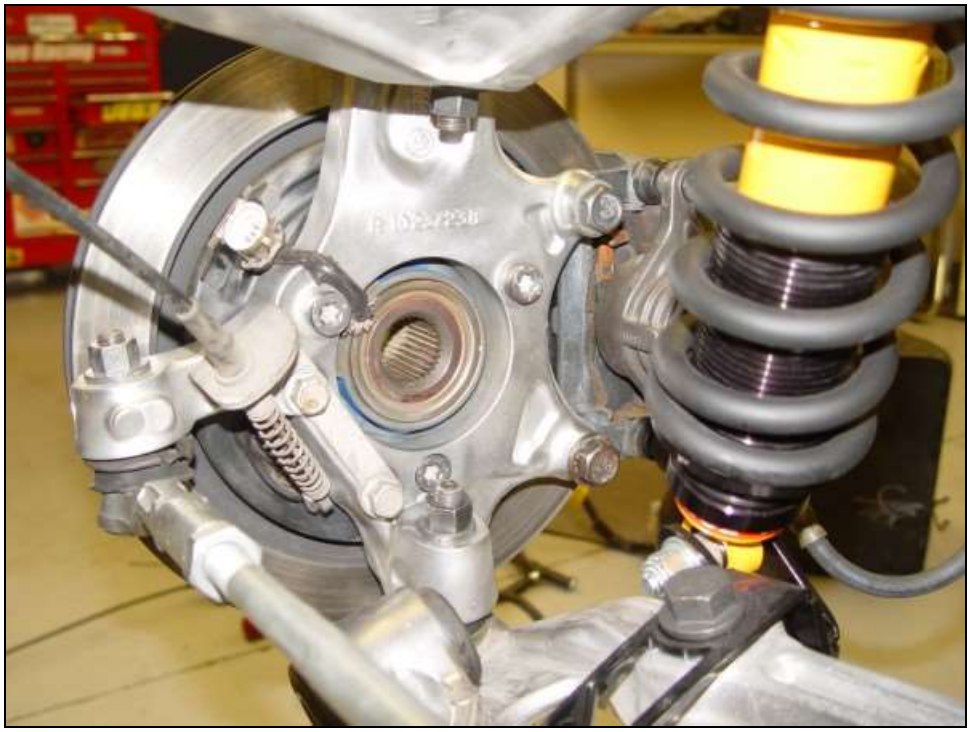
Lower the coil-over assembly through the upper control arm (the body of the shock down). It is helpful at this time to jack up the lower control arm so the shock will slip in. Pass side shown.

Attach the upper shock mount to the frame using the supplied hardware and shock spacers (the upper shock spacers are the longer ones, and the lower ones are short).

The 3½" bolts are used in combination with the longer spacers on the upper rear coil-overs. Torque all coil-over hardware to specifications (¾" wrench) (same procedure used on driver and passenger side). Tighten the ⅝" bolt and nut that attach the lower coil over mount to the lower control arm (15/16").

Rear Tie Rod

The Corvette rear tie rod is installed using the donor hardware.



Install the ball joint on the rear spindle as seen below same as it was found on the Corvette (18mm wrench). Torque to specification (same procedure used on driver and passenger side).

The inner tie rod is mounted to the frame using the Corvette nut (24mm wrench). Torque to specification (same procedure used on driver and passenger side).

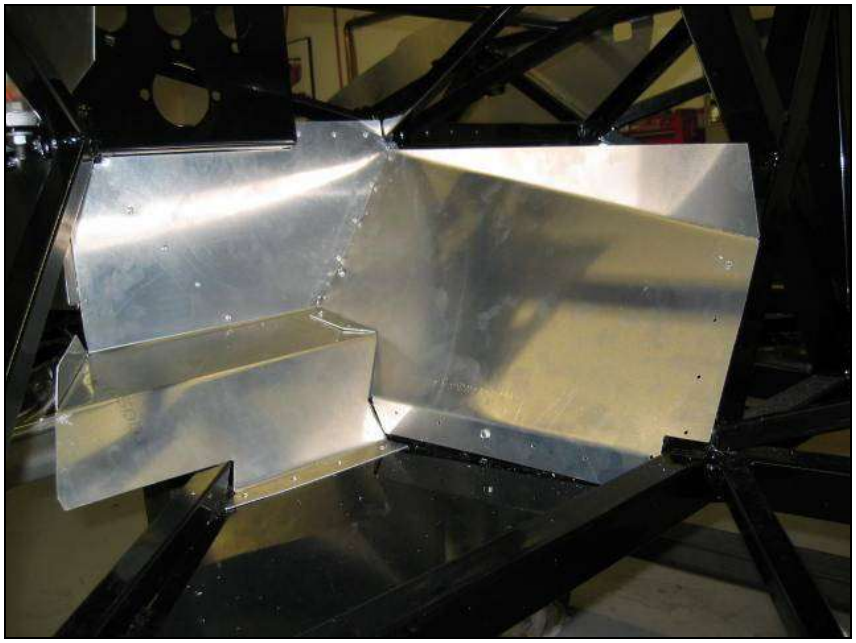
Footbox Aluminum

🛠 Eye protection, drill w/#6 hex nut driver, ⅛" drill bits, drill, rivet gun, silicone, caulking gun, #6 self tapping screws.

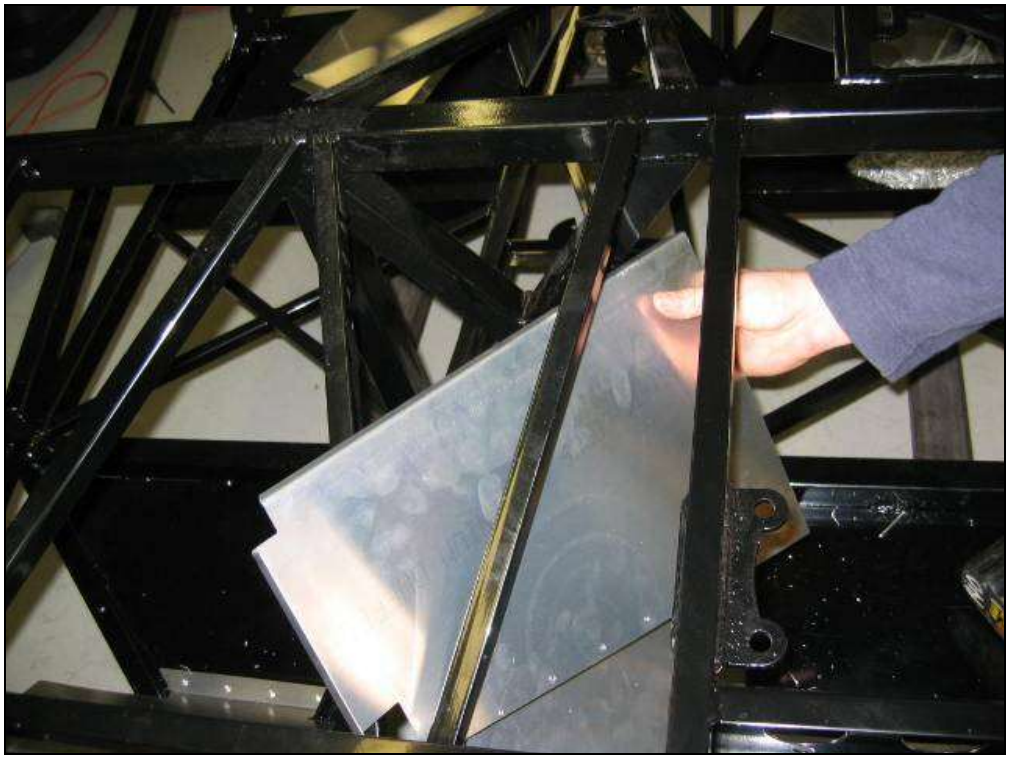
🚘 Driver/passenger footbox aluminum (FFR# 25172, 25174, 25175, 25176, 25173).

DRIVER

The first pieces to be installed are the front wall (FFR# 25172). The bottom flange on this piece is riveted to the 1/16" steel front footbox floor pan and the upper edge sits right underneath the base of the pedal box mounting plate.



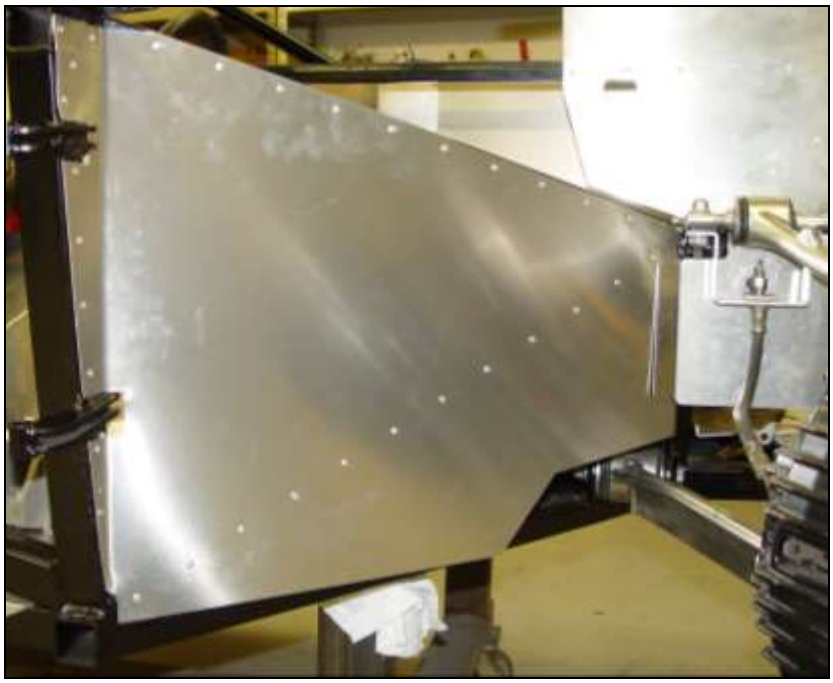
The next piece which is installed is the Inner lower wall (FFR# 25174).



We now have to install the inner upper wall (FFR# 25175). To get this piece in place, start with it in the driver's footbox at an angle and lift into place.

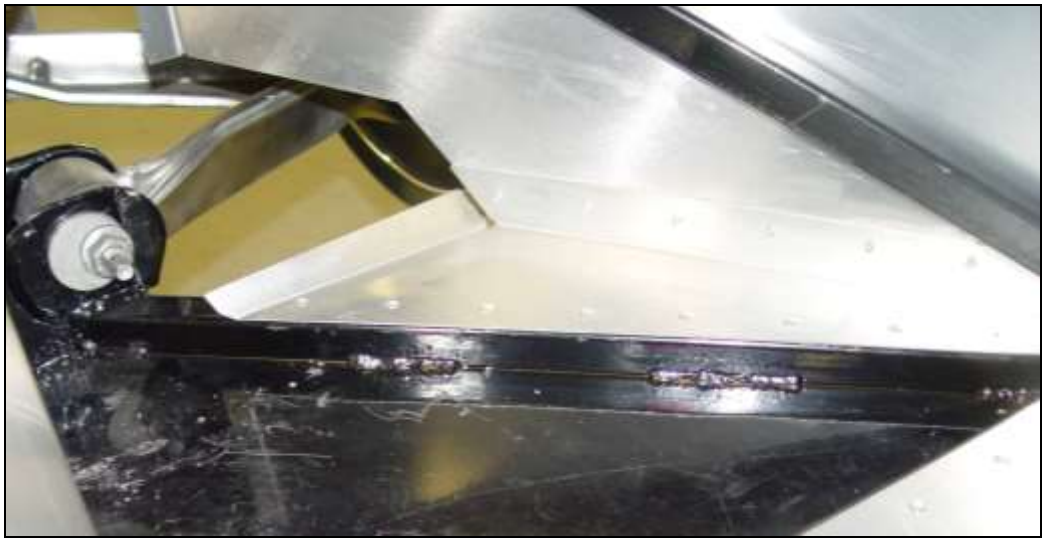
The upper flange on this panel is flush (horizontally) with the 1.5" frame rail towards the rear of the car and the ¾" tube towards the front vertically.

The last piece to be installed is the upper X panel (FFR# 25176).

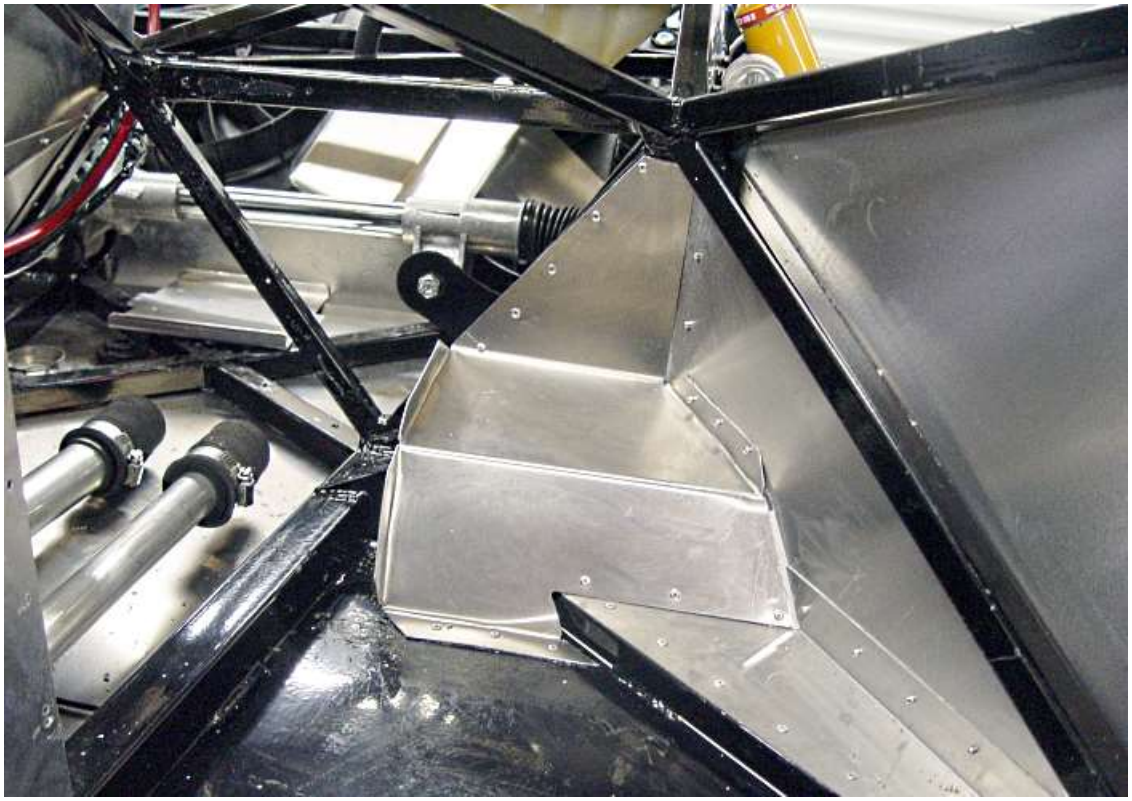


Install the foot box outer wall on both the driver and passenger side; passenger side is shown below in picture (FFR# 25179, 25180). Do not rivet the flange below the lower door hinge mount to the frame yet.

The body close-out panels (FFR# 25443, 25445) will have to slide behind the panel (see photo for placement of closeout panel once body is on). Once you have the body on after it has been painted, you can slide the close-out panel in place and rivet both panels to the frame.



Install the outside drop floor piece next on both the driver and passenger side (FFR# 25191, 25192).

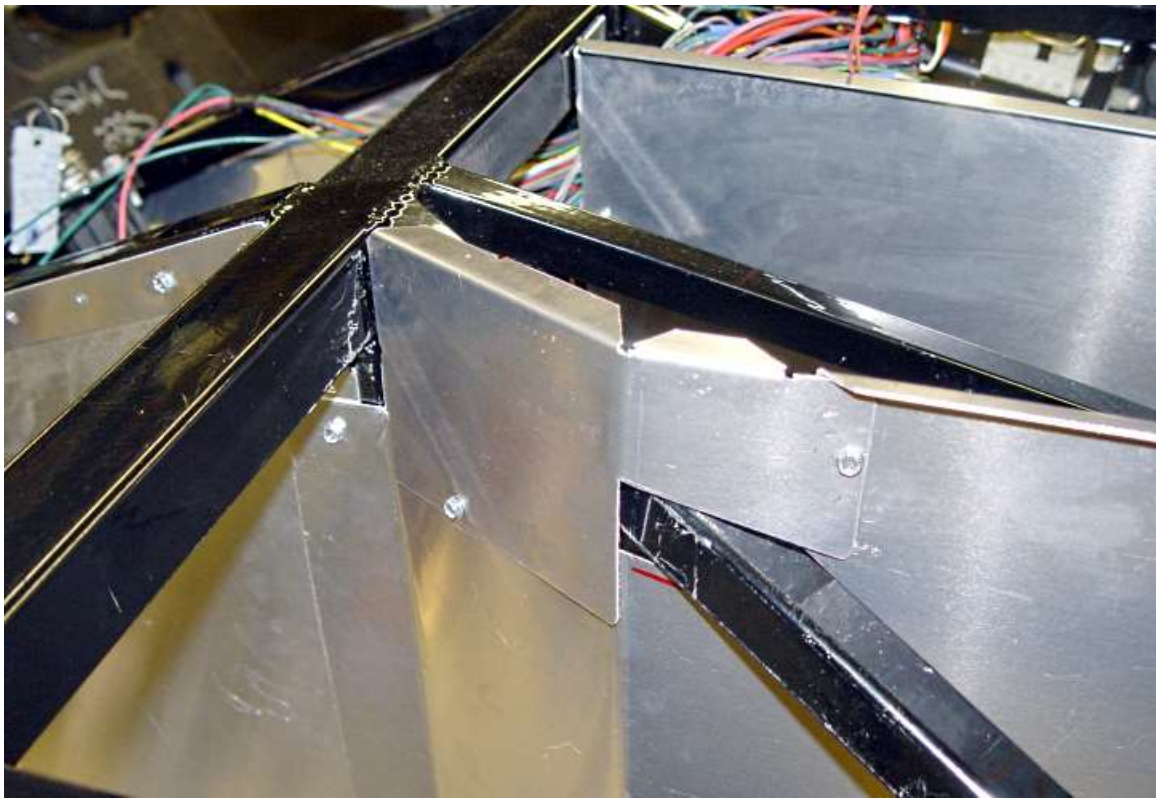


The front wall on the passenger footbox is installed next (FFR# 24173).

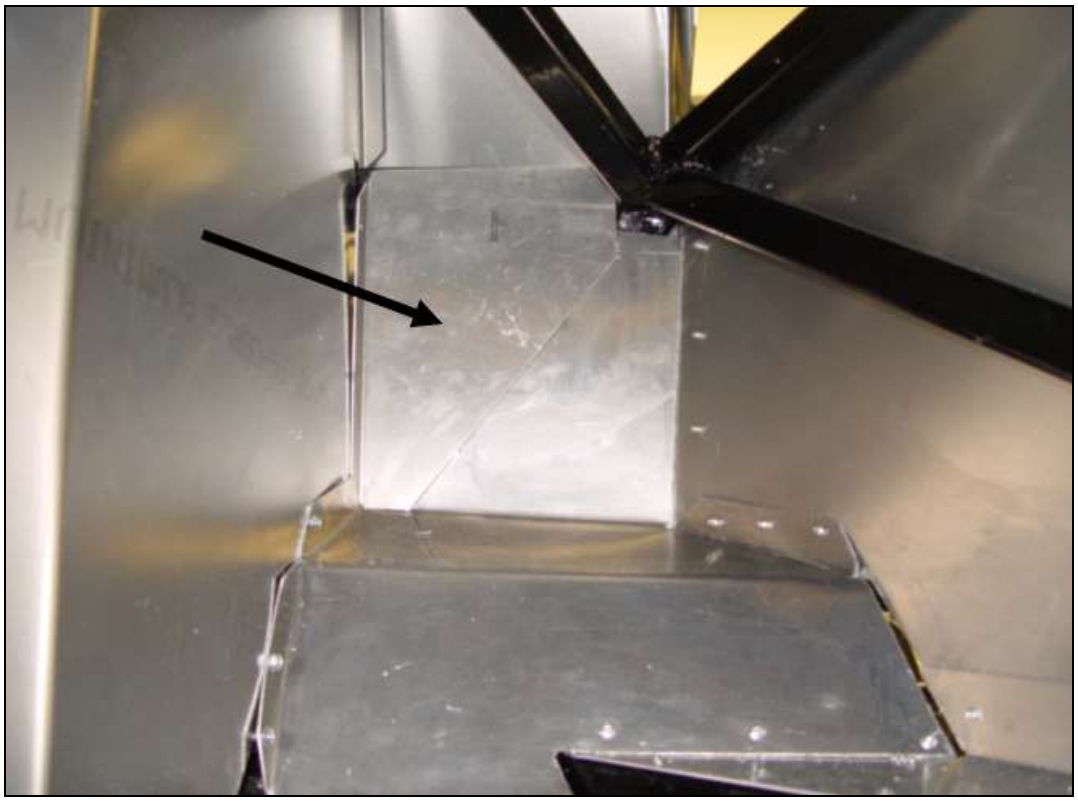
Passenger side

- If you are planning on installing heat and air conditioning, perform that installation now according to the instructions included with the Air Conditioning Kit.

Install the inner footbox panel. This panel is riveted to the vertical 2” upright, along the bottom to the 1/16” steel and the passenger front footbox piece.



Install the passenger footbox upper wall panel (FFR# 25855).

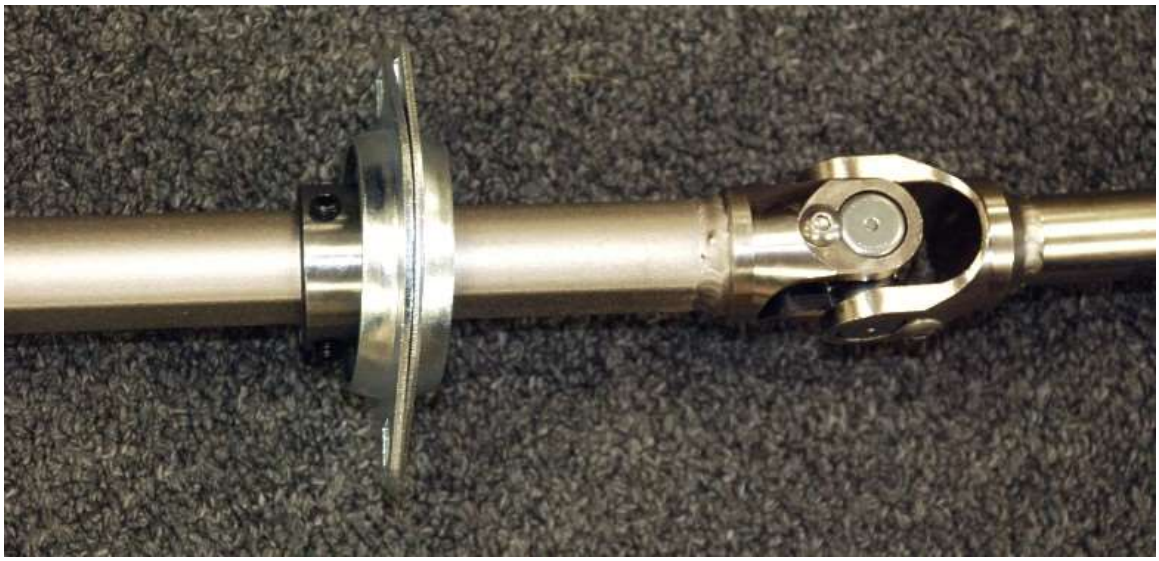


If air conditioning is not being installed, install the passenger front foot box block off plate (FFR# 25853).

Steering Column/Shafts

Non-Telescoping Column

🛠 ½", 9/16" wrenches, 5/32", 5/16" Hex key.
🚗 Steering shaft components, steering system hardware.



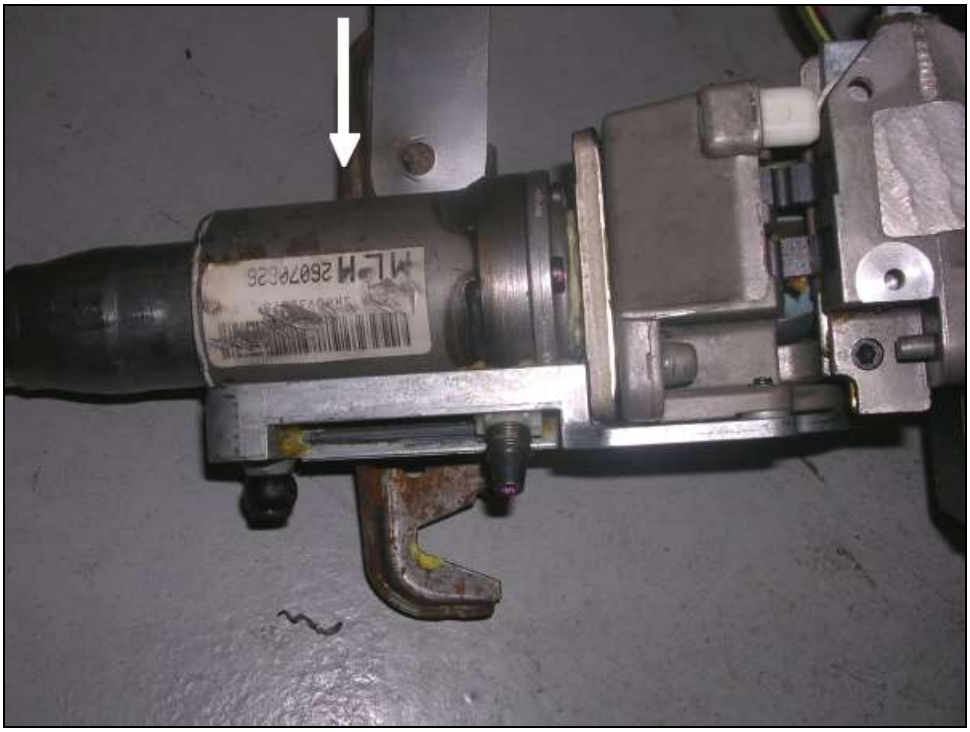
Slide the flange bearing and bearing retainers on the long/upper steering shaft. The Hex set screw on the bearing should be on the shaft side of the bearing, not the joint side.

The assembly is installed from the cockpit side, carefully snaking the joints and shaft through the lowest hole on the pedal box mounting plate.

The lower universal joint now gets attached to the steering rack. This joint is splined and the Hex set screw has to be aligned with the groove on the input shaft on the steering rack. Loosely attach this universal joint now as well.

Using the supplied 5/16" hardware (FFR# 11024, 13963), loosely fasten the bearing's mounting flange to the pedal box mounting plate.

Once all the universal joint and bearing retainer bolts are loosely installed, make sure the linkage does not bind and the steering system is functional. At this time, tighten all the Hex set screws and then tighten the ½" nuts to lock the set screws in place on the universals. We recommend using loc-tite on all steering bolts, including those with jam nuts.



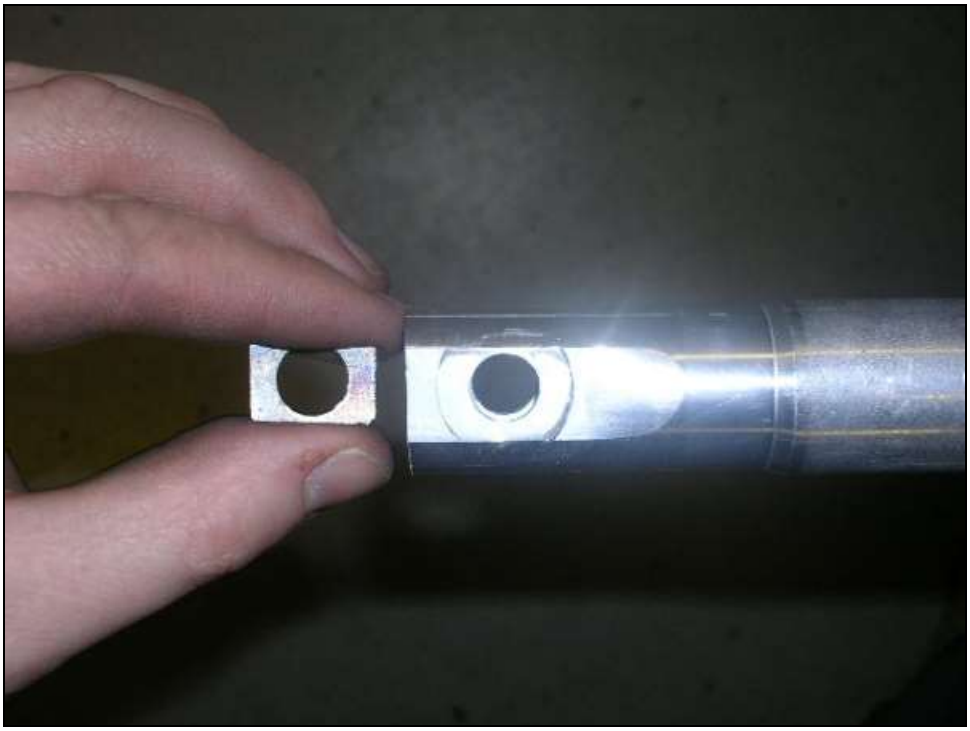
Before the Corvette upper steering shaft is installed, the steering column adapter plate (FFR# 25760) must be placed on the Corvette steering column in between the steering shaft housing and the mounting plate (telescoping column shown).

The donor Corvette upper steering assembly must be installed next. The Corvette shaft slides into the hollow long upper shaft previously installed. The steering column is attached to the frame using the ⅜" supplied hardware (FFR# 1040, 11005, 13964). Fully tighten the flange bearing bolts at this time.

(Optional) Telescoping Column

🛠 7/16", 1/2", 9/16" wrench, 5/32", 3/16", 5/16", 4mm Hex keys, 1/8", 3/16" drill bits, drill, 5/32" punch, hammer.

🚘 Steering shaft, steering system hardware, Telescoping Steering Column adapter Assembly (FFR# 25545, 26022, 25743, 25892).



Cut 1 7/8" off of the 9" long x 3/4" DD shaft (FFR# 25523). Remove any burs from cutting on both shafts as even a slight bur will make it very difficult to fit the shaft in the universal joint or hollow DD shaft.

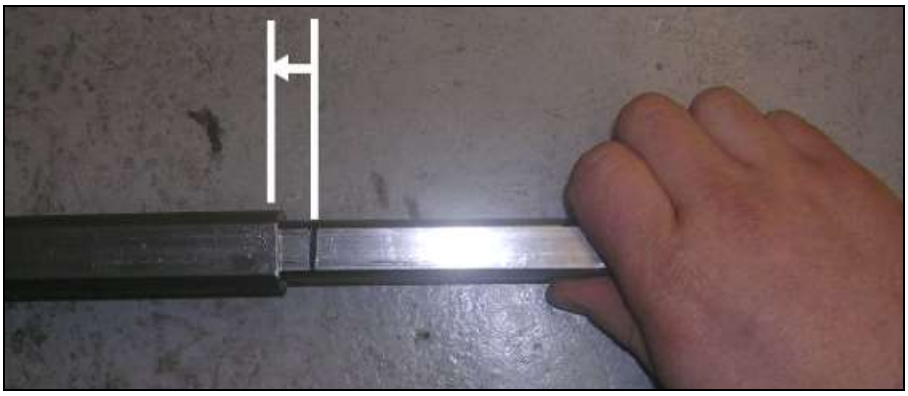
Drill a 3/8" hole through the 1 7/8" long shaft 1.25" in from one end on the flat surface of the shaft.
Insert the supplied spacer (FFR# 25866) into the lower end of the Corvette shaft, lining up the holes.

Insert the 1⅞" x ¾" DD shaft into the lower portion of the Corvette lower shaft. Using a screwdriver or a punch to hold the spacer in place helps to keep the holes lined up.

Insert the 10 mm bolt (FFR# 25662) through the Corvette shaft, spacer and 1⅞" long shaft, then install the supplied lock nut (FFR# 25376) remove the tape and tighten (15 mm)

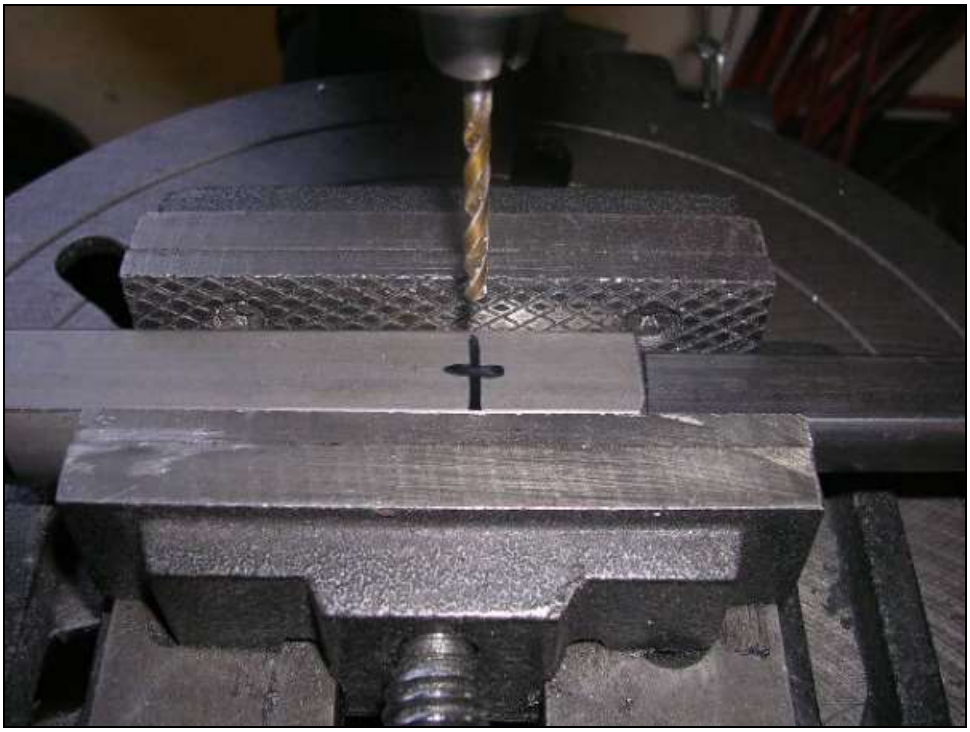
On the supplied steering shaft (FFR# 26022) measure up from the upper universal joint 8" and cut the shaft.

From one end of the now 7”x ¾” DD shaft (FFR# 25867) measure 2” and mark the location.

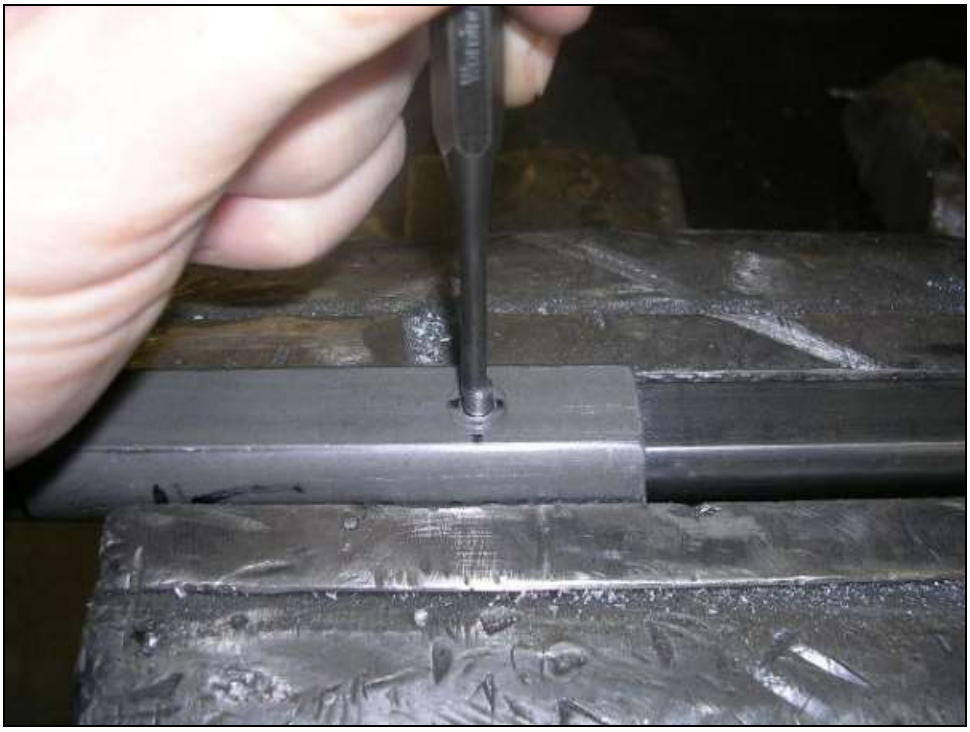


Insert the 7”x ¾” DD shaft into FFR# 25602 up to the 2” mark you made.

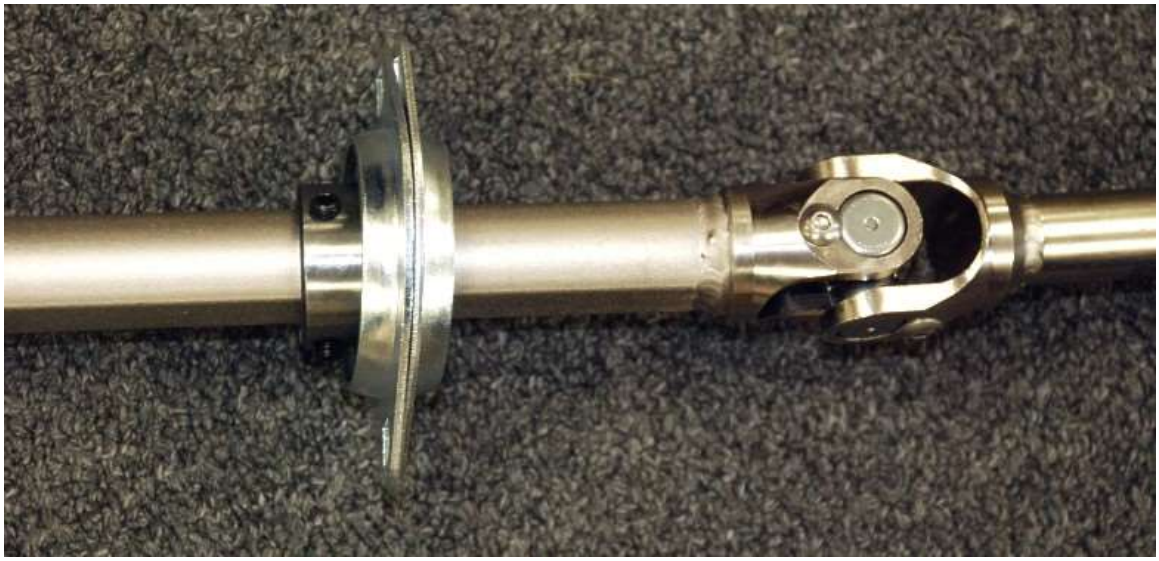
Measure 1” down from the end of FFR# 26022 you just cut, and drill a ⅛” hole through both shafts.



Remove the ¾" DD tube (FFR# 25867). Drill through the ⅛" pilot holes you just drilled in both the 1"DD and the ¾" DD tubes separately with a 3/16" drill bit.



Slide the 7"x ¾" DD tube (FFR# 25867) into the steering shaft (FFR# 26022). Put the assembly in a vise or against something solid that won't move when you drive the pin in. Install the shear pin using a punch and a hammer. **DO NOT** hit the pin in with just a hammer – the pin will deform and you will not be able to get the pin in.



Slide the flange bearing and bearing retainers (FFR# 12640) on the long/upper steering shaft. The Hex set screw on the bearing should be on the shaft side of the bearing, not the joint side.

Install the shaft assembly in the chassis from the cockpit side, carefully snaking the joints and shaft through the lowest hole on the 1/16" pedal box mounting plate.

Attach the lower universal joint to the steering rack. align the Hex set screw with the groove on the input shaft on the steering rack. Leave the set screw loose.
Using the supplied 5/16" hardware, loosely fasten the bearing's mounting flange to the 1/16" steel pedal box mounting plate.

Place the steering column adapter plate on the Corvette steering column in between the steering shaft housing and the mounting plate.

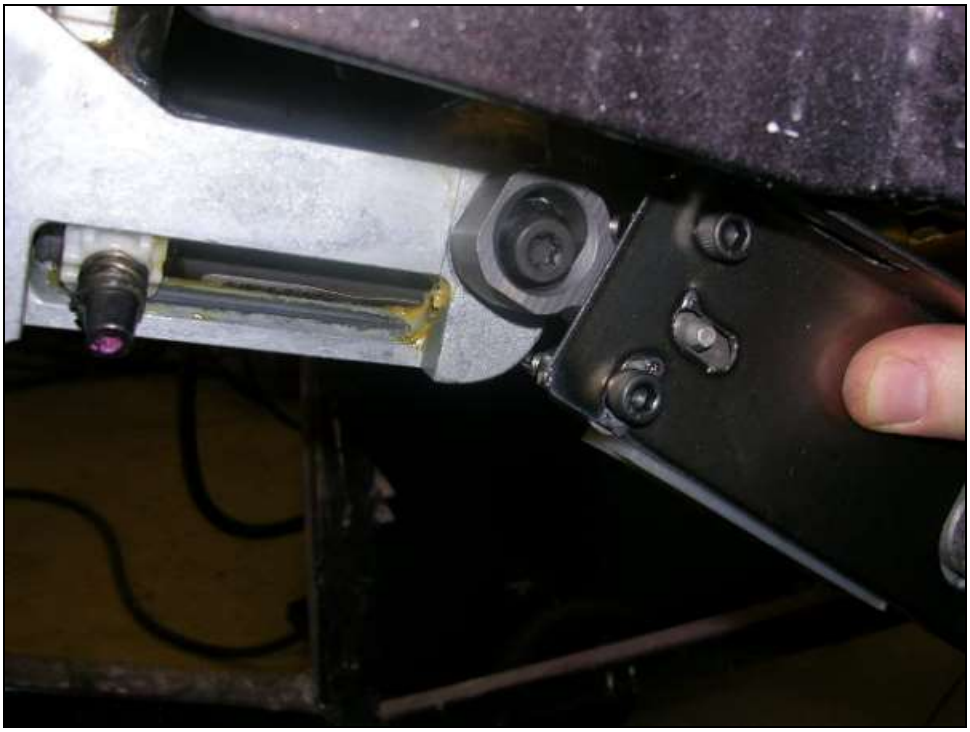
Attach the Corvette upper steering assembly to the frame using the ⅜" supplied hardware. In order for the steering column to clear the bottom of the top 1.5" square dash bulkhead tube, you will have to place the supplied washers between the Corvette column bracket and the welded column bracket. Leave the bolts loose at this time

Install the ¾" Pillow Block Bearing on the 9"x ¾"DD shaft. Once the Pedal Box is mounted and you have installed the brake light switch bracket, you will be able to mount this bearing, but for now leave just leave the bearing on the shaft.

Slide the 9"x ¾" DD shaft into the ¾" DD to ¾" DD universal joint. If needed, you can slide the steering column forward/back since it is not fully tightened yet to make this step easier.

Drill out the bracket to 25/64" and install two rivnuts in the telescoping actuator frame bracket.

Bolt the telescoping actuator column bracket (FFR# 25870) to the actuator with the supplied hardware (FFR# 12336, 10802) (3/16" Hex, 7/16" wrench/socket). Make sure the wires on the actuator are in the slot cast into the actuator housing and not being pinched by the bracket.



Press the actuator arm onto the drive ball.

Using the ¼”-20 x 1” (FFR# 25461) bolts, fasten the column actuator bracket to the frame (4mm Hex).

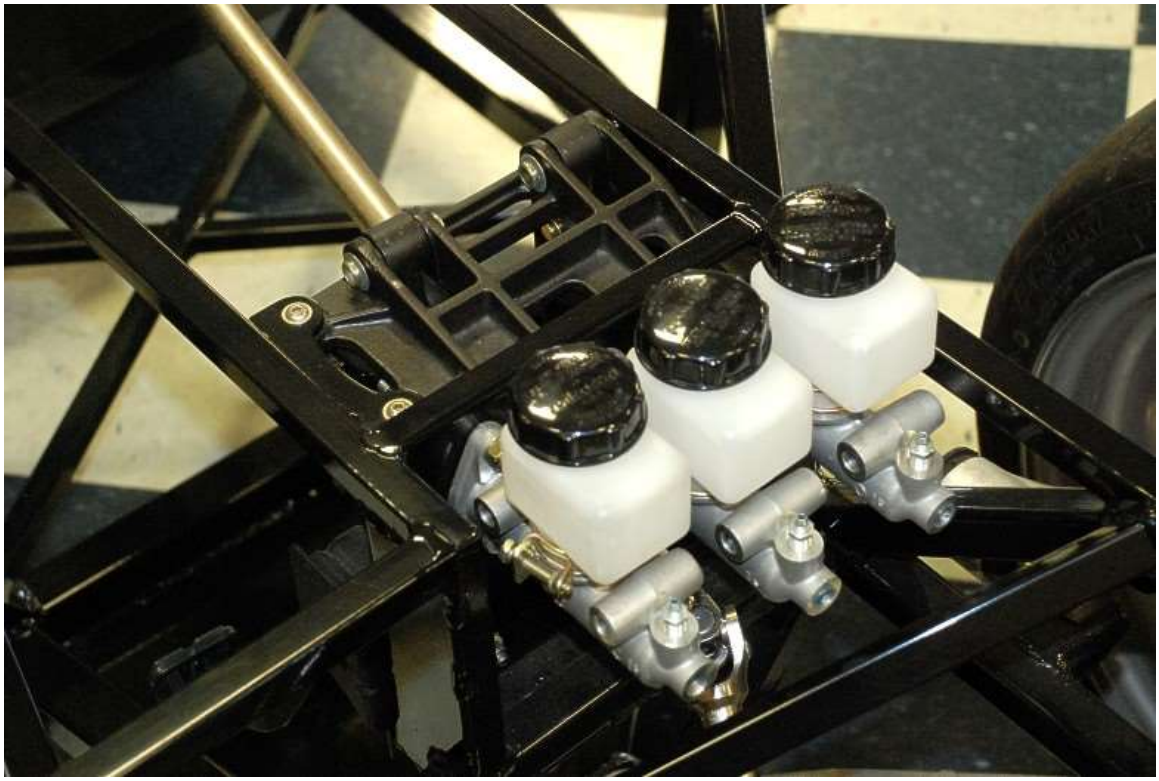
Mark a location on the frame for the motor bracket, then drill and rivet the motor to the frame with a 3/16" rivet.

Once all the universal joints and bearing retainer bolts are loosely installed, make sure the linkage does not bind and the steering system is functional. You can test the telescoping function of the column for any binding by hooking a test lead to the positive side of a battery (or a jumper box or battery charger) then to one pole on the motor plug, and a test lead to the negative side of the battery then to the other pole on the motor plug. Switch the connections at the plug to move the column in the opposite direction. Once you are sure the steering and telescoping ability are both free of any binding, tighten all the Hex set screws and then tighten the ½" nuts to lock the set screws in place on the universals. Tighten the Steering Column Bolts.

Pedal Box and Master Cylinders

🛠 Eye protection, drill, 25/64" drill bit, drill, ½", 7/16" wrench, 3/16" Hex key, rivnut tool.

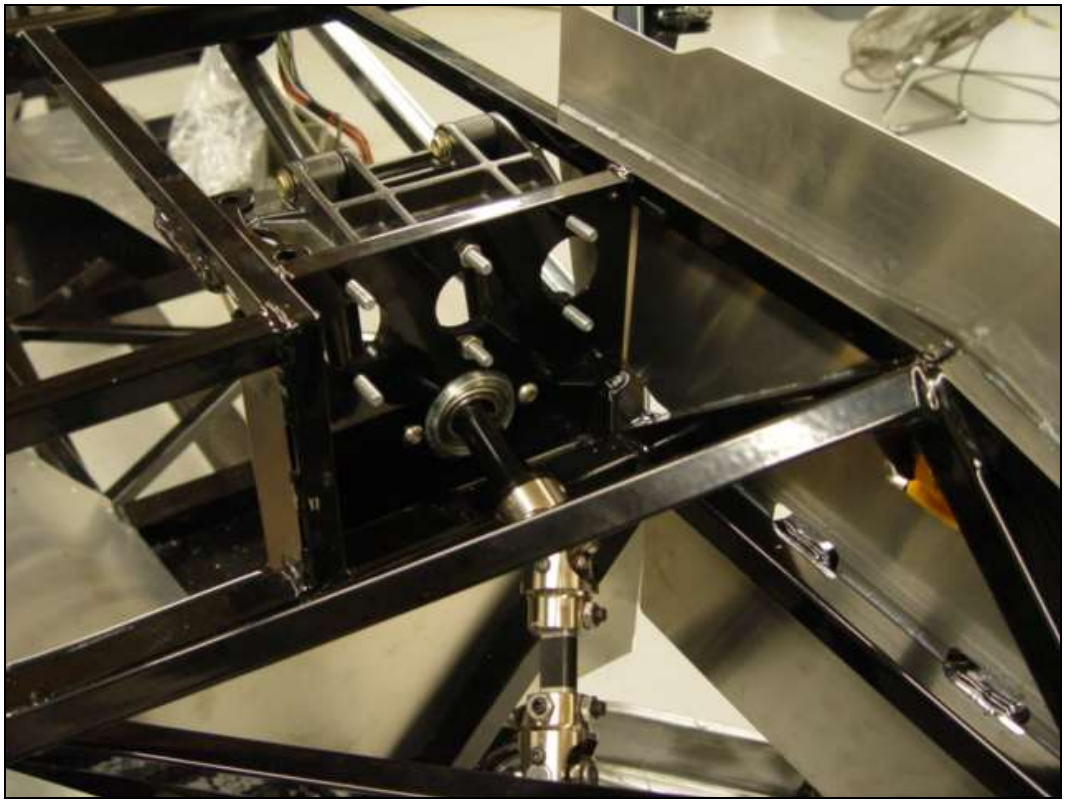
🚗 Pedal box and hardware (FFR# 25225, 25375).



Install rivnuts on the top side of the inside pedal box mounting plate.
Set the supplied pedal box on the frame mount bracket so that the outside flange is under the ¾" tube on the outside in order to check fitment. Mark the underside of the ¾" tube where the pedalbox holes are.

Drill out the 2 marked holes (from the previous step) with a 25/64" drill bit to accommodate ¼-20" rivnuts.

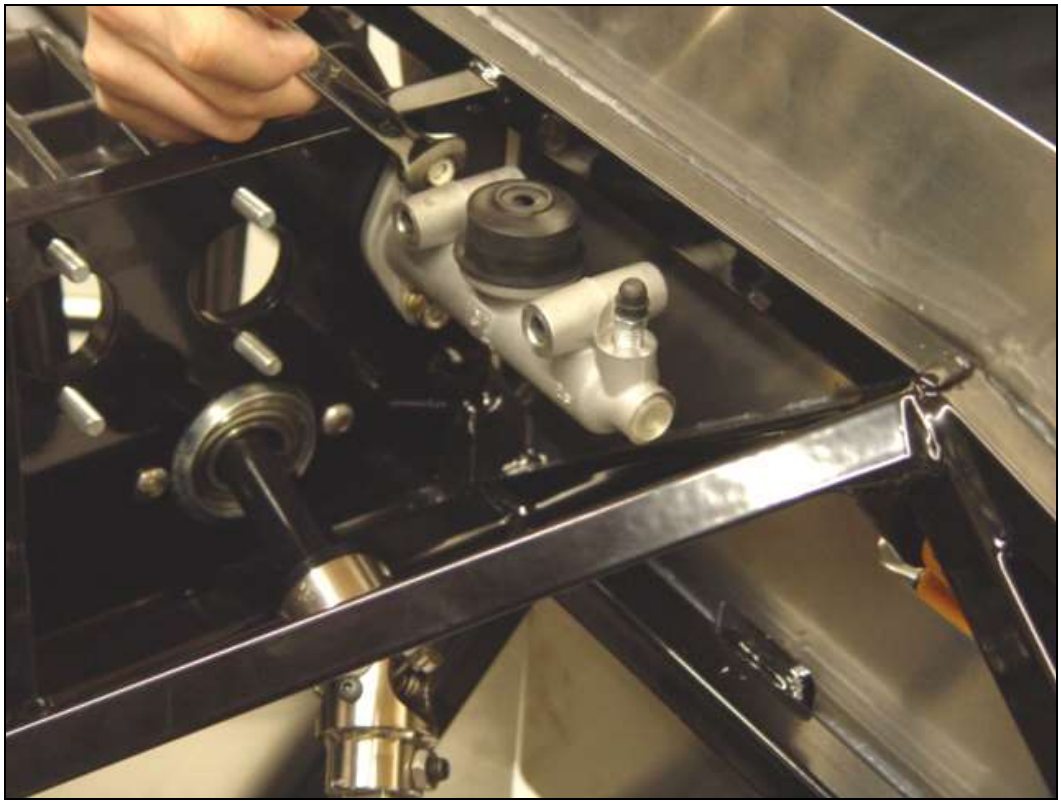
Install ¼-20” rivnuts (FFR# 25530) in the holes which were just drilled from the underside using the supplied rivnut tool (FFR# 33582).



Install the pedal box to the frame using the ¼-20 hardware (FFR# 25461, 11088) into the 2 rivnuts installed onto the frame in the previous step; do not fully tighten these bolts. The pedal box is also

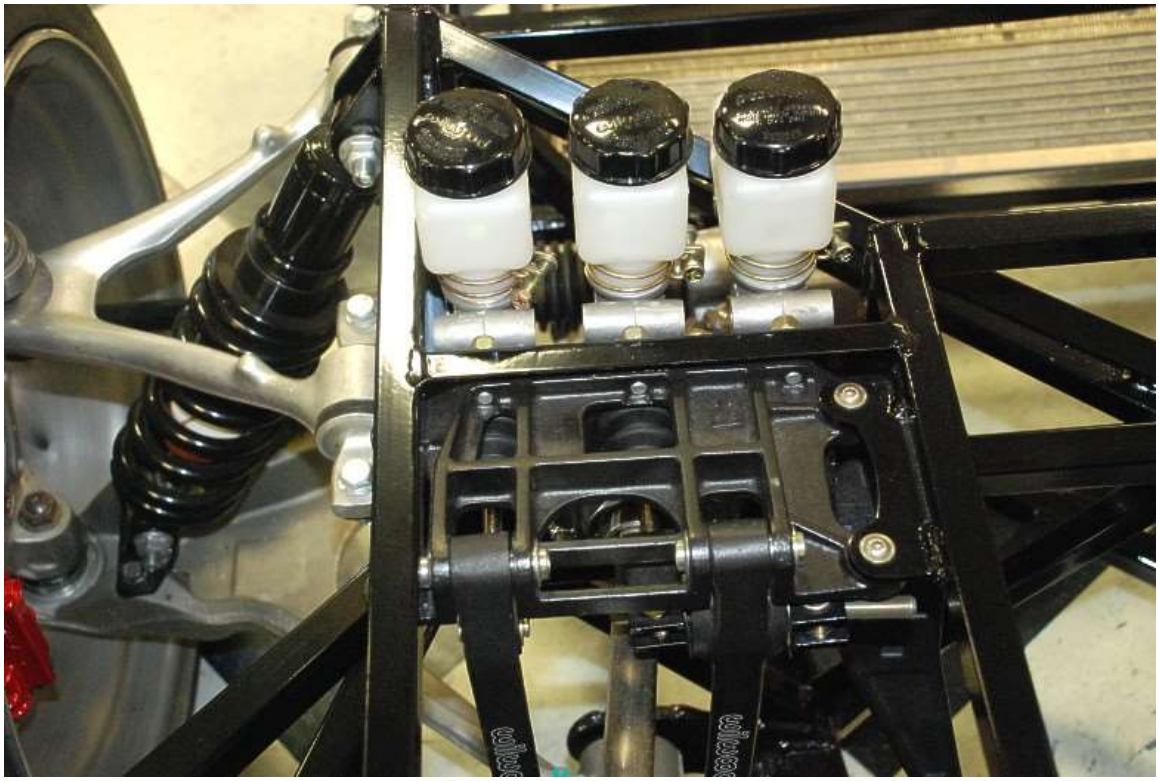
through bolted on the passenger side to the frame using the same bolts and lock nuts (FFR# 25461, 11088, 10802).

The push rods on the master cylinders must now be shortened. As seen in the picture below, mark ¾" from the end of the threaded section and cut. Even though the push rod is shortened, there is more than enough pedal adjustment available.



All of the master cylinders are ¾" bore. They are installed on the front side of the pedal box mounting plate. They are affixed to the studs coming off of the pedal box assembly and fastened using the Wilwood hardware.

Fully tighten the 4 button heads mounting the pedal box to the chassis (7/16” wrench and 3/16” Hex key). Once the pedal box is mounted, you can thread the pushrods into the machined billet pieces mounted on the pedals.



Remove the rubber covers and install the small reservoirs.

Gas Pedal

🛠 Eye protection, drill, 25/64" drill bit, 5/32" Hex tool, rivnut tool.
🚗 ¼-20" rivnuts, ¼-20" short flanged button heads, washers (FFR# 25460, 11088, 25375).

Place the "L" shaped template (FFR# 25763) over the lower right corner of the pedal box mounting panel and mark the location of the 2 holes. DO NOT DRILL THESE HOLES YET.

Now set the Corvette gas pedal in place and make sure that you are satisfied with the gas pedal placement – place a seat in the car and have someone hold the gas pedal in place for you. You do have the ability to mount it in a slightly different location.

Using the desired location from the steps above, drill and install (2) ¼-20" rivnuts. Using the supplied hardware (FFR# 25460), install the gas pedal.

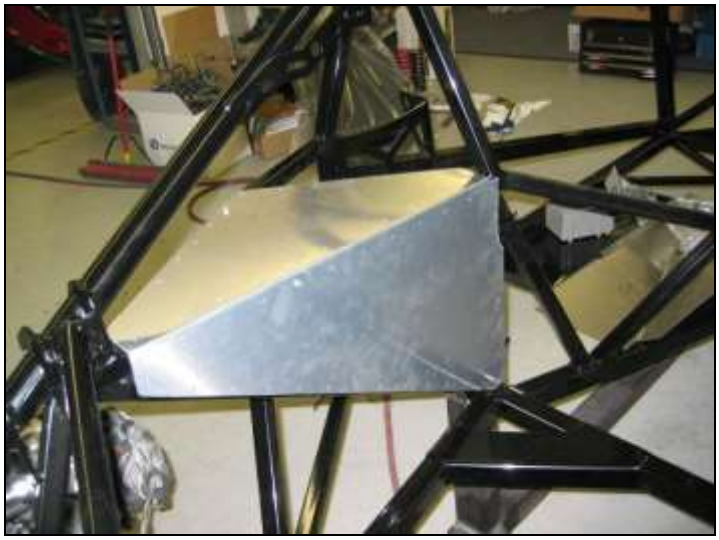
Fuel Tank Finish Panels

🛠 Eye protection, drill, #6 hex nut driver, ⅛" drill bits, drill, rivet tool, silicone, caulk gun, #6 self tapping screws.

🚘 Fuel tank finish panels (FFR# 25641, 25643).

✋ These panels must be installed before the engine.

The cutout on the passenger side houses the Corvette fuse panel.



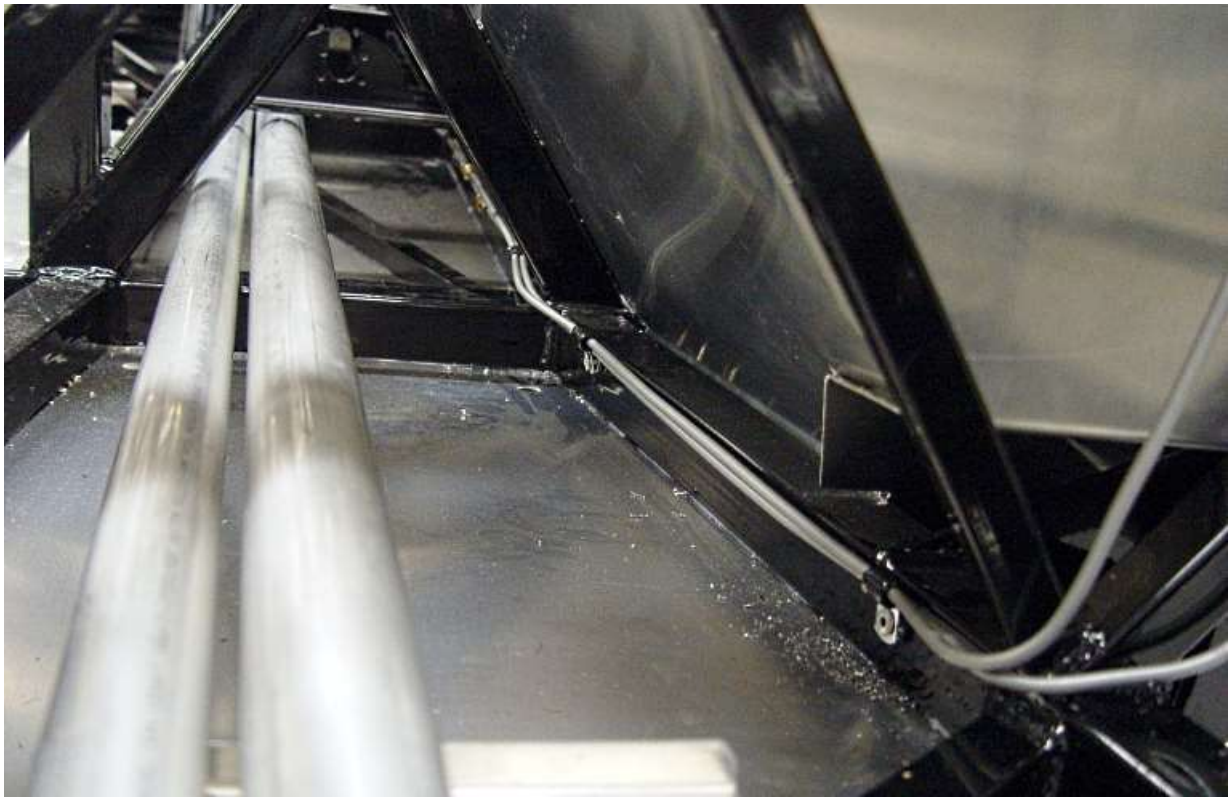
These panels are riveted to the 1" frame members. Make sure to pre-fit these panels before drilling.

✋ You will not have enough space to drill and rivet at the rearward edge of the horizontal section of the panel and under the computer mounts on the passenger side panel so mark only the holes that you will be able to reach with the drill/rivet gun.

Pre-engine preparation

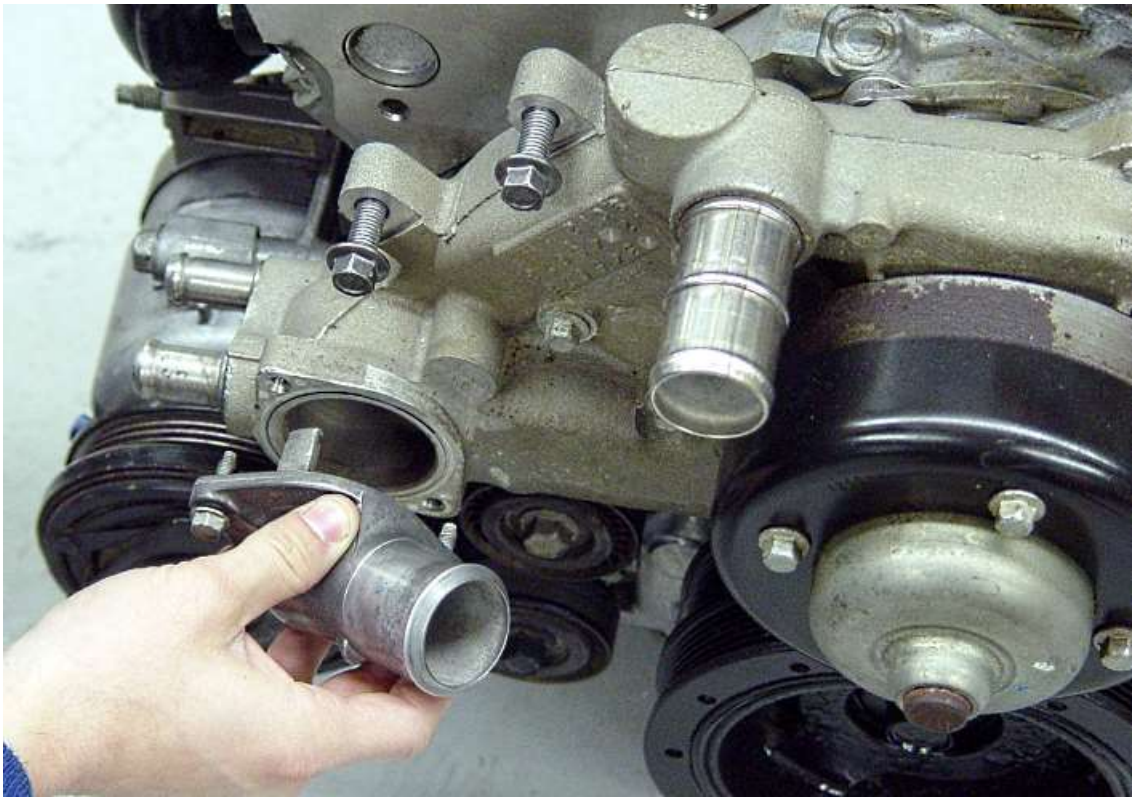
🛠 10mm, 17mm socket, ratchet, 2x4 steel bar or something to support rear of engine.

🚘 Engine Mount Spacers (FFR# 25756), Radiator Tubes – 1.5/1.25OD (FFR# 25534, 25535)



You must place the hard aluminum coolant lines (FFR# 25534, 25535) in the tunnel before the engine is installed.

Place the engine mount spacers on top of the mounts welded to the frame. The rectangular slot will need to be lined up with the locating boss on the Corvette engine mount before you set the engine all the way into the frame – this does not apply to all donor engine mounts; certain donors do not have the locating boss on the engine mount.



Remove the thermostat housing (10mm wrench) as it aids in the installation. The engine is installed with the engine mounts and rubber isolators mounted to the engine itself.

Unbolt the engine harness clamp on the engine block just in front of the driver engine mount, do so now (13 mm). Save the bolt – you will use it to bolt the rear leg of the Alternator Relocation Bracket to the engine block.

Engine Installation

When installing the engine it is a good idea to have at least one person assisting you, two is preferred.

Attach the chain to the engine as low as possible, leaving as little slack at the top. Be careful that the chain does not apply pressure to the fuel lines or coil packs.

When lowering the engine, rotate the engine slightly (to clear the rear X-member).

Once the motor has been lowered enough, you will have to rotate the motor back straight and continue to lower the engine making sure to line up the engine mount studs with the holes on the frame and lining up the boss on the engine mount with the rectangular cutout on the aluminum spacer.

Use the flanged Corvette engine mount nut to secure the engine mounts to the chassis and torque to specification.

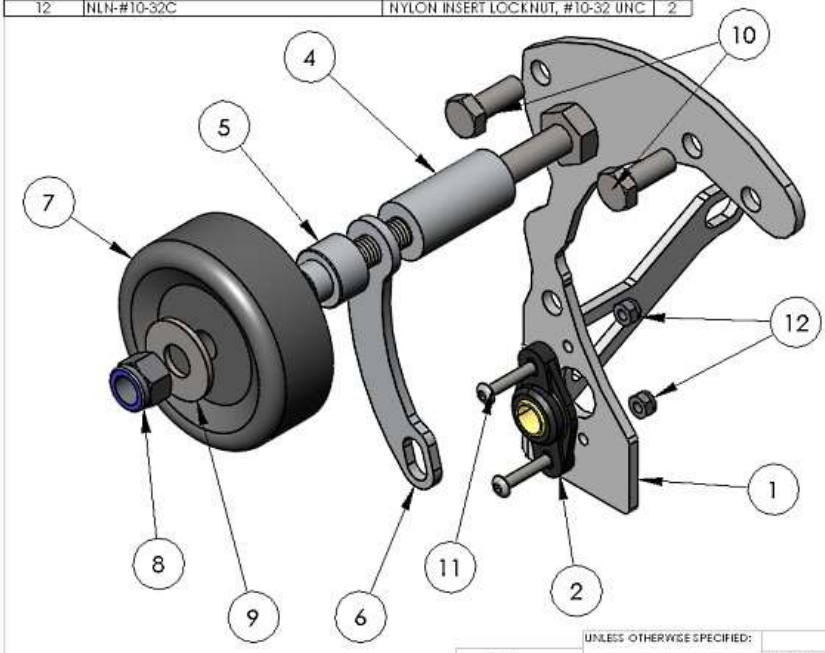
Alternator Installation

🛠 13, 15, 17 mm sockets, 17 mm wrench, 9/64" hex key, 11/32" wrench (or 9 mm wrench), Ratchet, Universal Joint.

🚗 Alternator Relocation Components (FFR# 25267), Tensioner Relocation Bracket Components (FFR# 25661).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	25229 - Alternator Bracket	ALTERNATOR BRACKET	1
2	26084 - 2 HOLE PLASTIC FLANGE BEARING		1
4	26157 - IDLER PULLEY SPACER	IDLER PULLEY SPACER	1
5	26158 - IDLER PULLEY MOUNT	IDLER PULLEY MOUNT SLEEVE	1
6	26159 - Alternator Support Bracket	ALTERNATOR SUPPORT BRACKET	1
7	pulley - smooth	CORVETTE IDLER PULLEY	1
8	10834	NYLON INSERT LOCKNUT, 1/2-13 UNC	1
9	Preferred Wide FW 0.5		1
10	818.23.TM - Hex cap screw, M10 x 1.5 x 25--25N		2
11	SBHCSCREW 0.19-32x1-HX-N		2
12	NLN-#10-32C	NYLON INSERT LOCKNUT, #10-32 UNC	2

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	10/4/05	
B	SPACER CHANGED, 26159 ADDED	8/24/10	



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
TWO PLACE DECIMAL ±0.01
THREE PLACE DECIMAL ±0.005
FOUR PLACE DECIMAL ±0.001

	NAME	DATE
DRAWN	PISANI	10/4/05
COMMENTS:		

GTM

MATERIAL: STEEL
FINISH: BLACK POWDERCOATED

USED ON
APPLICATION

PRINTED: 9/28/2012

PROPRIETARY AND CONFIDENTIAL
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Factory Five Racing, Inc.

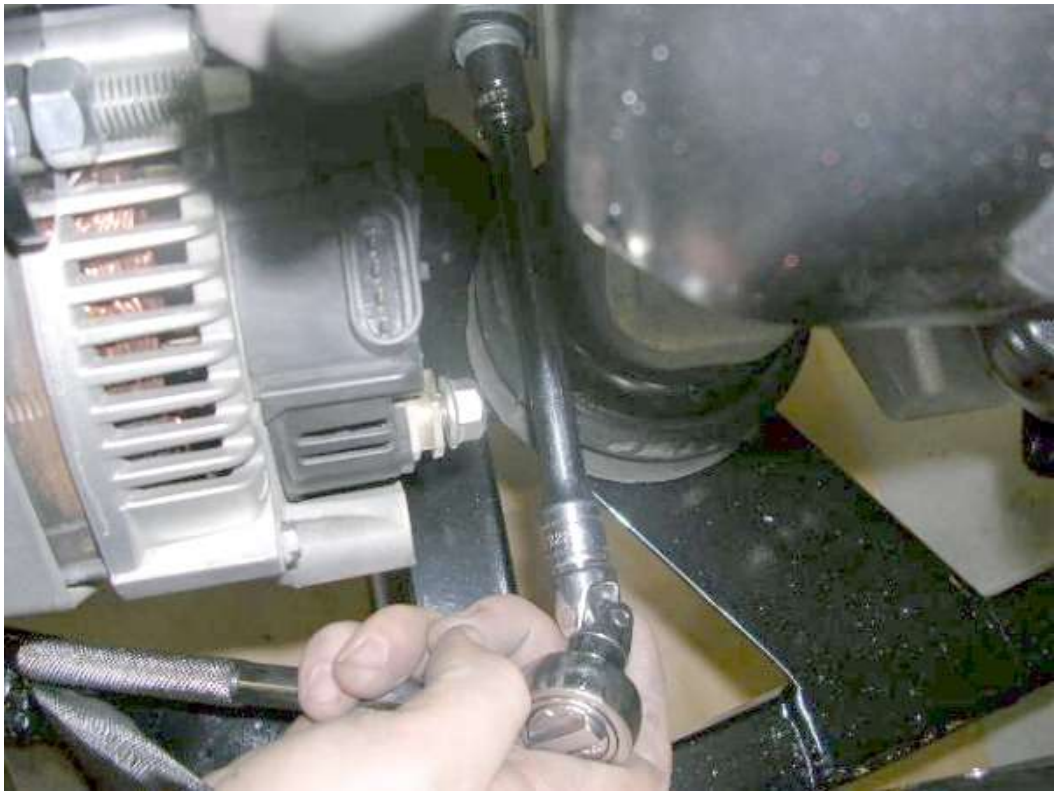
TITLE:
ALTERNATOR BRACKET ASSEMBLY

SIZE	DWG. NO.	REV
A	25526 - Alternator Bracket	B

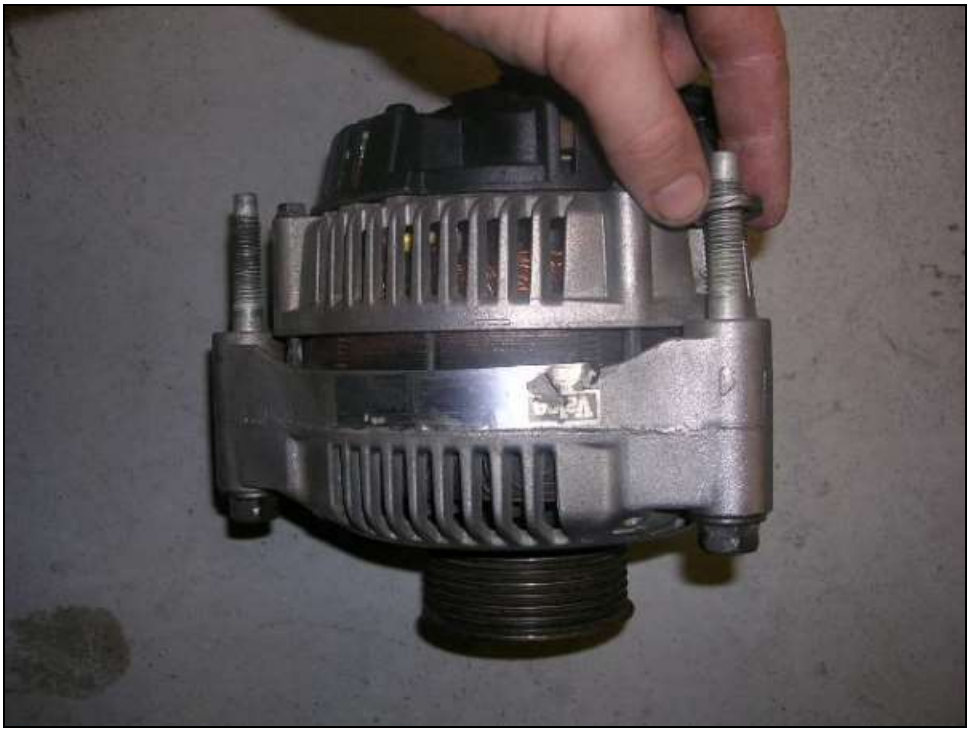
SCALE: 1:2 | WEIGHT: | SHEET 2 OF 2

Mount the flange bearing (FFR# 26084) to the Alternator Relocation Bracket (FFR# 25526) using the supplied fasteners (FFR#'s 12774, 12768). If you have trouble getting the bolts through the holes in the bracket, you may need to chase the holes with a drill bit).

Install the Pulley spacer.
Install the alternator support bracket.
Install idler pulley mount.
Slide on the idler pulley.
Push on the washer and attach the locknut hand tight for now.
Put the following bolts in, but do not tighten any of them until you have all of the bolts partially threaded into place (shown with alternator already in place)
Upper left bracket bolt (FFR# 25831) (17 mm).



Rear bolt (the engine harness clamp bolt – 13 mm).



Insert the alternator bolts through the alternator then put the supplied spacers (FFR# 13210) on.

Thread the lower alternator bolt into the engine block enough to keep the bolt in place.

Next, slide the upper bolt through the hole in the bracket just enough to start the supplied mechanical lock nut (FFR# 25376), then push the bolt the rest of the way through the alternator/bracket.

Put in the upper bracket bolt (FFR# 25831) (17 mm).

Now that you are sure all of the bolts are threaded in properly, you can tighten all of the bolts down.

Remove the Corvette Idler Pulley from the Corvette Alternator bracket (13 mm).

Put the Corvette Idler Pulley on the sleeve followed by a ½" washer (FFR# 13976), and nylon lock nut (FFR# 10834). Tighten the lock nut, checking that the pulley moves freely.

Unbolt the Tensioner from the engine block (13 mm). Save the Tensioner and bolts.

Mount the supplied Tensioner Bracket (FFR# 25360) to the engine block using the Corvette tensioner bolts.

Mount the Tensioner to the bracket with the supplied nuts/bolts (FFR#'s 25663, 25662) (17 mm).

Remove the Corvette Pulley wheel (15 mm).

Mount the supplied pulley wheel (FFR# 10775) onto the Tensioner and tighten (15 mm).

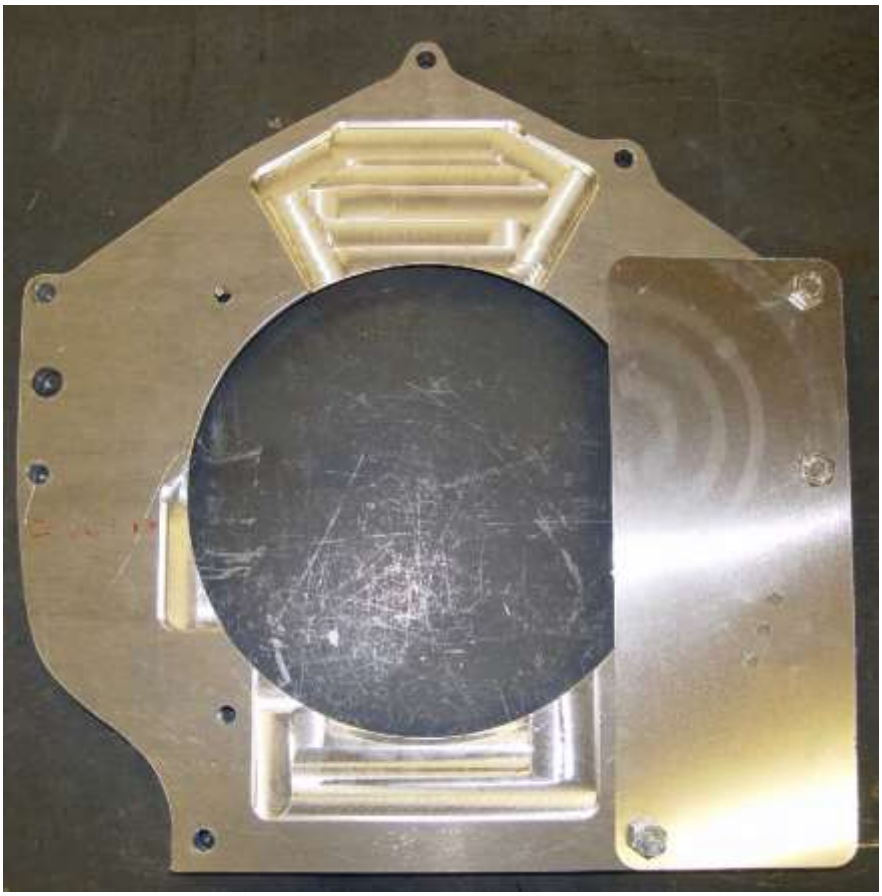
Now you are ready to mount the 6-rib serpentine belt (FFR# 25527). Wrap the belt around the Crankshaft Pulley, over the Idler Pulley (smooth side in contact with the pulley), around the Alternator Pulley, and line up the smooth side of the belt with the edge of the water pump pulley.

Loop the remaining section of the belt past the bolt holding the Tensioner on. Place a 15 mm socket on the Tensioner bolt and rotate the pulley wheel clockwise.

Put the belt on the pulley wheel and allow it to rotate counter-clockwise until the Tensioner stops.

Transaxle Adapter Plate Preparation and Installation

- Drill, 7/8", 3/16" bit, 9/64" Hex key, 11/32" wrench.
- Transaxle adapter plate, hardware and drill template.
- When drilling the template do not allow the drill to walk, particularly when drilling the larger hole for the bearing – misalignment beyond what the bearing is designed for will cause binding in the shifter linkage.
- If using a Mendeola Transaxle, skip this section and refer to Mendeola supplied instructions.



Using the picture below for reference, bolt the drill template to the engine side of the adapter plate. The side which has the "KEP" logo is on the transaxle side of the adapter plate. You can use the bolts supplied with the adapter hardware (10mm).

Use a center punch (or marker) to mark the 3 holes in the drill template.

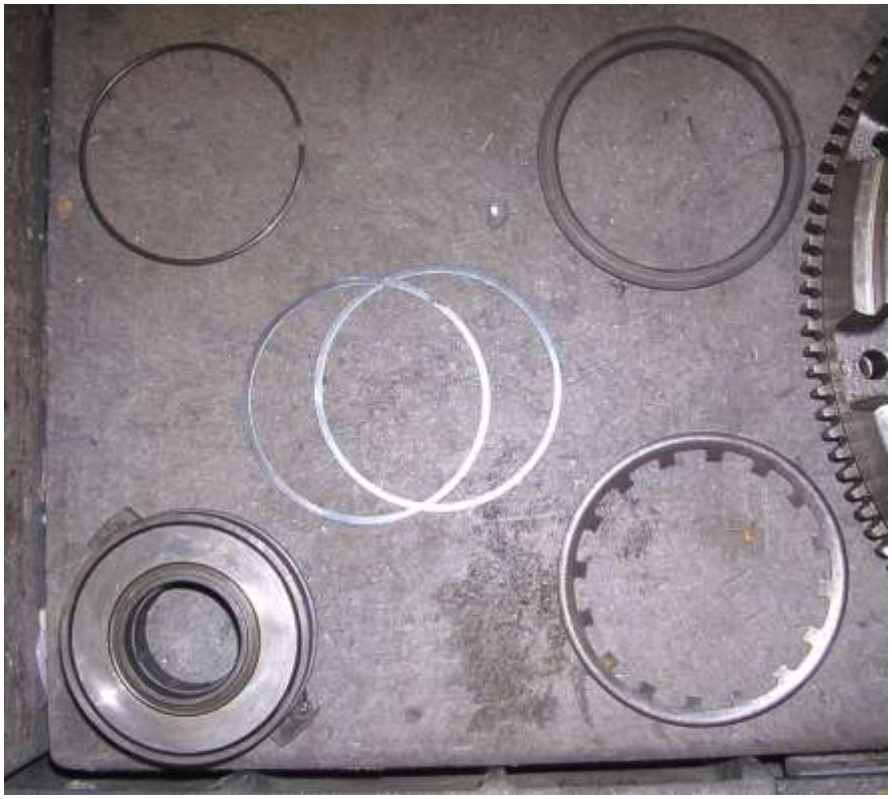
Remove the drill template from the adapter plate. Using a 3/16" bit, drill all 3 holes completely through the adapter plate. Then use a 7/8" drill bit to drill out the center hole. A drill press is best, but a hand held drill can be used.

Install one of the flange bearings on the adapter plate using the holes just drilled. The flat mounting side of the bearing is installed on the engine side of the adapter plate and fastened with the #10-32 hardware.

The pilot bearing must be installed in the back of the engine. The bearing is located inside of the crank shaft. Use a 20mm or larger socket (avoid applying a load to the bearing itself) and a dead blow hammer to set the bearing in place. It will stick out from the engine ⅛".

Install the adapter plate on the engine. Make sure the "KEP" logo is at the top facing rearwards in the car. The adapter plate is attached to the motor using the eight M10 bolts. Torque to specification.

Throwout Bearing Assembly



Place the two thin shims on the throwout bearing.

Place the toothed ring on the throwout bearing.

Put the throwout bearing down on a table and place the pressure plate on top of it.

Place the thick ring on the throwout bearing.

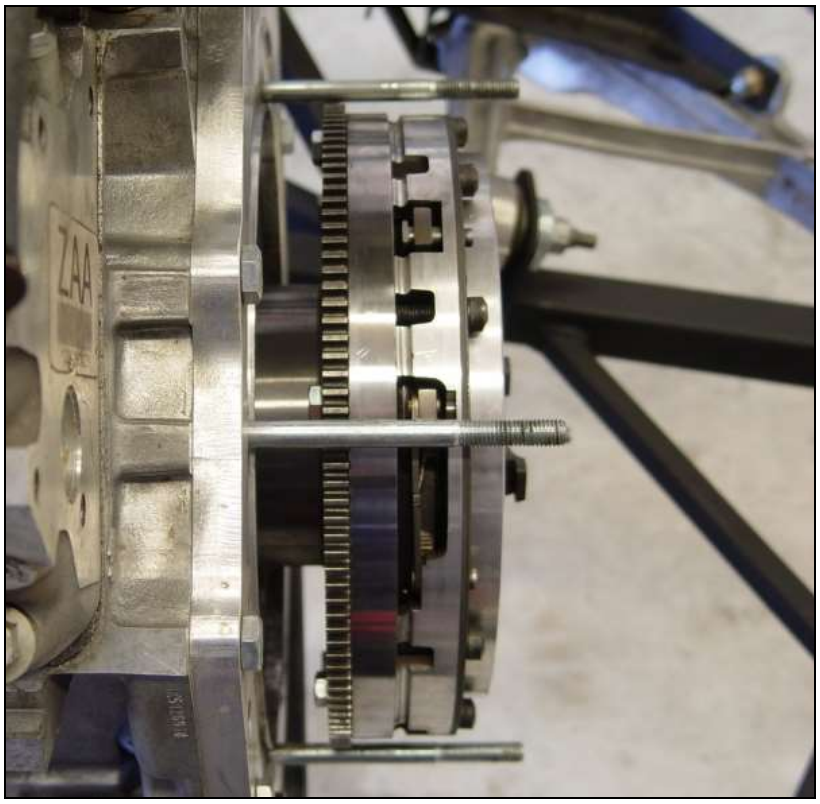
Push the snap ring onto the throwout bearing locking it onto the pressure plate.

Transaxle Install

1990 and Later G50

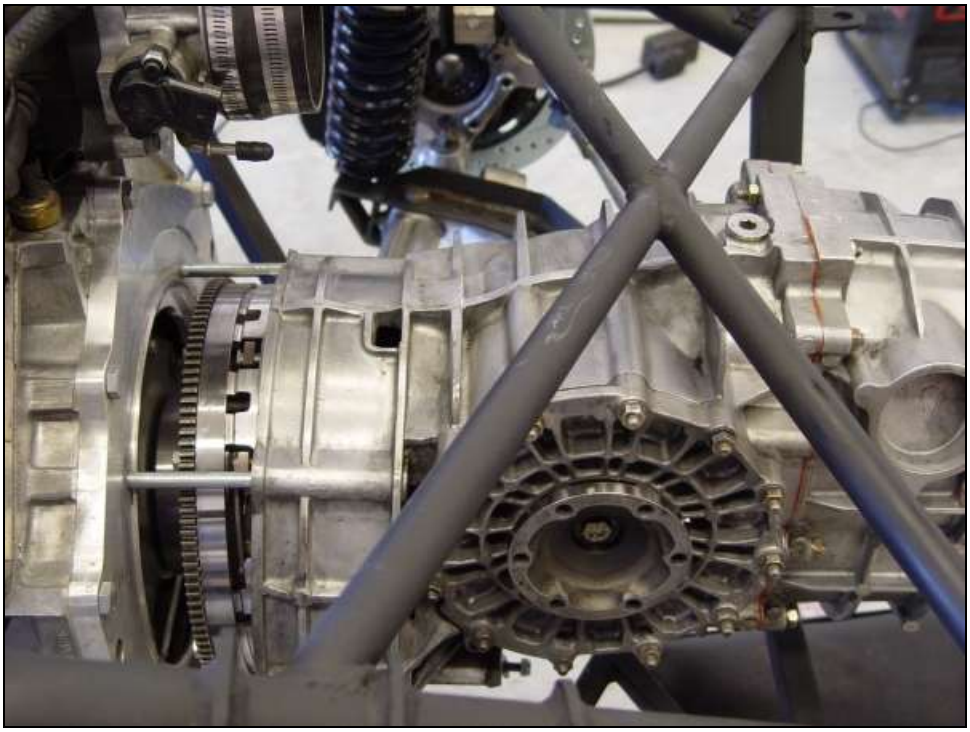
🛠 17 mm wrench, 10, 13, 17 mm socket, ¾" socket/wrench, Ratchet, pick and/or screwdriver.
🚘 Transmission, Clutch, Pressure Plate, Transmission Mount, 90-98 G50 Transaxle Adapter Kit.
✋ The transaxle is a heavy and has to get aligned with the studs on the adapter plate making it extremely hard for someone to do on their own. Find assistance during this step.

Install the supplied studs on the adapter plate. The longer stud should be installed on the lower right corner of the adapter plate (Picture shown is with the engine out of the car, pilot bearing not installed).



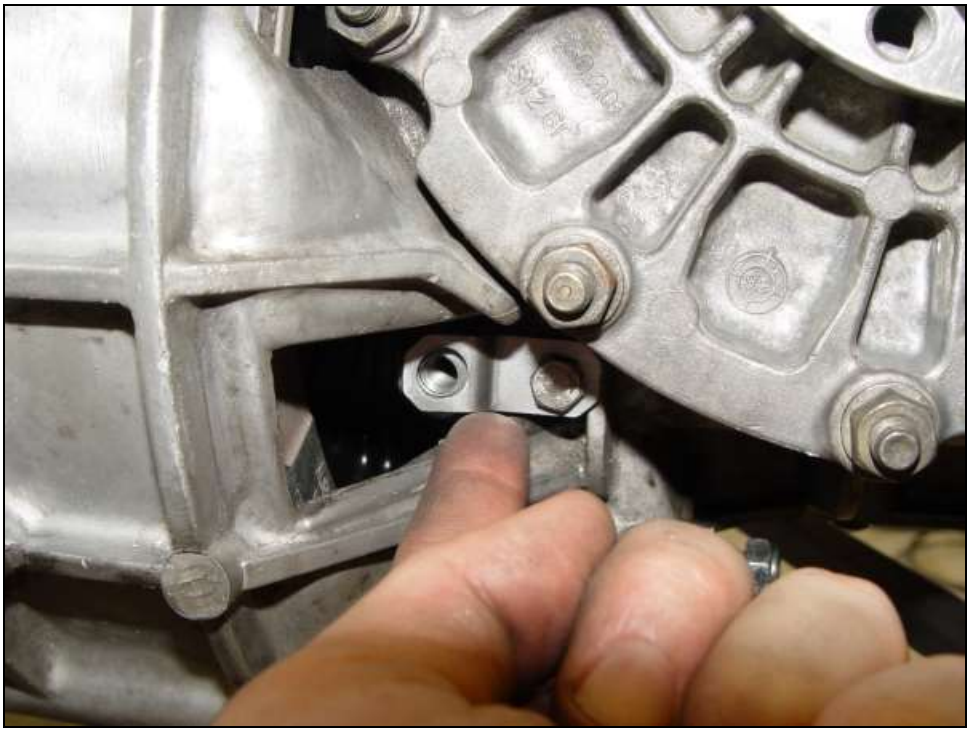
Bolt the flywheel to the crankshaft, and then install the clutch disc, followed by the pressure plate. Don't be alarmed by how close the studs are to the flywheel – this is the way the transmission was designed – it's a very tight fit!

Slide the fork onto the throw-out bearing and tape in place. Make sure the socket on the bottom arm of the fork faces rearward.



Slide the transmission onto the studs. Another set of hands and/or something to brace the transmission will be helpful here. Before sliding the transmission all the way on, install the top left nut, then side the transmission the rest of the way on (the nut will not clear the housing once the transmission is all the way on the stud). Install the rest of the nuts (17 mm socket, wrench). Do not fully tighten the bottom right nut – it is also one of the starter nuts.

Apply some lithium grease onto the clutch fork shaft, then slide the shaft through the bearings in the transmission and the fork and push the cap on the shaft.

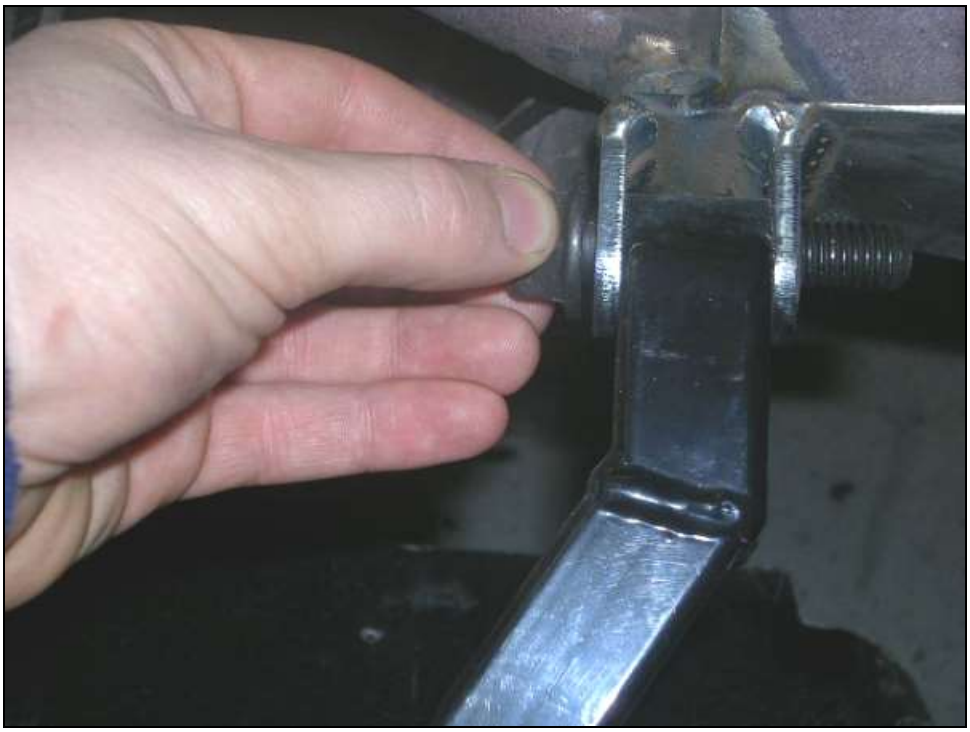


Install the retaining bracket (10 mm – transmission housing, 13 mm – Clutch fork Shaft).

Remove the tape from the clutch fork by inserting a pick or a screwdriver through the access holes in the transmission.

Slide the Transmission Mount (FFR# 25311) into place. The lower brackets may have pulled in slightly due to the heat from welding, so you may have to increase the distance between them slightly to get the

transmission mount to slide into place without scratching the powder coating. The handle of a dead-blow hammer works well for this since they are coated in rubber or plastic.



Put the top bolts in, but do not fully tighten them until all of the bolts are in. Put the top bolts in so that the head of the bolt is on the inside of the frame – once the wheel wells are in, this will allow you to get the bolt out without having to access the bolt from inside the wheel well.

Put the bottom bolts in from the inside out just as with the top bolts.

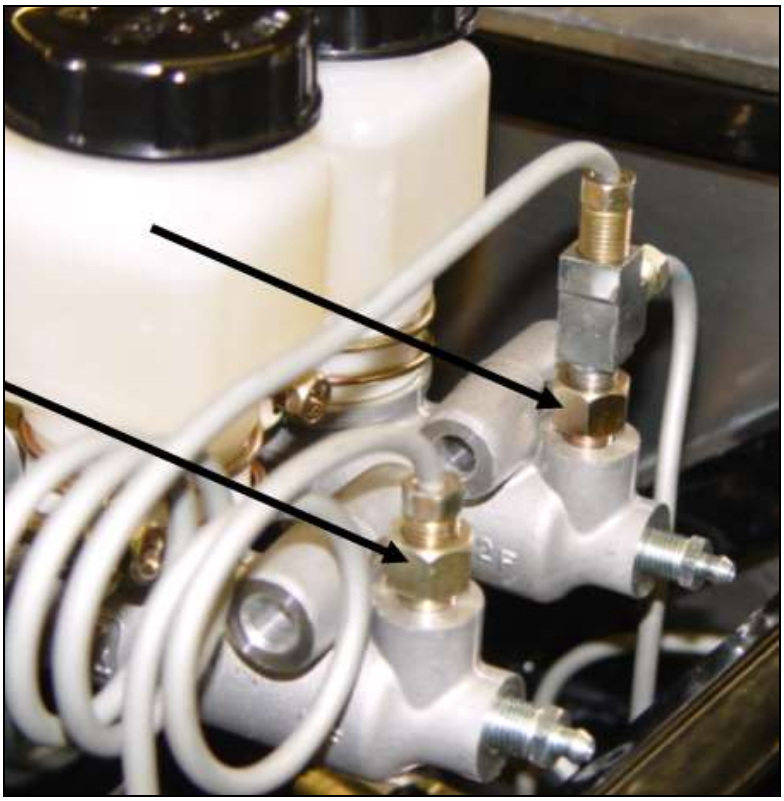
Bolt the transmission to the Transmission Mount.

Tighten the Transmission Mount to frame bolts (¾" wrench/socket).

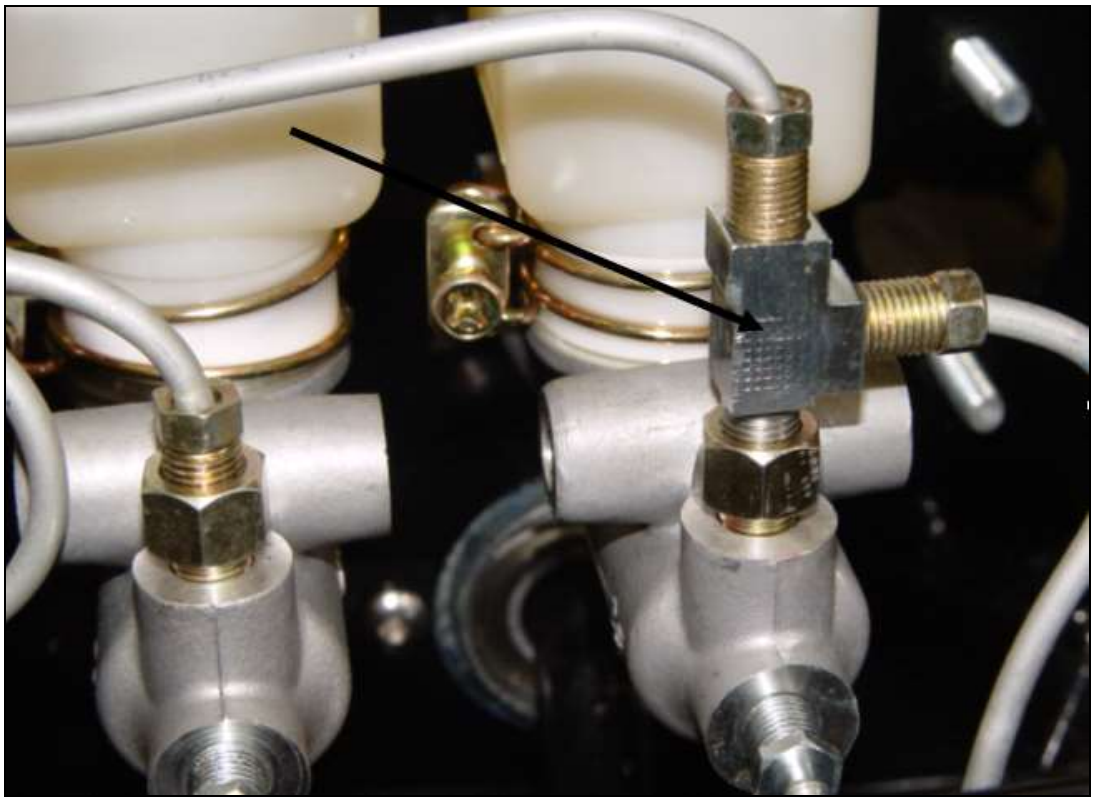
Brake Line Routing

🛠 Drill, ⅜", 7/16", ½" wrenches.

🚗 Brake line components and Corvette flexible brake line (FFR# 25567, 13738, 13739, 13740).



The master cylinders have 2 openings; the upper outlet is used as a bleeder to bleed the master cylinders themselves. The front facing opening is used to plumb brake lines. One of the cylinders is used for the front brakes and the other is used for rear brakes. Insert the adapter fitting (3/8-24 THD to 3/16" tube inverted male flare, found in the Wilwood cylinder kit) into the front opening of the master cylinders.

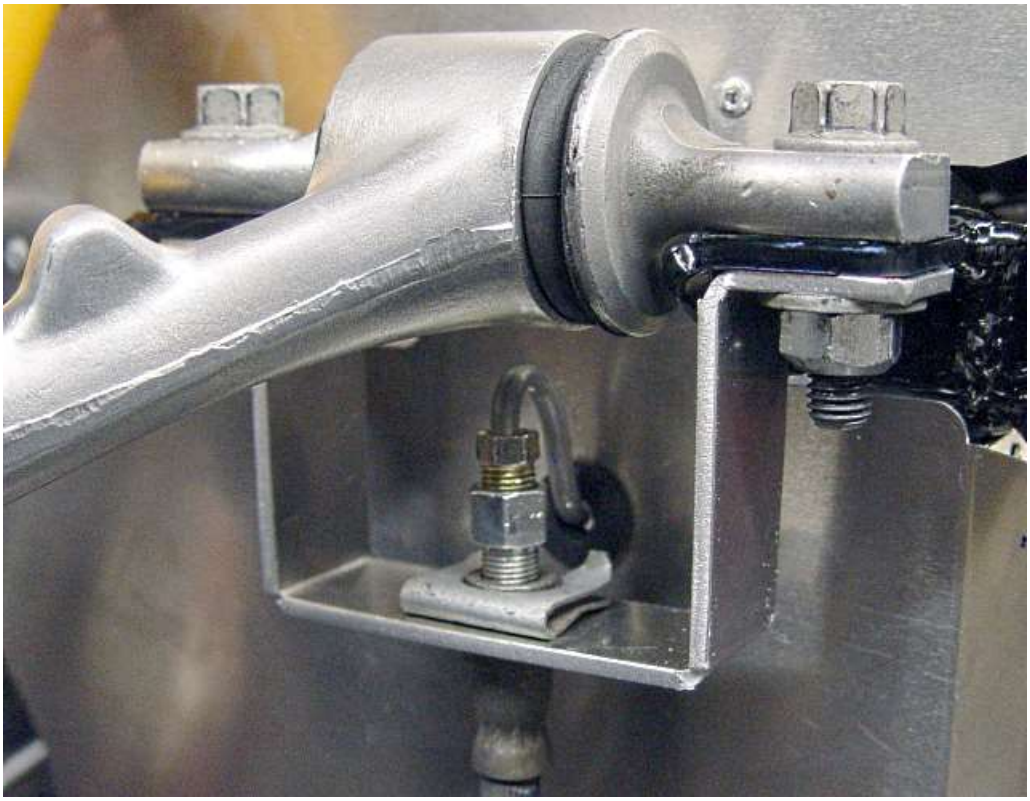


Plumb the front brakes first. Thread the male end of the brake line "T" adapter (FFR# 25507) into the adapter previously installed into the master cylinder. It is your choice on which master cylinder to use for the front/rear brakes because they have an identical bore size.

The front brake lines pass through the front inner wheel well aluminum. Drill a ⅝" hole inline with the hole on the brake line bracket located, ½" above the upper surface of the brake line bracket. After the

hole is drilled, insert the rubber grommets found in the Painless Performance wiring box. (same procedure used on driver and passenger side).

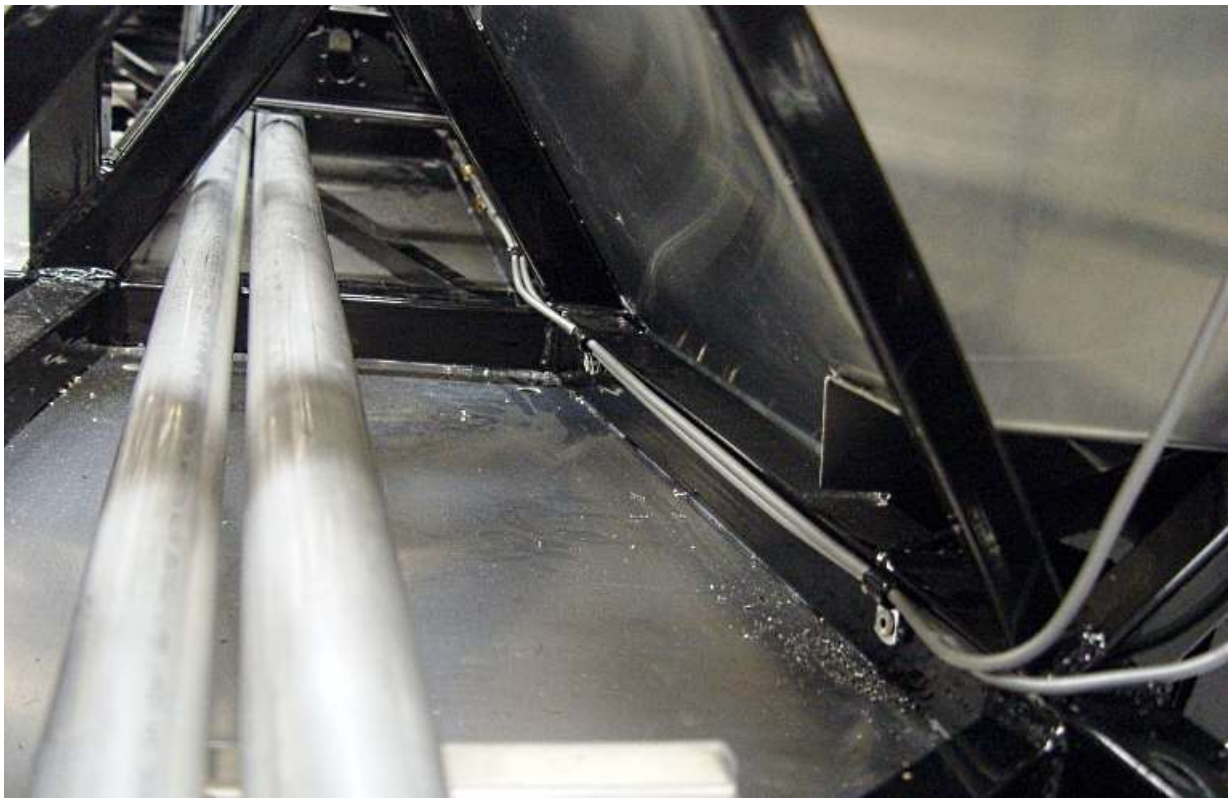
Insert the Corvette soft brake line into the brake line bracket from the bottom and hold it in place using the clip found on the Corvette. The brake line metric adapter (FFR# 25502) is then inserted into the opening in the Corvette Brake line fitting. (same procedure used on driver and passenger side).



Plumb the driver side front brake line first using the 20” brake line (FFR# 13740) starting at the brake caliper and working towards the master cylinder. The pre-flared brake line has a long and a short brake

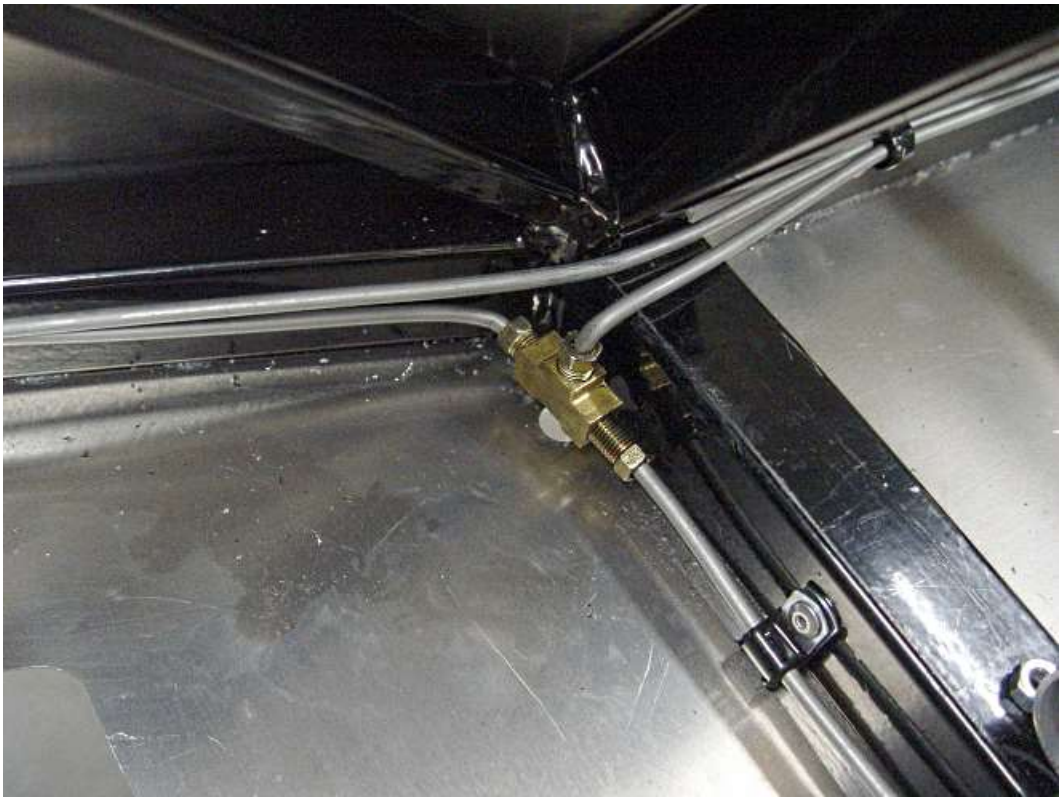
line fitting from the factory. The shorter end gets installed at the caliper side to give clearance for the upper control arm.

The front passenger side line is installed in a similar process using the 51” brake line (FFR# 13739). Run the passenger line along the 1” frame rail. The lines are longer than needed due to the inclusion of service loops.



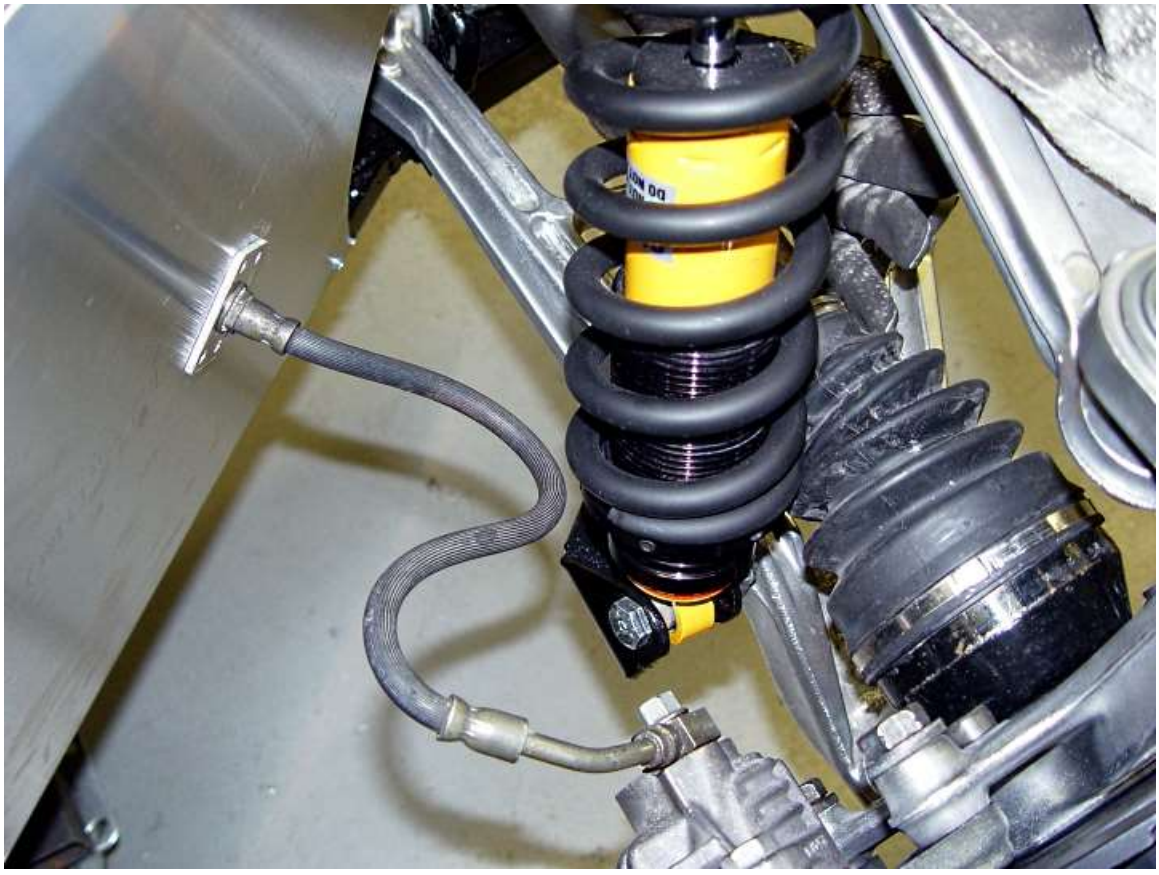
Attach the long 60” brake line to the master cylinder for the rear brakes (FFR# 13738). Run this line down the driver side of the tunnel and attach it to the 1.5” frame rail. Photo shows the brake line and the clutch line).

At the end of the 60” line, install the brake line union (FFR# 13743).



On the other side of the brake line union, install a 20” brake line (FFR# 13740). At the end of the 20” length, install the brake line T fitting (FFR# 25556).

The soft Corvette brake lines are attached to the car using the rear brake line bracket (FFR# 25762).

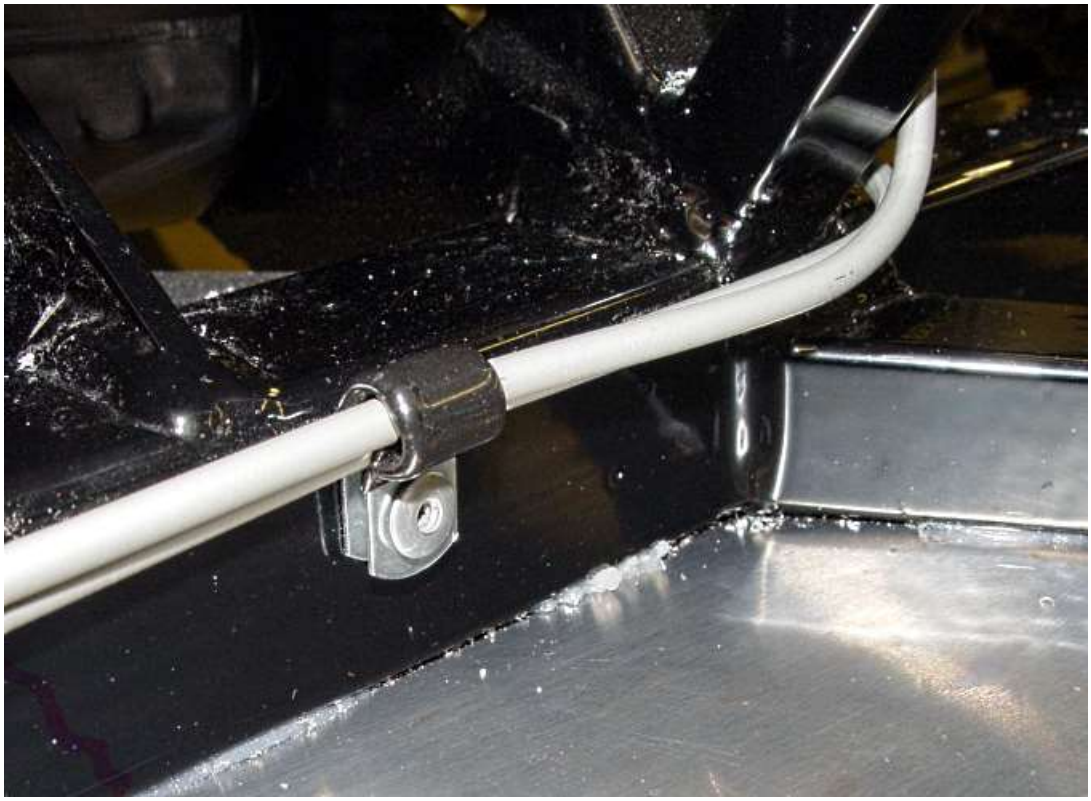


With the rear brake line bracket fitted over the Corvette soft line hold the bracket and soft line up to the rear splash. Drill and rivet the brake line bracket into place (2 of the rivets are attached into the

aluminum and 2 are attached into aluminum and the 1" frame rail). Before fastening the bracket to the frame/aluminum, run the suspension through its full range of motion to determine a location for the bracket that will not stress the flexible brake line as the suspension travels. It is also a good idea to put a wheel on to make sure the line does not contact the wheel.

The Corvette brake line retainer clip is then attached on the inside of the brake line holding it in place.

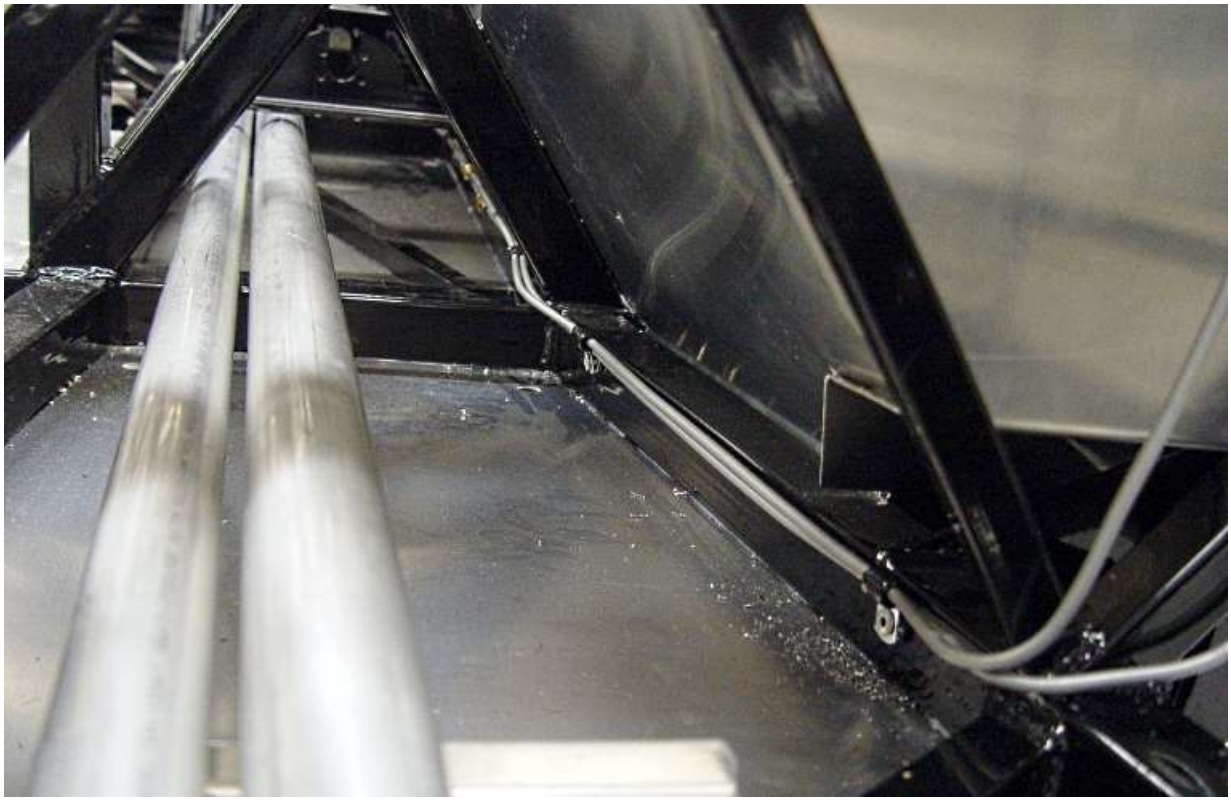
Use the 60" to plumb the passenger and driver sides from the previously installed T fitting. Install the metric adapter (FFR# 25502) in between the 3/16" brake line and the Corvette flexible line.



Clutch Line Routing When all the lines are completed, attach them to the frame using the ⅜" insulated line clips every 15".

🛠 Drill, ⅜", 7/16", ½" wrenchs, 7 mm wrench, 14 mm wrench.
🚗 Clutch Slave Cylinder Kit (FFR# 25564), Wilwood Master Cylinder (FFR# 25227).

Use the same procedure as the brake master cylinders to install the third clutch Master Cylinder.
Use the same procedure as the rear brake lines to plumb the hard line for the Clutch Slave Cylinder (installed in the Transmission Installation section) along the same path as the rear brake lines.



If installing a Mendeola Transaxle, route the clutch line down the Passenger side of the engine bay, the cylinder is on the opposite side compared to a Porsche transaxle.

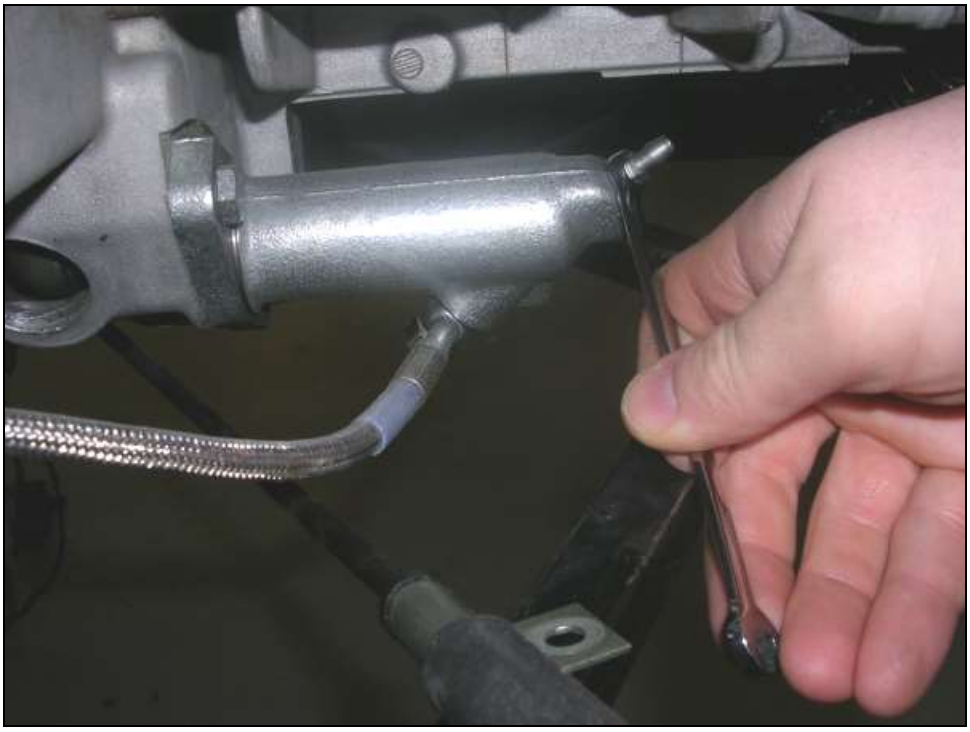
Put a crush washer on either side of the line fitting, then bolt the Stainless Steel Braided Flexible hose (FFR# 25817) to the Slave Cylinder using the provided banjo bolt (14 mm).

Using the supplied fittings, mate the flexible line to the hard line you ran from the Clutch Master Cylinder.

Fill the master cylinder with brake fluid.

Holding the slave cylinder so the bleed screw points up, open the bleed screw and gravity bleed the slave cylinder until there is no air coming out (7 mm). DO NOT depress the clutch with the slave not bolted in place.

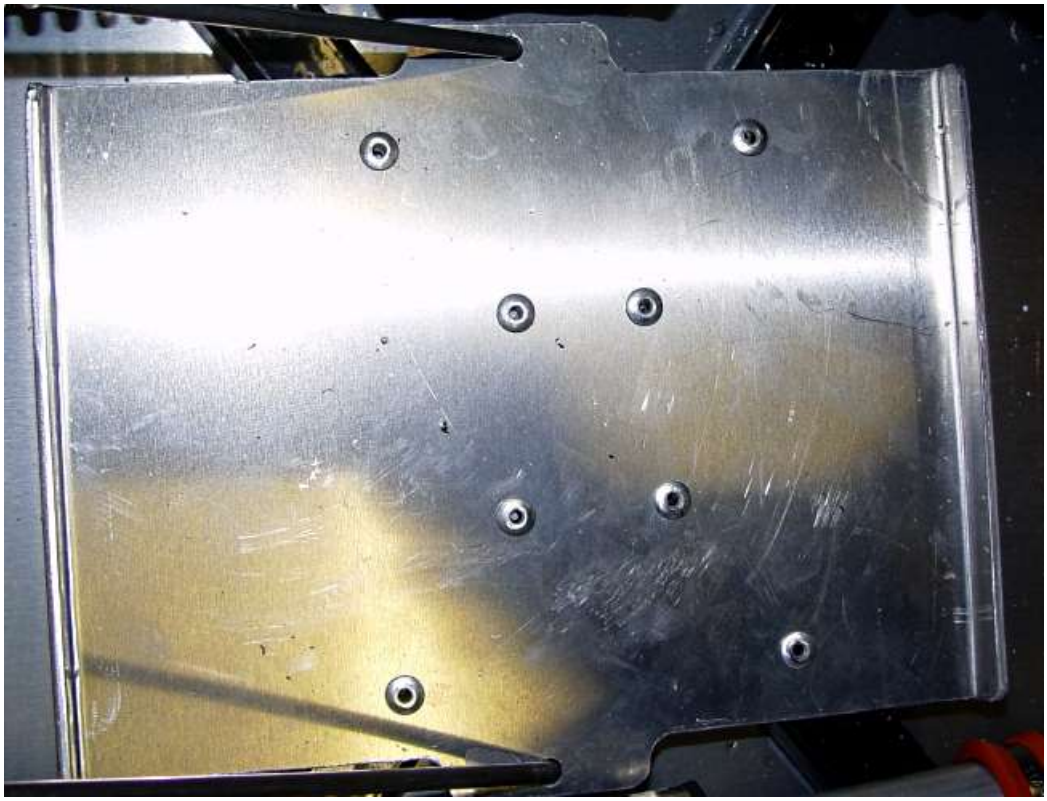
Bolt the slave cylinder (FFR# 25501) to the transmission (13 mm). Make sure the slave cylinder shaft engages the clutch fork.



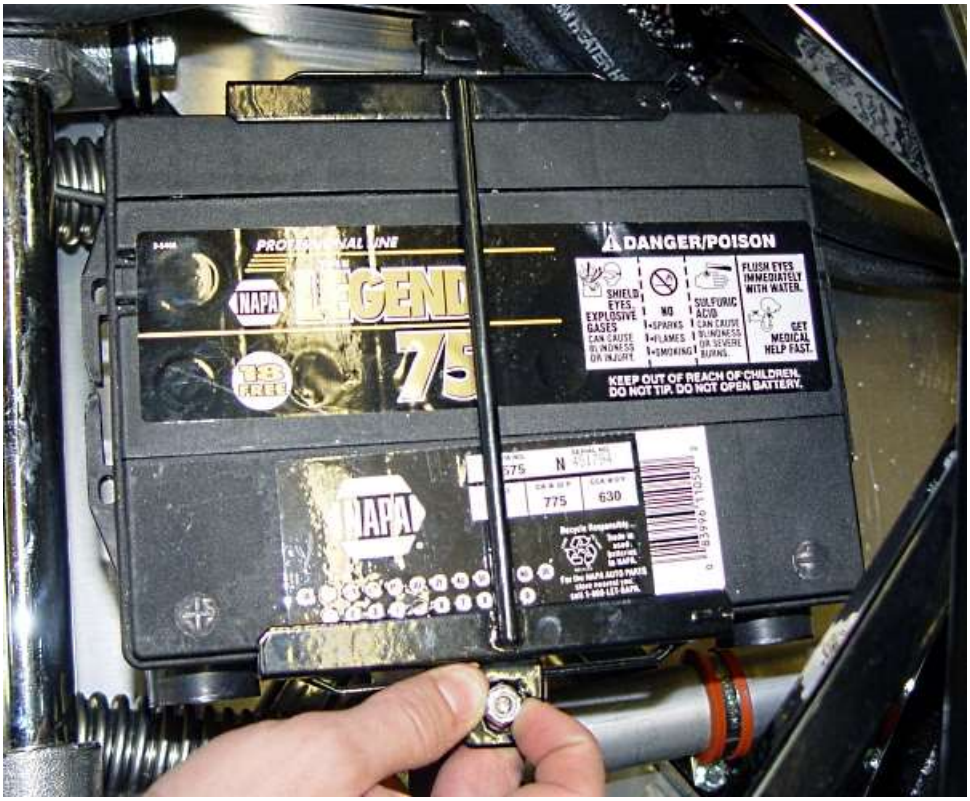
Bleed the line at the slave cylinder (7 mm – bleed screw) until you no longer have air in the lines and have good pedal feel.

Battery Install

- 7/16" wrench.
- Corvette battery, battery hold down kit.



Insert the J-hooks into the holes in the battery tray.



Place the battery on the battery tray and attach the J-hooks on top of the battery with the supplied ¼" hardware (FFR# 10802). The terminals on the battery are located on the driver side.

Radiator Aluminum and Radiator Install

🛠 Eye protection, drill w/#6 hex nut driver, ⅛" drill bits, drill, rivet gun, silicone, caulking gun, #6 self tapping screws.

🚘 Radiator aluminum rear duct and under tray (FFR# 25495, 25493).

✋ The radiator aluminum has to be installed before the radiator and coolant overflow container are installed.

The under tray aluminum piece is installed first. The lip on the front of this piece is located at the front of the vehicle and oriented upwards. Do not rivet the rearward flange which is attached to the ¾" horizontal frame rail until the next step.

Install the rear duct aluminum next. This piece is riveted on the bottom through the under tray and into the ¾" frame rail.

The radiator assembly is installed next. The fan shroud must be clipped onto the backside of the radiator. If you are installing air conditioning in the car, make sure the Corvette condenser is clipped onto the front of the radiator.

Insert the round insulator from the radiator in the frame (you may have to open up the hole in the frame for the insulator to fit).

Cut the nipple off the bottom of the Corvette driver side radiator bushing.

Set the Driver side Corvette bushing on the flange so that the radiator will sit on it as shown in the photo below.

Set the radiator in place.

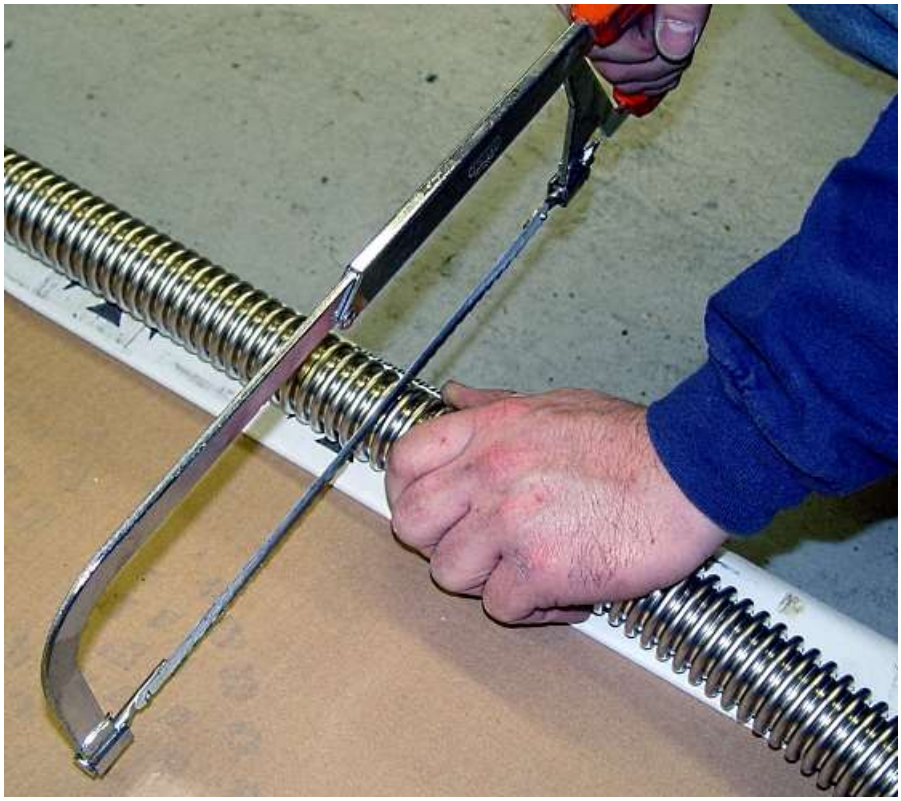
Drill and rivet the radiator to the three mounting tabs on the frame using the supplied ⅛" rivets.

Cooling System

🛠 Drill (a right angle drill is extremely helpful in this section), 3/16" drill bit, flat screw driver, hack saw, tape measure.

🚘 Stainless radiator hose kit, loop strap, (FFR# 13883, 25767, 25768, 10984).

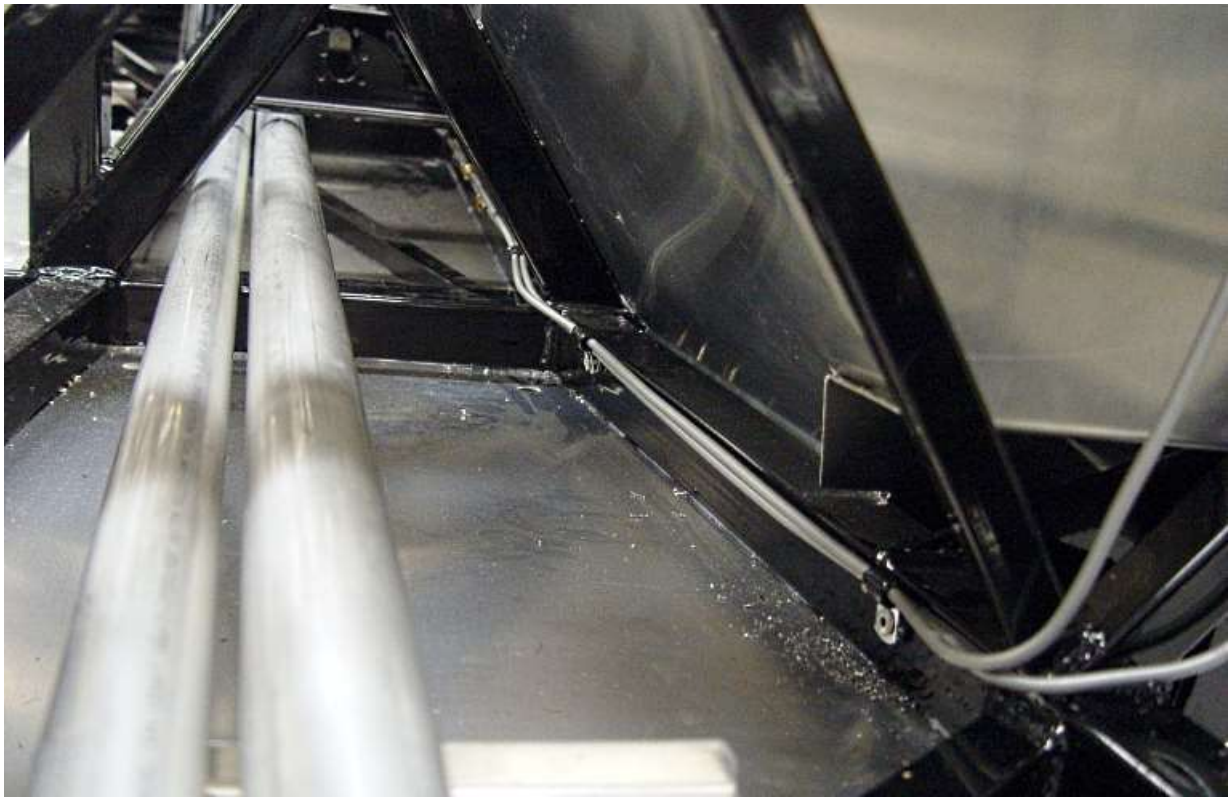
✋ The stainless corrugated lines connect the hard aluminum tubing to the motor/radiator.



The corrugated line is cut using a hack saw to the lengths listed below.

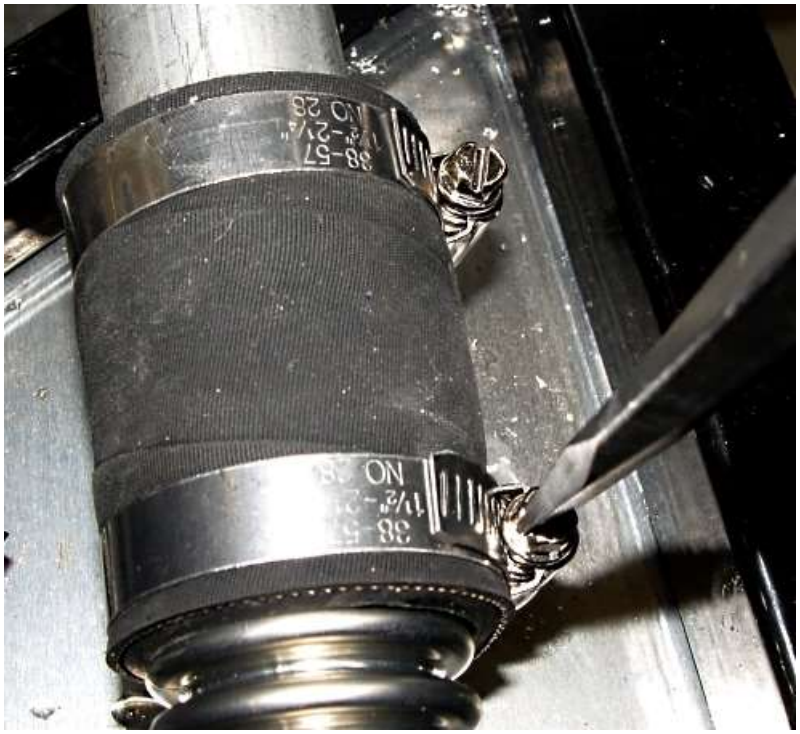
- Mock up the corrugated hoses in car before cutting. Below are some approximate lengths for each section.

Front Passenger (radiator exit): 34”
Front Driver (radiator input): 47”
Rear Driver (engine exit): 35”
Rear Passenger (engine input): 19”

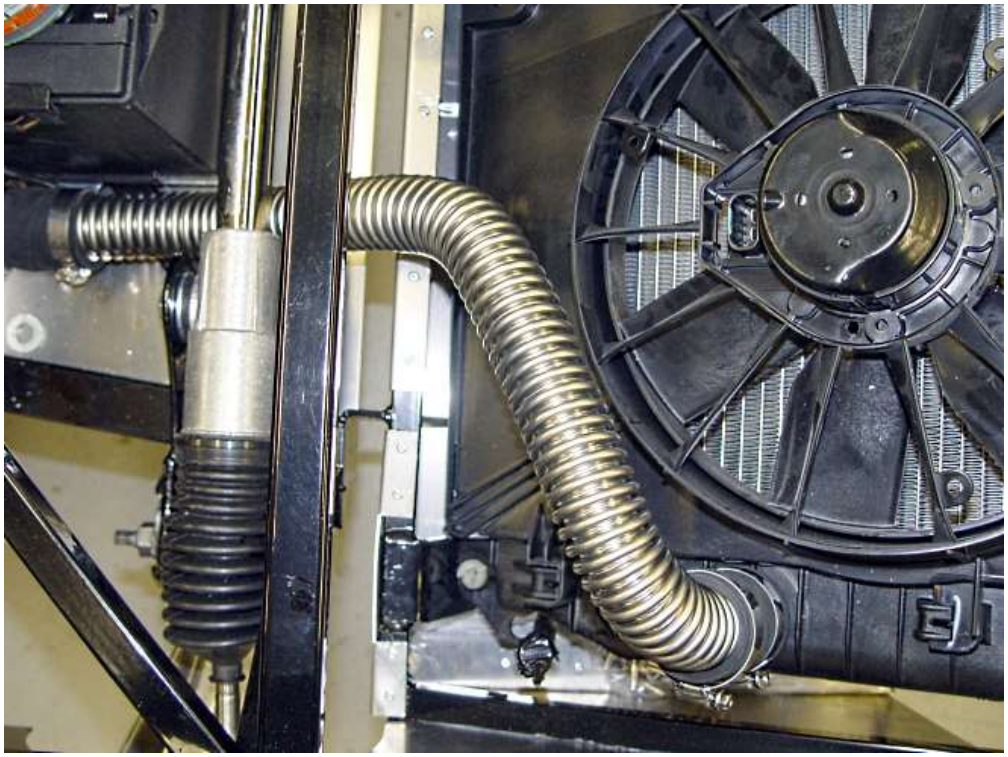


The smaller diameter aluminum tube extension (FFR# 25294) is the return to the radiator (smaller connector). The larger diameter hard line (FFR# 25293) goes from the radiator to the engine (larger connectors). Place the tubes on the passenger side of the tunnel.

Install the 1.5" long rubber adapters over the hard aluminum line, thicker adapters are for the smaller diameter hard lines and the thinner ones are for the larger diameter aluminum tube. Then slide the 3" long adapter over the smaller ones. (it may help to spray Windex on the rubber to act as a lubricant)



Install the corrugated stainless line (make sure to install the correct length line at each location using the previously given lengths) into the open end of the 3” long adapter. Secure both sides of the 3” long adapter with the supplied hose clamps.



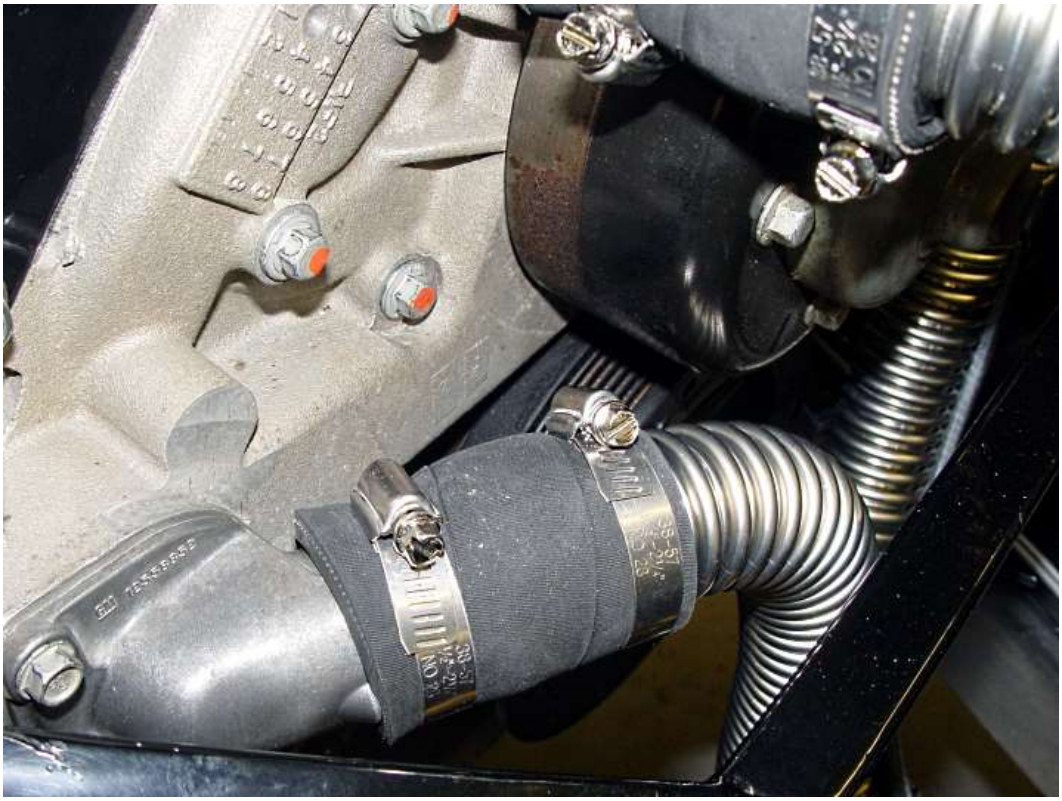
Start plumbing the lines at the front of the car first; these are routed under the steering rack and around the battery. Connect the corrugated line to the 1.25” diameter hard line then to the radiator opening on the passenger side using the 3” long adapter and one of the 1.5” long thick adapters on the radiator opening. Tighten the adapters with the supplied hose clamps.

The lower radiator hose from the Corvette must be modified before it can be installed on the GTM. The reducing elbow will be used on the upper radiator inlet. Cut the elbow as seen in the picture.

Attach the corrugated line to the 1.5” diameter hard line to the upper port on the radiator. The line is attached to the radiator using the modified elbow from the Corvette lower radiator hose. Fasten with the supplied hose clamps.

Trim the upper port on the water pump just in front of the inner rib, leaving about ⅛” of material in front of the rib.

Connect the rear lines next. The driver side corrugated line is connected to the upper port on the water pump. Use one of the thick 1.5” long adapters on the water pump and attach the corrugated line to the port with the 3” long adapter.

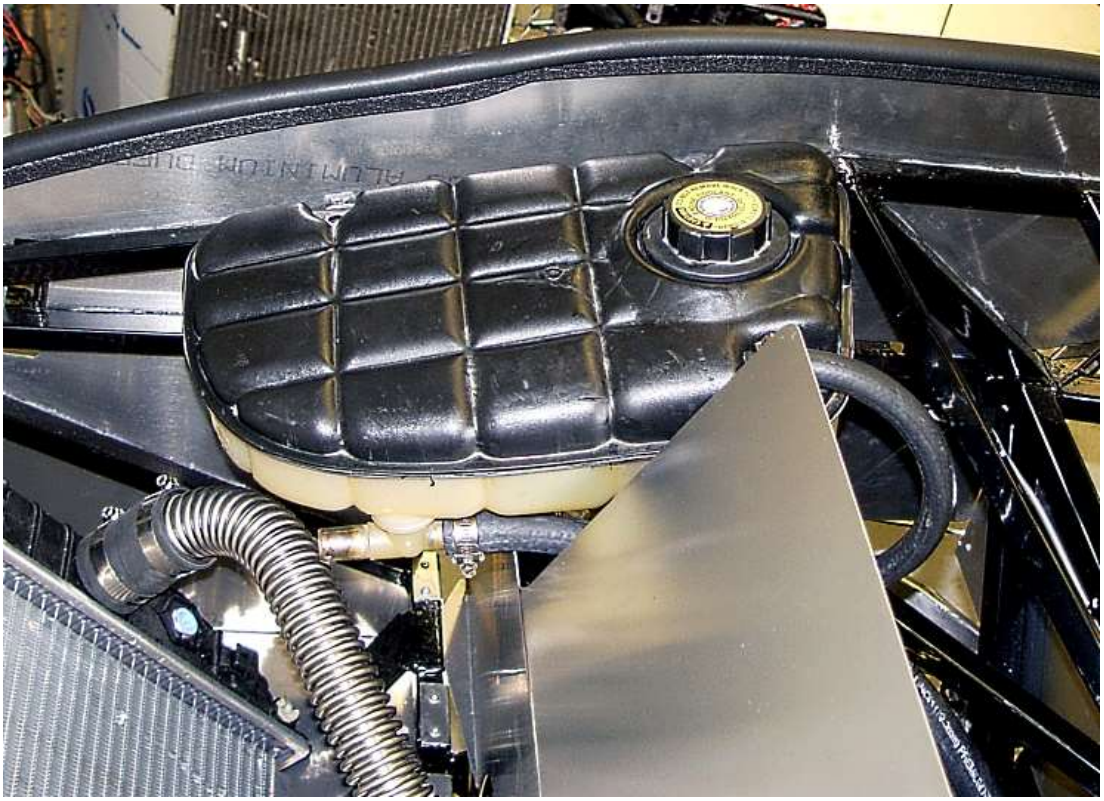


The corrugated line on the passenger side (1.25” diameter) is attached to the lower water pump port using just the 3” long adapter.

- After running the car for the first time once coolant is added and while the system is still warm, retighten the hose clamps used on the cooling system.

Surge Tank and Soft Coolant Line Routing

- 3/16” Hex key, ½” wrench, flat screwdriver, razor knife.
- Corvette overflow tank, radiator hose components (FFR# 25568).

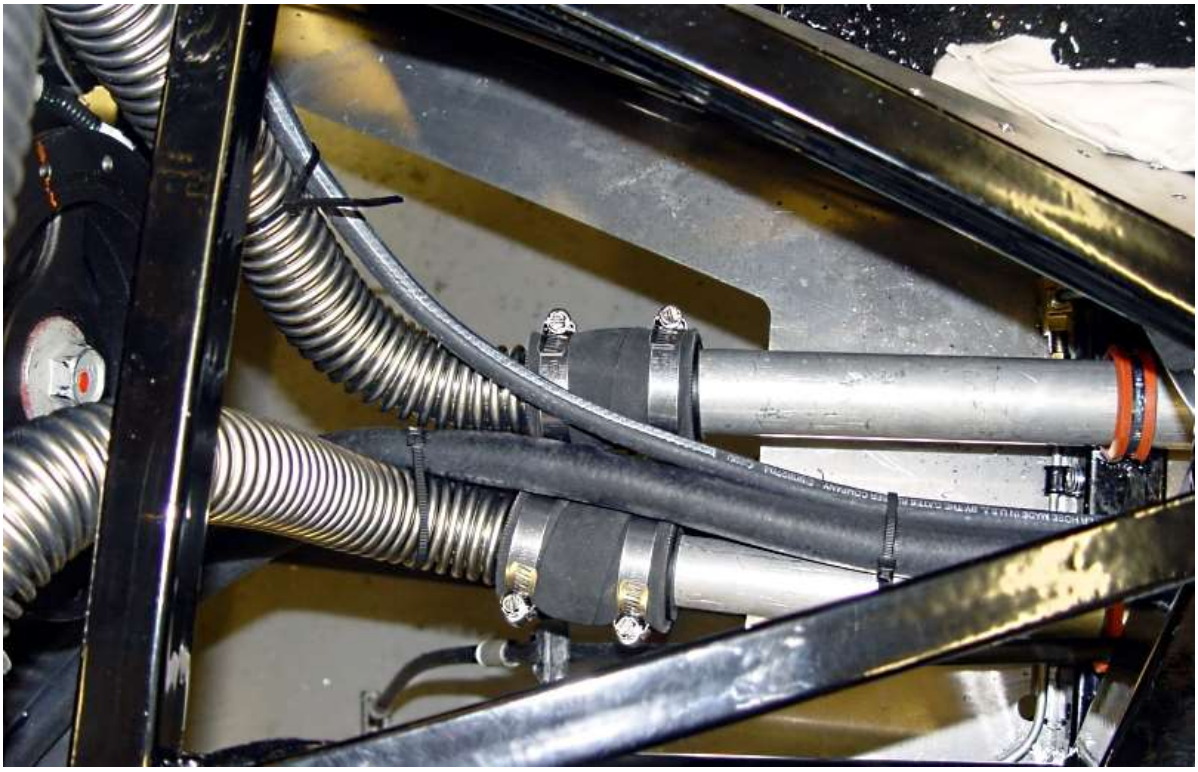


Attach the Corvette overflow container to the chassis using the supplied hardware (FFR# 11024, 13963, 11005).

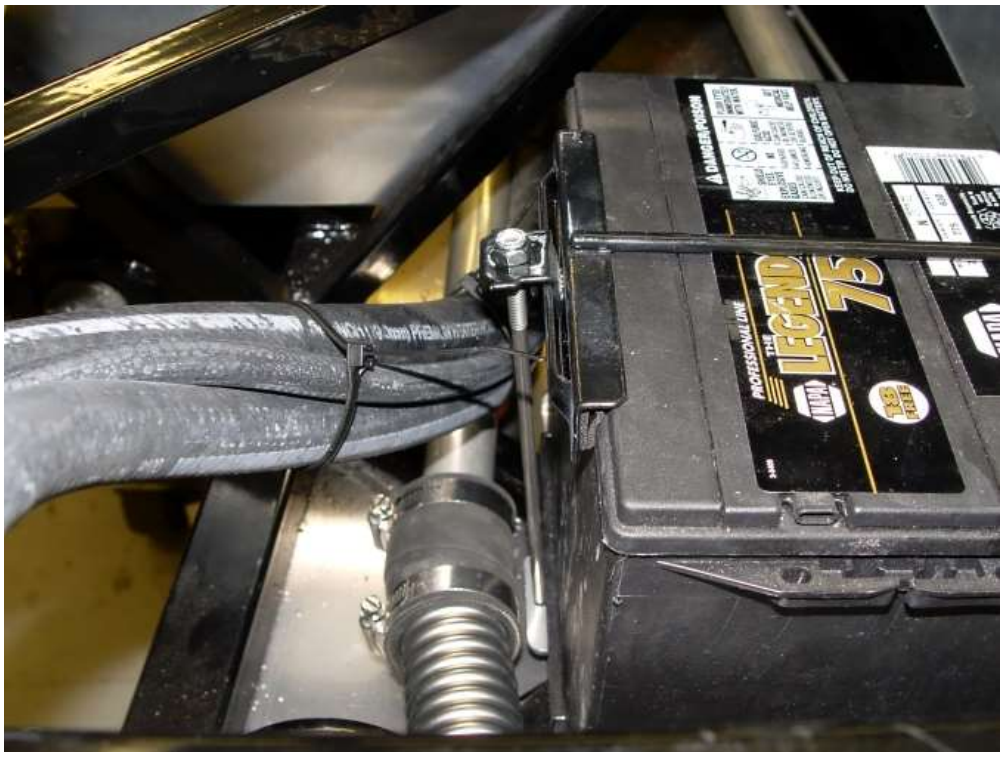
The heater hoses are installed next. Snake the long ⅝" (FFR# 25537), ¾" (FFR# 11205) and ¼" (FFR# 25536) radiator hose down the tunnel through the lower portion of the Dash bulkhead X member.

The heater ports on the water pump are different sizes. Connect the larger heater hose (¾") to the larger port on the water pump (front) and the smaller heater hose (⅝") to the smaller port on the water pump (rear). Attach these hoses onto the water pump with the large heater hose clamps (FFR# 25601).

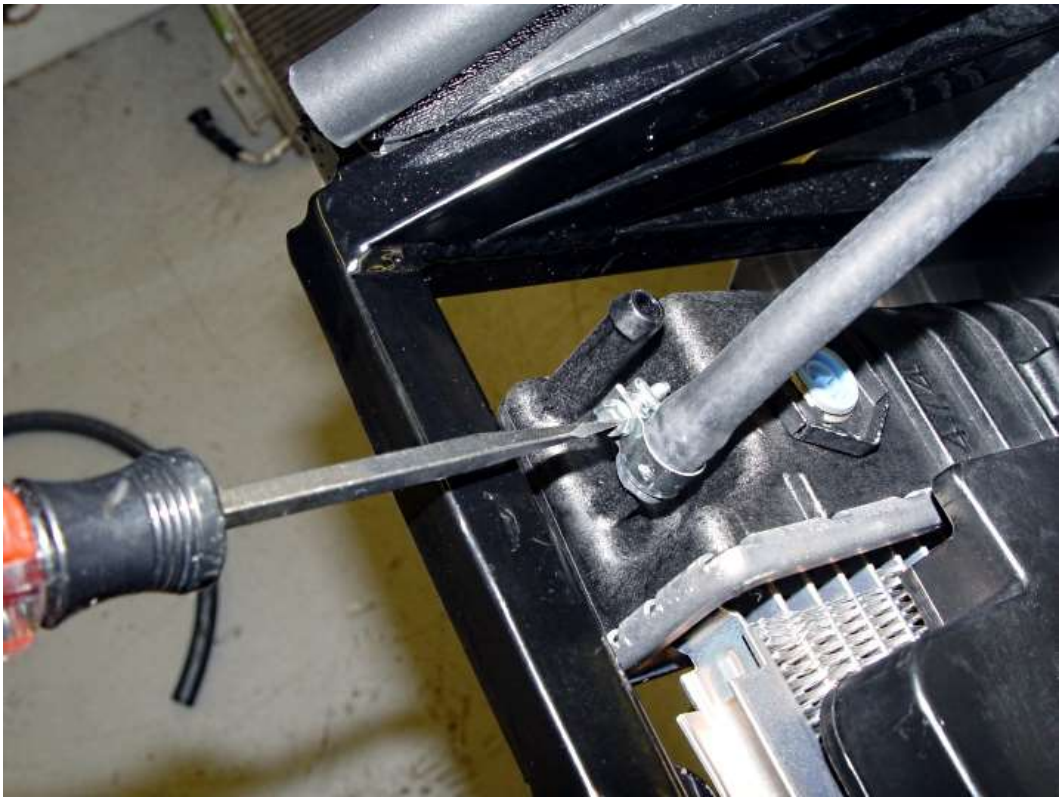
The small heater hose is connected to the cylinder head vent tube. Attach these hoses onto the water pump with the large heater hose clamps (FFR# 10855).



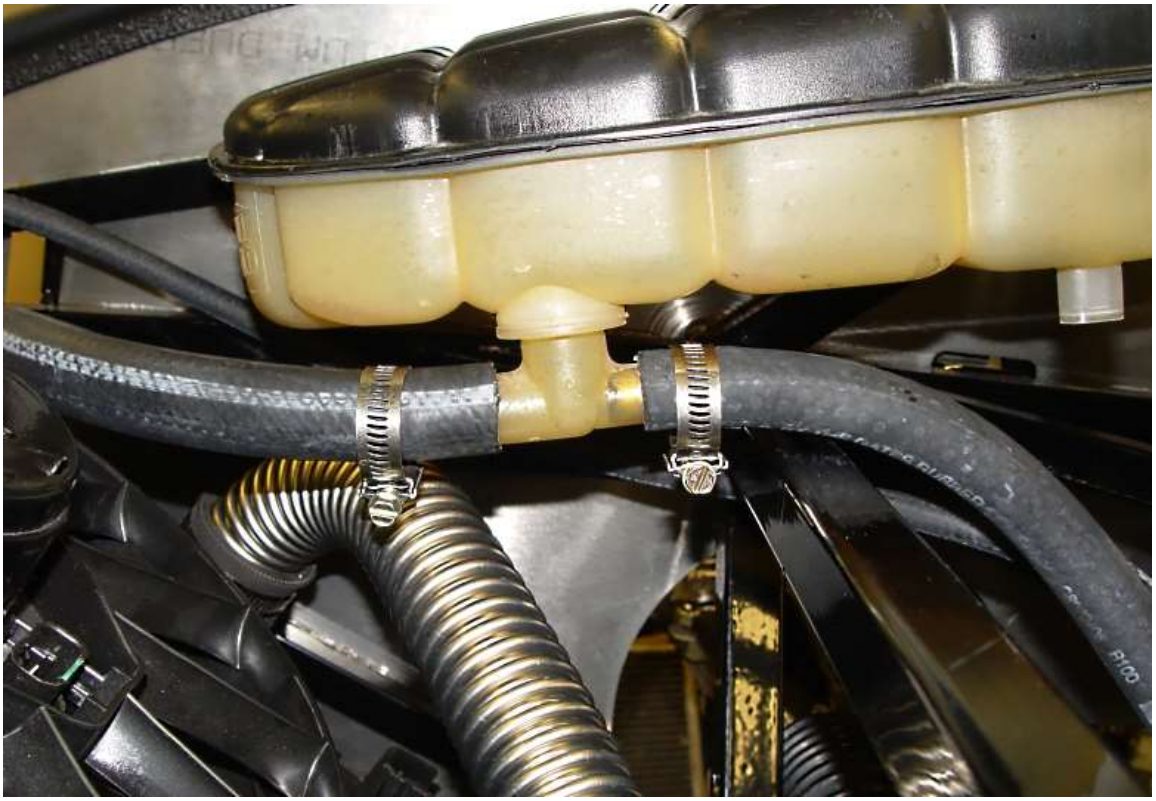
Route the heater hose in the tunnel as a bundle and fasten them to the aluminum hard heater line on the passenger side with the black nylon cable ties (FFR# 13328).



Route the bundle of heater hoses around the battery on the passenger side.



Install the small ¼” heater hose (FFR# 25536) onto the small fitting on the top of the passenger side of the radiator using the ¼” hose clamp (FFR# 10855).



The two larger lines from the water pump are attached to the base of the surge tank. Install the larger diameter line (¾") on the front facing lower port and the smaller one (⅝") on the rear facing lower port using the large hose clamps (FFR# 25601).

The surge tank now has to be connected to the radiator. Connect one end of the ½" heater hose (FFR# 11202) to the upper rear facing port on the surge tank using the supplied hose clamp (FFR# 11206).

Attach the other end of this ½" hose to the larger port on the top of the passenger side of the radiator using the supplied hose clamp (FFR# 11206).

The filling process is taken from the GM Corvette service manual. Make sure to use a 50-60% mixture of distilled water and DEX-COOL® coolant. Fill the system through the surge tank opening until the fluid level is ½" below opening.

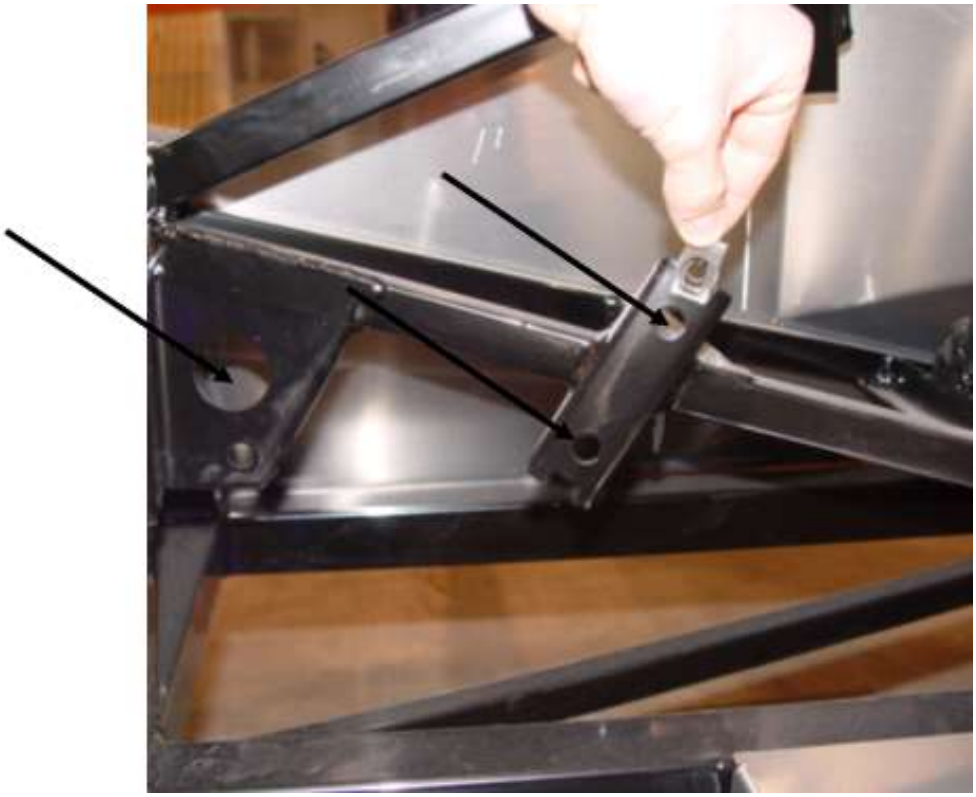
With the cap removed from the surge tank, start the engine and let it idle for one minute. Install the surge tank cap and bring the coolant up to temperature (210°F) by revving the engine from idle to 3000 RPM in 30 second intervals; then turn engine off. The engine/coolant is now at temperature so use extreme caution. Slowly unscrew the surge cap releasing pressure, and then remove the surge cap.

Start the engine and let it idle for one minute. Fill the surge tank with coolant ½" above the FULL COLD mark on the surge tank and re-install the surge tank cap.

Once again, bring the coolant up to temperature (210°F) by revving the engine from idle to 3,000 RPM in 30 second intervals; then turn engine off. Top off the coolant ½" above the FULL COLD mark on the surge tank.

Emergency Brake and Cables

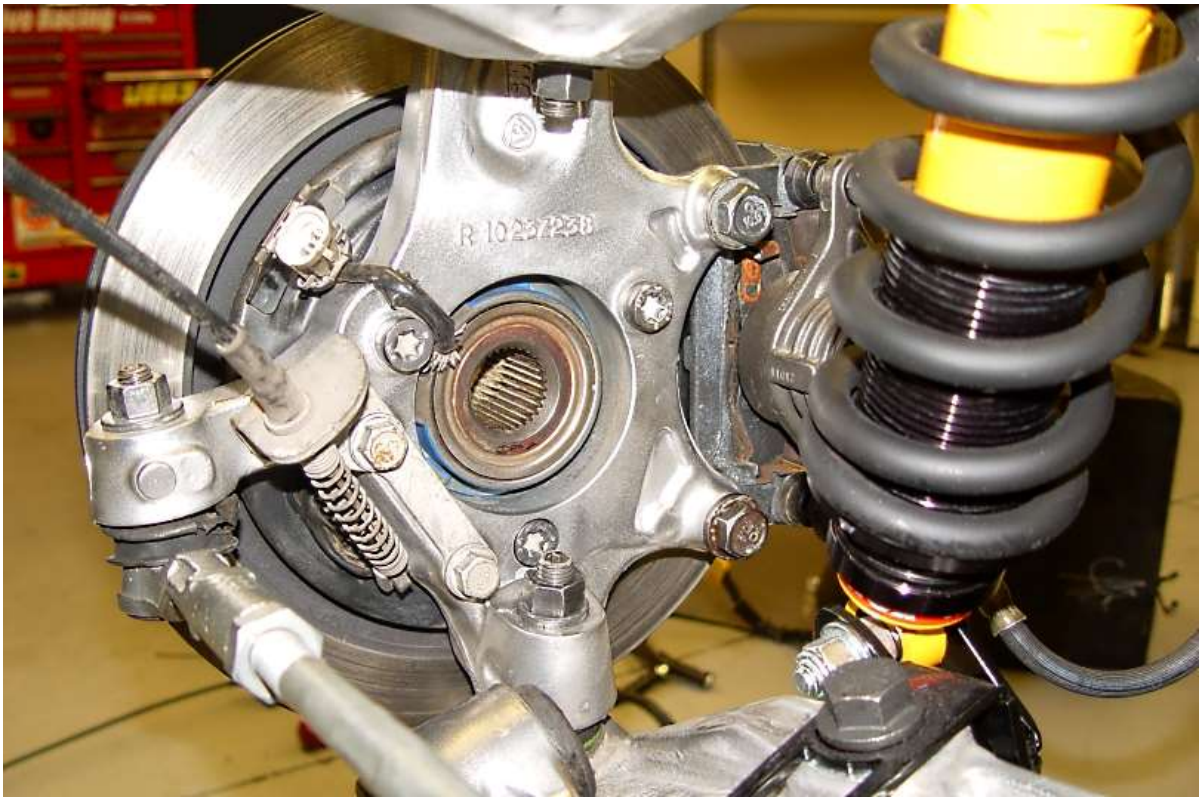
- 3/16" Hex key.
- Corvette E-brake handle, cables, connection bracket, parking handle hardware (FFR# 25660).



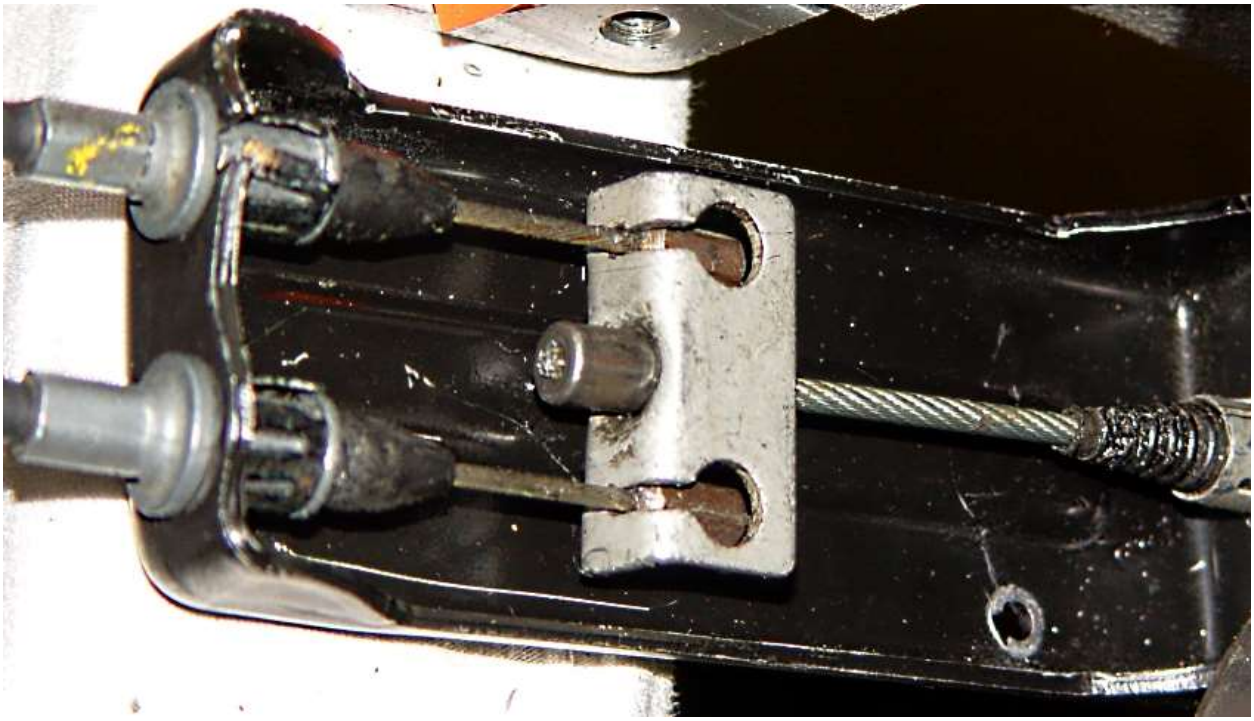
Slide the “U” nuts into place on the frame. Two get installed towards the front and the third is installed inside of the circular cutout towards the rear.

Install the Corvette e-brake to the frame using the supplied 5/16” button head hardware (FFR# 11024).

Attach the single cable coming off of the e-brake handle into the connection bracket. Make this connection outside of the tunnel and then slide the cable and connection bracket towards the rear of the car in between the engine and the rubber motor mount.



If you removed the Corvette e-brake cables from the rear hub assembly, re-install those now using the Corvette hardware.

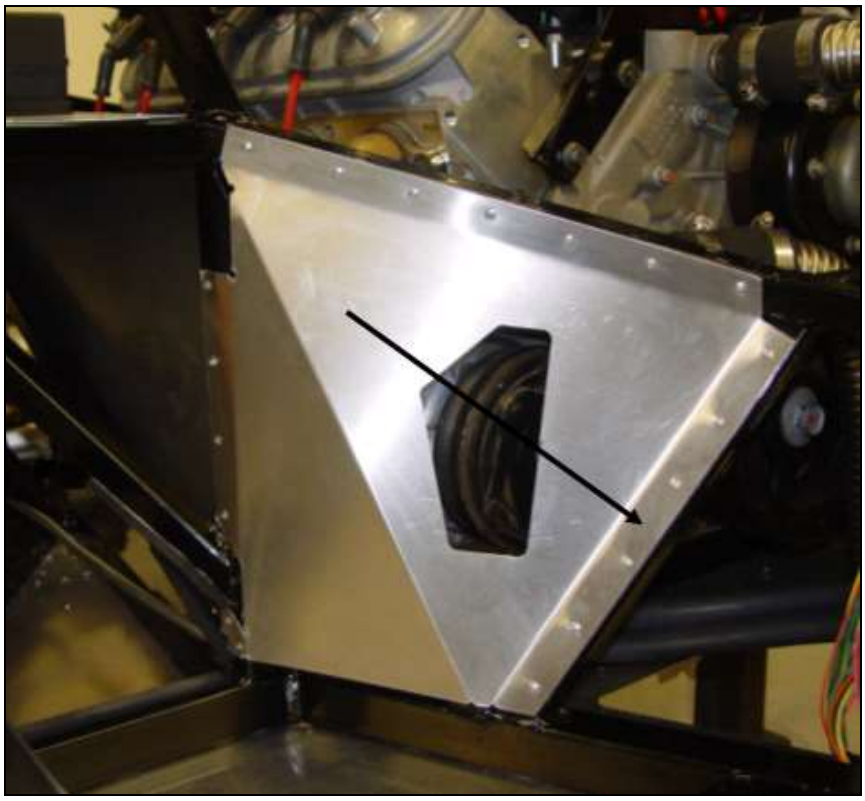


Loop the cables forward and attach the ends into the emergency brake connection bracket.

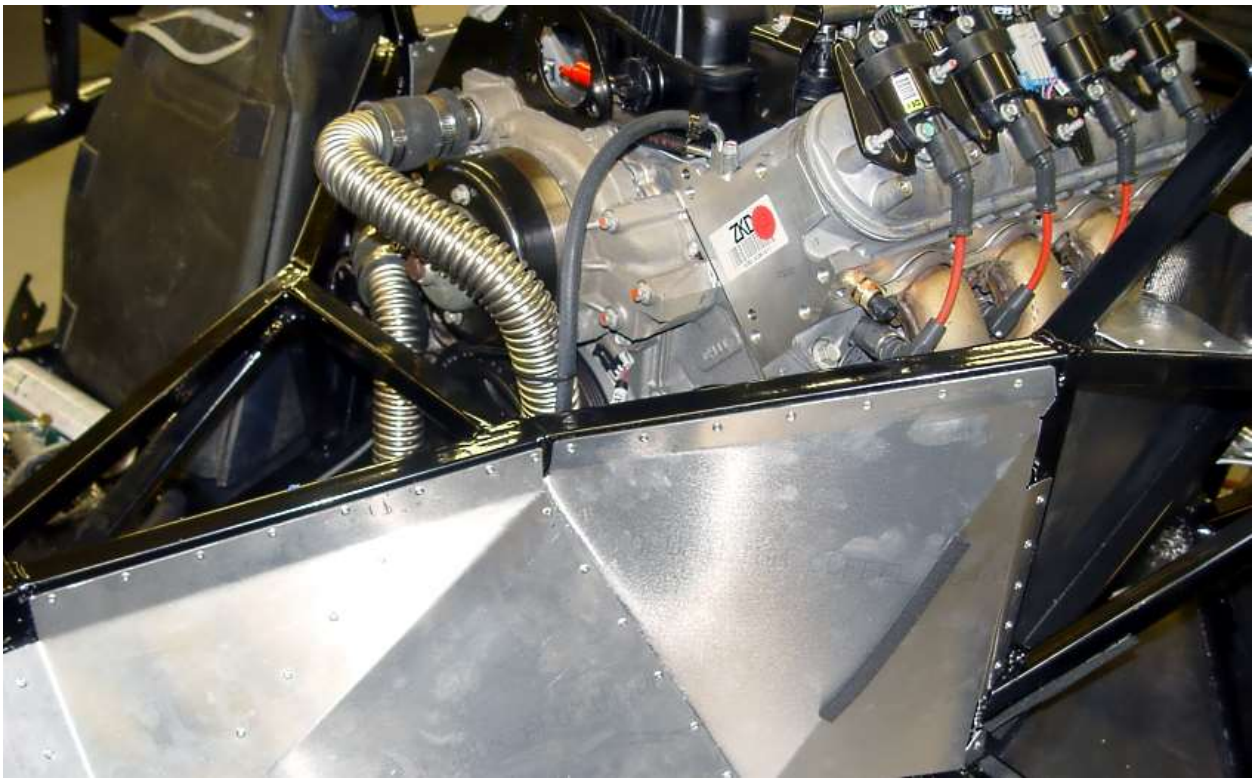
Cockpit/Tunnel Aluminum

🛠 Eye protection, drill w/#6 hex nut driver, ⅛" drill bits, drill, rivet gun, silicone, caulking gun, #6 self tapping screws.

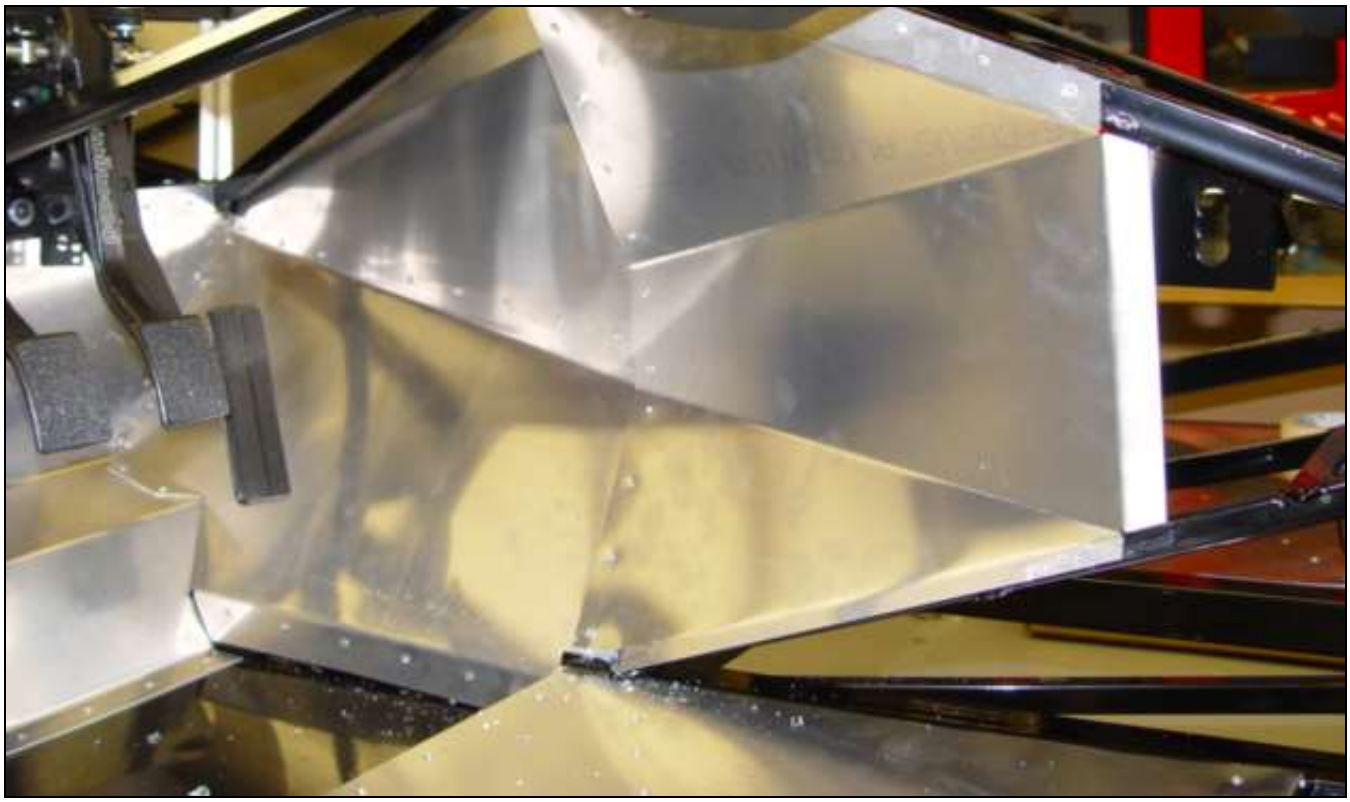
✋ Rear cockpit lumbar aluminum (FFR# 25156).



Install the rear driver (FFR# 25163) and passenger aluminum (FFR# 25164) panels. The cutout is located on the passenger side to give clearance for the HVAC compressor. Do not rivet the front edge (arrow) of these panels, because it is riveted in the next step. (same procedure used on driver and passenger side)



Install the rear lumbar aluminum panels on the drivers (FFR# 25161) and passenger (FFR# 25162) side. (same procedure used on driver and passenger side)



Install the concave driver tunnel piece of aluminum (FFR# 25158).

Install the driver front tunnel wall (FFR# 25160). The driver side tunnel is now complete (shown before panels were riveted in place).

The last piece that has to be installed is the passenger tunnel wall (FFR# 25157). The hole in this panel is for the e-brake handle to pass through. Position the e-brake handle in the "up/engaged" position while installing this panel.

Axles and CV joints

🛠 Vise, dead-blow hammer/rubber mallet, pliers, 34mm socket, ratchet.

🚘 Axle Shafts (FFR# 25290), Inner CV Joint Boot (FFR# 25715), Outer CV Joint Boot (FFR# 25716), Speedometer Gear (FFR# 25149).

The outer CV joints need to be removed from the donor axle shafts. Put the axle shaft in a vice and pull back or cut away the CV boot.

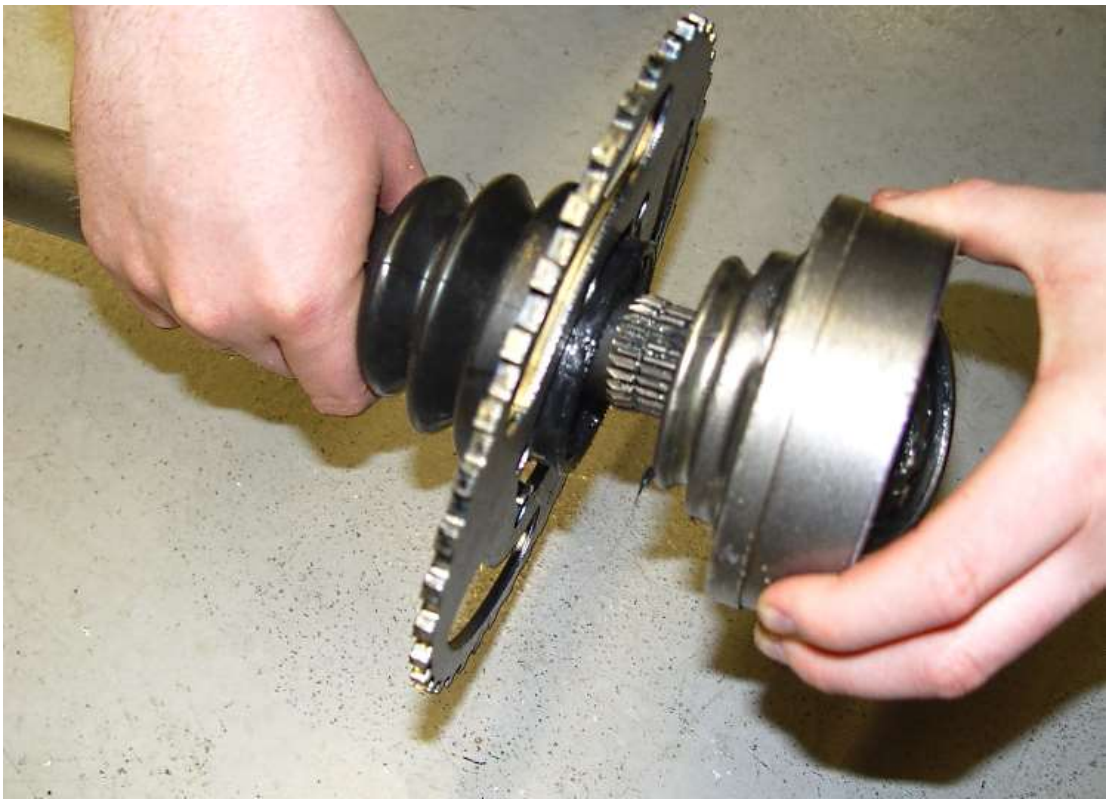
Using a hammer or soft mallet tap on the inner race of the CV joint until it slides off of the old axle shaft.

Locate the new axle shafts provided in the kit and slide CV boots with the small clamps down over each end. The Smaller Porsche CV boot fits over the end that necks down further than the other.

Attach the corvette CV joint to the new axle shaft and clamp the supplied boot (FFR# 25716) over the joint and axle.

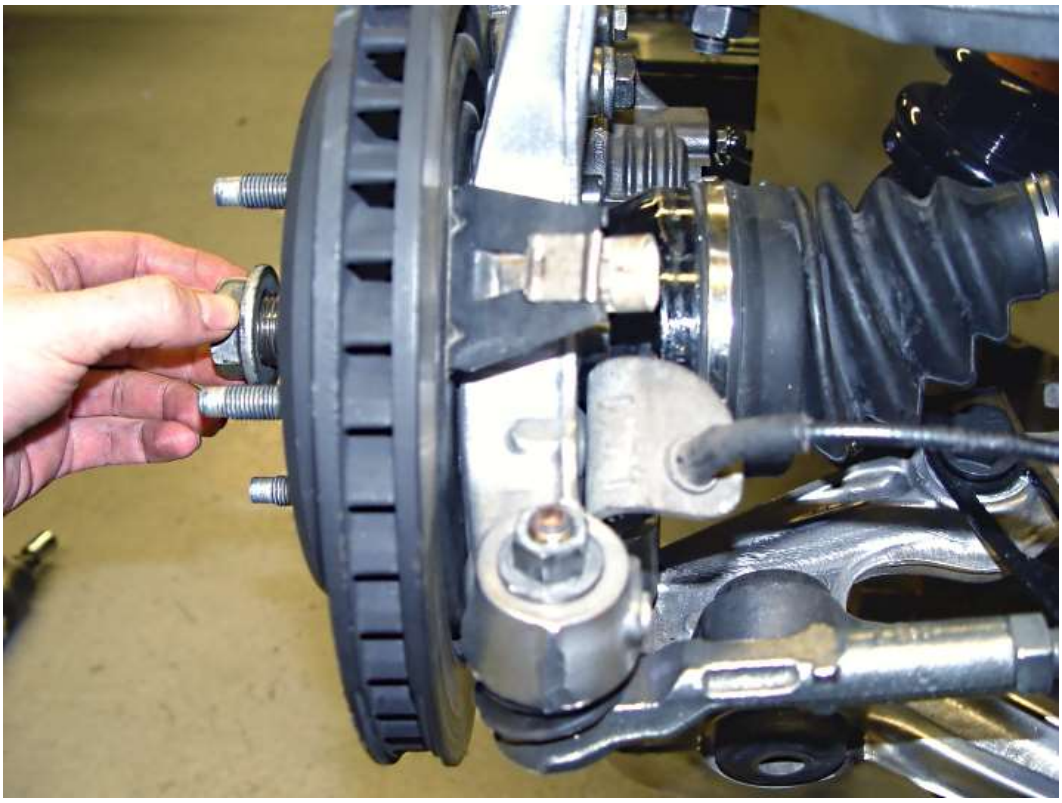
Speedometer Gear

If using a Mendeola Transaxle, skip this section.

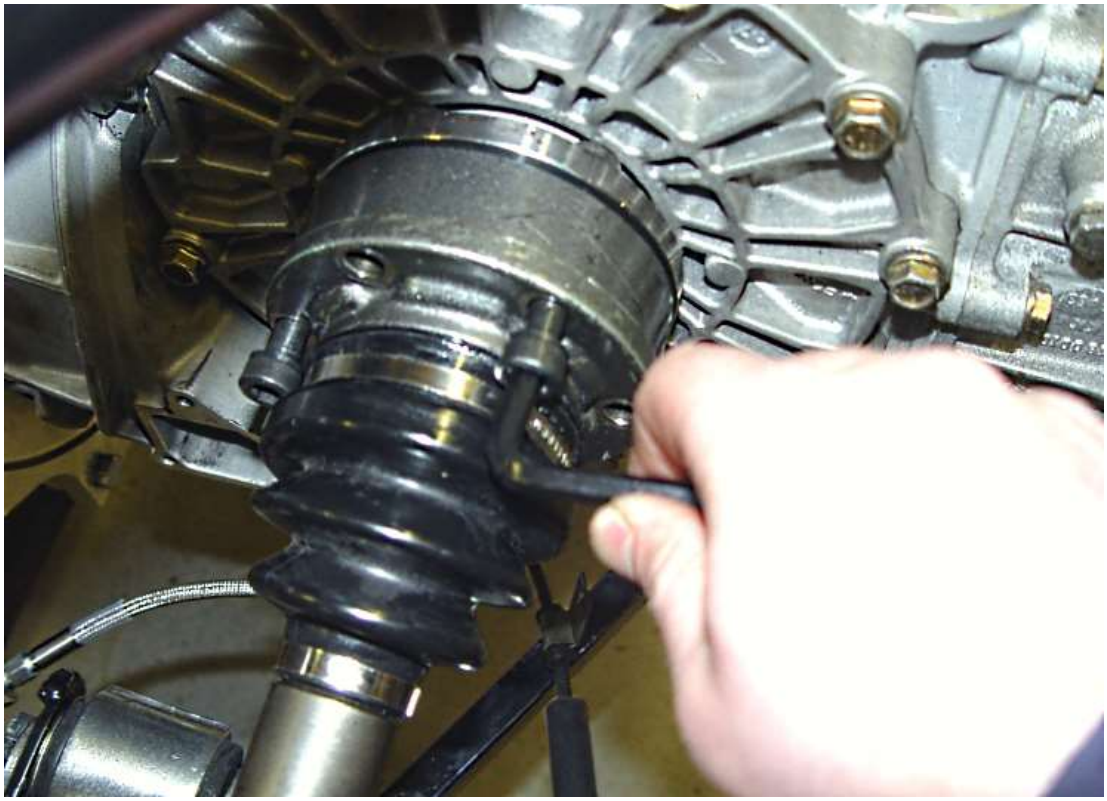


Slide the speedometer gear (FFR# 25149) over one of the axle shafts. Then on both shafts attach the inner CV joint and boot ring to the axle, and clamp the boot (FFR# 25715) in place.

CV Axle Install



Mount the axle assembly in the car by sliding the outer CV through the hub and re-installing the original axle nut (34 mm).

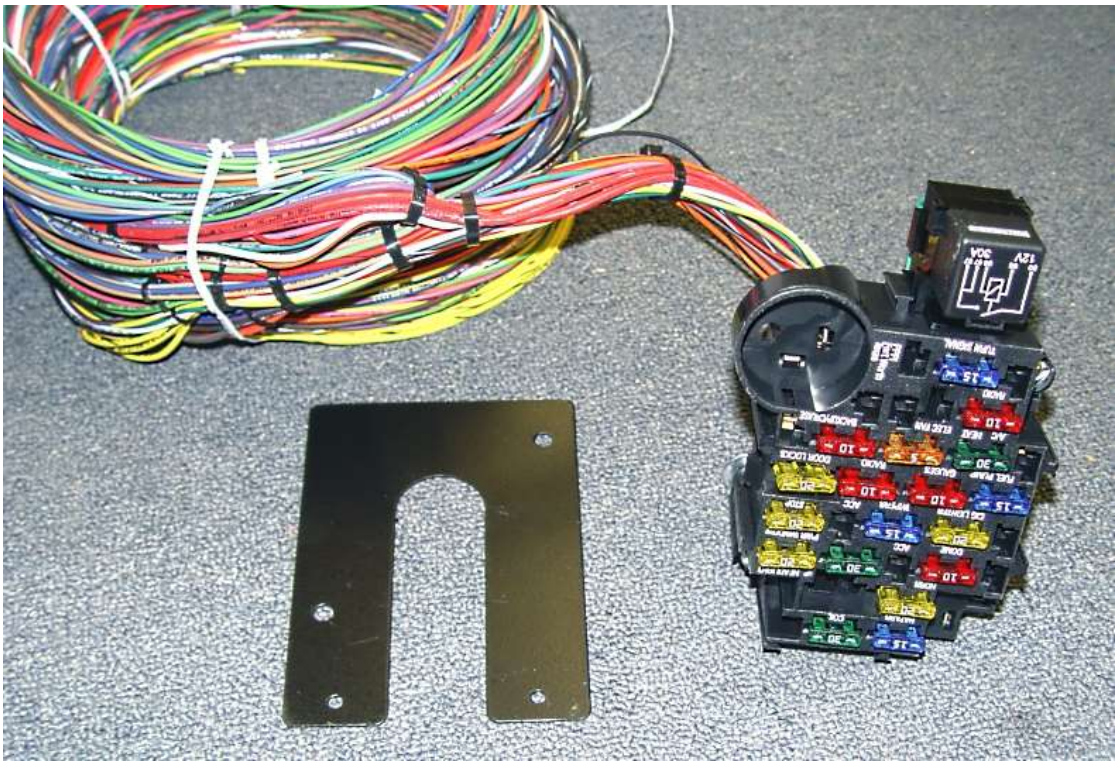


Attach the inner CV joints back to the transmission using the original hardware. The axle with the cog wheel mounts to the passenger side.

Chassis Wiring

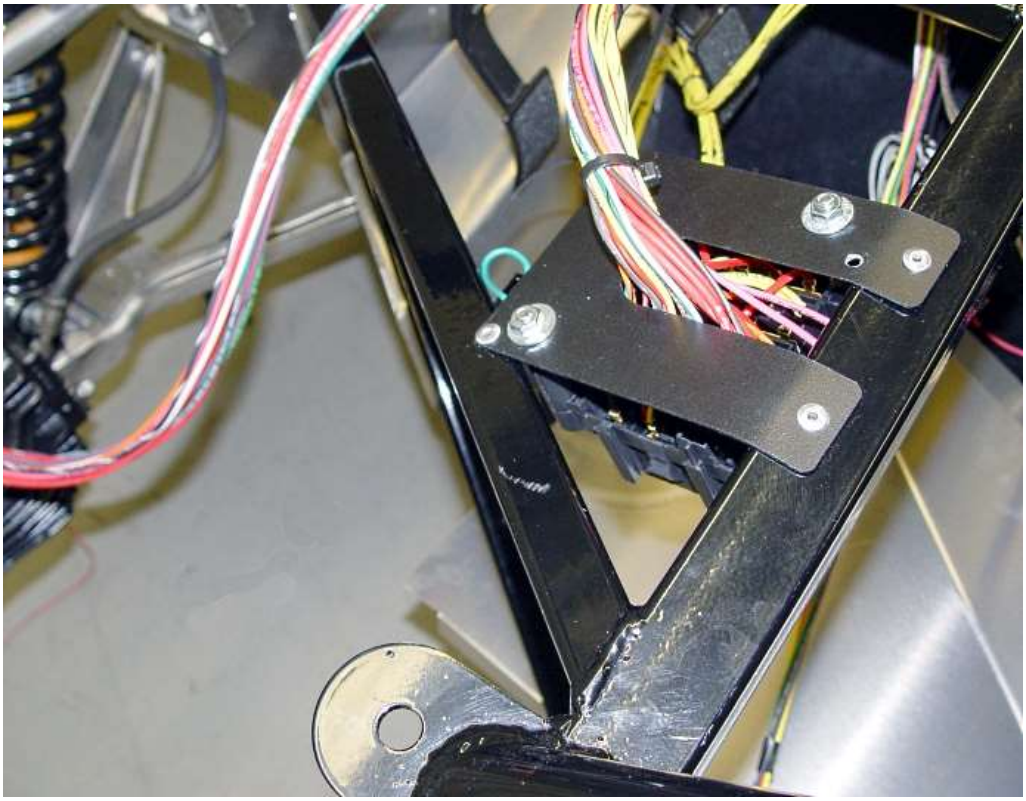
- 🛠 Electrical Tape, Wire Strippers, Wire Crimpers.
- 🚘 Prepared Donor wiring harness, 18 circuit Chassis Harness, Zip Ties, Flexible wiring loom.

Fuse Panel

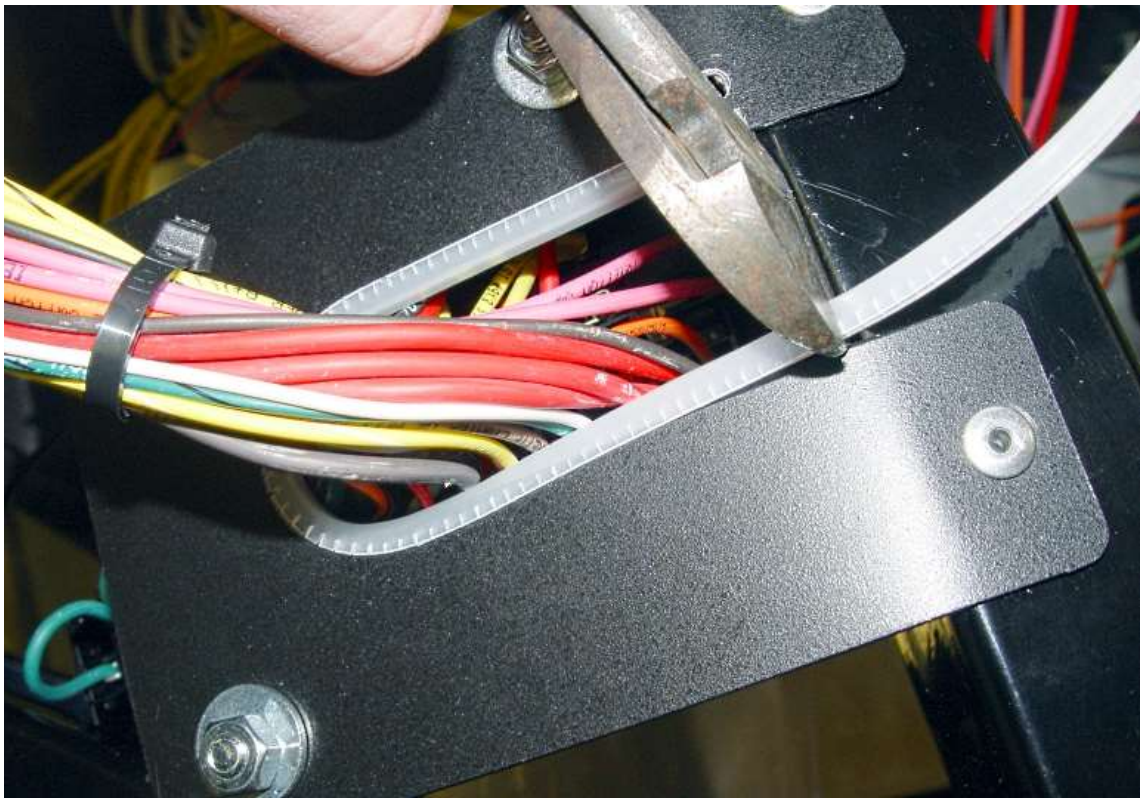


Remove the chassis harness from the box and find the mounting plate for the fuse panel.

Attach the fuse panel mounting plate to the fuse panel using the hardware provided. The open end of the plate should be away from the round flasher receptacle.

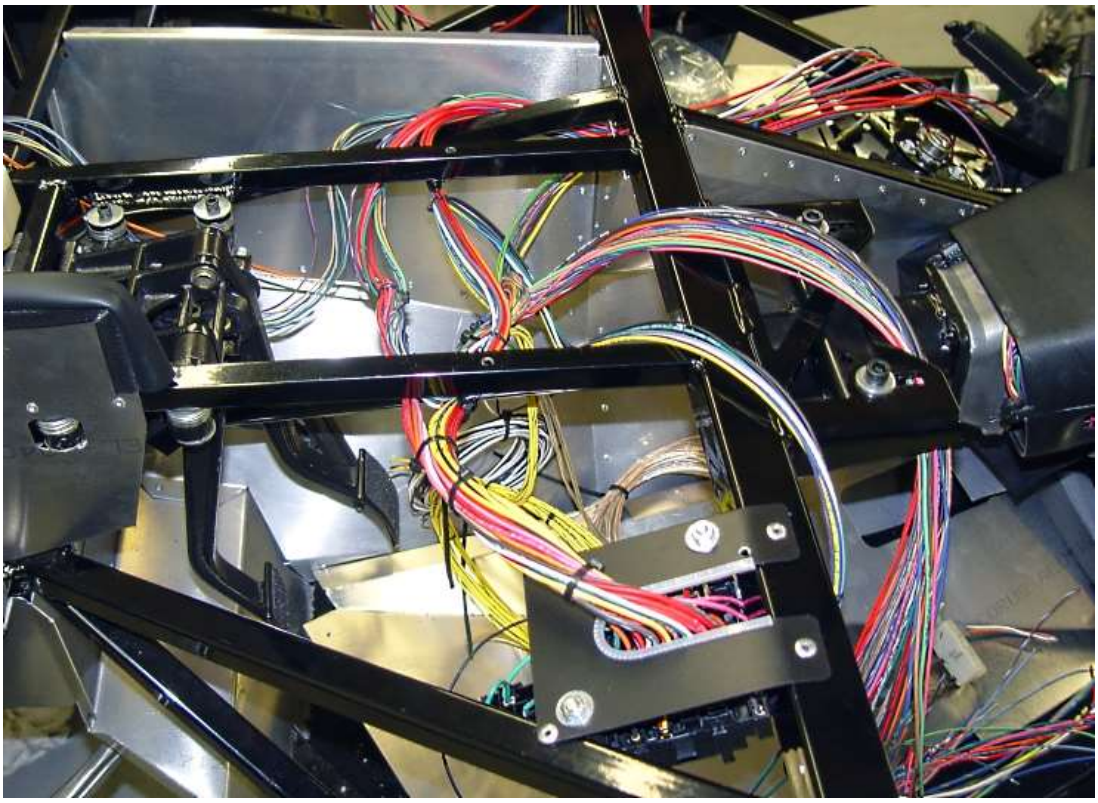


Mount the fuse panel to the chassis on the driver's side of the Dash Cross member using 3/16" rivets. Line the back corner of the mount panel up with the smaller side tube to support the back.



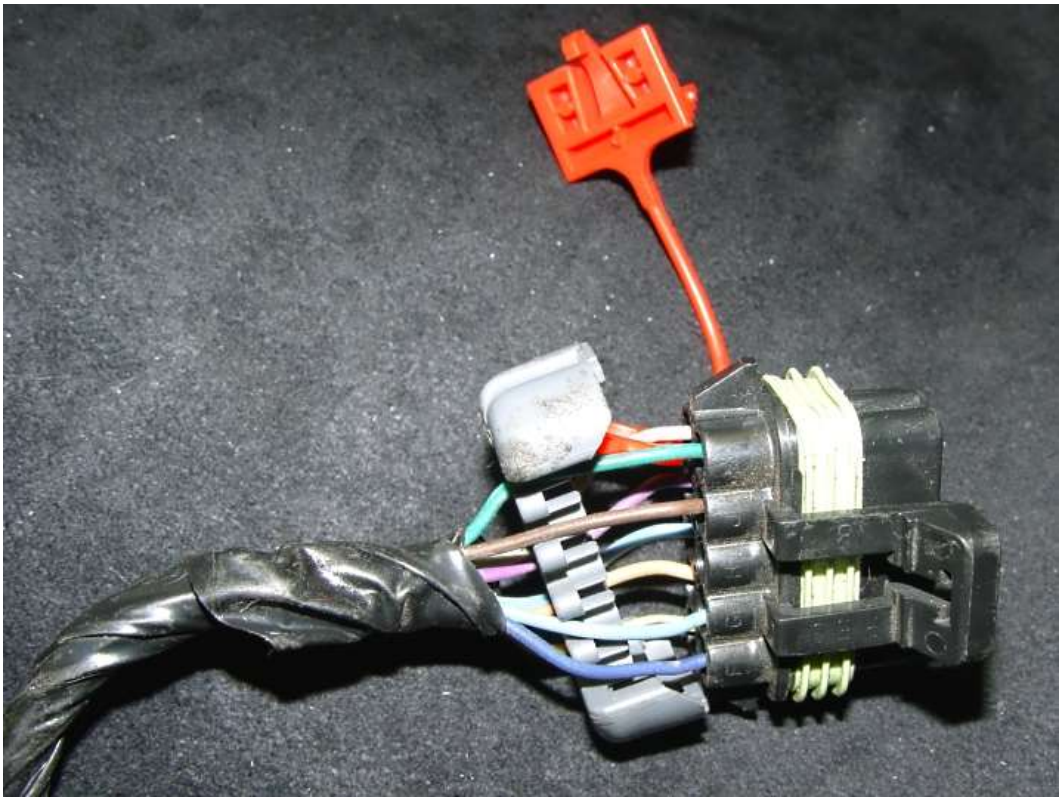
The fuse box mount panel has a fairly sharp edge and should be protected using the flexible serrated polyethylene grommet.

Main Harness Routing

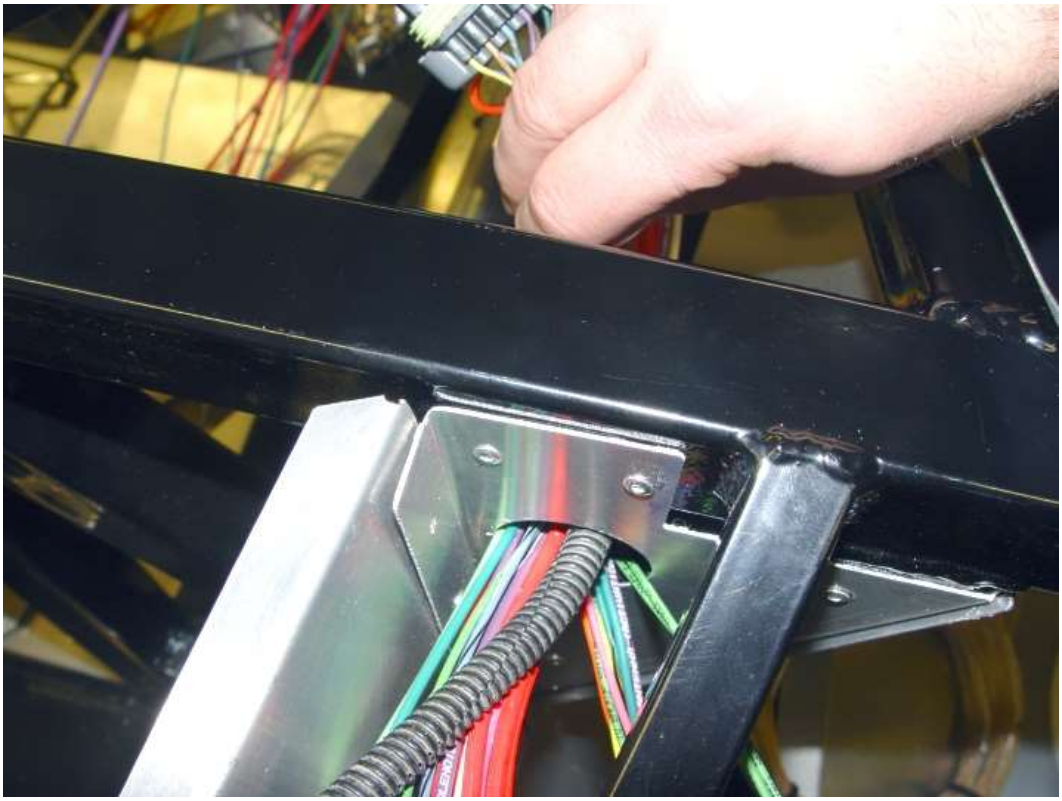


Separate the wires that stay in the cockpit behind the dash from the wires that exit the footbox into the tunnel. The wires that stay behind the dash include: gauges, stalk switchgear, dash indicator lights, brake light switch, and horn button.

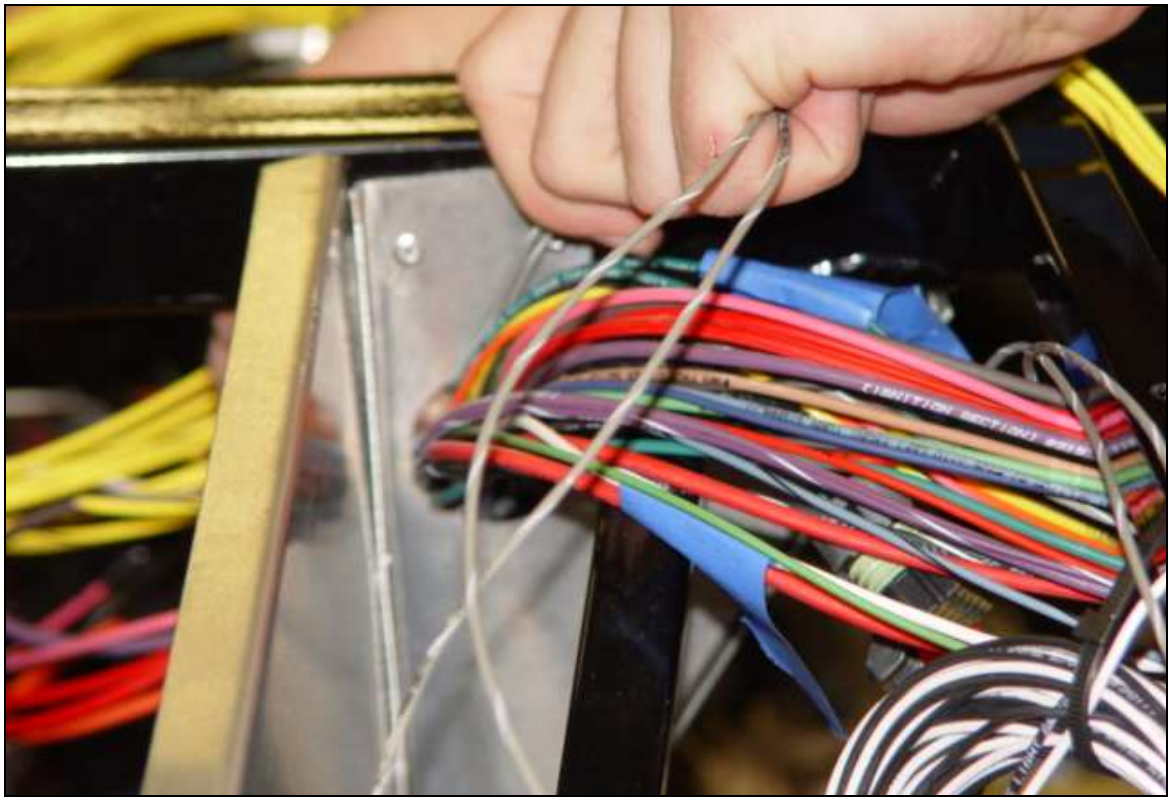
Route the sections of harness that run to the front and back of the car from the fuse box out into the tunnel through the hole next to the driver's knee. These wires must route under the tubes that support the pedal assembly. They include the headlights, taillights, engine controls and the ignition switch wires.



Locate the drive by wire harness that was separated from the donor harness and pull the gray plastic section back from the plug to allow it to pass through the tunnel wiring hole.

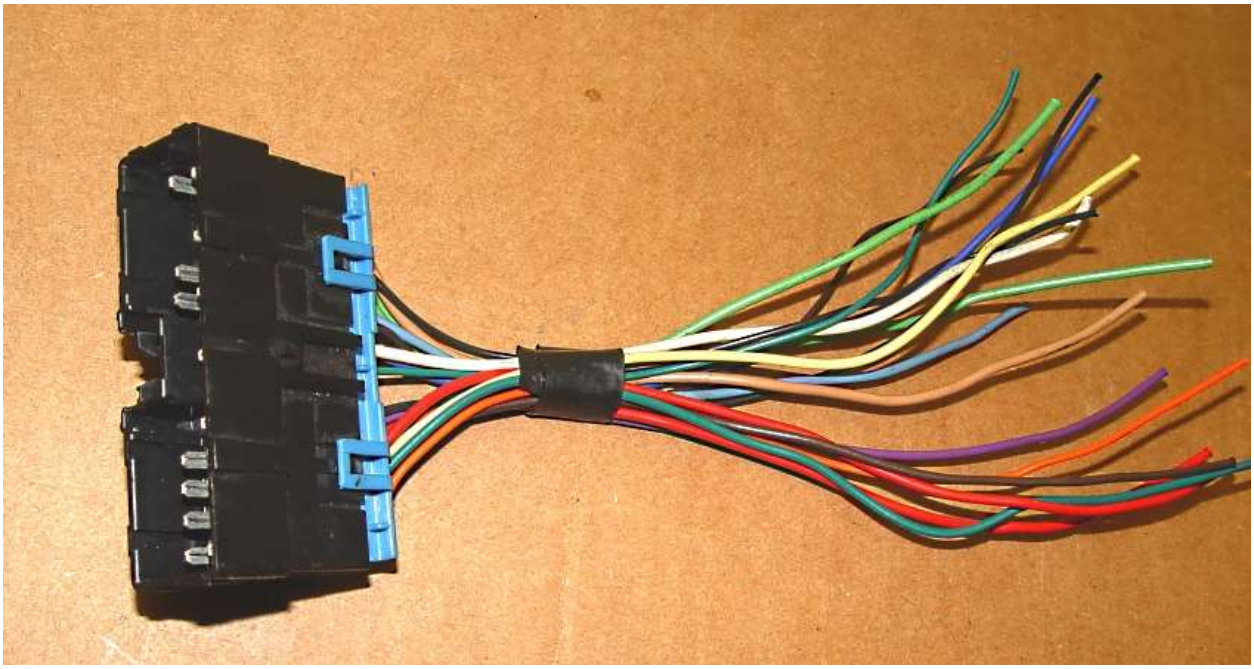


Pass the drive by wire plug (either end, they are symmetrical) through the pass through from the tunnel into the footbox.



Separate the two grey fan control wires from the dash section of the chassis harness and route them through the pass through with the other wires. These wires will be used for the fog lights as the fan is computer controlled.

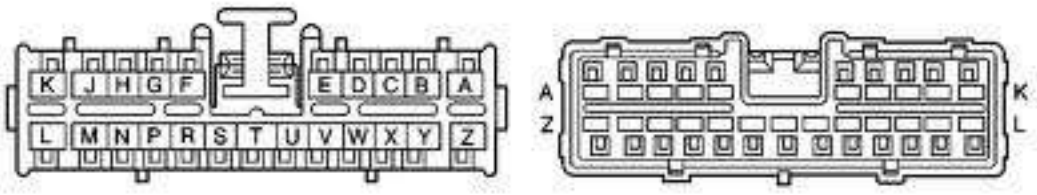
Steering column plug



Find the plug that was removed from the harness that attaches to the turn signal stalk/ headlight switch

- The wires from the turn signal section of the chassis harness need to be spliced into this plug to operate the turn signals and horn and lights. Most of these wires will match color wise between

the two harnesses. The wires on the corvette turn signal plug are labeled A-Z except that I, O, and Q are skipped. Do not wire in the headlights or parking lights yet. The letters correspond to the following circuit:



Pin letter	Pin Wire Color	Circuit	Painless Harness wires
A	White	Hazard light wire	Hazard switch
B	Dark Green*	Right Rear Turn Signal	925 and 948
C	Yellow*	Left Rear Turn Signal	926 and 949
D	Purple	Turn Signal Flasher	952
E	----	Not used	Not used
F	Dark Blue	Turn signal feed, RF	938
G	Light Blue	Turn signal feed, LF	937
H	Dark Blue	Backup lamp relay control	Not used
J	Black	Corner lamp feed, right	Not used
K	Light Green	Headlight High Beams	Relay and 936
L	Tan	Headlight Low Beams	Relay
M	----	Not used	
N	Black	Ground	Ground
P	----	Not used	Not used
R	Brown	Parking/Dash Lights	Relay
S	White	Headlamp switch, on	Not used
T	Dark green	Headlamp switch, off	Not used
U	Orange	Corner lamp feed, left	Not used
V	Black	Horn relay output	Black from painless horn relay
W	Red	Battery Positive	Red/black 928
X	Red	Battery Positive	Red/black 928
Y	Light Blue	Park lamp switch output	Not used
Z	Orange	Battery Positive	Orange 959

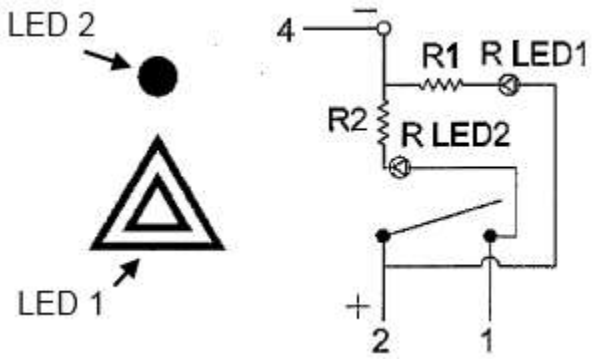
*The dark green and dark blue wires from the Painless harness need to be spliced into the dark green wire on the Corvette harness (Pin B). Similarly, the yellow and light blue wires from the Painless harness need to be spliced into the yellow wire of the Corvette harness (Pin C). These wires will allow proper function of the Hazard lights.

Two circuits from the chassis harness will not be used and should be taped off. The white brake switch to turn signal switch wire and the Blue/Yellow dimmer switch wire.

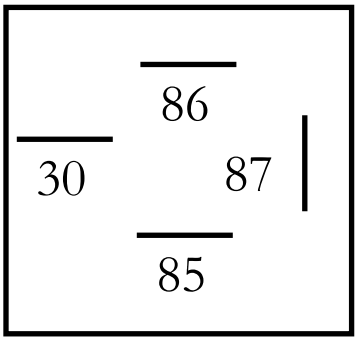
Hazard Wiring

Wire crimper, wire stripper
Dash components, misc. electrical

Strip and connect the wires to the switch connectors.
Connect the switch wires.



1 – Connect to Relay lead #86
2 - +12 volts from fuse panel #951
4 – Ground

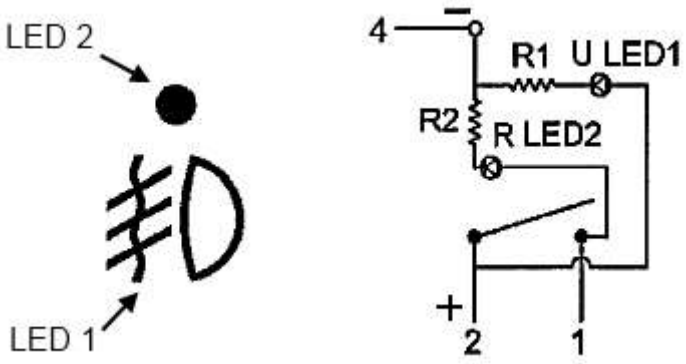


30 – +12V – BRN #951 from Fuse panel
85 – Ground
86 –+12V from switch (#2 above)
87 – To Pin A (Steering column)

Fog light wiring

🛠 Wire crimper, wire stripper
🚘 Dash components

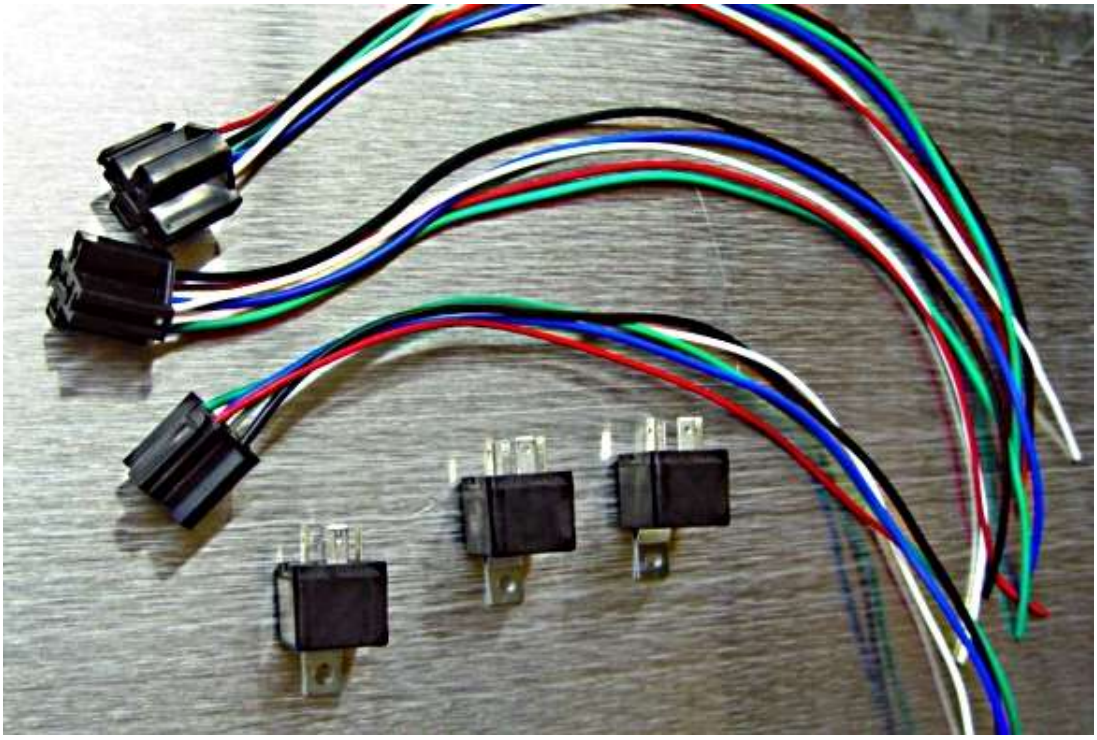
Strip and connect the wires to the switch connectors.
Connect the switch wires.

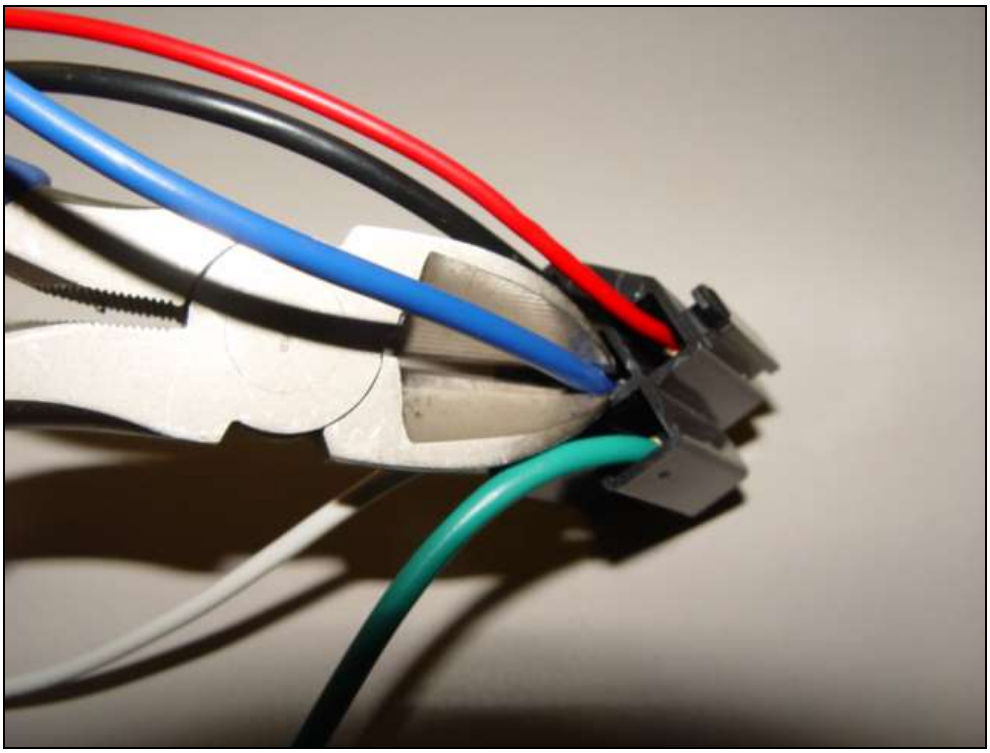


1 – Connect to fog lights.
2 - +12 volts from fuse panel (Painless #928)
4 – Ground

Headlight relays

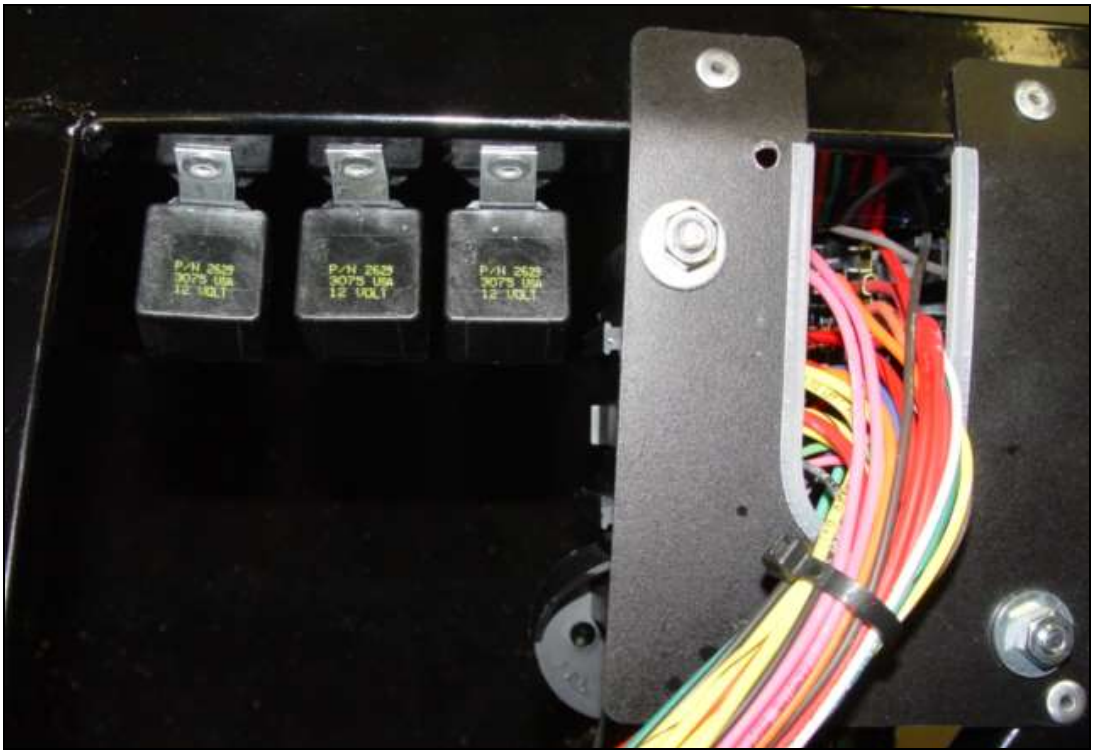
🚘 Misc. electrical components
🛠 Wire cutters, 3/16" drill bit, drill, wire crimper, wire stripper
✋ The headlights and parking lights require a relay so as not to overload the stock GM switch, three relays along with plugs and one ground screw are provided in the kit, separate from the chassis harness for this process.



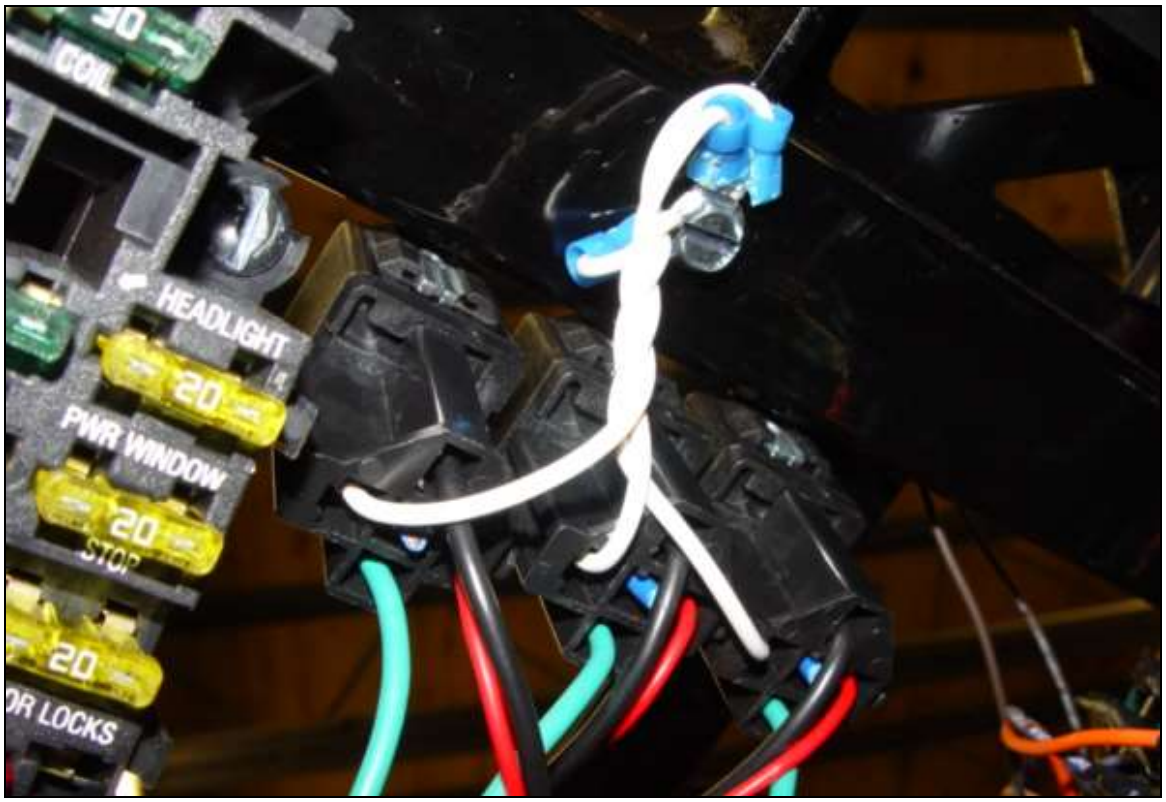


If on the plug, the middle (fifth) wire from the relay plugs is not used and can be cut right at the socket.

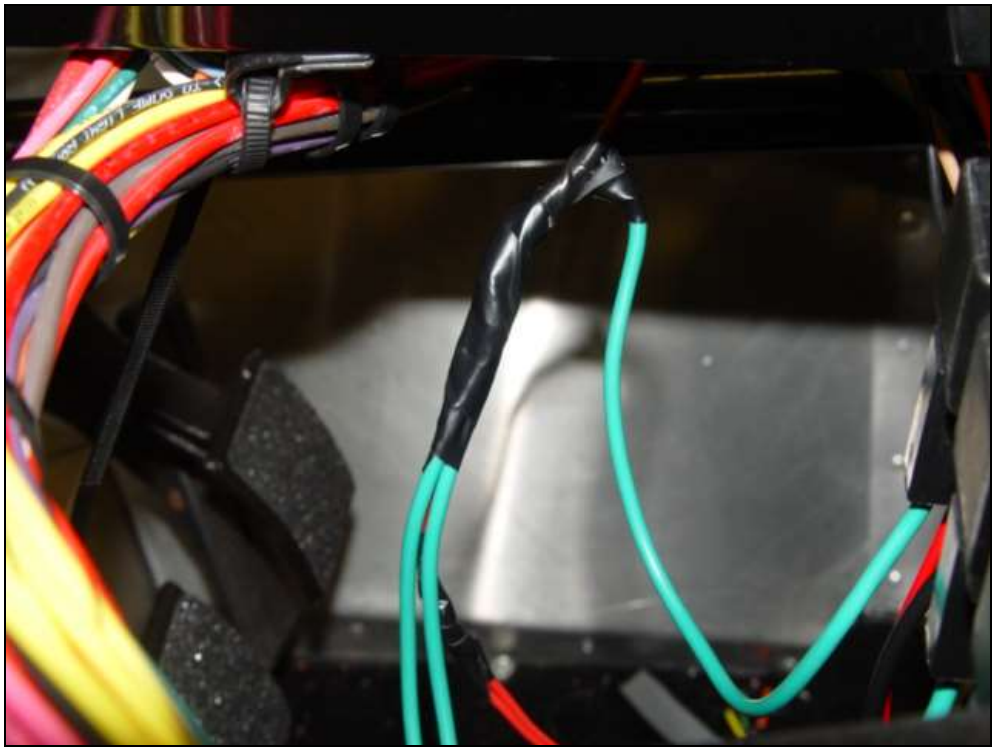
Crimp on a ring terminal (provided in the harness kit) on each of the relay plugs blue ground wire (circuit 85 on the relay).



Attach the relays to the chassis near the main fuse panel.

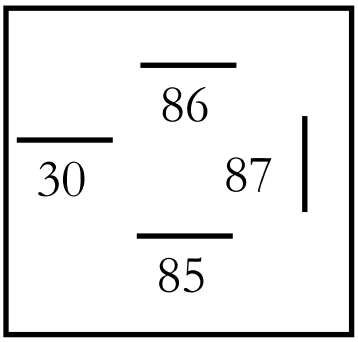


Ground the relays to the chassis using the #14 screw provided.



Constant power is wired into the relays from the same source that powers the light switch (Painless #928) into the red wire. (relay #87)

Hook the High Beam, Low Beam, and Parking lights up one through each relay, relay #86 on the socket goes to the switch side and relay #30 attaches to the chassis harness. It will be easier to trace any wiring later if you label the relay sockets as you hook them up.



High Beam

30 – (Painless #908)
85 – Ground
86 –+12V from switch (steering column K), Painless #936
87 – +12V – #928 from Fuse panel

Low Beam

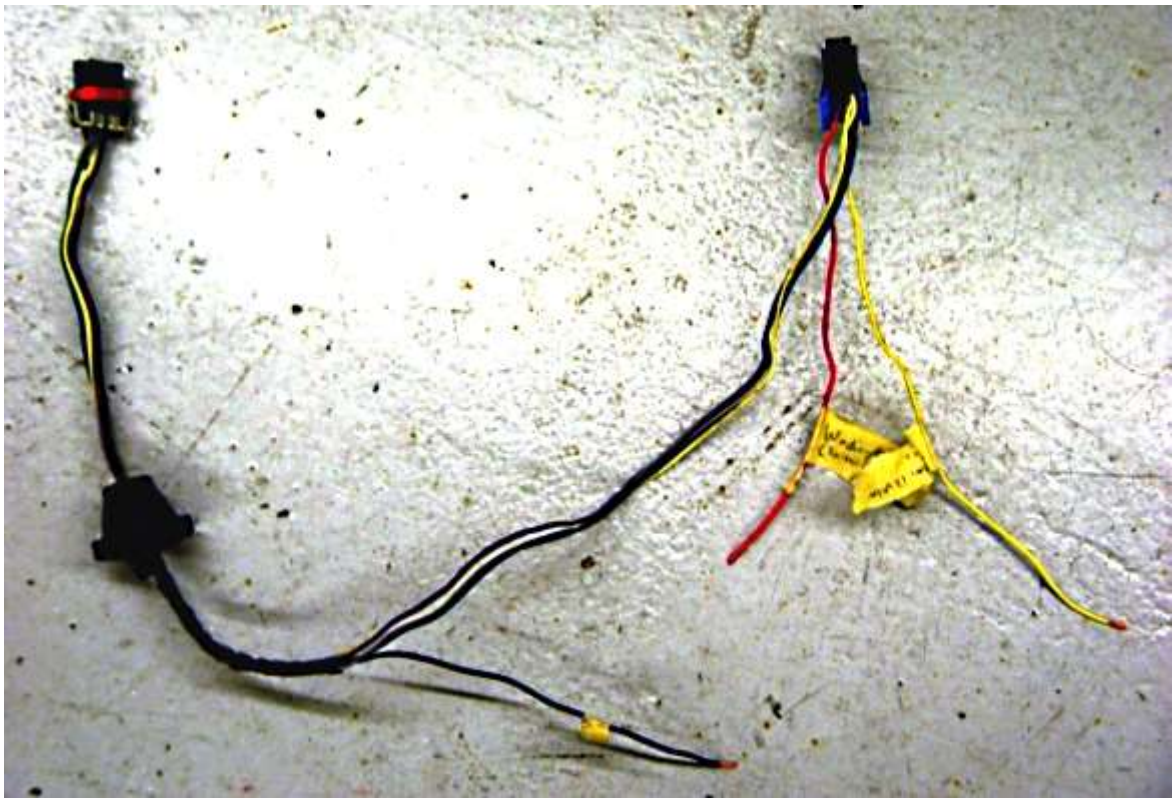
30 – (Painless #907)
85 – Ground
86 –+12V from switch (steering column L)

87 – +12V – #928 from Fuse panel

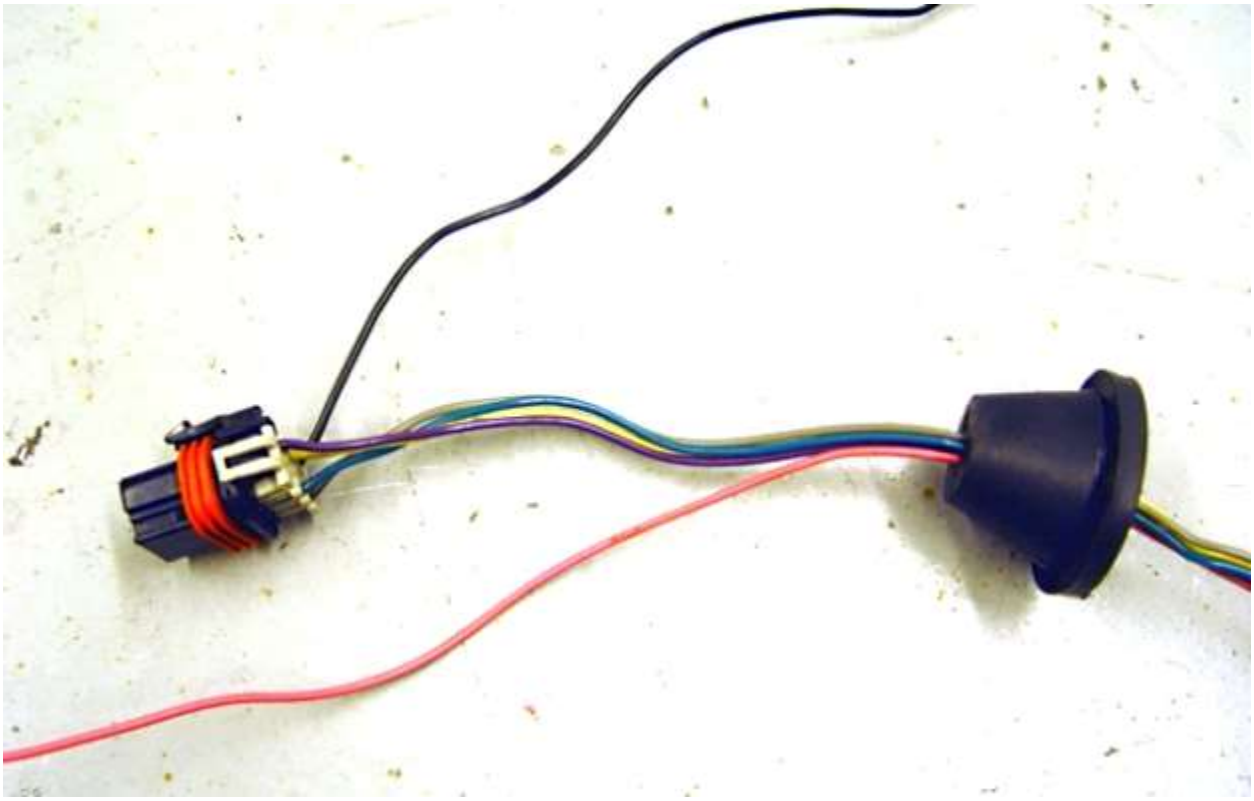
Parking Lights

30 – (Painless #927)
85 – Ground
86 –+12V from switch (steering column R)
87 – +12V – #928 from Fuse panel

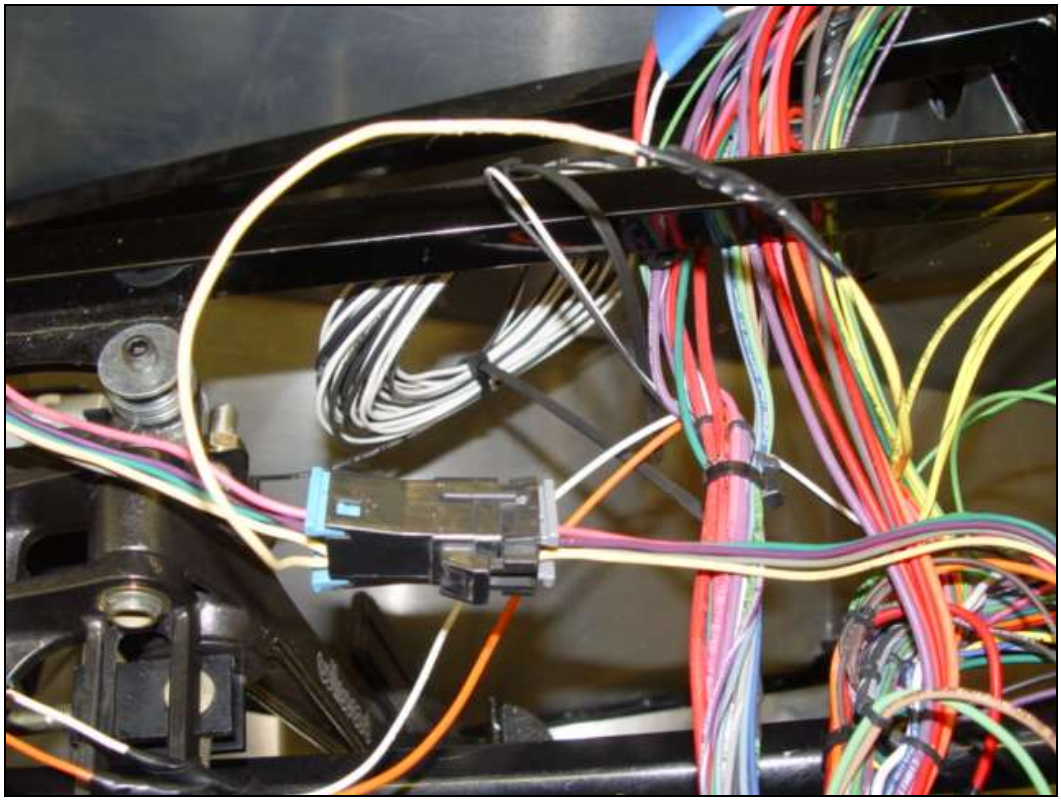
Windshield Wiper Harness



Locate the short windshield wiper harness that was removed from the Corvette. The rubber firewall plug should still be in place.



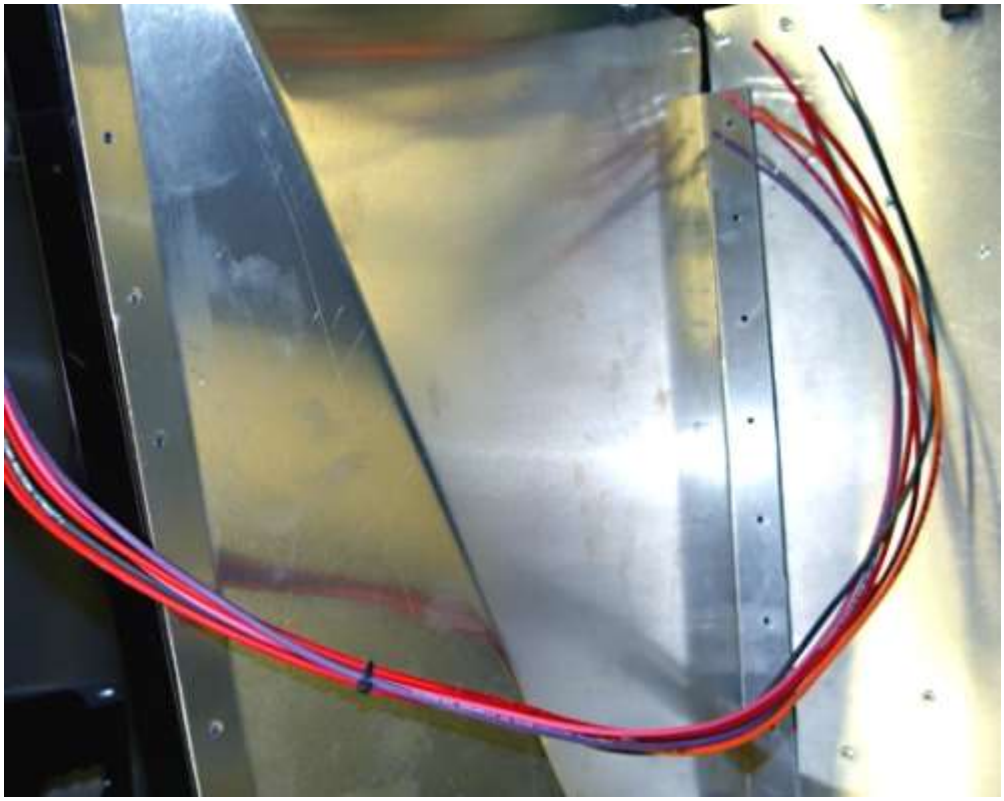
Remove a 3-4 foot section of pink wire from the remainder of the corvette harness. This wire is spliced into the pink wire on the wiper harness and then run through the firewall plug. Pull the free black ground wire back through the plug at the same time.



Plug the wiper harness into the column and stretch it out forward toward the radiator. The yellow wire that is hanging free is spliced into either side door lock power from the chassis harness.

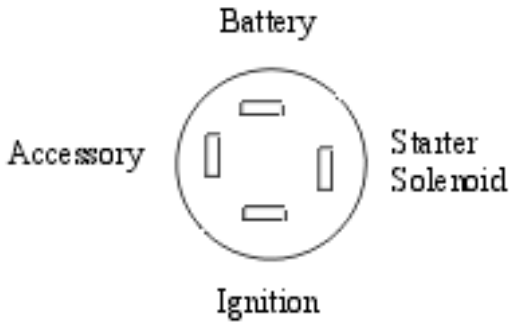
Cut the purple wire. This wire is the high speed setting on the wipers, which will cause the wiper arm to over extend past the windshield when going through its sweep if it is not disabled. The setting just below the top speed should be sufficient in heavy rain. (Shown with wiper motor/linkage already installed)

Ignition Switch

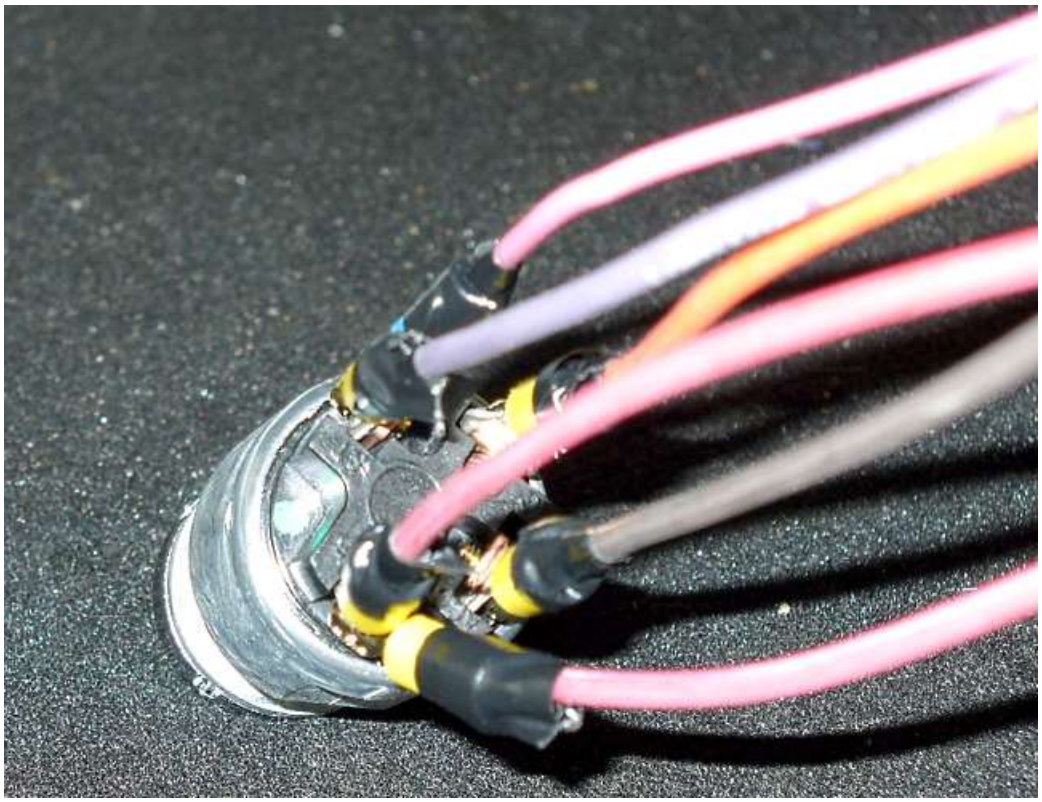


Locate the bundle of heavy gauge wires that attach to the ignition switch in the chassis harness.

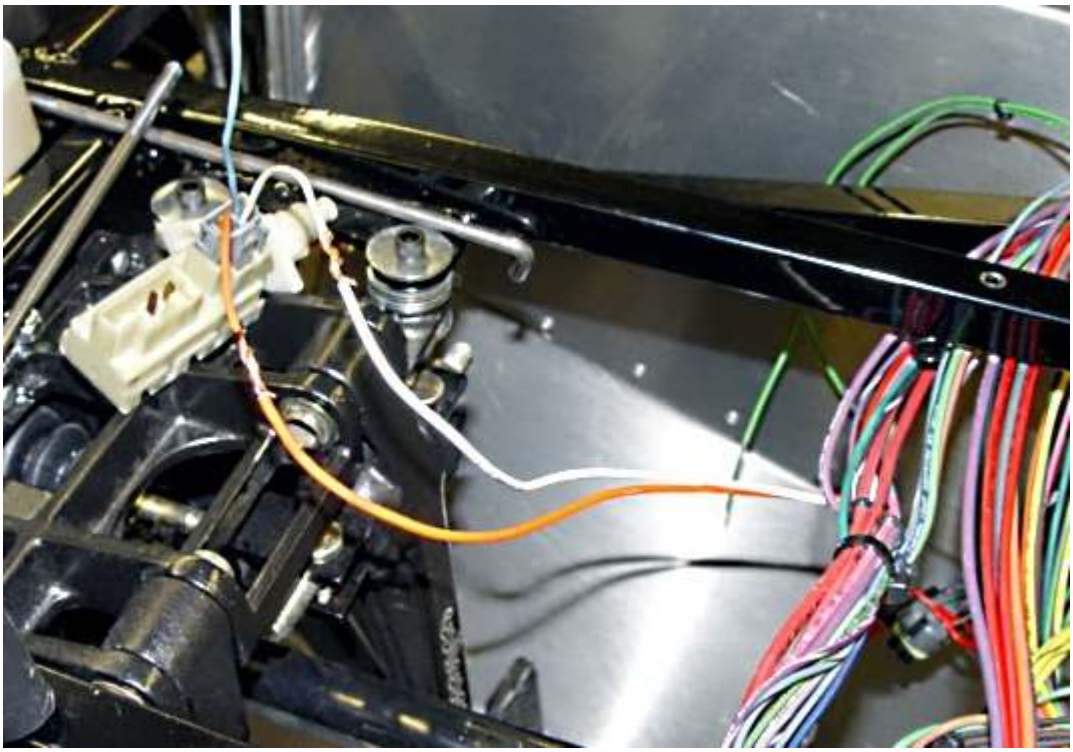
You can mount the ignition switch on the gauge face, on the center section of the dash etc. Although you won't be permanently mounting the switch now, this is a good time to determine the location in case you need to extend/shorten the wires before crimping the ring terminals on.
Once you determine the location you want to mount the ignition, you will have to drill a 1" hole with a hole saw to mount the ignition (through the dash face, dash center/center cover plate). We recommend mounting the ignition through the console cover plate/dash center section.
Crimp the supplied ring terminals onto the ignition wires in the chassis harness.



Terminal	Wire Color
Battery	Red
	Red
Starter Solenoid	Purple
Accessory	Brown
Ignition	Orange
	Pink

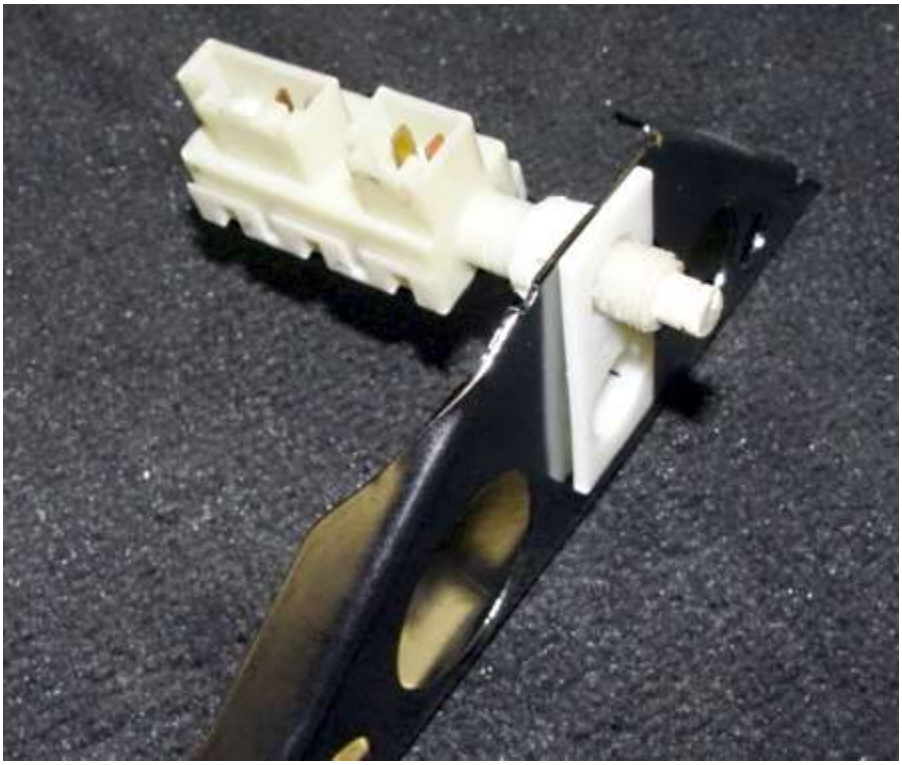


Brake Light Switch

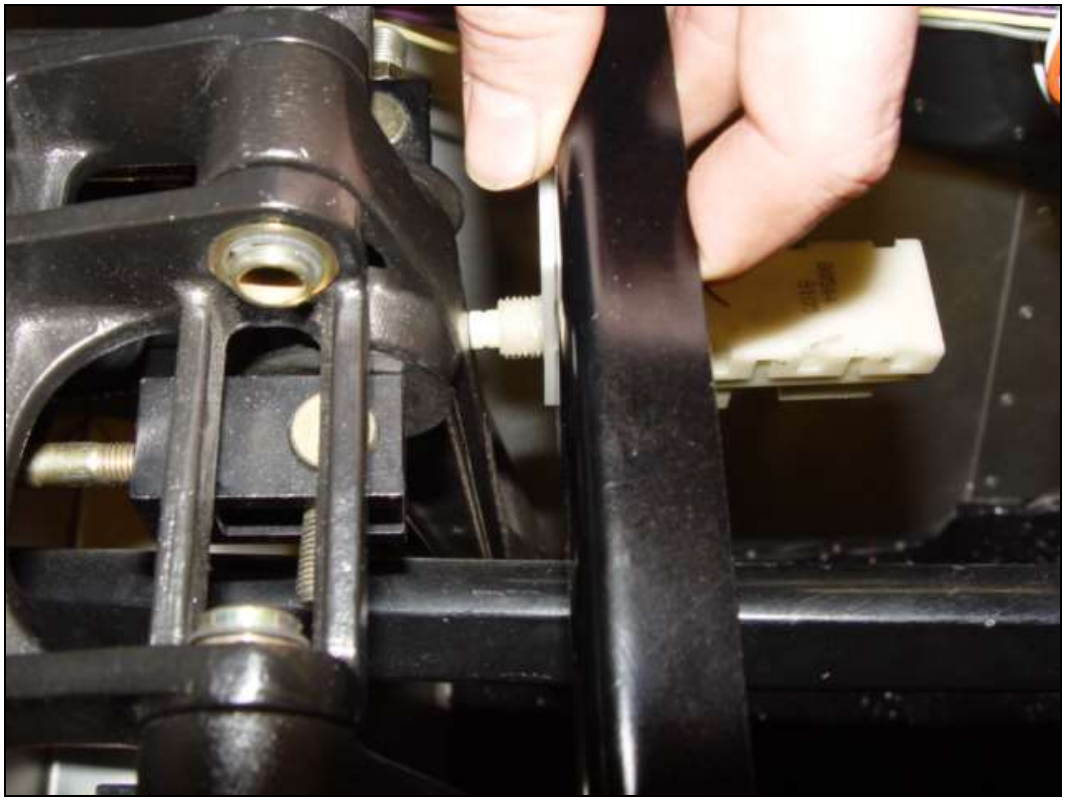


In the dash section of the chassis harness there is a brake light switch section. Splice the switch that was removed from the donor into the harness matching the wire colors white and orange, the third wire on the switch is not used.

Unscrew the two hole retainer from the brake light switch and pop it into place on the brake switch bracket.

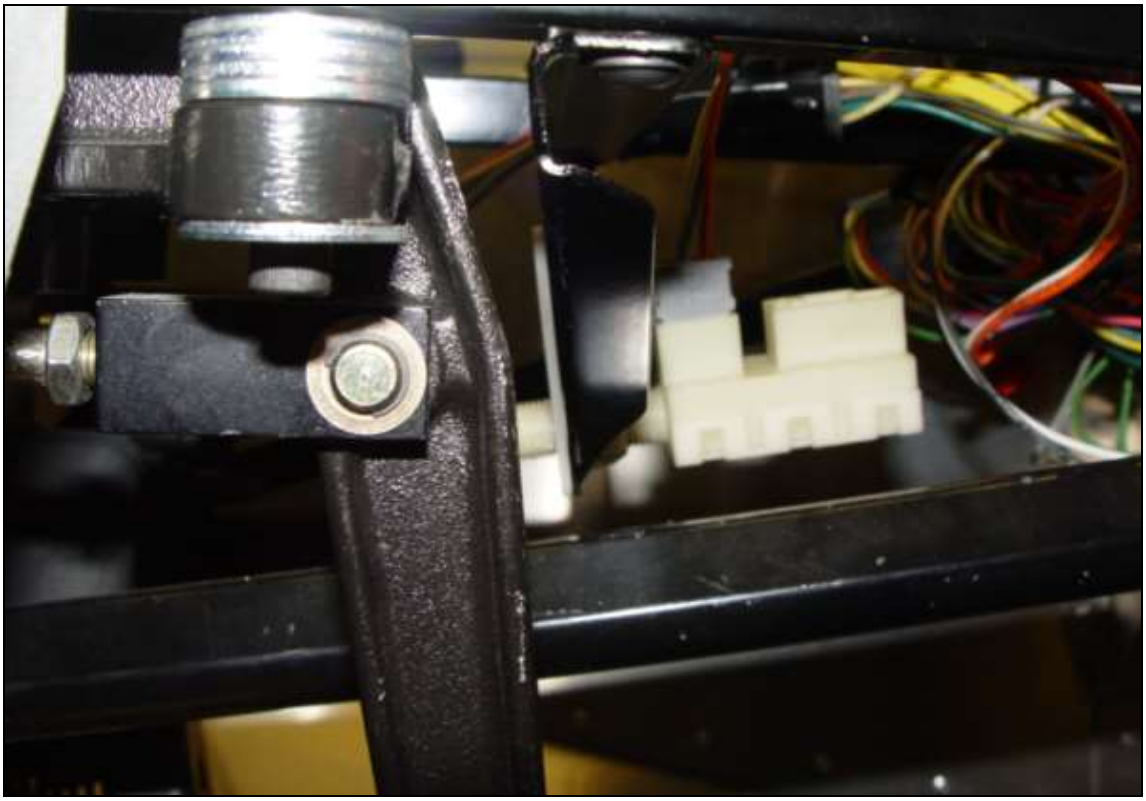


Thread the switch into the mounting bracket provided in the kit about half way to give adjustment in either direction.



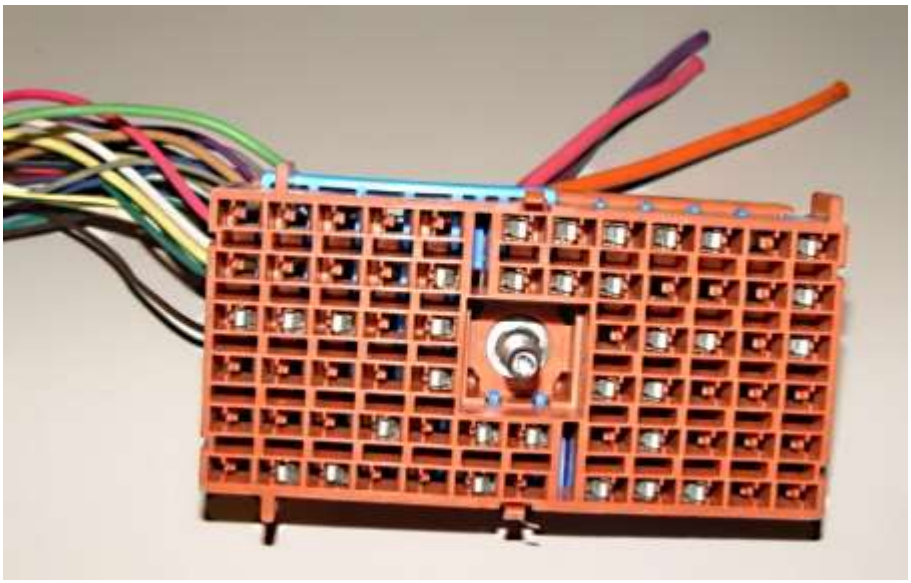
Line the bracket up in the car so that the pedal is pushing the switch in about half-way. The bracket mounts to the bottom of the tubes holding the pedal assembly. When the position is right mark for the holes on the bottom of the tube.

Drill the mounting holes out with a 25/64" drill bit and install a ¼"-20 rivnut in each hole.

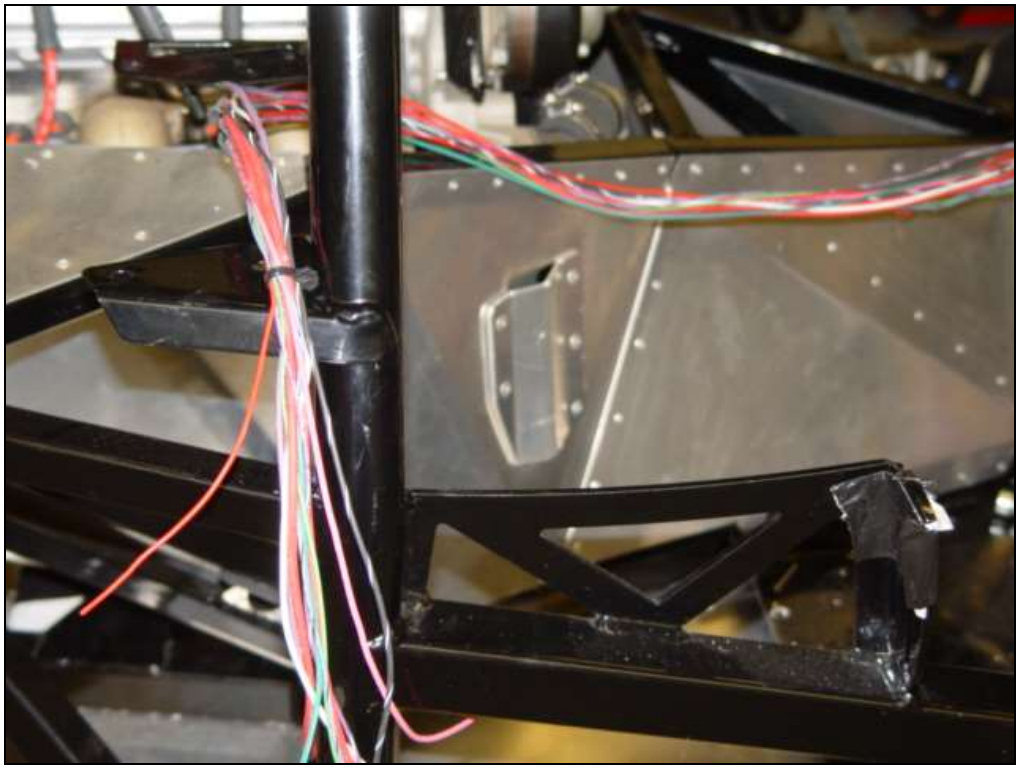


Attach the bracket top the chassis using two button head screws and plug the switch back in. If the switch needs adjustment unplug the plug before threading it in or out.

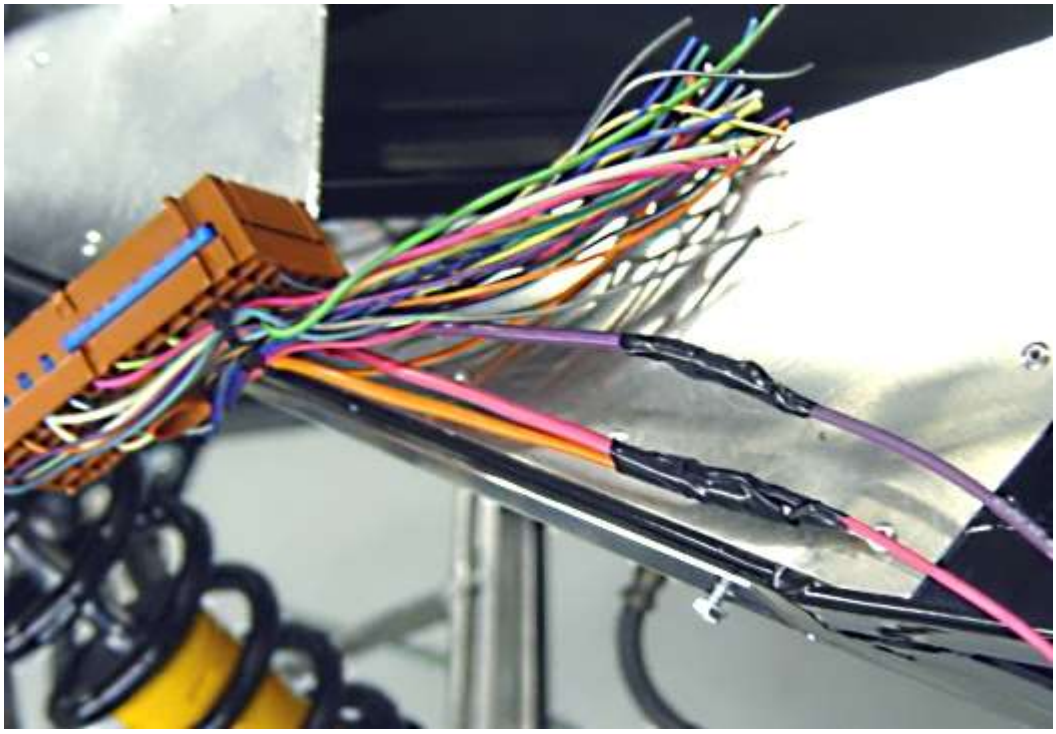
Engine Harness Fuse Panel Connection



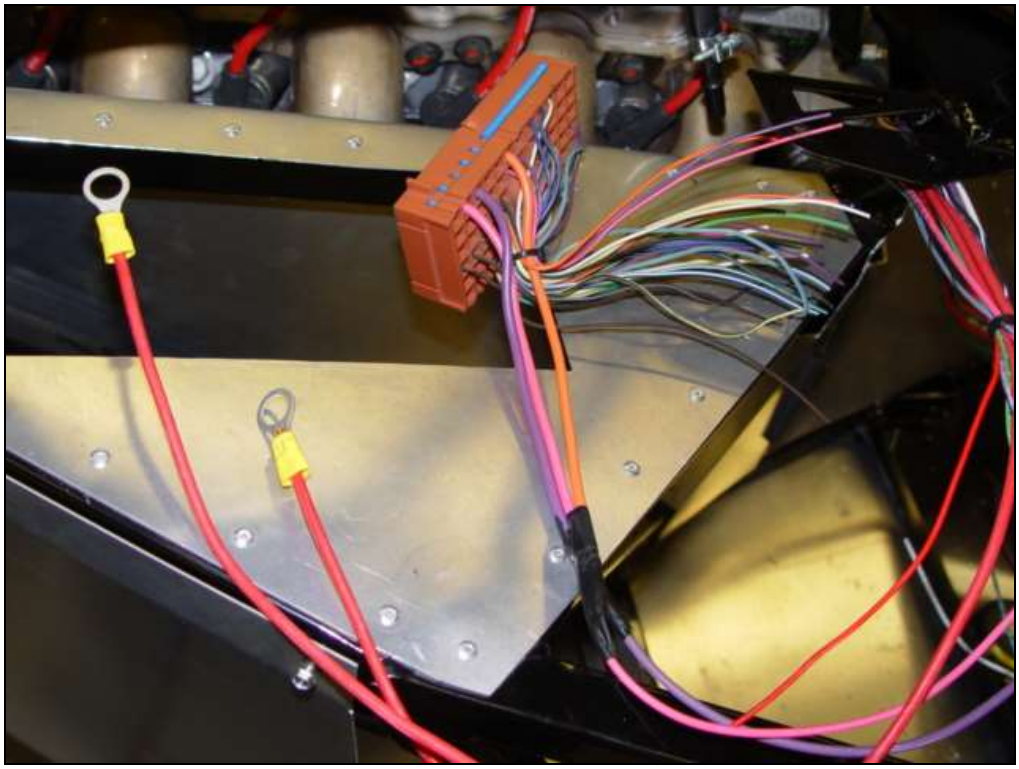
Locate the large center plug that attaches to the Corvette engine harness fuse box. It will have three heavy gauge wires, an orange, a purple, and a pink.



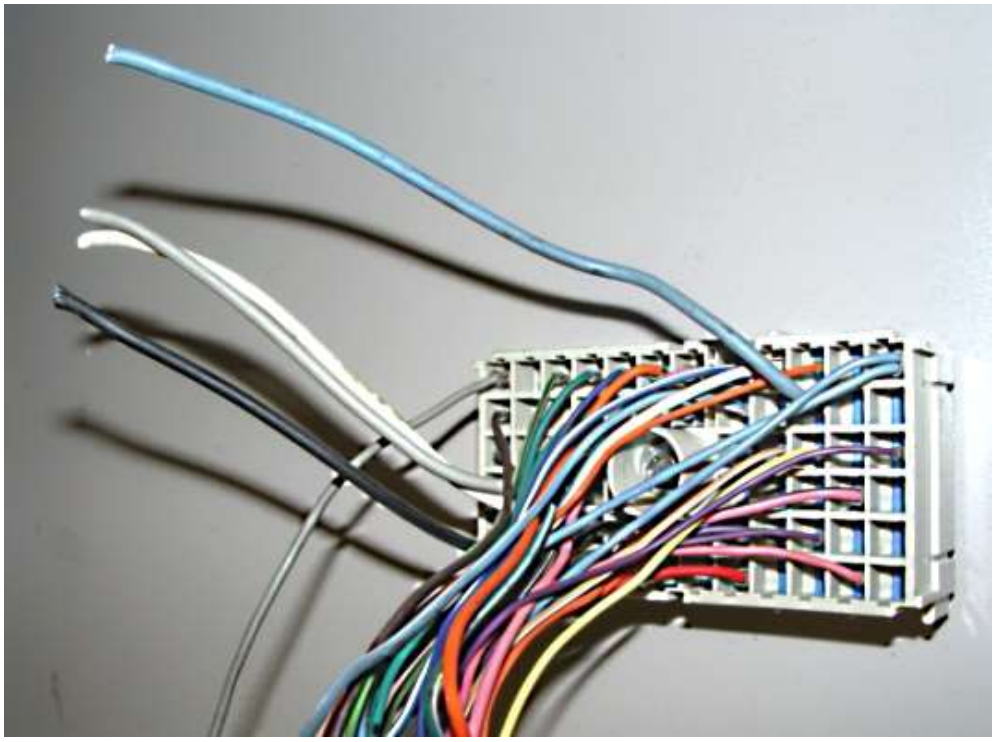
Locate the engine section of the chassis harness, it should be pulled through into the center tunnel and include the ignition, alternator and start wires along with some other wires. These wires should be long enough to stretch out next to the engine bay.



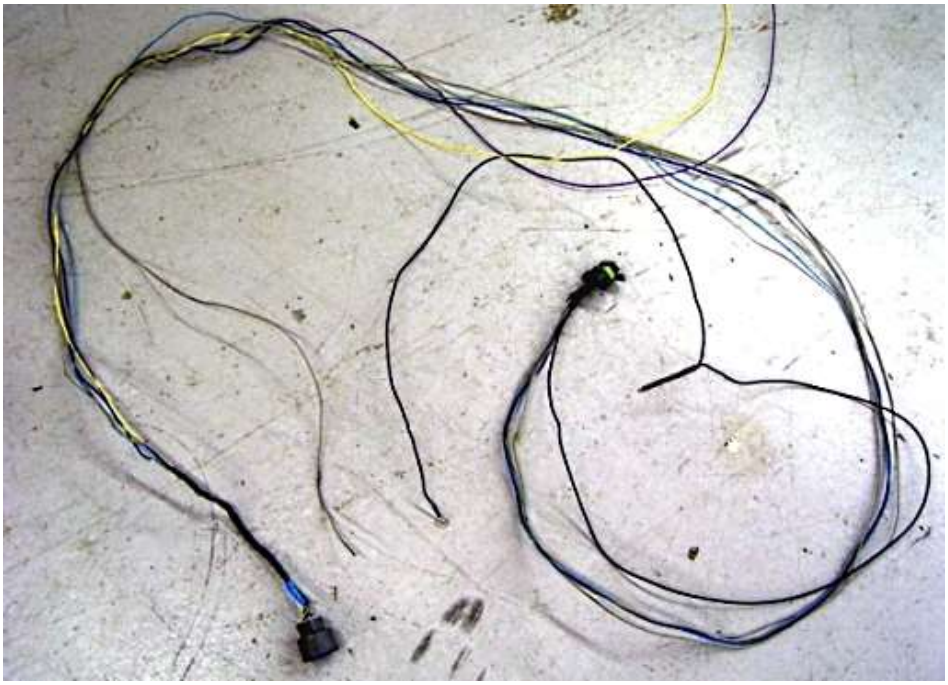
The fuse panel power wires attach from the large plug to the end of this section of harness. The purple start wire hooks to the heavy gauge purple wire on the plug and the pink ignition harness wire splices into the two heavy pink and orange wires on the plug. This section should be left as long as possible.



Crimp two of the large hoop connectors provided with the chassis harness onto the two heavy gauge red wires marked alternator and battery.



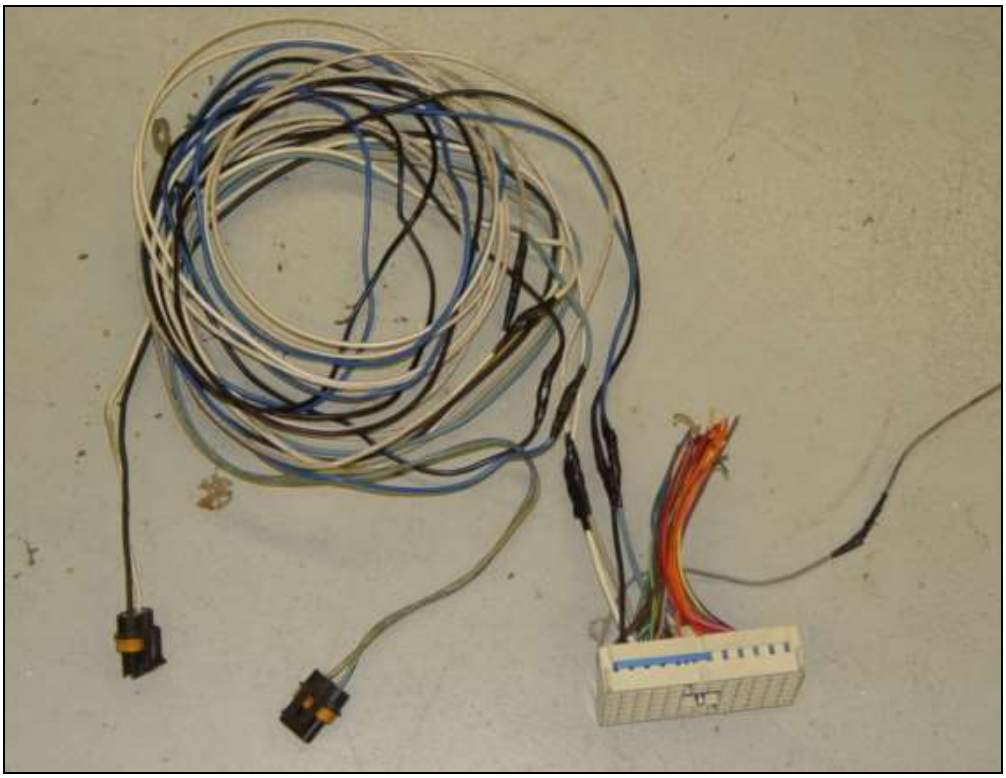
The final large plug on the underside of the Corvette fuse panel contains the circuit for the cooling fans as well as the fuel pump. It is recognizable by four heavy gauge wires, blue, white, grey, and black.



The fuel tank harness that was stripped earlier should have four loose wires, two for the vehicle speed sensor, a black ground, and one small grey wire for the fuel pump feed.

The small grey wire splices into a similar size grey wire on corner of the large fuse panel plug, the plug is marked on the back in a grid and this wire is at the A12 position. We have also wrapped the harness with electrical tape to make it more manageable.

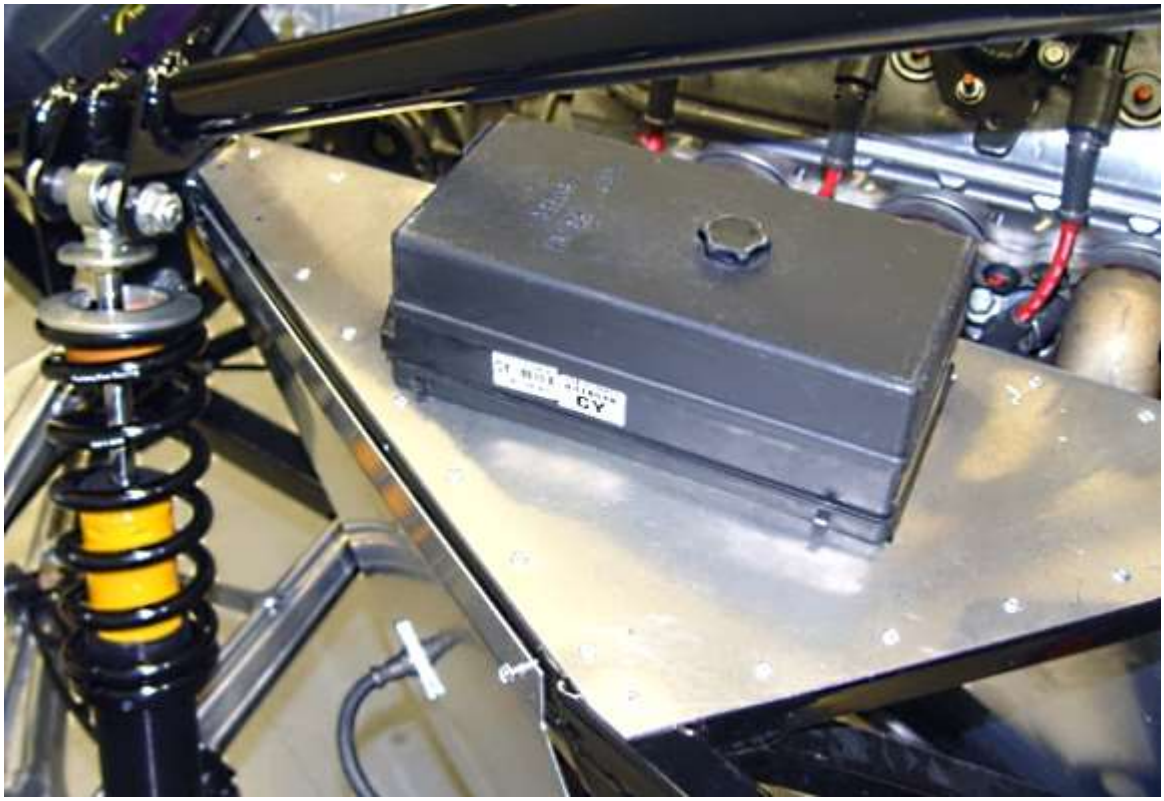
Fan wires



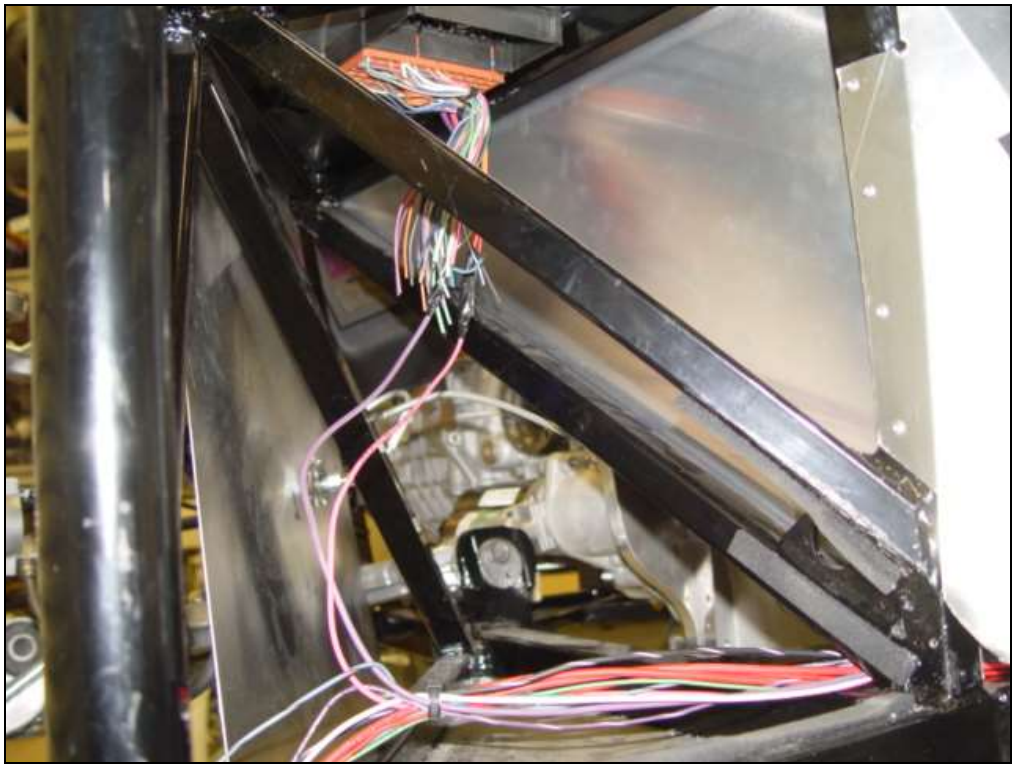
The fan wires need to be extended to reach to the fan plugs removed from the original Corvette harness. These are the heavy gauge wires in grid positions B3, D10, E10, and F11. The 14ga. wires are provided in the kit.

Wrap the fan harness in electrical tape from the plug down to the ground loop on the black fan wire.

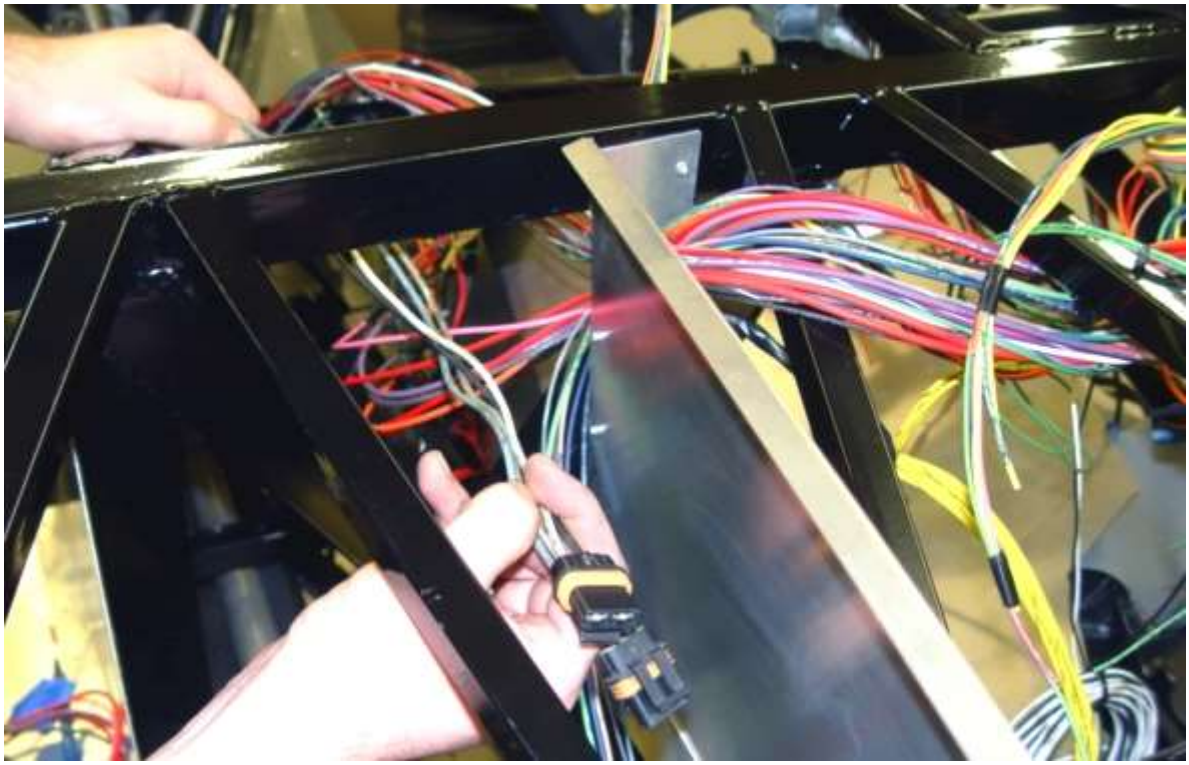
Fuse panel mounting



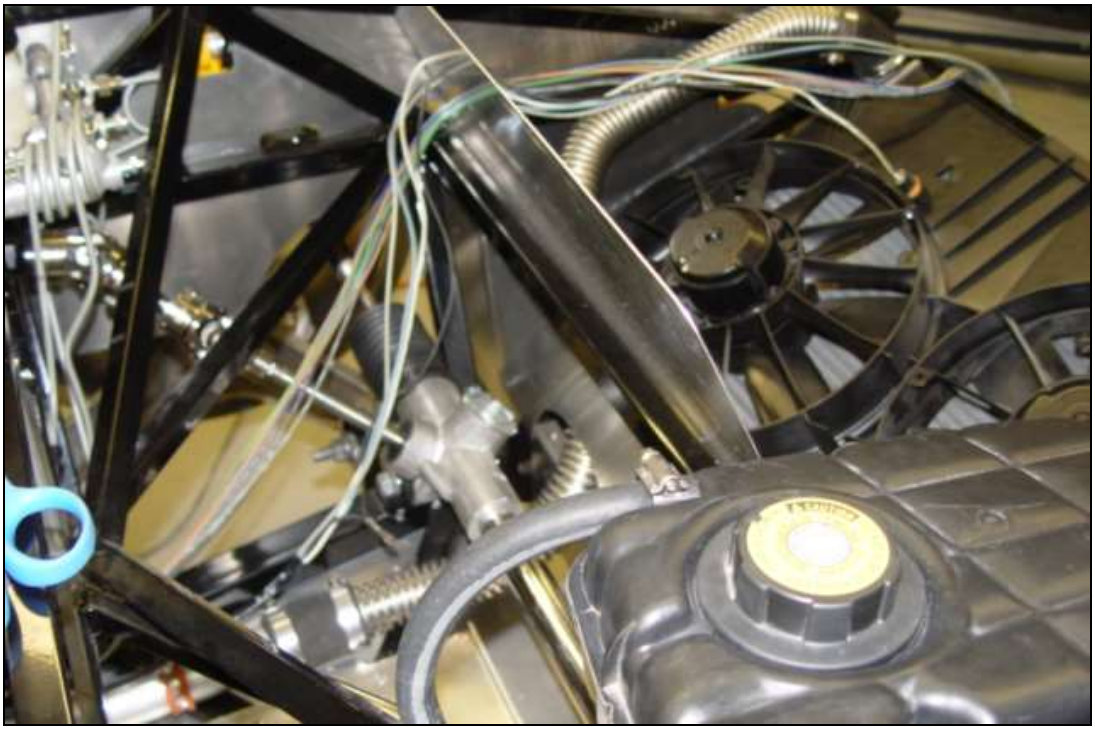
Sit the fuse box in place in the chassis with the terminal post toward the rear of the car.



Route the engine section of the chassis harness and spliced in fuse panel plug back through the tunnel and down low past the A/C compressor. Reach the plug up and plug it into the middle slot of the fuse panel.



Plug in the fan and fuel pump plug into the front slot of the fuse panel. Route only the four fan wires into the tunnel along side of the engine section of harness.



Continue Routing the fan harness toward the front of the car. The headlight harness routes along this same path from the tunnel forward then over to a pass through space on the drivers side behind the radiator.

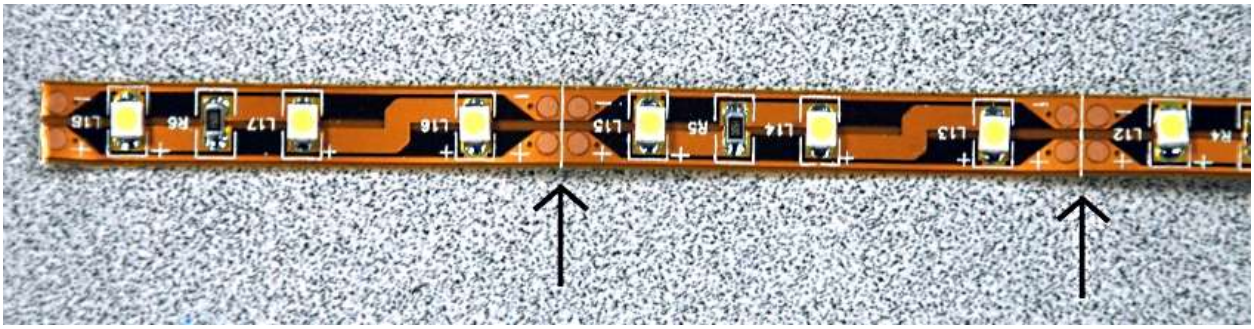
Drape the headlight wire over the radiator support for now and plug the fans into the harness. The left side fan wires are grey and blue and the right side are black and white.

UNDERDASH LIGHT

- The dash light provided can be cut into multiple pieces if lighting is desired in each footbox and under the dash.

How to cut the LED light strip

- If you choose to cut and spread the lights around, wires will need to be soldered to each piece to connect them in series.



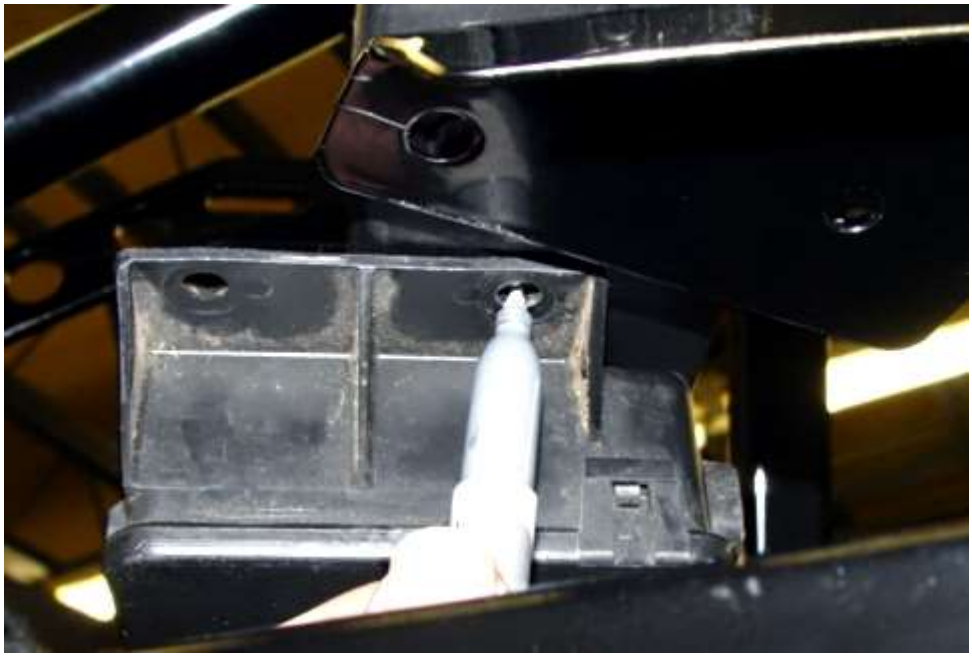
Wiring

Connect the power to a 12v source such as the electric choke if not using a carburetor.
Attach the ground wire to the headlight switch courtesy light ground wire.

Bracket Mount

Find the computer mounting bracket and hardware from the Corvette and computer bracket to frame mounting hardware in the kit.

Temporarily mount the lower bracket to the frame using two of the provided screws.



The Tach module will be mounted to the underside of this bracket using two of the three mounting holes with the plugs pointing toward the front of the car. Hold it in this position clear of the bracket and trace the holes for drilling.

Remove the bracket and drill the two holes using a ¼" drill bit.

Remove two of the screw clips from the top half of the computer bracket.

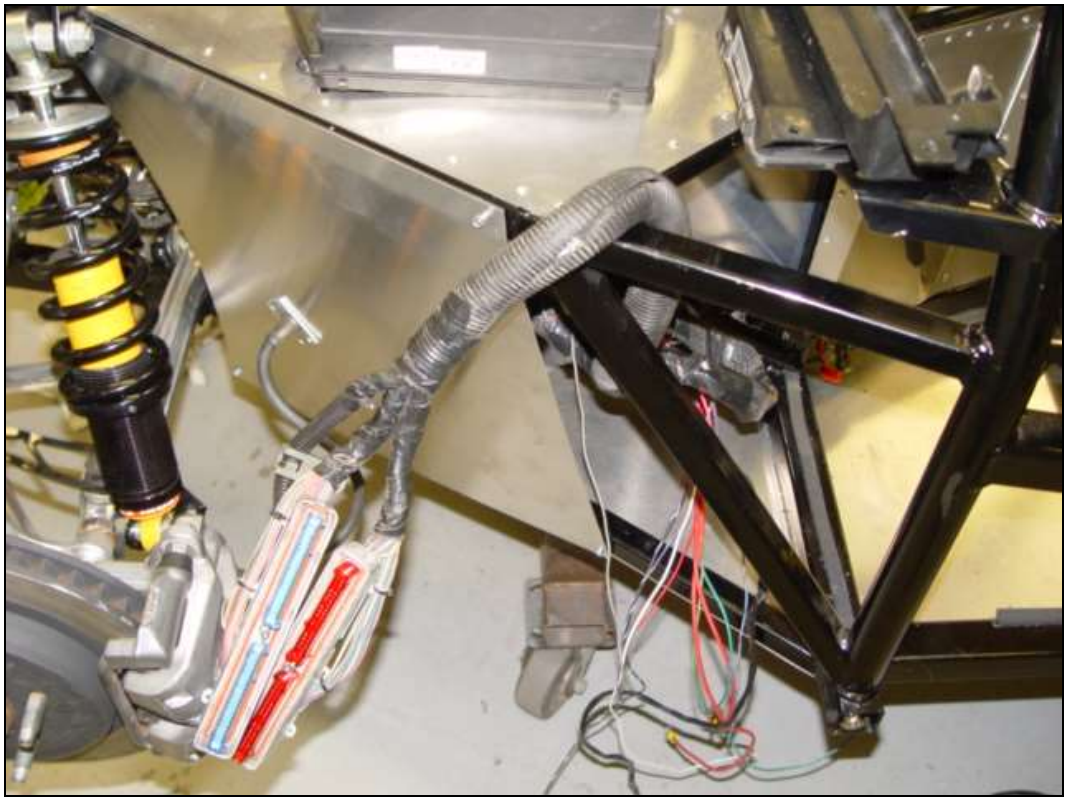
These clips are now attached to the throttle control module tabs.

Attach the throttle control module to the lower computer bracket using the original hardware and a 7mm socket or driver.

Bolt the bracket and module into the frame using the four button head screws.

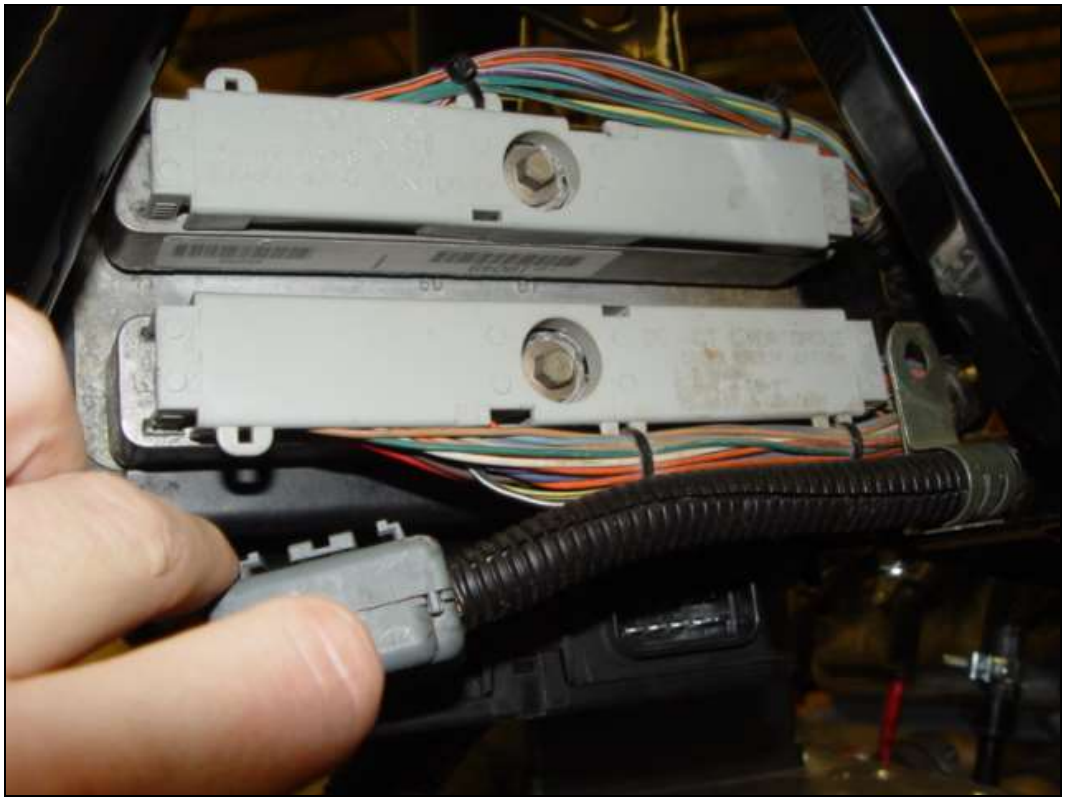
Computer

Rest the engine harness roughly into position over the top of the engine. Route the fuse panel, computer, and plug in the large fuse panel plug.

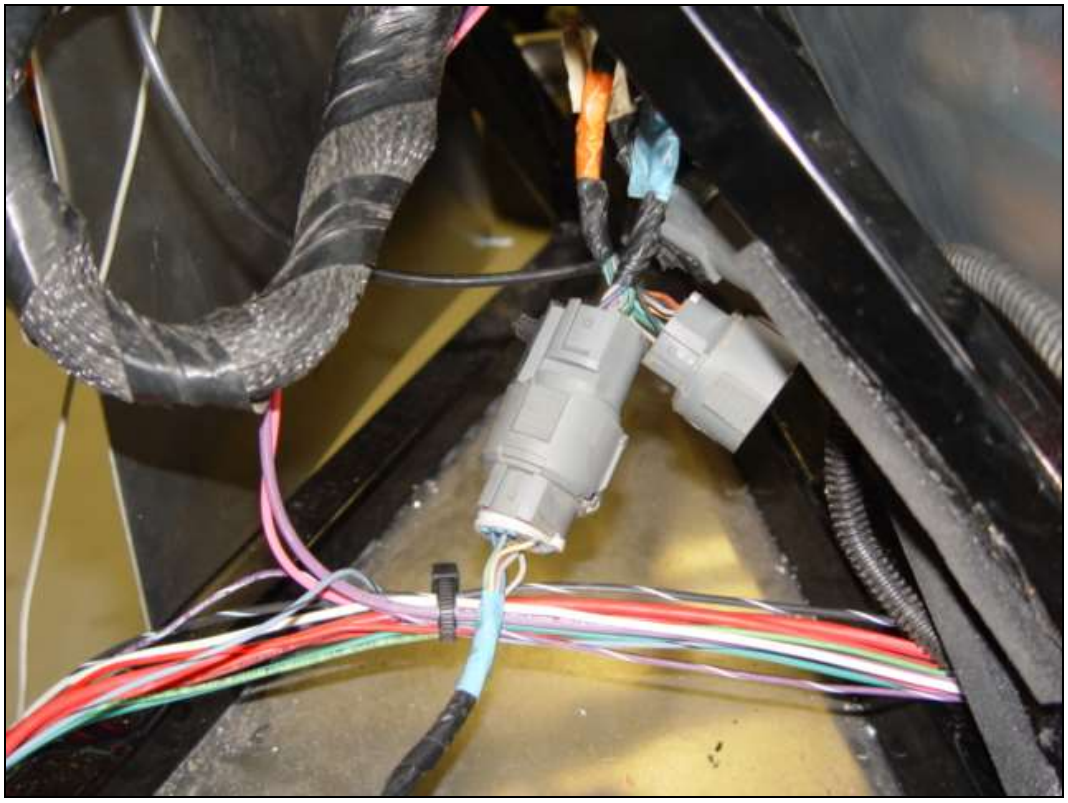


Route the two computer plugs and the throttle module plugs up to the computer mounting bracket through the back corner of the fuel tank area.

Plug the computer plugs into the computer and mount it into the mount bracket using the original hardware. The wires should come out of the plugs toward the inside of the car.



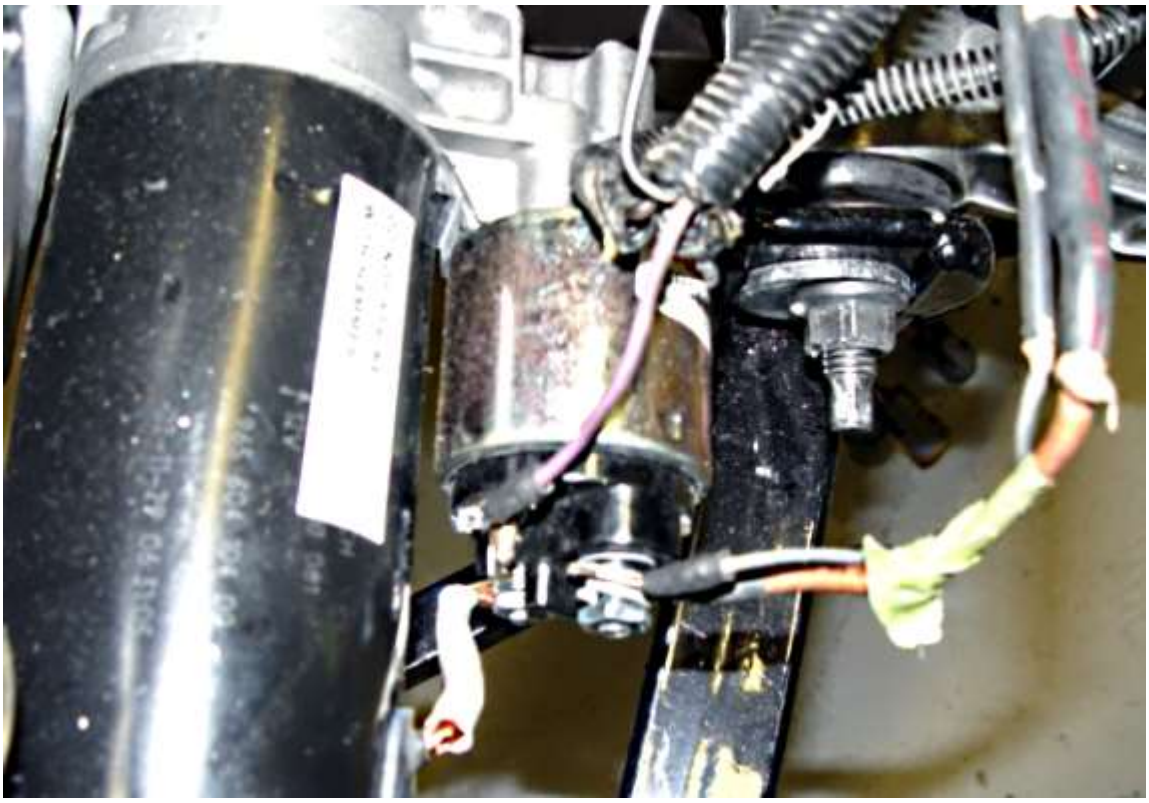
Plug the throttle control module in.



Plug the round connector from the fan/fuel pump harness into the round connector on the engine harness. Both plugs are a few inches down the wiring harness from the fuse panel plugs.

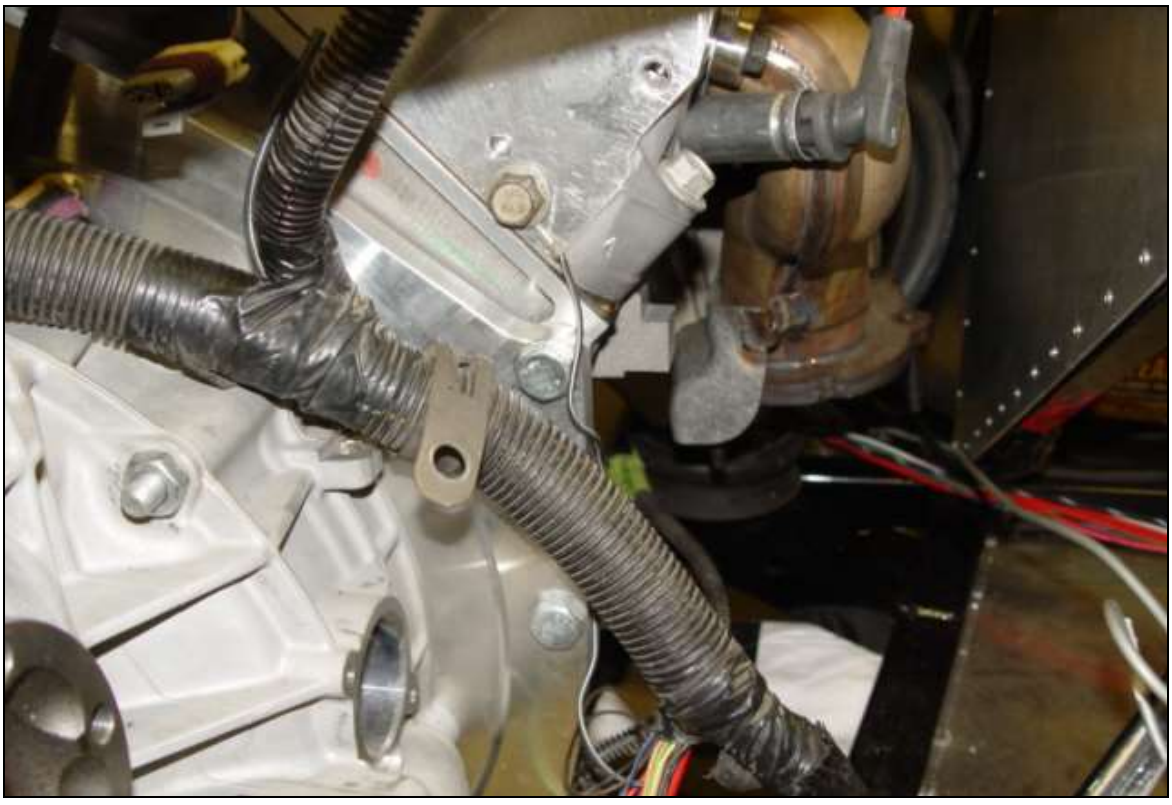
Route the throttle control harness back through the tunnel along side of the other harnesses. This harness is too short to run down next to the fuse box so it must run vertical next to the A/C compressor and get plugged into the module.

Starter Solenoid



Locate the wires for the starter solenoid; they include a heavy red alternator wire and a fusible link that attach to the large post and a small purple start wire that attaches to the small post.

There is a black ground wire that comes out of the same location of the harness that attaches to the engine block. The conduit on the harness may need to be pulled back to get this and the rear sensor plugs to reach with the starter wires in place.



Ground this wire to the rear of the cylinder head using one of the extra donor bolts.

Crank Position Sensor

Plug the crank position sensor into the side of the block.

Air Temperature Sensor

For 1997-2000 Corvettes, the air filter needs to be drilled to accept the air temperature sending unit that was removed from the corvette intake tube. On the 2001-2004 Corvettes, the Intake Air Temperature sensor is integrated into the Mass Air meter, so you can skip this step if you have a 2001-2004 Mass Air Meter. If you are not sure which one you have, the 1997-2000 Mass Air Meter measures approximately 3.5" in diameter, and the 2001-2004 measures approximately 3.75" in diameter.

Using a ½” bit drill a hole in the back side of the air filter.

Insert the air temp sender into the air filter.

Attach the mass air meter to the air filter and then the entire assembly onto the throttle body. You can now plug in the harness connections for the mass air, air temperature, and throttle position sensor.

The manifold pressure sensor wires will not reach the front of the engine. Extend these wires with some of the remaining harness so that this plug will reach around and plug into to the sensor.

Connect any remaining ground loops on the harness to the block or cylinder heads. The three wire plug pictured is the old oil pressure sensor and is not used.

Oil Level Sensor

Plug the oil level sensor plug into the sensor in the bottom of the oil pan.

Wrap the harness for the driver side under the throttle body and across the back of the block. Plug the injectors and coil plugs in on both sides of the engine along with both throttle body plugs.

Under the throttle body is the cam position sensor and pigtail for the knock sensor. Plug them both in making sure that the wire colors match on the knock sensor plug and pigtail, it can be incorrectly switched with the oil level sensor plug.

Run the alternator wires and coolant temperature sensor wires down the front edge of the block and attach them.

Oil Pressure sending Unit

Screw the base fitting into the block below the throttle body. An open end wrench will fit in through from underneath.

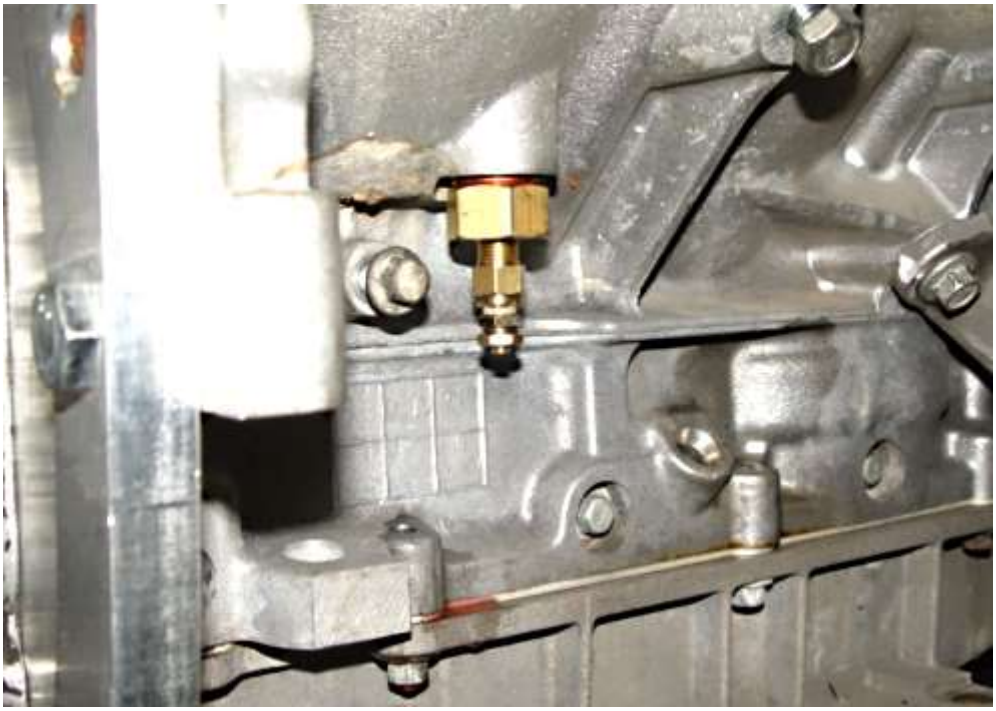
Thread in the 45° adapter using some Teflon tape or paste. Tighten the adapter until the opening faces the drivers side and just slightly forward.

Install the sending unit (older Autometer sender shown). If it is tight to the intake vacuum nipple then it is ok to trim the nipple down to about ½ its original length and plug the line back in.

Water Temp Sending Unit

Remove the coolant plug in front of the crank position sensor on the back passenger side of the engine block.

Open the water temperature gauge and remove the sensor, this sensor is threaded into the metric adapter provided in the kit using Teflon tape or paste. (older Autometer sender shown)

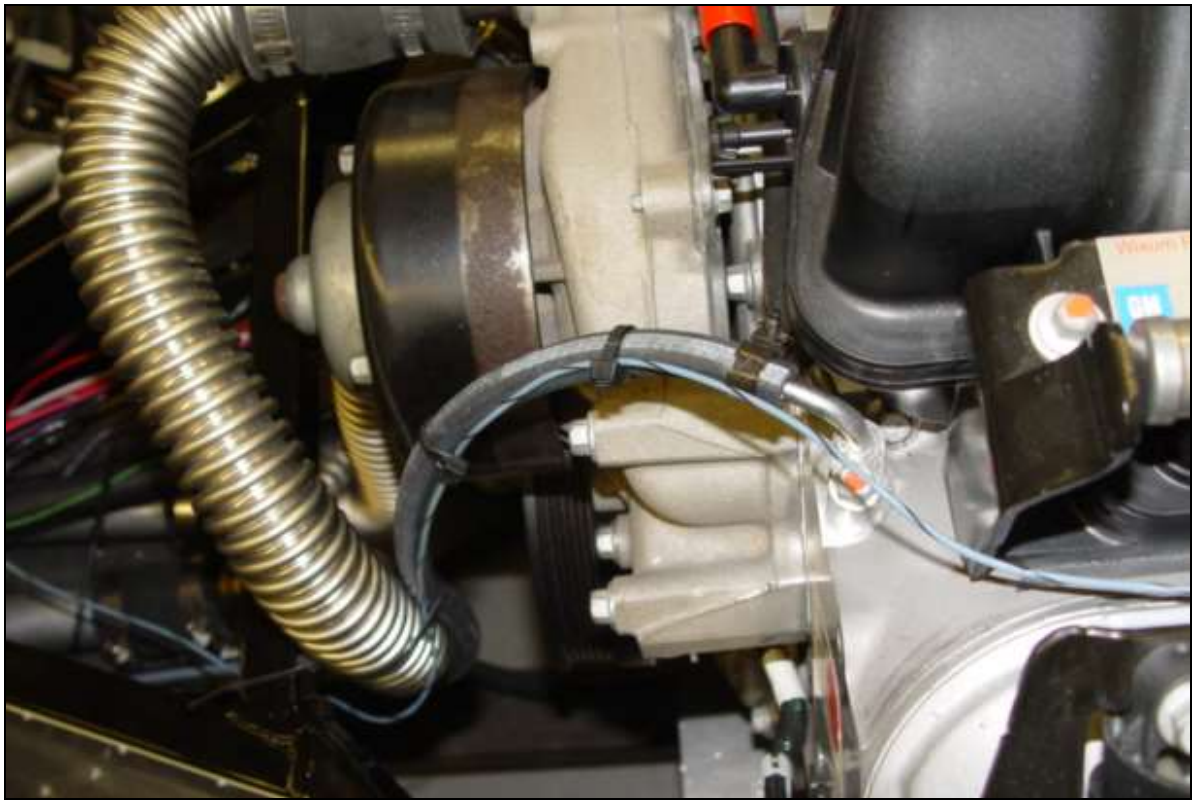


Thread the sender and adapter back into the block making sure that the copper ring gasket is in place.

Sending unit wires

- The Factory Five gauges require two sending unit wires per sending unit. The wires come with the gauges.

Route the water temperature sensor wire under the accessories and along the side of the block and connect it to the sensor with a loop connector.



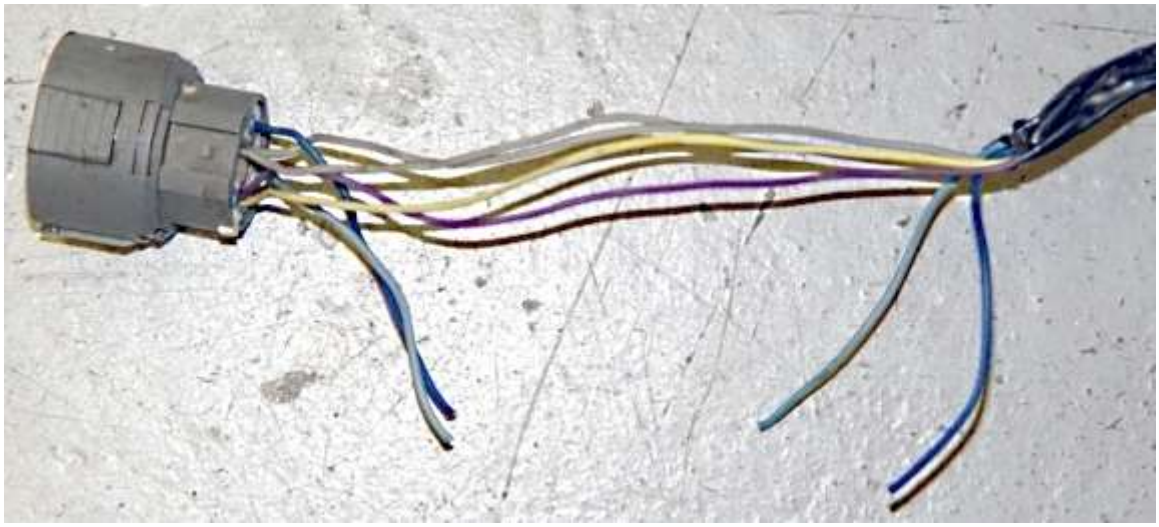
Route the oil pressure sending unit wires up the small air bleed tube to the intake manifold.

Route the oil pressure sensor wire along the intake manifold running it along side of the injector harness and attach it to the pressure sender with a small ring terminal.

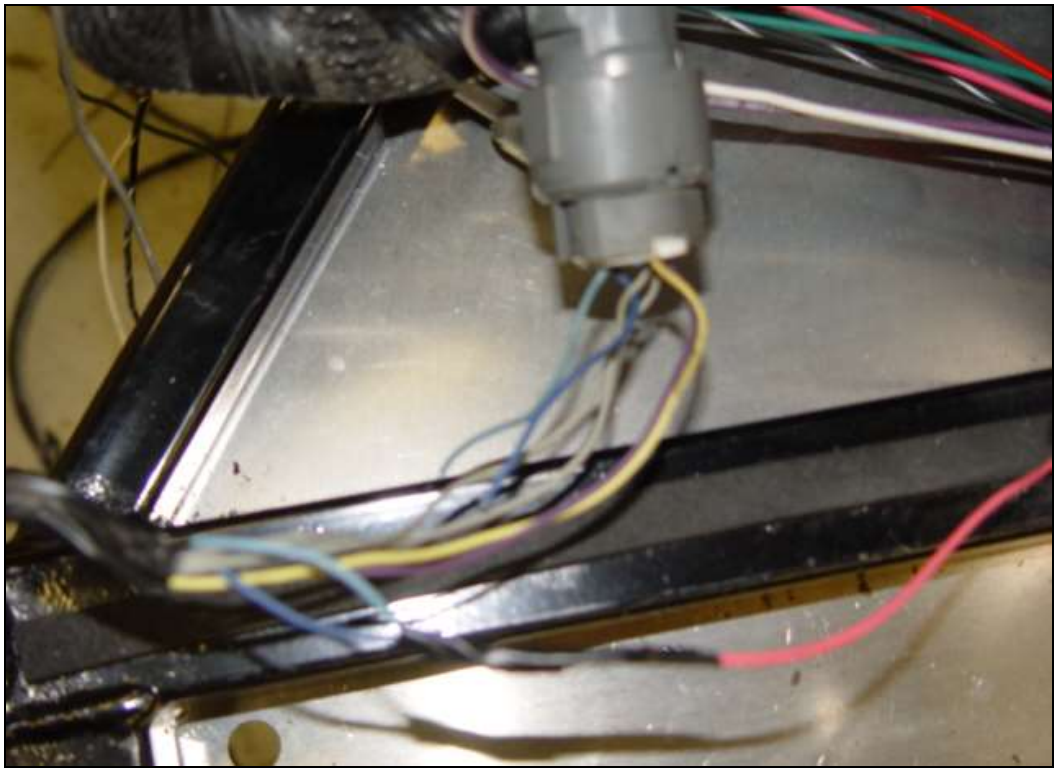
Fuel level wires

Separate the fuel level send wire and the power antennae wire from the taillight harness and re-route them in with the engine section of the chassis harness. The tail light harness has not yet been routed past the pass through into the tunnel.

Trace the fuel tank harness back to the round grey plug near the engine fuse panel.



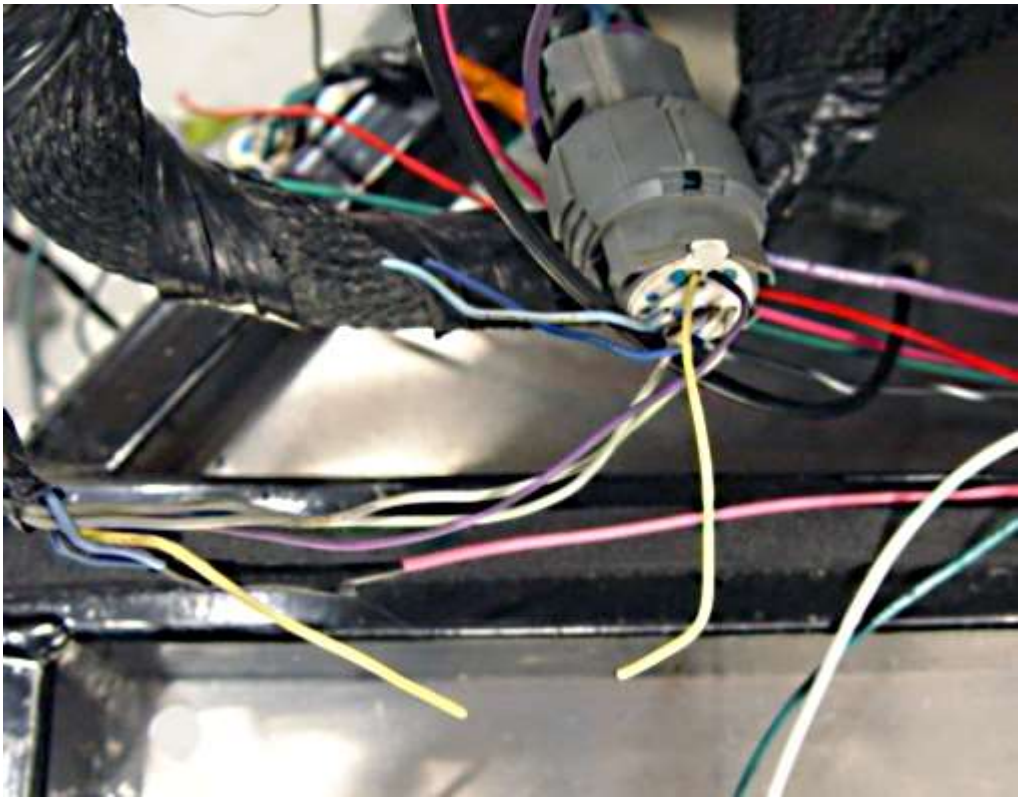
Cut the two sending unit wires on this harness about an inch out from the plug, they are light blue and dark blue and in the positions marked M and U on the plug.



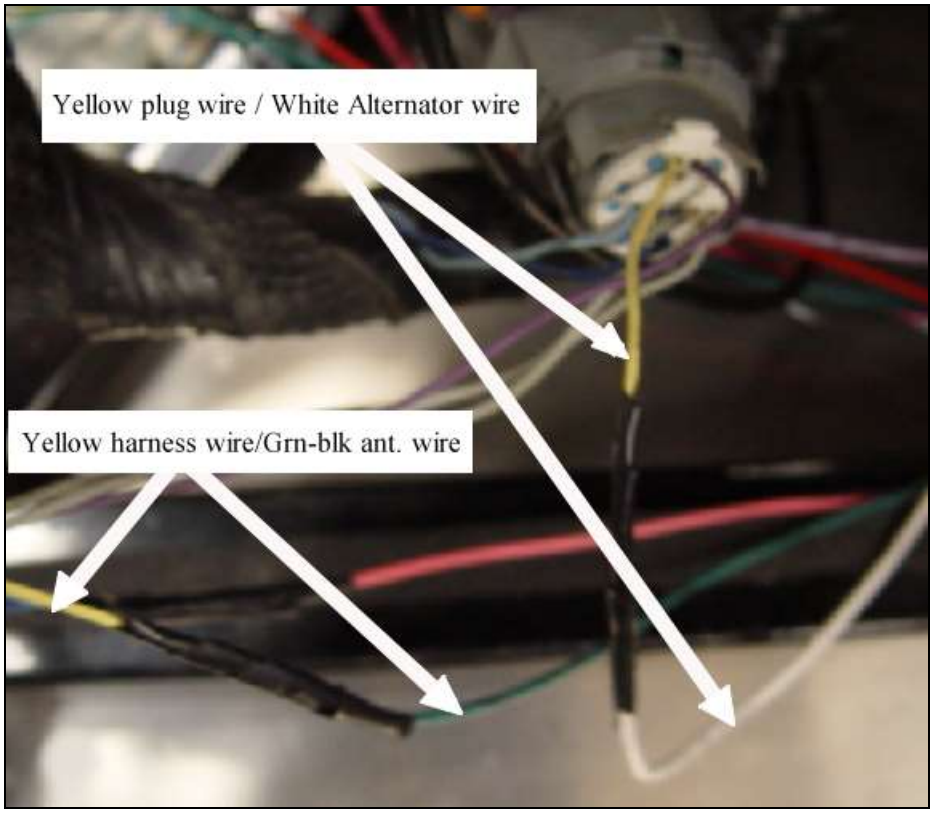
Splice the two wires that run into the harness into the fuel level send wire from the chassis harness.

The tachometer signal wire is located in the engine section of the chassis harness. This wire is spliced into the white wire leading into the computer plug (the Engine Speed Signal – ESS – wire).

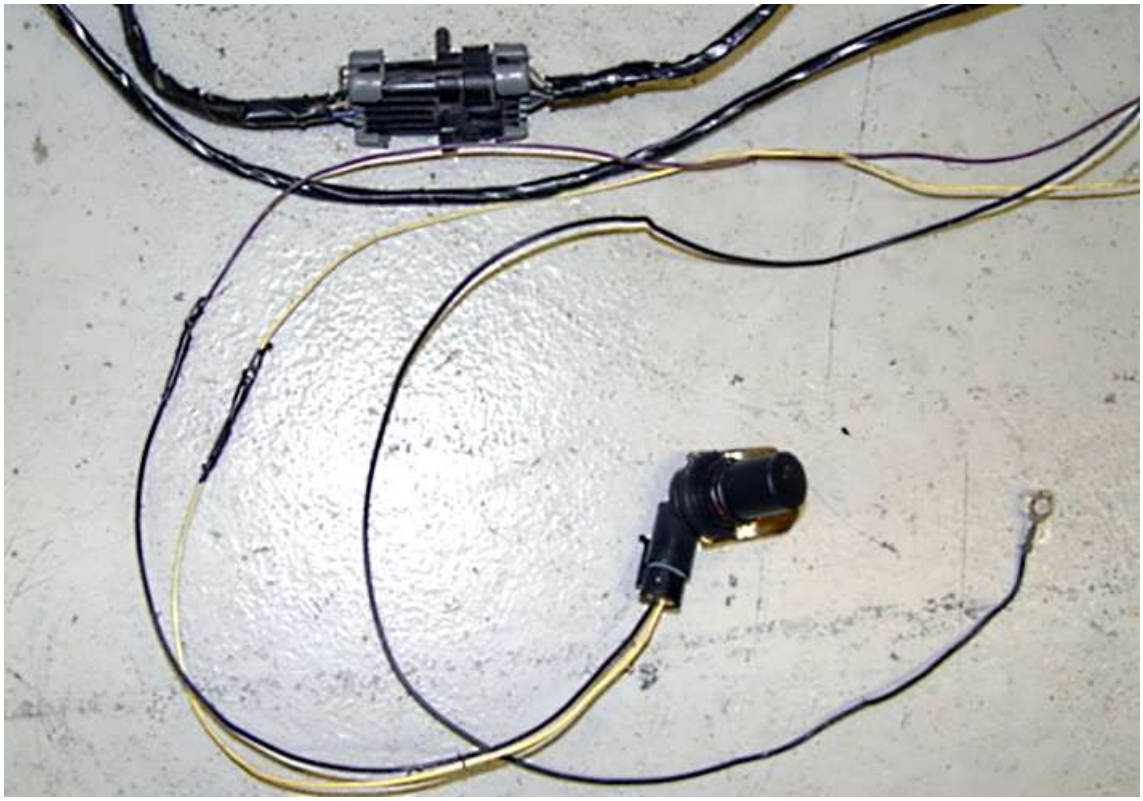
- The ESS wire is located in pin #35 in the Blue Computer Plug for 1997-1998 Corvettes, and in pin #10 in the Red Computer Plug for 1999-2004 Corvettes.



The same round grey plug that the fuel level gauge was spliced into has a yellow wire at the B position that runs the Vehicle Speed Sensor. Cut this wire a few inches back from the plug.



The white “alternator regulator” wire located in the engine section of the chassis harness needs to be spliced into the plug side of the yellow wire and the green/black “power antennae” wire is spliced into the harness side of the yellow wire. This circuit will be used to supply the speedometer with a signal.



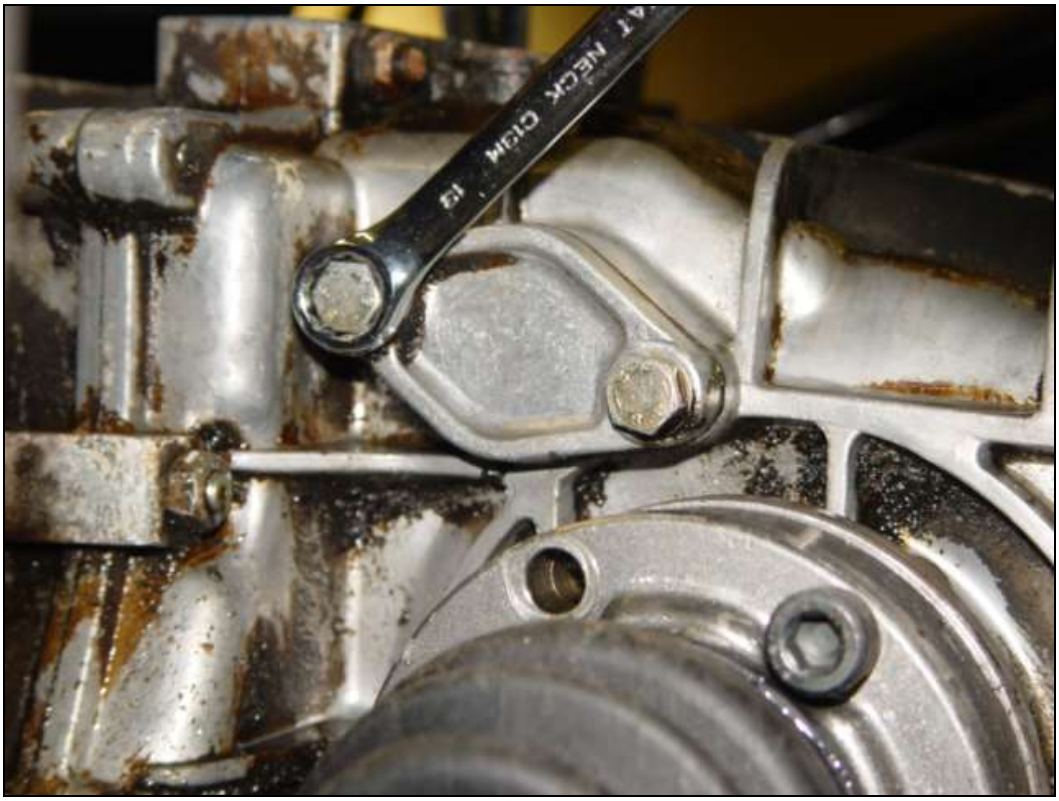
Out further on the fuel tank harness is the plug from the Vehicle Speed Sender and the chassis ground. Clean a spot on the chassis and ground the harness.

Vehicle Speed Sensor

Porsche Transaxle

🛠 3/16" Hex key, 7/16" wrench
🚗 Intake relocation components

The mounting bracket for the vehicle speed sensor and hardware to attach the sensor to the bracket are included with the kit.



On the transmission there is a small cover just above and behind the passenger side CV joint. Remove the rear bolt from this cover.

Attach the bracket to the transmission by re installing the removed bolt through the slot in the bracket and back into the transmission. Tighten this bolt finger tight.

Route the Vehicle Speed Sender and wires from the area under the engine fuse panel along the engine harness and up to the transmission. Install the sensor into the bracket using the provided hardware.

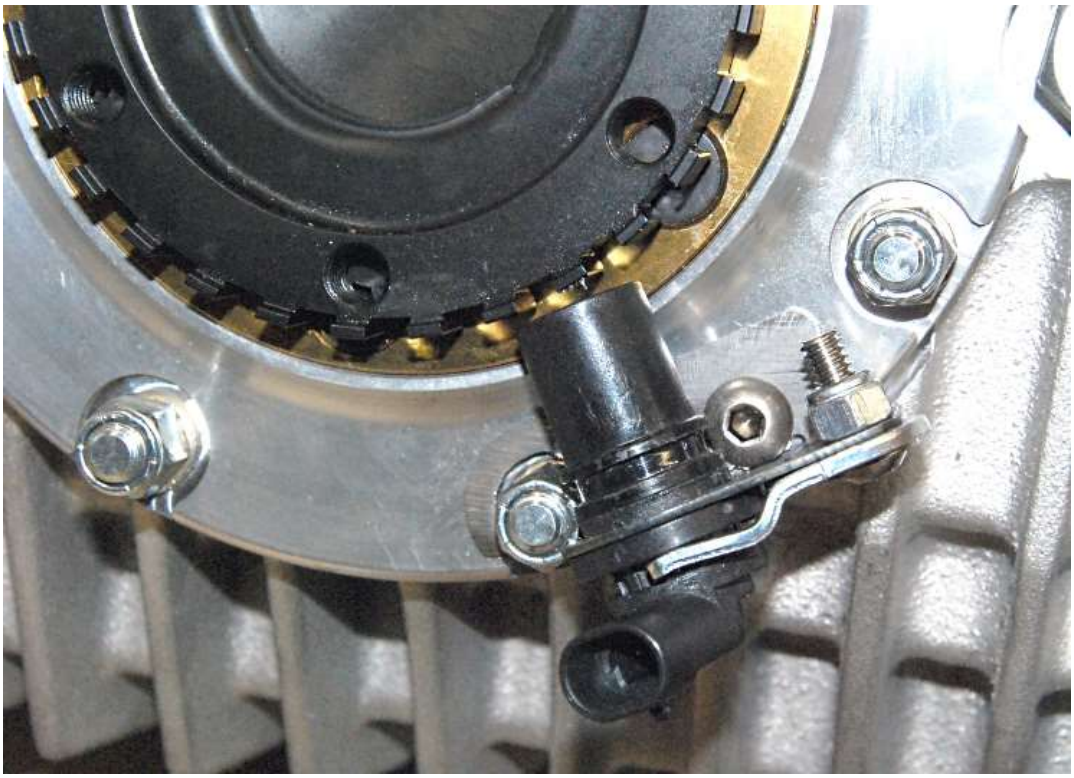
Adjust the sensor and bracket until there is an even 3/16" gap between the sender and the cog wheel.

Mendeola Transaxle

🛠 Thread lock, 5/32", 3/16" Hex key, 7/16" wrench

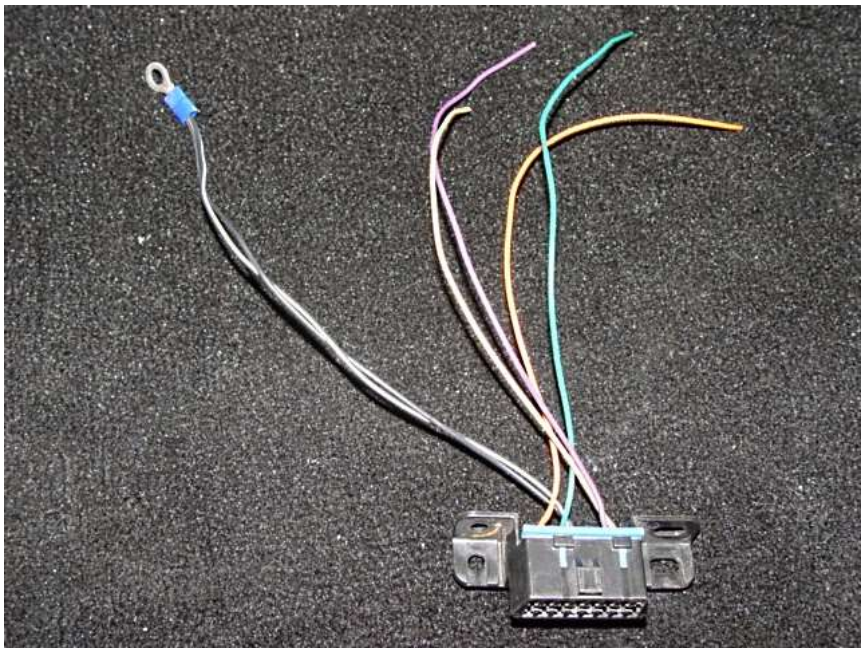
🚗 Intake relocation components, Mendeola installation parts

On the Mendeola Transaxle, the speed sensor mounts on the driver side at the 5 o'clock position to a 5/16" threaded hole and reads the the toothed stub axle.
Attach the sensor to the bracket using a 5/32" Hex key and 7/16" wrench

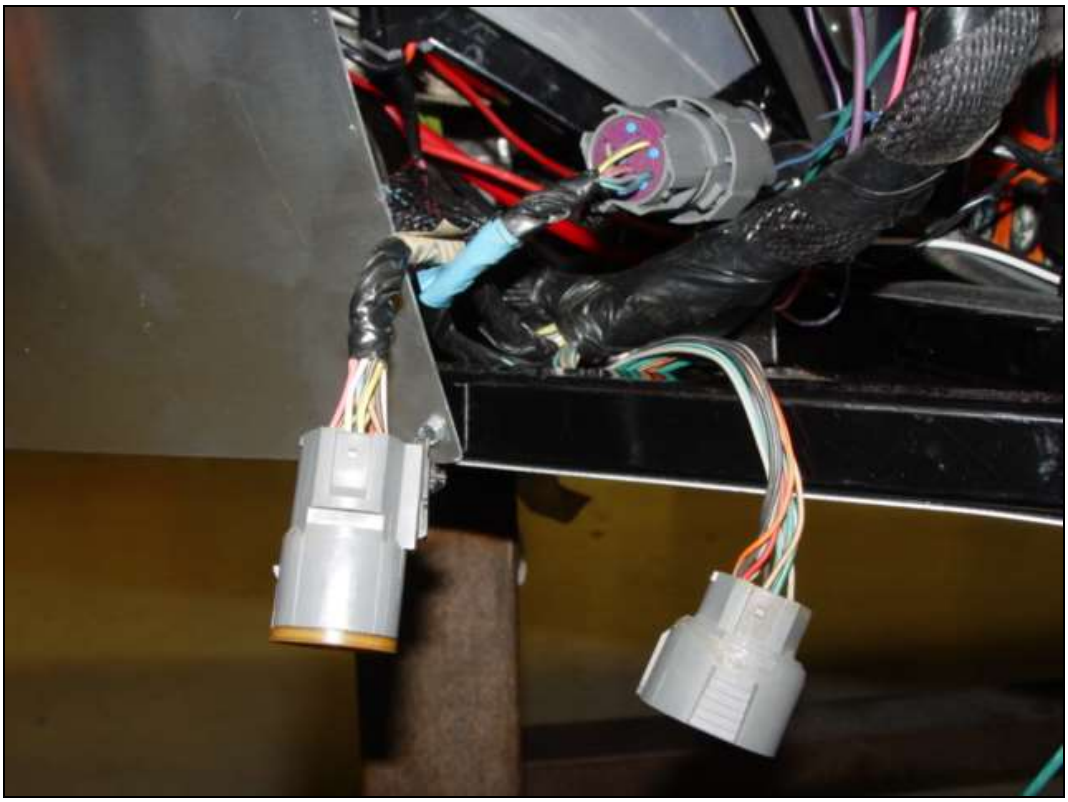


Put some thread lock on the short 5/16" bolt and attach the bracket to the transaxle so that the sensor is between 1/8"- 3/16" from the teeth.

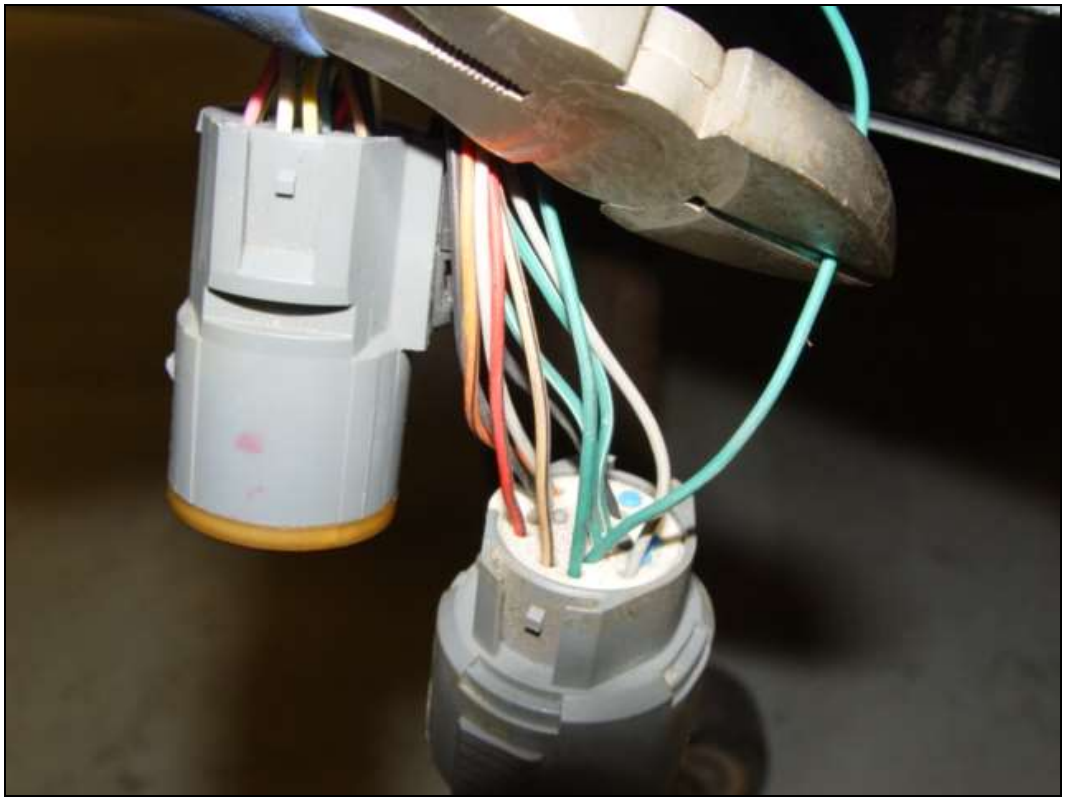
OBD II Diagnostic Plug



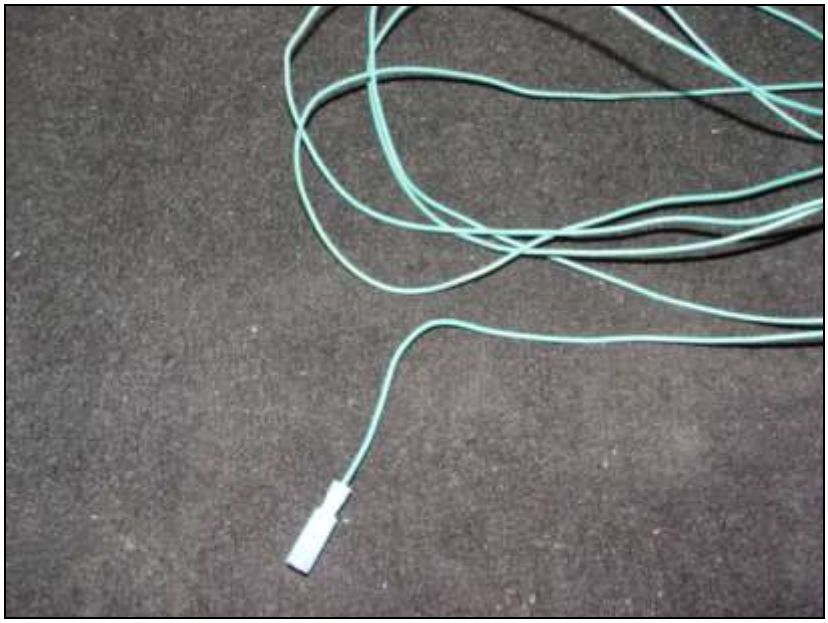
Locate the OBD II plug that was removed from the harness and attach a ground loop from the chassis harness kit to the black and black with white stripe wires.



Underneath the engine fuse panel are three round grey plugs two of which are unplugged.

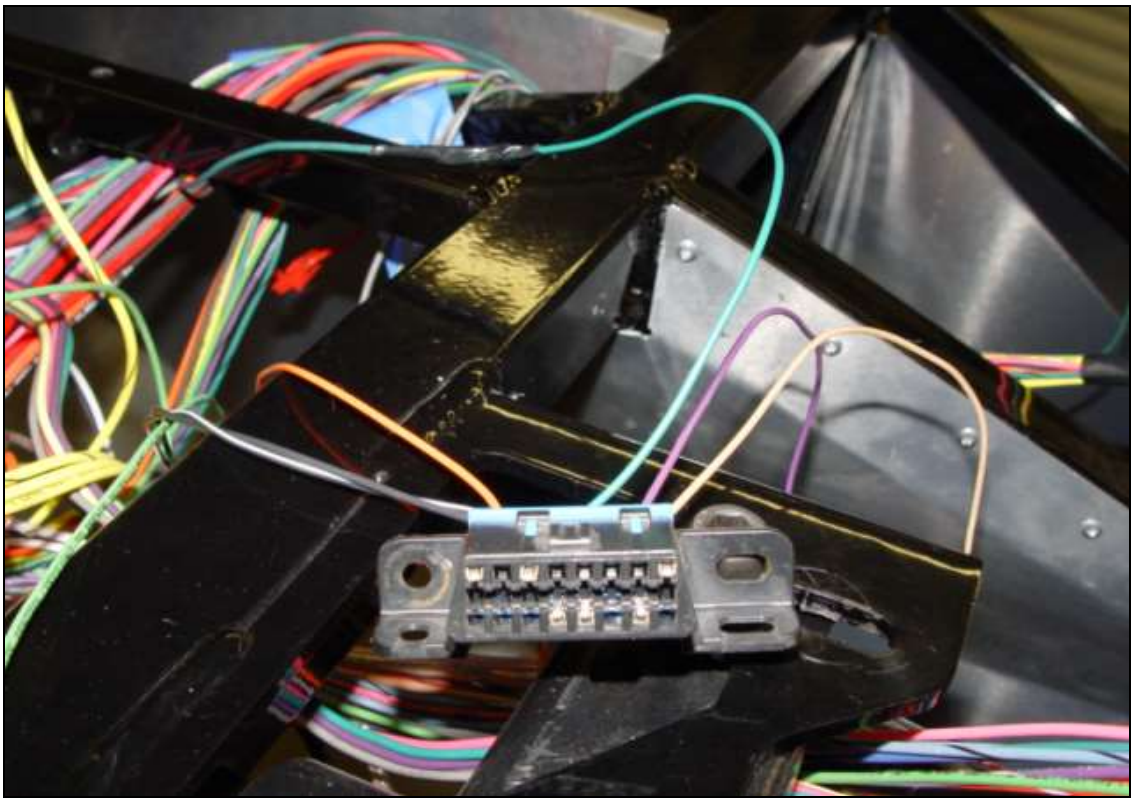


Find the plug that has four green wires in one row and cut the wire that is in the M position. Install a male bullet connector from the chassis harness kit on the harness end of the trimmed wire.

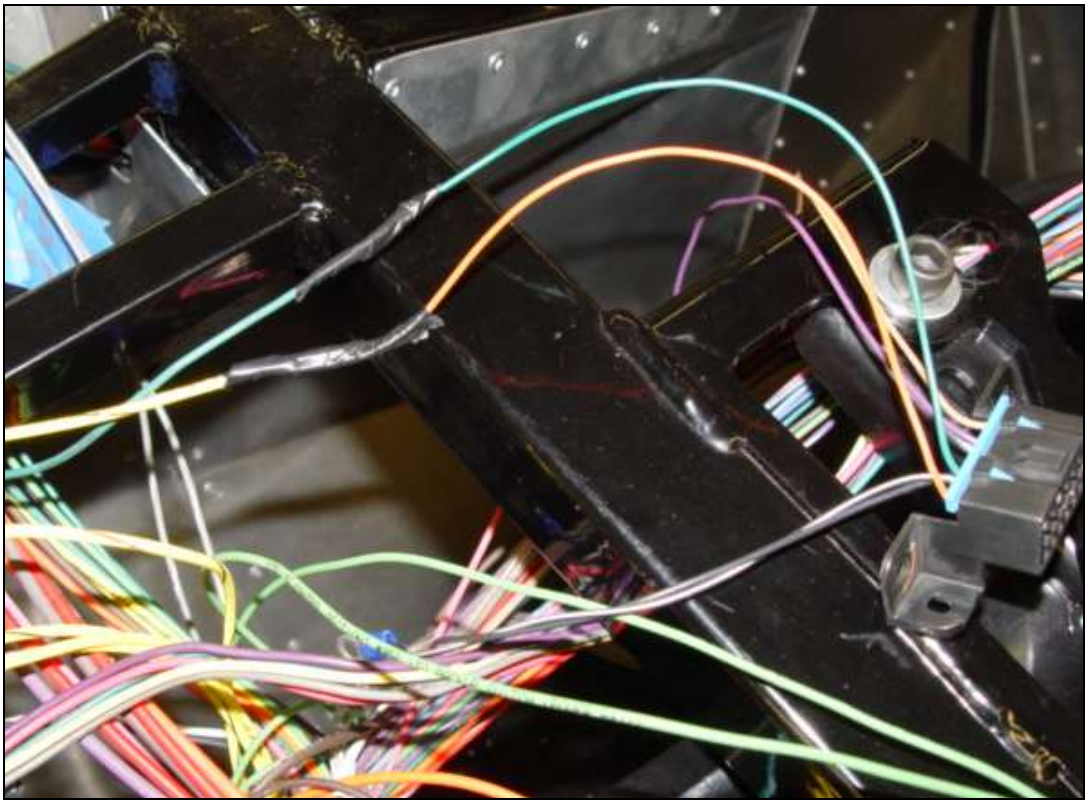


In the remaining donor harness pull a long section of wire (preferably purple so it matches the wire at the OBD II plug) from the bundle, roughly 6-7 feet will do. Crimp a female bullet connector on one end.

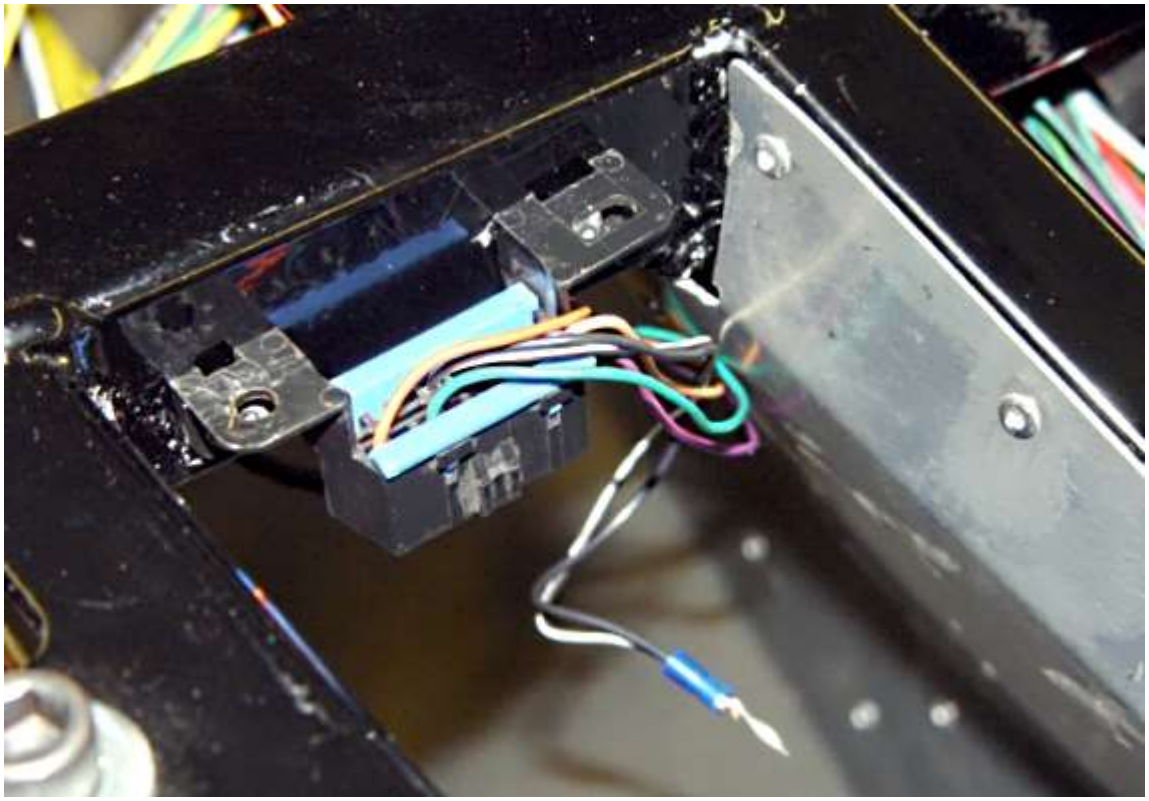
Plug the bullet connector together and route the remaining wire extension up through the tunnel and pass through into the dash area.



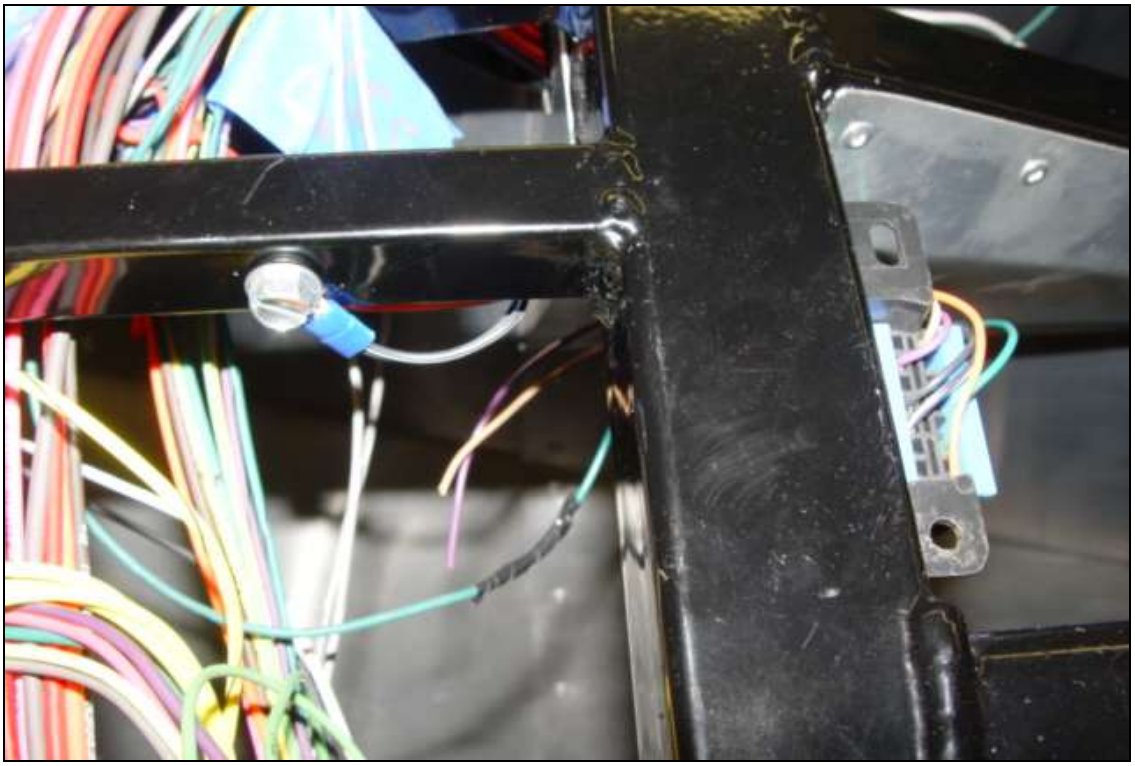
Splice the wire extension into the purple wire on the OBDII plug.



Find the side door lock power wire that wasn't used in the dash harness and splice it into the orange wire on the OBDII plug.



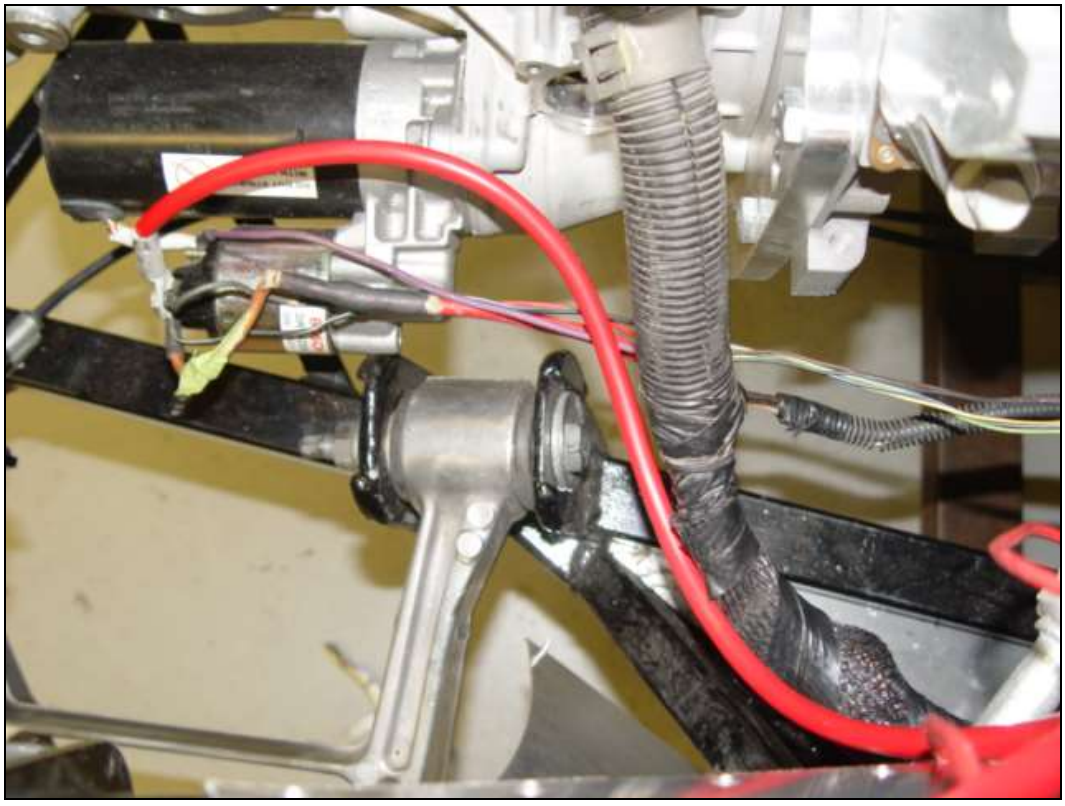
Rivet the OBDII plug to the chassis next to the steering column mount using $^{3}/_{16}$" rivets. Make sure that the wires to the plug run underneath the main chassis tube to allow for the aluminum panel that covers the footbox.



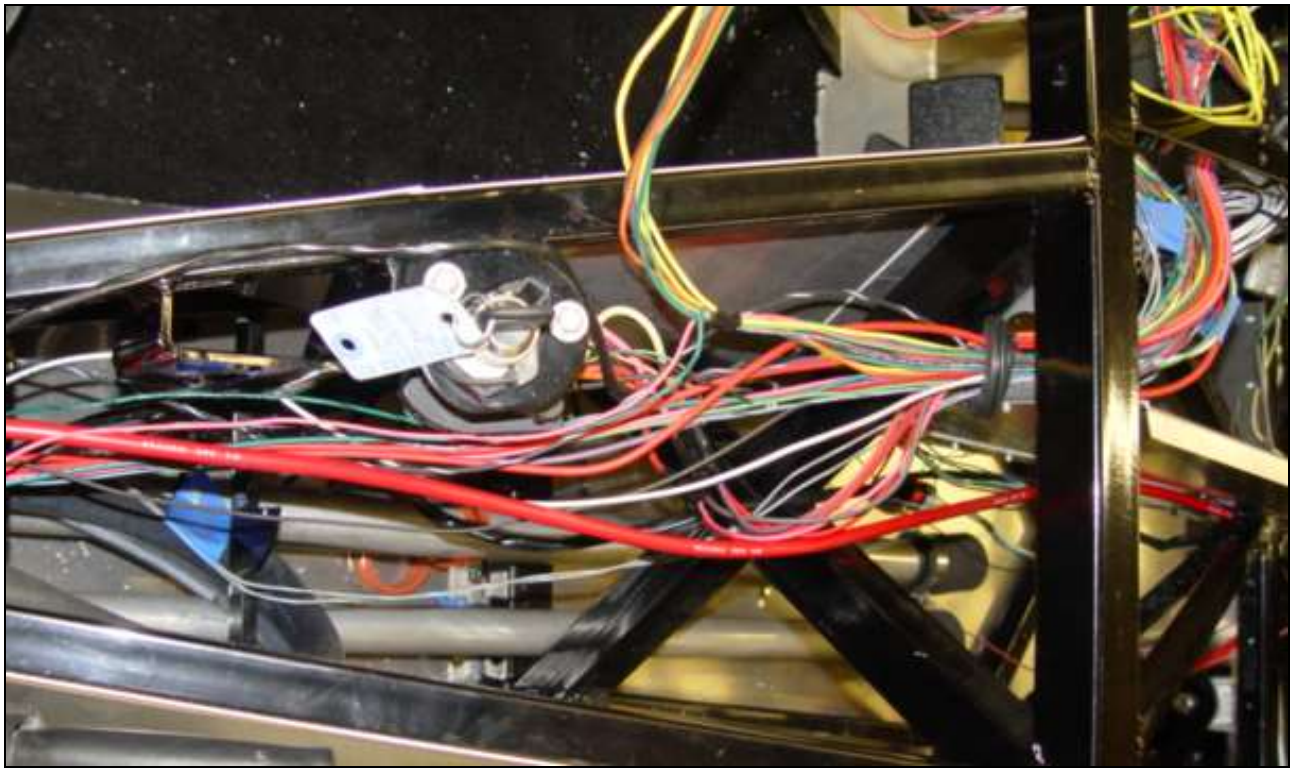
Ground the plug to the chassis.

Battery Cables

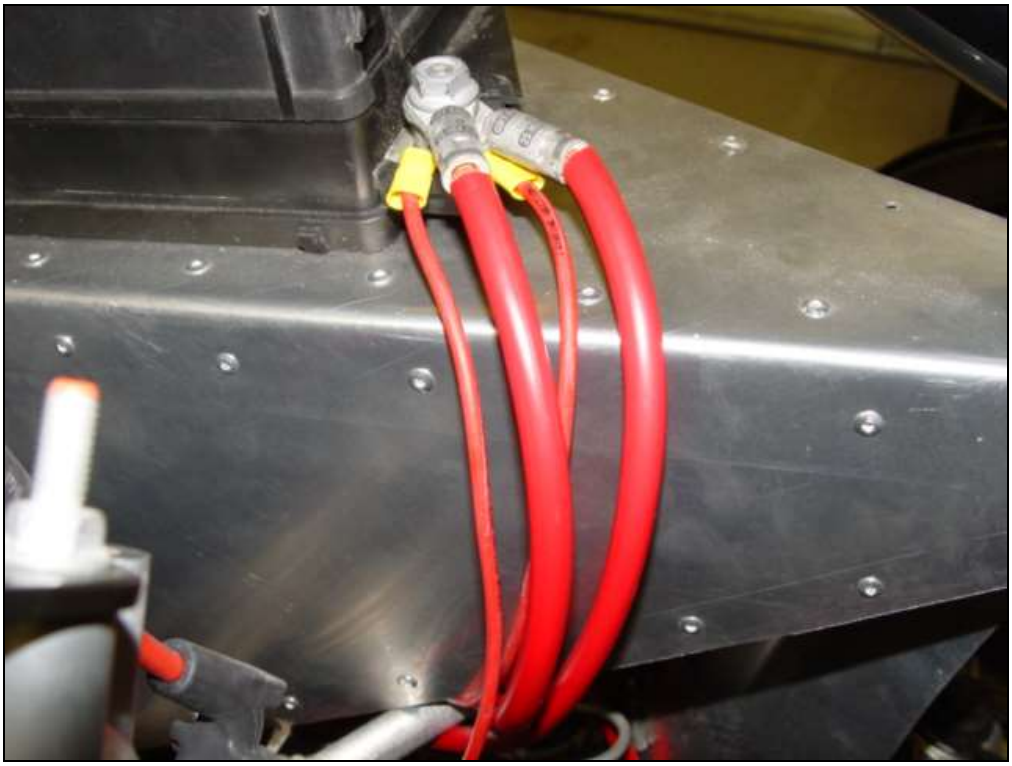
Two positive battery cables are provided with the kit, a long cable that connects the battery to the engine fuse panel (FFR# 25996) and a short cable that connect the fuse panel to the starter (FFR# 25997).



Hook the shorter wire onto the large terminal of the starter and run it up the along the harness toward the engine fuse panel.



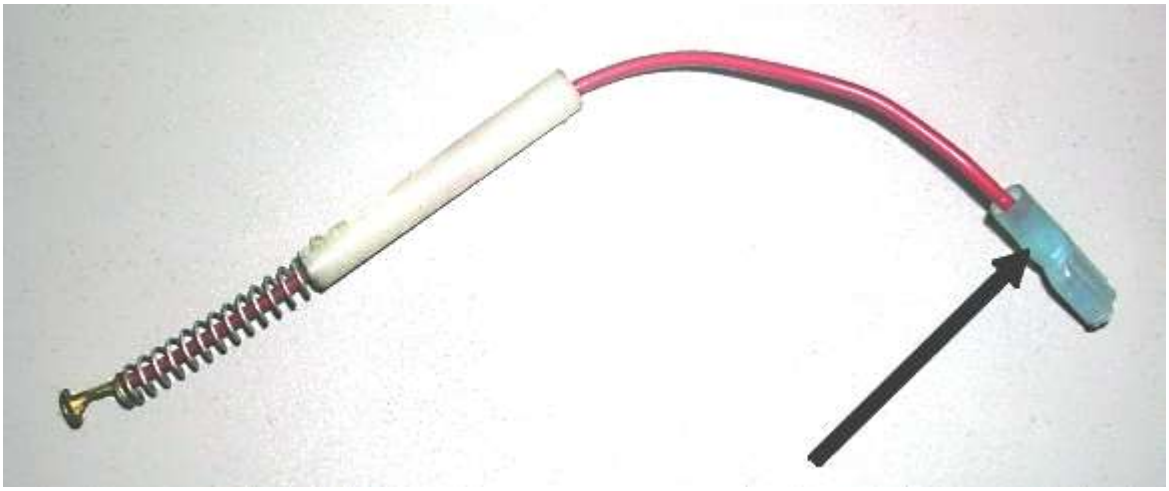
Route the long cable through the tunnel along the same route as the heavy red wires from the chassis harness.



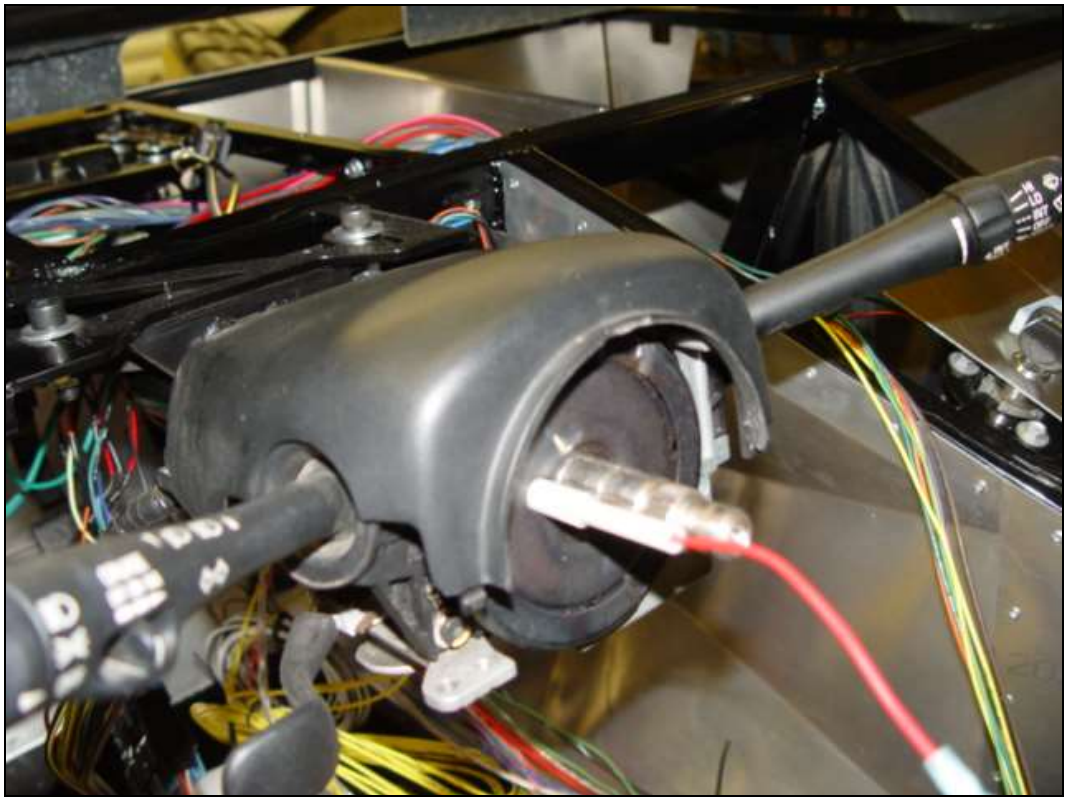
Hook both cables along with the two heavy red chassis power wires to the fuse panel outside terminal.

Steering Wheel and Horn

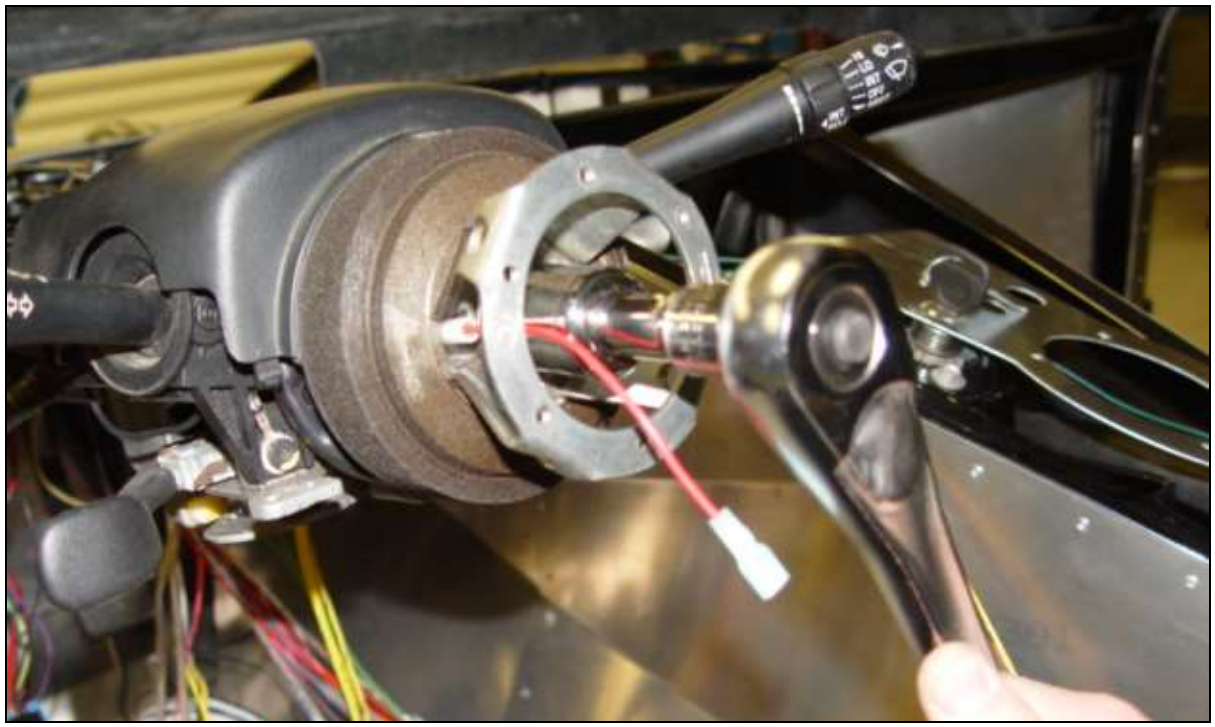
🛠 Wire stripers and crimpers, 21mm socket and ratchet
🚘 Steering wheel and fasteners FFR# 25268



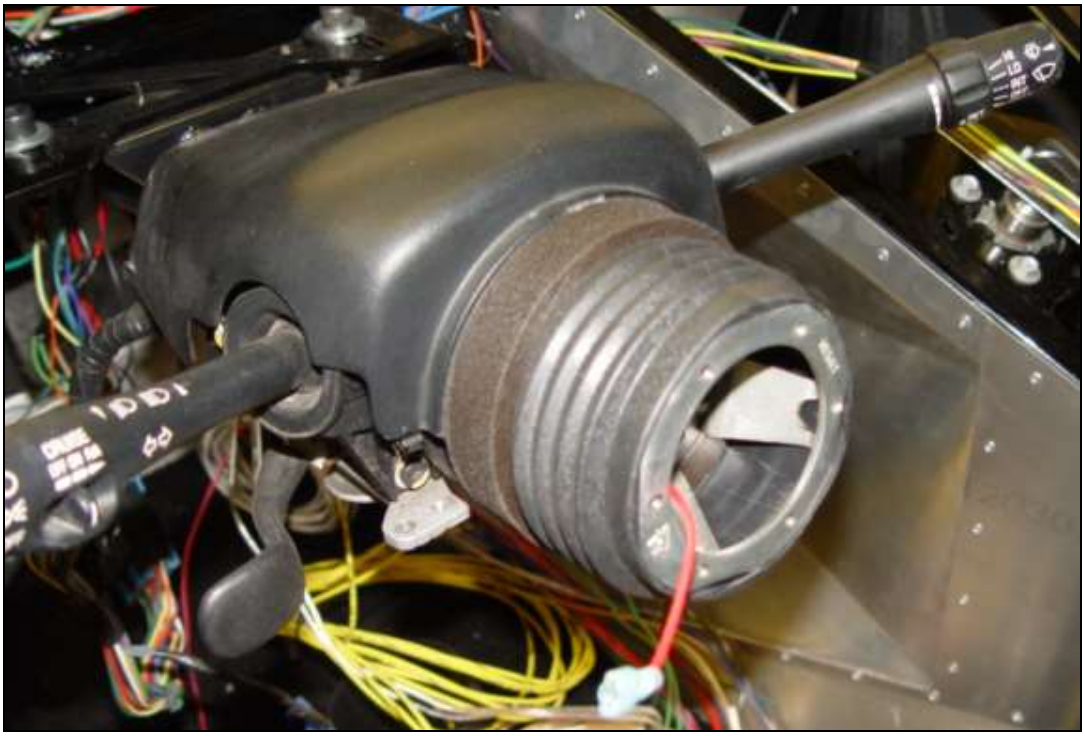
Cut the horn relay connector found on the backside of the driver's side air bag assembly approximately 5" from the end of the white plastic housing. Install a female spade connector to this end (arrow pointing to this end).



Install the horn relay connector onto the steering column by inserting it into the receptacle and rotating it to lock it in place.



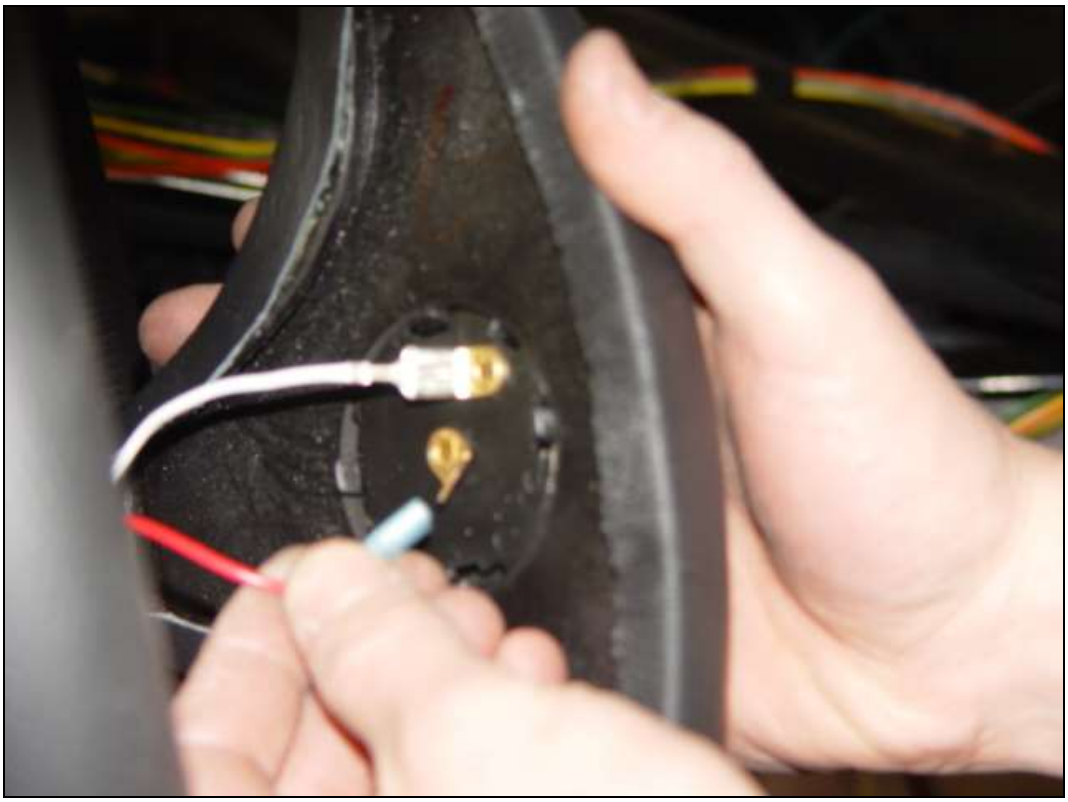
Install the steering wheel boss (FFR# 25459) on the Corvette column; the square cutout on the boss is to allow the horn wire to pass through. Use the Corvette steering wheel nut to attach the steering wheel adapter to the steering column.



Install the steering wheel adapter surround over the steering wheel adapter.

With the steering slipped upside down, insert the horn grounding ring into the backside of the wheel. The white wire included with the steering wheel is used to connect the spade terminal on this grounding ring to one of the spade terminals on the horn button.

Remove the center section of the wheel by peeling back the overhanging sections on the backside and install it onto the steering wheel adapter using the recessed Hex keyed fasteners.



After the wheel is installed, connect the horn button relay wire to the other spade terminal on the back of the horn button. Re-install the center section of the steering wheel.

Battery Install

7/16" wrench, 3/16" Hex key, dill, 5/16", 3/8" drill bit

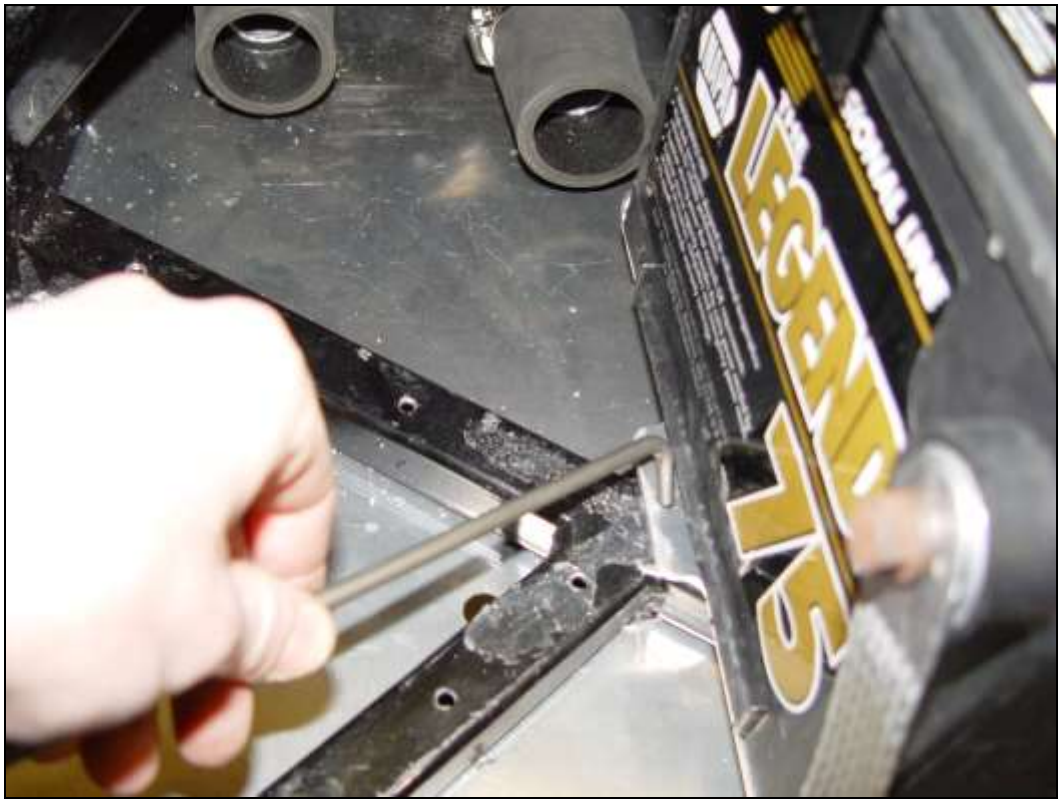
Corvette donor battery and battery hold down kit (FFR# 25546).

The instructions for this section were written during a build-up of a car to be fit with the optional Air Conditioning System so the pictures will show the battery offset to the driver side. If you are not using A/C the battery (as covered in the battery tray installation section) will be centered on the floor cross member. For the following section, where there is a difference between the battery installation in a non-A/C car and a car with A/C, the different methods will be noted.

Temporarily cover the battery terminals with some tape and install. The battery has to be angled to set it in place on top of the previously installed battery tray.

Once the battery is in place make sure that the terminals are oriented towards the inside of the car.

If you are installing the optional Air Conditioning system the hole on the passenger side of the battery tray sits on top of the 1” frame rail so you will have to drill it out. If you are not installing A/C, skip to the next step.

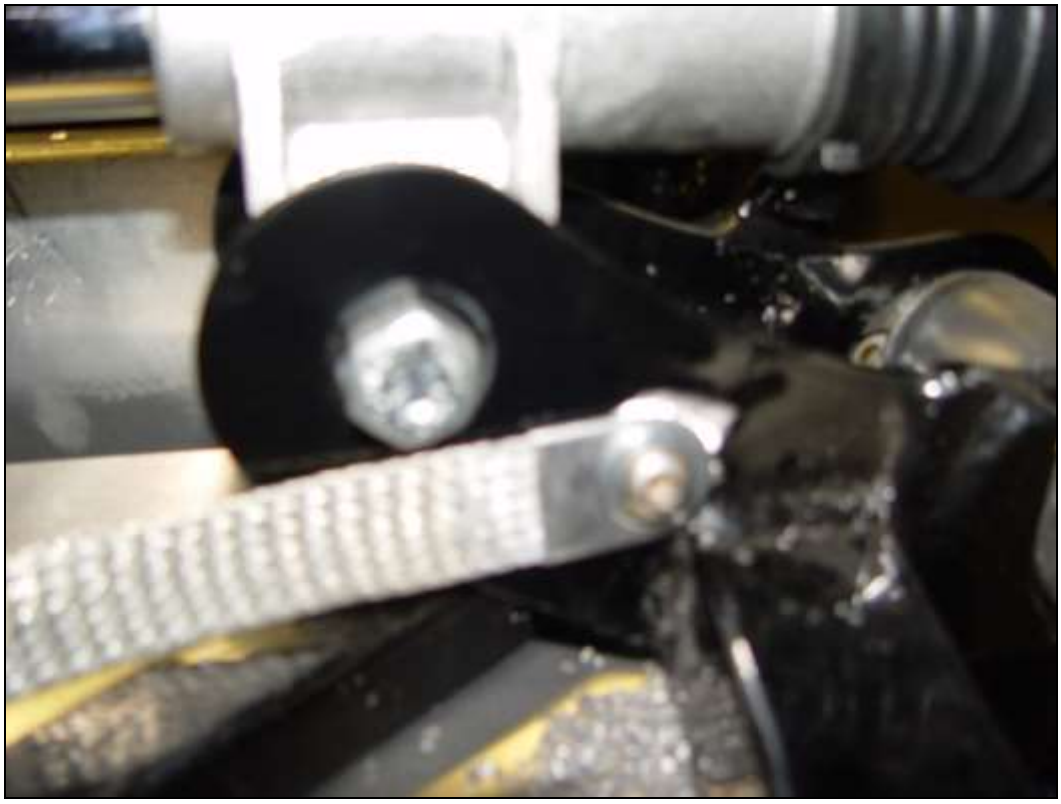


Insert the battery hold down “J” bolt into the holes on either side of the battery tray.

Lay the battery crossbar hold down on top of the battery and fasten the “J” bolts into place using the supplied fasteners (FFR# 10802, 11088).

Attach the positive cable to the positive terminal on the battery using the supplied button head bolt and washer (7/32" Hex) (FFR# 25873, 11005).

The ground strap has to be attached to the frame. Drill a 3/8" hole on the rearward, passenger side steering rack mounting bracket. After the hole is drilled, grind the powder coat in that area where the terminal will contact the frame.



Attach the ground strap to the frame using the hardware provided (FFR# 11005, 11024, 13963).

Attach the other side of the ground cable to the negative terminal on the battery using the supplied button head bolt and washer (FFR# 25873, 11005).

Shifter Linkage

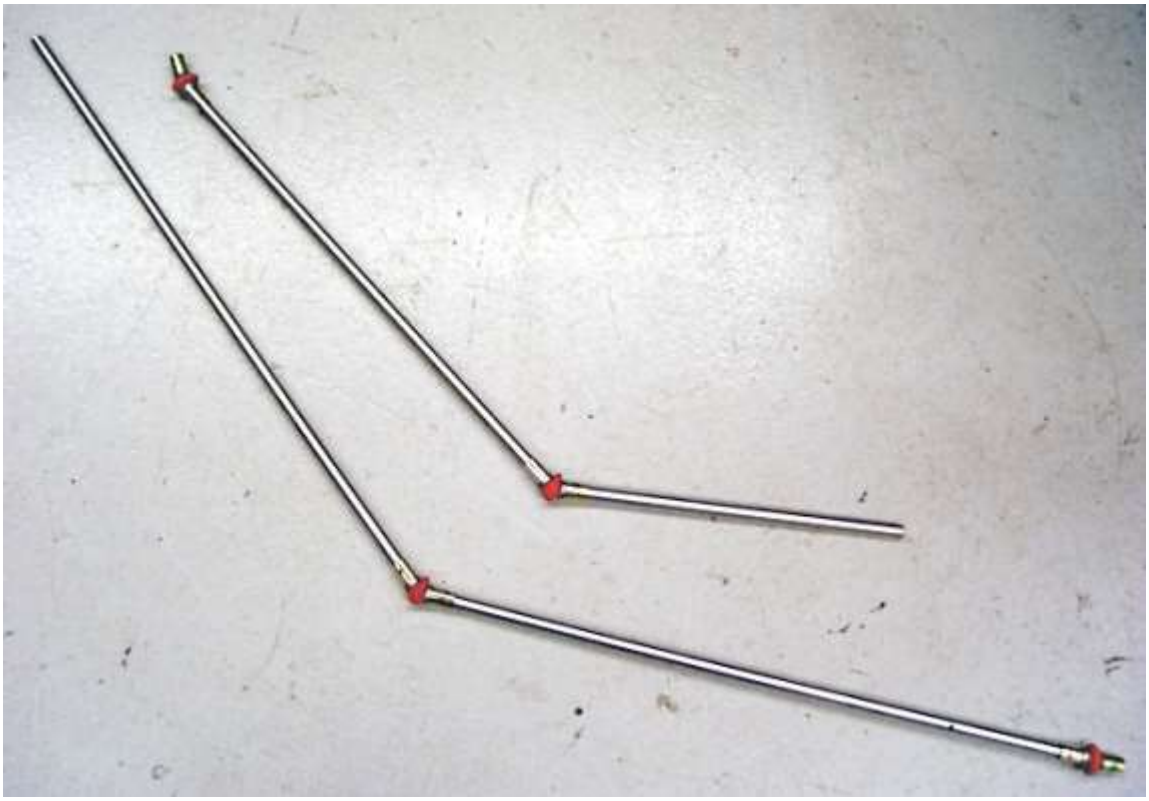
Hammer, hacksaw, 13mm, 9mm wrench, 3.5mm Hex key.

Shifter linkage and hardware, shifter handle assembly (FFR# 25832, 26085).

On some engines, the engine mount may interfere with the shifter linkage – you will have to grind the engine mount slightly to allow the linkage to clear the mount if this condition exists.

The shifter linkage is easier assembled outside of the car and then installed as two completed assemblies.

Install the universal joint (found with the shifter linkage assembly) onto the rearward linkage arm. This is installed using one of the supplied spring pins.



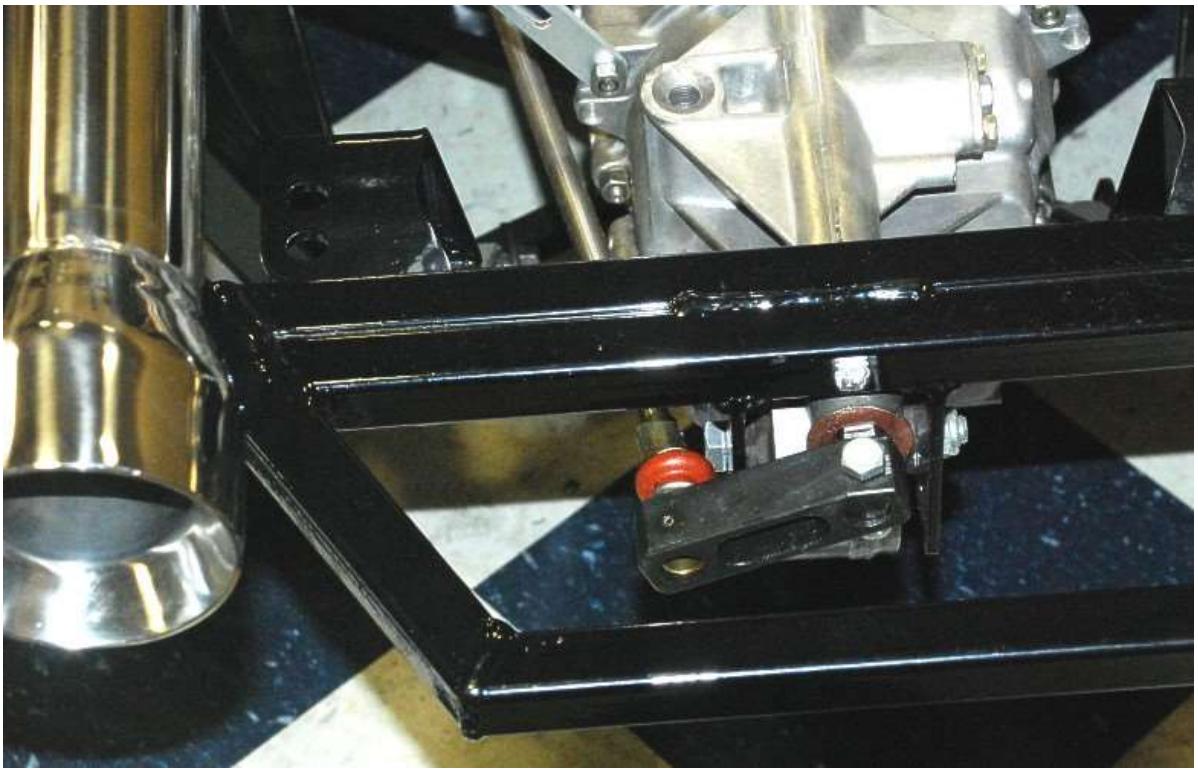
There are 4 lengths of shifter shaft, 2 long (FFR# 25897, 25898) and 2 short (FFR# 25895, 25896).

Connect the two short and two long segments together with a universal joint (FFR# 25899). Attach a second universal joint to rear end of the short (FFR# 25896) shifter assembly and the rear end of the long shifter assembly (FFR# 25898).

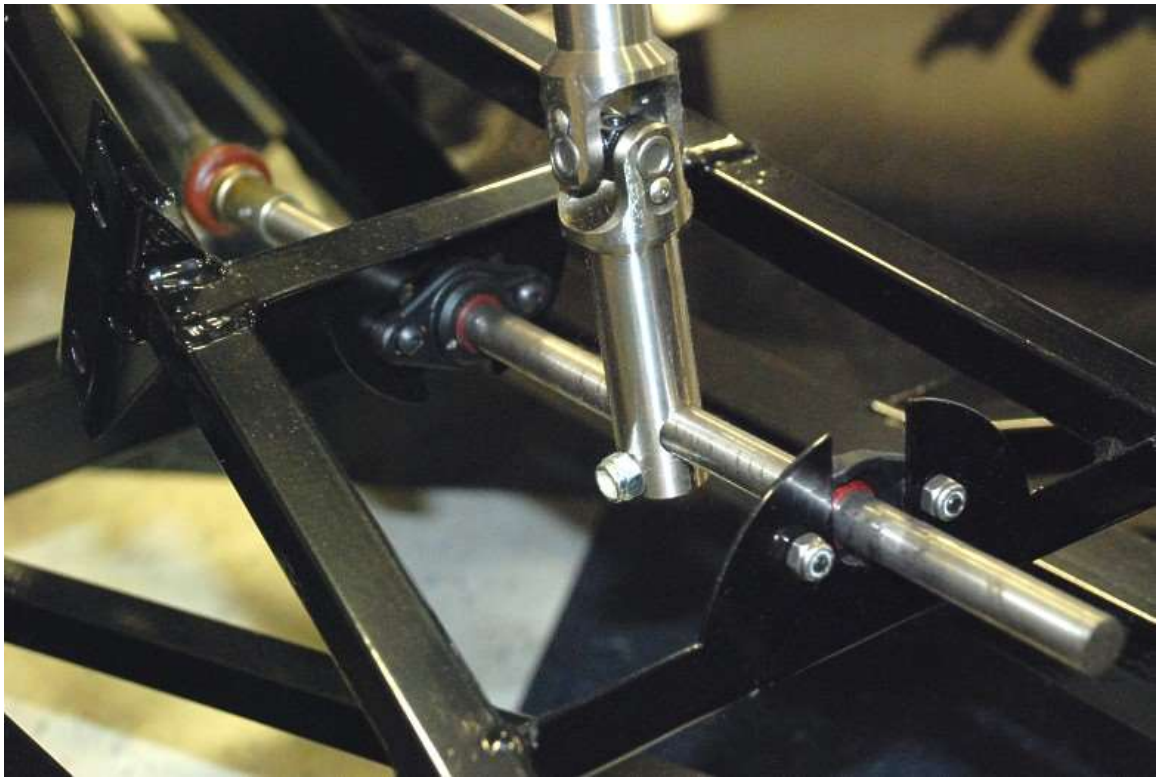
Once the shifter assembly is assembled as seen above, attach the pieces together using the short spring pins (FFR# 25901). Drive the pins into place using a small hammer until they are flush with the casing on the universal joint.

Install the rear shifter linkage (FFR# 25436) into the joint previously installed into the rearward linkage arm using the supplied long spring pin (FFR# 25894).

Now that rear section of the shifter assembly is complete, install it into the chassis. With the rearward linkage arm oriented at the rear of the car, insert the front shaft of this assembly through the flange bearings previously installed on the transaxle adapter plate and alternator bracket.



Install the rearward most linkage arm onto the transaxle shift rod using the supplied bolt (FFR# 10601). You are advised to use Loc-tite on the threads of this bolt. Make sure that the transaxle is in neutral for the remainder of this procedure. (picture is of an early model transaxle)



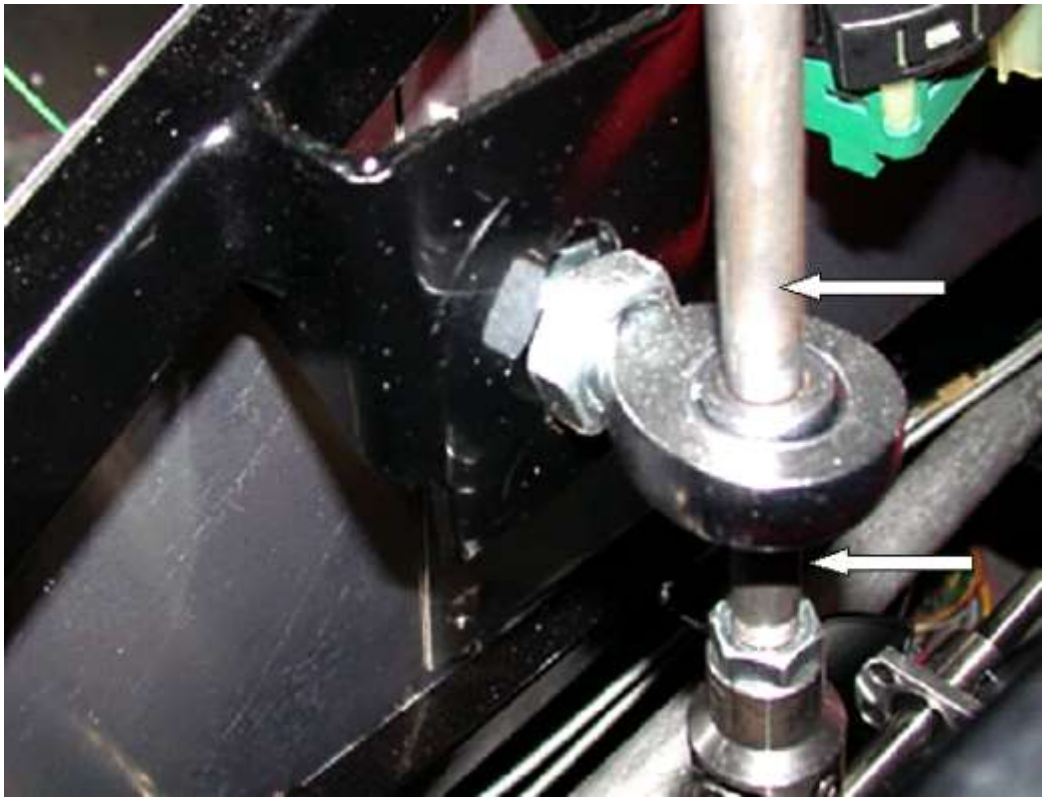
The front portion of the shifter assembly has one end with a universal joint attached to (rearward section) and the other end just has the shifter rod itself (front). You are going to have to assemble this in the car. Slide one plastic flange bearing (FFR# 26084) onto the front portion of this shifter assembly with the flat mounting side towards the joint. Next slide the shifter joint which is apart of the shifter handle assembly (FFR# 25547) onto the shaft. Slide the last flange bearing onto the shaft, with the flat mounting side towards the front of the car. The picture below shows the orientation of the flange bearings and shifter shaft assembled in the vehicle.

Loosely attach these flange bearings to the frame using the supplied hardware. (FFR# 12775, 12768)
The rearward end of this front shifter shaft assembly has to be attached to the rear shifter shaft assembly. Insert the rod coming through the flange bearing mounted on the alternator bracket into the universal joint on the front shifter shaft assembly. Attach the two sections of shifter assemblies together using the supplied spring pin.

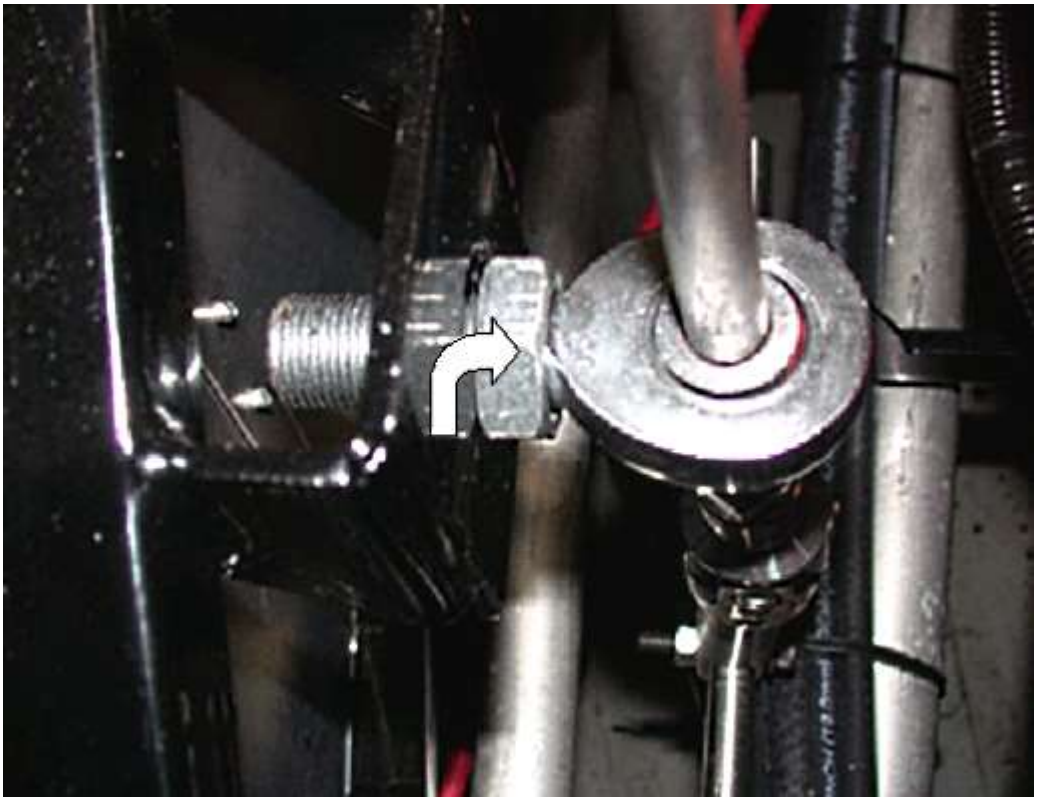
Once the shifter linkages are attached, go back and tighten the front two flange bearings located on the front shifter linkage assembly.

Center the shifter handle joint in between the two flange bearings and tighten the bolt holding it in place. (this will act as the baseline setting)

The bottom of the shifter handle shaft is threaded into the shifter handle joint. Make sure the shifter handle is threaded approximately half way into the shifter handle joint and tighten the jam nut. (this will act as the baseline setting)



Using white lithium grease (or standard chassis grease) lubricate the vertical shifter handle.



Slide the ¾" rod end over the shifter handle shaft and insert it into the center hole on the frame mount. (FFR# 25628) Using the supplied hardware (FFR# 12380) fasten the rod end into place.

Install the shifter knob (FFR# 25374) onto the shifter handle assembly.

Place the seat temporarily into the car and shift through the gears. You can adjust where the shifter is (forward and backwards) in the car by loosening the bolt holding the shifter handle assemble to the rest of the shifter mechanism. Loosen this bolt and adjust slightly to achieve the desired result.

You can also slightly adjust the height (motion ratio) of the shifter mechanism by loosening the jam nut at the base of the threaded shifter handle. Slight adjustments here result is significant changes in the overall “feel” of the shifter mechanism.

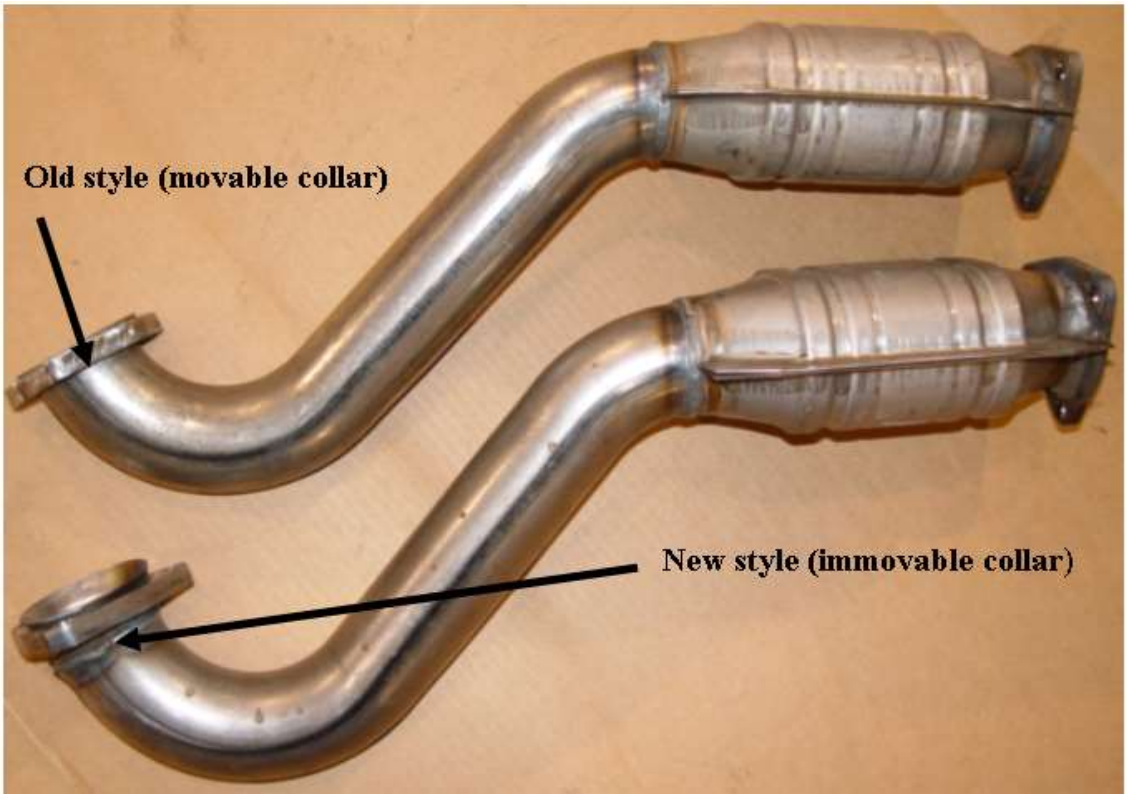
Catalytic Exhaust Pipe Installation

- 15mm wrench.
- GTM catalytic converter pipes (FFR# 25370 or 25876 and 25877).
- There were two versions of exhaust manifolds used on the C5 Corvette the first vintage was seen on cars from 1997-2000 and the second was from 2001-2004. The first vintage was constructed using double walled stamped steel pieces which were welded together whereas the later versions were cast iron.
- Be advised that all LS1 and LS6 crate engines use the 2001 and newer manifolds.

1997-2000 2001-2004

1997-2000 2001-2004

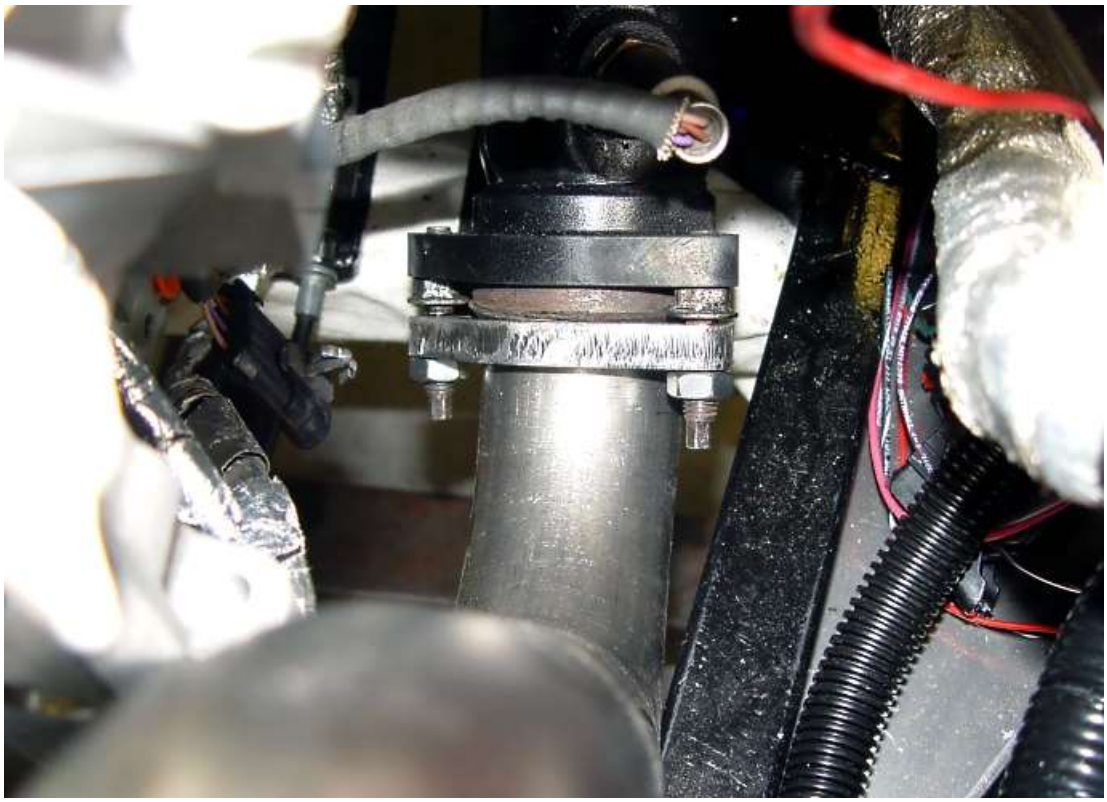
- Due to the Corvette having two different styles of exhaust manifolds, there are two different versions of the catalytic converter pipes. The earlier vintage (1997-2000) cat pipes (FFR# 25370) use the same pipe on the driver and passenger side. The later versions (2001-2004) has specific driver (FFR# 25876) and passenger (FFR# 25877) pipes which are marked from the factory. Make sure your cat pipes are the correct version in relation to the year of your exhaust manifolds. The easiest way to tell the difference is that the new style catalytic converter pipes prohibit the collar from sliding up to the cat itself.



Before you install the cat pipes, make sure the Corvette donut gasket is in place at the exit point of the exhaust manifold. This is a commonly replaced item from a GM dealership, GM# 12555555.

The FFR cat pipes attach to the Corvette manifolds using the Corvette donor studs and nuts. These studs are commonly damaged during disassembly and can be purchased from a GM dealership, GM# 12561310.

Make sure all mounting studs are in place along with the donut gasket; slide the cat pipes through the tubular x-frame in the rear of the car setting them into place.



The flanges are indexed and will only attach to the Corvette manifolds in one orientation. Go ahead and install the Corvette exhaust manifold nuts onto the studs holding the cat pipes in place. Do not fully tighten these nuts as you will do that later when the h-pipe is installed.

Fuel Tank and Fuel line Routing

1997–2002 Fuel Tanks

🛠 3/16" Hex key, ½" wrench, flat screwdriver, razor knife.

🚘 Corvette gas tanks/fuel lines, fuel filter/regulator, AC compressor cover plate, pre-bent barbed fuel line (FFR# 25753, 25888, 25889).

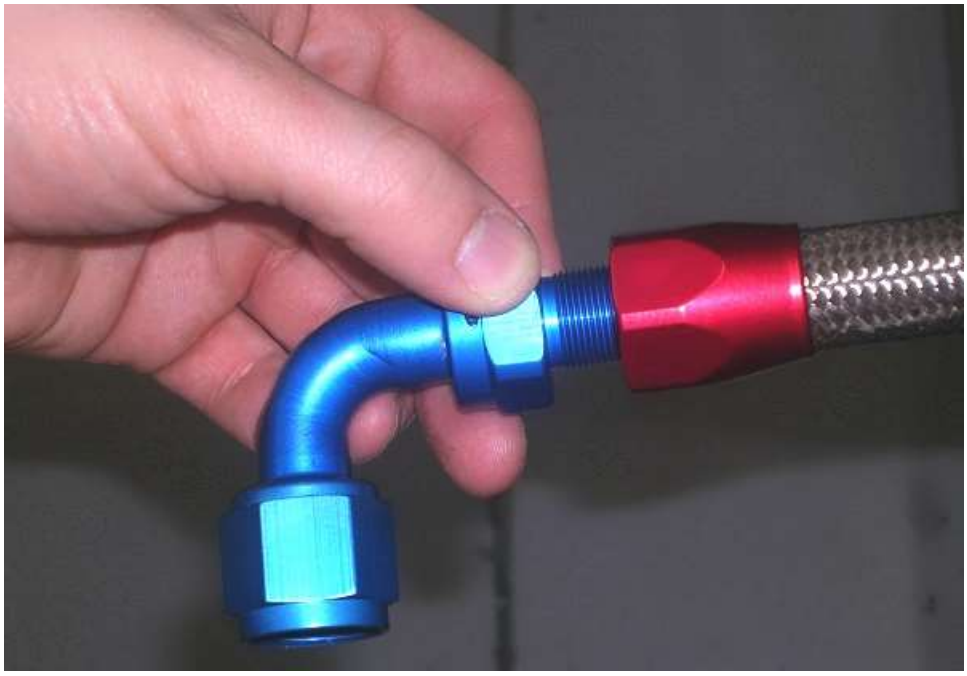
The driver/passenger tanks must be swapped side to side when installing then in your GTM chassis. Lay the tanks into the chassis to get a better understanding on their orientation and to see which tubes they are in contact with. Mark the frame tubes which are in contact with the tanks (same procedure used on driver and passenger side). You will also want to cap off the old filler neck ports on the tank which now point towards the engine on the passenger side.

Remove the tanks from the chassis and install the adhesive backed weather strip in the areas the fuel tank is in contact with the frame (FFR# 10857). Set the tanks back into the frame and add additional weather strip if needed. On the passenger side, mock up the AC compressor cover plate (FFR# 25753) to check its clearance between both it and the AC Compressor and it and the fuel tank.

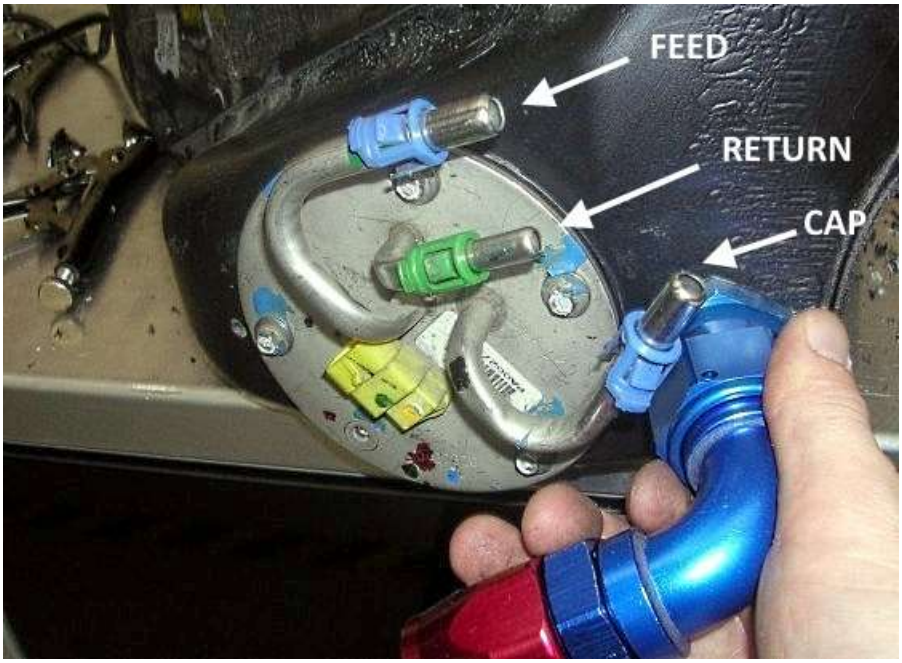
Install the AC compressor cover plate using the 3/16" short rivets. While installing this panel, make sure there is plenty of clearance between it and the engine belt/pulley. Also, make sure its position does not affect the way the fuel tanks are installed into the frame.

Fuel tank Crossover Tube

Press one of the female AN fittings onto the braided hose until it reaches the stop inside the fitting.



Thread the elbow onto the female fitting you just pressed onto the braided hose.



Thread one of the elbow fittings on the braided line onto the bulkhead fitting.

Route the braided line along the 1.5" square tube between the engine mount brackets, making sure that it is low and away from the exhaust, crank pulley, A/C Compressor etc. Check for kinks in the line.
Install the other elbow onto the braided hose.
Thread the hose onto the bulkhead fitting you installed in the other tank.

✋ Do not secure the line to the chassis yet.

Fuel line Routing

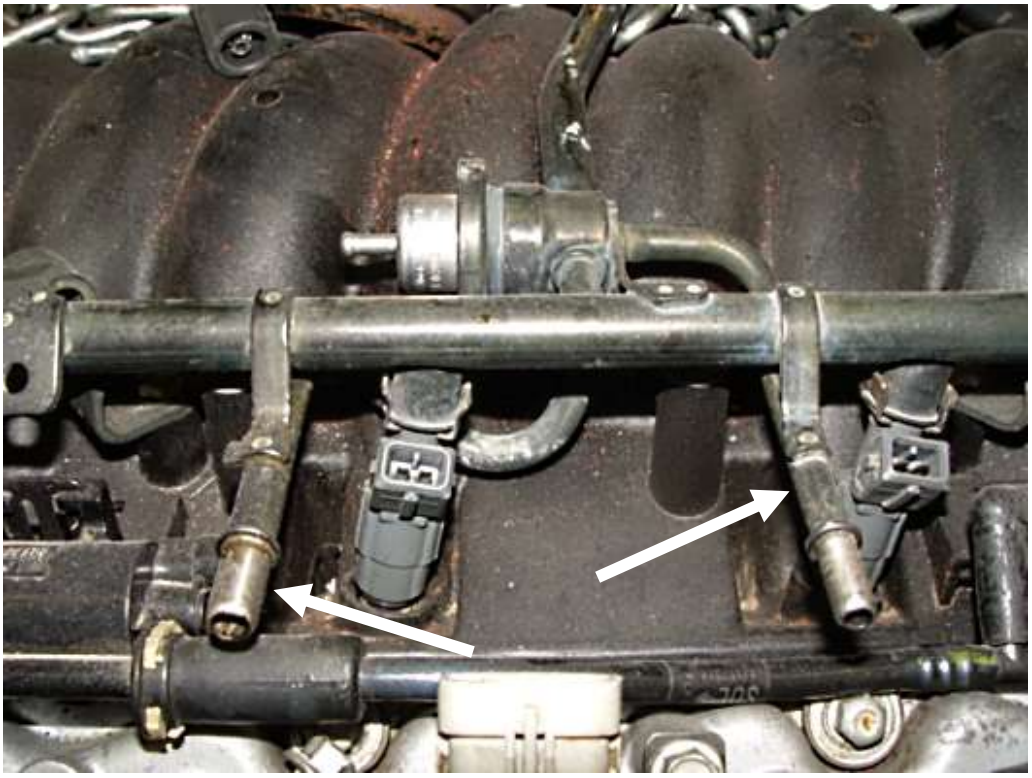
Fuel filter to engine

✋ The Corvette fuel system and line routing changed a number of times over the span of the C5. The Corvette fuel lines utilize re-usable quick connect fittings, which we will use. If these fittings were not saved off of the salvaged vehicle, you can neglect them and run just the ⅜" and 5/16". An easy way to determine the vintage of your fuel system is by the fuel filter. The 2003-2004 Corvette fuel tanks have an integrated fuel filter inside the tank (not shown).

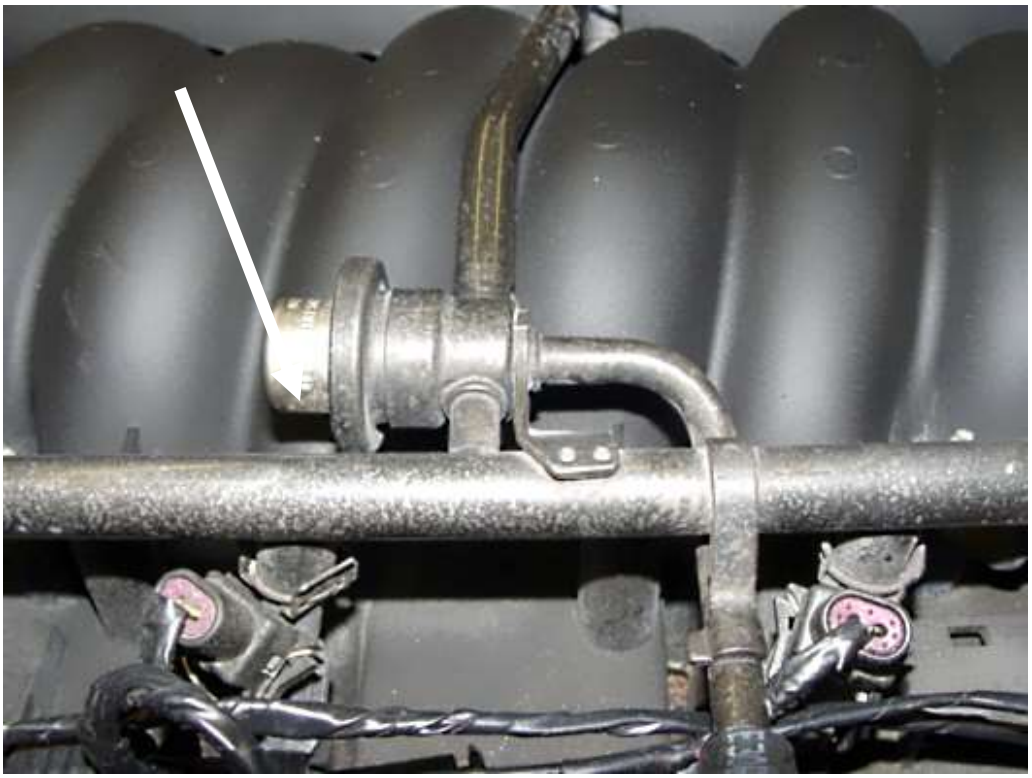
1997-1998 C5 Fuel filter

1999-2002 C5 Fuel filter

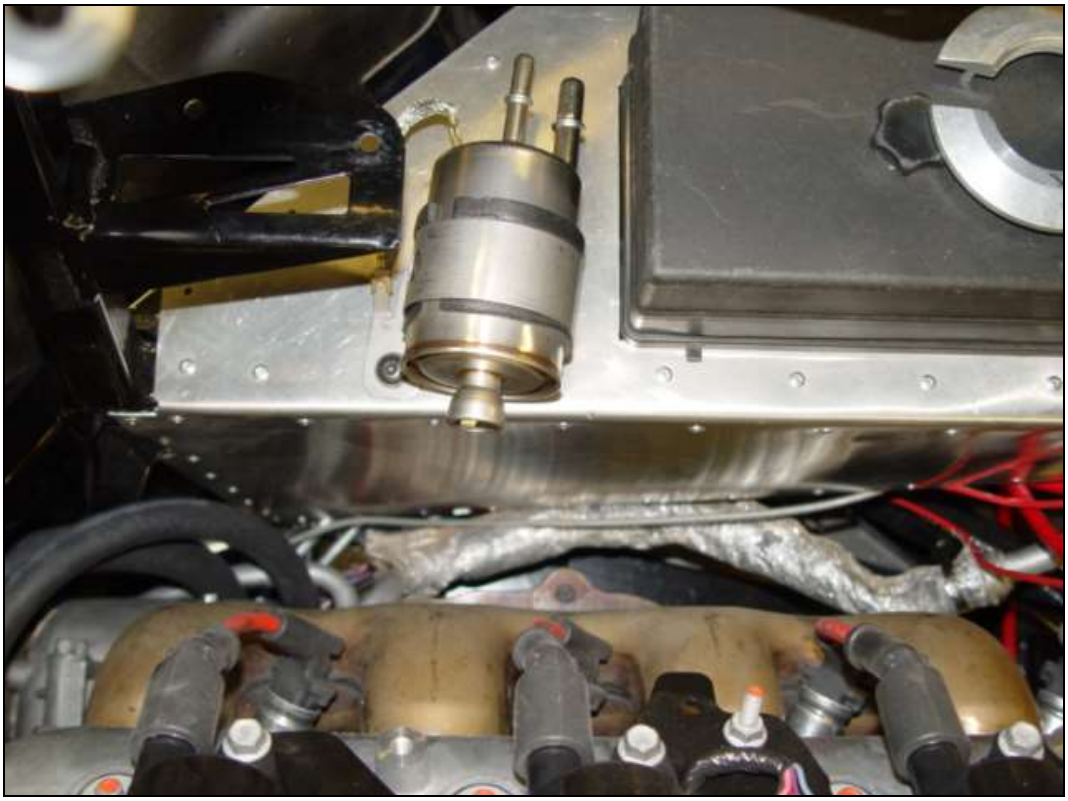
- Another way to verify the year of fuel system is to look at the fuel rails on the motor. The first generation fuel line routing has 2 ports on the fuel rails, one feed and one return. The second generation has a single feed on the fuel rails and no return (the fuel filter has a return port to the tanks).



1997-1998 Feed/return style fuel rails



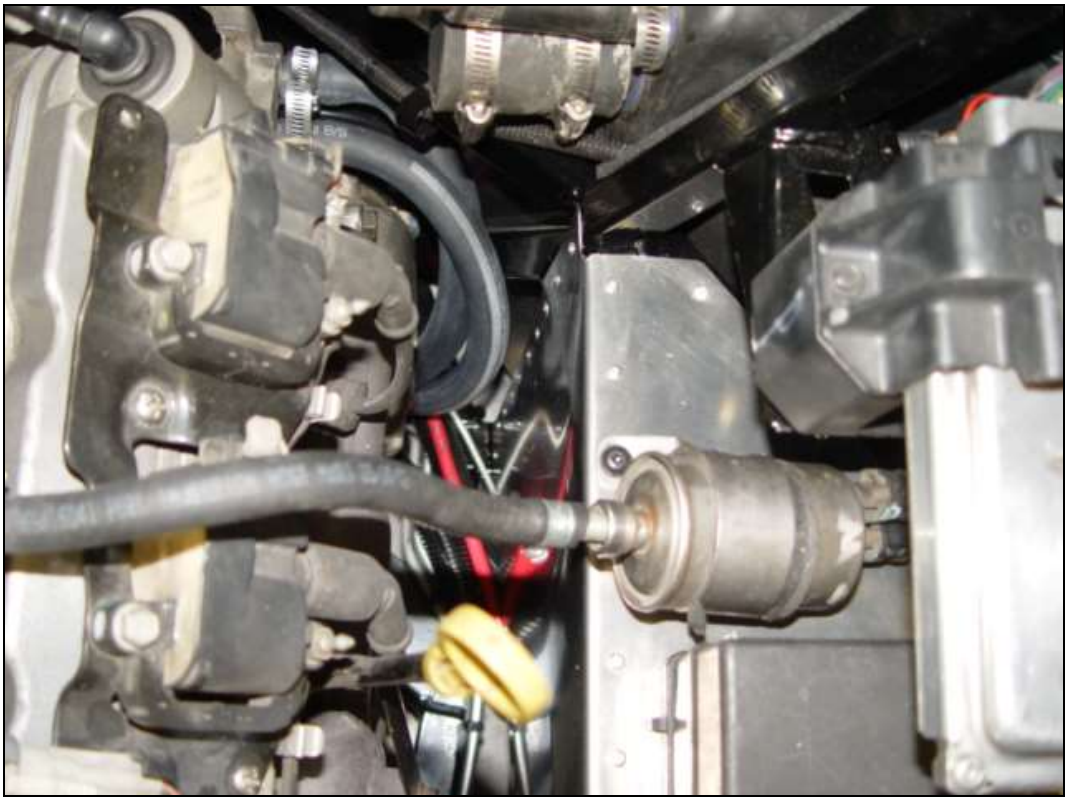
1999-2004 Feed port only on fuel rail



The fuel filter is installed under the PCM on top of the fuel tank finish panel (just forward of the engine fuse box). Install a ¼-20" rivnut into the frame then attach the fuel filter to the frame using the flanged button head fastener (FFR# 25460). The filter should be oriented with the output of the filter facing the motor.

Connect the output on the fuel filter to the input on the motor, large 10mm port on the fuel rail. The fuel filter output requires a 10mm male fitting which is cut off of the hard Corvette nylon coated fuel lines. Cut a short section (1.25" from the ridge) off one of these lines. Using a flaring tool slightly flare the end of this adapter piece.

Trim a small section of the nylon coating off of the line – this will provide a better seal when you clamp the flexible hose onto it.



Attach the ⅜" fuel line to the adapter piece, and insert it into the output on the fuel filter. Attach the other side of this line to large 10mm port on the fuel rail.

Fuel tank to fuel filter

- The Corvette fuel line with an inline y-fitting needs to be modified. The Y-fitting needs to be removed.

Use caution and remove the rubber/nylon line from this smaller port on the y-fitting.

Remove the straight 8mm fitting on the end of this section of hose that was just trimmed from the y-fitting.

Use the same process and remove the other 10mm and 8mm quick connect fuel line fittings to plumb the fuel system with.

On the driver side fuel tank (has only 2 fittings and no internal pump), make a short fuel line that simply loops from one fitting to the other fitting. Using the larger lower crossover tube included with the kit these smaller Corvette crossover lines are not needed.

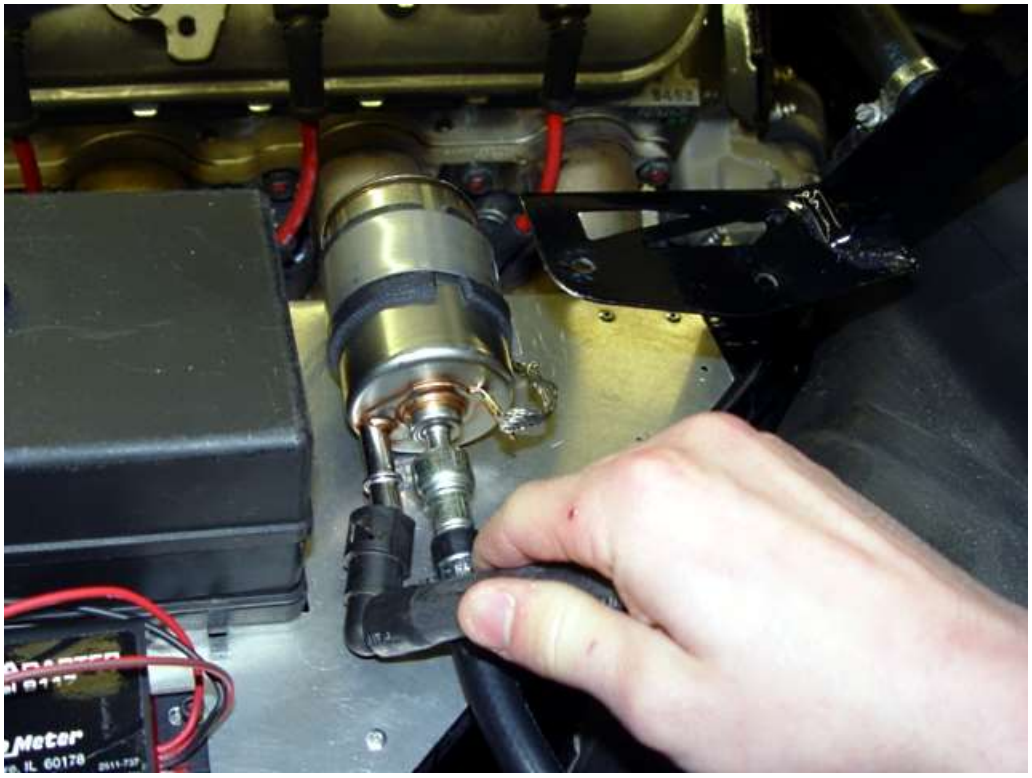
Use the quick connect fuel lines removed from the “Y” fuel line and connect the larger 10mm fitting to the ⅜” rubber line and attach it to the larger port on the passenger side tank.

Connect the other end of this line to the input on the fuel filter.

Return line

Use $^{5}/_{16}$" rubber fuel line along with 8mm connectors on both ends of the line. Install one 8mm fitting into the end of the $^{5}/_{16}$" and connect it to the center port on the passenger side tank (the only 8mm port on the passenger side tank).

Refer to fuel filter to engine section to see which generation fuel system you are using.



Connect the other side of the 5/16" line to the return port on your system, either the 8mm port on fuel filter or fuel rail.

Check for leaks before fastening the braided line to the chassis. Once you are sure the braided line isn't kinked and is safely out of the way of any moving parts and none of the fittings are leaking, secure the line to the chassis using the supplied insulated hose clamps and rivets.

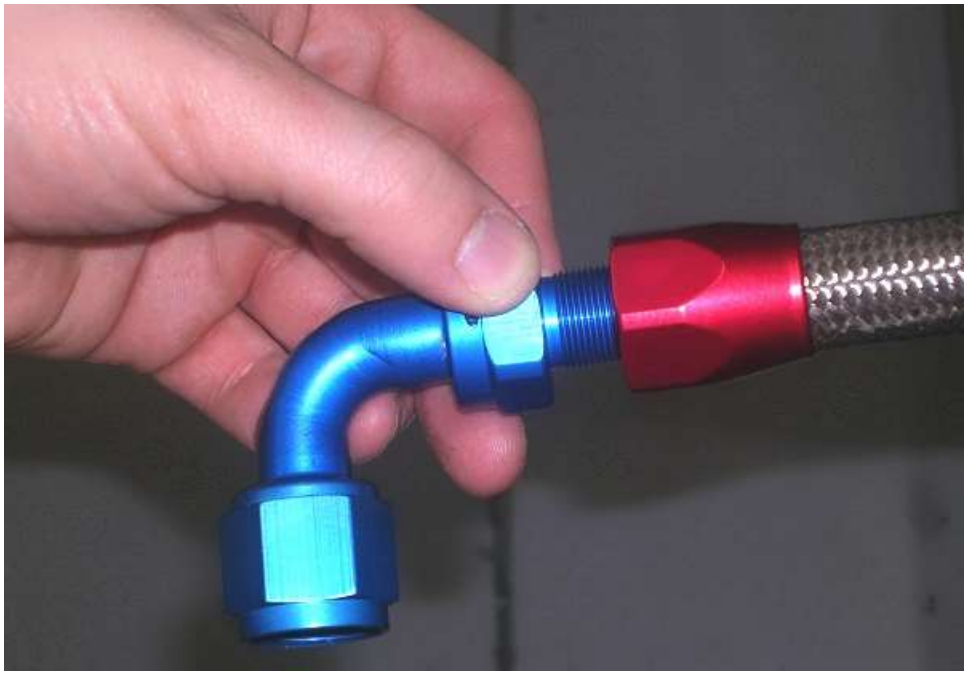
Connect the electrical plug into the back side of the tanks. (Same procedure for both the passenger and driver tank)

2002-2004 Fuel Tanks

Remove the tanks from the chassis and install the adhesive backed weather strip in the areas the fuel tank is in contact with the frame (FFR# 10857). Set the tanks back into the frame and add additional weather strip if needed. On the passenger side, mock up the AC compressor cover plate (FFR# 25753) to check its clearance between both it and the AC Compressor and it and the fuel tank.

Install the AC compressor cover plate using the 3/16" short rivets. While installing this panel, make sure there is plenty of clearance between it and the engine belt/pulley. Also, make sure its position does not affect the way the fuel tanks are installed into the frame.

Press one of the female AN fittings onto the braided hose until it reaches the stop inside the fitting.

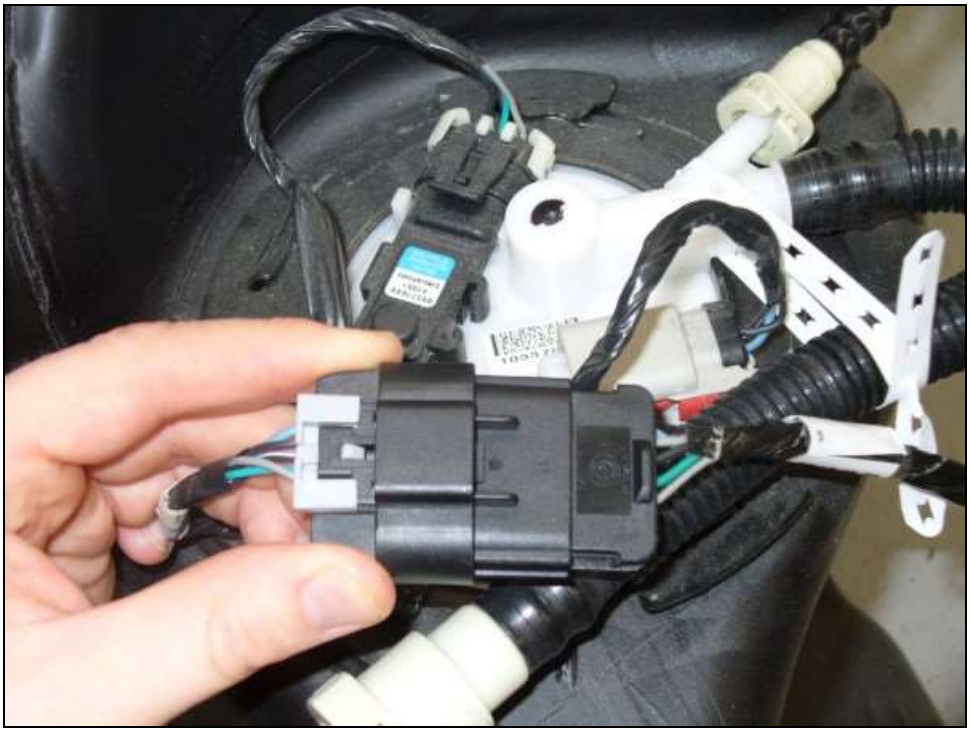


Thread the elbow onto the female fitting you just pressed onto the braided hose.

Thread one of the elbow fittings on the braided line onto the bulkhead fitting.

Route the braided line along the 1.5" square tube between the engine mount brackets, making sure that it is low and away from the exhaust, crank pulley, A/C Compressor etc. Check for kinks in the line.
Install the other elbow onto the braided hose.
Thread the hose onto the bulkhead fitting you installed in the other tank.

- Check for leaks before fastening the lines to the chassis. Once you are sure the line isn't kinked and is safely out of the way of any moving parts and none of the fittings are leaking, secure the line to the chassis using the supplied insulated hose clamps and rivets.



Using the flexible fuel hose supplied with the GTM kit, connect the barbed fitting on the top of the sending unit to the fuel rail on the engine.

Plug in the electrical connections for the Fuel Pump and Sender assemblies and the fuel tank pressure switch.

Drive/Test Chassis (Go-Cart)

Front Suspension

Now is a good time to double check all your hardware, make sure your wiring and hoses are away from extreme heat and moving parts, make sure the steering turns freely lock to lock, and make sure your brake flex lines have enough slack for the full range of wheel movement.

Fluid Levels and Grease

🛠 Grease gun, chassis grease, ratchet, rags
🚘 Transmission fluid, rear axle gear oil, engine oil, coolant, water

Transmission

Fill the transmission with fluid and install the shifter assembly. Leave the shift handle and knob off for now.

Engine

Fill the engine with Oil and coolant. Both these fluids should be rechecked after you have started the engine for the first time. Make sure there is some coolant in the overflow to start out, about ⅓ full is good.

Suspension

All of the suspension and steering components that have grease fitting need to be greased. With a grease gun squeeze grease into each fitting on all the control arms, including rear lowers on a slid axle, and tie rods.

Wheels

Install and torque your wheels. Make sure they rotate freely and do not interfere with the brake calipers, lines, or any suspension components.

Rattle Patrol

Get the engine up to temperature and check for leaks and make sure the fan is working.
After running the car for the first time once coolant is added and while the system is still warm, retighten the hose clamps used on the cooling system.

If you have the space in your driveway or have access to a small parking lot it is very helpful to drive the chassis around a little to make sure everything is working before you seal it all up.

 **If you do this, bolt the seat harnesses in and use them** 

You will be very surprised at how quickly the car responds to small inputs and it is amplified by being extra light without the body in place. Things to check for:

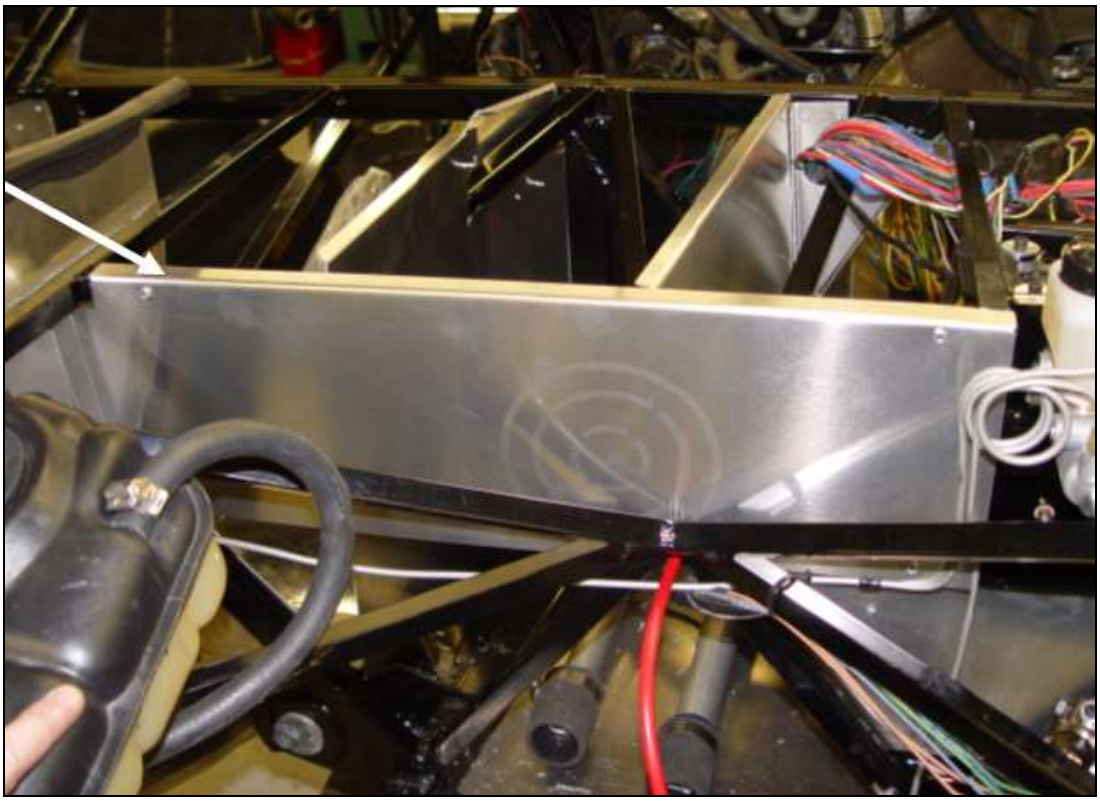
- Any leaks – brake fluid – transmission fluid – engine oil – rear diff fluid – coolant
- Wiring – loose wires – close to heat sources or moving parts – loose grounds
- Suspension – all hardware tight – no binding or clearance issues
- Chassis – all hardware double checked – nothing loose or sharp
- Steering – all set screws tight – steering wheel tight – tie rods and rack tight
- Brakes – plenty of fluid – pedal not bottoming- all fittings tight to reservoir

Brake Bias – if you have space adjust your brakes bias with the balance bar (the set up and adjustment procedure is detailed in the paperwork that came with the pedal-box) Set up your brakes so that the fronts lock up just before the rears.

Foot Box Front Wall, Top Panel, and Tunnel Cover Aluminum

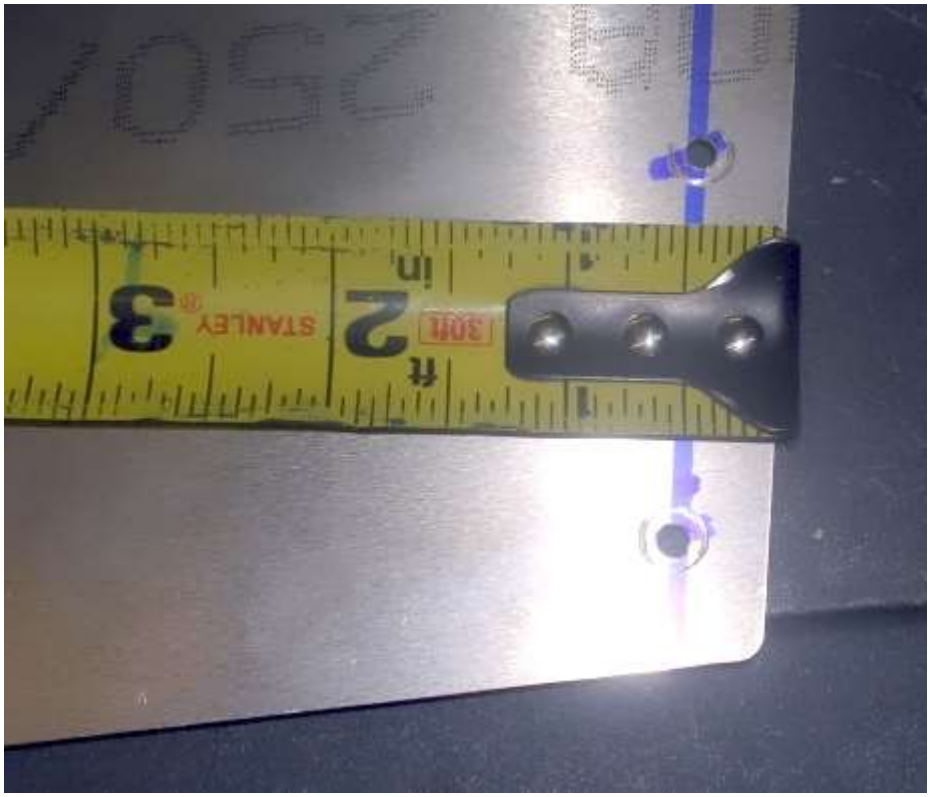
🛠 Eye protection, drill w/#6 hex nut driver, ⅛” drill bits, drill, rivet gun, silicone, caulking gun, #6 self tapping screws.

🚘 GTM foot box aluminum (FFR# 25171).



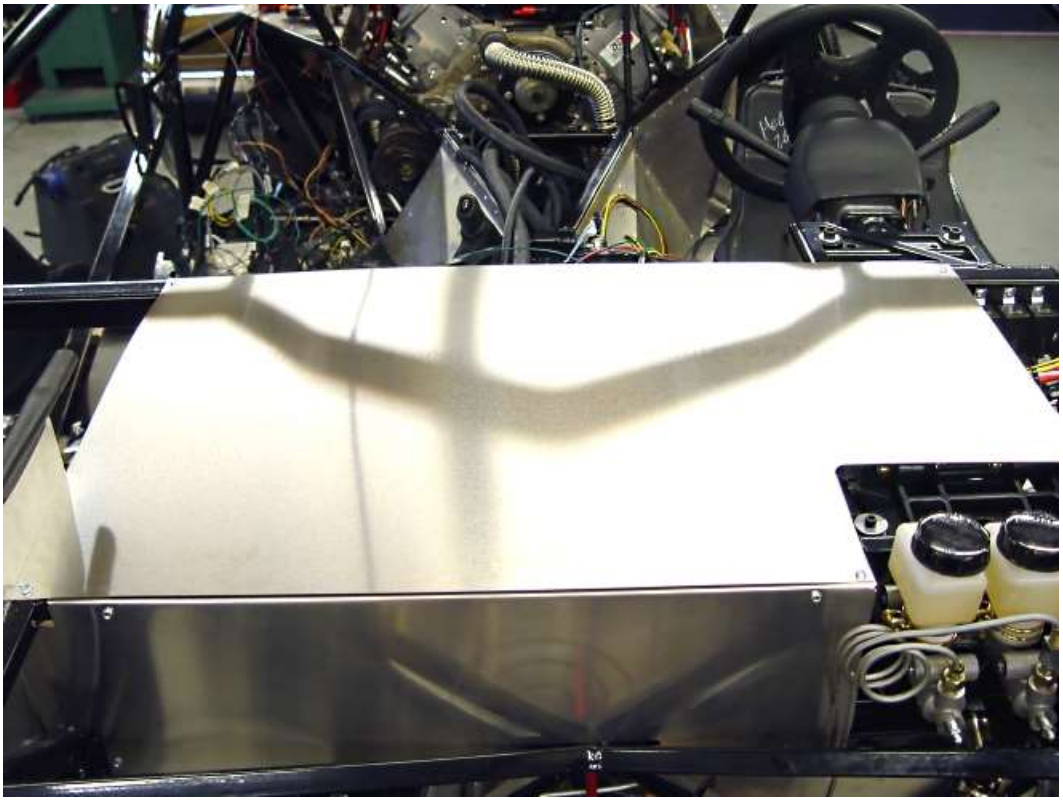
Install the front footbox wall (FFR# 25190). Do not rivet the upper edge yet, as it is riveted in the next step.

If you did not do so when you removed the Tunnel Cover Aluminum Panel (FFR# 25802) from the frame, you will need to mark the rivet locations on the panel now.



Measure in from the sides of the panel ½" and draw a line parallel to the edge of the aluminum. Measure along the line every 2" (approximately) and mark the location for the rivets. Drill out the panel. DO NOT drill the top edge – this will be fastened to the frame when you install the footbox top aluminum panel.

Apply a bead of silicone to just the top edge of the Dash Bulkhead tube. Set the panel in place. Drill the frame using the holes in the aluminum panel as a reference and rivet the panel to the frame.



Install the foot box top piece. This piece is riveted around the outside to the frame as well as to the upper flanges on the multiple footbox pieces. You are going to have to mark these flanges on the bottom surface of the piece and then drill for ⅛" rivets.

Main Body mounting

- 🛠 ⅛", 3/16", ¼", ⅜", 25/64" drill bits, drill, Rivnut tool, ½" wrench/socket, ratchet, 3/16" Hex key, 1" hole saw
- 🚗 Body – Main (FFR# 25245), Rear Hatch Fasteners (FFR# 25429), Firewall Panel (FFR# 25497), Weatherstrip (FFR# 10761), Tail lights and Hardware (FFR# 25218), Fuel Filler Assembly (FFR# 25228), Rear Quarter Window Assembly (FFR# 25249), Rear Hatch Hinge (FFR# 25236)

Lower the main body shell into position on the frame, make sure to pull the door openings out and around the hinges.

Make sure that the body is sitting tight around the door openings. Check that where the bottom of the body curls under is underneath the frame tubes.

Door area mounting

The body is located by the door openings underneath the door sills and front to back by the chassis in front of the door opening. Making sure that the body is tight against the frame in these areas sink a few 1/8" rivets through the body into the door sill.

The front of the door opening will eventually be permanently mounted using 3/16" rivets to the chassis. Drill and rivet a few of these rivets to hold the body in place keeping in mind these will be visible when the door is open and should have a nice even spacing.

Rear body mount

Measure in about 8½" from the outside edges of the exhaust exit recess and draw a vertical line – the material between these lines will not get cut. This is where the license plate will mount. Trim the body along the outline of the exhaust recess and along the vertical lines you drew.

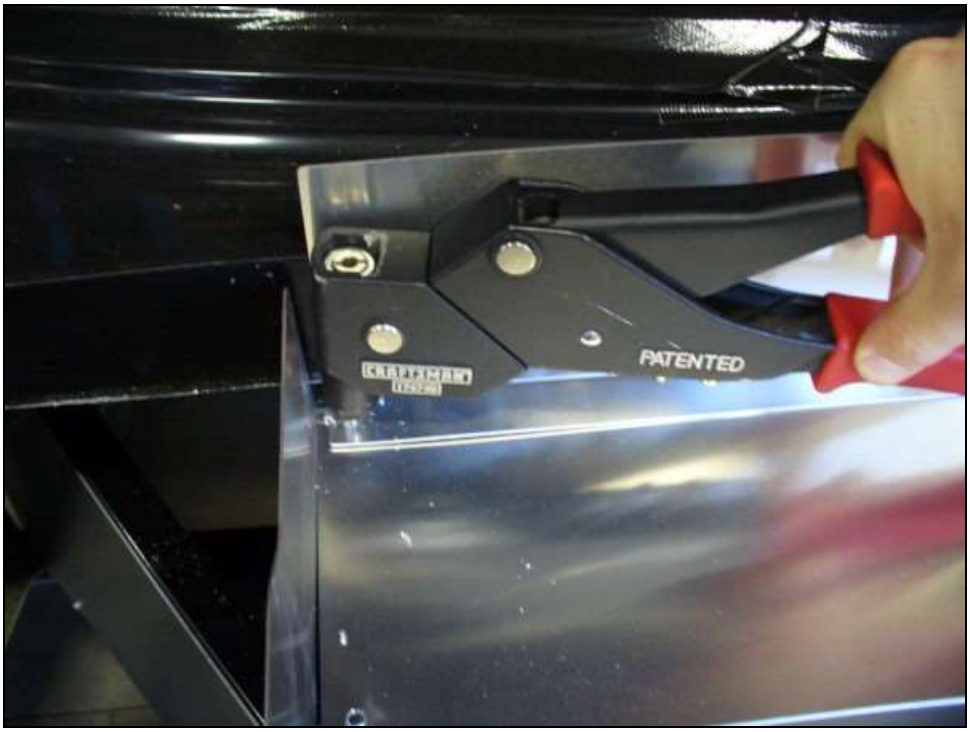
- The rear section of the body needs to be leveled and centered side to side by measuring from the wheel opening in to the shock mount, once it is centered mark down either side of the mounting bracket with a marker or tape.

Raise the body up until the bottom edge of the license plate recess is flush with the top edge of the transmission mount and the mount is centered by the two lines drawn in the previous step.

Attach the rear body mount that the body was mounted with from FFR.
Find the center of the transmission mount then mark a line 2.25” to the right (pass side) of this. This will be the location of the right side of the latch support.
Unpack the Hatch Fastener components (FFR# 26166).
Locate the right side of the latch support on the line marked on the transmission mount.
Push the latch support against the back side of the hatch latch mount area and clamp the latch support bracket to the transmission mount.
Use a 3⁄16” drill bit and 3⁄16” rivets to mount the latch support to the transmission mount.
From the back side of the latch support bracket drill two ⅛” holes through the bracket and latch mount area of the body.
From the body side of the latch area, use two ⅛” long rivets to mount the body temporarily until the latch is mounted.

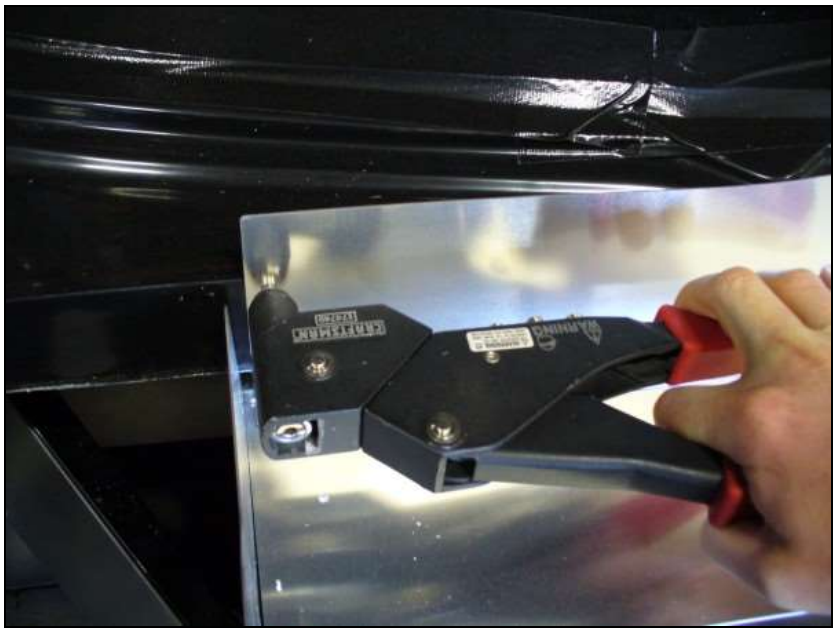
Firewall mounting

Set the aluminum Firewall Panel (FFR# 25497) in place and push it back against the body.



Rivet the bottom corners of the panel into the chassis.

Pull the body up into position against the panel. It is easiest to put some wooden blocks between the body and footbox tops to hold it in place.

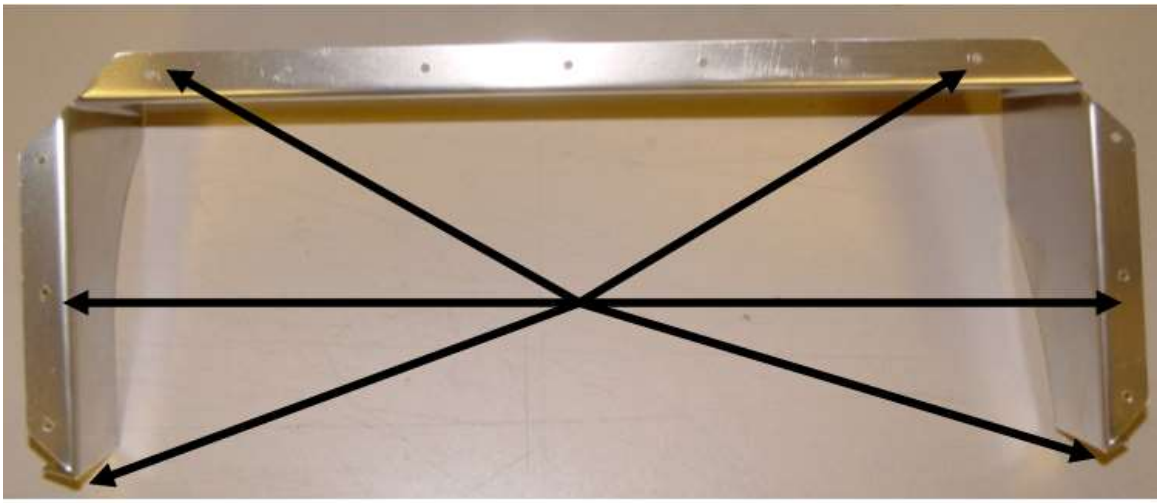


With the body up tight against the panel put a rivet on each end of the front face into the body.

Set the side cowl bracing panels in place, lining up the top edge of the panel with the top edge of the center firewall panel you just installed. Make sure you leave enough room between the top edge of the panel and the body for the weather stripping. You want the weather stripping to contact the body, but not to be crushed. Also, make sure that the hood struts clear the panel when the hood is closed.

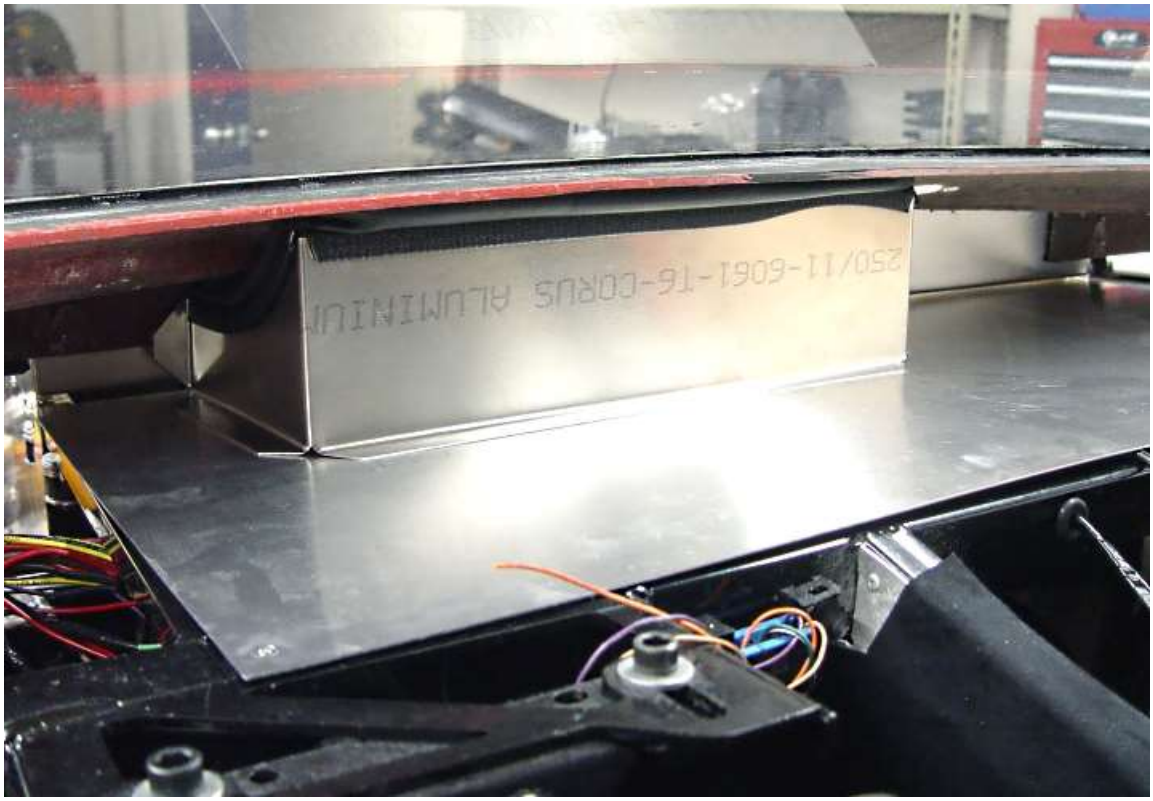
For a clean install, you can drill a hole in the body and press the weather stripping through the hole (shown installed after the car has been painted).

With the body in place the wiper enclosure panel (FFR# 25500) has to be fit to the body/chassis. Pre-drill the holes (⅛") in this panel before setting it into place. All of the mounting flanges should be pre-drilled.



Picture shows the panel with the flanges oriented upwards, drilling the holes in this orientation makes is easier.

Install round bulb seal on the upper edge of this panel. Cutting slices in the push-on section of the bulb seal helps when rounding the 90° corners.



Once the bulb seal is installed fit the panel into place. This piece of aluminum is mounted around the wiper cutout on the body and installed from the cockpit.

Use a marker and mark the location of location of this panel. (Mark the perimeter of the panel on the foot box top)

- Once the body is removed later in the build, make sure to rivet this panel in place with the bulb seal installed on the panel.

Taillights

Unpack the taillights (FFR# 25219, 25220), mounting brackets (FFR# 25223) and hardware (nut – FFR# 25864, washer – FFR# 11088) from the kit pack.

Mount each taillight using the aluminum bracket and hardware, the orientation is not important for initial fitment.

Mount all four taillights to ensure a perfect fit, it may be necessary to file or sand the body to get a perfect fit.

Fuel Filler Caps

Unpack the fuel filler caps (FFR# 13490) and the hardware. The hardware is in the small boxes with the caps.

Lower each cap into the body opening on the rear fender and if necessary sand or file until they will center in the recess.

Mark and drill 3/16" holes for the mounting hardware, make sure that the cap orientation is the way you want it. We prefer the flip up tab pointing toward the rear.

Rear Quarter Windows

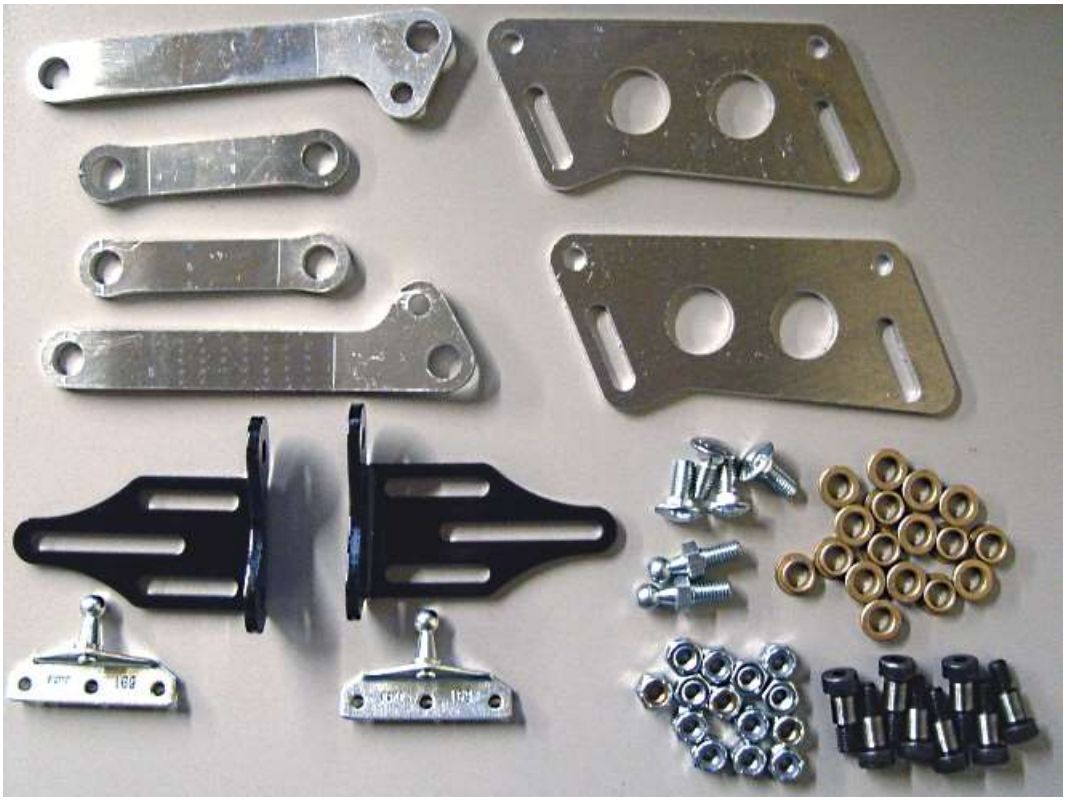
Fit each window up to the opening lining the front edge up flush with the body.
Use black silicone or have the windshield guy attach the windows with his windshield adhesive.

Rear Hatch Hinge

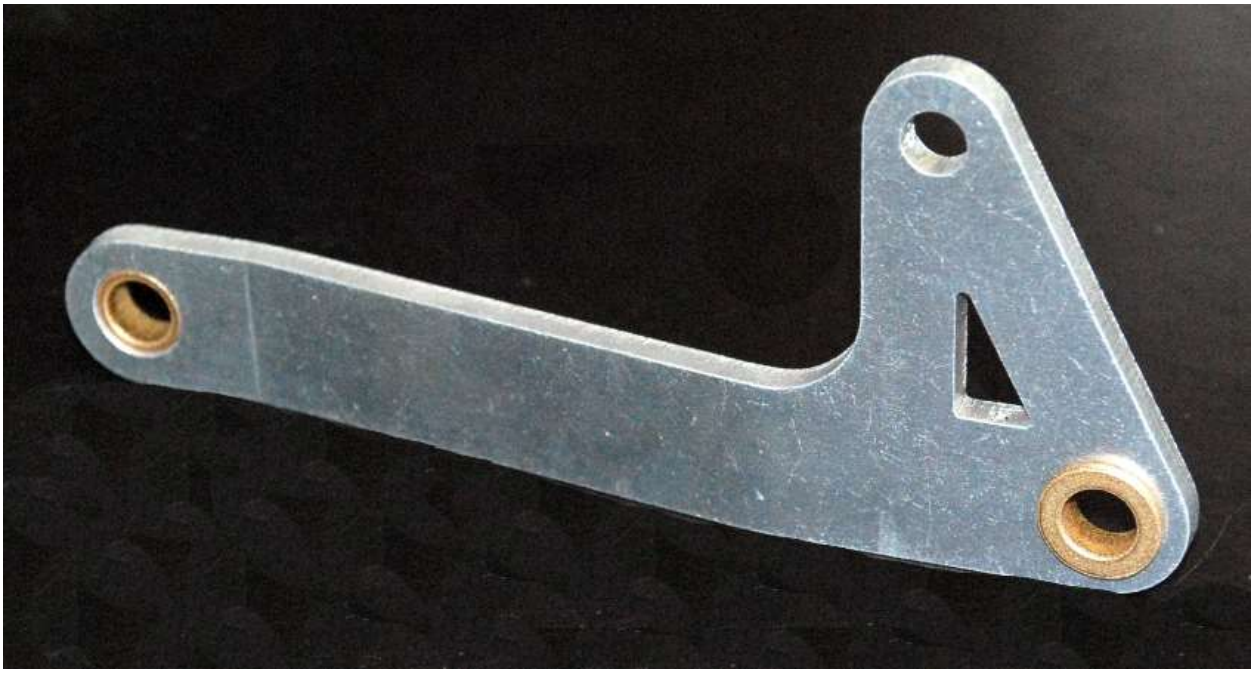
- The panel has been trimmed oversize to allow for material to be removed until the desired seam is found.

Lower the hatch into the opening on the body to do initial fitment.

Space the panel from underneath with shims or bumpers until the surfaces are flush on the top and back side then mark and sand until the seam is even around the visible section of the panel.



Unpack the hatch hinge brackets and hardware (FFR# 25236).



Press the brass bushings (FFR# 13183) into the adjustment plates (FFR# 25404) and the long hinge arms (FFR# 25412, 25413 – driver, passenger).

Press the bushings into the shorter arms (FFR# 25410).

Press the bushings into the hatch attachment brackets (FFR# 25401, 25402 – driver, passenger).

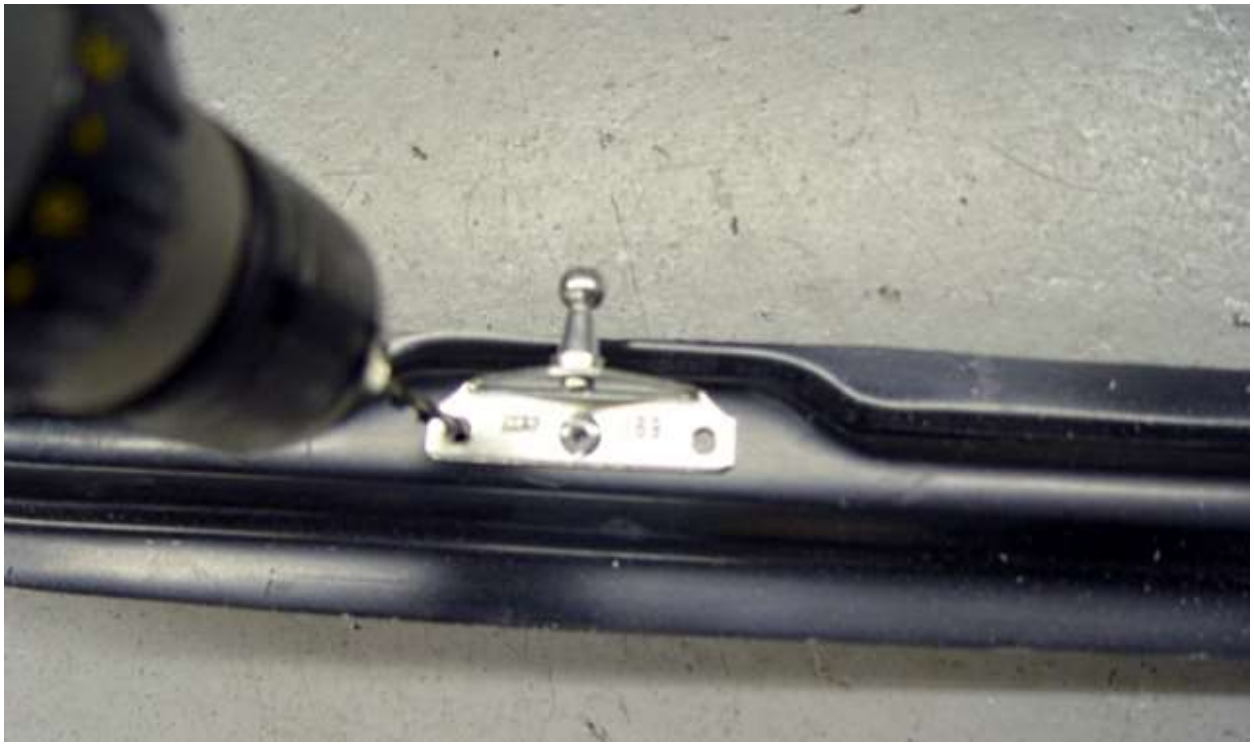
Attach the hinge arms to the adjustment brackets.

Attach the tops of the hinge arms to the hatch attachment brackets.

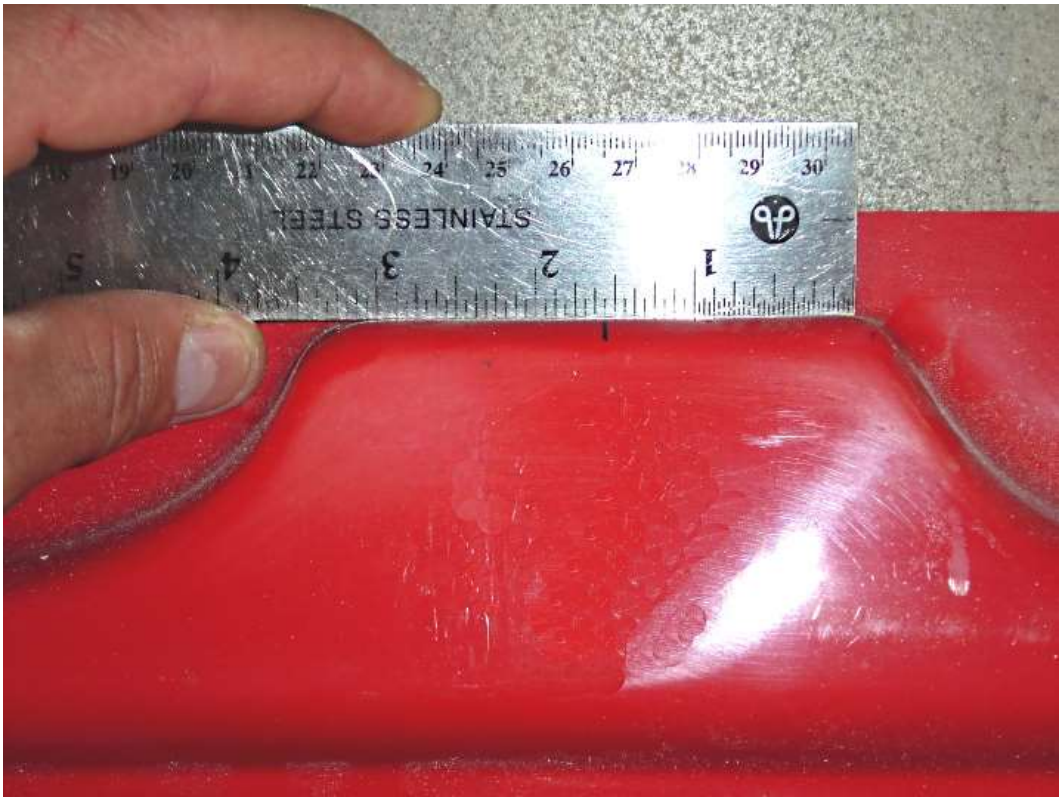
Attach the hinge adjustment brackets to the chassis finger tight so the brackets can still slide to adjust.

Set the hatch back into position and line the hinges up. With everything lined up mark the center of each mounting slot of the attachment bracket onto the hatch.

Remove the hatch and drill and install ¼-20 rivnuts in the hatch



The gas shock mounts are centered on the mounting pad on the hatch with the ball stud facing inward. Drill and rivet both mounts to the hatch.



Find and mark the centerline of the hatch striker mount area.

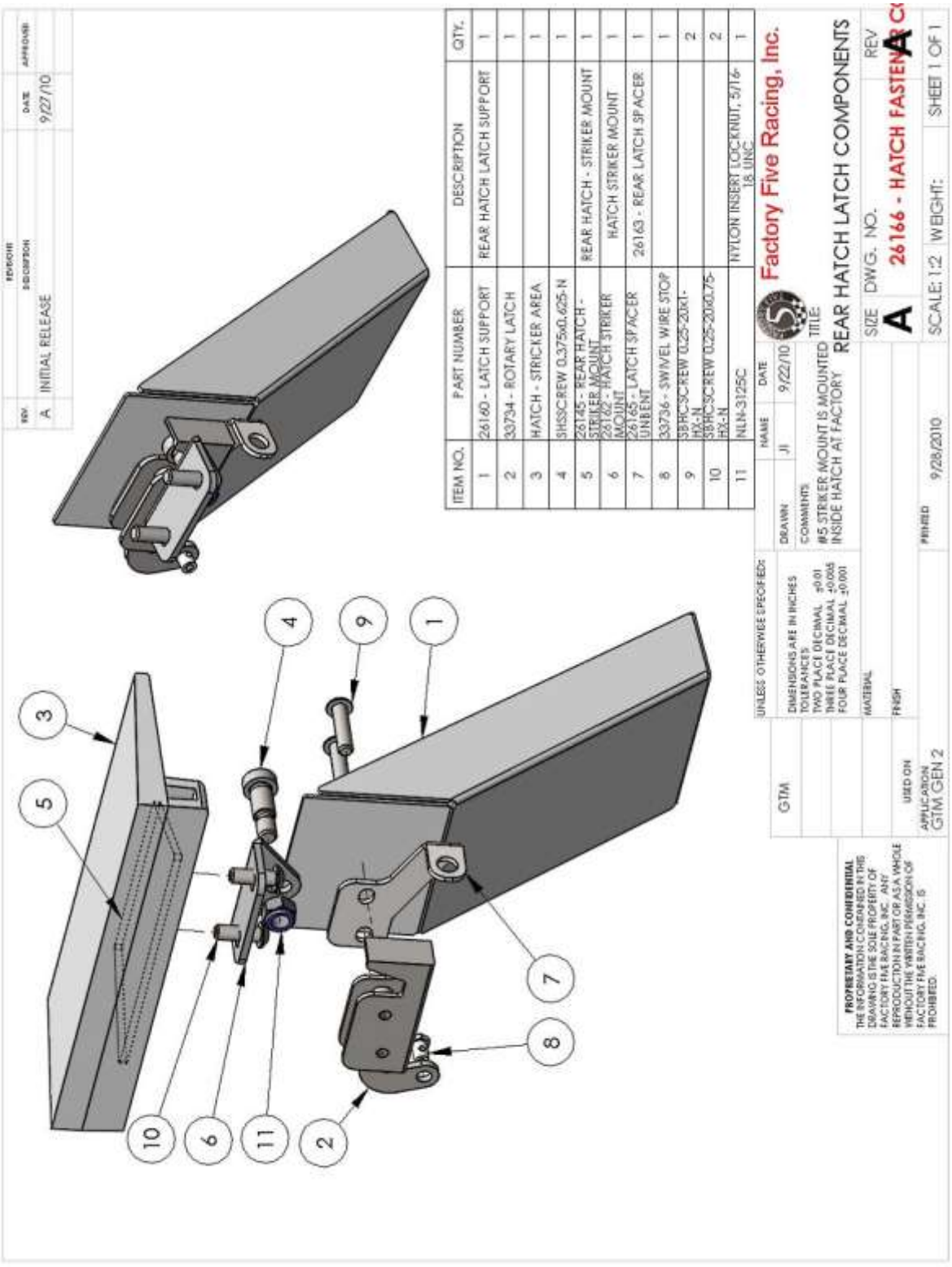
Mount the hatch to the hinges using the six small ¼”-20 button head screws. Align the hatch paying close attention to the rear corners and the bottom corners of the window openings.

Attach the gas shocks to the hatch.

Rear Hatch Latch

🛠 5/32" hex key, 1/2" socket, ratchet, 3/16" drill bit, rivet tool, rivnut tool, 25/64" drill bit, marker, ruler

🚗 Hatch fastener components

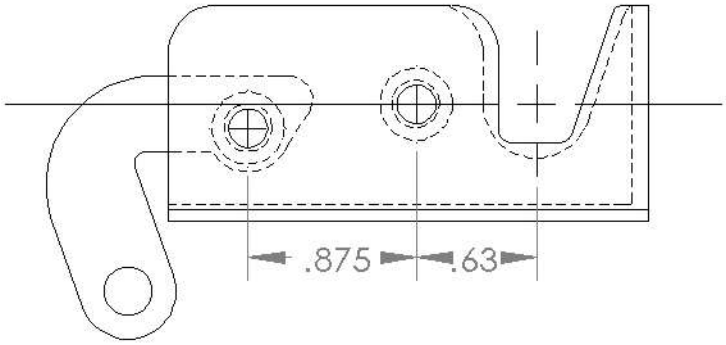


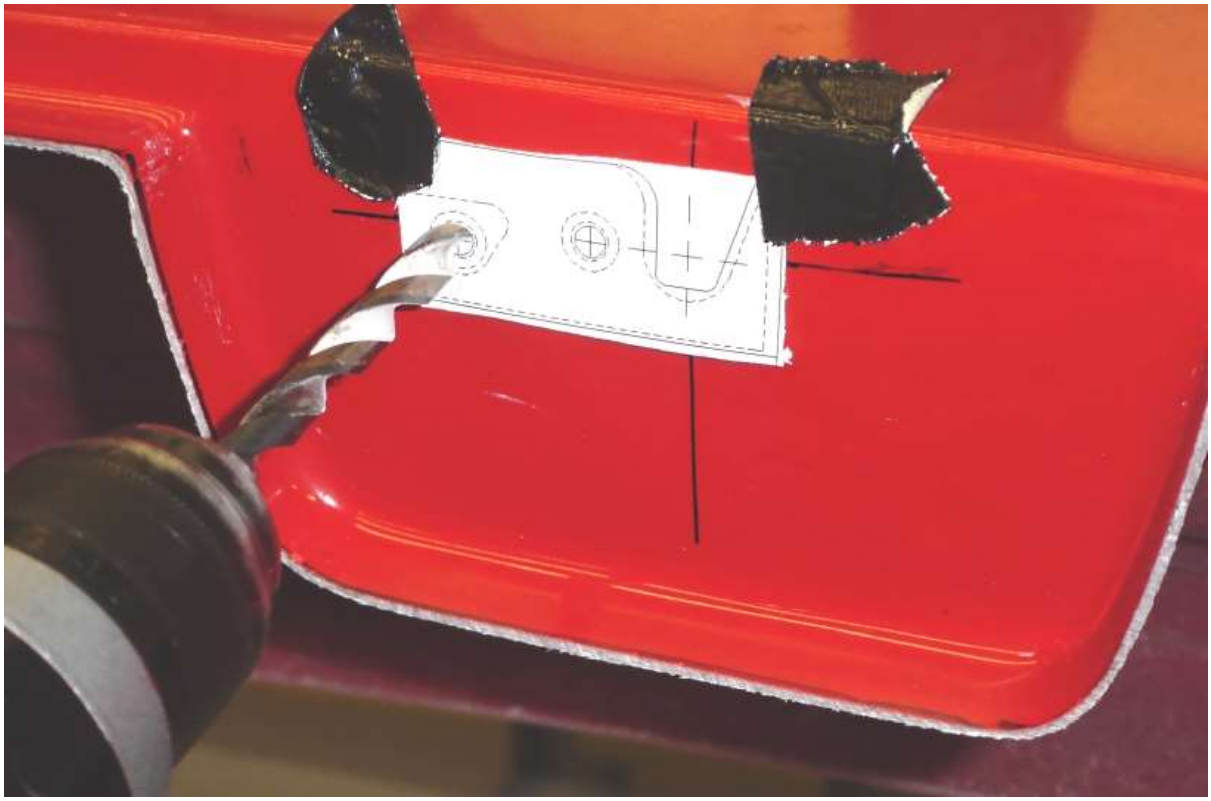
Close the hatch.

From the underside, measure forward from the body latch mount area 15/16" and mark the hatch. This is the front of the latch striker mount.

Open the hatch.
Center and locate the striker mount bracket on the hatch and mark the mounting holes.
Drill and install rivnuts at the locations marked.
Attach the striker mount to the hatch using the ¼"-20 x ¾" flanged button head screws.
Attach the shoulder bolt to the center of the striker mount hole.
Close the hatch so it is flush with the body.
From the underside of the body, mark the center location of the shoulder bolt on the hatch latch area.

Open the hatch and extend the lines out so that they can be seen around the latch template.





Use the template to locate and drill ¼” latch mounting holes through the body latch area and the latch support bracket.

Insert the swivel wire stop in the latch hole.
From the latch support side insert the ¼”-20 x 1.00” flange head screws through the latch support, body, latch spacer and into the latch.
Tighten the screws.
Insert the hatch release cable end fitting into the latch spacer.
Insert the cable into the swivel wire stop.
Pull on the end of the cable and, at the same time, tighten the release cable in the swivel wire stop.
Leaving the hatch open, test the release cable. If necessary either loosen and readjust the cable in the swivel fitting or loosen the latch screws and adjust the latch spacer so the cable is tight.
Close the hatch and test the release cable. If necessary, move the shoulder bolt up or down so that the hatch is flush with the body.

Wipers

On the cowl measure straight back ¾” from the bottom point of the driver’s side wiper pad and mark a point.

Drill this point with a 1” drill bit or hole saw.

Locate the wiper transmission from the kit and insert it upside down in the hole. With the outer holes even mark through them on the body and drill out with a ¼" drill bit.

Diffuser

🛠 Drill, 3/16", 5/16" drill bit, rivet tool, clamps, measuring tape, marker.

🚗 Secondary body fasteners, Rear Diffuser.

Raise the diffuser up to the chassis with a jack for fitment so that the Diffuser is sitting against the frame but can still be moved around. The upward bend in the diffuser starts just behind the ends of the chassis tubes.

The most important visible alignment of this panel is the rear edge that sticks out past the body. Measure and make sure this edge is even (~1.25") all of the way across.

Measure the height from the body down to the diffuser. 3.75” is the length of the spacer provided but if a different look is desired these could be cut.

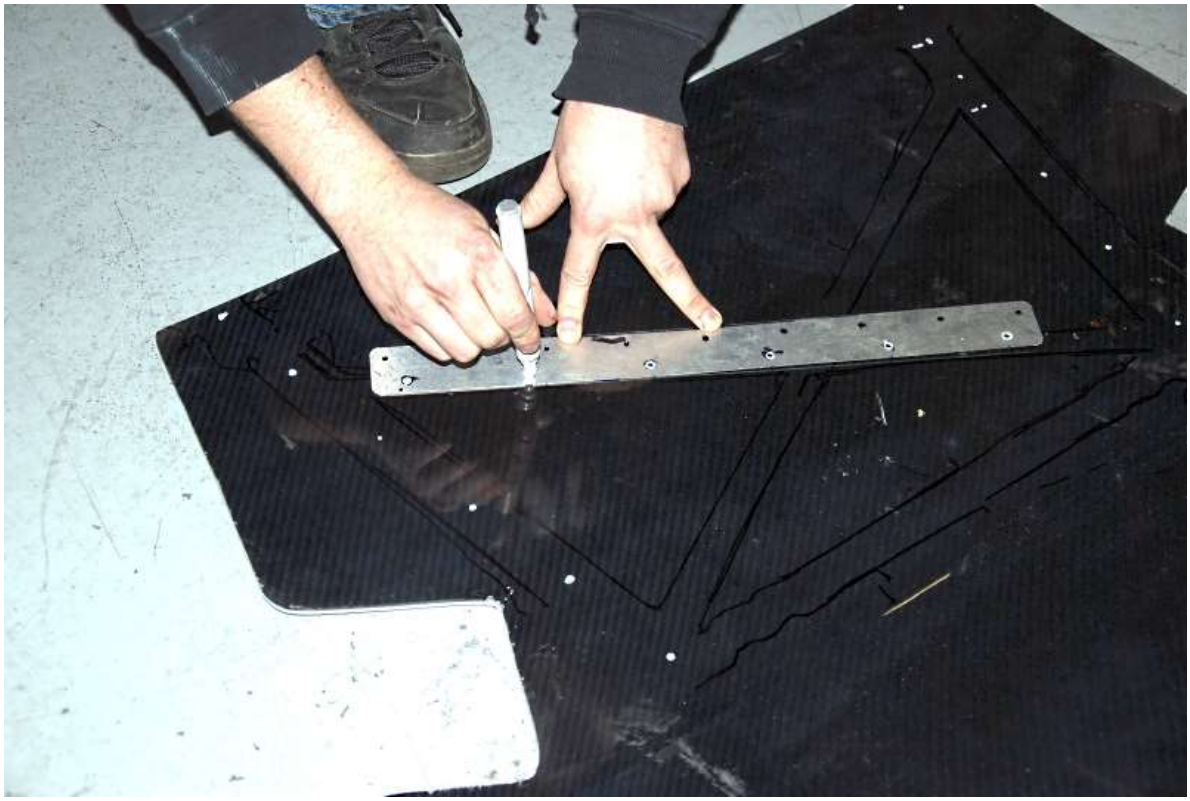
Double check the in/out measurement again then put a little more pressure on the jack to hold the panel firmly in place.
Clamp the sides of the Diffuser near the bottom to hold it at the correct angle.

Trace the frame rails and body flanges onto the diffuser from the top to locate the rivet locations.

Decide how many spacers you would like to use to hold the diffuser. We provide five but three could also be used.

Evenly position the spacers on the Diffuser so that the top is in the middle of the body mount flange. A little masking tape between the diffuser and the body might be needed to hold everything in place.

Make sure all of the spacers are aligned and mark around the spacers, top and bottom.



Remove the diffuser and mark the panel for 3/16" rivets on both the bottom part and the sides.

Remember that the Diffuser sticks out past the body so do not mark for rivets in the area sticking out.

Drill 3/16" holes in the Diffuser for the rivets.

Drill 5/16" holes at the center of the marked spacer locations on both the body mount flange and the diffuser.

Re-position the diffuser and using the diffuser rivet holes as a guide, drill the bottom frame tubes. Rivet the lower area. For now, you only need to put about every fourth rivet in place as the panel will be removed prior to paint.

Bolt the spacers onto the body.

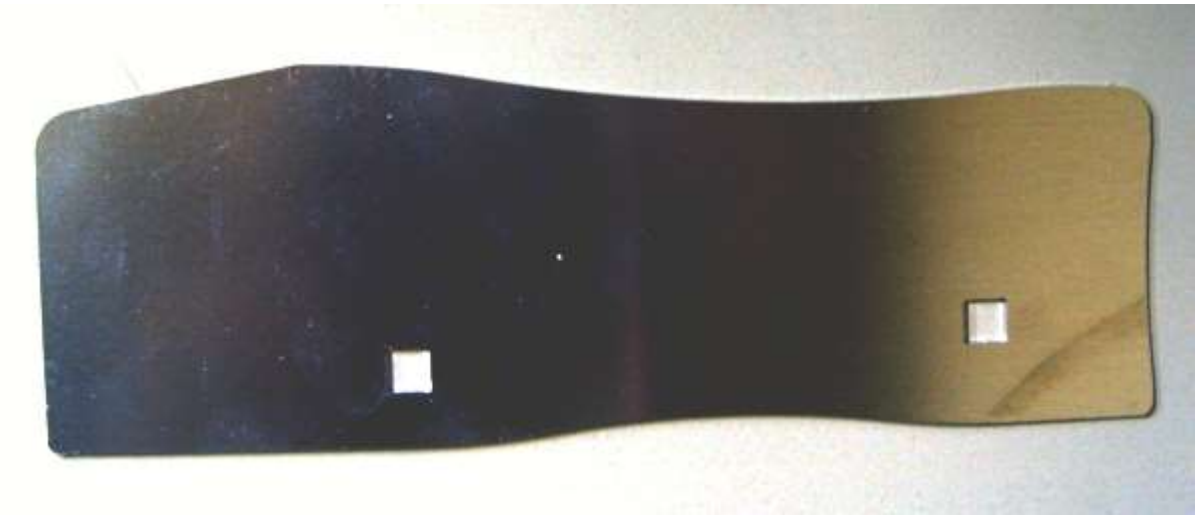
Use the Diffuser side holes as a guide and drill the side body holes for rivets.


FACTORY FIVE
VV-544
Factory Five Racing
GTM

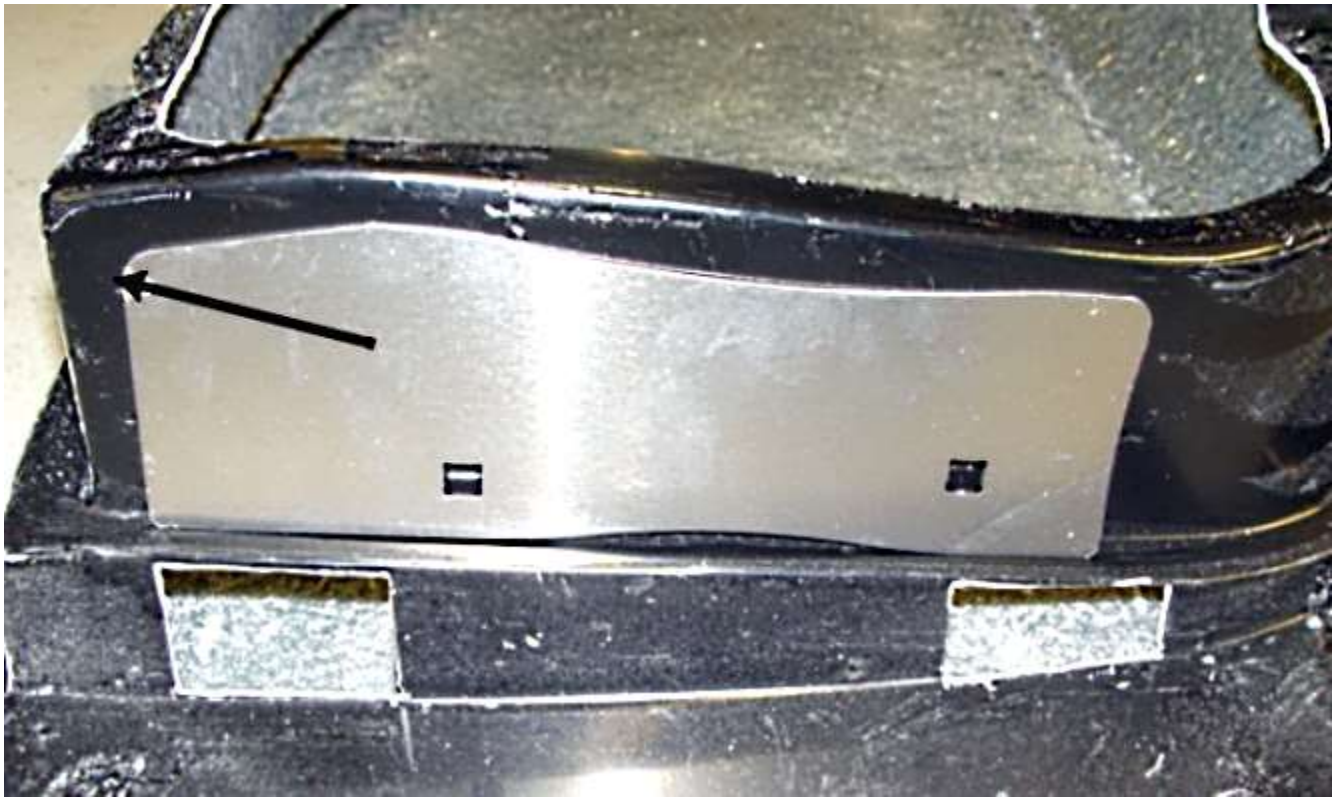
Doors

Position the doors in the openings and remove any excess material to allow the door sit flush with the body.

Door Hinge



Locate the front door trim panels.



These panels locate the bolts that hold the door to the frame in the front. Align the panels so there is a ½" between the bottom outside corner and the bottom of the door (see arrow) and mark the two square holes on the door.

Remove the panel and drill the two holes with a ⅜" drill bit.

On the original power window tracks there is a stud at the top of each track, hammer this stud out using a medium size steel hammer. Resting the track on a socket will keep it from deforming when removing the stud.

Position the door hinge plate on the front of the door aligning the slots in the plate with previously drilled holes. Mark the door to cut holes for the hinge pin sleeves and the door stop bracket.

Cut the marked through holes, be sure to leave room for adjustment.

Position the door hinge plate in the door, the plate is symmetrical and can be set in place with either side up.

Insert rubber door stop stud (FFR# 26034) through hole in bracket and tighten lock nut (FFR# 13963).

Depending on your door installation, you may need to space off the door stop with washers, if the door opens to far and contacts the body. This can be done after the door is fit and trimmed.

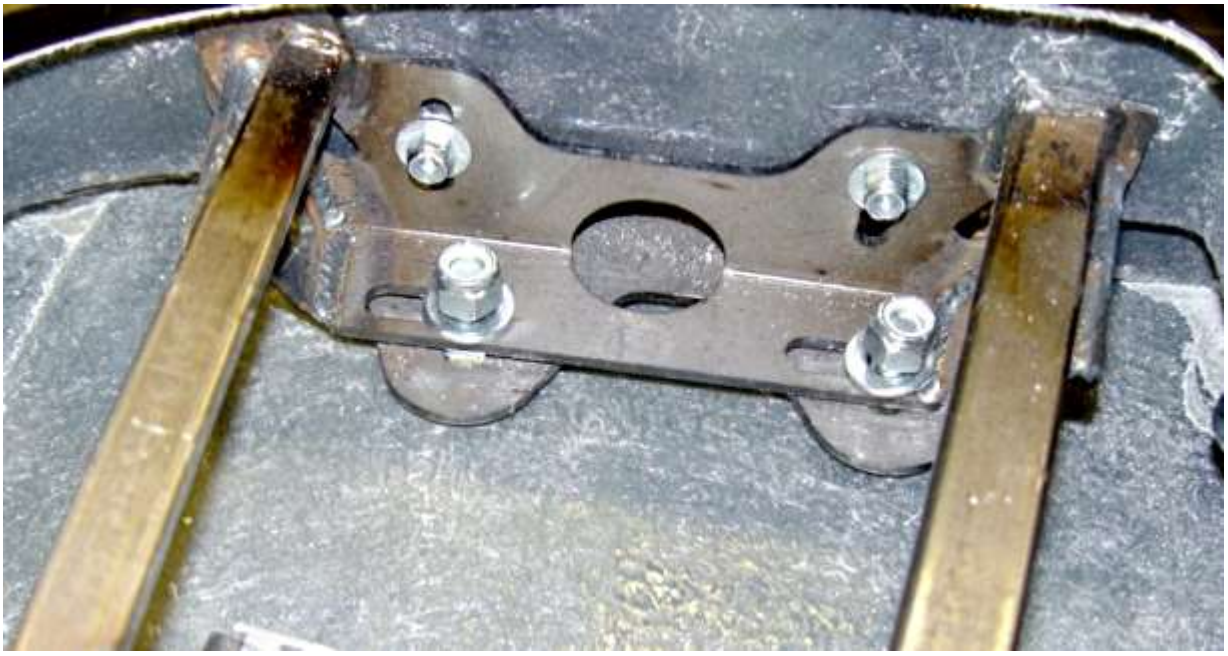
Power Window Track

Set the window tracks in the door shells in rough position, then set the door frames in above them.

Attach the latch to the latch adjuster bracket to the latch mechanism using the grade 8 ¼" screws. The screws that come in the package with the latch are too short and are not used.

Slide the latch assembly in behind the frame into position and loosely bolt the two together using 5/16" carriage bolts, washers and lock nuts.

Lift the frame and hinge plate in the front of the door as high as you can get it and insert the two ½" carriage bolts from the bottom.



With the trim panel in position, push two 5/16" carriage bolts through the door and the front of the door frame and finger tighten a lock nut on each.

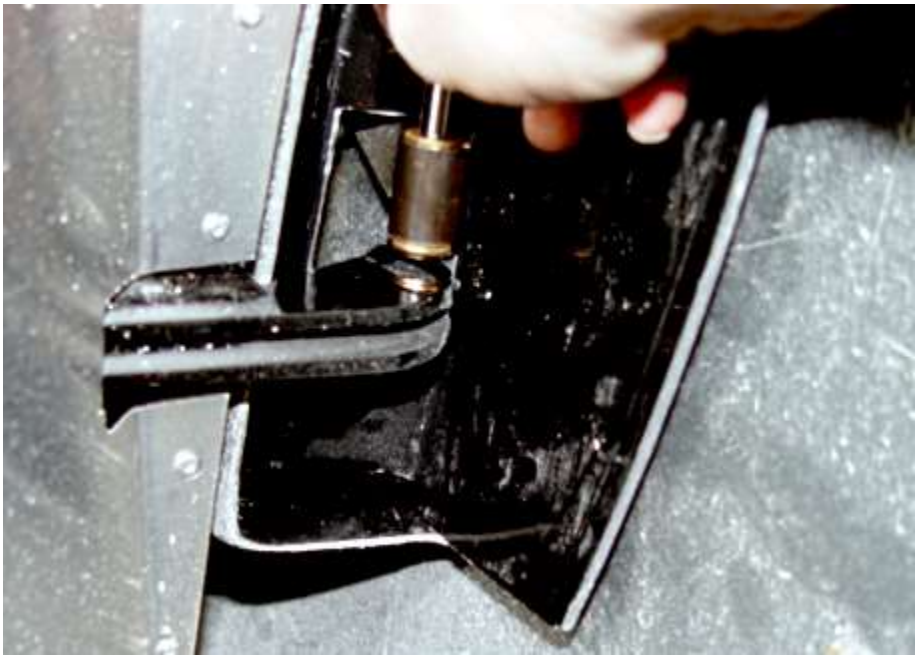
Holding the latch adjustment panel snug against the back side of the door tighten the bolts that hold it to the door frame.

Drill out the body slots for the door striker. Mark the chassis for the vertical center of the slot then measure in 5/8" from the outside of the striker pad and drill an 1/8" hole.

Walk the small drill around to make a larger hole that is centered with the slot then switch to a larger ½" bit and bore out the hole using the chassis as a drill guide.

Push the brass bushings from the door hardware into the chassis and door frame, if they are loose in the frame put a little grease around the outside to keep them from falling out while lining up the pins.

Position the door on the body lifting the hinge plate over the chassis hinge mounts to allow the door to slide forward into position. Tape the door in place to make it easier to line up the hinge.



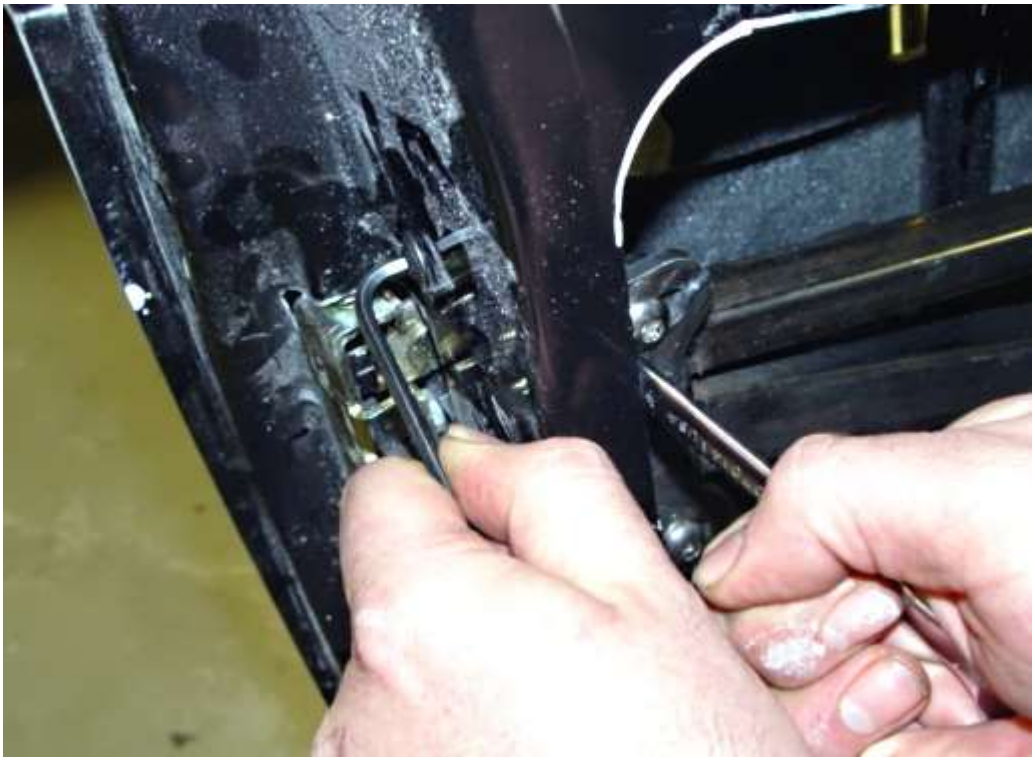
Slide the shoulder bolts through both the hinge plate and chassis mount and finger tighten a lock-nut on the bottom.

Remove the tape and align the door so that the surfaces are all flush and tighten the mounting nuts from the hinge to the frame and frame to the door.

The bottom edge of the body is still loose and can be moved in and out some to help line up the door surface. Once you are happy with the door fit drill and rivet the body to the four ends of the chassis cross-tubes.

Bolt the door latch pin to the chassis leaving it loose enough to adjust. The washer on the door pin should be between the body and the chassis and is threaded to allow the pin to adjust outward.

With the door in position and the door latch operational mark the center of the slots in the door latch mount where it meets the body and drill with a ¼" drill bit.



Bolt the rear of the door to the door frame using the ¼" stainless bolts provided and tighten them with the door in its fitted position.

Mark the seams for an even gap and file or sand until you have an even 3/16" gap around the door.

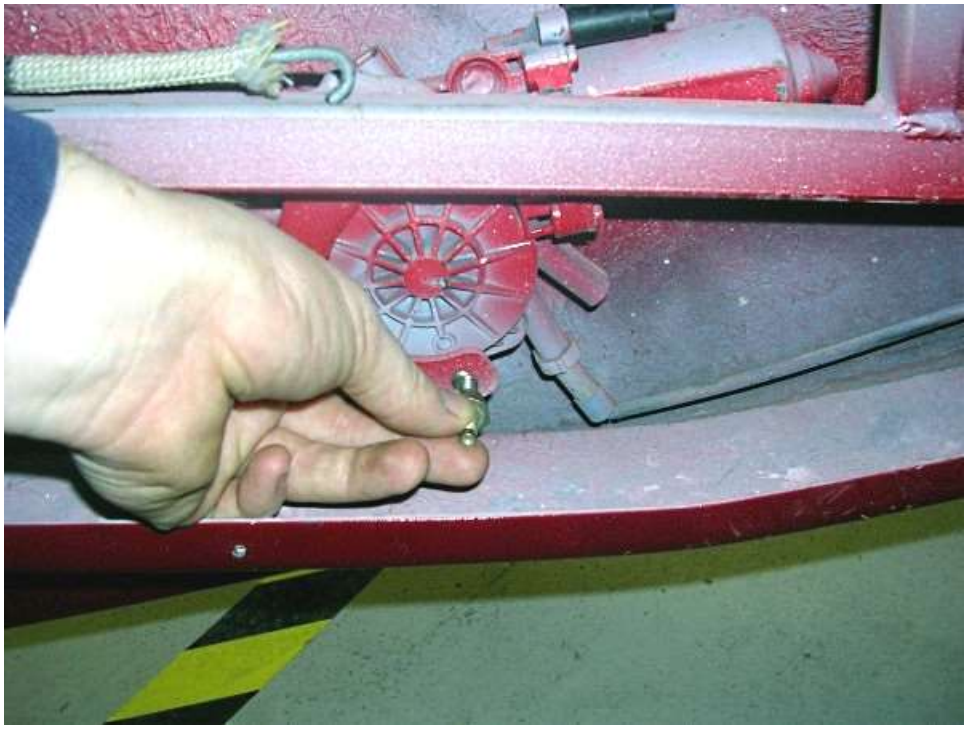
Open and close the door looking for interference between it and the body, the main area that this will occur is the upper front corner. The body will be just and edge in this area to allow the door to swing inward.

Once you have the door lined up properly, you can mark the location for a hole for the door latch on the supplied aluminum cover panel.

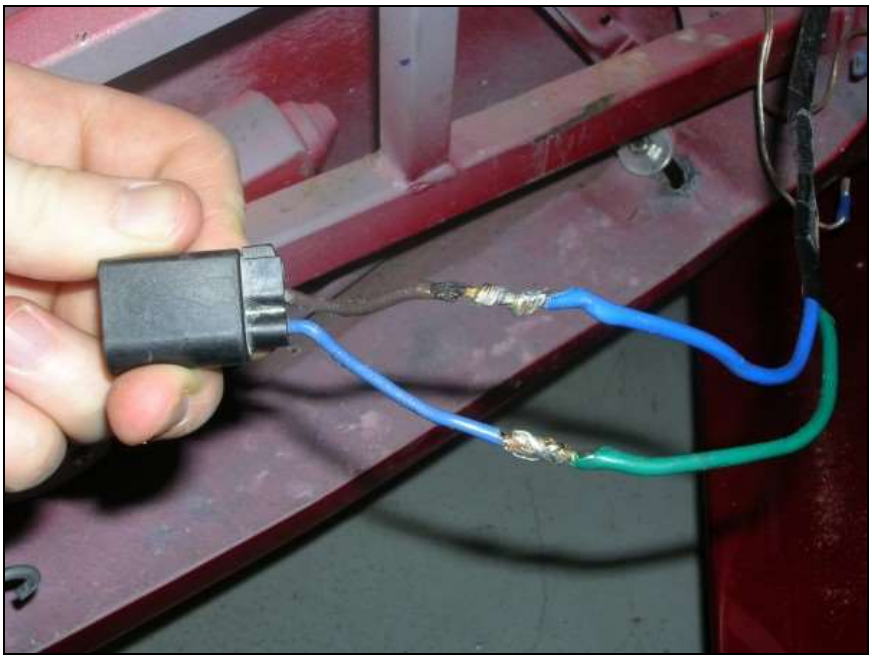
Drill the mounting holes in the panel and in the body, but don't mount it permanently until the body has been painted (Shown after body is painted).

Windows

With the door frames installed and the doors adjusted, set the window tracks in the door.



Using the Corvette window motor screws, mount the window motor to the bracket on the door frame using the three holes in the bracket.



Splice the Corvette window motor plug into the wires that you ran earlier in the build from the window switches.

Position the front lower track mount tab to the recess in the bottom of the door so that the hole in the bracket is centered about the recess. Using the track bracket as a template, mark the position for the hole. Drill a 6 mm (approx ¼" if you don't have a 6 mm drill bit) hole in the bottom of the door. Then, using a grinder or saw, slot the hole so you can adjust the window track in and out. Bolt the track to the door with the supplied hardware (FFR# 25798, 25864), but do not fully tighten yet.

Place the lower portion of the rear track into the molded recess on the inside of the door near the back of the door.

Position the track so that the mounting hole in the track is in the approximate location shown in the picture (shown already bolted in position).

Drill a 6 mm (approx ¼" if you don't have a 6 mm drill bit) hole in the door pocket.
Bolt the track to the door with the supplied hardware (FFR# 25798), but do not fully tighten yet.

Adjust the tracks by pivoting them about the lower bolts. Start by positioning the rear upper track so that the bolt will be approximately 10” from the rear edge of the door and the bolt in the front track will be about 27” from the rear edge of the door.

- The actual measurement from the edge of the door may vary car to car, but the important things to be sure of are that both tracks are below the opening in the door and they are as CLOSE TO PARALLEL AS POSSIBLE! It is very critical that the tracks are parallel to prevent them from working against each other which will cause the tracks to bind and prevent smooth transition of the glass.

Before mounting the Window Track Brackets (FFR# 25859, 25860), notice that the brackets should rest against the window track, and sit flat against the top edge of the door frame (shown bonded and bolted in place).

Squeeze a small amount of the supplied adhesive (FFR# 25865) onto a flat surface like a piece of cardboard (something you are willing to discard). The epoxy is a two part epoxy, so be sure that both parts A and B are coming out of the tube. Mix part A and B together with a nail, rivet or something similar (also something you are willing to discard). Once mixed, you should have a pool of adhesive about the diameter of a quarter and about ⅛" – 3⁄16" thick.

- When applying the adhesive to the brackets, if the location on the track that you will bond the bracket to has a hole, place a piece of duct tape over the hole on the backside of the track to prevent the adhesive from seeping through the hole (if the adhesive seeps through the hole and is allowed to harden, it can interfere with the window guide movement).

Apply to the back of one the supplied Window Track Brackets.

Using a set of clamps and a small straightedge, clamp the bracket to the window track and allow the adhesive to harden (Driver side rear shown). Repeat for front bracket.

Starting at the back of the door, push the felted bulb weatherstrip (26039) onto the flange going around the top of the door opening on the body to the front corner.

Attach the adhesive-back weatherstrip (FFR# 12750) around the lower door opening on the body.

Using the same adhesive-back weatherstrip (FFR# 12750), install a strip along the rear door post so the bulb faces toward the front of the car. This will allow the rear edge of the glass to rest against the bulb, sealing the rear edge.

Window Down

Window Up

Install the felted weather strip on the inner and outer edges of the window slot in the top of the door. The weather strip with the wider edge is for the outside. Also install a piece of the bulb weather strip on the flange at the edge of the front door post.

Outside Weatherstrip

Inside weatherstrip.

Slide the glass through the slot in the top of the door.

Set the bottom edge of the glass in the two guide clamps. Do not tighten the clamps yet.

Using the switch, move the window up and check its position in the window opening around the door and also along the body. Make sure it is contacting the weatherstripping. Also, make sure that the glass clears the door linkage and moves up and down smoothly. Adjust as needed.
Depending on the position of the window track brackets, you may have to bend the bracket over the top of the door frame to clear the door panel once it's in position.

Once you are sure the window will move freely, tighten the window tracks and the guide clamps to the window.

Screw the window track brackets to the door frame using the supplied screws.

Side Mirrors

The side view mirror gasket acts as the drilling template for the holes in the door, slide the gasket down to the end of the mirror studs.

Measure on the door upper corner 2¼" back from the leading edge of the door and draw a mark. The front stud of the mirror must be at least this far back to give clearance for the nut underneath.

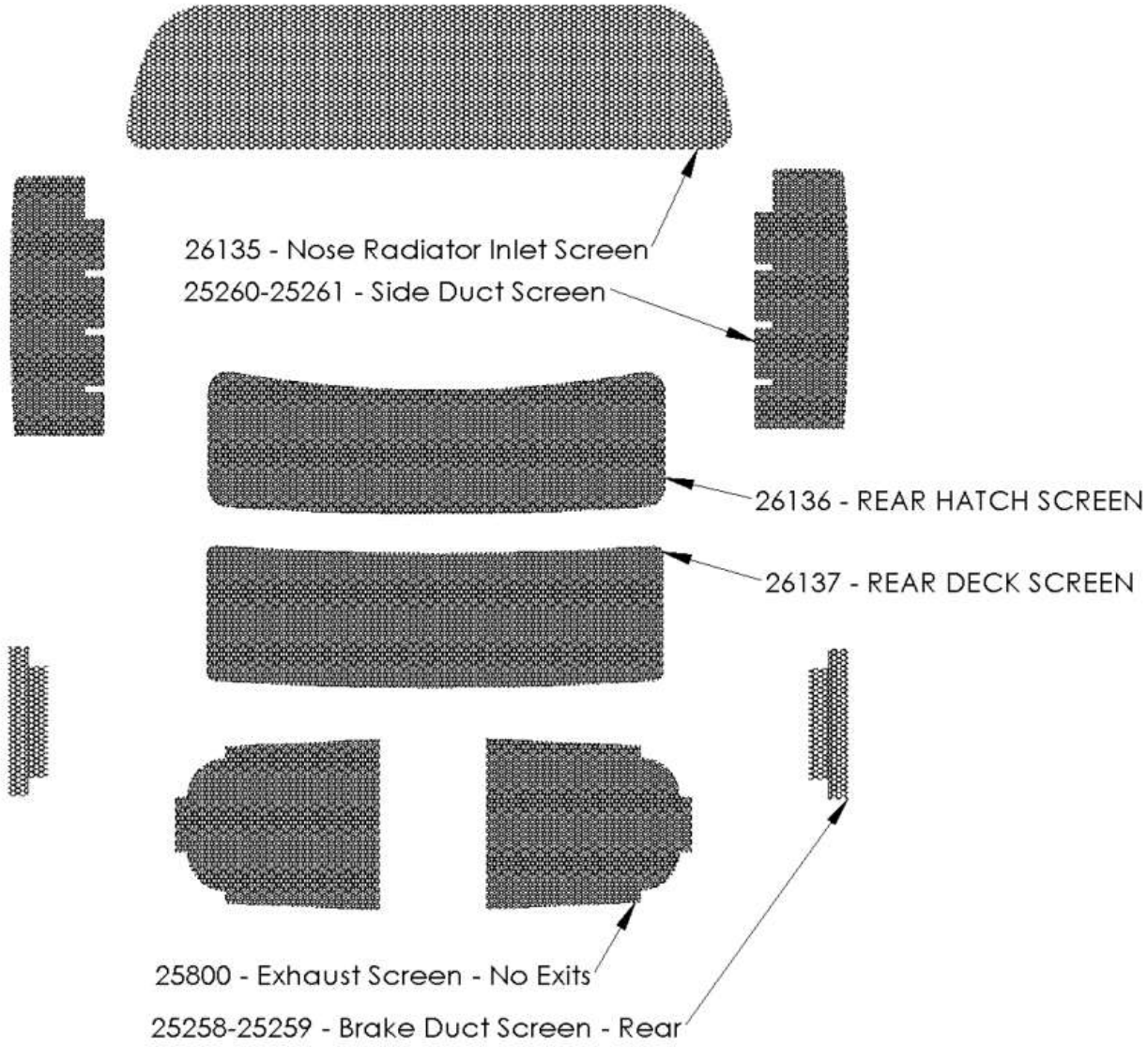
Line the mirror up on the door, the height is set by keeping the gasket just below the top edge of the door.

To set the height and angle of the mirror have someone hold the mirror while you stand from the front about 15 feet away and guide them.

With each mirror in the position you want them hold the gasket to the body and remove the mirror. Mark the three holes through the gasket and drill with a ¼" drill bit.

Install the mirrors and gasket using the original nuts.

Vents and Screens



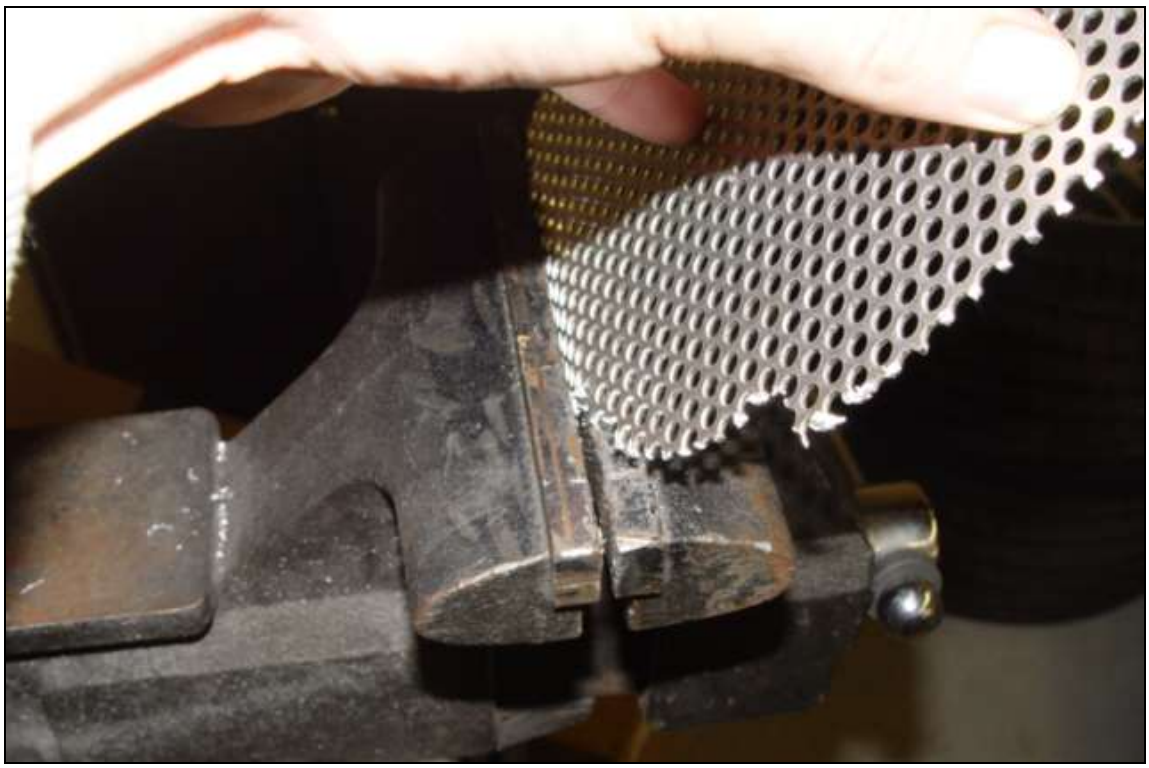
Locate and identify the mesh louvers for the body. It is much easier to do any fitment on these panels prior to the body being painted.

Fit the rear hatch mesh panel to make sure that it fits in the recess and trim if needed.

Use the rear deck mesh as a template to mark the rear deck of the body with a marker. Measure 1” in from the lane marked and remark the body.

Cut the rear deck for the mesh.

The rear exhaust passes through the mesh.



The flanges that stick out from the piece need to be bent at 90˚ in a vice. Bend the end and the top for now.

Position each piece on the body and mark for the third flange to be bent for a tight fit. Marking is easier on the outside of the body then bend ⅛" outward from your line. This flange is not bent the full 90°.

The mesh for the side scoops need to be formed to fit the body.

The front radiator opening mesh and can be fit by hand to the opening. Hold it in place from the back and wrap the edges around the back side of the opening. If the mesh does not sit flush, sand the edge of the opening to fit.

Hood Preparation

🛠 Drill, 2⅜", 3.5" hole saw, ²⁵⁄₆₄", ¼", ⁵⁄₁₆", ⅛" drill bit, screw driver, reciprocating saw (air powered is recommended), paint marker

- Nose assembly, fog light components, headlight bucket assembly, headlights and hardware, front turn signals and hardware, GTM nose aluminum (FFR# 25243, 25216, 2553, 25209, 25214, 25686, 25533)
- If you are going to make up your own pattern, do so out of paper/cardboard for one side and simply flip template over for the second side.

Cut the radiator exit hood openings. These cutouts allow air to escape from under the body after it passes through the radiator. Wind tunnel tests suggests that these cutouts are cut using the factory shape. Use a reciprocating saw, cut 1" in from the recess in the hood.

Headlight and Turn Signal Mounting

- The following pictures show the headlight bucket off the nose. The headlight bucket for the Gen 2 GTM is part of the nose. Use the pictures for reference only to mount the lights.
- The low beam light is the outer light position of the headlight bucket and the high beam is located in the inner position of the headlight assembly

Headlight

Using a 3.5” hole saw, drill out the 2 holes for the head light and high beams; the turn signal indicator requires a 2⅜” hole drilled. Use the dimples found in the gel-coal as center points to drill.

Drill 4 holes in the headlight bucket. From the backside of the headlight bucket, use the headlight cutout template (FFR# 25484) and mark the 4 locations using a paint marker. (at this time the lights should not be installed in the buckets)

Using a 25/64" drill bit, drill 3/8" into the headlight bucket from the backside. You will drill through a layer of fiberglass and then into a foam core, stop there, do not go through the second layer of fiberglass.

Press the black retainer clips over the ball fittings attached to both the head light and high beam light.

Install the low beam (on the outside hole in the bucket) and high beam light (on the inside hole of the bucket) in the headlight bucket from the backside simply by pushing them into place.

Do not to push the retainer clips fully into the headlight bucket during initial fit as they are difficult to remove once they are fully seated.

Turn signal

🛠 Drill, ¼" hex drive, [5]Philips head screwdriver, hack saw
🚘 Turn signal components.

Cut the top outside ear off the turn signal light. Left light shown, right side is opposite.

From the back side of the headlight bucket, position the light then use one of the self-tapping #6 screws from the aluminum to drill and tap the screw holes.

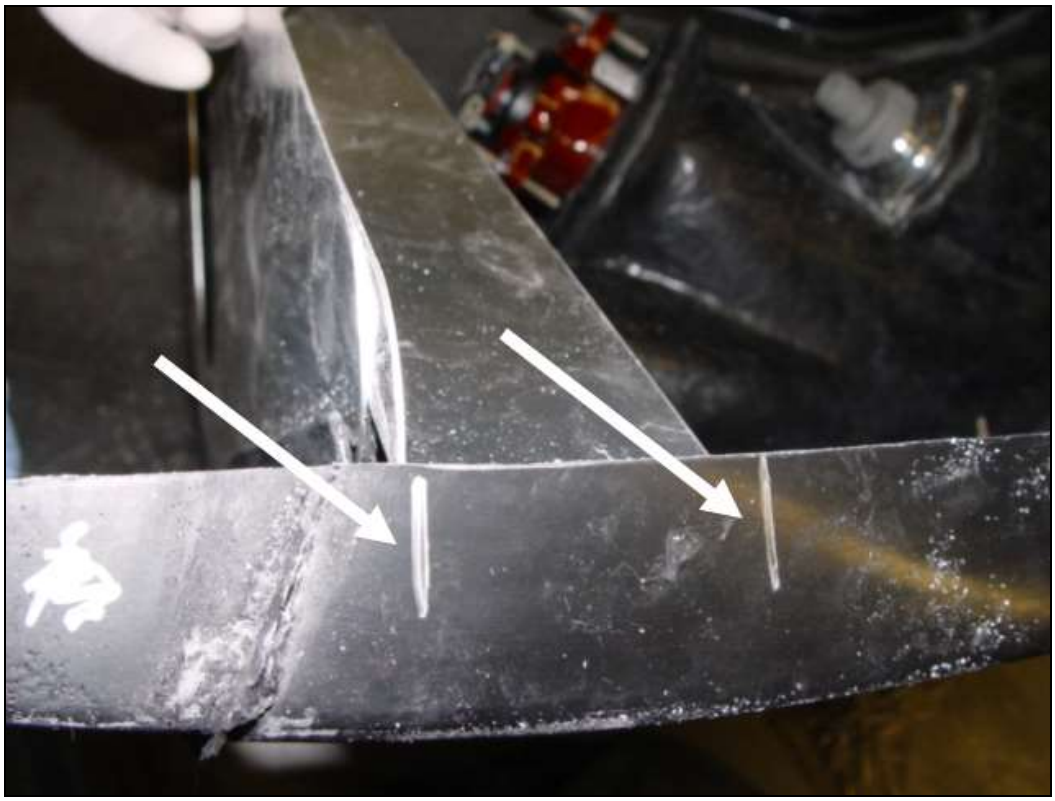
Attach the turn signal to the bucket using the black #6 screws using a Philips head screwdriver.

Front wheel well panel

- This panel is located behind the headlights in front of the front wheels. The hole in the center is used as an access panel for the backside of the headlights.

Install bulb seal (FFR# 10761) on the outside edge of this panel.

The hood supports are installed next. These hood support brackets have one 90˚ bend along the length of the part as well as a 45˚ bend which is located at the bottom of the nose. You will have to bend the upper flange of these nose support pieces to fit the contour of the hood liner. The edge on the 90˚ flange runs along the edge of the front wheel well panel.



Once the hood support is in place, mark the underside of the nose and the hood liner where the support contacts. The following picture shows the bottom flange on the bottom edge of the hood

Remove the front wheel well panel.

Drill and rivet the support onto the hood using 3/16" long rivets. (picture below shows the top flange on the hood liner)

Headlight Lenses

Fit the headlight lenses to the nose/headlight bucket.

Due to tolerances in the headlight lenses, some filing of the edge is necessary to achieve a uniform gap around the outside. After achieving the desired shape, use 600-1200 grit sandpaper to clean up the edge.

Hood Hinge/Hood mounting

- Before the nose is set on the body, the hinges have to be assembled. The Corvette hinges are similar, but there are differences side to side. Look at the pictures below to see verify the correct side.

Driver

Passenger

The hood hinge bracket attaches the nose of the GTM to the Corvette hinge. These brackets are side specific and can be differentiated by looking in the pictures below.

Driver

Passenger

Attach the hood hinge bracket to the Corvette hinge using the supplied carriage bolts and hardware. The picture below is of the driver's side assembly.

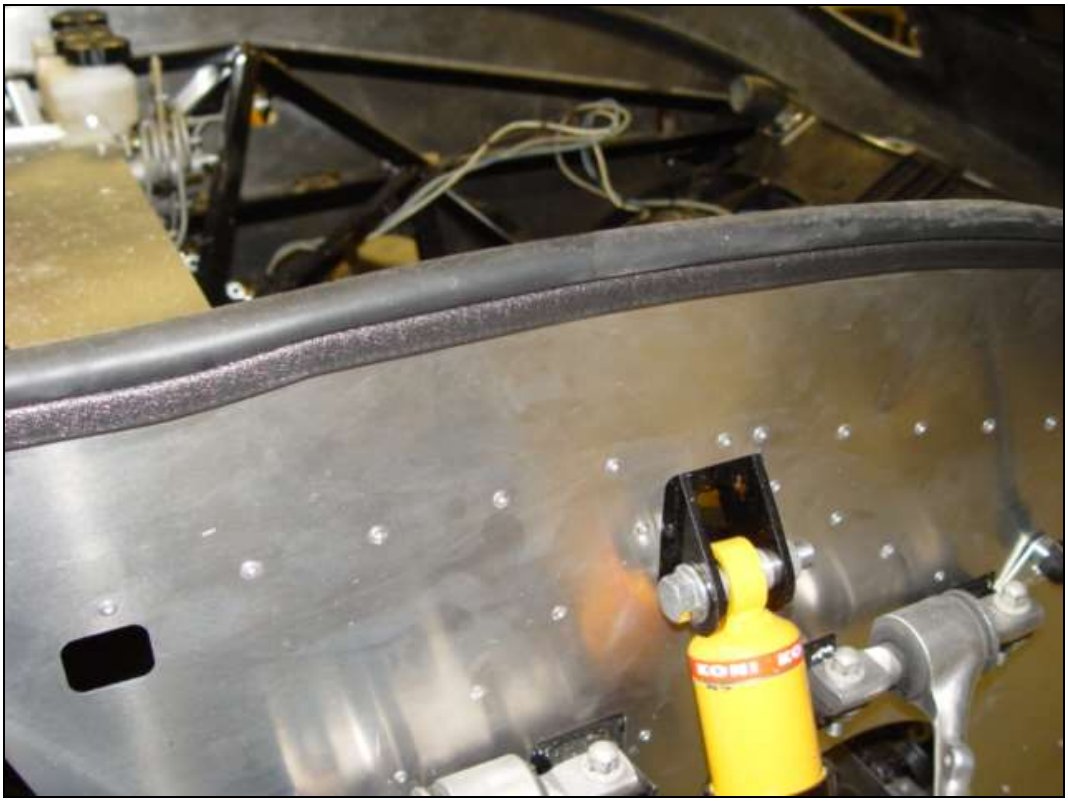
Do not fully tighten the nuts during this step, as they are adjusted after the nose is aligned.

The hinge assembly is now installed onto the car using the supplied carriage bolts and hardware.

Driver

Passenger

Do not fully tighten the nuts during this step, as they are adjusted after the nose is aligned.



Install the rounded push on bulb seal (FFR# 10761) to the front inside aluminum panels.

With the help of a friend, position the nose on the car. The hood will support itself on top of the bulb seal while you position it into place.

Roughly position the nose on the car (exactly lining of the hood is done later after the hinges are installed). Once you are comfortable with the nose placement on the body, tape the hood to the body as seen below.

The hood hinge bracket attaches to the backside of the fog light recess in the nose. Before drilling the fog light buckets to mount the nose, check its alignment one last time.

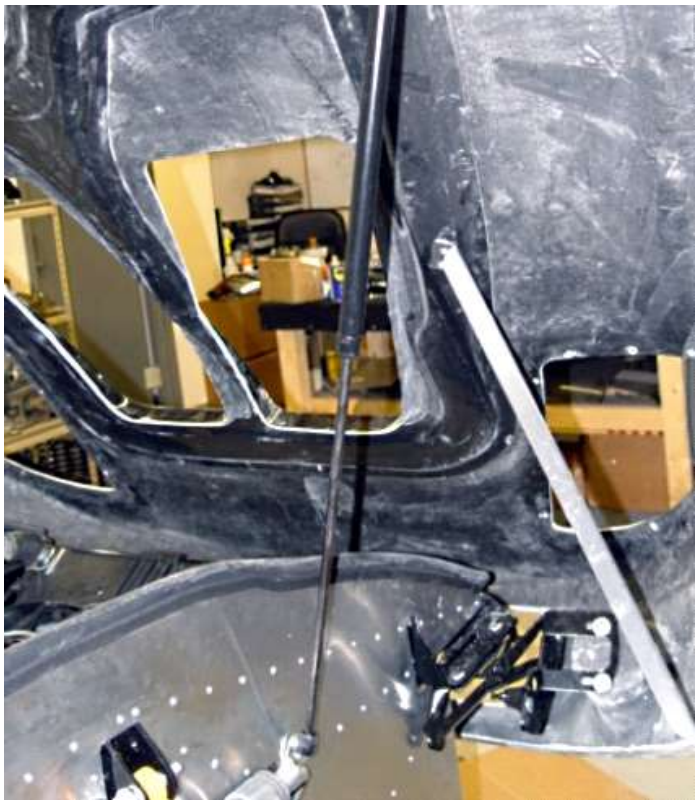
Drill two 5/16" holes through the nose centered in the slot on the hinge bracket.

Fasten the nose to the hood hinge bracket using the supplied hardware (FFR# 11024, 11005, 13963). Do not tighten the fasteners on the hinge assembly yet, as they are tightened in a few steps.

Align the nose to the main body section with the hood in the closed position.

Gas strut Installation

Attach the gas strut bracket to the ¾" frame tube just forward of the upper control arm using 3/16" rivets.



Attach the gas strut ends (FFR# 13972) to both sides of the gas strut. Attach the rod side of the assembly to the gas strut bracket installed in the previous step onto the frame.

There is aluminum glassed into the nose to provide an attachment point for the gas strut bracket. Look at the picture to locate the gas strut bracket. Draw a line on the hood liner in line with the outermost ridge and a second line on the front face of the hood striker bracket pad. The intersection of these lines is the location for the rear rivet on the bracket. (picture is of the passenger side nose liner)

Using the location marked above, place the gas strut bracket along the first line that was drawn above (length wise of the vehicle). Drill and attach this bracket to the nose using (3) 3/16" rivets.

Hood Latches

The Corvette hood latches are mounted to the sides of the body towards the rear of the nose opening. The latches are different side to side; the front edge is attached in 2 places and the rear is attached in just one (on both driver and passenger side). Picture is of the passenger side with the Corvette driver side latch.

Drill 5/16" holes through the body and attach the latches to the body using the provided hardware.

Once the latches are in place, insert the Corvette striker brackets into the latches. It is helpful to apply duct tape around the striker bracket holding it upright and in place.

Using a paint marker, mark the perimeter of the hatch striker bracket.

Close the nose (while the paint is still wet), marking the perimeter of the striker bracket on the hood liner.

Remove the hatch striker bracket from the latch and open the hood. Align the striker bracket to the underside of the hood and mark the location for the 2 mounting points.

There is aluminum in the nose here. Drill 3/16" holes in the hood liner and mount the striker brackets with 3/16" rivets.

Final Paint Prep/ Body Shop Tips

Make sure all wheel wells are even thickness and radius

All trimmed panel edges should be radiused and should be either done or pointed out for the body shop to do.

All Mesh openings need to be made flush and flat edges radiused.

The section of body where the dash rests should be painted flat black under the windshield; we usually mark this area for the paint shop with a paint pen or silver marker. You can paint this after the body is painted as well.

The body flange behind the wheel well is visible with the hood open and should be trimmed to match the wheel well thickness.

Make sure that the front fender air exits are trimmed even and radiused, we usually leave ¼" of a flange for strength and appearance.

The door openings should be trimmed flush with the chassis along the bottom and front to allow the aluminum trim to sit correctly if it overhangs in some area mark it to be ground when the body is removed prior to painting.

The side window openings and rear hatch opening should be sanded for an even thickness and flange width.

Radius the body edge above the front tires from the wheel well in to the vertical aluminum.

The underside of the body is not visible in most places however the area around the door pillars back to the rear quarter windows (the outside area marked in the picture) is visible past the headliner and should be painted either black or sanded and painted body color. The inner fender-wells look good in flat black as well.

Have the body mounting flange around the rear Diffuser painted black.

Send the body out to paint

Interior - Rear Wall

🛠 ¼”, 25/64”, ½” drill bits, drill, clamps, marker, tape measure.

🚘 Secondary body fasteners, Aluminum Rear Wall (FFR# 25271), Upper Cockpit Sidewall Brackets (25741, 25742), Fuel Tank Covers (FFR# 25195, 25196).

✋ Slightly rounding off the edges of the rear wall with a grinder/sander aids in installation of the rubber push-on trim onto the rear wall.

Cut two pieces of the rubber push-on trim (FFR# 10761) 9” long and push the trim onto the outside edges of the rear wall.

Cut a 41” section of the rubber push-on trim and press the trim onto the rear wall.

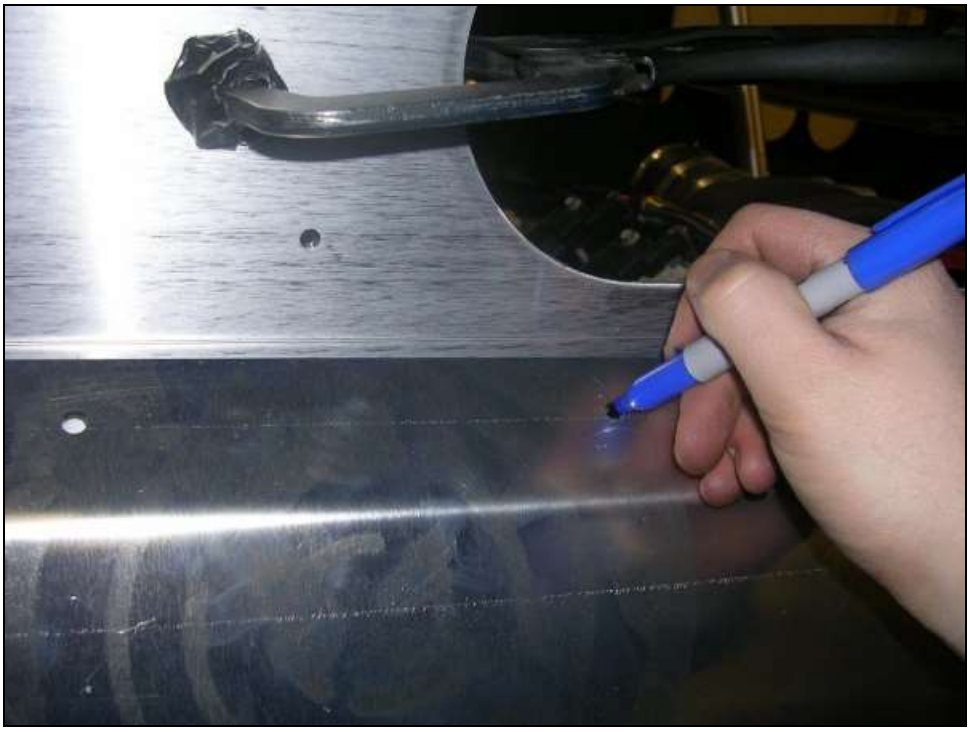
Set the rear wall in the car so that the bulb seal contacts the body with just enough pressure to create a seal between the trim and the body – do not press the rear wall up to the body so hard that the bulb seal is fully crushed. Make sure that the holes in the panel for the rivnuts are near the center of the 1" square tubes. Clamp into place

Mark the locations where the rivnuts will be installed in the 1" square tubing.

Mark the location for the upper seat belt mount holes.

Set the upper cockpit side wall brackets (FFR# 25741, 25742) in place and mark the holes you will need to drill in the body and the rear wall. The square flange of the bracket goes behind the rear wall (pointing in towards the center of the car) and the flange with the rounded edge points outward and will locate near the top of the door jam (See Photo – Passenger side shown). Mark a trim line on the bulb seal as needed if it prevents the bracket from sitting flush against the rear wall.

Check the fit of the rivnuts in the bracket – you may have to drill out the brackets to 25/64". Install the rivnuts in the side wall brackets as shown (See Photo – Passenger side shown).



Set the fuel tank covers in place. Mark the location of where the upper sets of holes need to be drilled in the rear wall for the rivnuts.

Mark the location of where the lower holes will be drilled in the floor pan.

- You may have to trim/grind the outside edge of the fuel tank covers slightly to clear the door striker mounts.

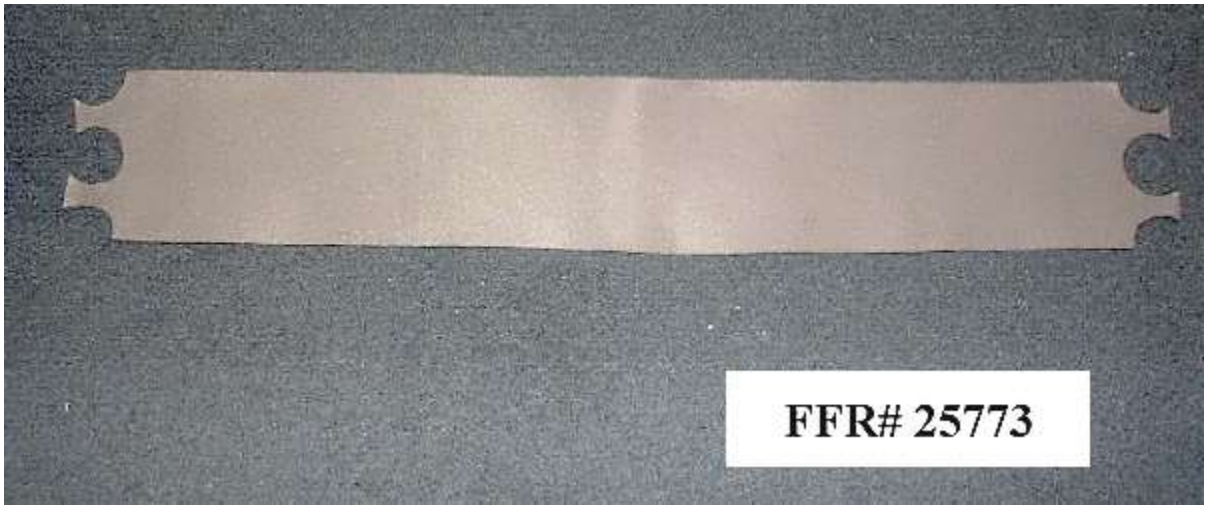
Remove the fuel tank covers from the car and install the rivnuts in the floor pan.

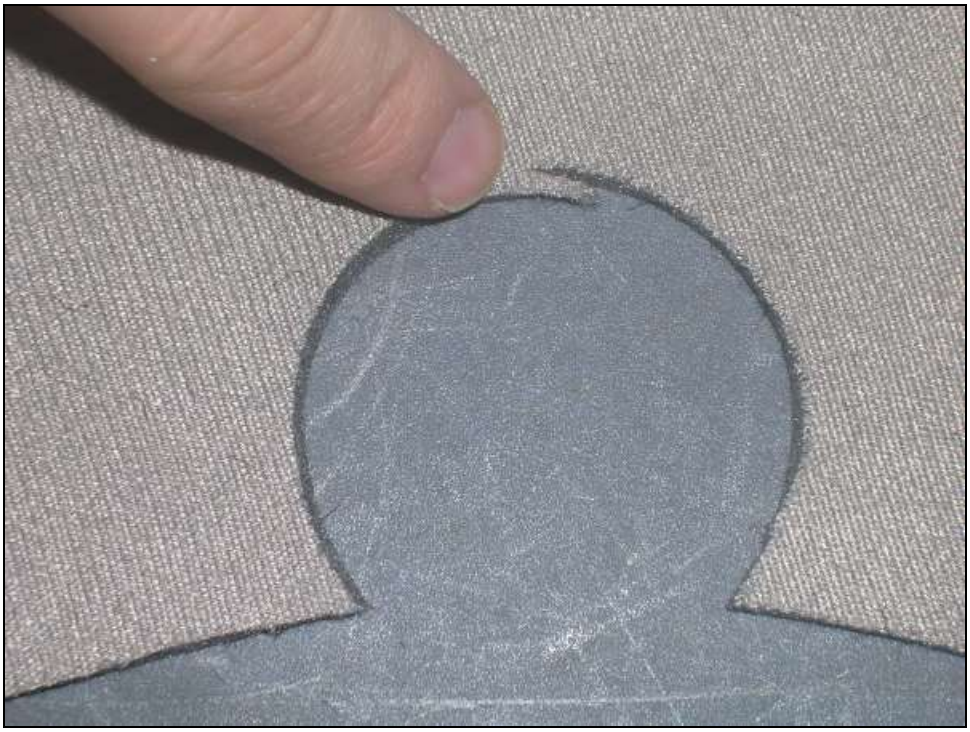
Set the interior engine cover in place. Make sure that the engine cover clears the Tensioner Pulley and the upper coolant hose.
Set the fuel tank covers in place.

Roll Bar Padding

Front Cross Bar

- Masking Tape, Headliner Spray Adhesive.
- Roll Bar Cover- Front Cross Bar (FFR# 25773).
- The adhesive you should use needs be a high temperature, high strength adhesive designed for headliners. Do not use 3M Super 77 – it will not hold up. 3M does have a product for this type of application called "3M Super Trim Adhesive" (3M I.D 60-9800-4438-6/buyer's P/N 08090)
- When using the "Super Trim Adhesive" allow the adhesive to tack up before wrapping the material or putting any pressure on it – if it is still in liquid form and you apply pressure to it, the adhesive will bleed through fabric. The can says to use three coats on both the material and the surface it will bond to, but this is meant for heavier material. One good coat on the foam backing of the material will work for the lightweight material being used.





You may have to trim the small bit of material left on the round sections of the material from when the cutting tool lifts for a second to readjust its position before cutting the rest of the radius.

Begin by performing a trial fit prior to applying the adhesive.

Starting on the driver side, hold the cover behind the front cross bar with foam side towards the front of the car.

Wrap the cover around the roll bar starting with the top edge, then wrap the other end around the bar in a clockwise motion. The cut edge should be in an area that will be hidden once the body is on (near the top and towards the front). The two tabs will wrap around the front bend of the side bar (the top of the A-pillar).

Work your way across the front cross bar to the passenger side, taping the material in place as needed with the low-tack tape. The material may tend to twist as you wrap it. This is not a problem as long as the cut edge remains in an area that will be covered once the body is on and the material does not wrinkle.

Once you have determined that you can wrap the material around the roll bar without wrinkling the material, placing the exposed edge in a place that will be covered by the body and the material reaches

all the way across, begin applying the adhesive to the foam then wrap the material around the roll bar. Make sure to spray the adhesive on the back of the material as you begin to overlap the material so it will stick to itself. Taping along the edge where the material overlaps provides the best seal and prevents the adhesive from bleeding through in an area that is visible.

Do not apply too much pressure to the tape/material just in case the adhesive has not fully set – you don't want the adhesive to bleed through the material.

Side Bars

Hacksaw, Masking Tape, Headliner Spray Adhesive, knife/razor.

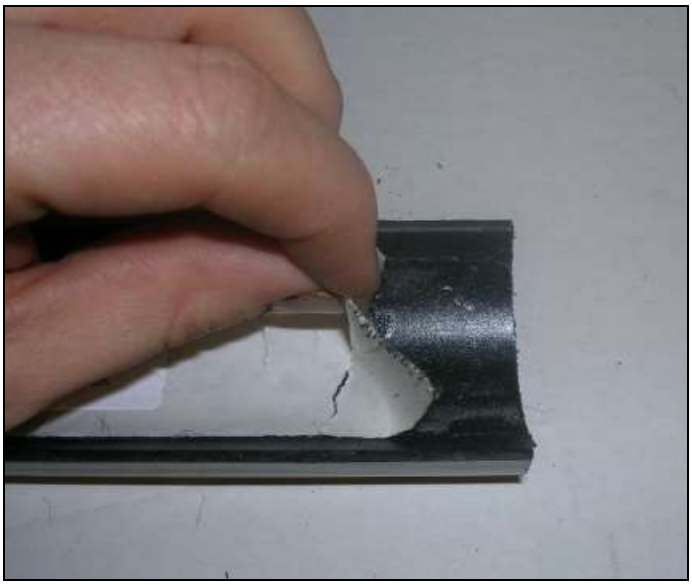
Closed-cell Roll bar Padding (FFR# 25772), Roll bar Covers.

Mask off any area that could get overspray on it, including the engine bay, wiring etc. When spraying the adhesive, work in small sections to be sure the adhesive does not dry before you can wrap the roll bar cover material around the roll bar tightly. The adhesive you want to use should be a high temperature, high strength adhesive designed for headliners. Do not use 3M Super 77 – it will not hold up. However, 3M does have a product available for this type of application called "3M Super Trim Adhesive".

Cut the Roll Bar Pad (FFR# 25772) to a length of 30".
Before adhering the padding to the roll bar, check to make sure the padding fits between the front and rear roll bar sections – leave room for the ⅛" thick aluminum rear wall.

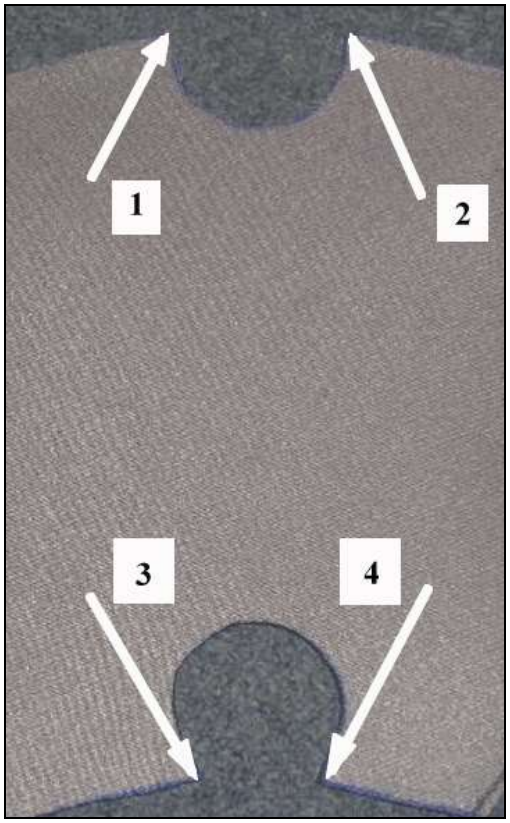
Tape the padding in place and mark areas for adjustment if any. Also, you want to be sure that you have enough head room AND the padding is not going to put upward pressure on the roof of the body. Place a seat in the car and temporarily setting the body on the car helps.

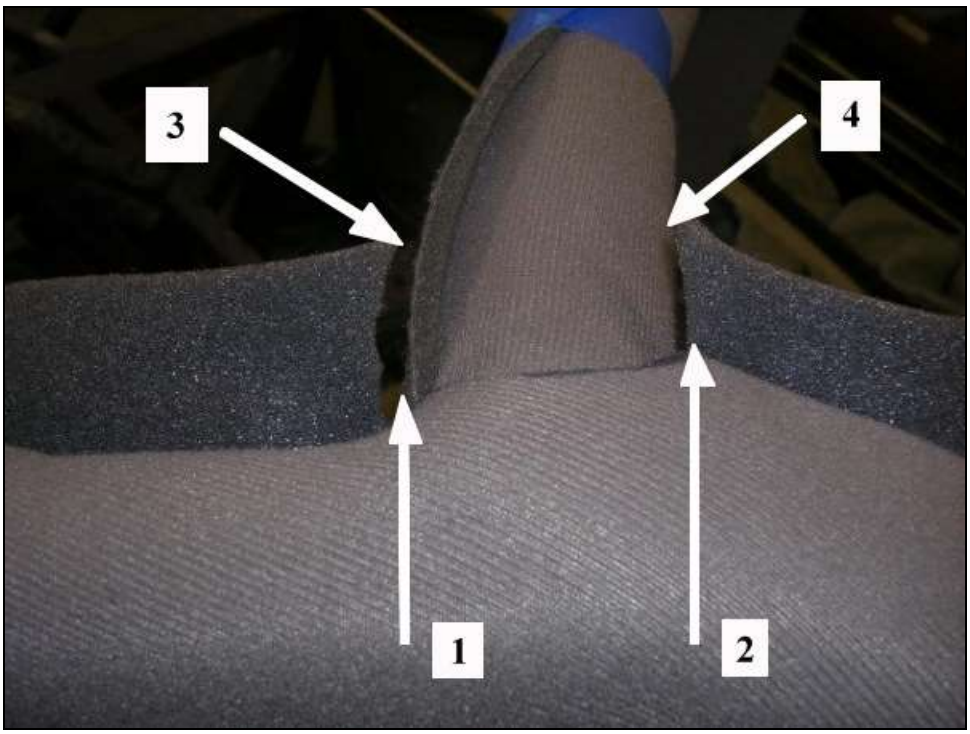
Remove the padding from the roll bar.



Peel the backing off the adhesive strip on the roll bar padding. Apply the padding to the roll bar just as you did in the trial fit.

- Before gluing the cover material to the roll bar, test fit it so you can practice covering the roll bar without wrinkling the material.





Fit the roll bar cover over the padding, starting at the junction of the top of the A-pillar and the front cross bar. Place the cover over the top of the corner of the side bar, lining up the cutout with the front cross bar. Wrap the cover under the side bar, then up over the top and tape on either side of the bend.

Continue wrapping the cover over the side bar, taping the material down every few inches. The material may tend to twist as you wrap it.

This is easily corrected by rotating the material until it faces an area that will be covered by the body (facing up and towards the outside).

- Remember to work carefully! After spraying the adhesive and wrapping the material around the roll bar and overlapping it at the top of the roll bar, tape the cover in place with masking tape until the adhesive dries.
- When removing the tape, do not begin pulling the tape at the cut edge – you will pull the material away from the foam. Instead, peel the tape back so that the last bit of tape in contact with the material is at the cut edge of the material.

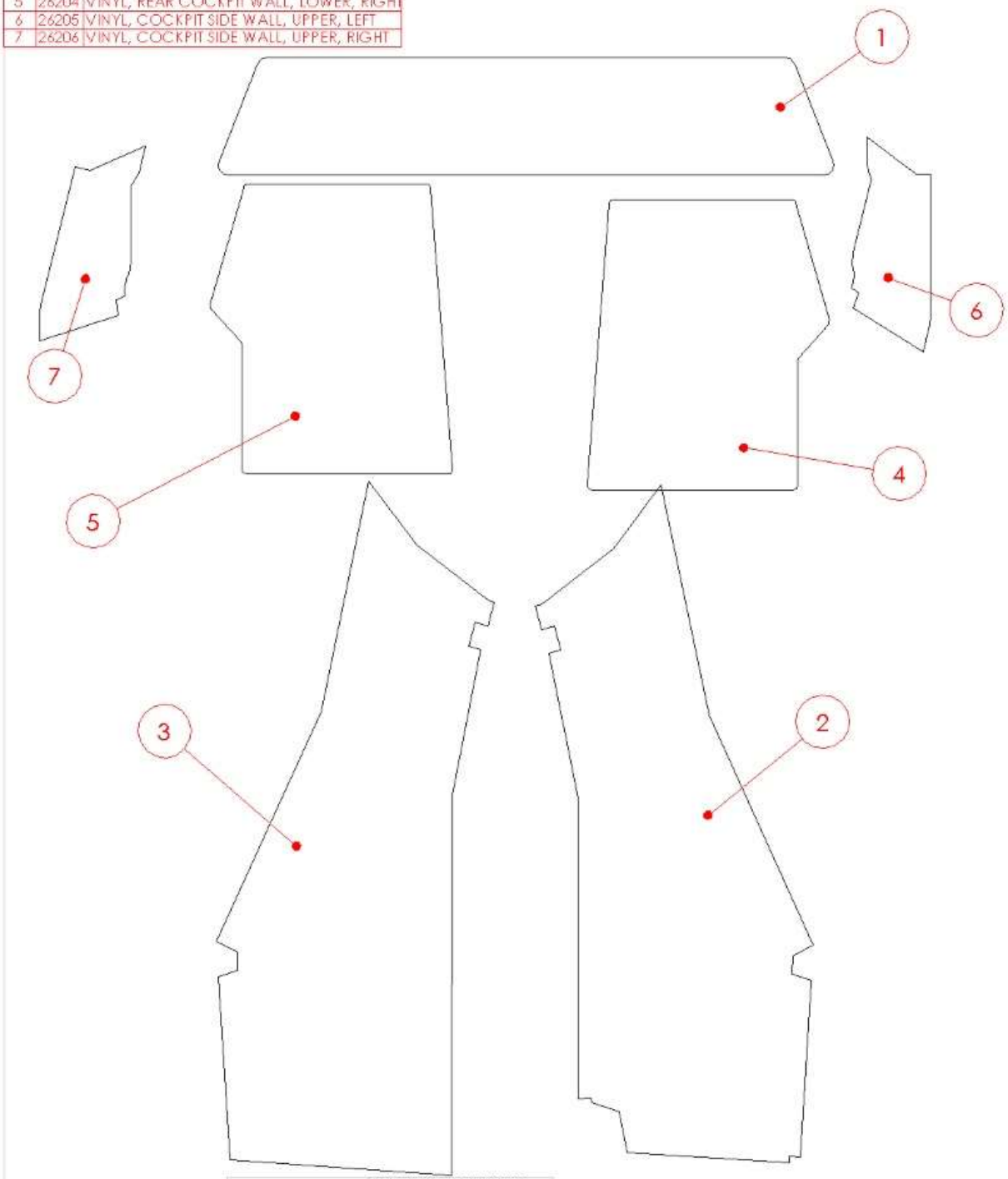
Again, begin with the front upper bend of the side bar (the top of the A-pillar), remove the tape holding the material on from the trial fit.

Spray some of the headliner adhesive on the backing of the material, and then wrap the cover around the roll bar. Make sure to spray the underside of the cover material so it will adhere to itself once you begin to overlap the material.

Tape over the section (along the edge of the material, not around the roll bar) you just sprayed until the adhesive dries.
Cut off any excess material at one end, and repeat for the other side.

Vinyl Installation

1	26200	VINYL, REAR COCKPIT WALL, UPPER
2	26201	VINYL, TRANSMISSION TUNNEL, LEFT
3	26202	VINYL, TRANSMISSION TUNNEL, RIGHT
4	26203	VINYL, REAR COCKPIT WALL, LOWER, LEFT
5	26204	VINYL, REAR COCKPIT WALL, LOWER, RIGHT
6	26205	VINYL, COCKPIT SIDE WALL, UPPER, LEFT
7	26206	VINYL, COCKPIT SIDE WALL, UPPER, RIGHT



DIMENSIONS ARE IN INCHES
TOLERANCES:
TWO PLACE DECIMAL ±0.01
THREE PLACE DECIMAL ±0.005
FOUR PLACE DECIMAL ±0.001

MATERIAL
FINISH
USED ON
APPLICATION
PRINTED 6/12/2017

Factory Five Racing, Inc.

GTM VINYL

	NAME	DATE
DRAWN		
COMMENTS:		

SIZE A | DWG. NO. 26209 | REV.
SCALE:1:14 | WEIGHT: | SHEET 1 OF 1

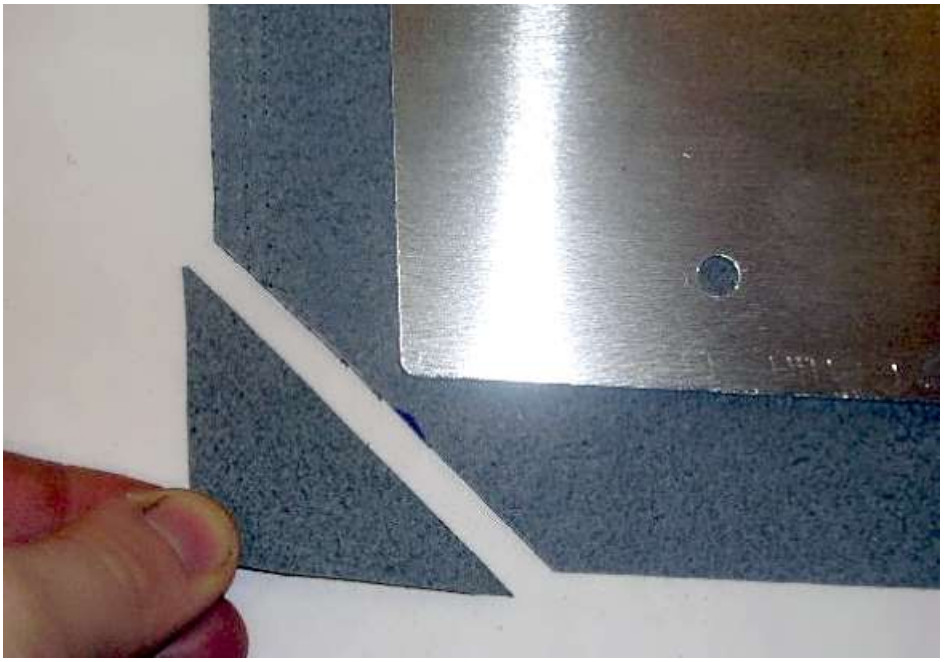
Fuel Tank Covers

🛠 Super 77 Spray Adhesive, marker, scissors, Razor Knife/Razor Blade.

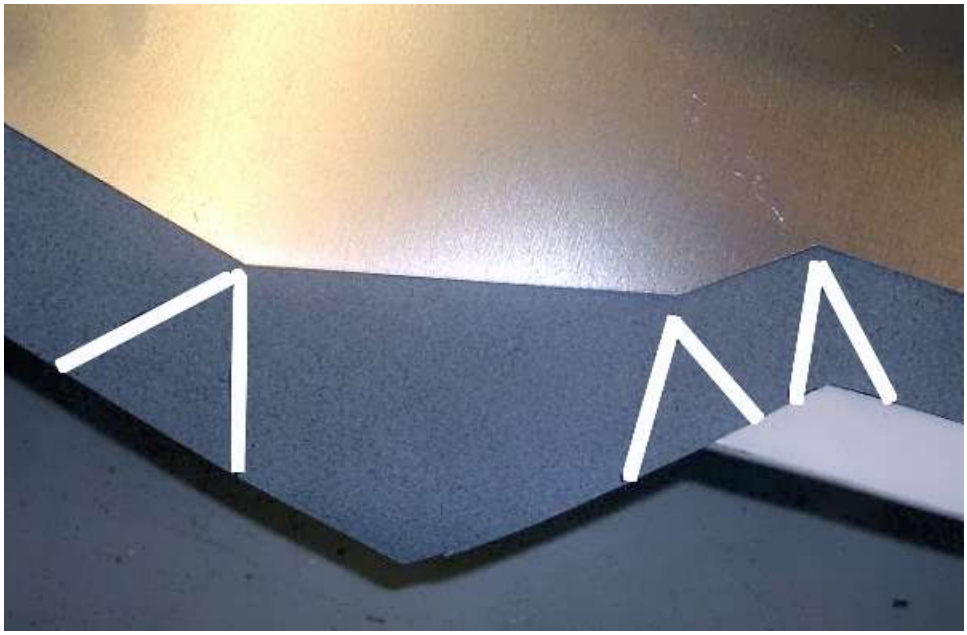
🚘 Interior Vinyl parts, Aluminum Panel- Fuel Tank Cover (R, L)

✋ For the vinyl installation, work carefully and most importantly TAKE YOUR TIME! You do not want to have wrinkles in the vinyl, you don't want to get any adhesive on the vinyl that will show, and you want to be sure that the vinyl is tightly adhered to the bends in the aluminum.

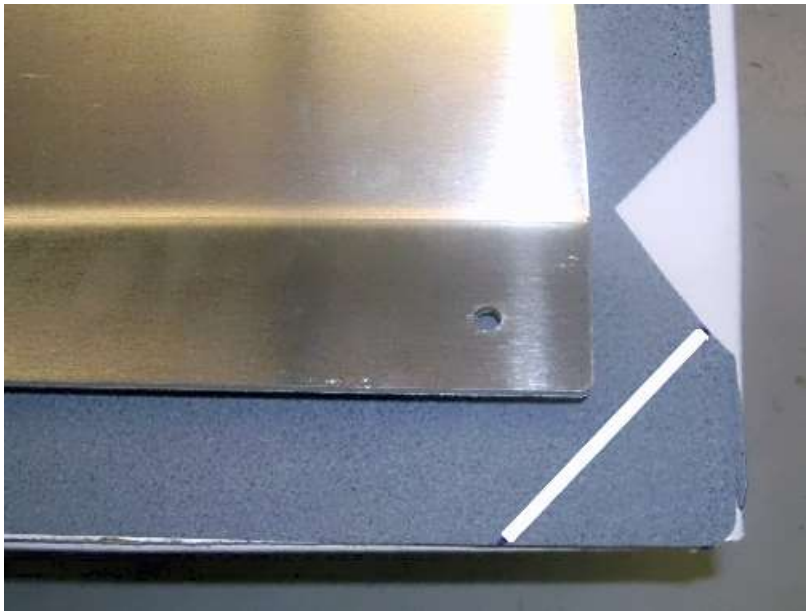
Lay the Driver side vinyl piece vinyl side down on a flat, clean surface then lay the Driver side Fuel Tank Cover on top of the vinyl, with the bent flange sticking up so that the aluminum sits flat on the vinyl.



Mark the lower corners of the vinyl according to the picture. Make sure to leave about ¼ inch of material between the cut edge and the corner of the aluminum – this will prevent the corner of the Aluminum from showing when you wrap the vinyl around it. Cut the corners off.



Mark the inside edges according to the following picture. Again, leave about ¼ inch between the cut and the edge of the aluminum. If the vinyl overlaps, trim as necessary so that the vinyl only adheres to the aluminum.



Cut out the material at the upper bend line (on both sides), mark and cut the upper corners off.

Remove the aluminum panel from the vinyl. If you have been working on a surface that you don't want overspray on, use a box or something similar that you can set the vinyl on and not be concerned with getting overspray on. Spray the vinyl with the Super 77, covering the entire piece.

Spray the side of the aluminum that was in contact with the vinyl when you marked and cut the material to fit.
Carefully lower the aluminum panel back onto the vinyl, lining it up with the cuts you made.

Punch holes in the vinyl where the bolts will go through it with a Razor knife or something similar.

Tilt the panel up, allowing it to rest on the bottom edge of the panel, and smooth out the vinyl, making sure that it sticks to the aluminum.

Spray the edges of the aluminum as well as the back so when you begin to wrap the vinyl around it, the vinyl will stick to both the back and the sides of the aluminum.

Begin to wrap the vinyl around the aluminum, pressing first along the sides of the aluminum. Then press the vinyl over the back of the aluminum until each section of vinyl sticks to the panel with no wrinkles.

Using the holes you already punched as a guide, punch holes through the vinyl you just wrapped around the aluminum. You will want to punch through each hole in a few different directions (North to South, East to West for example) to allow the bolt to go through. Check the fit with one of the bolts by pressing it (you may have to use a Hex key to tighten it down) through the hole. If necessary, cut the vinyl as needed to get the bolt through.

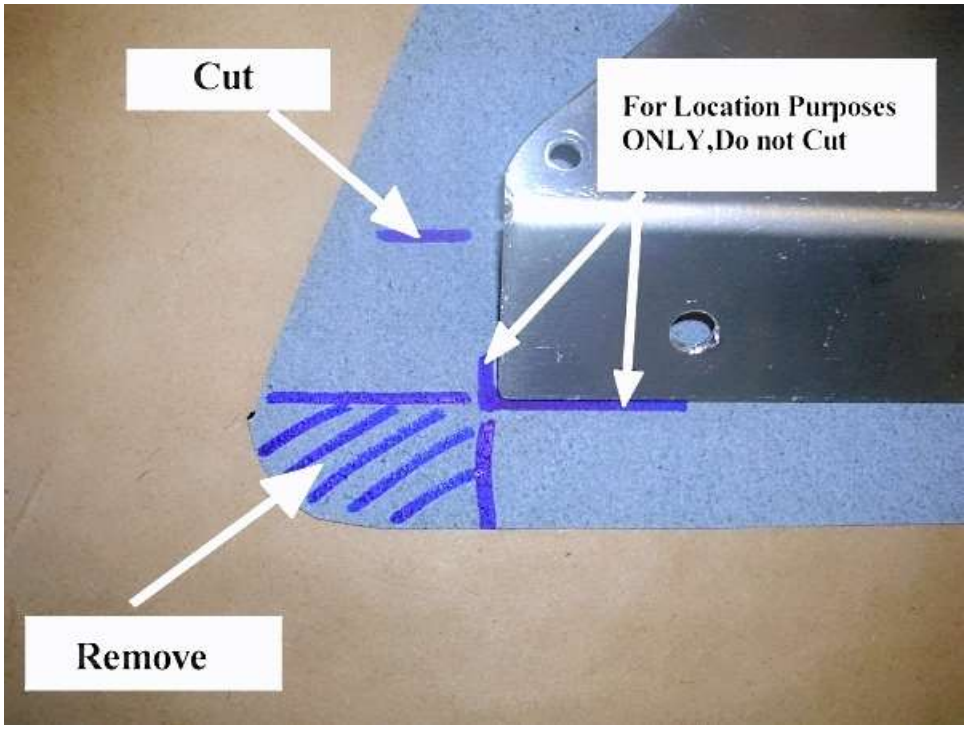
Repeat for the Passenger Side.

Rear Wall

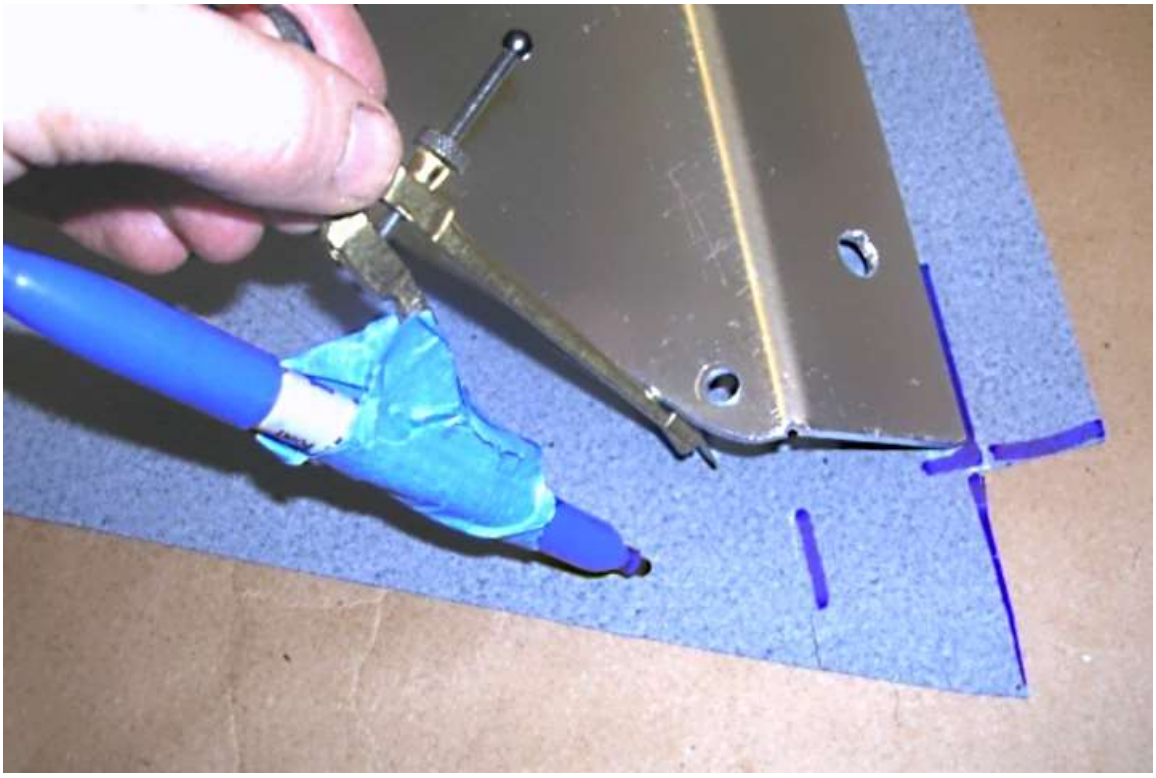
- Masking tape, Super 77 Spray Adhesive, marker, scissors, Rivnut Kit, Rivnuts, ¼", 25/64" drill bits, drill, Razor Knife/Razor Blade.
- Interior Vinyl parts, Aluminum Panel – Rear Wall (FFR# 25194).
- For the vinyl installation, work carefully and most importantly TAKE YOUR TIME! You do not want to have wrinkles in the vinyl and you want to be sure that the vinyl is tightly adhered to the bends in the aluminum.

Remove the rear wall vinyl from the box and lay it vinyl side down on top of something that it is ok to get the spray adhesive on (box, newspaper etc).

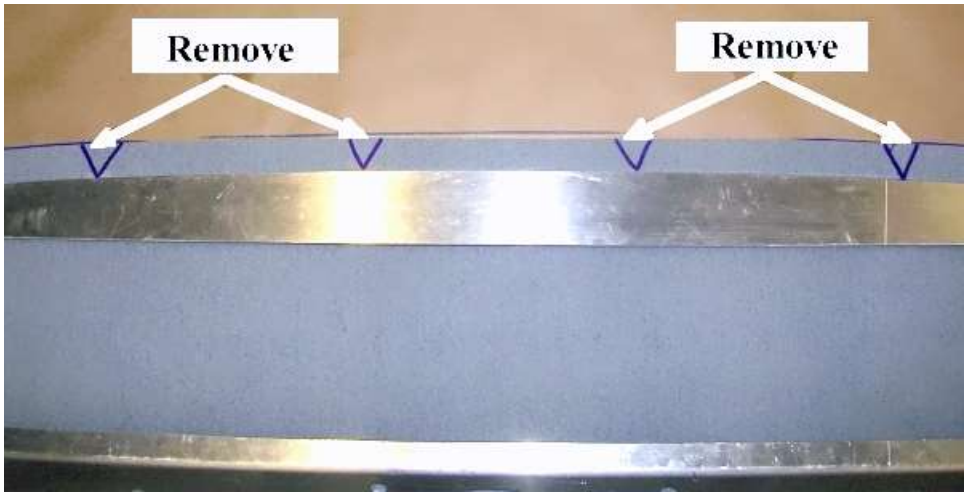
Lay the rear wall aluminum panel on top of the vinyl so that the bend in the aluminum is up. Match the profile of the vinyl to the profile of the aluminum so you have even amounts of overlap on each side.



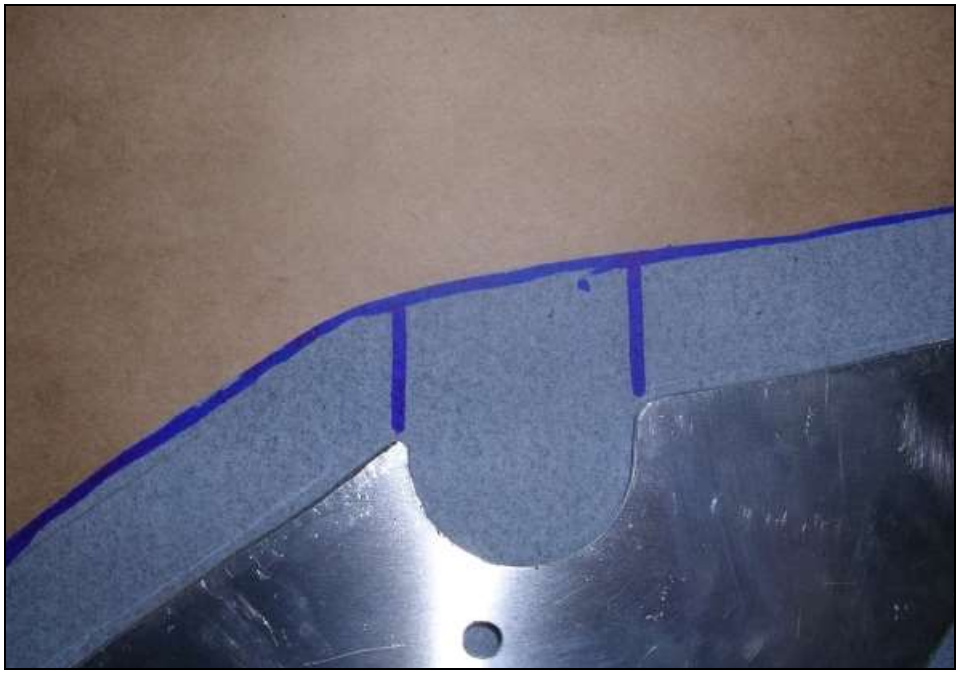
Mark the sections to slice and the area to remove on each lower corner.



Sketch a line that follows the top arc of the aluminum panel about 1” offset from the edge of the aluminum. An easy way is to use a compass with a marker on it. Trim excess vinyl along the line made.



To prevent the material from wrinkling as you wrap it over the top arc of the aluminum, mark then cut evenly spaced sections out of the vinyl about every 8”.



Cut a slice in the vinyl at each side of the roll bar cutout on each side. Once you are ready to put the vinyl in the car, you can trim this area to conform to the roll bar.

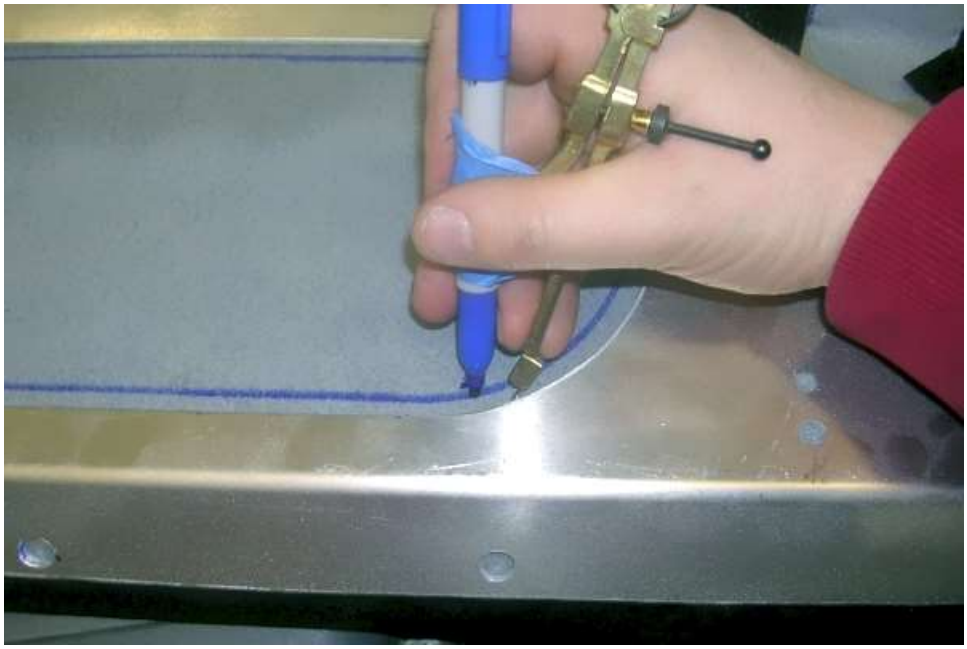
- If you don't plan on painting the rear wall or you have already had it powder coated/anodized etc, before spraying the wall with the adhesive, you may want to wrap the vinyl around the wall to determine where the end of the vinyl will be, then mask off the aluminum that will be exposed to overspray.

Remove the aluminum and spray the vinyl with the Super 77 and the face of the aluminum panel that was just facing down. Allow the adhesive to tack up (this only takes a minute or two) and set the aluminum panel back into place.

Spray the top edge of the aluminum panel facing you (the back of the wall). Wrap the vinyl around the top edge and onto the face you just sprayed.

Work your way down the panel from the top, smoothing the vinyl out onto the panel. Be sure to get the vinyl into the bend line as tight as possible and spray the back of the lower flange.

Wrap the lower section of the vinyl over the rear wall.



Trace the outline of the window with the compass offset from the edge of the aluminum panel about ¼".

Spray the area with the adhesive.

Cut the window outline with a razor blade, slicing the outside edges into three or four sections to allow the vinyl to wrap around the aluminum properly. Wrap the Vinyl around the aluminum panel.

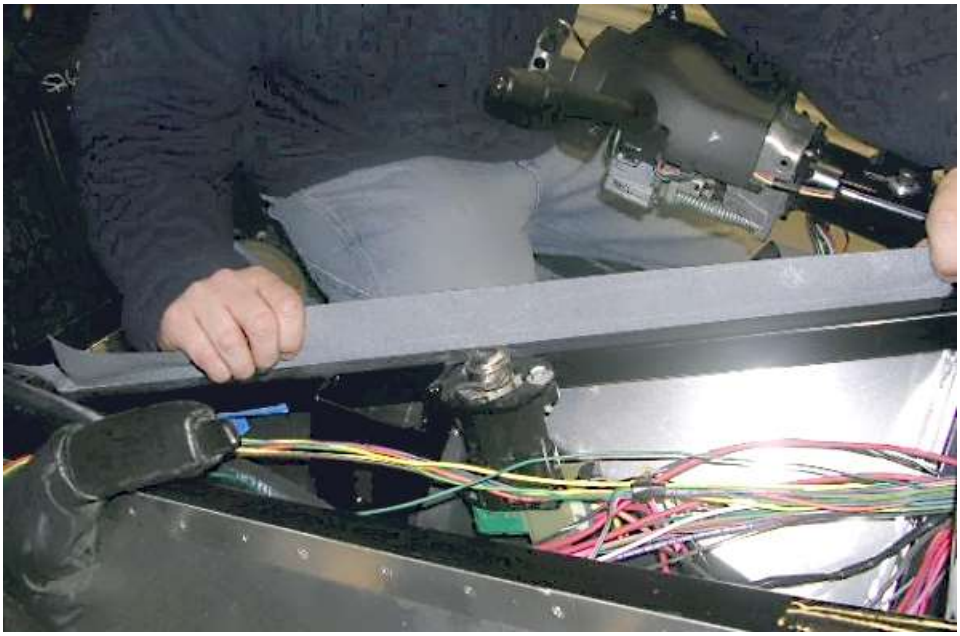
Punch holes in the vinyl for the bolts to pass through just as you did with the fuel tank covers.

Cut out the holes for the lower rivnuts with a Razor knife or razor blade.

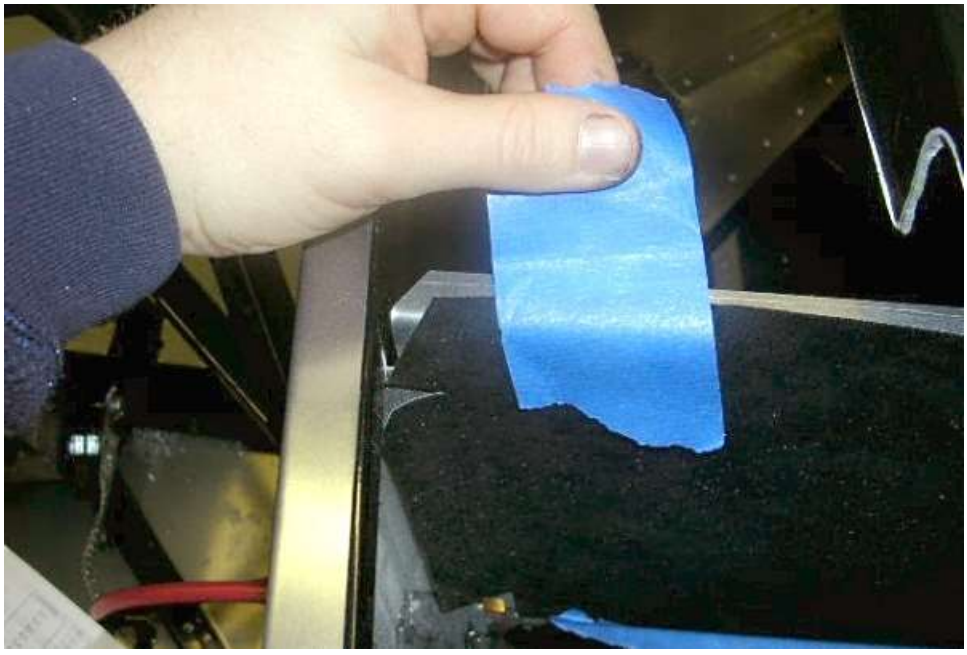
Install the rivnuts for the fuel tank covers and the engine cover.

Tunnel – Driver and Passenger Side

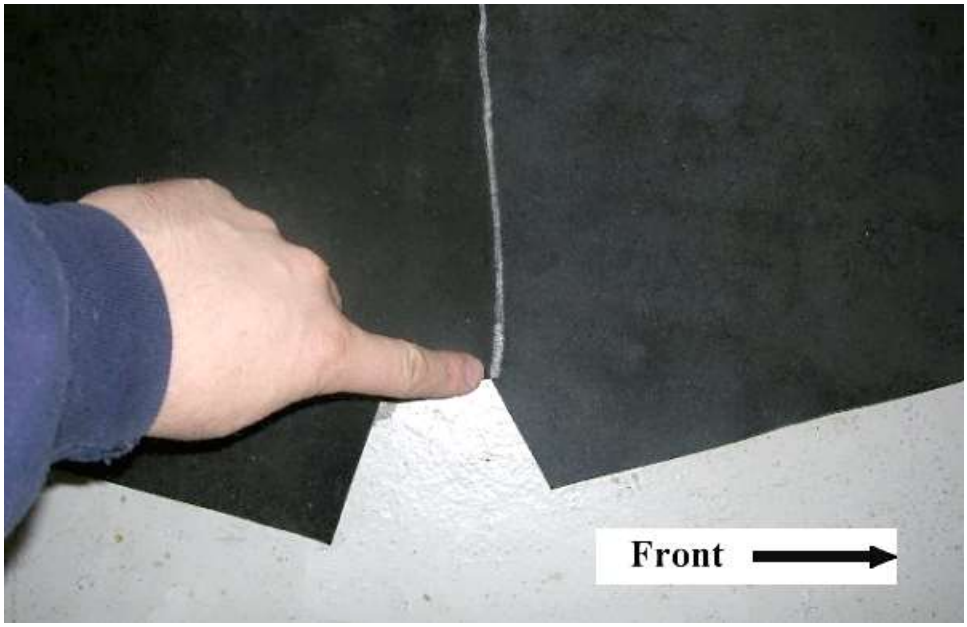
- Masking tape, Super 77 Spray Adhesive, marker, scissors.
- Interior Vinyl parts.
- For the vinyl installation, work carefully and most importantly TAKE YOUR TIME! You do not want to have wrinkles in the vinyl and you want to be sure that the vinyl adheres tightly to the bends in the aluminum.



Remove the Driver Side Tunnel Vinyl and set in place on the tunnel. Make sure you have enough material to wrap around the 1" square steel dash upright and onto the floor (the carpet will overlap the excess vinyl). Once the vinyl is situated in the right manner, tape the top edges, and the rear edge in place.



Tape the top edge of the vinyl at the front of the footbox in place.



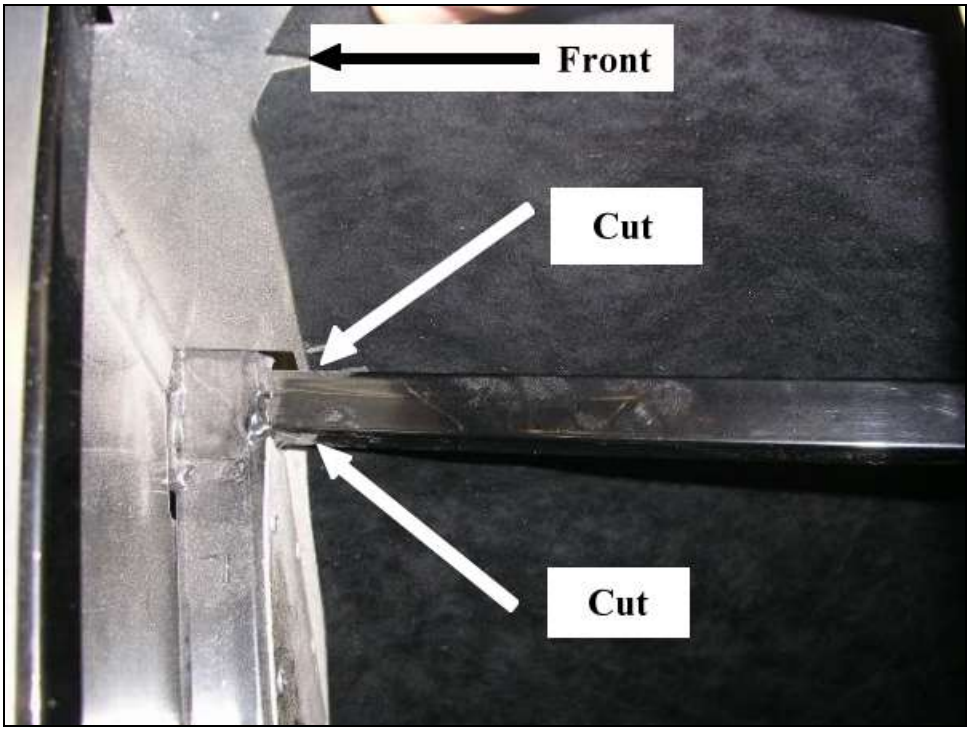
Identify the areas where you will need to cut a slit in the material – this helps the material set in place properly. Begin by marking the cut line along the edge of the Dash X where the footbox begins. A good way to be sure you are on the edge is to press the marker along the edge of the steel/aluminum and trace downward until the panel meets up with the lower portion of the footbox aluminum.

Remove the vinyl and cut along the line you just made.
Put the vinyl back on the tunnel, taping the top edges to hold the vinyl in position.

- When cutting the material, do not cut too far! The material may be higher or lower once glued in place and if you cut too far, the slit may be visible, so make your cut a bit short to begin with. Once the material is glued in place, you can extend the cut if needed.

Cut the portion of the footbox floor underneath the gas pedal.

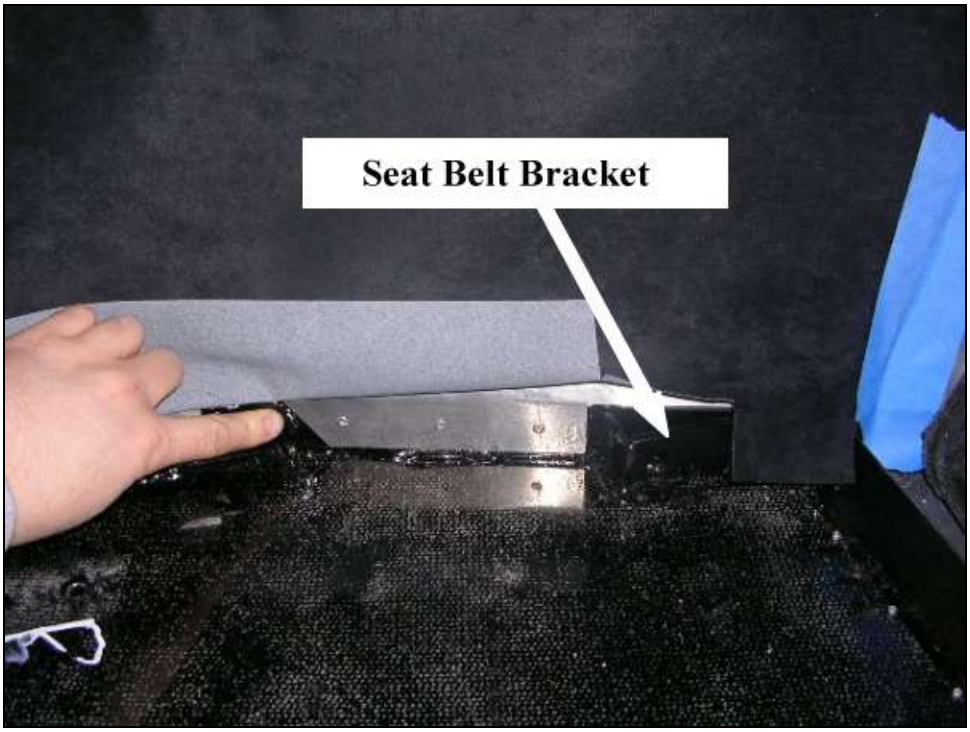
Cut the location where the floor drops and begins the footbox.



Cut around the ¾" steel tube coming from the top of the dash bulkhead, meeting at the front of the footbox (to the right of the gas pedal).

Remove any excess in the corner between the inside footbox wall and the aluminum panel that the wiring passes through. You will not cover the piece with the hole in it with the vinyl.

Mark and cut the location at the beginning of the floor pan where the seat will mount.



Cut location for the area where the 1.5” steel tube begins to angle outward (just in front of the inboard seat belt buckle bracket). You may also have to trim around the inboard seat belt buckle bracket.

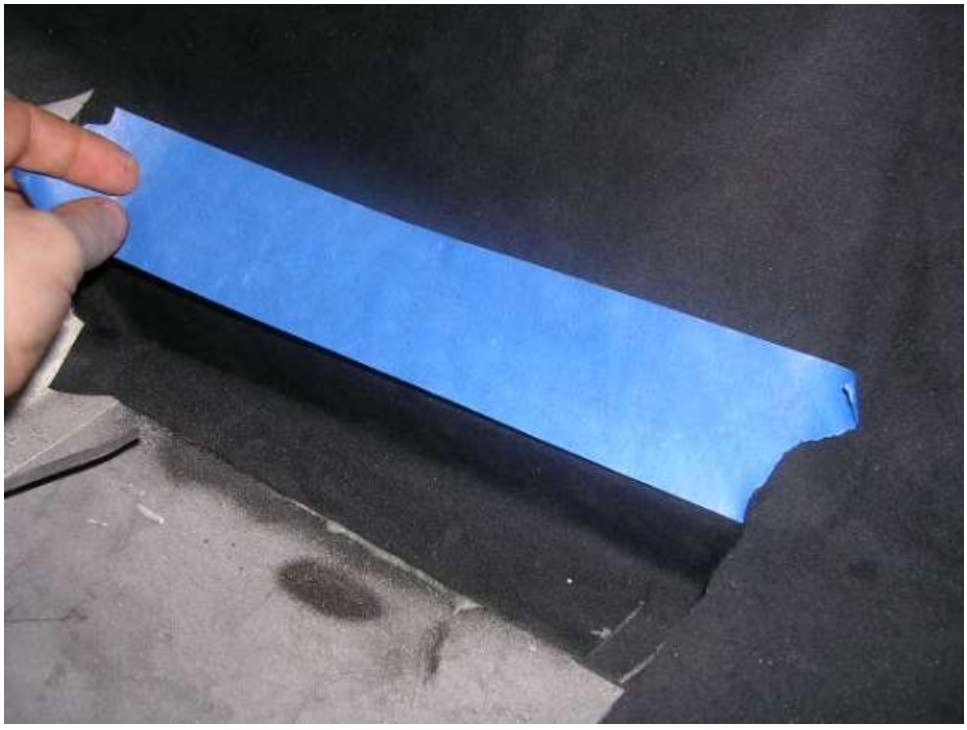
Cut the material at the front and rear edges of the 1.5” square tube at the area where the dash and the interior engine cover meet.

Tape off the ¾” steel tube coming from the dash bulkhead going to the front of the footbox.

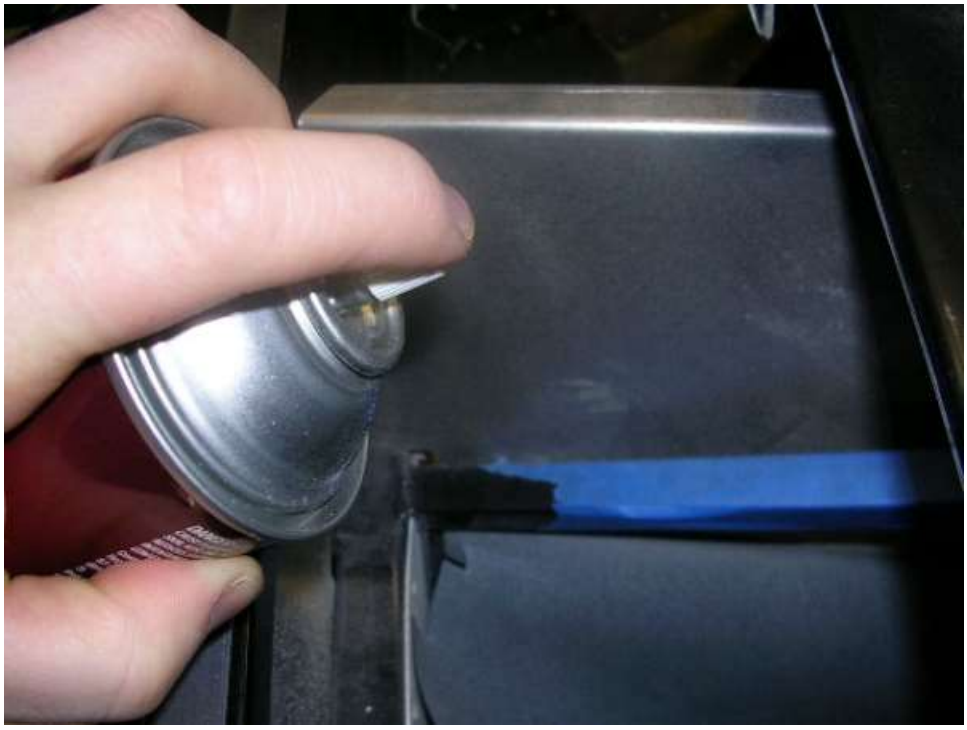
Tape off or conceal any wiring that could possibly get the spray adhesive on it.

Lift up the bottom edge of the vinyl in the footbox.

Spray both the aluminum (only the lower inside wall for now) and the backing of the vinyl with Super 77. Wait a minute or two to allow the adhesive to tack up, and then lower the vinyl onto the aluminum making sure that the material does not wrinkle. Smooth the material over the aluminum. Make sure that the vinyl fits tightly in/over any bends in the aluminum.



Remove the tape from the top edge of the footbox section and lower the vinyl down. Mask off any area that could get overspray on it.



Before spraying, pay close attention to how the Super 77 sprays so you don't accidentally spray in the wrong direction onto the black side of the vinyl when you get close to the edges. Spray the aluminum and the backing of the vinyl. Allow the adhesive to tack up. Put the panel back into place. If the vinyl sticks to itself or to the aluminum before you line it up with the top of the aluminum you can pull it back, even it out and re-apply it to the aluminum – the Super 77 will still hold the material in place.

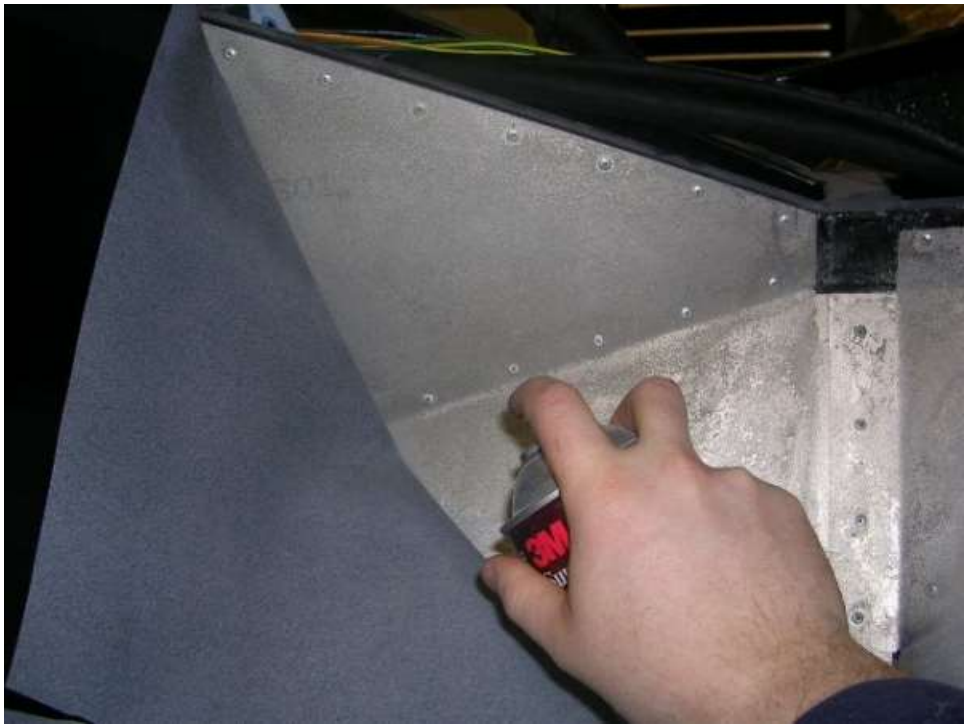
Remove the tape from the upper edge of the dash upright and from the back edge of the material. Pull the vinyl away from the tunnel wall.

Spray the upper half of the recessed section of the tunnel wall and the corresponding section of the vinyl. Allow the adhesive to tack up and apply the vinyl to the tunnel wall. Try to keep the top edge of

the material parallel with the 1” dash upright. Smooth the material out starting at the top working your way down. Again, make sure to work the material into the bends and over the edges.

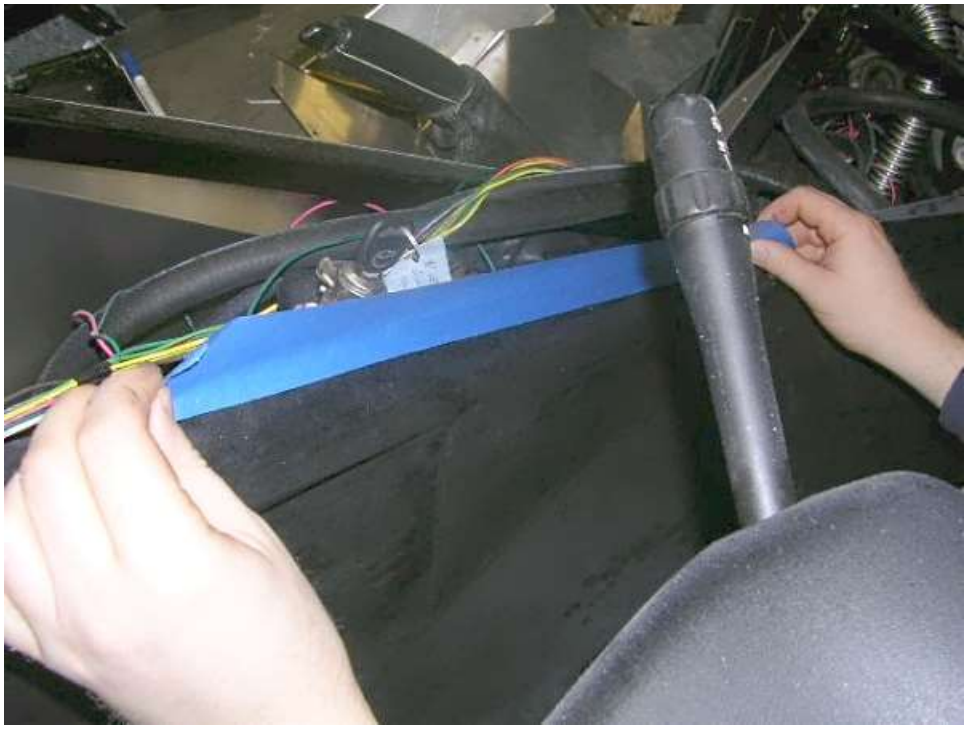
Spray the lower half of the recessed area of the aluminum and the backing of the vinyl.

Smooth the material over the aluminum and onto the floor panel.



Spray the rest of the front half of the tunnel up to the 1.5” square tube where the dash meets the interior engine cover. Apply the vinyl, smoothing it out from top to bottom.

Spray the rear half of the tunnel and apply the vinyl.



Mask off the top edge of the vinyl to prevent overspray. Mask off the ignition and any wiring that may get overspray on it as well.

Spray the upper edge of the vinyl and wrap it over the top of the 1” square tubes and the 1.5” square tube section at that dash/engine cover junction.

Remove the passenger side tunnel vinyl from the box and as with the driver side, fit the vinyl to the tunnel wall, trimming and slicing where necessary.

✋ TAKE YOUR TIME!

Once you are sure the vinyl is trimmed properly, spray the adhesive/smooth the vinyl out in a similar fashion as with the driver side starting from the footbox and work your way towards the back of the tunnel (shown with carpet already in place – you will put the carpet in AFTER the vinyl).

Cockpit Side Wall (Upper)

- Super 77 Spray Adhesive, scissors.
- Interior Vinyl parts
- Work carefully and most importantly TAKE YOUR TIME! You do not want to have wrinkles in the vinyl and you want to be sure that the vinyl adheres tightly to the bends in the aluminum.

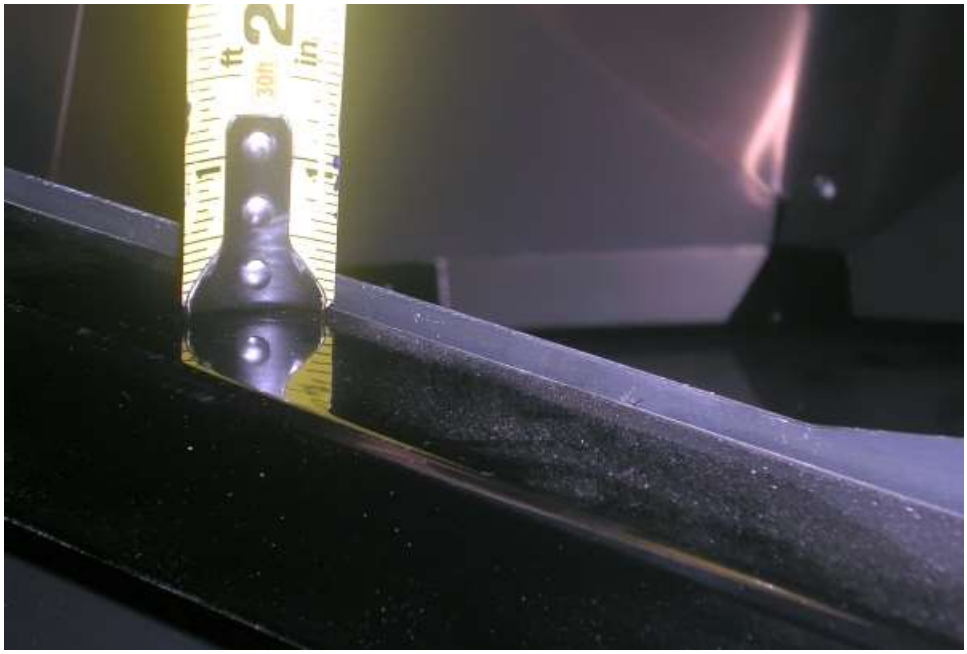
Before applying the vinyl to the cockpit side wall panels, you may have to cut a relief in the panel to allow it to bend slightly around the top of the door latch bracket. Hold the panel in place and mark the location for the cut and trim a small section from the rear flange.

As with the previous panels, slice and/or trim the vinyl in the necessary locations so the vinyl fits tightly around the panel and does not overlap it self once you have done so.

Spray the side wall panels with the adhesive and apply the vinyl. On the driver side, make sure the rear hatch handle cutout in the vinyl lines up with the cutout in the aluminum panel.

Cockpit – Door Sill Inside Panel Installation

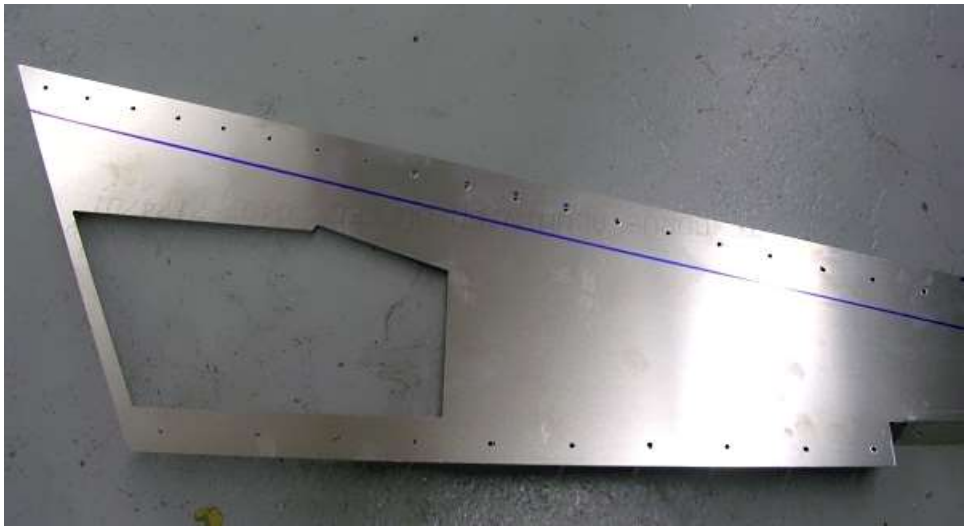
🛠 ⅛" drill bit, drill, marker, silicone, caulking gun.
🚘 Aluminum Panel – Door Sill, Inside, Driver and Passenger Sides.



Make sure that the flange that sits on the aluminum floor pan sits flat, the top edge of the panel is no more than approximately 3/16" above the 1.5" steel door sill tube (you don't want it to be any higher than the section of the body that wraps over the 1.5" tube).

Make sure the front edge of the panel that sits in the recessed area of the floor pan is up to the edge of the raised aluminum floor pan.

Mark the location of the 1.5” square steel door sill tube and 1.5” square steel dash upright tube.



Mark the locations for the rivets and drill them out with a ⅛” drill bit.

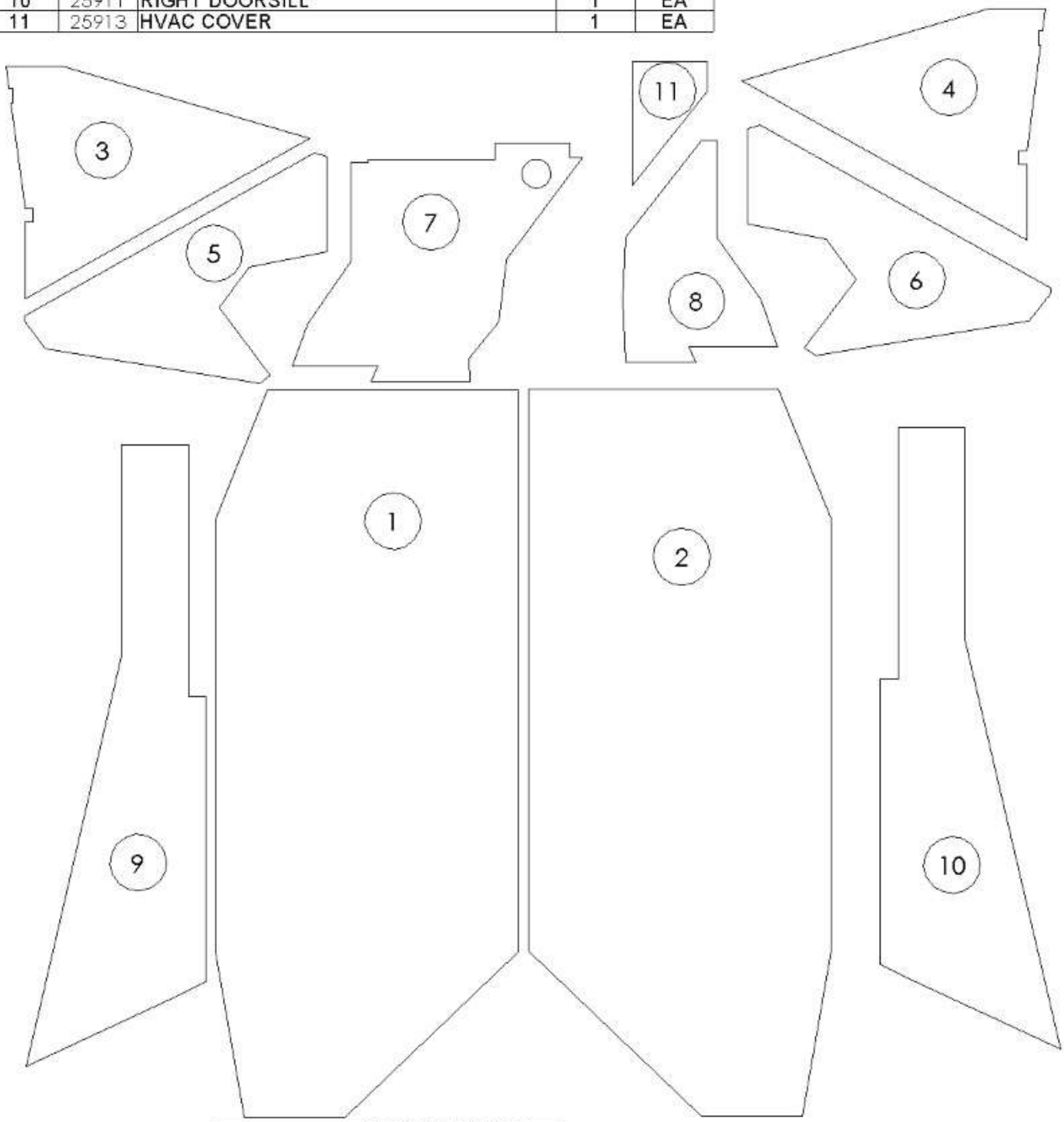
Apply silicone to all edges of the panel that come in contact with steel or aluminum and set the panel back in place.

Drill the frame according to the holes you already drilled in the panel and rivet the panel in place and repeat for the other side

Carpet Installation

- Razor, Scissors, Low-Tack Tape, Silicone, Caulking Gun.
- Carpet
- Perform a trial fit before applying the adhesive to the carpet and to the floor/aluminum panels.

1	25478	LEFT SIDE COCKPIT FLOOR	1	EA
2	25479	RIGHT SIDE COCKPIT FLOOR	1	EA
3	25904	LEFT FOOTBOX OUTSIDE WALL, UPPER	1	EA
4	25905	RIGHT FOOTBOX OUTSIDE WALL, UPPER	1	EA
5	25906	LEFT FOOTBOX OUTSIDE WALL, LOWER	1	EA
6	25907	RIGHT FOOTBOX OUTSIDE WALL, LOWER	1	EA
7	25908	LEFT FOOTBOX FRONT WALL	1	EA
8	25909	RIGHT FOOTBOX FRONT WALL	1	EA
9	25910	LEFT DOORSILL	1	EA
10	25911	RIGHT DOORSILL	1	EA
11	25913	HVAC COVER	1	EA



USED ON

APPLICATION

DIMENSIONS ARE IN INCHES
TOLERANCES:
TWO PLACE DECIMAL ±0.01
THREE PLACE DECIMAL ±0.005
FOUR PLACE DECIMAL ±0.001

MATERIAL

FINISH

PRINTED 5/31/2017

Factory Five Racing, Inc.

	NAME	DATE
DRAWN		

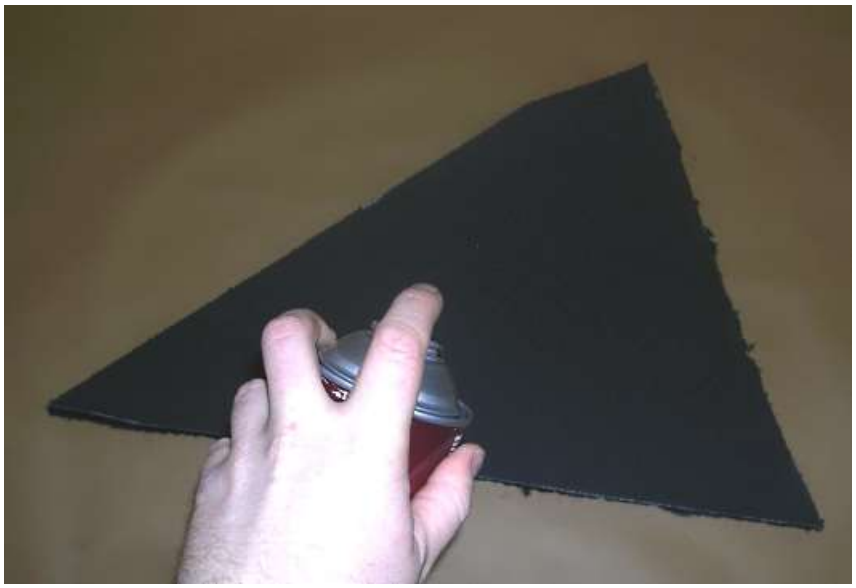
COMMENTS:

SIZE A | DWG. NO. GTM CARPET | REV.

SCALE: 1:10 WEIGHT: SHEET 1 OF 1

Footbox Outside Wall, Upper

Tape off any wiring, the fuse panel, the exposed powder coated steel, the steering column etc. that may get overspray on it – the Super 77 gives off a good amount of overspray, particularly in an enclosed area like the footbox.



After trial fitting the carpet and making any necessary adjustments, spray the carpet and the aluminum panel and apply the carpet.

Repeat for the passenger side.

Footbox Outside Wall, Lower

Trial fit the carpet. Make any necessary adjustments.

If you didn't already mask off the pedals (particularly the clutch since it is the closest to the outside wall) do so before spraying. An easy way to do this is to wrap a shop rag around the pedal.

Spray the back of the carpet and the aluminum then apply the carpet. Make sure to keep the carpet tight in the corners and around any bends.
Repeat for the passenger side.

Footbox Front Wall

Trial fit the carpet to be sure it fits snugly against the vinyl and the other sections of carpet on the outside wall. Make any necessary adjustments.

Mask off the carpet you just applied and the vinyl if you haven't done so already.

- Remove the accelerator pedal to make installing the carpet easier and to avoid getting any glue on the pedal.

Spray the carpet and the aluminum, then apply the carpet again, keeping the carpet tight to the other sections of carpet and around any bends/corners.
Repeat for the passenger side.

Floor

The floor pans are not welded all the way around so you will need to fill the gaps between the floor pans (where the seat mounts and in the footbox) and the tubular steel floor structure with silicone.

Set the carpet in place, making sure it fits snug against the lower bend in the front footbox aluminum piece.

Make sure the carpet sits flush against the raised edges (front and rear) of the floor pan and is tight in the corners (front edge shown).

Trim the area around the inside seat belt bracket.

If necessary, trim the carpet so that the back edge is about ¼" away from the rear lip of the floor pan – this will allow the fuel tank covers to sit in place properly and allow you to bolt the panels in without creating misalignment between the holes in the panel, and the rivnuts you installed in the floor pan.

Mask off any area that could get overspray on it, especially the vinyl you applied to the tunnel wall. A box, some brown paper, or newspaper will work well. The Super 77 is a "misting adhesive" which means that it does have a fair amount of overspray associated with it, so covering the whole tunnel, not just the lower portion will ensure there isn't any adhesive on the vinyl when you are done.

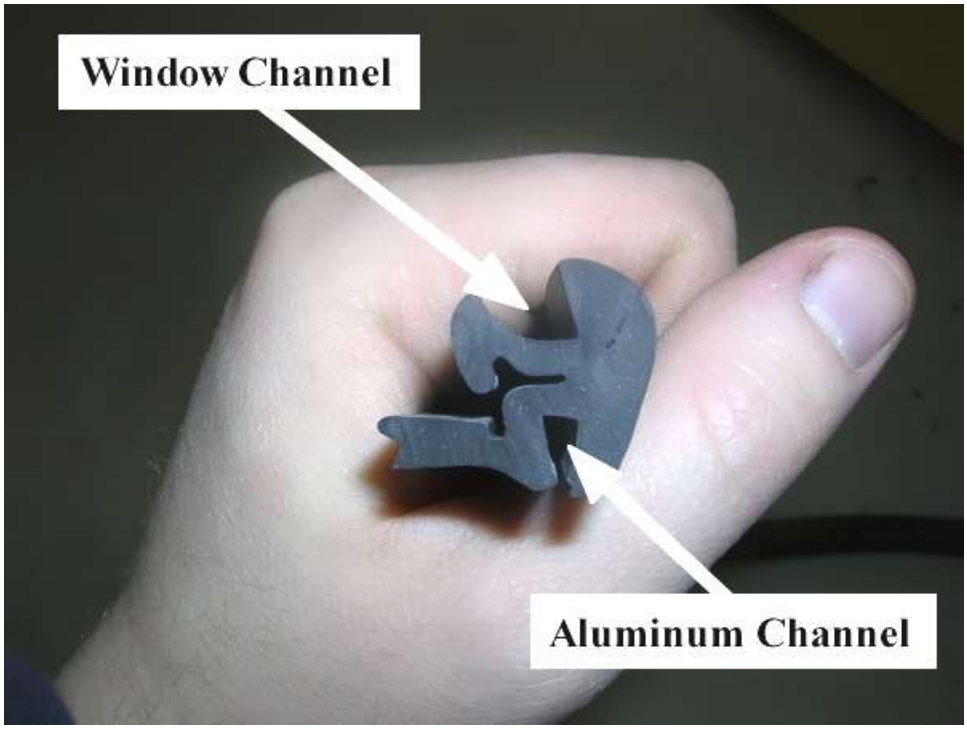
Spray both the floor and the underside of the carpet.

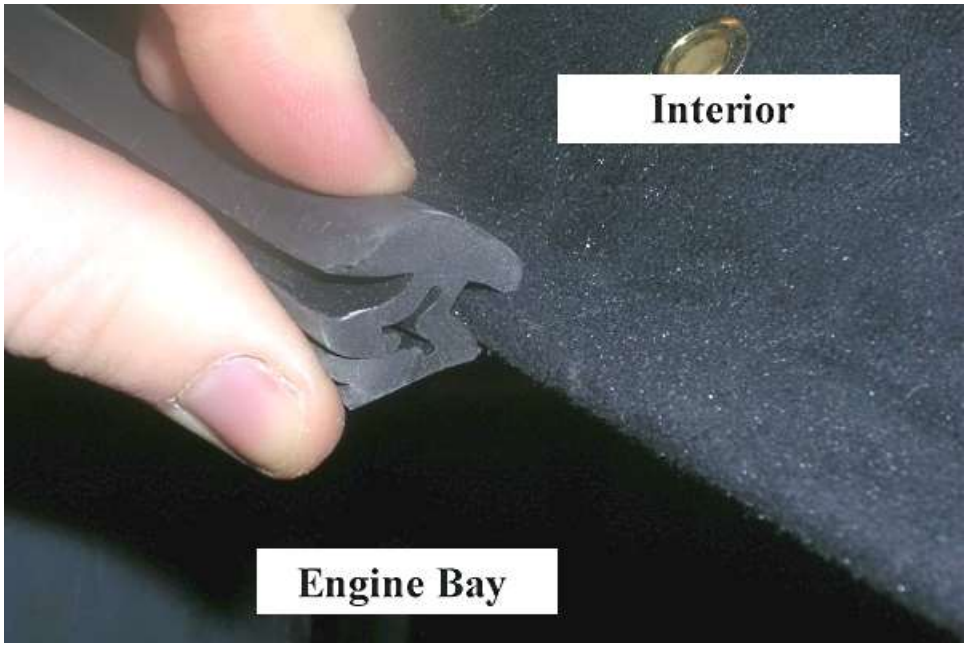
Lay the carpet in place, starting with the front edge just like you did with the trial fit. If the carpet does not fit properly right away, you can pick it up and re-adjust it – the adhesive is strong enough to withstand repositioning the carpet. Work your way towards the back, making sure that the carpet does not ride up the side of the tunnel (but is tight to the edges) and fits tightly around the bends in the floor.

Repeat for the other side.

Cockpit Rear Window

- Small Flathead Screwdriver, Razor Blade, Weather Strip Closing Tool.
- Interior rear window, Gasket.
- Once the window is in place (before trying to lock the self-sealing gasket into place) it helps to spray the gasket with some Window cleaner, or apply some soap and water.

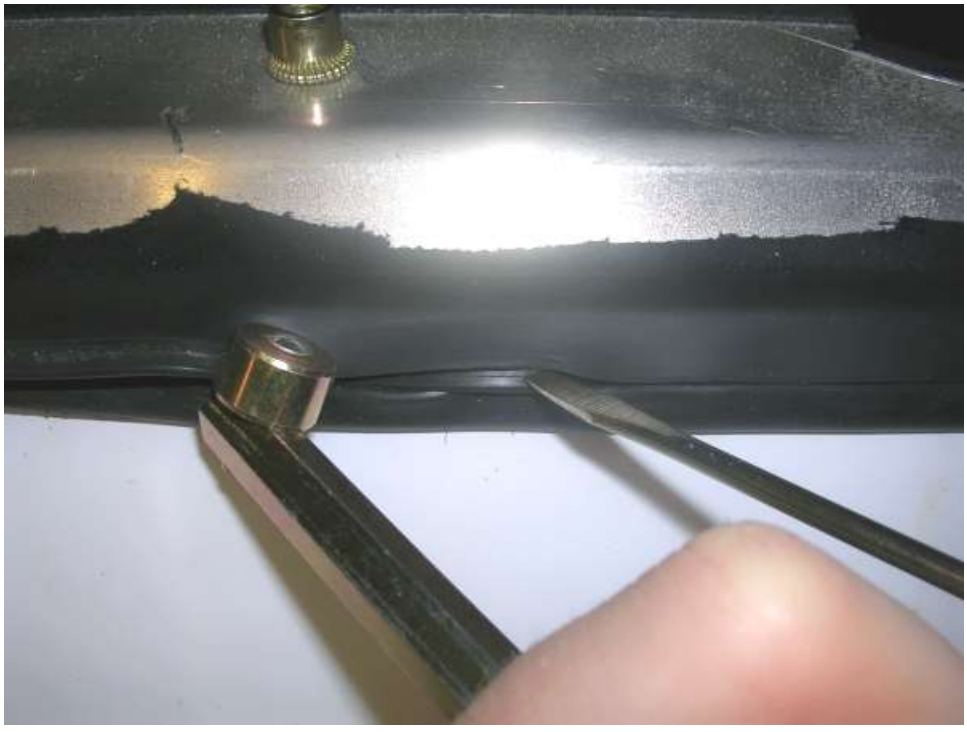




Press the window gasket onto the rear wall aluminum panel such that the smooth side will be on the inside of the car. The channel that presses over the aluminum is the smaller of the two channels. Make sure the gasket wraps tightly around the outside curved edges of the aluminum panel.

Trim the excess gasket material – be sure that the ends of the gasket will contact each other evenly and there is no gap between them.

Leaving the contact paper on the rear window, slide the window into the inner channel in the gasket. Start on one side by hand and work the material over the edges of the window with a small flathead screwdriver or pick until the window is all the way in the channel.



Again, spray the gasket with some window cleaner or something similar and begin to lock the weather strip into place with the supplied weather strip closing tool (FFR# 25890). Below is a photo of what the gasket looks like when sealed (off the car). Use the probe of the closing tool to pry the grooved portion of the gasket open and the wheel to roll along the tongue, sealing the gasket (See Photo). You may have to use a small flathead screwdriver to press the gasket closed if it doesn't close completely or if the tongue pops out of the groove as you work your way along the gasket.

Trim the excess vinyl around the window gasket.

Re-install the bulb seal you cut previously to the top edges of the rear wall.

Install the rear wall using the supplied ¼”-20 x 1” button head screws.

Interior Engine Cover

🛠 4mm Hex key, ¼”, 25/64” drill bits, drill, Rivnut Tool.
🚘 Interior Engine Cover.

Set the engine cover in place, and fasten it to the rear wall with the supplied ¼”-20 bolts (4 mm Hex).

Before drilling, make sure the engine cover is pressed onto the top of the steel it surrounds at the bottom end. Then, using the holes you already drilled in the engine cover, drill ¼” holes in the frame. A good way to prevent the engine cover from moving as you drill each hole is to drill the first hole, place one of the ¼”-20 bolts in the hole, move on to the next hole, place a ¼”-20 bolt in it etc.

Once you have drilled the six holes in the frame, remove the engine cover and drill out the holes with a 25/64" drill bit.

Install the rivnuts.

Re-install the engine cover, bolting it to the rear wall and the frame.

Fuel Tank Cover Installation

🛠 4mm Hex key, 1/8" drill bit, drill.

- Aluminum Panel- Fuel Tank Cover (R, L), Aluminum Panel – Fuel Tank Cover, Inside (L, R).

Set the fuel tank covers in place so that the side flange of the engine cover is in front of the fuel tank cover.

Slide the inside fuel tank cover aluminum panel behind the ⅛" fuel tank cover. Line up the corner between the two bends with the corner of the ⅛" fuel tank cover (see photos).

Drill and rivet the flanges of the inside panel to the tunnel aluminum. You may want to remove the ⅛" thick fuel tank covers first to avoid tearing the vinyl with the drill; just make sure that you tape or clamp the inside panel in place first.

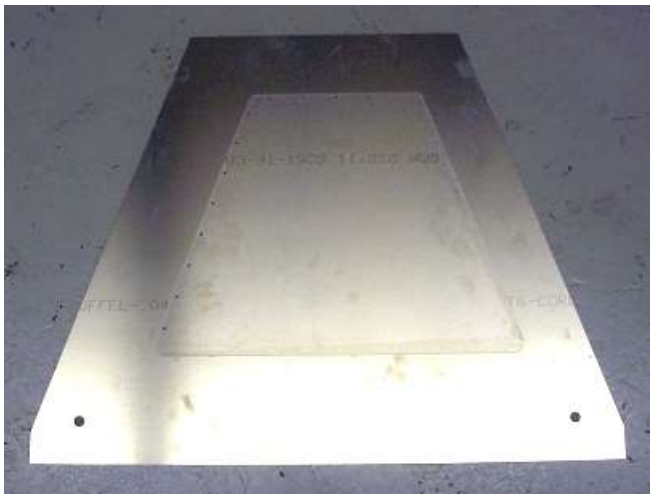
Bolt the fuel tank covers to the rear wall and the floor pan with the supplied ¼"-20 bolts (4 mm Hex) (Bolting to the rear wall shown).

Undercarriage Aluminum Installation

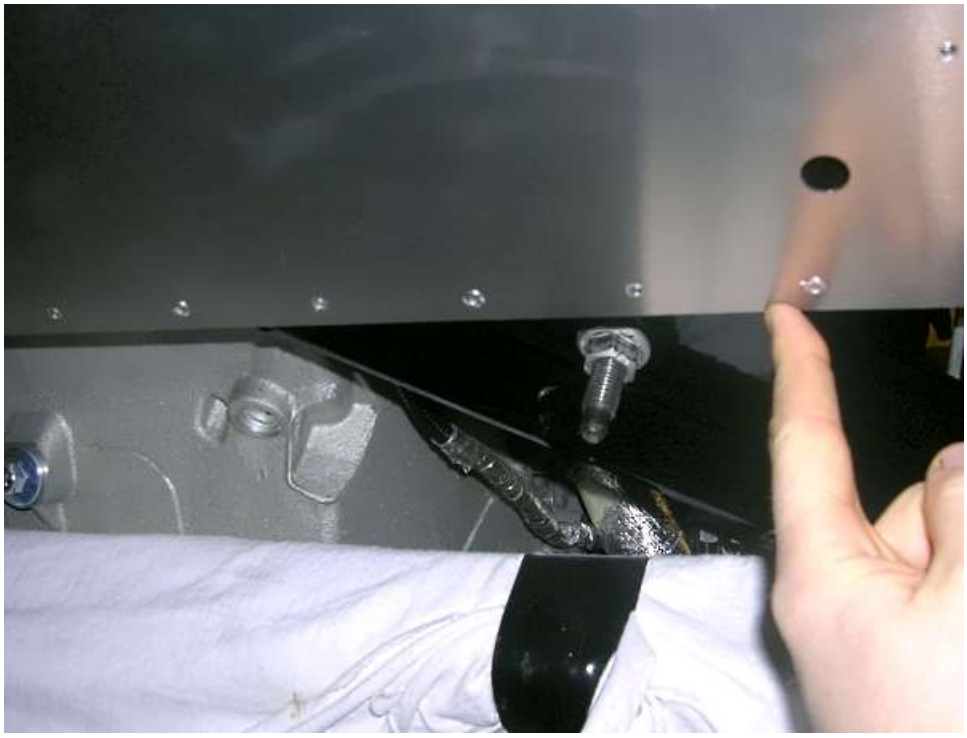
🛠 ⅛" drill bit, drill, marker, silicone, caulking gun, tape measure/ruler.

🚘 Tunnel Floor (FFR# 25185), Undercarriage panel – Front/Center (FFR# 25187), Engine Floor (FFR# 25186), Engine Floor Access Panel (FFR# 25419), Rear Quarter Floor (R, L) (FFR# 25420), Fuel Tank Floor (FFR# 25421), Undercarriage Floor Pan (R, L) (FFR# 25477).

Engine Floor/Engine Access Panel



Place the Engine Floor Access Panel on the Engine Floor. Make sure the Access Panel overlaps the cutout in the Engine Floor evenly. Using the laser cut holes in the Access Panel, drill and rivet the Access Panel to the Engine floor.



Place the Engine Floor/Access Panel onto the frame lining up the back edge of panel with the back edge of the 1.5” square tube that runs the width of the car and below the crankshaft pulley. Also make sure that the sides of the Engine Cover are in the middle of the diagonal 1.5” square tubes that make up the inside edge of the cockpit floor (Shown in photo already riveted in place). Tape into place.

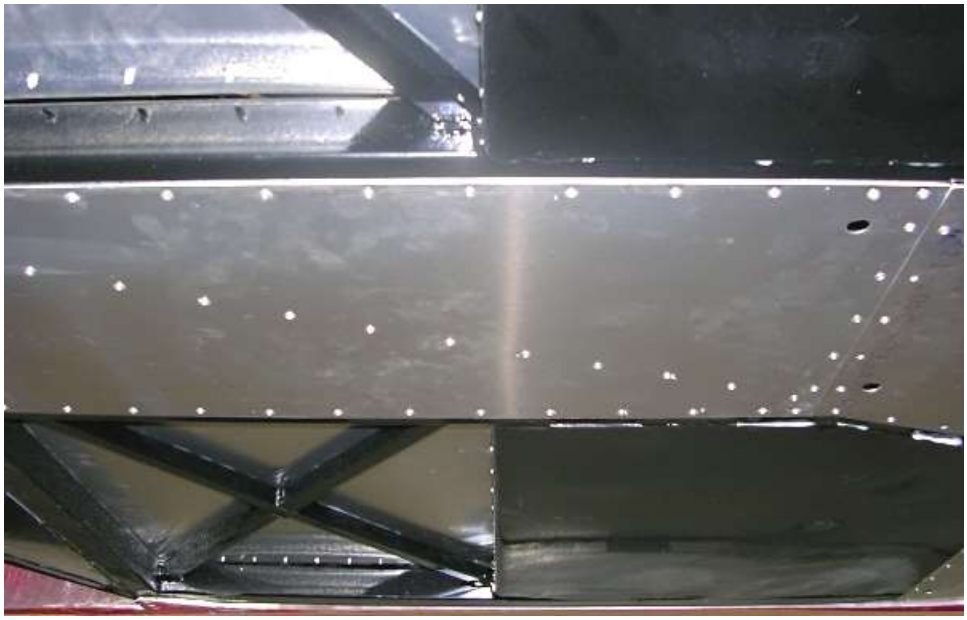
From the inside the tunnel, trace the outline of the 1.5” square tubes onto the panel with a marker. Remove the tape and the panel.
Using the procedure described in the Aluminum Preparation section, drill the panel, apply a bead of silicone to the frame and re-tape it in position on the frame. Drill and rivet the panel to the frame. Do not drill/rivet near the front corners of the panel – the Tunnel Floor Panel needs to overlap the front edge (leave about 1”) of the Engine Floor panel. Once the Tunnel Floor is in place you will drill/rivet through the corner of the Tunnel Floor, then the Engine Floor then the frame.

Tunnel Floor

Tape the Tunnel Floor Panel into position – make sure that the holes in the corners of the panel are not covered by the ¾" square steel tube (Shown in the photo after the panel has been riveted in place. Photo taken from driver side).

From inside the tunnel, trace the outline of the 1.5" square and ¾" square steel tubes. Remove the panel. Mark the rivet locations on the panel and drill them out.

Apply a bead of silicone to the frame/front edge of the Engine Floor, then re-install the panel to the frame, lining up the rear outside edges with the edges of the Engine Floor Panel, and making sure the panel lies about ¾" in from the outside edges of the 1.5" square steel tubes that run straight up the middle of the frame.



Drill and rivet the panel to the frame/Engine Floor. Do not drill/rivet near the front corners of the panel – the Front, Center Panel needs to overlap the front edge (leave about 1") of the Tunnel Cover. Once the Front, Center Panel is in place you will drill/rivet through the corner of the Front, Center Panel, then the Tunnel Floor, then the frame.

Rear Quarter Floor (R, L)

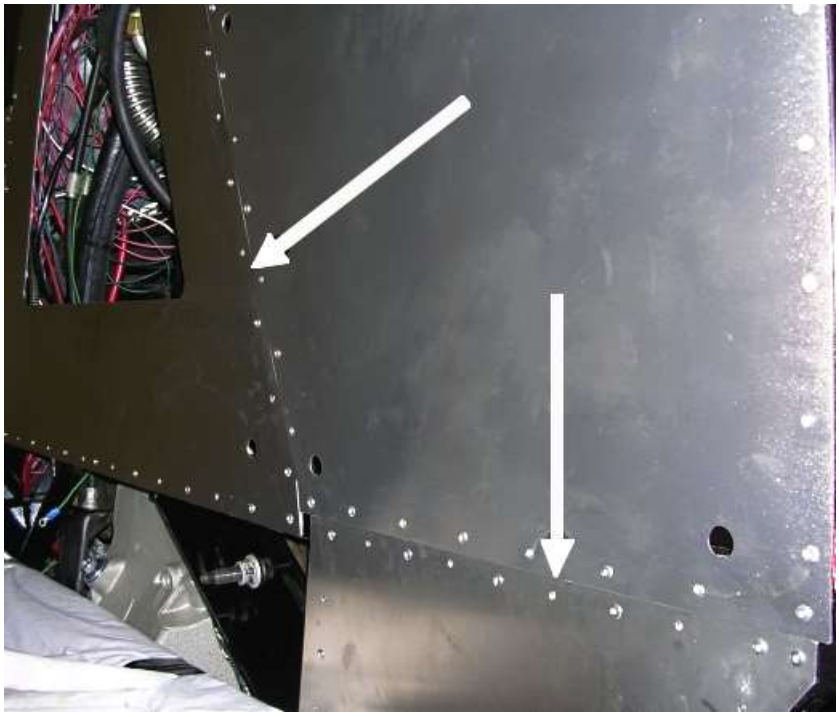
Tape the one of the Rear Quarter Floor Panels into place, lining it up with the 1.5" square tube that runs along side the engine, and the diagonal 1" square tube in front of the rear wheel. The front edge of the panel should be in the middle of the 1.5" square tube that runs the width of the car, under the crankshaft pulley. Trace the outline of the steel.

Remove the panel and mark the rivet locations. Drill out the panel.

Apply silicone to the frame and re-tape the panel into position. Drill and rivet the panel to the frame. Repeat for the other side.

Fuel Tank Floor (R, L)

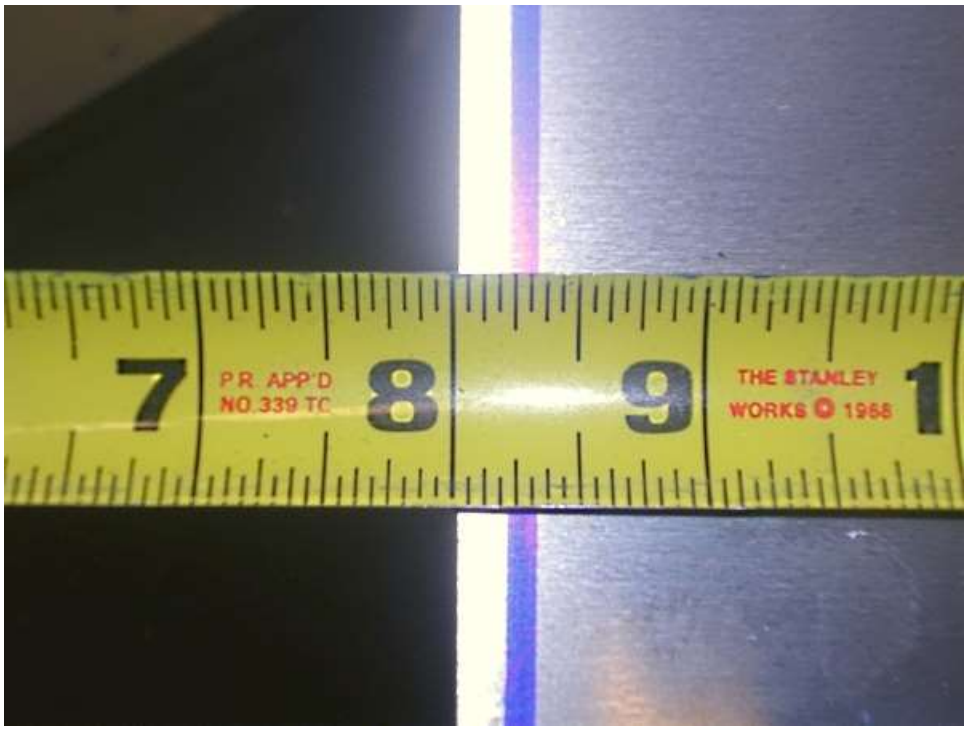
Place one of the Fuel Tank Floor Panels onto the frame. It should contact the front edge of the Rear Quarter Floor and the side of the Engine Floor. Measure in about ¼" from each edge of the panel and mark the rivet locations. Remove the panel.



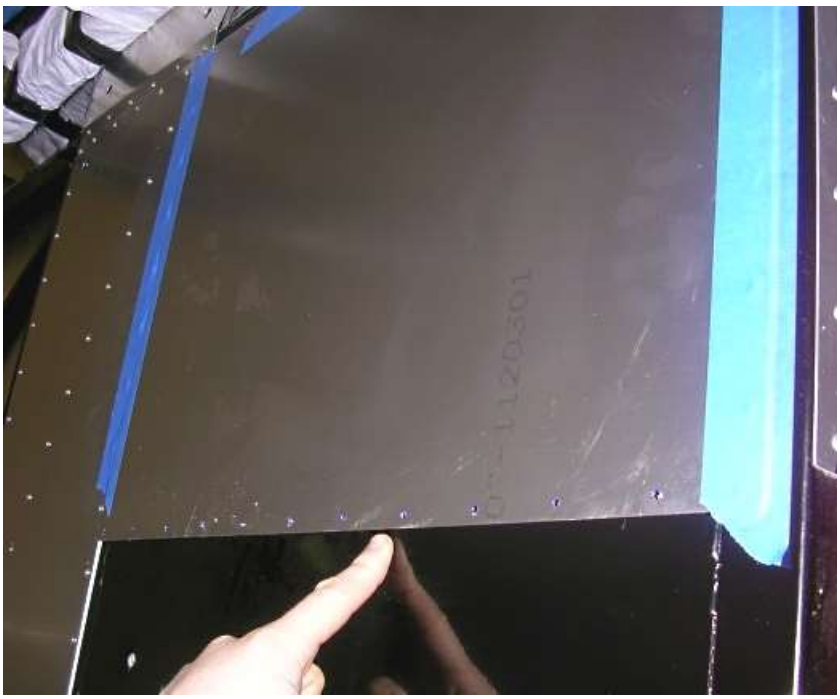
Apply a bead of silicone to the frame, then reposition the panel and drill and rivet it into place.

Repeat for the other side.

Undercarriage – Floor Pan (R, L)



Measure in about ¼" from the edges of the panel, mark the locations for the rivets, and then drill out the panel.



Set the panel in place on the frame so the front edge of the panel meets up with the front edge of the Lower Dash Bulkhead Tube and the inside edge of the panel touches the Tunnel Floor Panel you already installed. Note where the panel overlaps the steel floor pan so you know where to apply the silicone. Remove the panel and apply the silicone to the frame.

Drill and Rivet the panel to the frame.

Repeat for the other side.

Seat Belts

🛠 ¾” wrench, ¾” socket, ratchet, 19 mm wrench/socket.
Seat Belt Hardware
The Corvette Passenger Side Seat belt reels will be mounted on the Driver Side of the GTM, and the Corvette Driver Side Seat belt reels will be mounted on the GTM Passenger side.

The donor seat belts assembly will be re-mounted in the GTM chassis in their entirety. Locate the belts and the receptacles for each side and the mounting hardware.

Bolt the two belt reels to the chassis tabs, the tabs are shaped to locate the reels and keep them from being able to rotate (¾" wrench/socket).

Bolt the upper seat belt guide through the firewall and to the chassis (¾" wrench/socket).

Bolt the seat belt receptacles to the chassis making sure that each release button is facing the inside of the car (19mm wrench/socket).

Seats

🛠 Masking tape, measuring tape/ruler, 3/16", 5/16", 25/64" drill bits, drill, 4 mm Hex Key.

🚘 Seats.

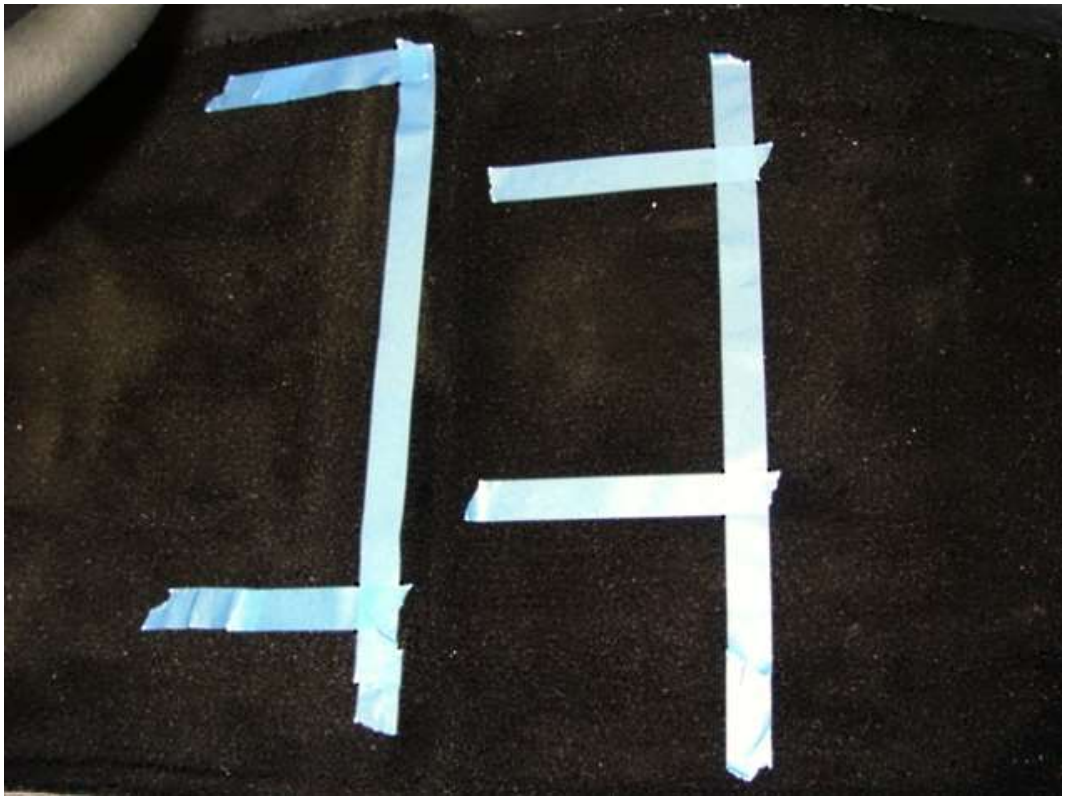
Mark the bottom of the seats with masking tape so that you can locate the mounting surfaces with the seats in position. The mounting surfaces are the two flat front corners and the lowest section of the slightly curved rear area.

Position the seats in the chassis and sit in them to find a comfortable position. Pay close attention to pedal position, steering wheel position, head clearance, and visibility as well as general comfort.

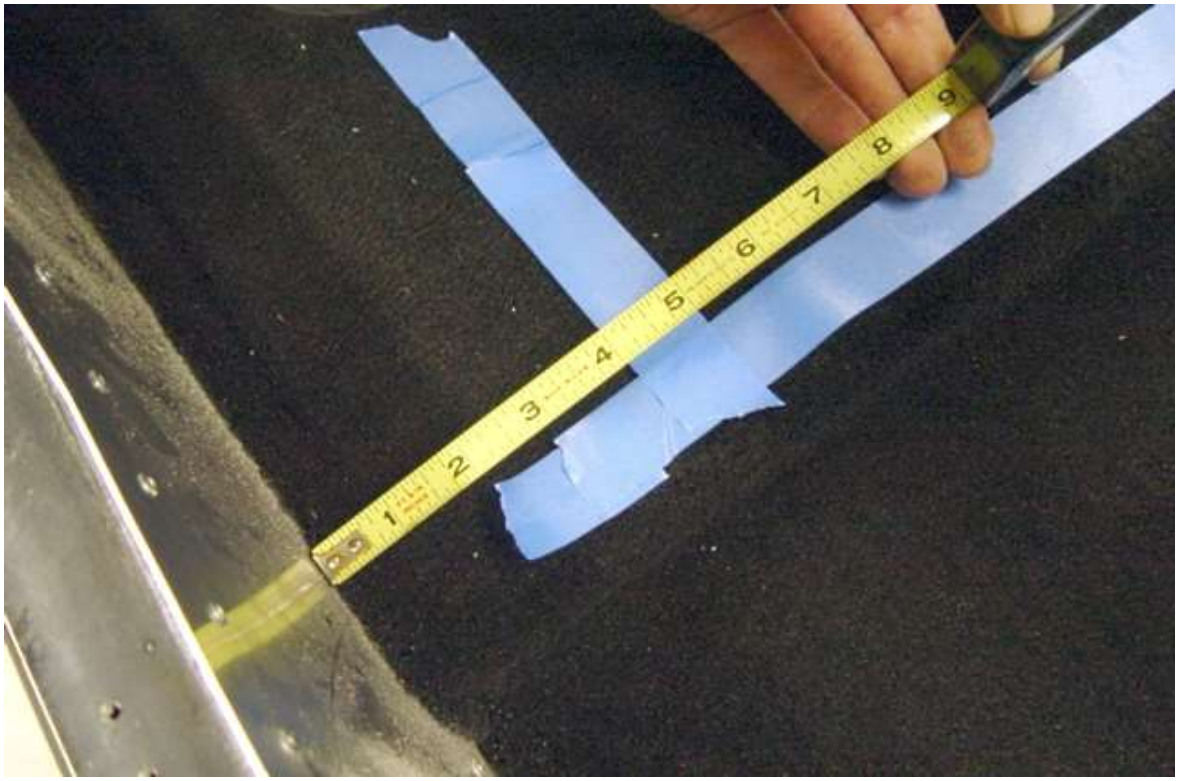
If you find that your head is close to the rollcage and you could use a bit more room, look at the inside seat belt mount and where it touches the seat. Removing the corner of the seat will allow the seat to move in more. You will not feel anything when sitting in the seat

- This can also be done for the passenger side, just cut the opposite side of the seat.

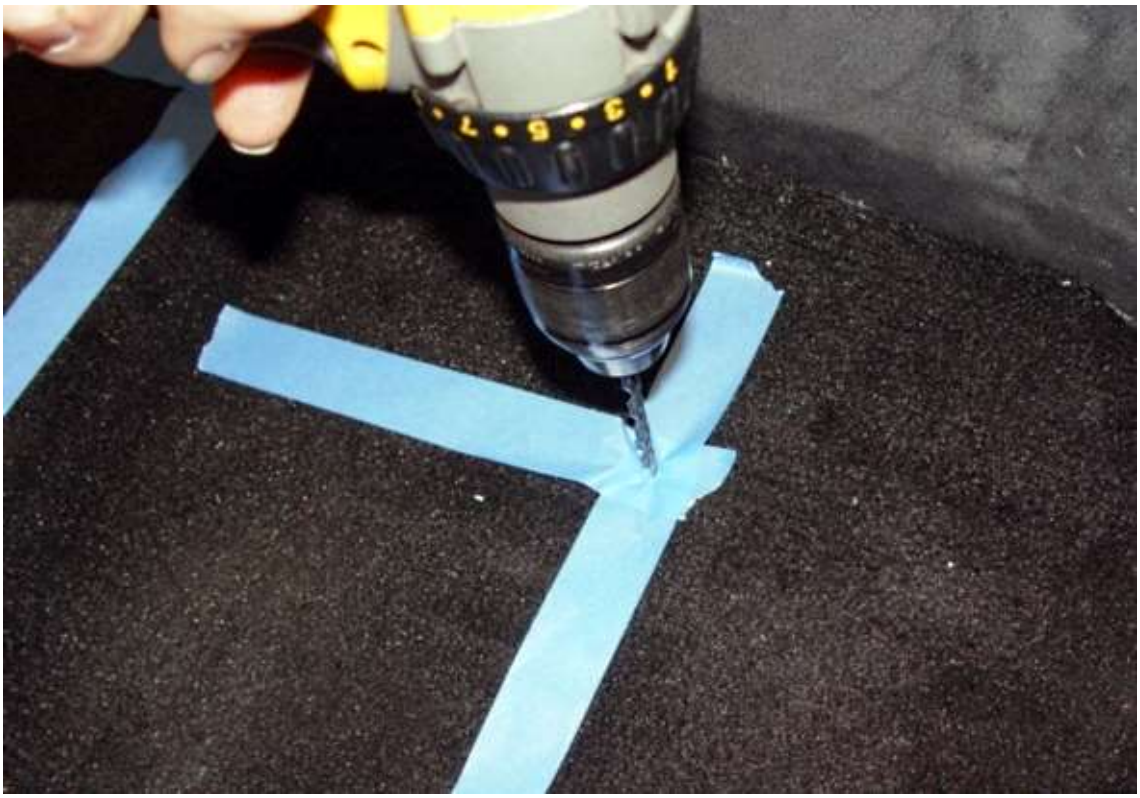
Once you have the seat in a position that suits you mark the carpet with masking tape to locate on the chassis where the seat mounting points will be.



Measure in 2” from the flat pads on the front and mark the side to side location for the rear bolts.



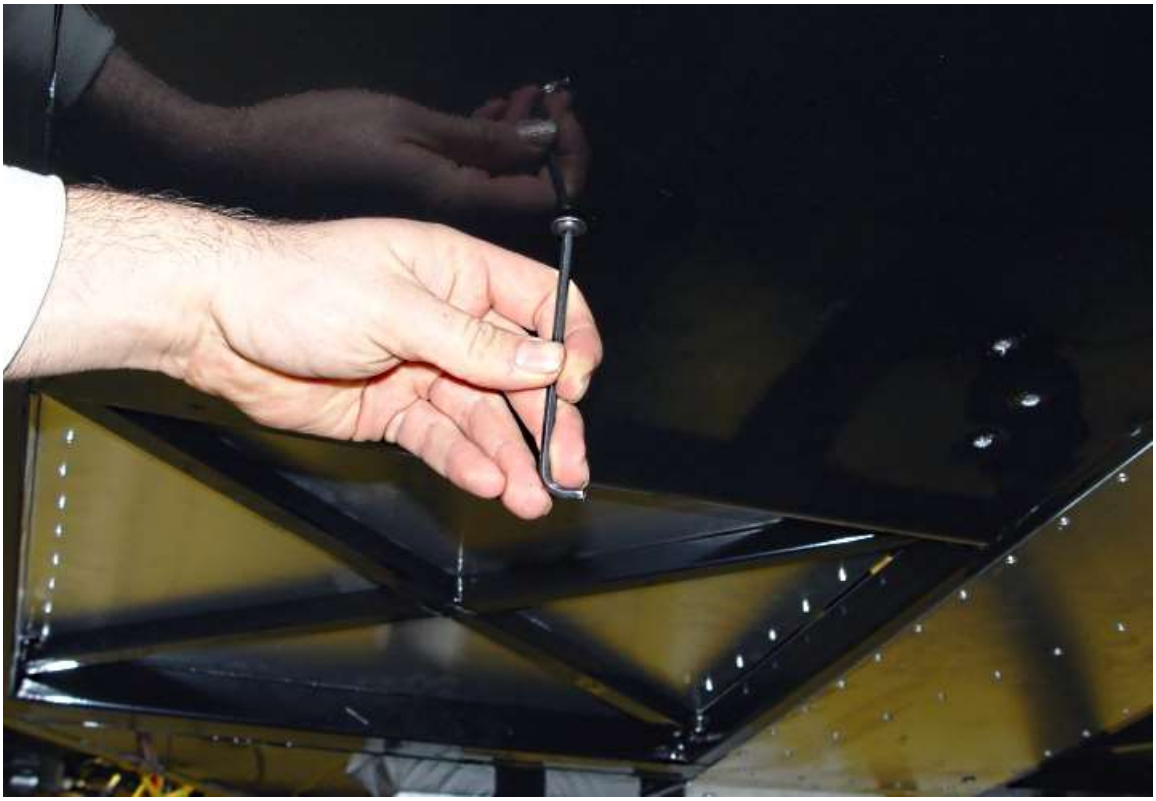
The front mounts will generally fall over the tubular section of chassis so it is important to measure from underneath where you can see the tubes to make sure that your mounting bolts will go through the chassis tube and into the seat.



Once you have the locations marked on the chassis drill them out from the top with a $^{3}/_{16}$" drill bit.

Re-position the seat and very carefully drill through the chassis from the bottom into the seat. In order to keep the seat in position while you drill you can use some temporary 3/16" rivets to hold it in place.

Remove the seat and drill out the four holes and install ¼"-20 rivnuts in the base.

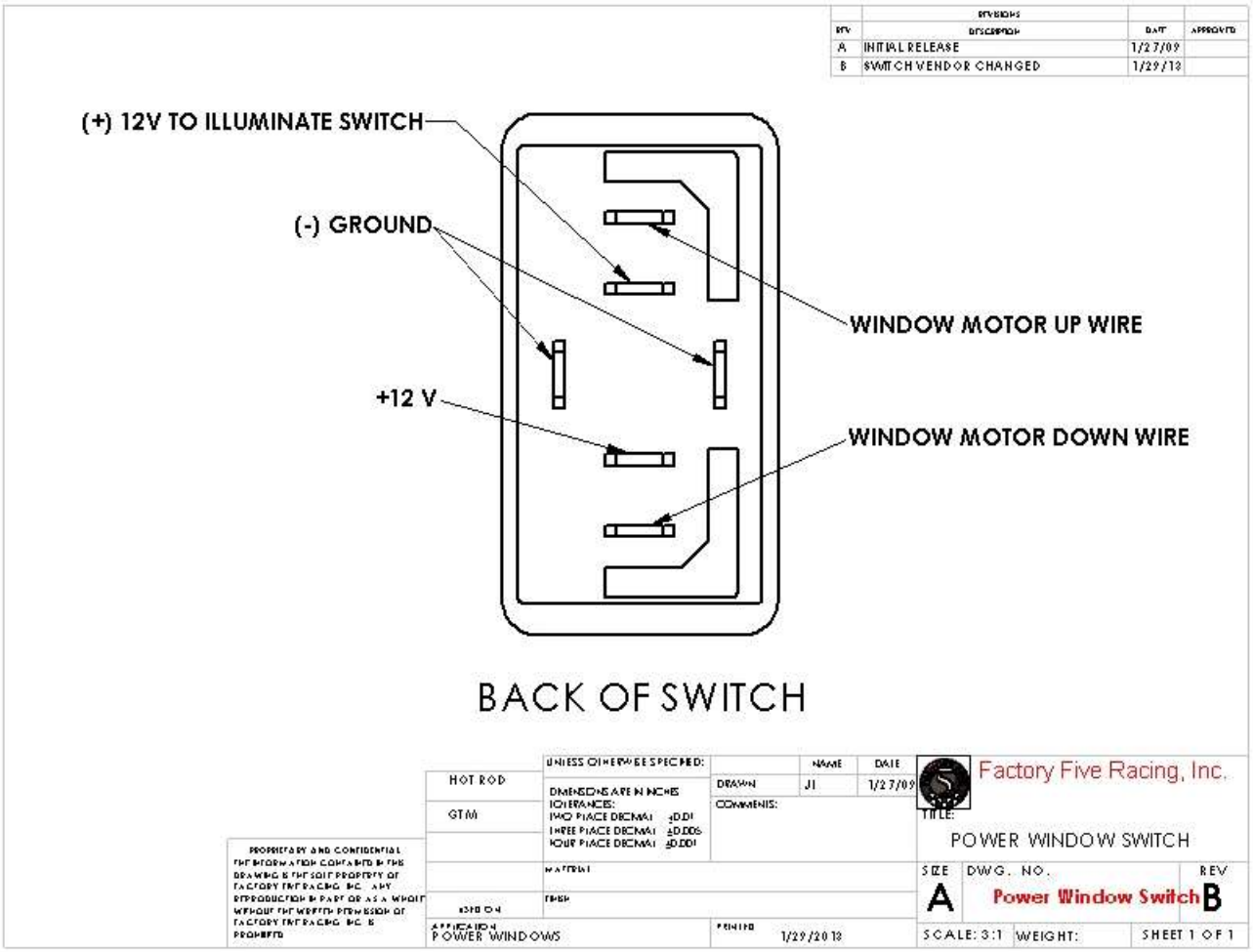


Drill the chassis holes out with a 5/16" drill and install the seat using ¼"-20 button head screws.

Dash Wiring and Gauge Installation

- 🛠 Wire strippers, wire snips, electrical tape, 5/8", 11/16" drill bits, hole saws, drill, Solder, soldering iron, marker, masking tape.
- 🚘 GTM Gauge Assembly, Door components, Misc. electrical components
- ✋ Use the following diagram as a guide for wiring the power windows circuits.
- ✋ Use the wire from the Misc Electrical components to connect the window motors to the switches.

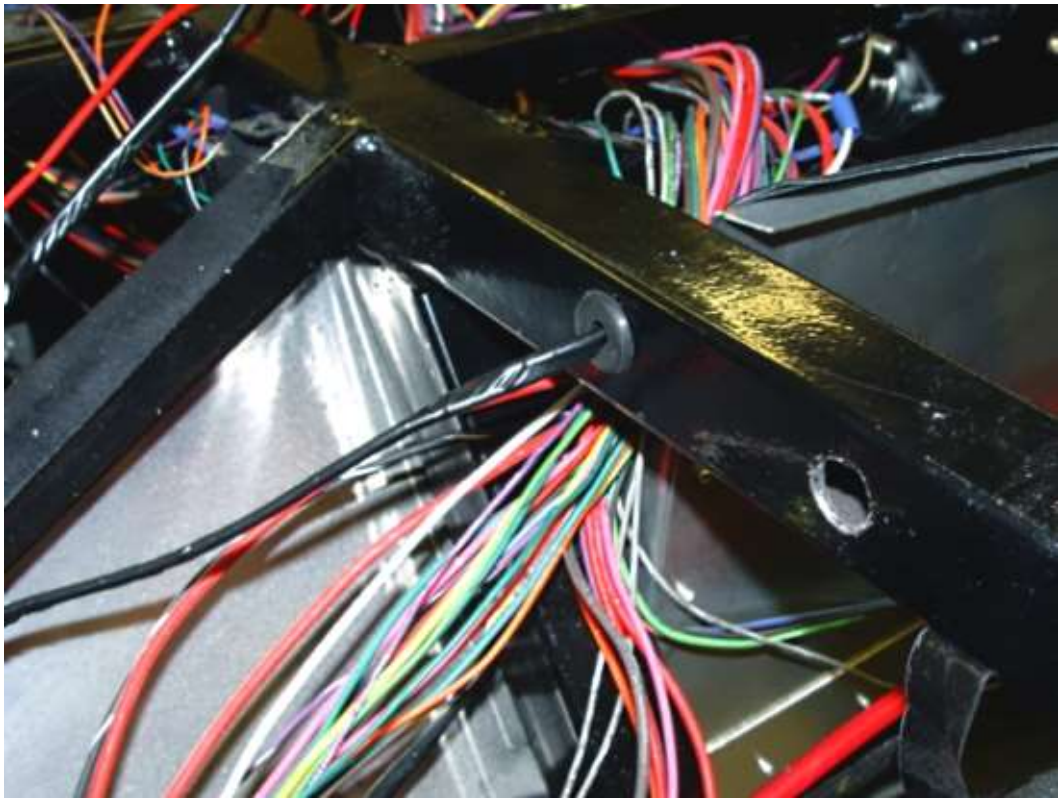
Power Window Wiring



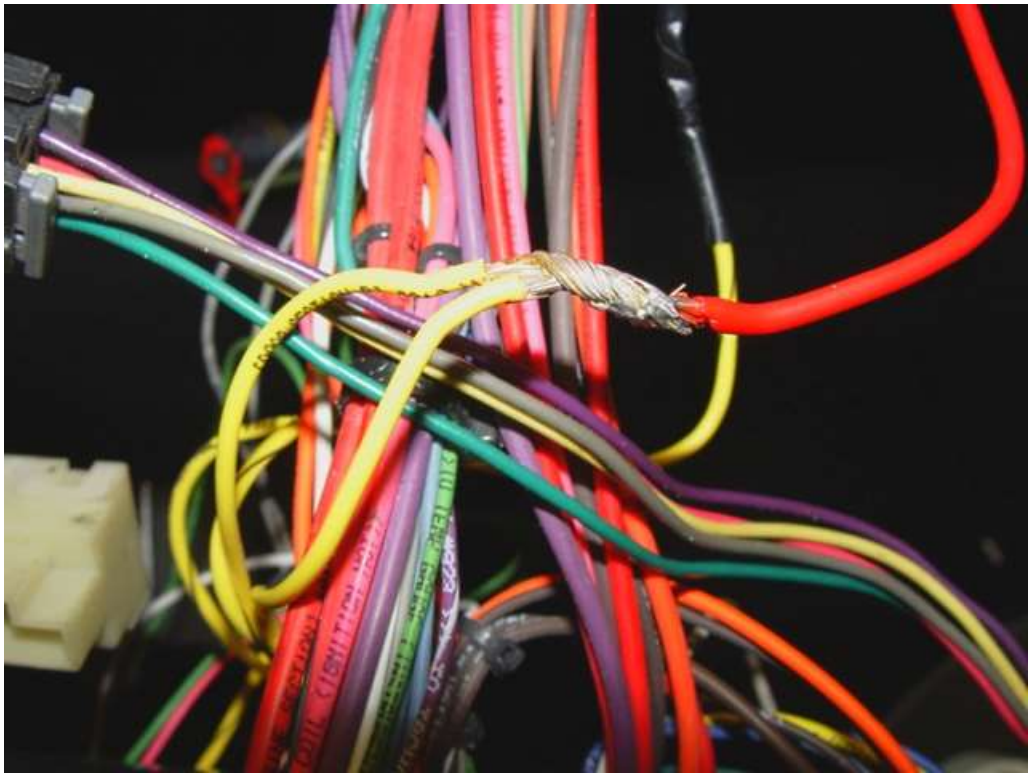
Locate the power window switches and wiring provided with the kit.

Lay the window switches in their rough location and slide one of the small rubber grommets from the chassis harness box down each pair of red and black wires that will connect the motors to the switches. The window wires run through the chassis to the doors.

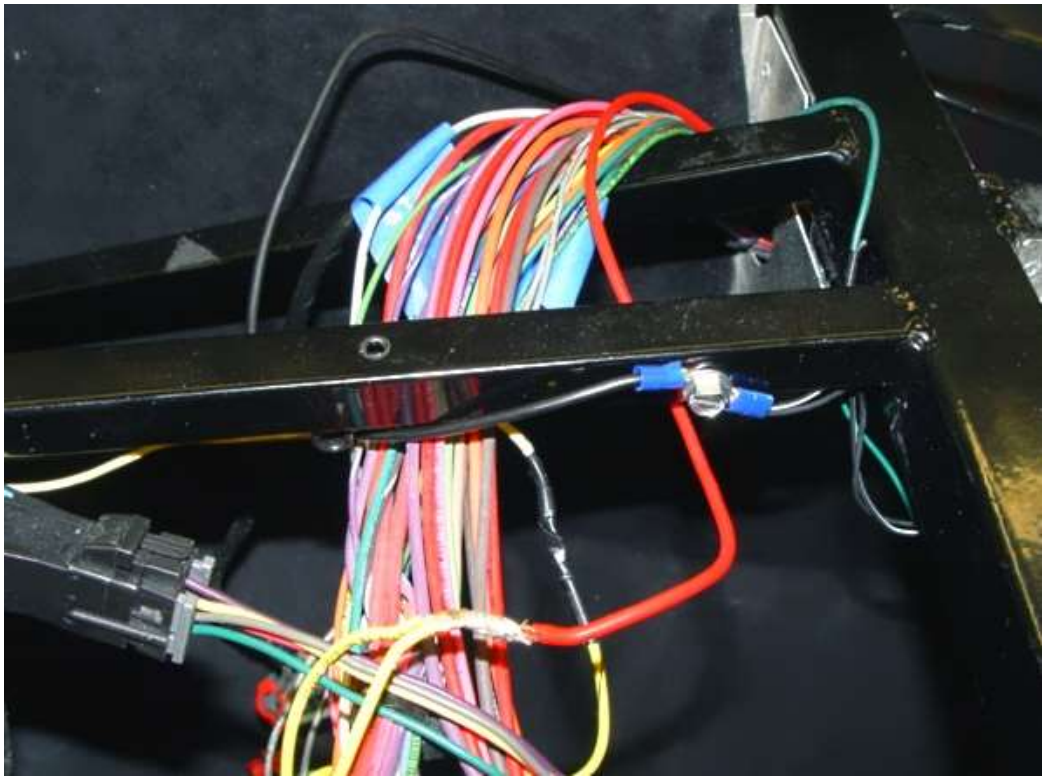
Drill two ⅝" holes about 2 inches apart in the center of the large chassis cross bar that runs under the dash.



Route the window motor wires through the chassis and push the grommet into the hole to protect the wires.



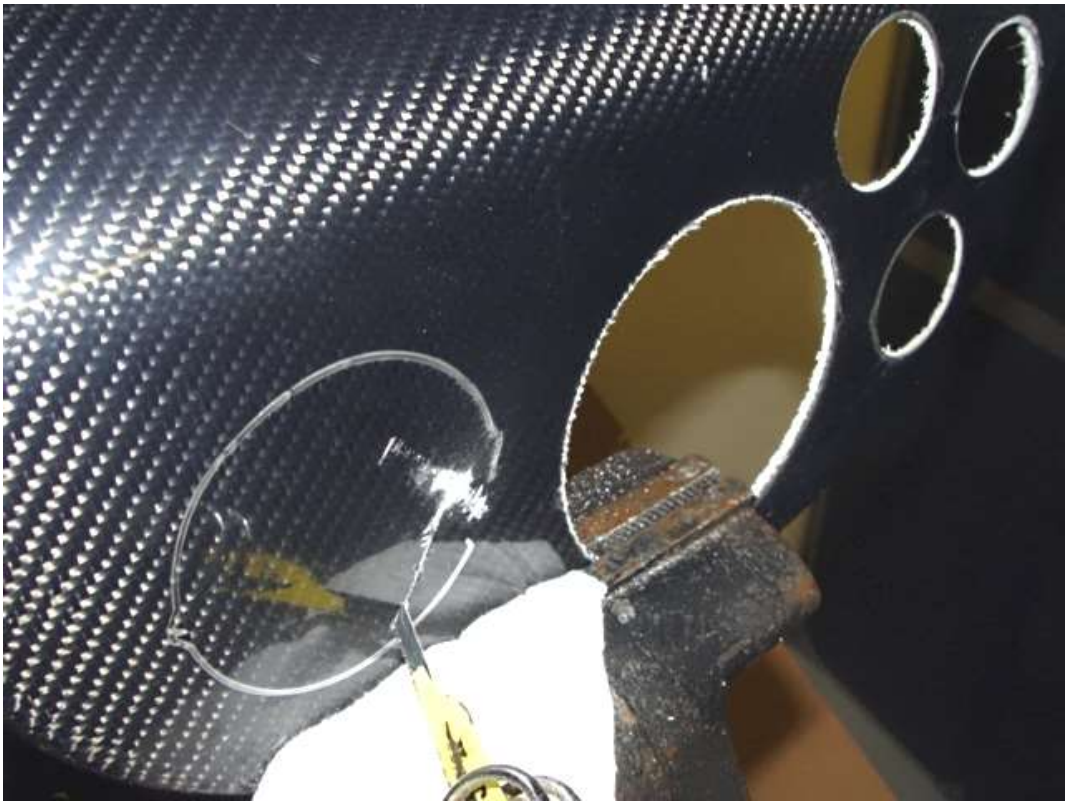
Run the two remaining power and ground wires back into the driver footbox through the pass through and splice and solder the red wire into both of the two yellow window power wires from the chassis harness. The chassis harness is fused so the extra in-line fuse can be removed.



Attach the black ground wire to the chassis at one of the common grounds for either your relays or OBDII port.

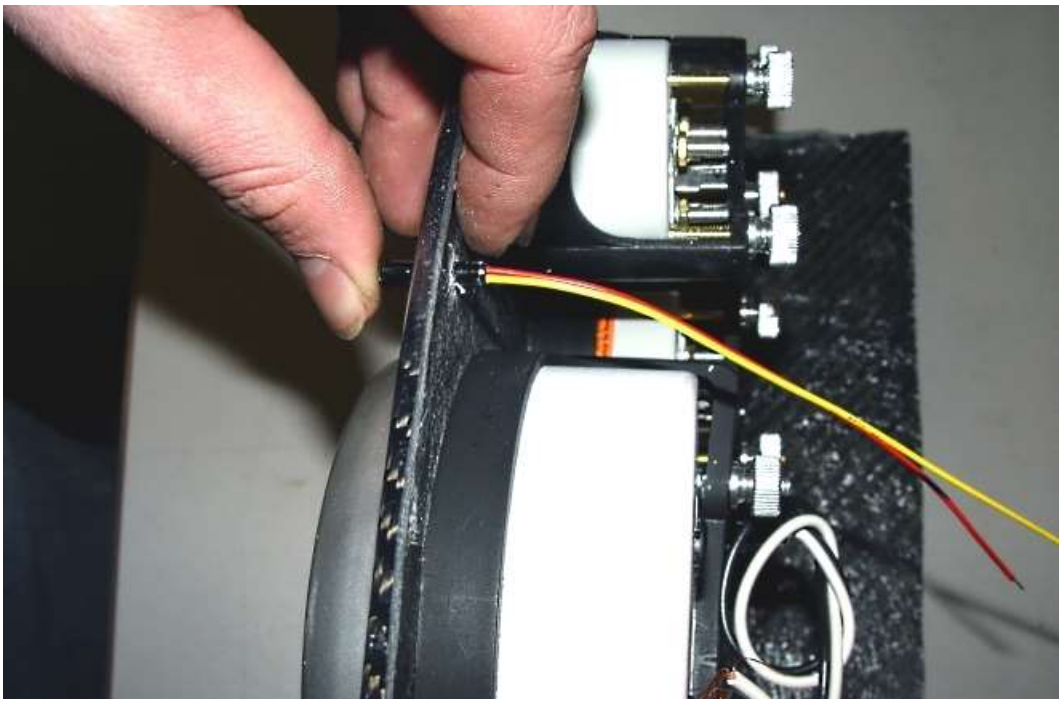
Gauge Installation

Remove the gauges from the box and locate the retaining rings; these will be used to help determine lay-out.
Cover the front of the dash face with masking tape.
Draw a line around the outside of the dash face ½" in from the edge. This area is used to attach the dash face to the dash pod.
Arrange the rings on the dash face until you have a lay-out that you like. Leave ⅜" between gauges to account for the bezel thickness.



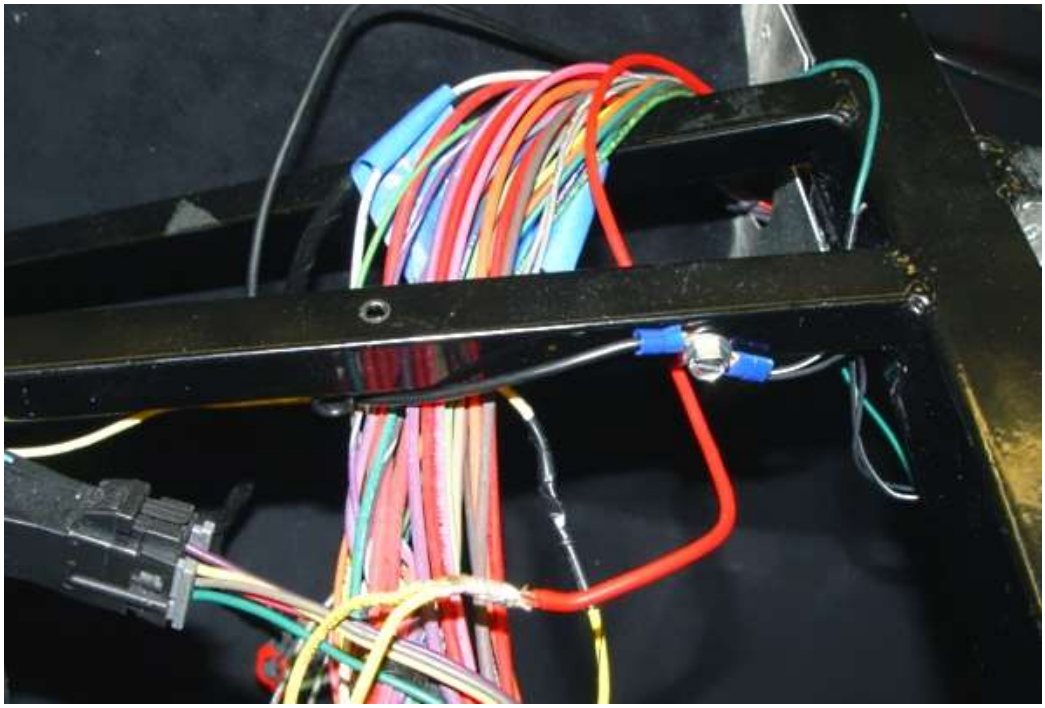
Trace the layout on the inside of each ring and cut with a hole saw, jig saw, or rotary cutter.

Remove the masking tape from the dash face.
Attach the gauges to the dash face. Make sure that the gauge writing is all straight and even and tighten the nuts with your fingers.



Choose a layout for your indicator lights - there are two greens for the turn signals and one blue for the high beams. Once you have picked a location drill the dash face with a #19 or 11/64" bit and press the indicators into place.

Wire the gauges up to the pre-labeled chassis harness. It will be easier to work on the car later if you run all of the gauge face wires through a large plug. One of the unused large round ones form the donor harness works well.



Run a ground circuit for all of the gauges and indicators. The indicators are LED's and the yellow must be hooked up to ground and the red to positive to light up. Use the same ground screw as you installed for the OBDII port earlier.

Headliner

- Headliner Adhesive.
- Headliner.
- The headliner is now black. These instructions show the old headliner

Flip the body upside down and rest it on a protective surface. Test fit the headliner to the body and trim to fit if needed.

Spray the front 12” of the liner with trim adhesive headliner glue and fit to the body. Be careful not to press to hard in when smoothing out the liner as you can crush the foam into the adhesive and leave a divot.

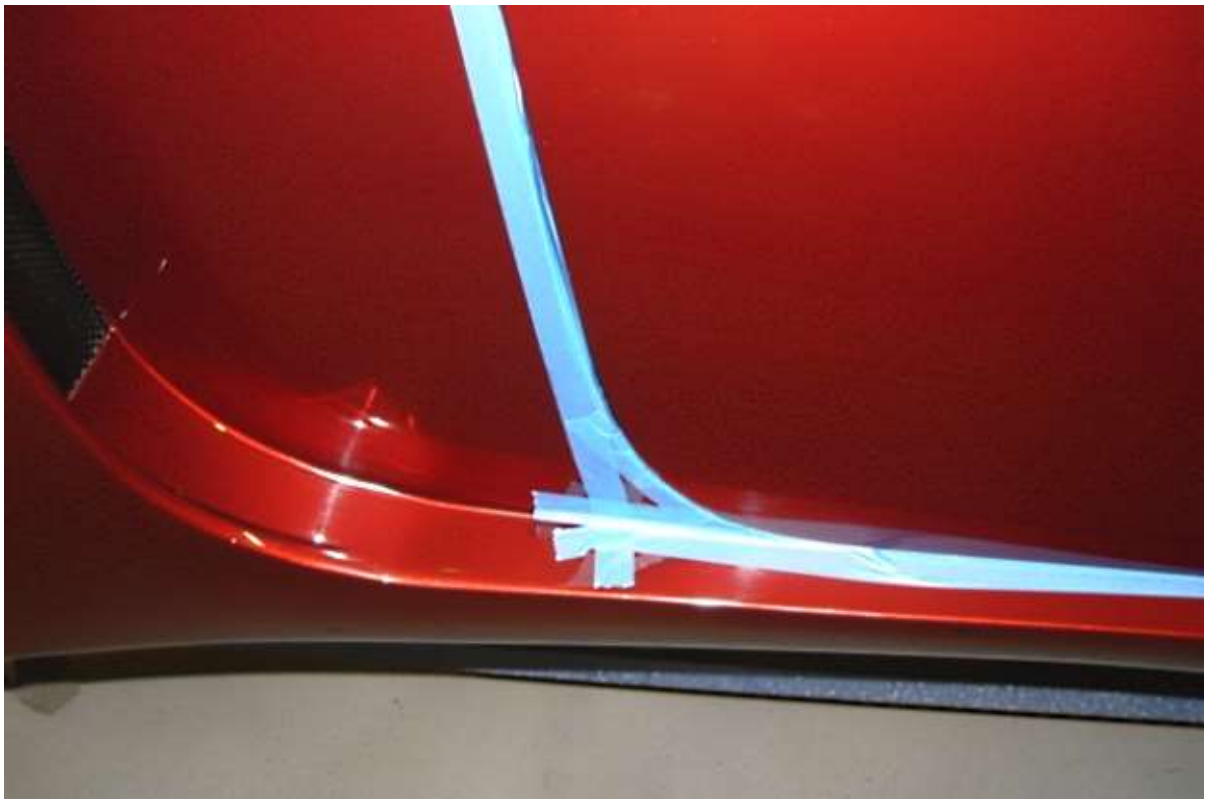
Finish the liner working in 12” increments until its sits smooth and is well attached in all corners and edges.

Body Final Installation

- 🛠 ⅛” drill bit, drill, silicone, caulking gun, flathead screwdriver, 5/16” socket, ratchet, Low-Tack Tape, Phillips head Screwdriver, wire strippers.
- 🚘 Aluminum Panel – Firewall, Fuel Filler Assembly, Rubber Push on Trim, Aluminum Panel – Rear Deck Trim Plate, Headlight Plugs

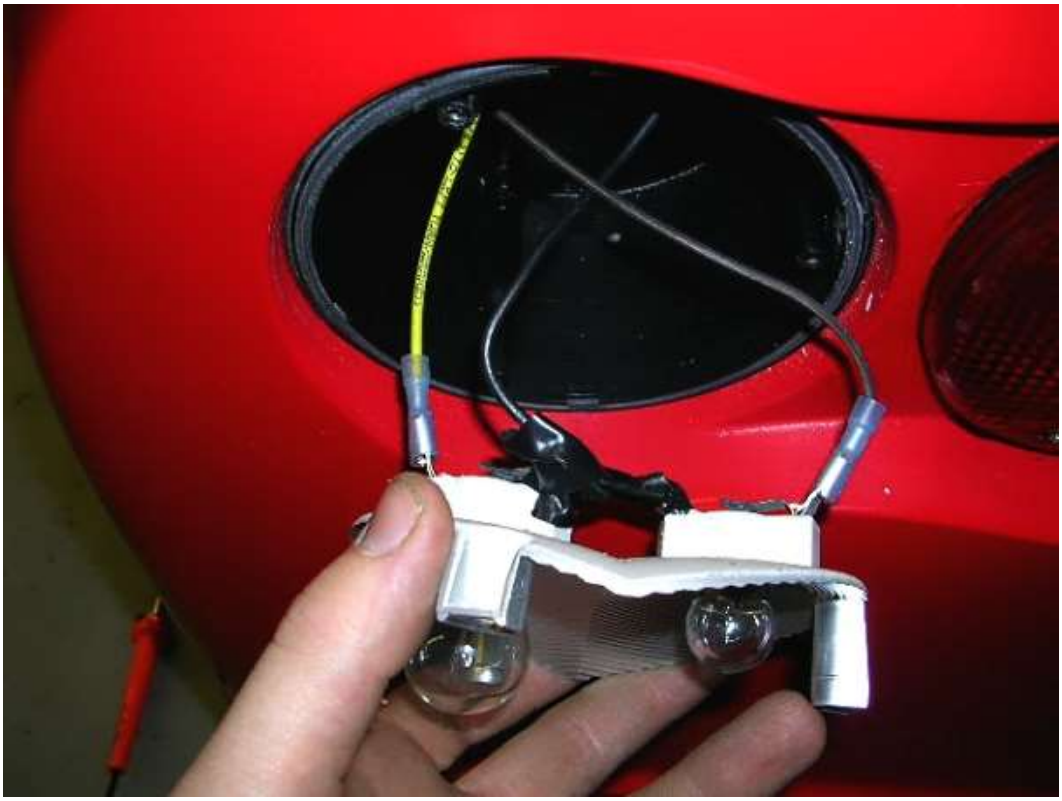
Install the fuel filler caps in the position you drilled before the body was painted and bolt in place using the hardware that came with the caps (Phillips screwdriver, 5/16” wrench/socket).

Re-install the body following the same steps as before but being extra careful this time with all painted surfaces.



We will often tape door and window openings with masking tape while lining up panels to prevent from scratching the opening during adjustment. 3M blue painters tape (#2080) works well and is easy on fresh paint.

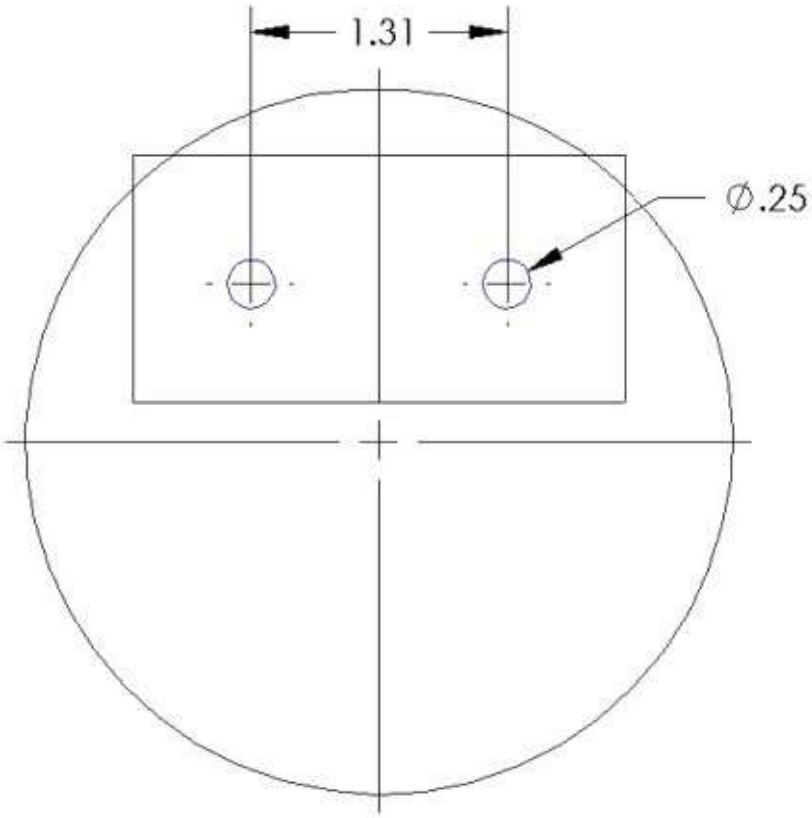
Taillights



Wire in the tail-lights to the chassis harness. Use the third brake light feed for both brake lights and ground all lights to the chassis, making sure the ground is clean and free of powder coat.

Run the reverse light wire to the switch on the transmission and attach it using the bullet connector from the chassis harness kit. The remaining wire that was trimmed from this circuit attaches to the other side of the switch and then runs to the two white sections of the taillights.

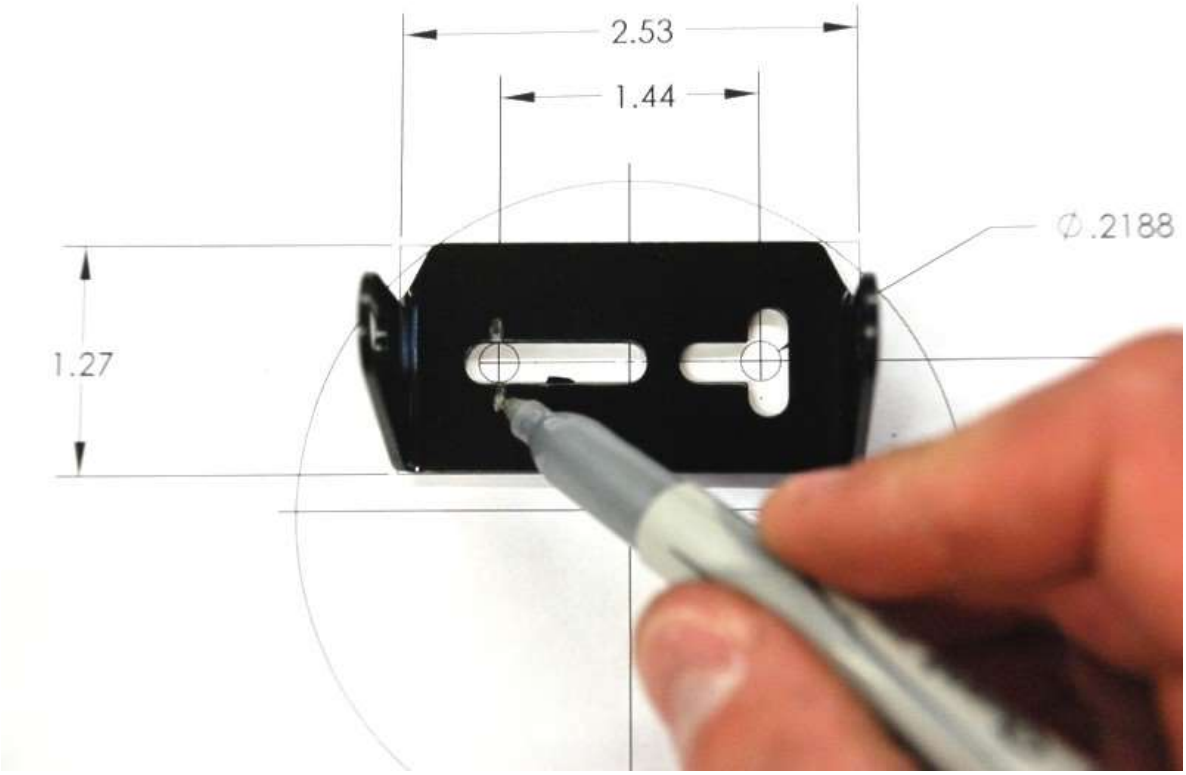
Fog Lights



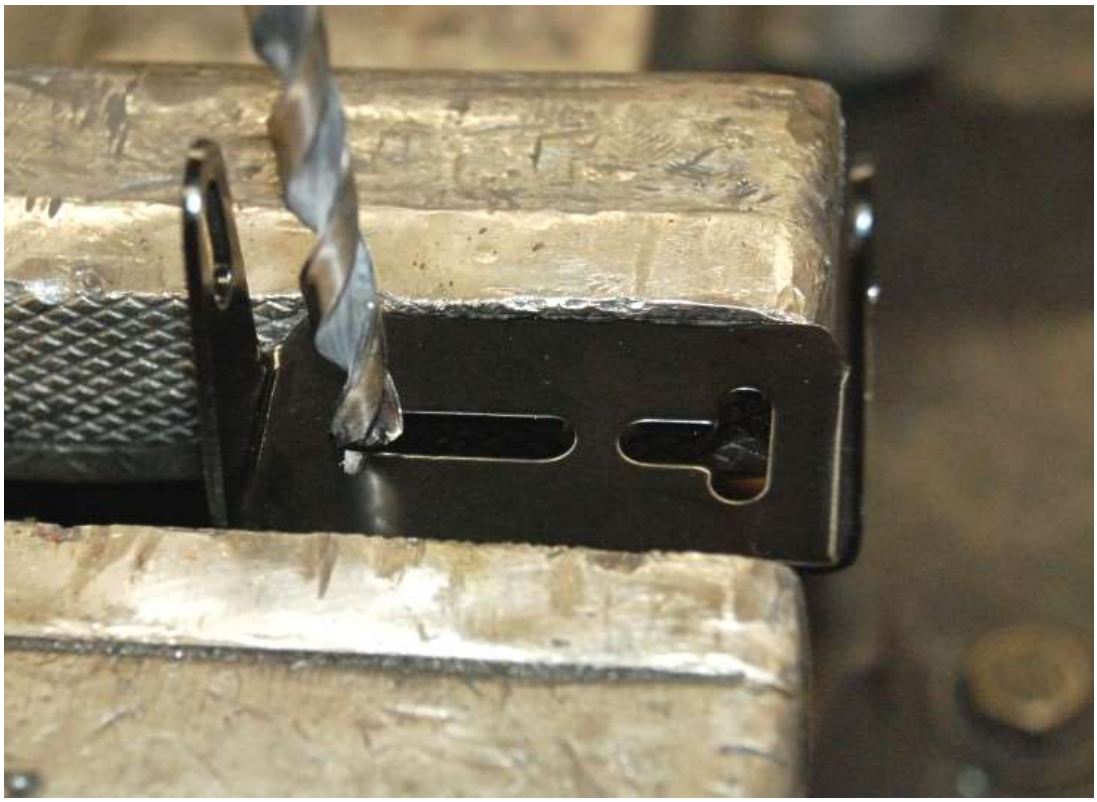
Make two copies of the following template to fit the fog lights to the nose and tape them in the light openings.

Test fit the light in the opening aligning the holes with the slots on the light mount bracket.

Remove the lights from the nose and remove the brackets from the lights.



Set the bracket on the template so the holes line up with the slot then mark the slot with the location of the hole.



With the bracket in a vise, drill the location marked and the center of the sideways “T” for rivnuts. Start with a small hole and work your way up in size to the 25/64” needed.

Use the rivnut tool to install ¼”-20 rivnuts in each bracket with the bracket ears pointed away from the tool as shown.

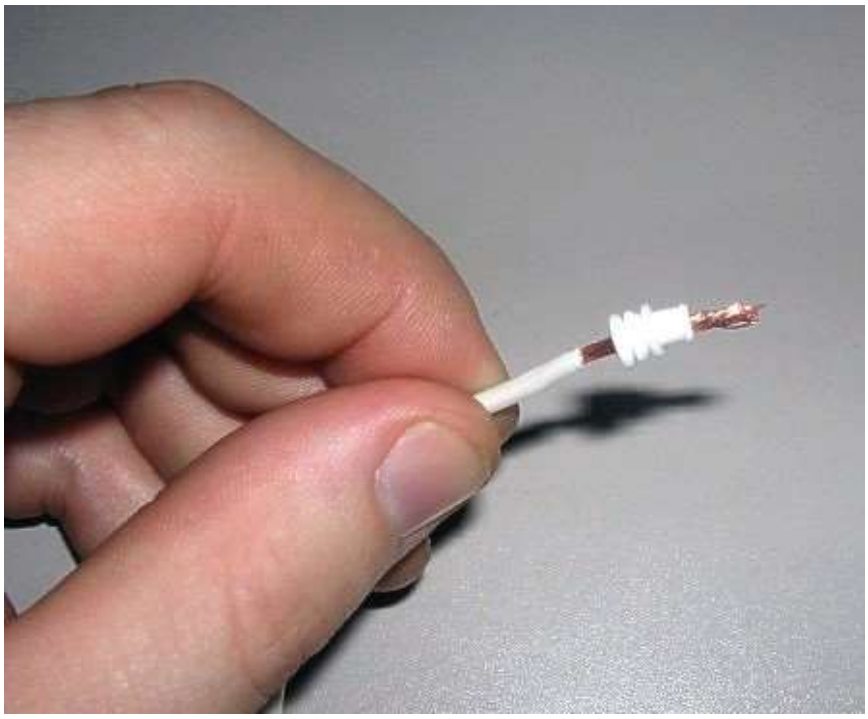
Reassemble the fog lights.

On the nose, drill a ¼” hole in the center of the light template for the fog light wires to go through.

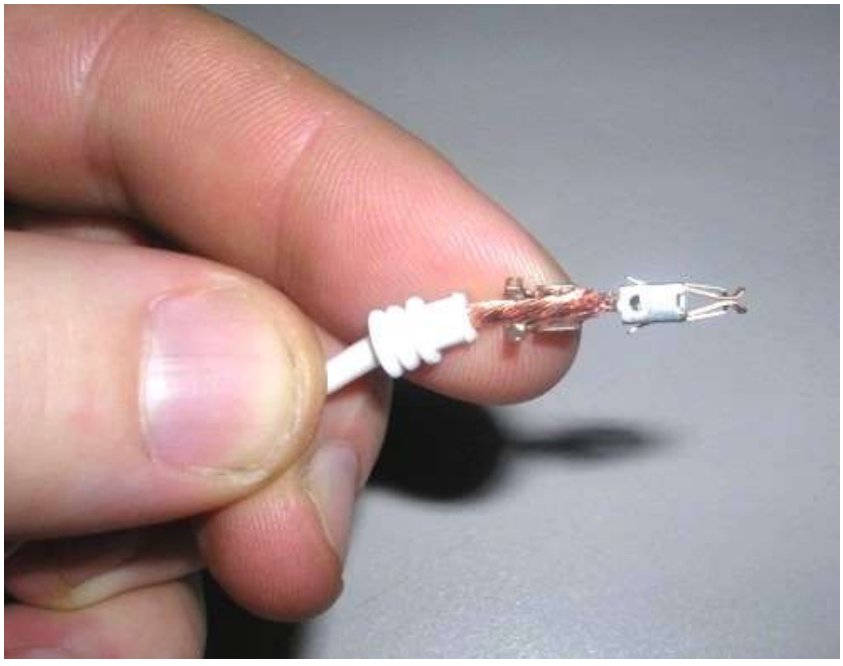
Drill the two mounting holes using a ¼” drill bit.
Remove the remains of the template and push the wires through the center hole.
Mount the fog light using ¼” flange head screws.
Connect the Fog lights to the fog light wires.

Headlight wiring

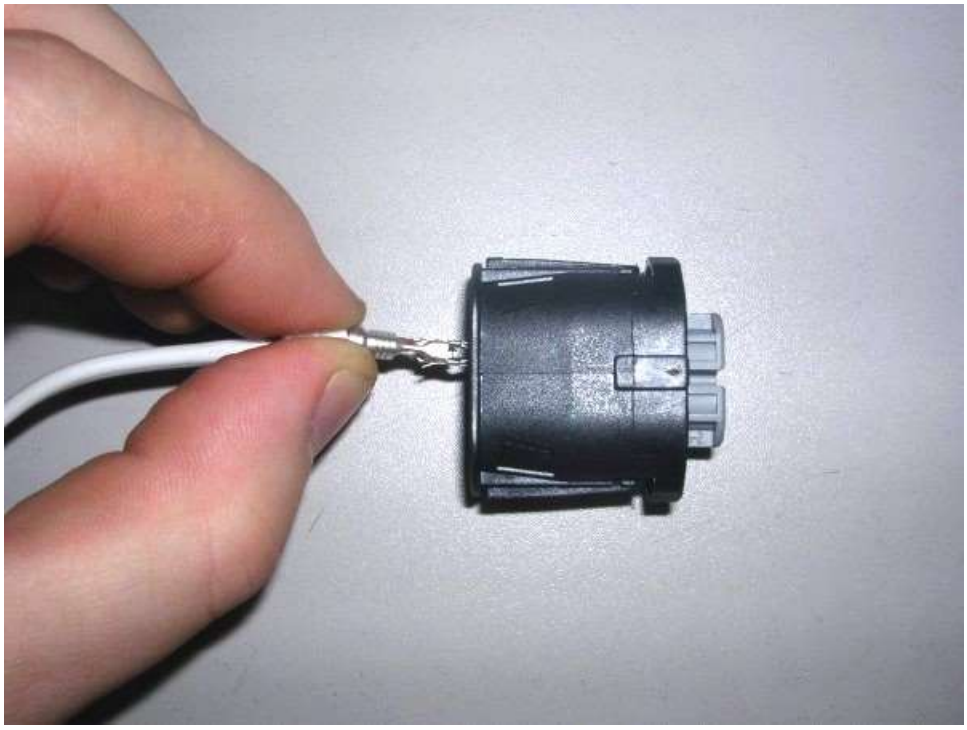
Wire the front lights into the chassis harness, using the chassis wire from the fan to power the driving lights.
Strip the insulation off one of the wires running to the headlight.



Slide the rubber seal over the exposed wire.



Slide one of the supplied terminals onto the wire and crimp into place.



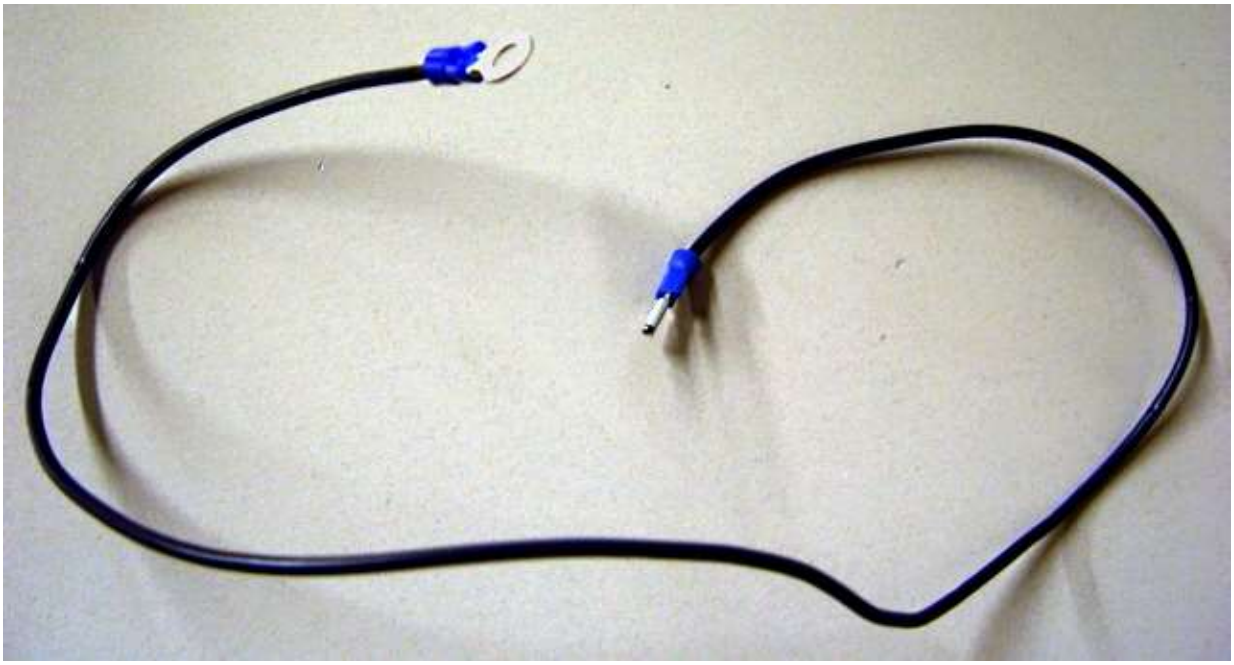
Slide the terminal into the headlight plug far enough so that the terminal will engage the male terminal on the headlight.

Repeat for the other wire leading to the headlight.

Once both wires are installed in the plug, press the blue plastic safety clip over the wires with a small screwdriver.

Press the plug onto the headlight until the clips snap into place.

Repeat for the other three headlights.
Cut 6 twenty inch long section from the black ground wire provided with the kit. Crimp a small loop connector from the chassis harness and a small spade connector from the kit on either end of each wire.

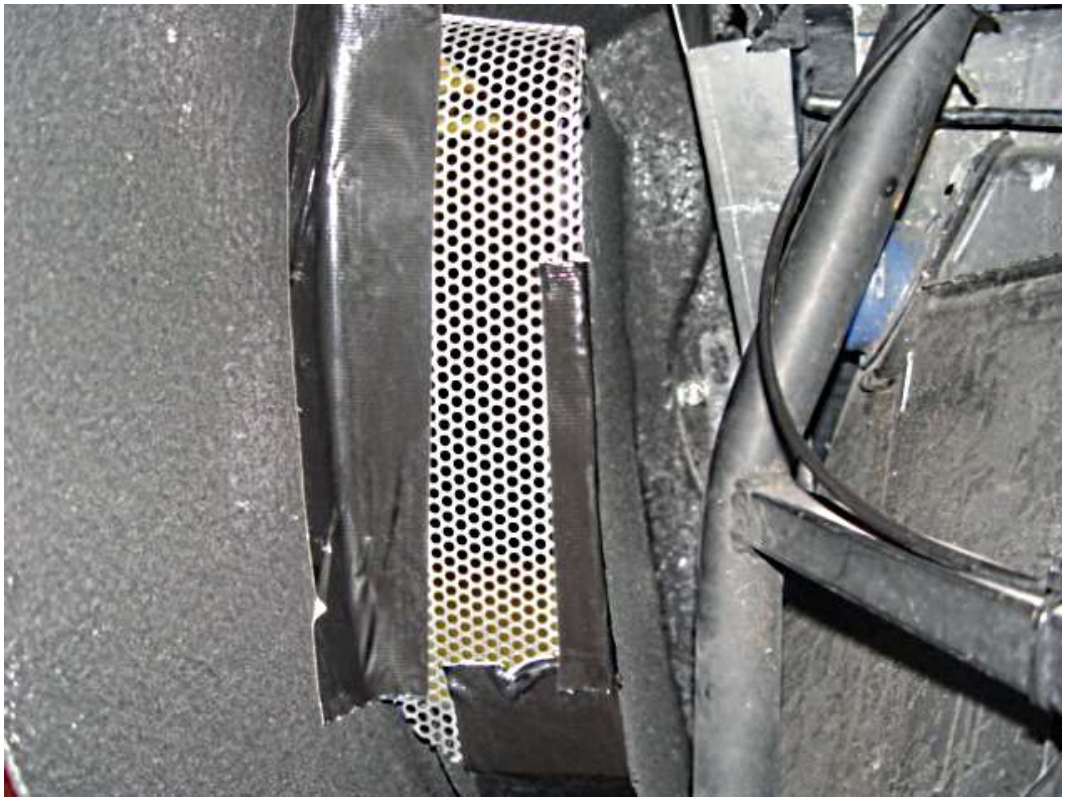


Use these wires to ground the driving lights and headlights.

Headlight covers

Silicone the headlight covers in place.

Aluminum Mesh



Install all of the mesh that was fit to the body earlier except the exhaust pass through pieces. Glue using black silicone and duct tape it in place to allow the silicone to dry overnight.

Install the door latch cover plate.

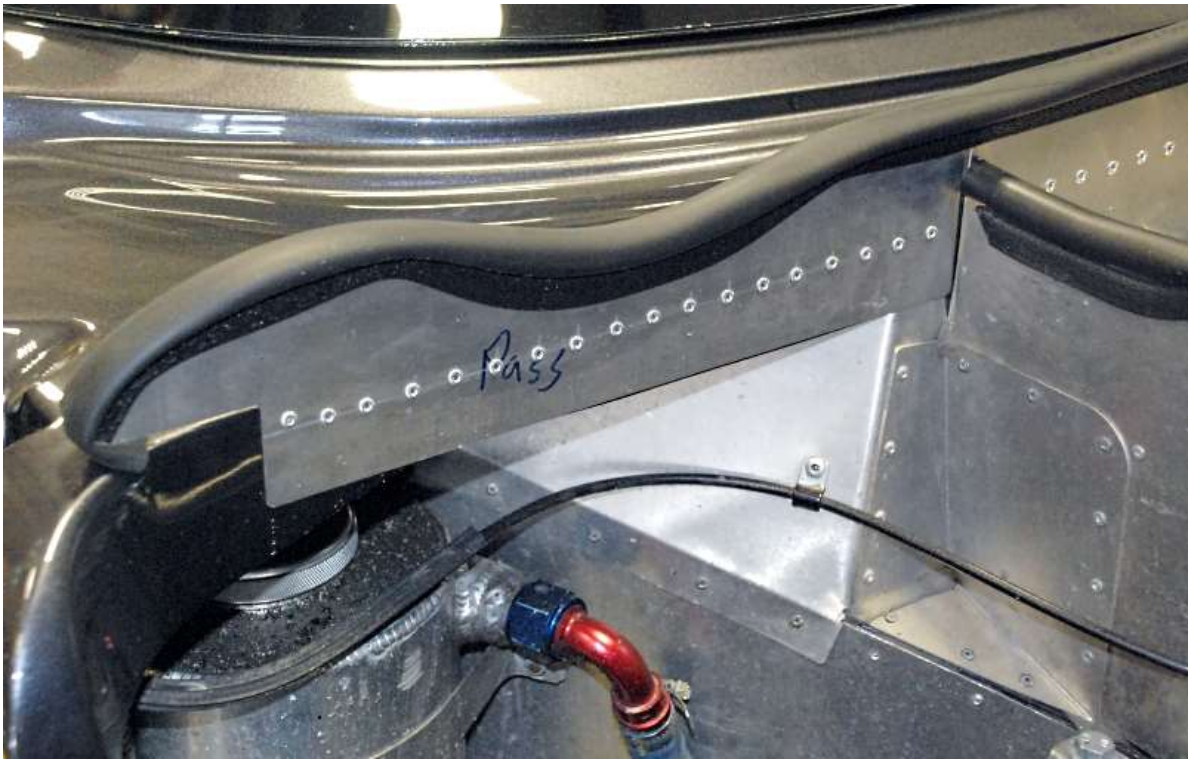
Aluminum Firewall

- Aluminum Panel – Firewall, Rubber Push on Trim, Aluminum Panel – Rear Deck Trim Plate

Set the firewall in place as you did during the trial fit of the body.

Drill and rivet through the Firewall, the body, and then the “L” Flange of the Upper Wheel Well panel.

Install the cowl bracing side panels.



Press the weather stripping on the top edge of the panels. At the ends of the Firewall where the firewall touches the body, remove the rubber coated clips leaving the weatherstrip bulb to continue to the corner of the firewall.

Fuel Filler Installation

- Fuel Filler Assembly

The fuel filler hoses and clamps are provided with the kit, use one small and one large clamp for each side.

Slip the fuel filler over the tank inlet first, then with both hose clamps over the hose, slip it onto the filler cap.

Make sure the hoses are seated and tighten the hose clamps.

Trim the large end off of the supplied filler necks in order to fasten them to the filler caps. Draw a line at the beginning of the point where the hose transitions from 2.25" diameter to 3" diameter. Cut the large diameter end off of the hose, making sure to leave enough room for the hose clamp to fit around the hose.

Install the other end of the filler neck onto the corrugated hose. Spraying the corrugated hose and the inside of the rubber filler neck with some water will make it easier since the rubber hose fits tightly over the corrugated hose. Clamp tight.

Install the cut end of the filler neck onto the filler cap. Clamp tight.

Once you have the filler hose in position it isn't uncommon for it to be against the body. Make sure there are no sharp/rough edges that the hose could rub on, possibly cutting the hose.

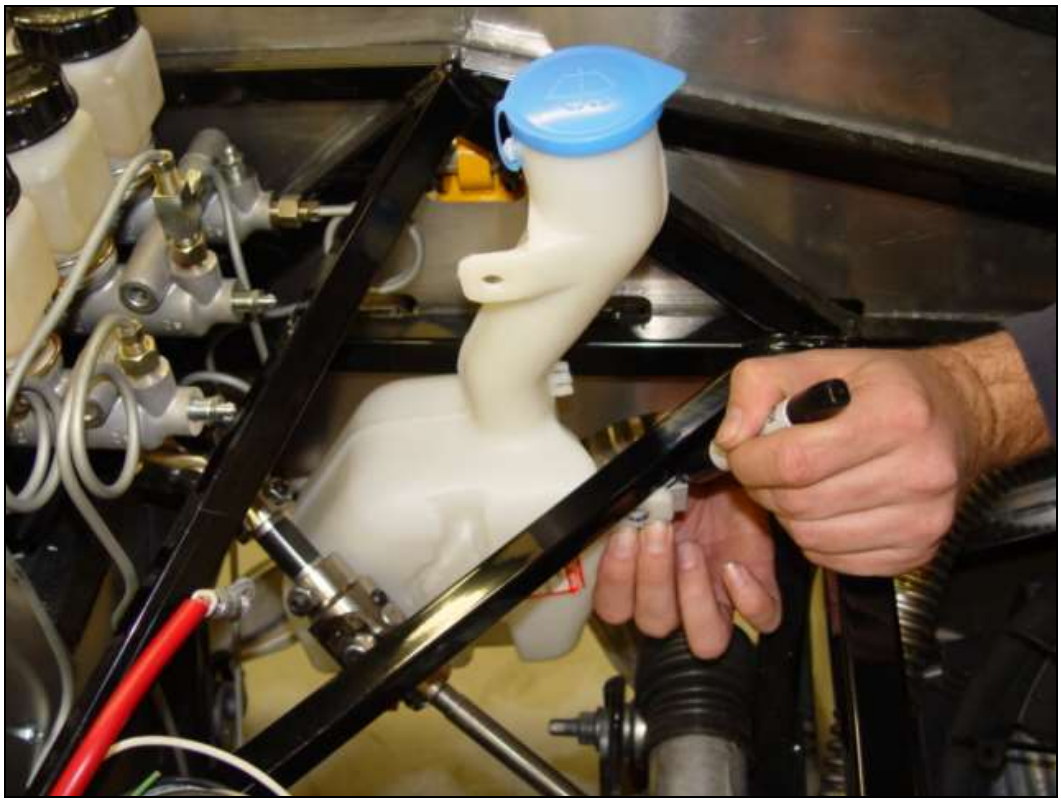
Windshield Wipers and Washer Fluid Tank

- 🛠 3/16", ¼" drill bits, drill, marker, rivet gun, 4mm Hex key.
- 🚘 Windshield Wiper Hardware (FFR# 25529).

The windshield washer fluid tank (FFR# 25392) mounts to the chassis under the steering shaft. Trial fit it into position - it is easiest to pass it from the bottom through the middle of the lower control arm.

With the tank in position mark the aluminum where the bottom mounting hole lines up and drill out with a ¼" drill. There is a small nub on the tank that needs to be cut or ground off for a flush fit.

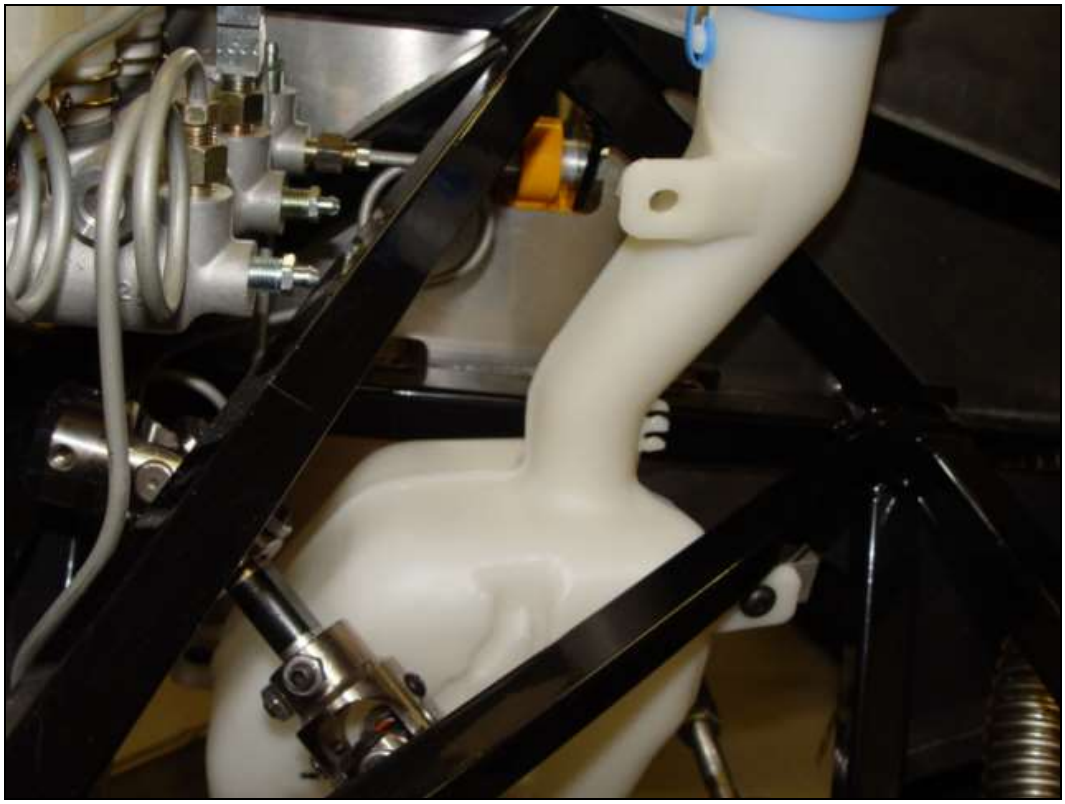
The mounting bracket for the top mount is a small piece of angle aluminum (FFR# 10648).



Fit the tank into position so that there is clearance around the steering shaft and line up the mount bracket with the forward mounting boss on the tank. Mark the bracket at the tank mount and by tracing the sides of the tube on the top.

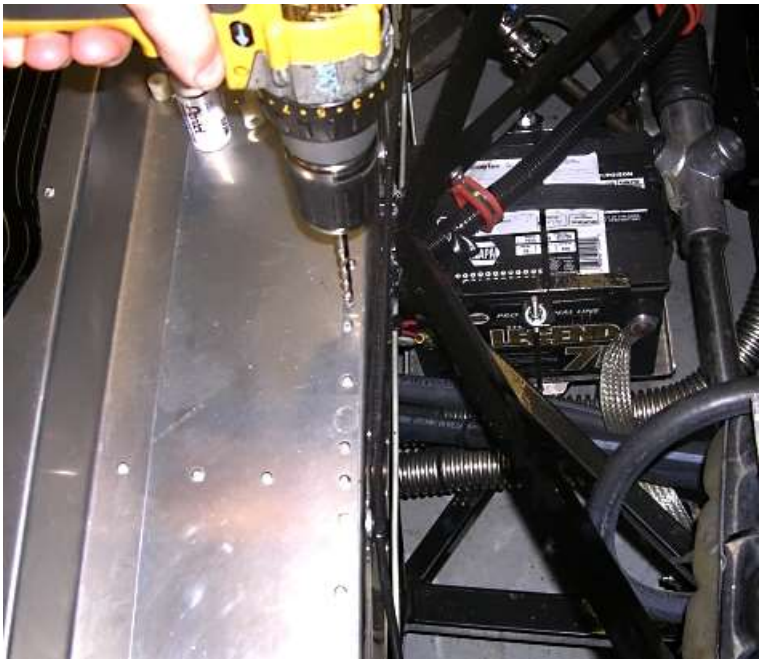
Remove the bracket and drill a ¼" hole to mount the tank and two 3/16" holes to rivet the bracket to the chassis.

Put the bracket back in position to mark the frame then drill and rivet the bracket in place.

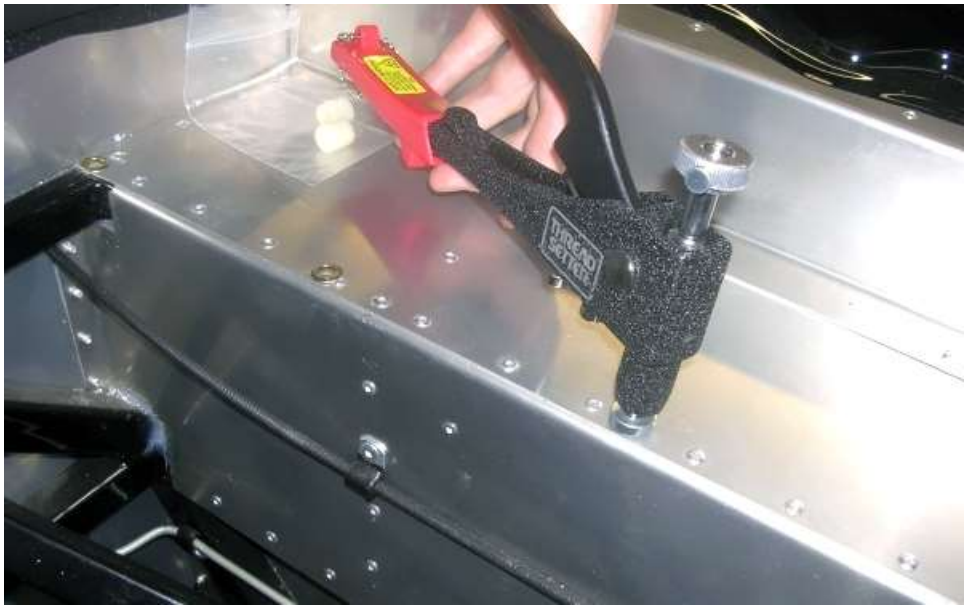


Bolt the tank into position using the two ¼”-20 button head screws and nuts provided.

Place the Wiper Motor Mount Plate (FFR# 25391) along the edge of the ¾” shock tower support tube on the passenger side and the top of the footbox front wall aluminum. Mark the location for the rivnuts (4 total).

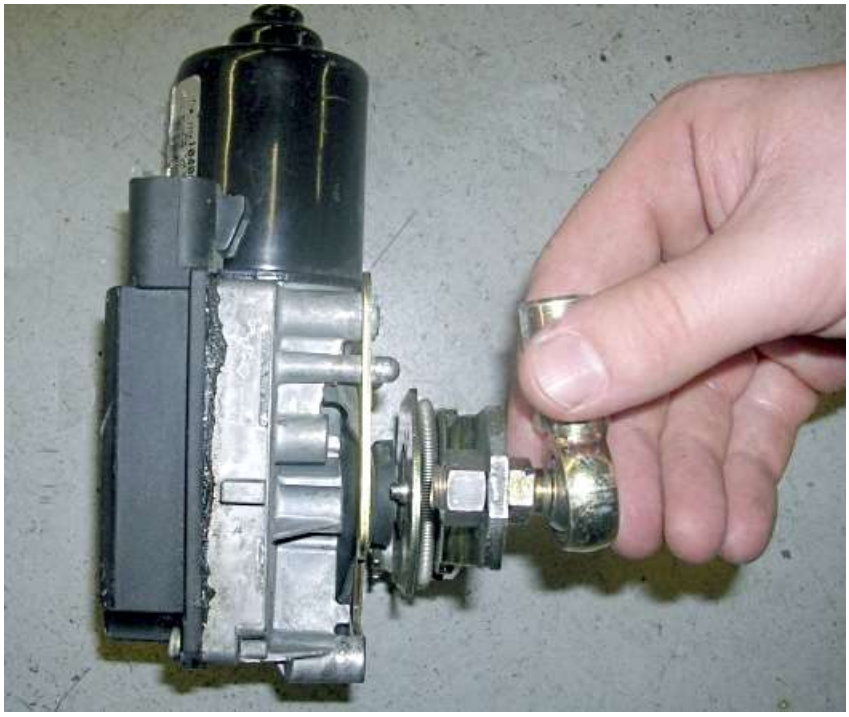


Drill the Rivnut holes using a 25/64" drill bit. You may want to begin by using a smaller drill bit to drill a pilot hole first (shown).

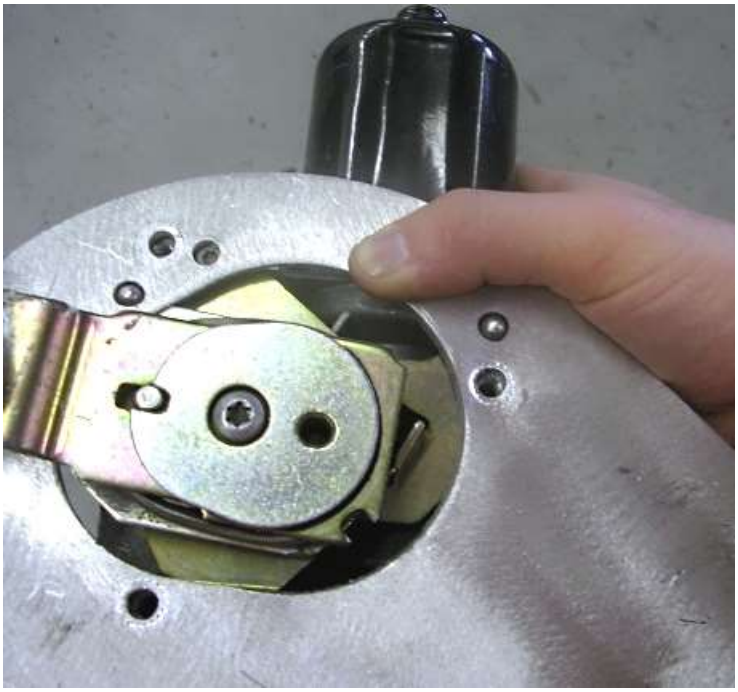


Install the ¼" rivnuts (4) using the supplied Rivnut tool.

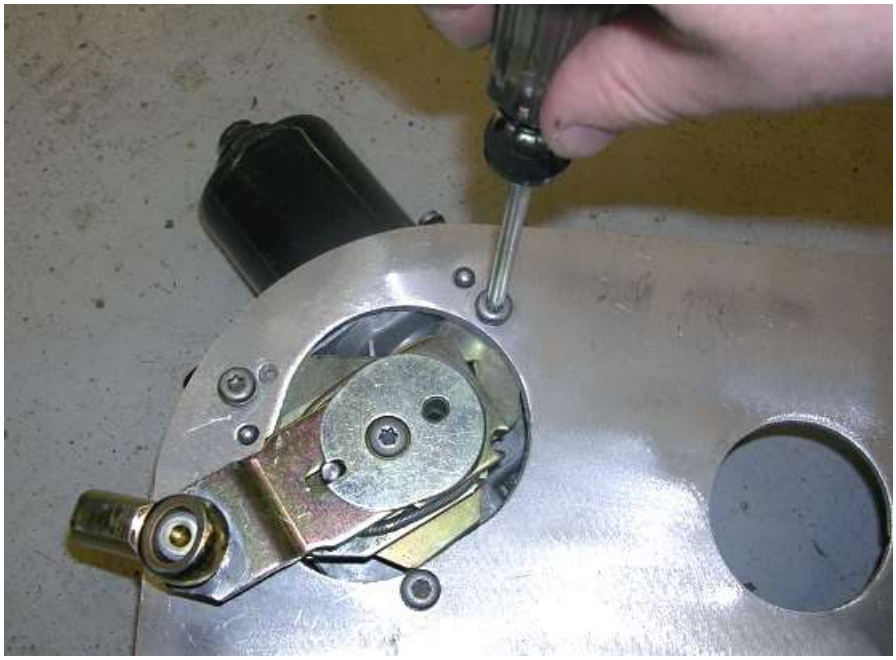
Grind down both sides of the knob at the end of the wiper motor arm until it's flush with the arm. Drill out the remaining material, starting with a small drill bit, and work your way up to a 3/8" bit – this hole will be used for the linkage rod end.



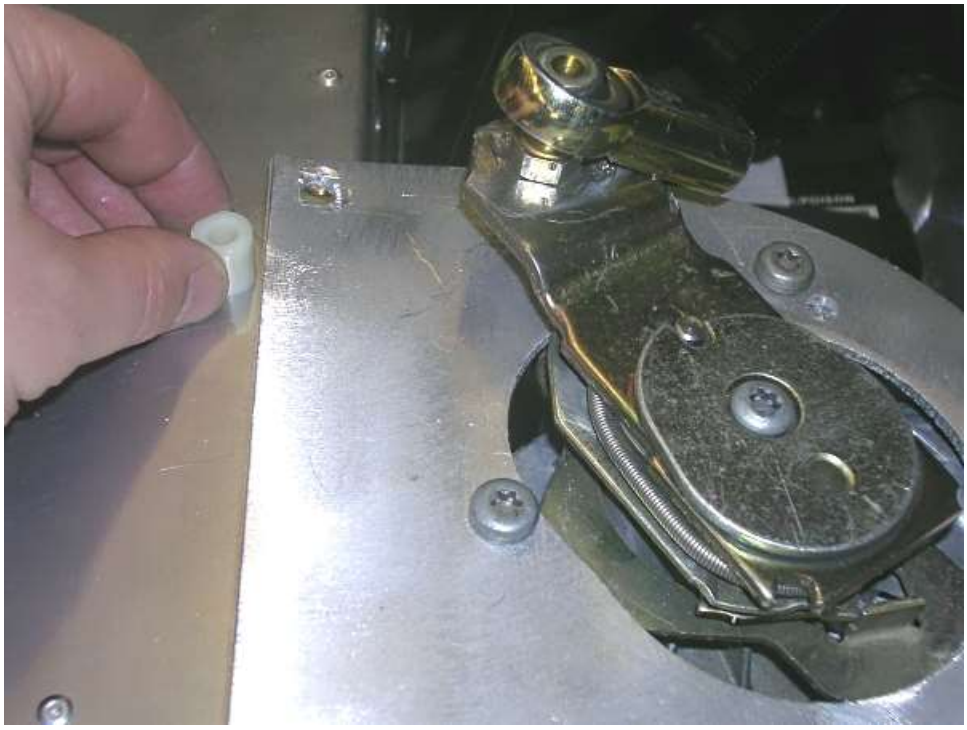
Install one of the rod ends (FFR# 25724) with the supplied jam nut (FFR# 25725) onto the wiper motor arm (½", 9/16" wrenches). You will have to trim some of the excess thread off of the rod end in order for it to have sufficient clearance between it and the wiper motor mount plate.



Place the wiper motor in the mount plate (FFR# 25391) so the pins on the motor fit inside the holes in the mount plate and the three threaded holes in the motor line up with the corresponding holes in the mount plate.

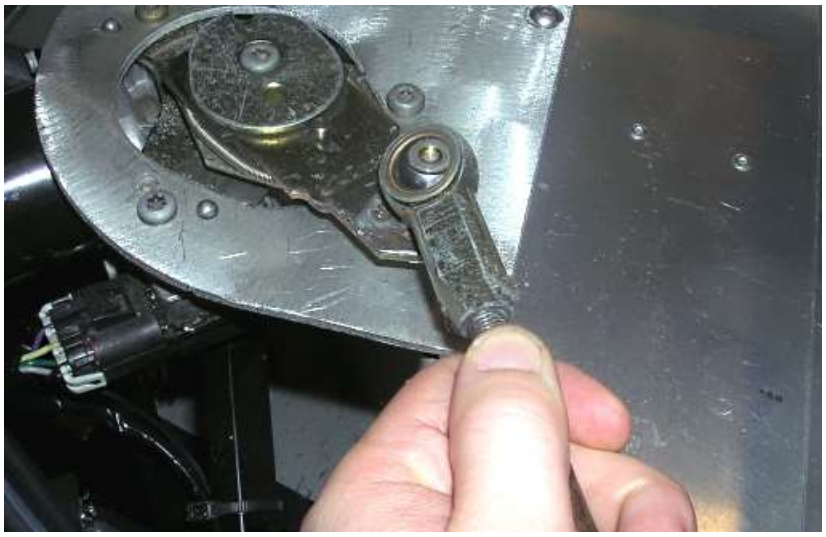


Using the three Corvette screws that held the motor in place, fasten the motor to the mount plate (T-30 Torx).



Place a nylon spacer (FFR# 10960) between the frame and the mount plate at each of the rivnuts and bolt the plate into position using the supplied ¼”-20 x 1.5” long bolts (4mm Hex).

For the bolt at the front corner of the plate, you may have to use the supplied washers as well as the nylon spacer to prevent the bolt from bottoming out before the plate is firmly in place (See photo).



Screw the supplied section of threaded rod (FFR# 25723) into the rod end on the wiper motor.

Slide the aluminum tube (FFR# 25934) over the threaded rod and measure how much of the aluminum tube will need to be trimmed once the rod end is screwed on. Trim the tubing with a tubing cutter/hacksaw/cutoff wheel.
As you did with the rod end on the wiper motor, you will have to trim the threads on the rod end to clear the aluminum.
Place the aluminum tube over the threaded rod, then screw the rod end (FFR# 25724) onto the rod until tight.

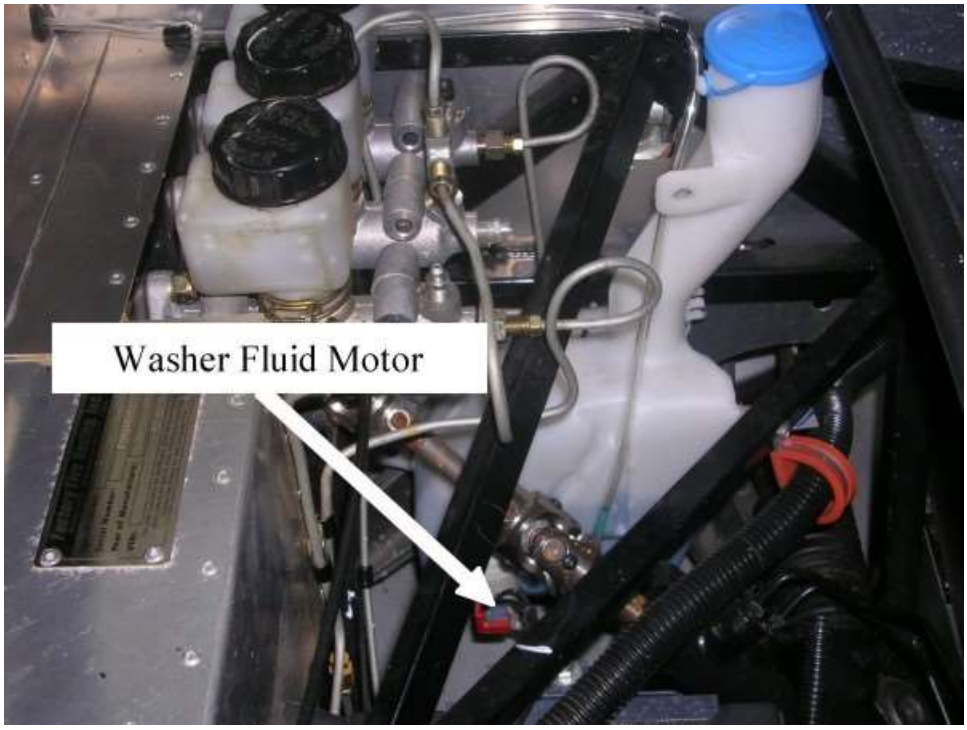
Before installing the wheel box to the body you will have to trial fit the wiper arm to the wheel box. It is a tight fit, so you may have to spray the splines with some WD-40 or some oil and tap the wiper arm onto the splines. Remove the wiper arm from the wheel box so you can bolt it to the body.

Install the wiper wheel box onto the body using the supplied ¼-20 hardware.

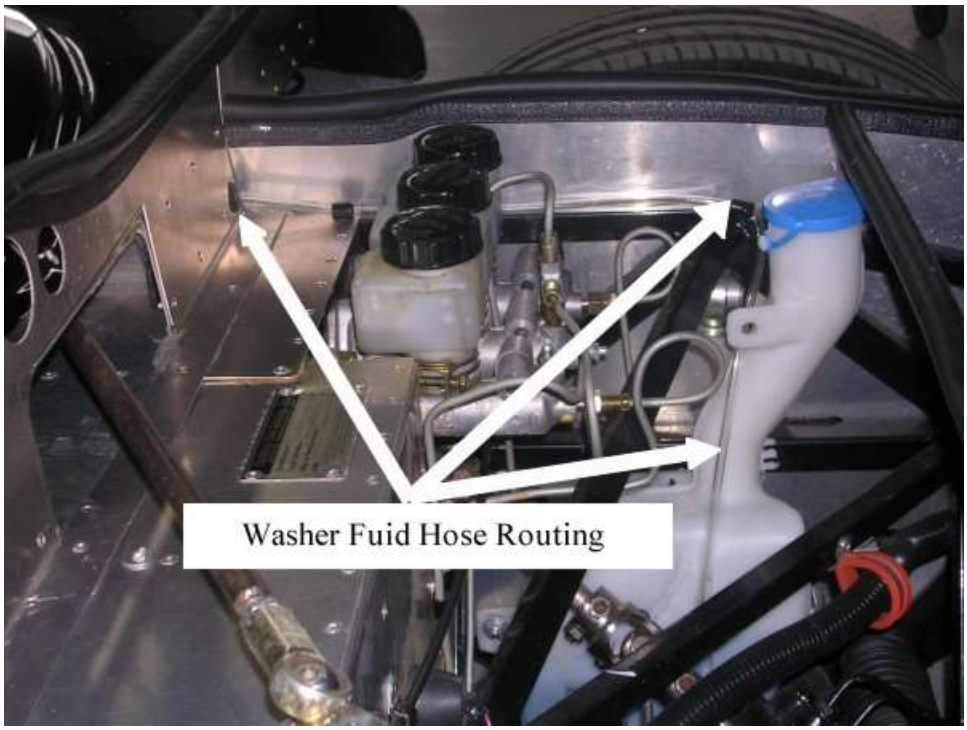
Install the rod end on the wiper wheel box arm with the supplied jam nut (FFR# 25725) (½", 9/16" wrenches).

Install the wiper blade (FFR# 25629) onto the wiper arm (FFR# 25552).

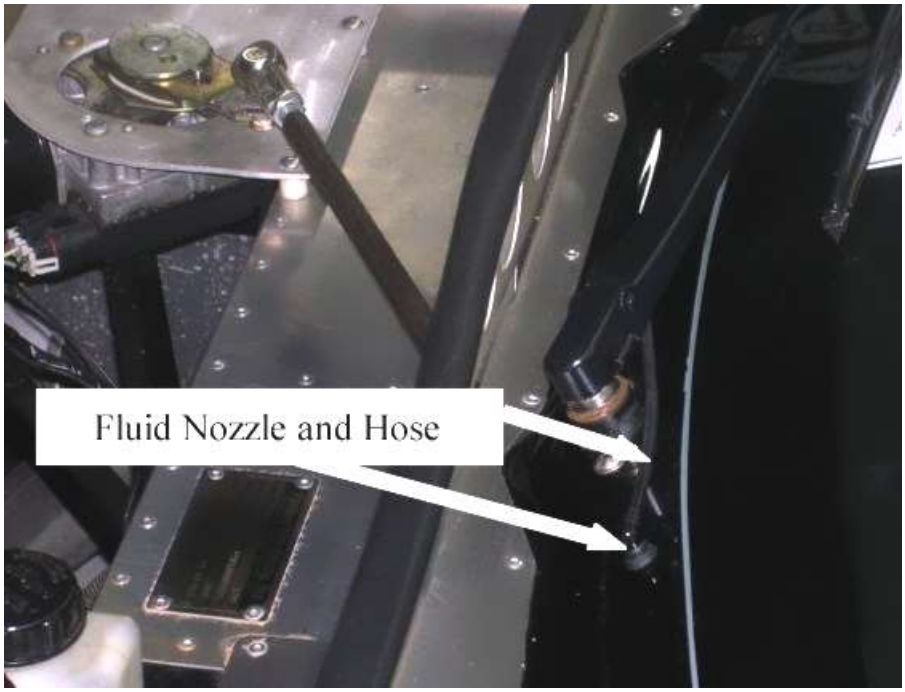
Clip the wiper arm onto the shaft of the wiper wheel box, making sure that the tab on the arm clips into the channel on the wheel box shaft (clip shown).



Using the supplied clear tubing with the windshield washer fluid tank, press the tube onto the barbed end of the motor in the tank.



Route the hose through the recess in the tank, up to the top of the tank. Drill a hole in the cowl bracing aluminum and route the hose to the underside of the body.



Drill a hole in the body for the barbed elbow fitting for the windshield washer nozzle. Insert the fitting and hook it up to the clear plastic hose. If you do not have the Corvette Nozzle and Hose, you can route the clear plastic hose

Clip the nozzle onto the wiper blade.

Fill the tank with fluid, and spray the windshield. Check the sweep by turning the wipers on – start with the slowest setting to avoid damaging the linkage or running the wiper beyond the windshield. Make any necessary adjustments, and the linkage installation is complete.

Door Handles/ Liners

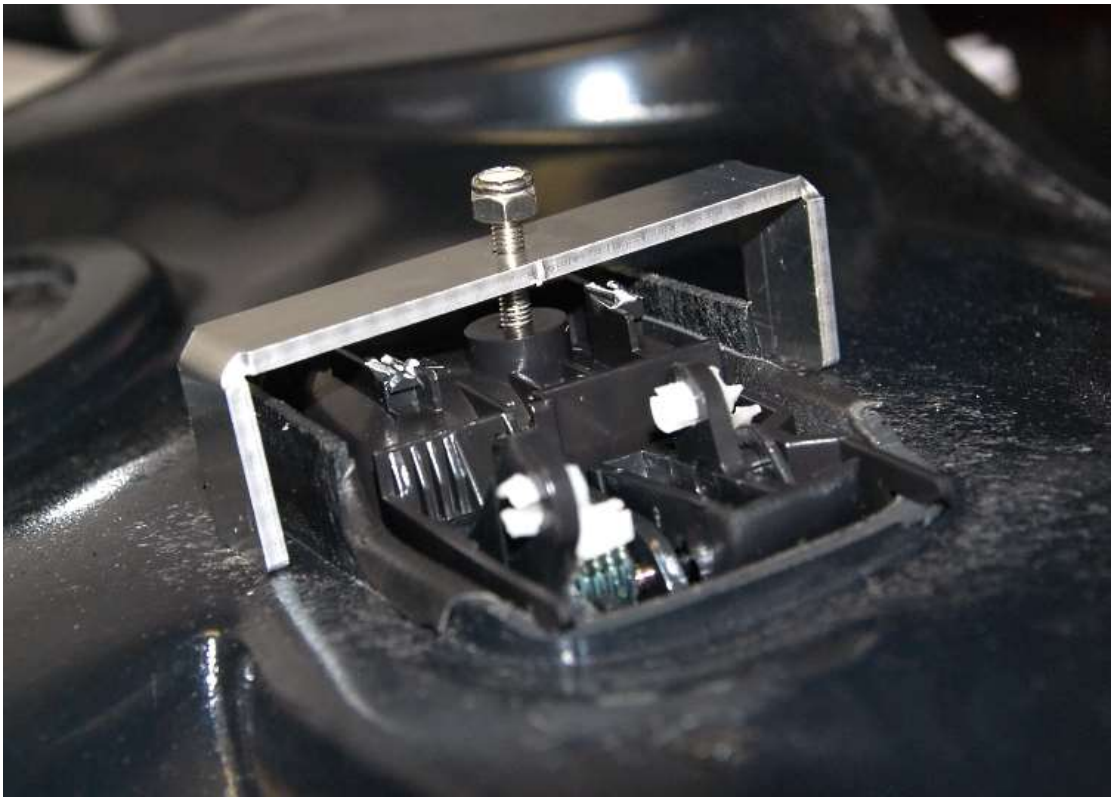
🛠 Hacksaw, marker, 1/8", 1/4", 25/64" drill bits, drill, Phillips head Screwdriver, 3/8" wrench, vise, ruler/tape measure.

🚘 Door liner (L, R) (FFR# 25744, 25745), Door handle and Fasteners (FFR# 25422).

The inside door handles need to be trimmed with a hack saw to fit in the door panel.

Trim the four feet off of the handle flush with the screw hole.

Insert the door handle into the door liner so that the front prongs go over the edge of the plastic. It may be necessary to grind the door liner to allow this.



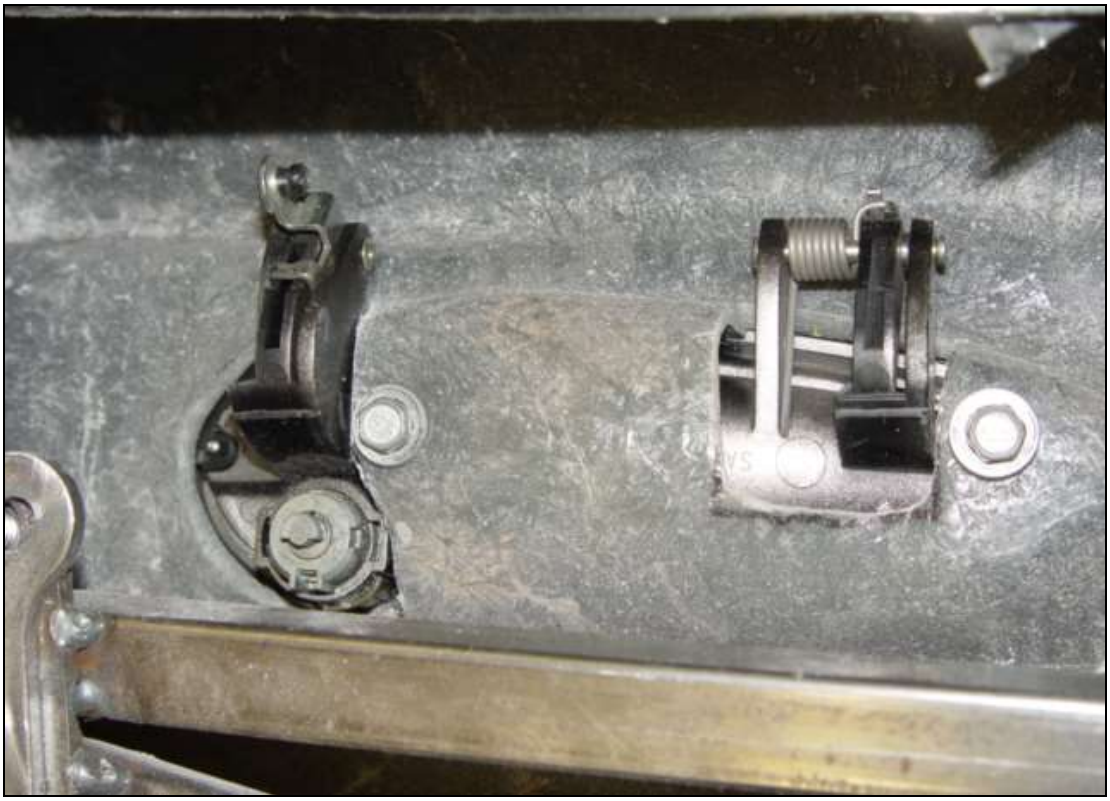
Insert the screw from the inside of the door handle through the mounting bracket and attach with a nut.

Tighten the retaining nut with a Philips head screwdriver and ⅜" wrench.

Locate the donor car door handles and mark each one with a line next to each mounting hole to give their vertical location.

Fit the door handles into position on the door and measure 7/16" toward the front of the door from the end of the line you scribed and mark for the mounting holes. (taping the door handle in place from the front may be helpful)

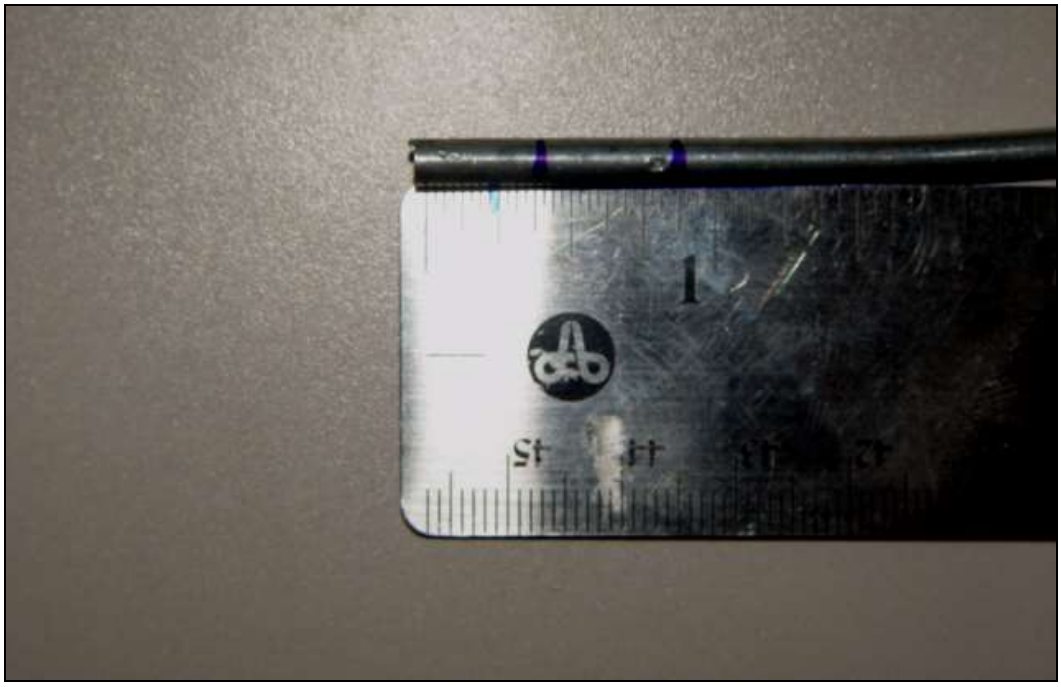
Drill the holes with a ¼" drill bit.



Bolt the exterior door handles into position on the doors using the original hardware. The handle should have its original gasket around the outside and can be shimmed and adjusted for a good fit.

The door linkage from the donor car is re-used for the inner and outer door handles. Locate the short piece of linkage from the door with the threaded section at one end.

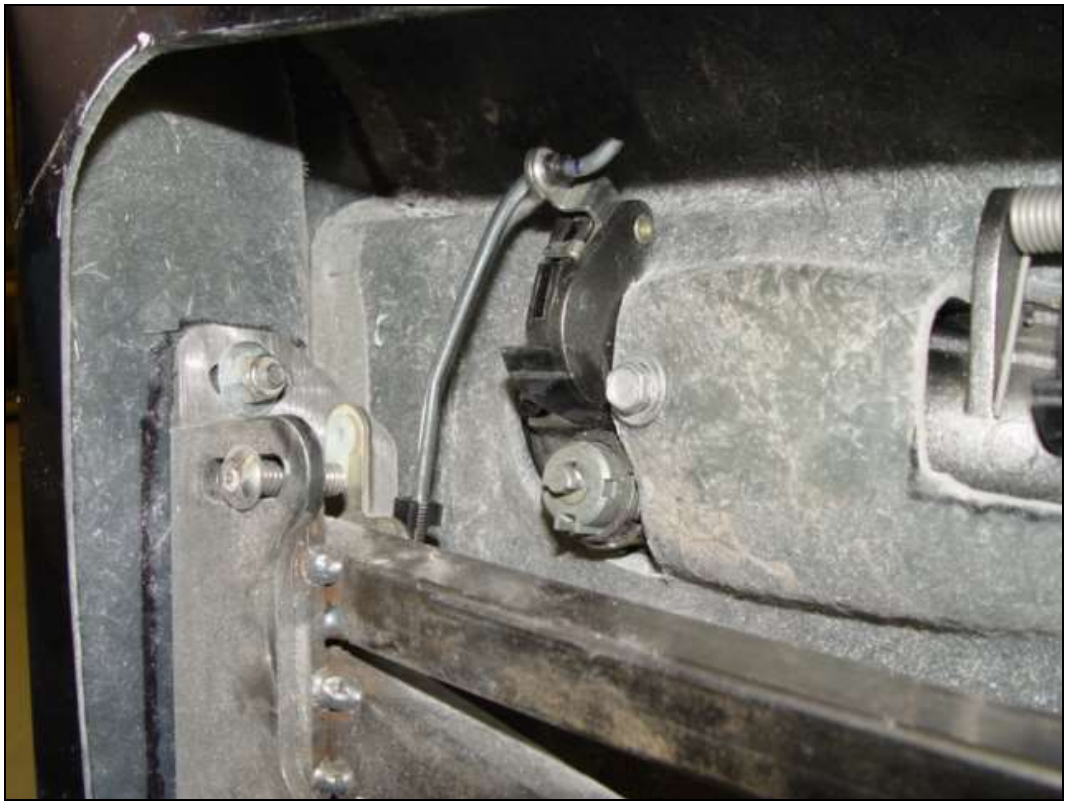
Measure 3” from the bend in the threaded linkage piece and cut with a hack saw.



On the remaining threaded piece measure in ½” and 1” from the non-threaded end and mark.

Bend the rod in a vice at the 1” mark in the same direction as the kink until it is perpendicular to the threaded section.

Bend the rod at the ½” mark 45˚ back in the original direction.



Install the rod and clip into the door. The bent end hooks through the outer door handle and the clip and threaded end snaps into the lower hole on the door latch from the outside.

Line the inner door liner up to the door so that there is an even gap around the outside.

Drill for the fasteners around the outside of the door with a ¼" drill. You can use more of the screws on the bottom as they will be hidden by the armrest.

Drill the holes on the door with a larger $^{25}/_{64}$" bit and install ¼"-20 rivnuts to hold the door panel in place.

Find the long linkage from the donor door that hooked up the original inside door handle, use the longer of the two pieces with the U-shaped bend at one end.

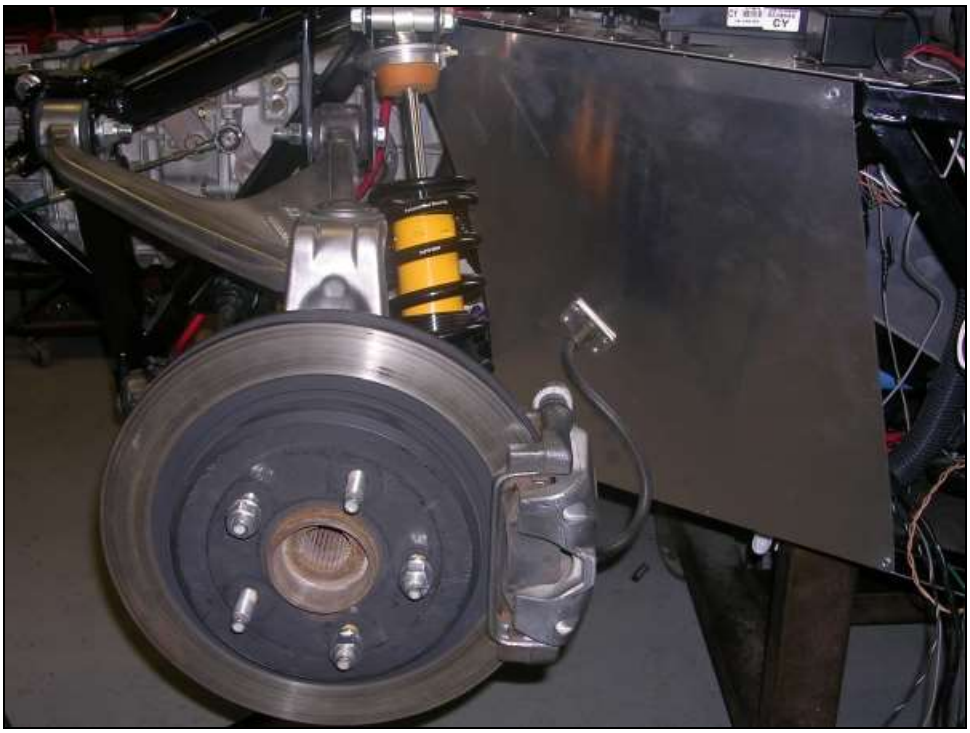
Hook the U-bend end into the door latch and install the door liner with the single bend end poking out of the door handle hole.

Line the inner handle up to the door and bend the linkage to fit the handle. Once the linkage is the correct length and functioning properly screw the handle in place.

Rear Splash Guards

🛠 Eye protection, drill w/#6 hex nut driver, ⅛", 3/16" drill bits, drill, rivet gun, silicone, caulking gun, #6 self tapping screws.

🚗 Rear Splash Guard Assembly (FFR# 25688).



The process for installing the rear splash guards is the same for both driver and passenger side (all pictures below were taken from passenger side). Make sure that the front lower splash guard is installed as previously instructed (FFR# 25651 and 25655).

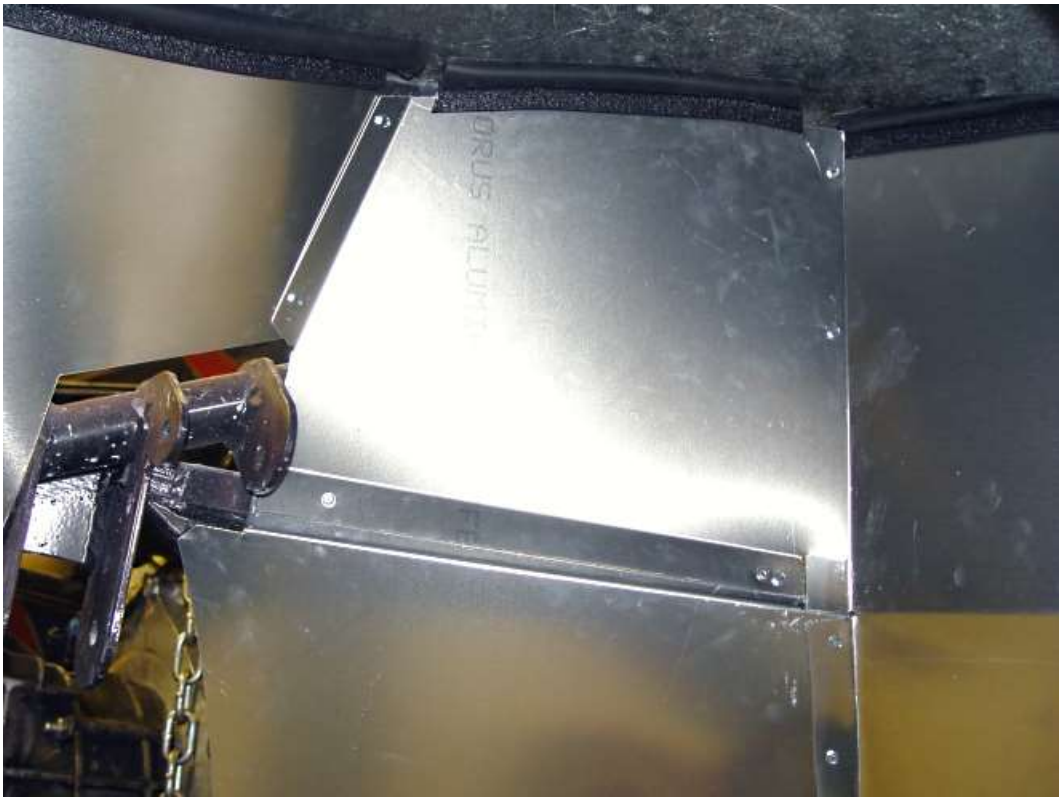
Attach Bulb seal to each aluminum panel where it contacts the body. Look at the pictures below to see which panels to install the bulb seal to. Trim the bulb seal slightly longer than needed to prevent gaps.

Rear

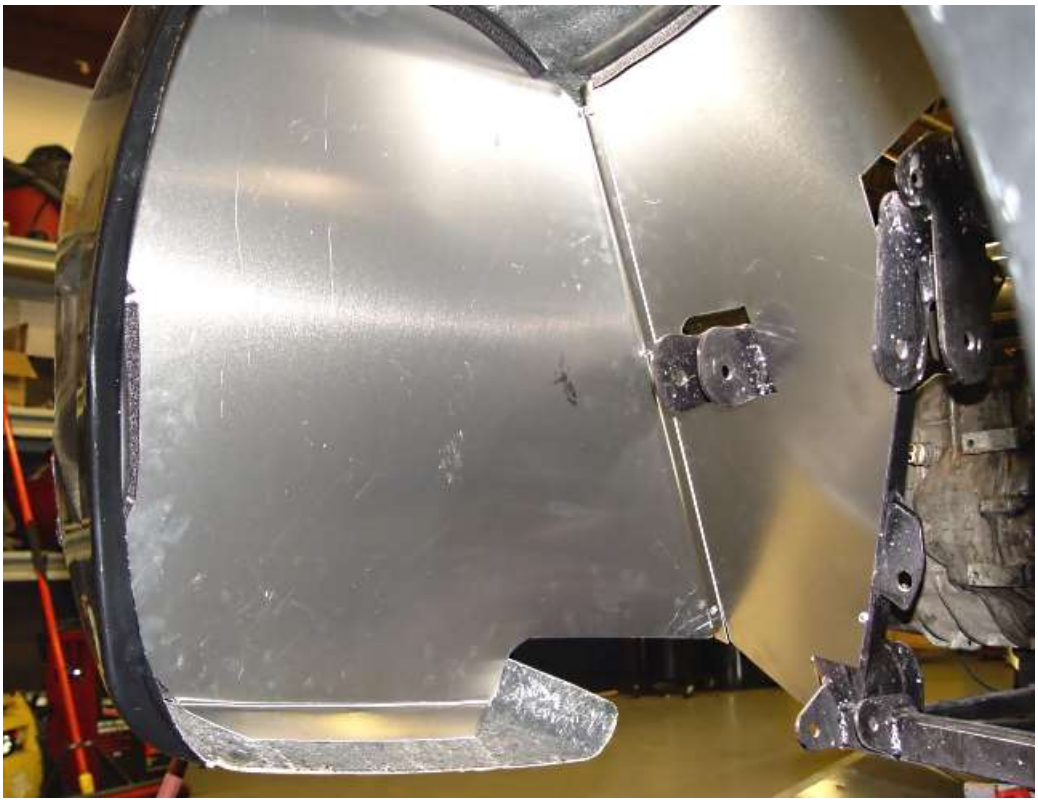
Front Upper

Front Large

Install the front large panel next. Rivet the lower flange to the side of the front lower panel.



Install the front upper piece now. This piece in riveted in place along the center, front lower and front large panels.



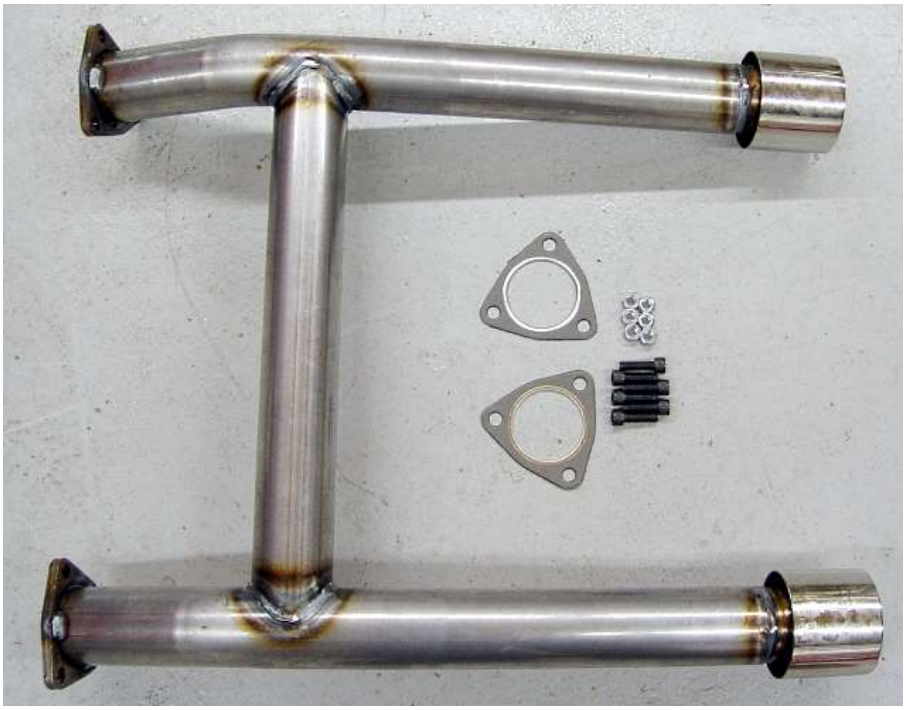
The rear splash guard is now installed. This is a large panel and seals the rear section of the wheel wells. Rivet this panel in place on the inner edge attaching it to the flange on the center splash.

Drill and rivet the bottom of this panel through the body using $^{3}/_{16}$" rivets.

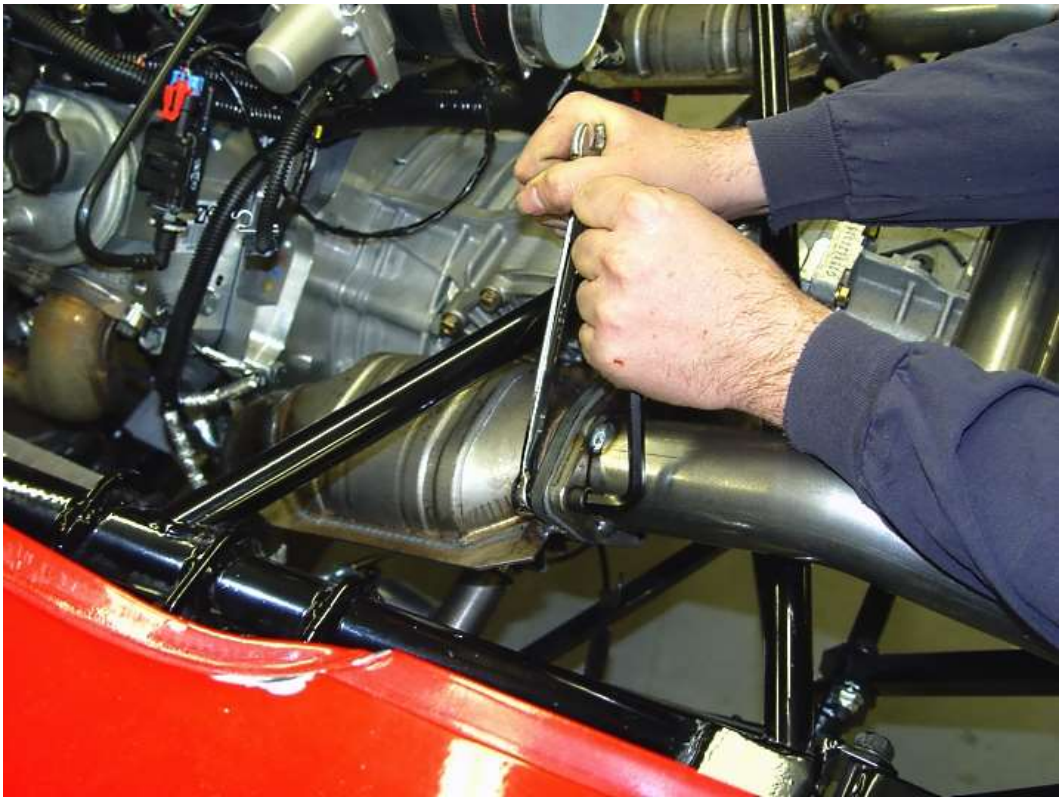
Exhaust/ Rear Mesh

🛠 $^{5}/_{16}$" Hex, ½", $^{9}/_{16}$" wrenches, tape measure, 3½" hole saw or jigsaw, shears/tin snips, pliers, silicone, caulking gun.

🚘 Exhaust – H Pipe Assembly, Exhaust Mount Hardware, Screen – Exhaust (L, R).



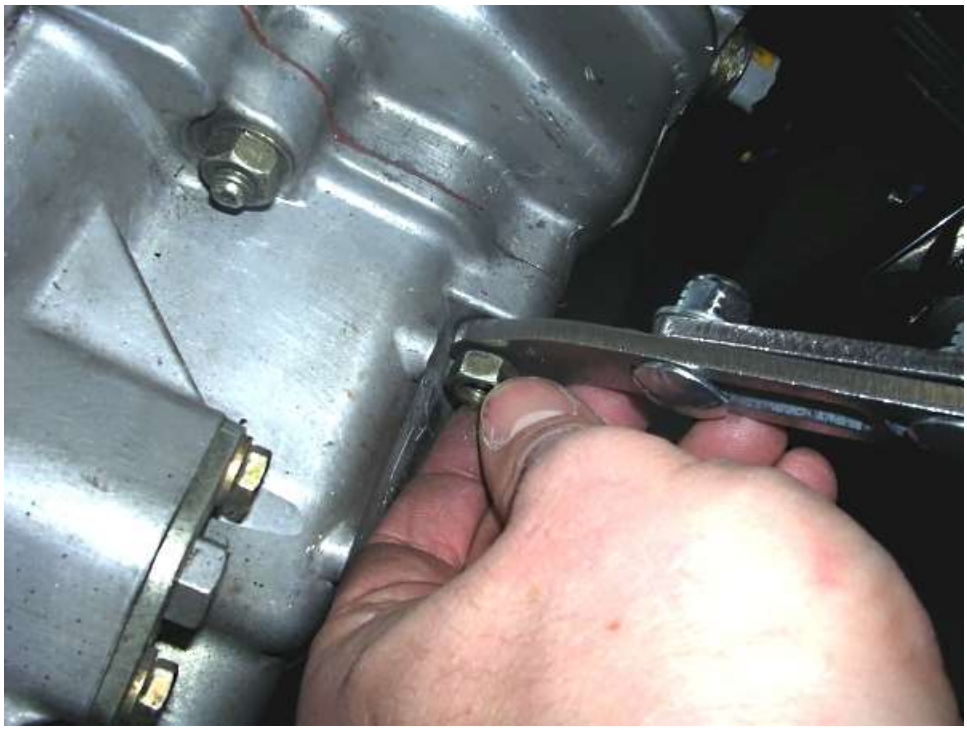
Locate the tailpipe assembly with hardware and gaskets.



Bolt the tailpipes in place, you can leave the gaskets out for now as this will have to be removed for the mesh installation (5/16" Hex, 9/16" wrench).

Loosely assemble the H-Pipe hangers with the supplied hardware.

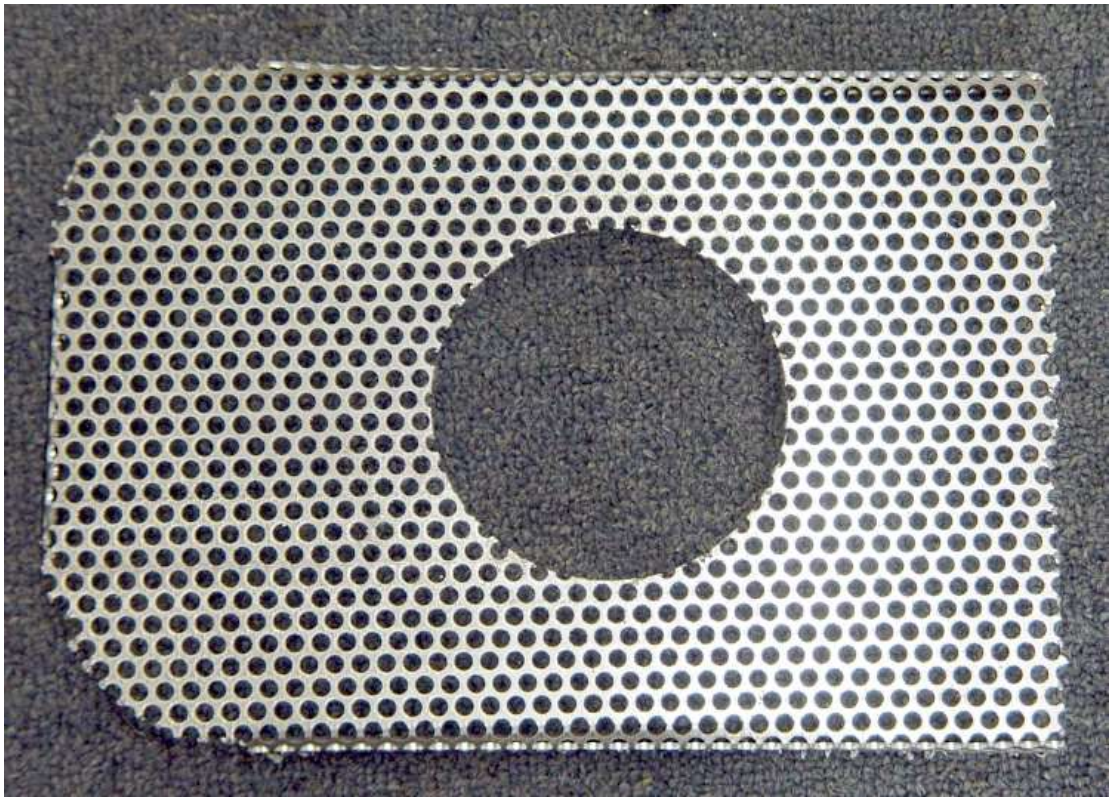
Bolt the hanger to the tab welded to the H-Pipe (½" wrench).



Remove one of the transmission housing nuts and put the lower end of the H-Pipe hanger on the stud. Tighten the hanger in place.

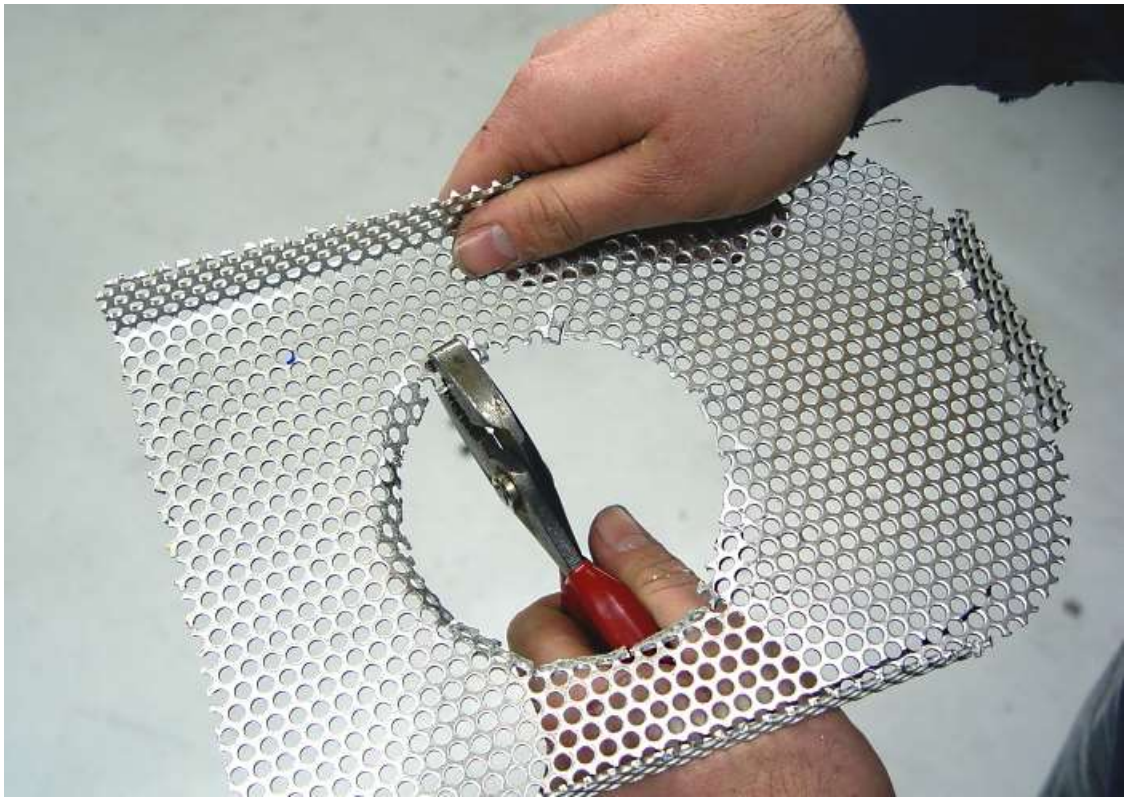
With the lower joint slightly loose on the catalytic converters center the exhaust tips in the rear of the body and tighten both the lower joint on the catalytic converter pipes and the sliders on the exhaust hangers.

Measure the distance from the outside flange on each side of the exhaust opening to the center of the exhaust tip.

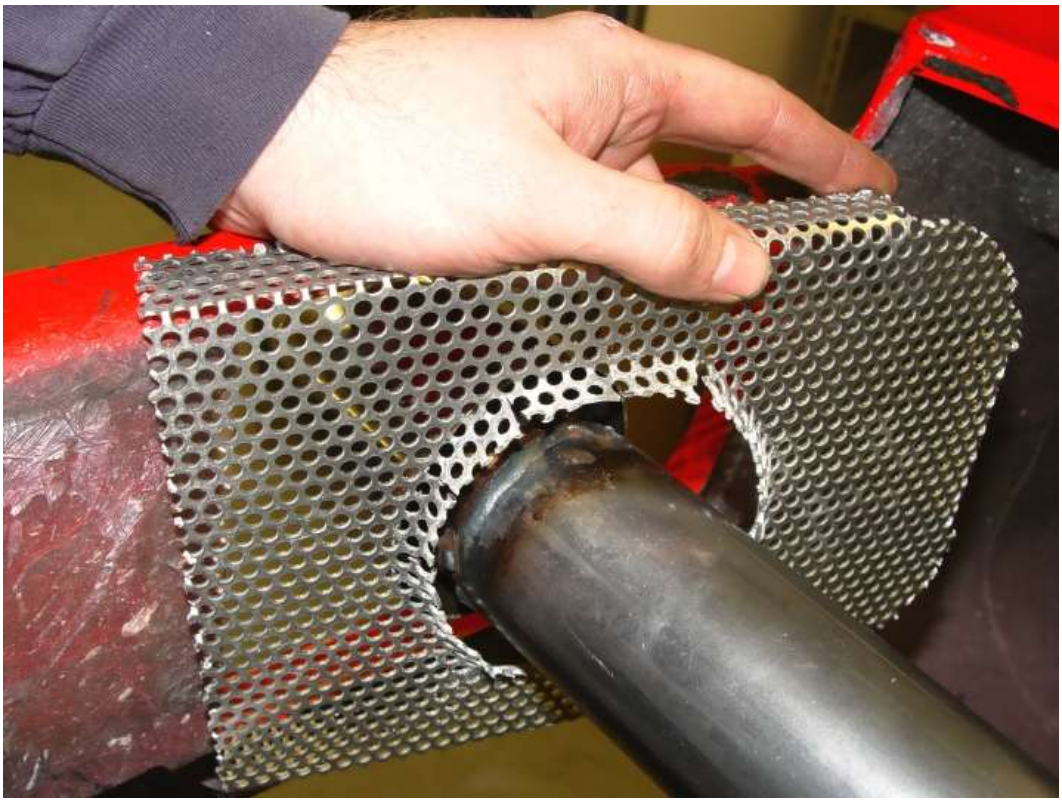


Transfer this measurement to the tailpipe mesh pieces and mark the center for a hole. Drill or cut with a jig saw a 3½" hole in the center of the mesh.

Using tin snips or shears cut ½" slice around the outside perimeter of the holes about ½" apart.



Using a pair of pliers carefully bend the tabs inward to form a radiused edge where the exhaust tip passes through.



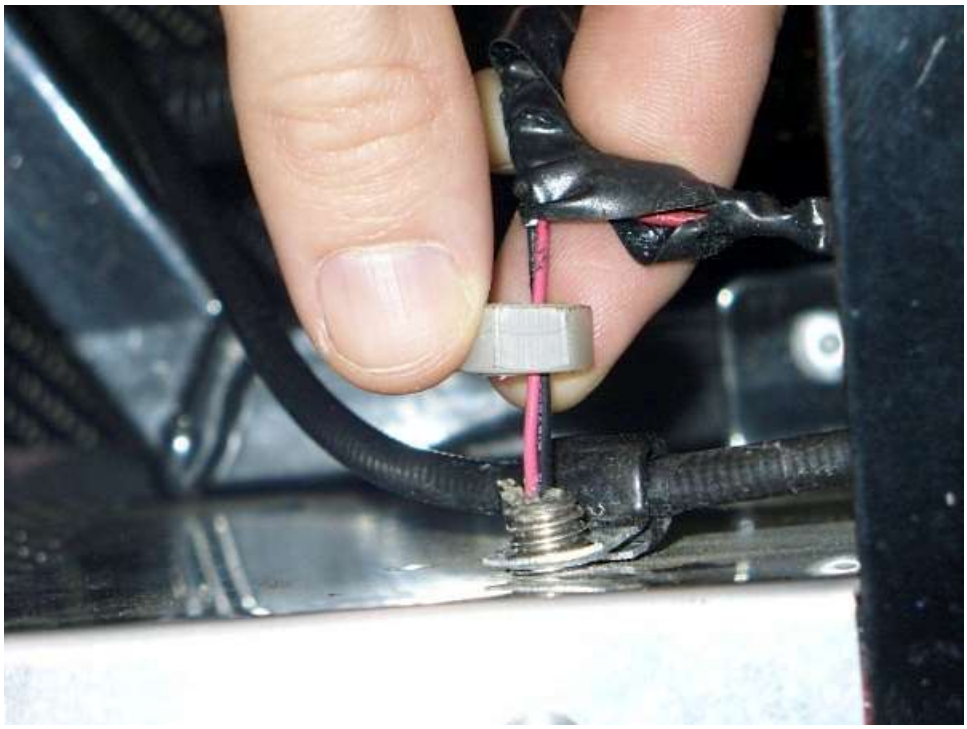
Remove the tailpipe and slide both pieces of mesh over the ends. Install the mesh using silicone and tape in place until dry.

License Plate Lights

🛠 3/16", 5/16" drill bits, drill, Rivet gun, ½" wrench, 3/16" Hex key, wire strippers, solder, soldering gun
🚘 License Plate Lights.

Center the license plate in the recess and mark the two upper holes.
Use a 5/16" drill bit and drill out the two holes.

Place the license plate into position and slide the light through the plate, then the body.



Make sure you put the nut on before soldering the wires.

Tighten the light down using a ½" wrench and a 3/16" Hex key.
Solder the red wire into the positive wire for the tail light circuit.
Solder the black wire into the ground circuit.
Cover any soldered joint with heat shrink, or electrical tape and repeat for the other light.
Make sure the lights are aimed correctly and illuminate the whole plate, then tighten if necessary.

Diffuser

- Rivet tool, 3/16" Hex key, ½" socket and ratchet
- Secondary Body fasteners

Remount the Rear Diffuser using 3/16" rivets along with the spacers and bolts.

Dash

- 3/16", ¼", 25/64" drill bits, drill, silicone, caulking gun, Low-Tack Tape, Rivnut tool, clamps, silver/white marker, 2.25" hole saw, jig saw or similar, razor knife, 5/32" Hex key.
- Stitched Interior components, Shifter Handle Components, dash components

Dash Vents

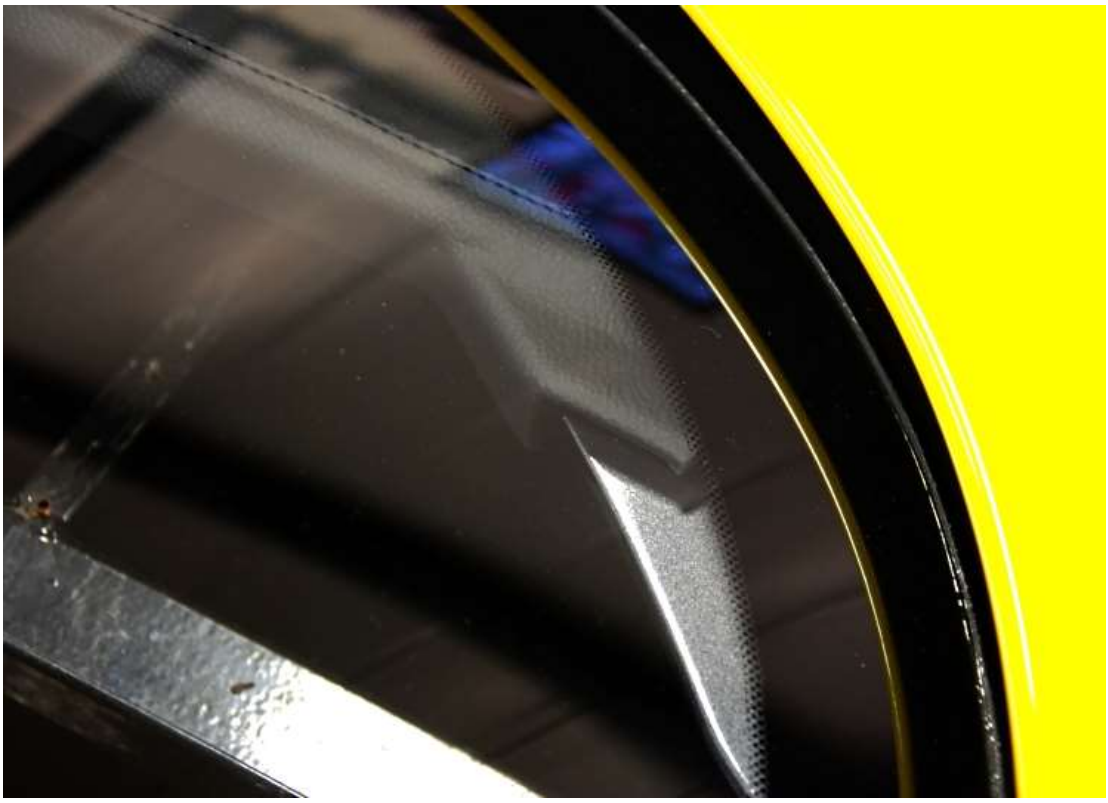
Unscrew the back of the dash vent from the front.
Insert the vent face into the dash and from the backside of the dash, screw the back of the vent onto the front.

- Check the rotation of the vent face, it should be able to rotate 360°.

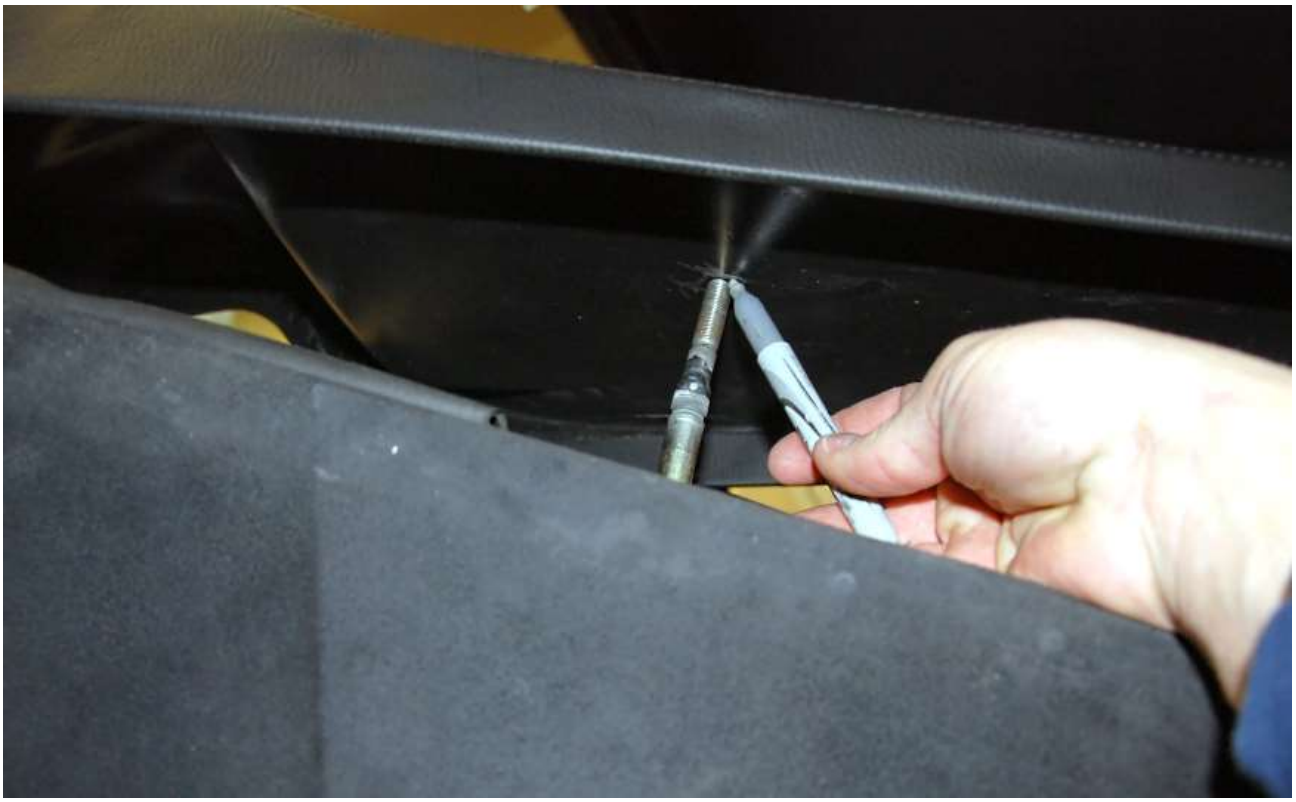
- check to be sure the vent face opens and closes properly.

Repeat for the other side pod and the two vent locations in the center console.

Center Console



Install the center console in the car so that the dash sits up on the body lip and the center area is sitting up on the shifter handle.



With the tranaxle in neutral, mark around the shifter handle on the underside of the center console.

Remove the center console from the car and use a 2.25” hole saw to drill through the console at the shifter location marked.

Reinstall the console in the car so that it sits down nice and tight on the frame.

✋ Before doing the next steps, make sure that you have oil in your transaxle and that it has been correctly broken in so that the shift forks do not stick.

Check the clearance of the shifter handle by carefully shifting through the gears including reverse.

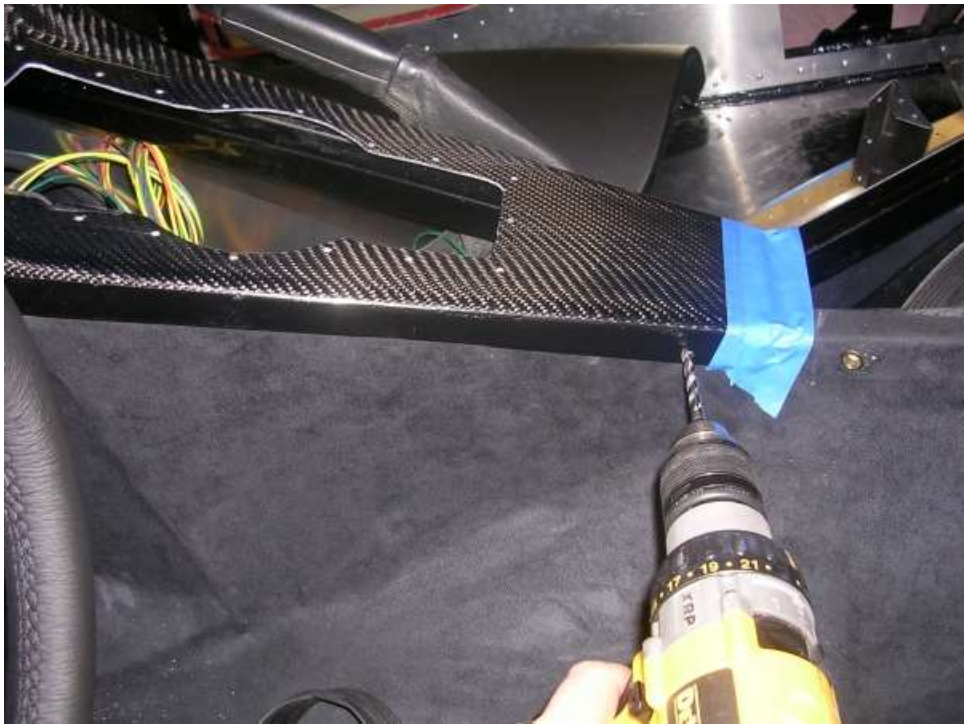
Use a white or light colored marker to mark the top of the console where it needs to be trimmed to allow for ⅛”- ¼” clearance around the handle. Keep in mind, when you shift hard, the handle will go just a bit further.

Remove the console again!
Cut the cover material on the line you marked so that it will not get messed up by a saw blade.

Use a jig saw or similar to trim the area marked.

Re install the console and recheck the handle for clearance. Trim again if necessary.

The center console can be attached to the frame a number of different ways. Factory Five has provided washer head sheetmetal screws, an alternative would be to use the 10-32 rivnuts.



Drill three evenly spaced holes through the side flanges of the center console and the 1” square steel tubes.

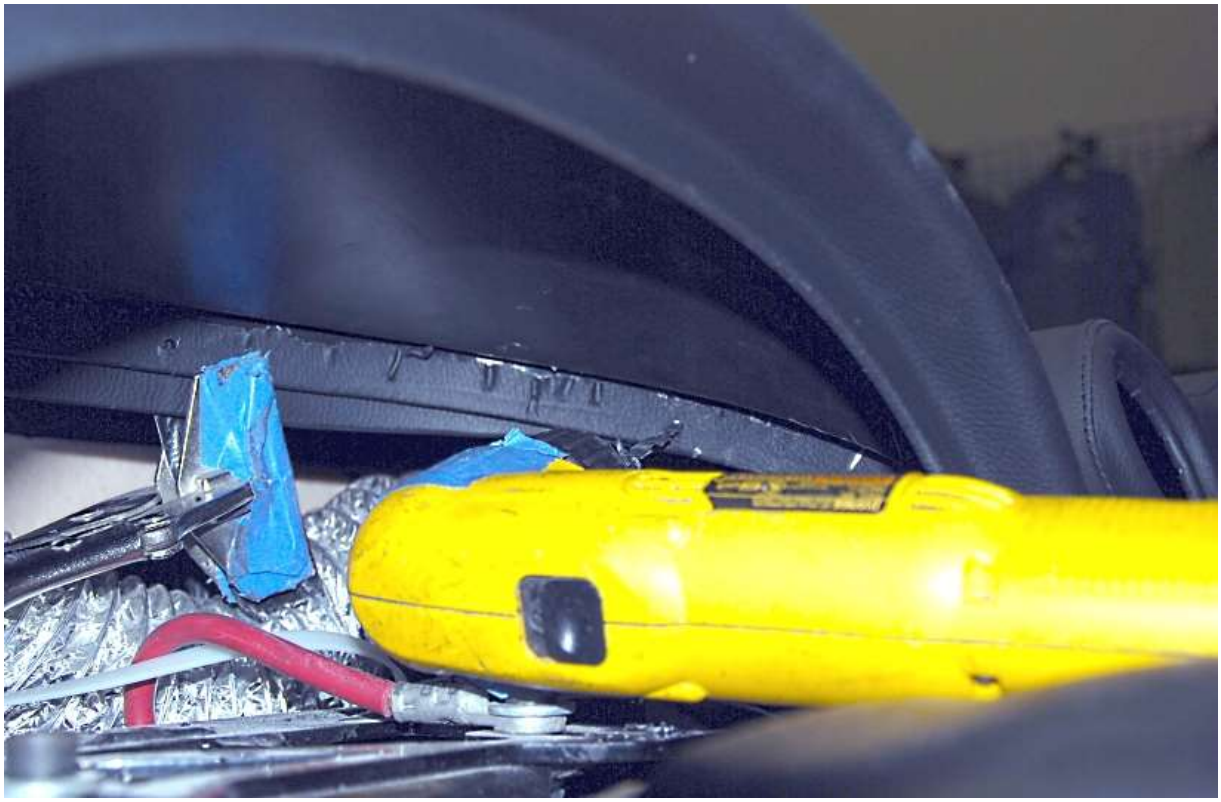
Attach the center console to the frame.

Dash Pods

With the center console in the car, position and clamp the right dash pod to the center console so that the top of the console in front of the pod is level with the top area of the pod and the point on the bottom

inside of the pod aligns with the bottom of the center console. Use two clamps, one in the front and one towards the inside.

Install and clamp the left dash pod the same way.



On the inside of the left dash pod, drill (4) 3⁄16” holes through the mounting flange so that they are spread evenly around the flange.

Unclamp and remove the **left dash pod only**.
With the right dash pod still clamped, carefully remove the center console assembly from the car.

✋ Use a pair of pliers or another clamp to squeeze the flanges together when you rivet the flanges to ensure a tight fit.

One hole at a time drill a 3/16" hole and rivet using 3/16" long rivets around the mounting flange on the right dash pod. Do this in four or more places around the flange.

Place the Dash Face in the driver side pod and from the back of the dash; trace the contour of the mounting flange onto the back of the dash face.

On the left side of the center console, drill out the four mounting holes made previously using a 25/64" drill bit.

Install ¼" rivnuts in the center console.

Drill out the mounting holes on the left dash pod using a ¼" drill bit.

Reinstall the center console assembly in the car for the last time with the front console flange on top of the body flange and the center section sitting down on the frame tubes.

Install the left dash pod using the ¼”-20 x ¾” flange head screws.

Attach the bottom of the right dash pod to the 1.50” square tube using 3/16” rivets.

Gauge panel

Apply some masking tape to the edges of the gauge panel and drill four 3/16" holes in the gauge panel, 2 at the top of the dash face and 1 on either side of the dash face near the bottom just before the panel begins to wrap under the dash.

- After you drill the first hole, place a 3/16" rivet in the hole (just place it in the hole, do not set it with a rivet gun) to hold the dash face in position. This will keep the holes aligned as you drill the rest of the holes and will make bolting the face down much easier.

Remove the gauge panel from the dash pod.

Open up the holes you drilled in the flange with a 19/64" drill bit and install four of the 10-32 fine thread Rivnuts (from the secondary body fasteners assembly) in the dash pod mounting flange.

Reconnect the plugs you used for the instrument wiring.

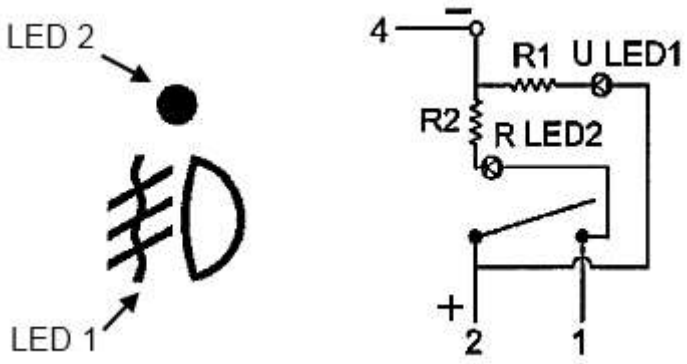
Install the dash front face over the steering column and firmly against the mounting flange on the side pod. Line up the holes in the dash face with the rivnuts on the mounting flange.

Bolt the face to the flange with the supplied 10-32 screws.

Fog Light Switch

- ¾” hole saw, round file
- Dash and components

Decide where you would like to locate the switches.
Drill ¾" holes in the center console.
Use a round file to open the holes up slightly so the switches will fit.
Insert the switches in the Center Console.
Connect the switch wires.

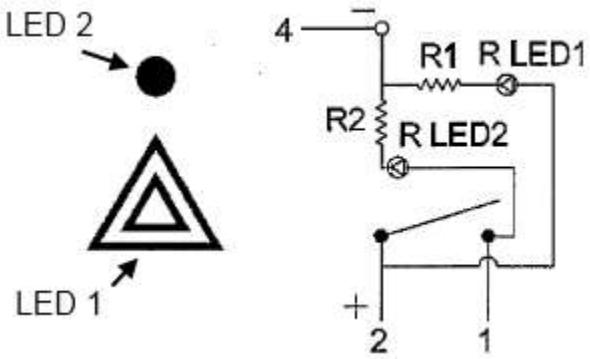


1 – Connect to fog lights.
2 - +12 volts
4 - Ground

Hazard switch

- ¾" hole saw, round file
- Dash and components

Decide where you would like to locate the switches.
Drill ¾" holes in the center console.
Use a round file to open the holes up slightly so the switches will fit.
Insert the switches in the Center Console.
Connect the switch wires.



1 – Connect to Hazard light wire (Brown 951).
2 - +12 volts
4 - Ground

Power window switches

Use the switch retaining ring and a marker to mark the desired location of the power window switches on the center consule.
Cut the hole for the switch retaining ring.
Press the window switch retainer into the console.
Connect the wiring to the window switches.
Install the FFR Ignition Switch (unless you chose to mount it in another location other than on the console trim plate).

Shifter boot, ring and knob

Place the shifter ring in place to determine how close to the hole you need to drill the screw holes.
Use the ring as a template to mark the console for the shifter ring screws.
Drill four ⅛" holes through the center console.
Slide the shifter boot over the shifter handle.
Place the shifter boot trim ring over the boot and align the holes in the boot with the holes in the ring.
Screw the shifter ring into the console

Install the shifter knob.

Column Cover Installation

Install the top column cover. Make sure to bolt it in place with the Torx head screw (a 4mm socket will work if you don't have the Torx bit).

Install the lower steering column cover, clipping it into the top cover and bolting it in place with the two Corvette bolts you took off in the donor part preparation section.

Emergency Brake Cover Plate

🛠 ⅛” drill bit, drill, marker, Rivet Gun
🚘 Aluminum Panel – Emergency Brake Cover Plate.

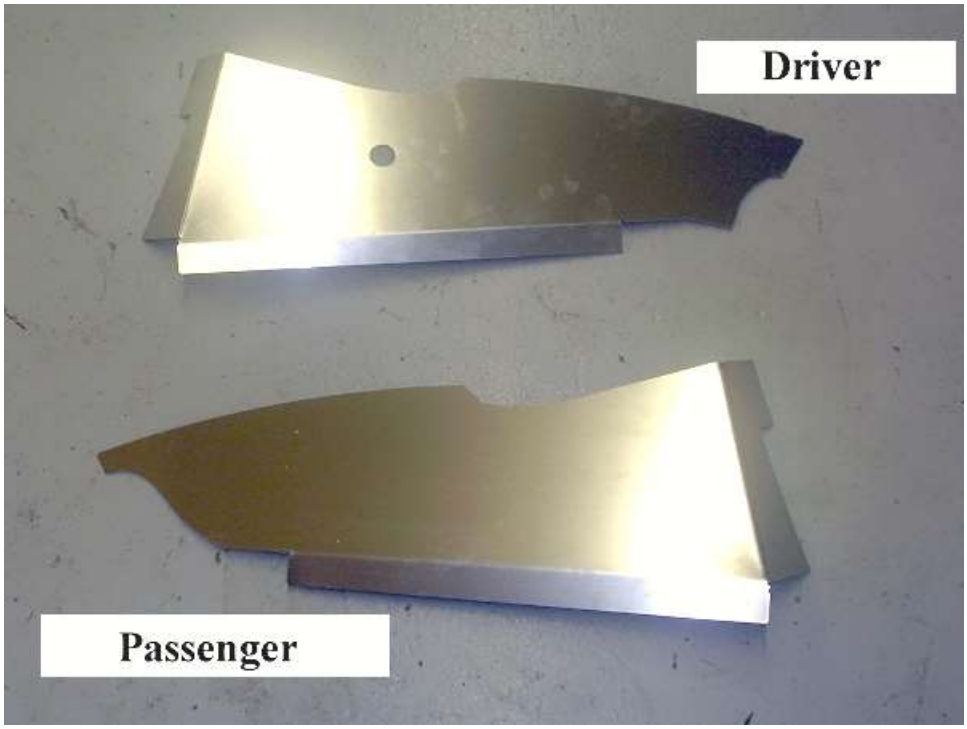
Drill an ⅛” hole in each corner of the aluminum panel.

Slide the panel over the emergency brake – you may have to lift the handle to allow you to get the panel over the handle and down to the opening in the tunnel panel.

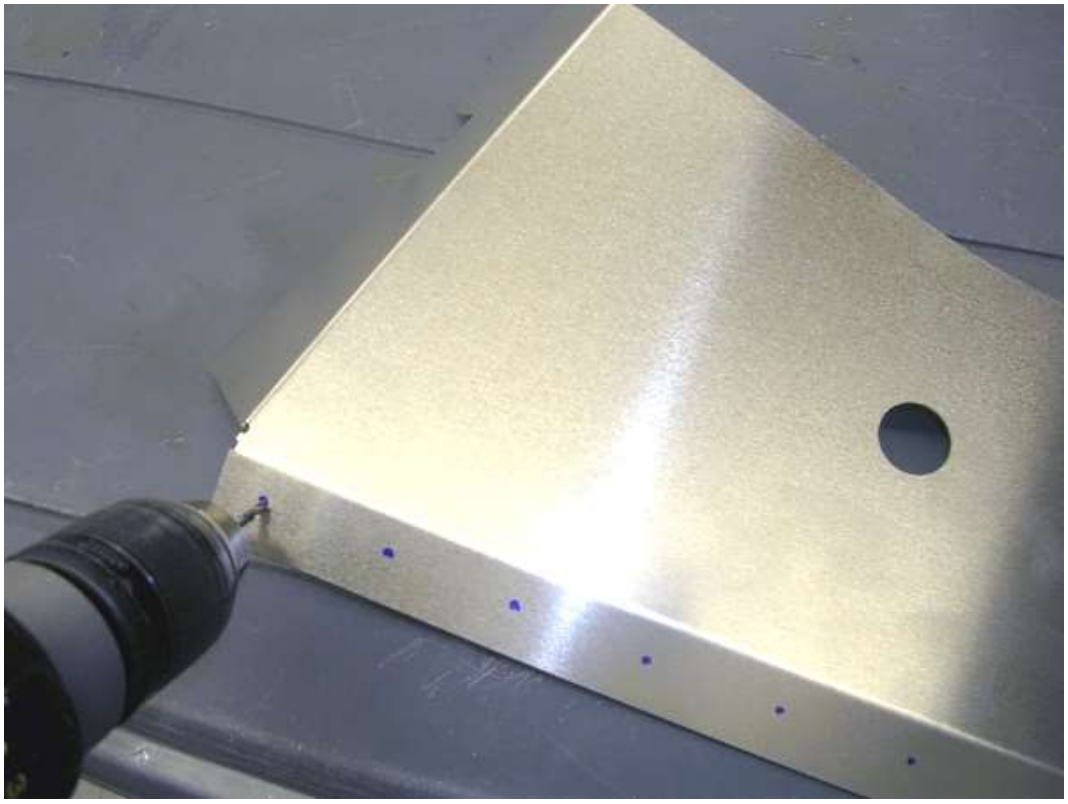
Using the holes in the panel as a reference, mark the rivet locations on the tunnel panel and rivet the panel in place.

Front Upper Wheel Well and Pedal Box Cover Aluminum

🛠 ⅛" drill bit, drill, silicone, caulking gun, marker.
🚘 Aluminum Panels – Wheel well Upper (R, L), Aluminum Panel - Pedal Box cover Plate (R, L).



Take the upper wheel well aluminum pieces out of the box. The driver side panel is the one with the hole in it.



Measure the rivet locations on the lower flange. Drill the panel accordingly with a ⅛" drill bit.

Cut a section of the supplied rubber push on trim and apply to the top edge of the panel.

Apply a bead of silicone to the top of the outside footbox wall where the Upper Wheel well panel will mount to. Set the aluminum panel in place. The "L" shaped flange on the panel goes behind the body.

Make sure the bulb seal has good contact with the body so the footbox is entirely sealed off.

- Apply silicone to any other areas that need to be sealed off.

Rivet the lower flange in place.

Repeat for the other side.

Set the Pedal Box Cover Plate into position and mark the rivet locations on all three sides.

Drill the panel according to the marks you made, apply silicone to the frame/mounted aluminum, and rivet the panel in place.

Front Wheel Well Rear Splash Guard Aluminum

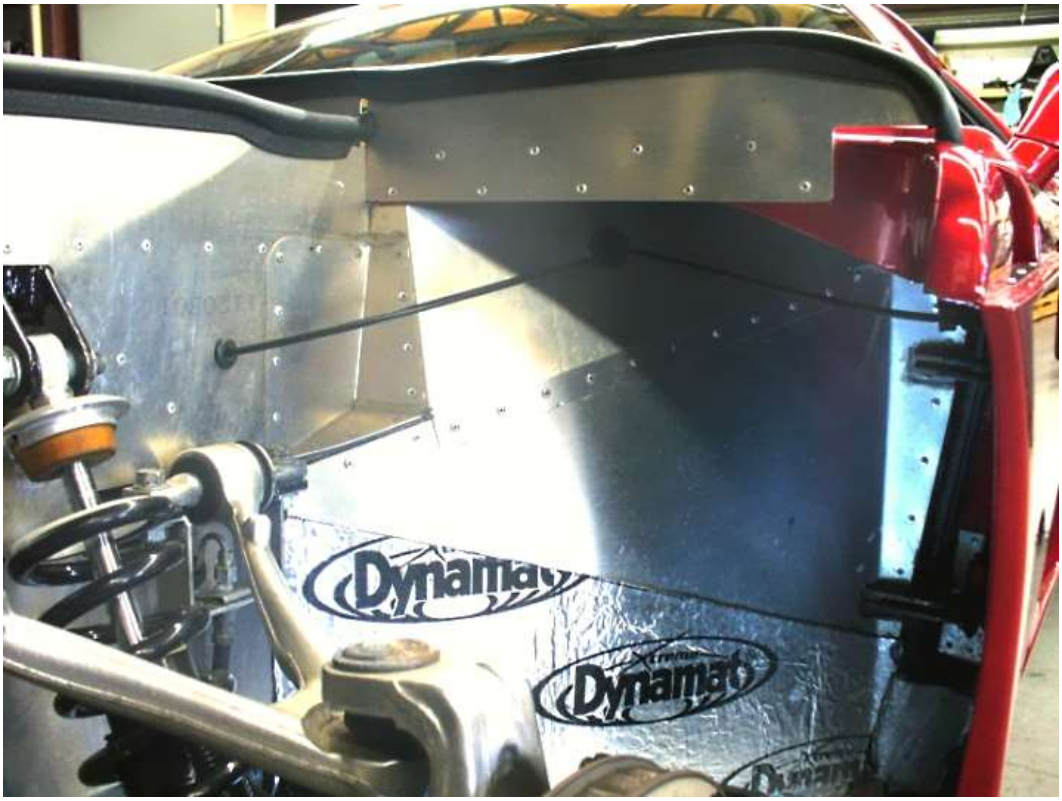
🛠 Eye protection, drill w/#6 hex nut driver, ⅛" drill bits, drill, rivet gun, silicone, caulking gun, #6 self tapping screws.

🚘 Driver/passenger front wheel well rear splash guard aluminum (FFR# 26025, 26026), aluminum-body seal, rubber push on trim (FFR# 26035(same as 10761)).

Install the front wheel well rear splash guards. Drivers side shown, bends are forward.

Mark the rivet spacing and drill ⅛" holes along the bent flanges.

Cut and install the bulb seal on panel as shown.



Fit panel with the bent flanges against footbox and the bulb seal against the inner body. The top outer corner should fit behind the hood latch mechanism.

Once properly fit, secure panel with a few #6 self tapping screws. Drill and rivet into place.

Body Close-out Panels

🛠 ⅛” drill bit, drill, tin snips.

🚗 Aluminum Panel – Body Close-out, Rear (L, R), Aluminum Panel – Body Close-out, Front (L, R), Rubber Push on Trim.

Front

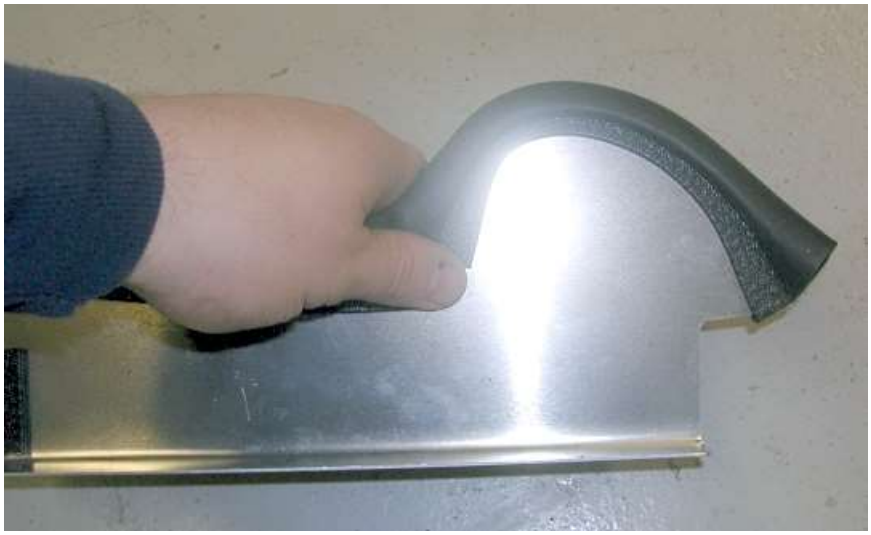
Cut a section of the body seal and apply to the outside edge of the aluminum panel.

Place the panel on the frame, making sure that the rubber seal has good contact with the body and rivet it to the frame. Make sure the top aluminum flange fits as tightly as possible to the underside of the body.

Seal any other gaps/seams with silicone.
Repeat for the other side.

Rear

Set the panel in place and check to make sure the outside flange follows the angle of the 1.5” square door sill tube. You may have to trim the upper flange if it contacts the body.



Cut a section of bulb seal and apply to the top and outside edges of the aluminum.

Set the panel in place, making sure the bulb seal has good contact with the body. The flange on the close out panel should be on the outside of the door sill panel.

Rivet the panel to the lower door sill panel.
Repeat for the other side.

Door Sill Carpet

- 🛠 Super 77 spray adhesive, Low-tack tape, scissors, razor blade, ¾" wrench, ¾" socket, and ratchet.
- 🚗 Carpet – Door Sill (L, R)

Set the carpet in place. Make sure that it doesn't protrude past the edge of the body. Make any adjustments needed to make sure all of the seams fit tightly and there is no overlap between the carpet on the floor and the door sill carpet.

Check the fit around the seat belts – you will have to make some slits in the carpet to get it to fit snug around the seat belts.

Mask off anything that could get overspray on it. Removing the seatbelts makes installation easier and prevents accidentally spraying the adhesive on the belts. Spray the aluminum panel and the backing of the carpet.
Apply the carpet.
Reinstall the seat belts.
Repeat for the passenger side.

Aluminum Door Sill Covers

🛠 ⅛” drill bit, drill, silicone, caulking gun.
🚘 Aluminum Panel – Door Sill Cover (L, R).

Set the driver side door sill in place so that the flange is on the inside of the car and the front edge of the aluminum is as close to the front edge of the door opening.

Notice where the panel contacts the body and apply a bead of silicone to the body.

Drill through the top of the panel, body and frame in two rows (one near the flange, one near the outside edge of the panel) in even increments and rivet the panel in place.

Cockpit Upper Side Walls and Rear Hatch Release

🛠 5/32" Hex, 3/32" drill bit, drill, Phillips screwdriver.

🚘 Cockpit Side Wall Brackets (L, R), Aluminum Panel – Cockpit Upper side Wall (L, R), Rear Hatch Handle, Rear Hatch Cable, Rear Hatch Handle Screws.

Reinstall the cockpit side wall brackets with the supplied ¼"-20 bolts (5/32" Hex).

Set the passenger side wall in place and drill pilot holes in the lower section of the panel (where it mounts to the frame) and in the side wall bracket you just installed (3/32" drill bit) (Shown without body closeout installed, without lower cockpit side wall carpeted).

Cut a section of the supplied bulb seal and apply to the front and top edges of the panel. Start at the lower edge of the panel.

Mount the panel with the supplied screws.

Install the hatch release cable to the handle.

Insert the rear hatch handle in the panel, sliding the cable through the hole first.

Drill two pilot holes (3/32" drill bit) for the handle screws.

Screw the handle in place with the supplied Phillips head screws.

Rear Hatch Release Cable

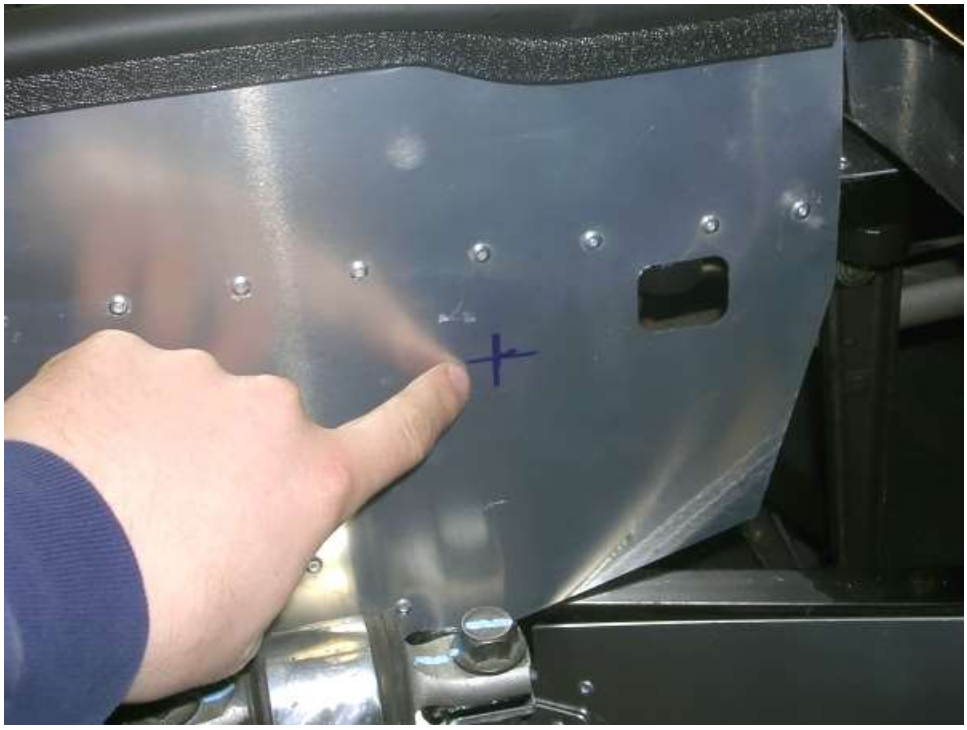
🛠 5/32" Hex, 3/32" drill bit, drill, Phillips screwdriver, Regular screwdriver.
🚗 Rear Hatch Cable, Insulated Line Clips.

Route the cable along the frame, using the supplied ¼" insulated clips to hold it in place. Insert the cable through the hole on the driver side of the receiver.

Hood Release Cable

🛠 3/16" drill bit, drill, rivet gun.
🚗 Insulated Line Clips.

Route the cable through the hole in the driver side upper wheel well panel, using the Corvette grommet on the lines to seal off the hole in the aluminum.



Drill a 5/16" hole in the upper wheel wells that will allow you to route the cable under the master cylinders on the driver side and under the ¾" square steel tube welded to the top of the shock tower that creates the top of the footbox (Shown without upper wheel well or pedal box cover panels installed).

Connect the end of each cable to the latch mechanism, making sure the cables are away from the wheels.

Mount the passenger cable in place with some of the ¼" insulated line clips.

Mount the Corvette handle to the supplied bracket and mount the bracket/release handle somewhere you can reach it easily. A good spot is near the outside of the footbox wall next to the fuse panel.

Windshield, rear hatch and side window glass

Windshield (FFR# 25000), Rear Hatch Window (FFR# 25001).

The windshield, rear hatch, and rear quarter window glass are designed to be installed by a professional glass installer with the heated adhesive and window trim.

Fit the rear window in place to make sure that the perimeter is flush with the body. Adjust the frame and body as needed for a proper fit.
Test fit the windshield glass.

Test fit the rear quarter glass.

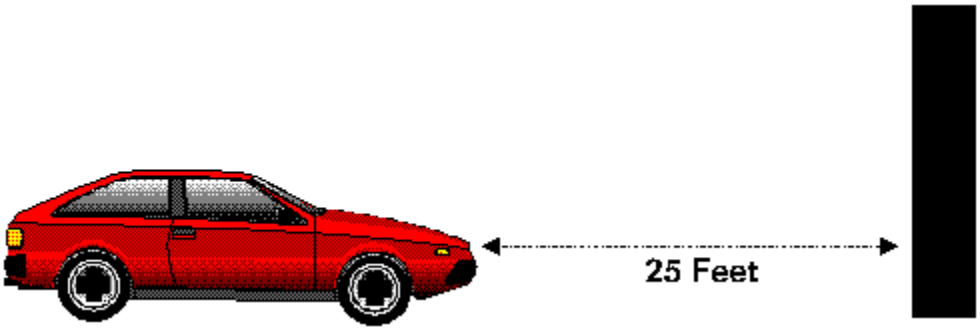
Have a professional windshield installer install the glass.

Finishing Touches

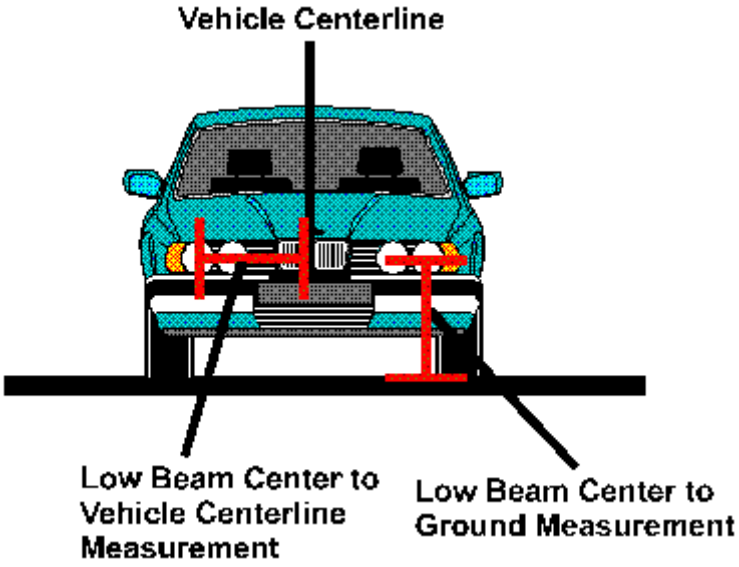
Headlight Alignment

- 🛠 Masking tape, marker, tape measure
- ✋ Make sure that the car is at the correct ride height before the alignment procedure is done. Ride height should be 4½" at the front and 4½" at the back measured to the bottom of the 4" round tube with the normal number of people/weight in the car.
- ✋ It is important that the headlights are aimed properly in order for them to perform at their best. Lights that are aimed incorrectly will not only perform poorly but may also offend oncoming traffic. When replacing bulbs, it is a good idea to verify that your lights are properly aimed. Slight variances in filament position can translate to large variances in beam pattern. The following procedure does not require special aiming equipment and ensures proper aim.

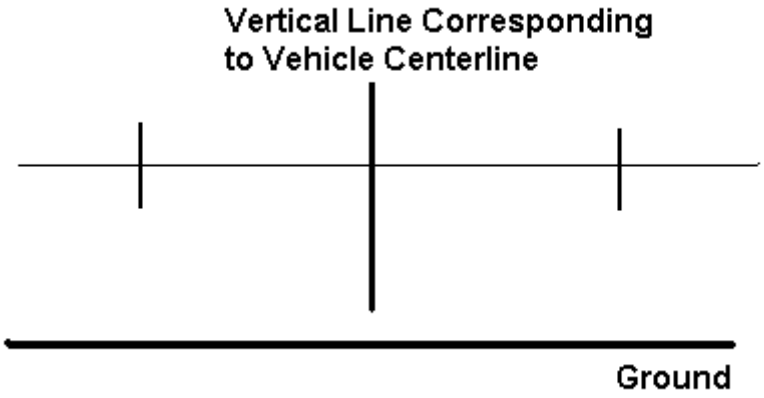
Find a flat, level surface next to a vertical white wall where the car can be parked (a garage door is an ideal location at home).
Pull the car straight up to the wall as close as possible.
Using masking tape and a marker, draw a vertical line on the wall corresponding to the centerline of the vehicle.
Pull the car straight back until the headlights are 25 feet from the wall.



Make the following two measurements:
Measurement A: From the ground to the geometric center of one of the headlight lenses
Measurement B: From one of the low beam headlights to the vehicle centerline.
(Also measure from high beam center to vehicle centerline for 4 headlight systems)
Note these measurements.



On a piece of masking tape, draw one horizontal line on the wall at a height exactly 2 inches lower than Measurement A.
On the line, make vertical marks both to the right and left of the vehicle centerline mark at the distance of Measurement B from the vehicle centerline vertical line.



Turn the headlights on and adjust the vertical aim of the headlights so that the top horizontal cutoff of each of the beams is located along the horizontal line drawn on the wall.
Adjust the horizontal aim of the low beam headlights so that the point at which the top cutoff of the beam begins to slope upwards is located at the vertical marks.

Alignment Specifications

Take your new car to an alignment shop and have the car aligned properly before hitting the track. A minor flaw in alignment can cause very "twitchy" handling. Avoid temptation and never drive a car without proper alignment.

	Toe In (inches)	Camber (deg)	Caster (deg)
Front	⅛"	-0.25	2.5
Rear	3/16"	-0.5	N/A

Appendix A - Torque Specifications

Suspension Bolts

Location	Ft-Lb
Front lower control arm cam bolt	125
Front upper control arm bolts	48
Front coil over to frame mount (upper/lower)	75
Rear lower control arm front bolt	107
Rear lower control arm rear bolt	71
Rear upper control arm	65
Rear coil over to frame mount (upper/lower)	75
Rear suspension tie rod nut (frame side)	44
Front lower coil over mount to lower control arm	21
Steering rack to frame	74
Front outer tie rod upper nut	83
Front outer tie lower rod nut	100

General Bolt torque specifications*

Thread	SAE English
	Zinc Plated
	Ft-Lb.
¼ -20	8
¼ -28	10
5/16 -18	17
5/16 -24	19
⅜ -16	30
⅜ -24	34
7/16 -14	48
7/16 -24	54
½ -13	75
½ -20	83
9/16 -12	100
9/16 -18	100
⅝ -11	100
⅝ -14	100

Thread	SAE Metric
	Zinc Plated
	Ft-Lb.
M8	18
M10	33
M12	61
M14	98
M16	120

ATTENTION: Use the following specs in order to torque Stainless Bolts.

3/16" 11 ft-lb (132 in-lb)
⅜" 16 ft-lb (192 in-lb)

Appendix B – Donor Specs by Year

Gen. III Horsepower/Torque by Model Year

Engine/Application	Model Year							
	1997	*1998*	*1999*	*2000*	*2001**	*2002*	*2003*	*2004*
LS1 5.7 Corvette	345/350	345/350	345/350	345/350	350/360 A 350/375 M	350/360 A 350/375 M	350/360 A 350/375 M	350/360 A 350/375 M
LS6 5.7 Corvette	N/A	N/A	N/A	N/A	385/385	405/400	405/400	405/400
LS1 5.7 Base F-body	N/A	305/335	305/335	305/335	310/340	310/340	N/A	N/A
LS1 5.7 Ram Air F-body	N/A	320/345	320/345	320/345	325/350	325/350	N/A	N/A

*Horsepower and Torque increase on LS1 engines due to use of Z06 intake manifold
A - Automatic Transmission
M - Manual Transmission

Appendix C – Donor Parts Required

FRONT SUSPENSION			
1	each	LH Front lower control arm (rubber bushings installed and ball-joints pressed in)	10326693-LH
1	each	RH Front lower control arm (rubber bushings installed and ball-joints pressed in)	10326694-RH
1	each	LH Front upper control arm (rubber bushings installed)	10333408-LH
1	each	RH Front upper control arm (rubber bushings installed)	10333409-RH
1	each	LH Knuckle (upper ball-joints pressed in)	10332530-LH
1	each	RH Knuckle (upper ball-joints pressed in)	10332529-RH
2	each	Front bearing/hub assembly	7470569
1	each	LH Hub backing plate for wheel speed sensor wiring attachment	10263081-LH
1	each	RH Hub backing plate for wheel speed sensor wiring attachment	10263082-RH
2	each	Locknuts for lower ball joints (M14 x 2mm)	10282253
2	each	Locknuts for upper ball-joints (M12 x 1.75mm)	3537772
6	each	Torx bolts (T55) for bearing/hub assembly to knuckles (M12 x 1.75mm x 55mm)	10414261
8	each	Bolts for upper control arm to chassis (M10 x 1.5mm x 40mm)	11515768
8	each	Washers for upper control arm to chassis (10mm)	10289125
4	each	Cam bolts for lower control arms to chassis (M14 x 2mm x 110mm)	10254819
4	each	Locknut for lower control arm bolts (M14 x 2mm)	11516382
4	each	Cam washers for lower control arm bolts	10254818
4	each	Bolts for lower shock mount (M8 x 1.25mm x 55mm)	14066450
4	each	Locknuts for lower shock mount (M8 x 1.25mm)	11517031
1	each	LH Front rotor	10445857-LF
1	each	RH Front rotor	10445856-RF
1	each	LH Front caliper	12530683-LH
1	each	RH Front caliper	12530682-RH
2	each	Front caliper mounting brackets	12455799
4	each	Front caliper guide pins	12530697
4	each	Front caliper guide pin bolts (w/o threads)	14067559
4	each	Bolts for front calipers to knuckles (M14 x 2mm x 47mm)	14084051
4	each	Washers for calipers to knuckles (5/8” ID, 1 1/8” OD)	10268875
2	each	Flexible brake lines with mounting brackets	10361617
2	each	Banjo bolts for brake line attachment to calipers (M10 x 1.0mm)('97-'00)	22163795
2	each	Banjo bolts for brake line attachment to calipers (M10 x 1.0mm)('01-'04)	11518571
4	each	4 crush washers	21012386
1	pair	Front brake pads	12530681
10	each	Lug-nuts for front suspension (M12 x 1.5mm)(Stainless steel capped)	9595165

REAR SUSPENSION			
1	each	LH Rear lower control arms (rubber bushings installed and ball-joints pressed in)	10233635-LH
1	each	RH Rear lower control arm (rubber bushings installed and ball-joints pressed in)	10233636-RH
1	each	LH Rear upper control arm (rubber bushings installed)	10233620-LH
1	each	RH Rear upper control arm (rubber bushings installed)	10233621-RH
1	each	LH Knuckle (upper ball-joints pressed in)	10332530-RH
1	each	RH Knuckle (upper ball-joints pressed in)	10332529-LH
2	each	Rear bearing/hub assembly	7470571
2	each	Locknuts for lower ball joints (M14 x 2mm)	10282253
2	each	Locknuts for upper ball-joints (M12 x 1.75mm)	3537772
6	each	Torx bolts (T55) for bearing/hub assembly to knuckles (M12 x 1.75mm x 55mm)	10414261
2	each	Cam bolts for lower control arms to chassis, forward most mount (M14 x 2mm x 110mm)	10254819
2	each	Locknut for lower control arm bolts, forward most mount (M14 x 2mm)	11516382
2	each	Cam washers for lower control arm bolts, forward most mount	10254818
2	each	Cam bolts for lower control arm, rearward most mount(M12x1.75)	10200097
2	each	Locknut for lower control arm bolts, rearward most mount (M12x1.75)	11515744
1	each	LH Rear rotor	10445859-LR
1	each	RH Rear rotor	10445858-RR
1	each	LH Rear caliper	12530685-LH
1	each	RH Rear caliper	12530684-RH
2	each	Rear caliper mounting brackets	12455800
4	each	Rear caliper guide pins	12530698
4	each	Rear caliper guide pin bolts (w/o threads)	14067559
4	each	Bolts for rear calipers to knuckles (M14 x 2mm x 47mm)	14084051
4	each	Washers for rear calipers to knuckles (5/8” ID, 1 1/8” OD)	10268875
2	each	Flexible brake lines with mounting brackets (rear, slightly longer than the fronts)	10333773
2	each	Banjo bolts for brake line attachment to calipers (M10 x 1.0mm)('97-'00)	22163795
2	each	Banjo bolts for brake line attachment to calipers(M10x1.0)('01-'04)	11518571
4	each	4 crush washers	21012386
1	pair	Rear brake pads	12530688
10	each	Lug-nuts for rear suspension (M12 x 1.5mm)Stainless steel capped)	9595165
2	each	Outer CV-joints	12532153
2	each	Locknuts for outer CV-joints (M27 x 2mm)	10257766
2	each	Rear toe link, 7844424-boot/7844100-sm clamp/26036823-lg clamp	88955489
2	each	Locknuts for rear toe link to chassis (M16 x 2mm)	11516383
2	each	Rear outer tie rods (M14 x 1.5mm)(includes jam nut)	88955488

2	each	Jam nuts (M14 x 1.5mm)	26017267
2	each	Locknuts for tie rod ball-joints (M12 x 1.75)	3537772
EMERGENCY BRAKE			
1	each	LH E-brake backing plate	12455802-LH
1	each	RH E-brake backing plate	12455803-RH
1	each	LH Parking brake lever boot protector at spindle	12530694-LH
1	each	RH Parking brake lever boot protector at spindle	12530695-RH
2	each	Parking brake kit (includes shoes, and misc. parts)	12530691
1	each	LH e-brake cable to knuckle brackets	10262949-LH
1	each	RH e-brake cable to knuckle brackets	10262950-RH
4	each	Bolts for e-brake cable to knuckle brackets (M10 x 1.5mm x 70mm)	11516356
1	each	RH E-brake cable	10299165-RH
1	each	LH E-brake cable	10409250-LH
1	each	E-brake handle (includes attached front cable with equalizer bar, black hand grip and boot)	10323579
1	each	E-brake cable connection bracket (connects front cable to both rear cables)	10255639
FUEL SYSTEM			
1	each	LH Fuel tank with pump and sending unit ('97-'98)	12458239-LH
1	each	RH Fuel tank with pump and sending unit ('97-'98)	12458238-RH
1	each	LH Fuel tank ('99)	12458241-LH
1	each	RH Fuel tank ('99)	12458240-RH
1	each	LH Fuel tank ('00-'02)('03 first design)	12459859-LH
1	each	RH Fuel tank ('00-'01)	12459858-RH
1	each	RH Fuel tank ('02)('03 first design)	10329498-RH
1	each	LH Fuel tank ('03 second design)('04)	10362744-LH
1	each	RH Fuel tank ('03 second design)('04)	10337582-RH
1	each	Fuel tank crossover hose 2.75" dia.('97-'98)	10292053
1	each	Fuel tank crossover hose ('00-'02) ('03 first design)	10312532
1	each	Fuel tank crossover hose 2" dia.('03 second design) ('04)	15223882
1	each	Fuel filter ('97-'98)	10287788
1	each	Fuel filter ('99-'04)	10299146
1	each	Fuel sender feed hose rear ('97-'98)	10404931
1	each	Fuel feed hose rear w/check valve ('97-'98)	10413424
1	each	Fuel return hose rear ('97-'98)	10404927
1	each	Fuel feed hose rear w/check valve ('99-'02) ('03 first design)	10448899
1	each	Fuel press. reg. return hose rear ('99-'02) ('03 first design)	10448903
1	each	Fuel aux. return hose rear ('99-'02) ('03 first design)	10448902
1	each	Fuel feed hose rear ('03 second design) ('04)	10362524
1	each	Fuel feed & return hose rear-RH ('03 second design) ('04)	10337581-RH
1	each	Fuel feed & return hose rear-LH ('03 second design) ('04)	10337583-LH
2	each	Fuel sender connector w/leads ('97-'02) ('03 first design)	12126487
1	each	Fuel sender connector w/leads -LH ('03 second design) ('04)	15306361-LH
1	each	Fuel sender connector w/leads-RH ('03 second design) ('04)	15326833-RH
COOLING SYSTEM			
1	each	Fan shroud ('98-'04)	12365307
2	each	Fans	22098787

2	each	Fan blade mounting nuts (M8 x 1.25 LH THD)	22082538
2	each	Fan motor	22104439
2	each	Fan motor to shroud mounting screw kit (contains 3 screws)	22062547
2	each	Fan motor connector w/leads	12101917
1	each	Radiator	52470606
1	each	LH Radiator lower rubber isolator	10278679-LH
1	each	RH Radiator lower rubber isolator	10188023-RH
1	each	Coolant overflow tank ('97-'99)	10405218
1	each	Coolant overflow tank ('00-'04)	10430189
1	each	Cap for coolant overflow tank	25713160
ELECTRICAL			
1	each	OBD2 PCM computer ('97)	16232148
1	each	OBD2 PCM computer ('98)	16238212
1	each	OBD2 PCM computer ('99-'00)	9354896
1	each	OBD2 PCM computer ('01-'03)	12200411
1	each	OBD2 PCM computer ('04)	89017739
1	each	Computer mounting bracket, inner piece ('97-'98)	10286699
1	each	Computer mounting bracket, outer piece ('97-'98)	10286700
1	each	Computer mounting bracket, inner piece ('99-'04)	10288066
1	each	Computer mounting bracket, outer piece ('99-'04)	10288067
2	each	Screws to connect computer brackets together	20430420
1	each	TAC module , and (for fly by wire throttle)	12578953
3	each	U-nuts for TAC module to computer bracket	11513599
3	each	Screws for TAC module to computer bracket	20430420
1	each	Throttle pedal (fly by wire)	12565643
1	each	Fly by wire harness (connects throttle pedal to TAC module)	12116247
2	each	Short 4 wire oxygen sensors	25312184
2	each	Long 4 wire oxygen sensors	25312202
1	each	Vehicle speed sensor (VSS) with mounting bracket	12369458
1	each	VSS connector w/leads (black) ('97-'04)	88987993
1	each	VSS connector w/leads (gray) ('01-'04)	15306302
1	each	Engine Harness	12189523
1	each	Brown plug that connects to the under-hood fuse box	15303514
1	each	Gray plug that connects to the under-hood fuse box	15303512
1	each	OBD2 Engine scan plug with about 12 inches of all wires extending out of it	12167308
1	each	Under-hood fuse box	10443148
1	each	Power terminal nut on fuse box	11514596
1	each	Brake light switch with plastic holder	10447139
1	each	Brake light switch connector w/leads and capacitor	12166226
1	each	Ignition switch	10308321
1	each	Ignition switch connector w/leads (6-way natural)	12167156
1	each	Ignition switch connector w/leads (6-way black)	12162229
1	each	Ignition switch connector w/leads (3-way black)	12101864
MISCELLANEOUS			
1	each	Ignition cylinder, lock cylinder(s) and 2 key set	12458190
1	each	LH Exterior door handle	10439373-LH
1	each	RH Exterior door handle	10439374-RH

1	each	LH Exterior door handle gasket	12531227-LH
1	each	RH Exterior door handle gasket	12531201-RH
1	each	LH Exterior rear view mirror	10416055-LH
1	each	RH Exterior rear view mirror	10416056-RH
6	each	Exterior rear view mirror mounting nuts	11609411
2	each	License plate lamps	16519986
2	each	License plate bulb socket	88986416
4	each	License plate lights mounting screws	10400761
1	each	Horn, high note	89046917-high
1	each	Horn, low note	89046916-low
1	each	Horn connector w/leads (gray)	15306302
1	each	LH hood latch	15804048-LH
1	each	RH hood latch	15288474-RH
1	each	Hood release handle and 2 attached cables	10411704
2	each	Hood strikers	10273708
1	each	LH hood hinge	10326221-LH
1	each	RH hood hinge	10326222-RH
1	each	Wiper motor with rotating assembly	12494759
3	each	Wiper motor mounting screws	11588831
1	each	Wiper motor connector w/o leads	12129126
1	each	Wiper rubber hose	22154854
1	each	LH Power window mechanism w/motor	10344131-LH
1	each	RH Power window mechanism w/motor	10344132-RH
2	each	Window motor connector w/leads	15305982
1	each	LH Seat belt	88893517-LH
1	each	RH Seat belt	88893521-RH
2	each	Seat belt upper bolt plastic covers	10258492
1	each	LH Seat belt receptacle	88956391-LH
1	each	RH Seat belt receptacle	12458065-RH
1	each	Steering column (w/stalks, 2 piece cover, steering wheel nut M14 x 1.5mm)(non-telescoping best)	26070622
1	each	Battery	75-7YR
1	each	Drive belt Tensioner ('97-'00)	12559325
1	each	Drive belt Tensioner ('01-'04)	12568181
1	each	Drive belt idler pulley	12564401
1	each	Alternator	10353440
2	each	Rubber motor mounts 11515744-nuts 4each	10284134
1	each	LH Aluminum motor mount bracket	10260642-LH
1	each	RH Aluminum motor mount bracket	10260643-RH
6	each	Motor mount to engine bolts	11515767
AIR CONDITIONING PARTS - OPTIONAL			
1	each	A/C bracket	12556444
1	each	A/C Compressor w/clutch	1137031
1	each	A/C Condenser	52470569
1	each	A/C Accumulator	1132765
1	each	A/C Mounting hardware (110mm bolt)	11516714
1	each	A/C Mounting hardware (165mm bolt)	12552922
1	each	A/C Mounting hardware (90mm bolt)	11509202

1	each	A/C Mounting hardware (nut)	10255857
1	each	A/C Mounting hardware (40mm bolt)	11515768
1	each	A/C Mounting hardware (stud)	12556447
1	each	A/C Belt Tensioner	12560345
1	each	A/C Idler pulley	12557334
1	each	A/C Belt	12569528

Appendix D – Heat & A/C Installation

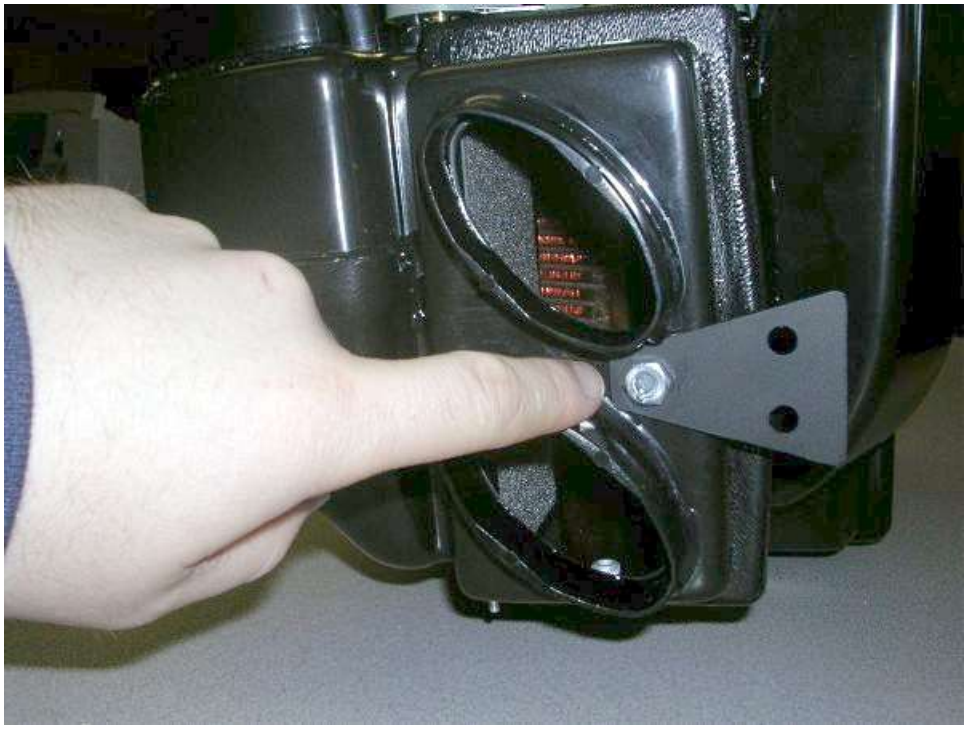
GTM A/C Evaporator Kit

- Heater & A/C evaporator kit
- Ratchet, 7/16" socket, Hose crimping tool (some parts stores can do this for you), Wire cutters, Wire crimpers, Philips head screwdriver, 3/16", 1/8", 5/8" drill bits, Drill, Tin Snips, 134a charge and oil kit

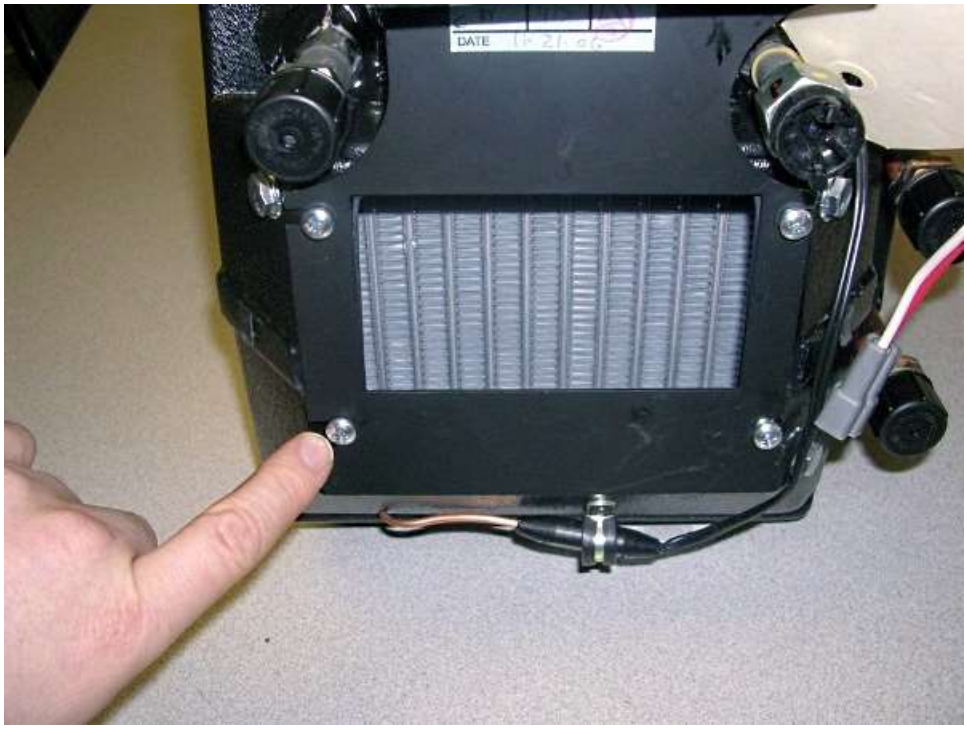
Installation Instructions

- Follow the manufacturer's directions on hooking up the various parts of the A/C system. For GTM specific instructions on how to install the Evaporator unit see the instructions below. We recommend using the Corvette Trinary switch to allow the Corvette computer to control the system (See Hose Kit Installation Instructions). However, if you are running an aftermarket stand alone computer, you can use the Vintage Air cutoff switch as shown in the Vintage Air instructions.

Perform an inventory of all the parts included with the kit using the Vintage Air pack lists.
If you have the passenger inner footbox wall installed, you will have to remove it since the Evaporator will be installed directly behind it. Also, if the passenger tunnel wall is installed remove it as well.

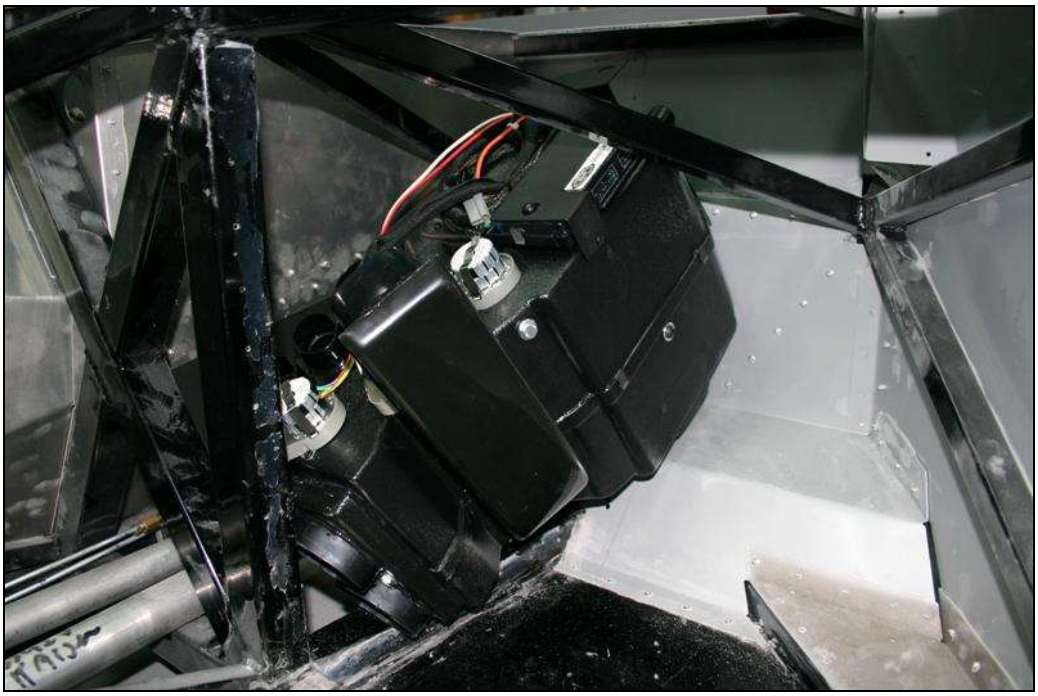


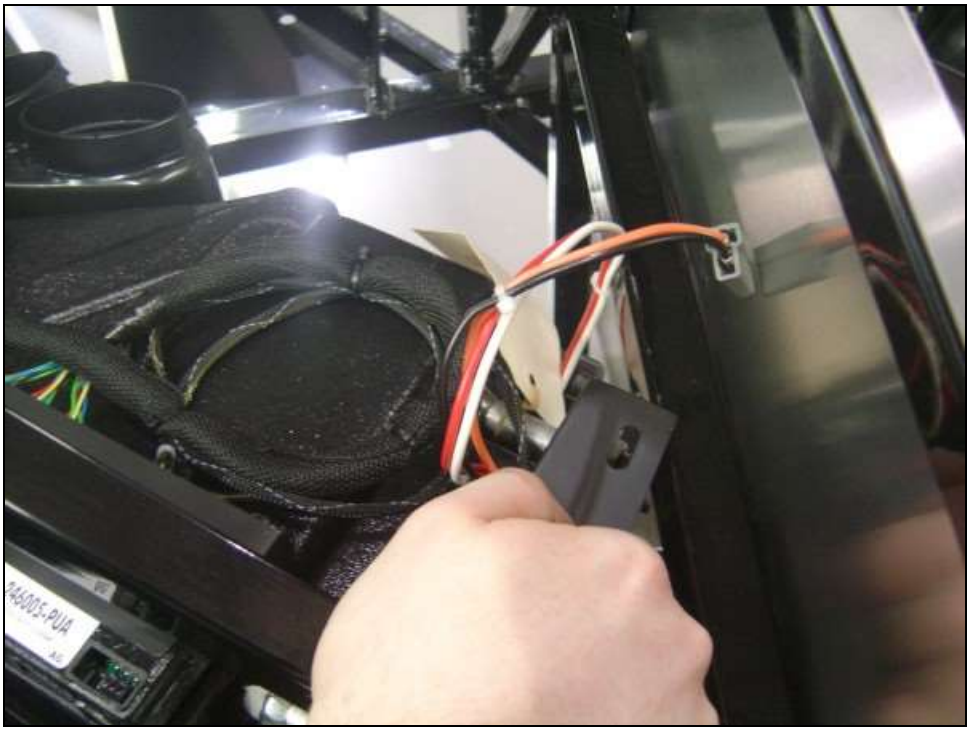
Remove the supplied bracket at the rear of the Evaporator (7/16" socket).



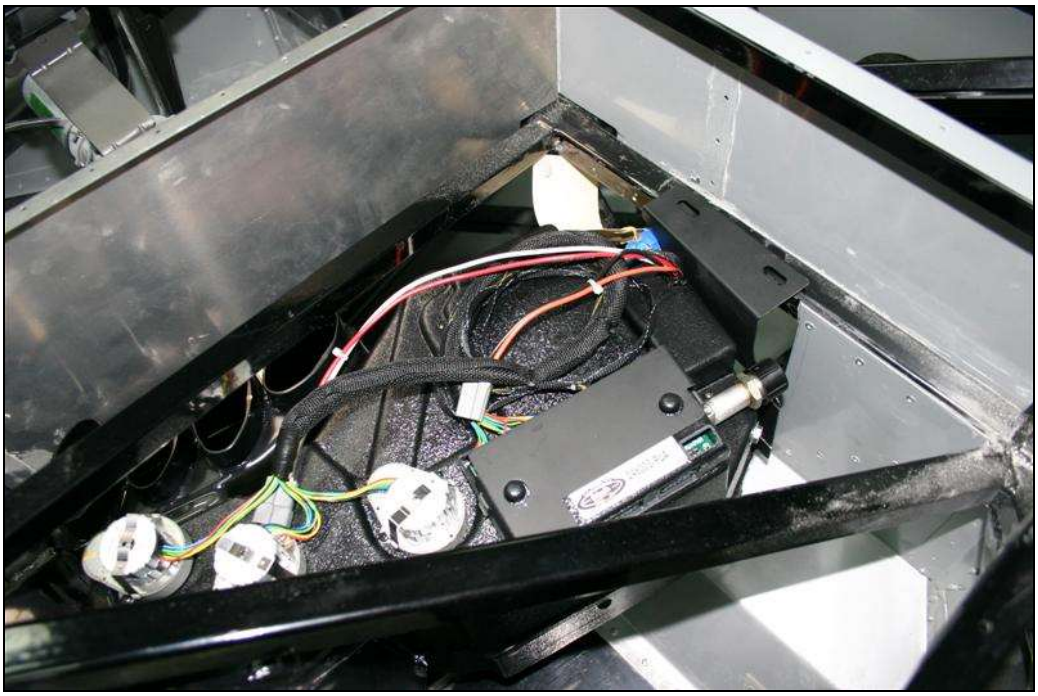
Remove the 4 screws from the front bracket on the Evaporator (Phillips screwdriver).

Begin the install by sliding the front end of the Evaporator to the front of the footbox and up towards the top.

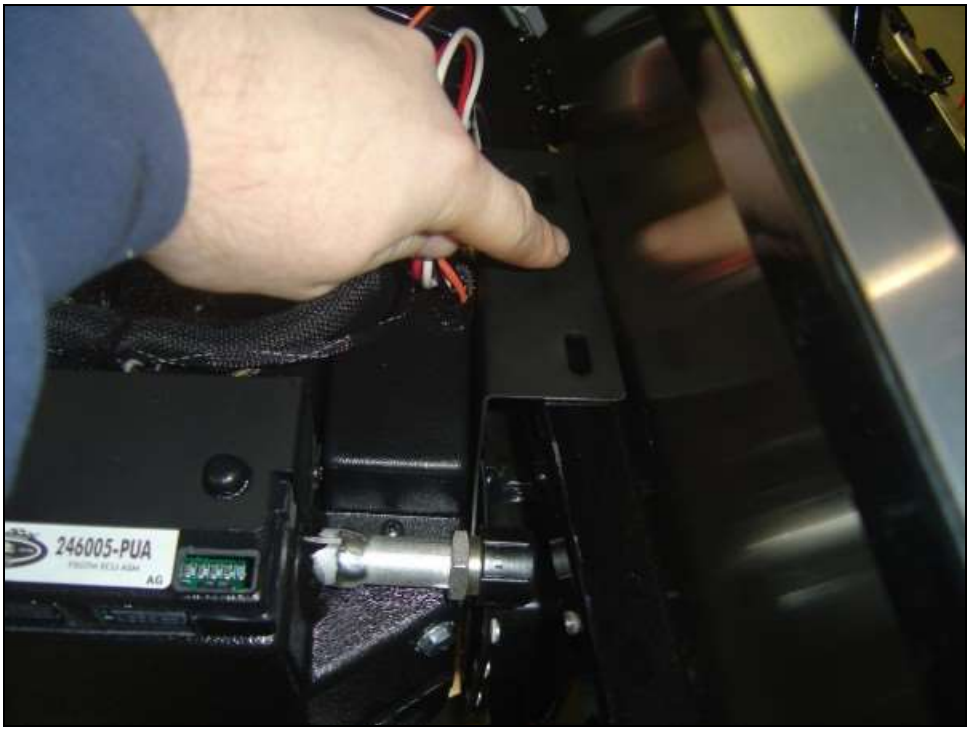




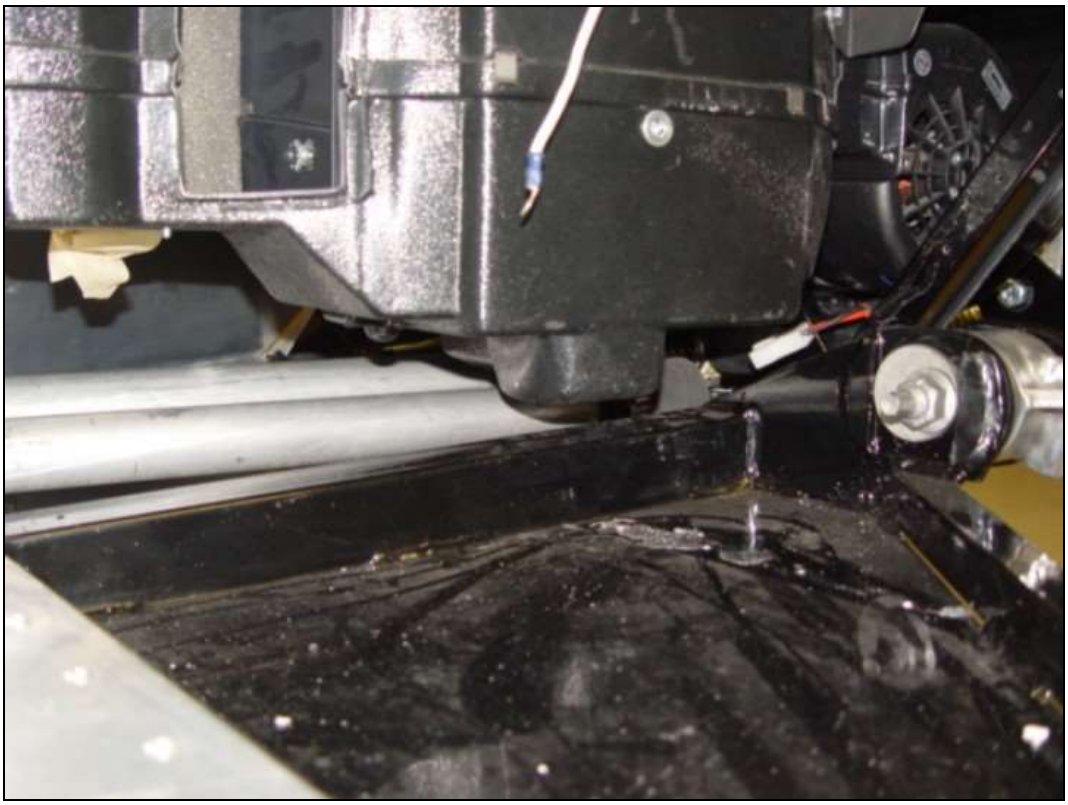
Turn the back end of the Evaporator into the center of the car, making sure the bracket at the front of the Evaporator stays above the 1” tube at the front of the footbox and slide the front of the Evaporator toward the center of the car.



You may have to trim the front of the mounting bracket to clear the front aluminum panel (See below).

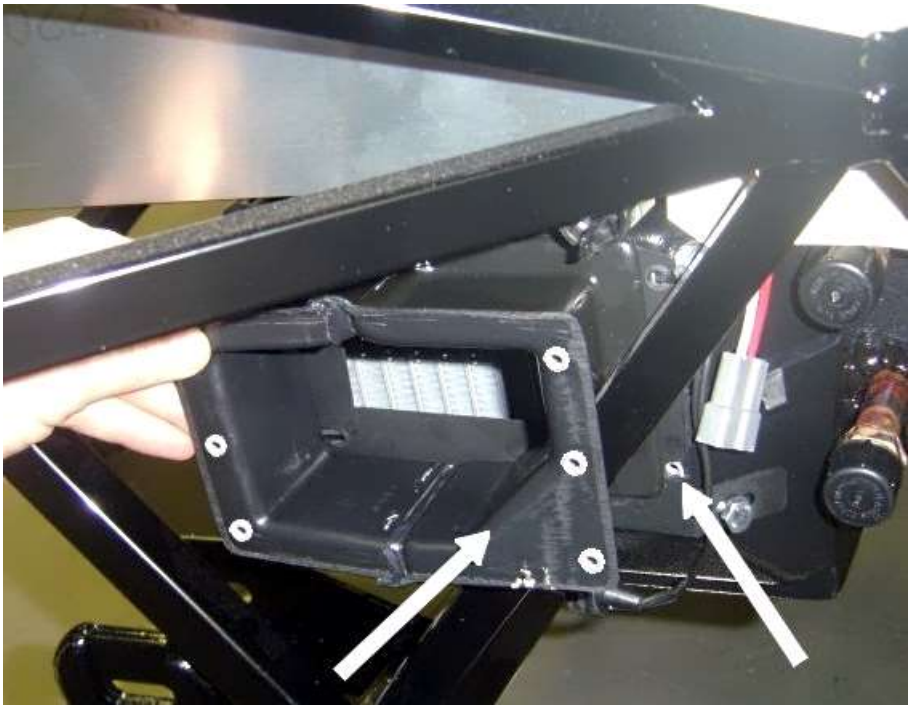


Once in place, the plenums at the back of the unit should be between the Dash Bulkhead “X” and the 1.5” Dash Bulkhead upright tube. If you need clearance fitting the Evaporator unit into the chassis due to the routing of your coolant lines/tubes you can mount the bracket under the 1” square tube if necessary.



Before drilling any holes for the Evaporator make sure the unit isn’t resting on the coolant tubes and there is enough room to install the A/C hoses underneath (Shown without footbox front wall installed).

Set the footbox inside wall in place to check the amount of clearance the unit has between it and the panel. Remove the panel when you are sure you will have enough clearance.
Unscrew the Blower Motor Extension from the Blower Motor (Phillips screwdriver).

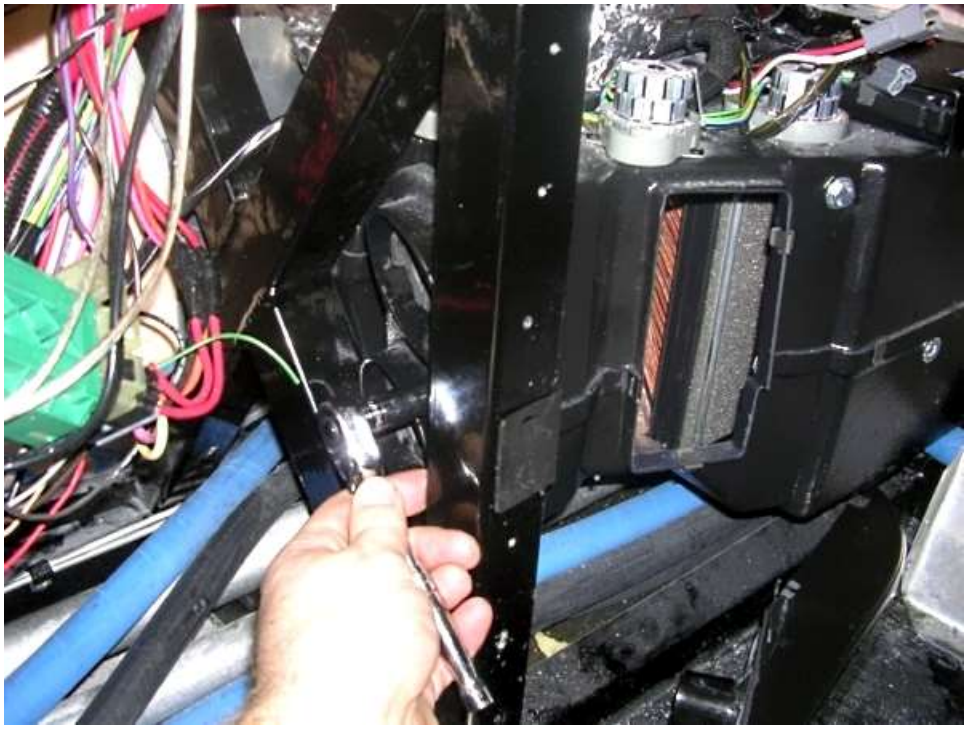


If necessary, lift up the Evaporator so that the lower screw fastening the Blower Motor Extension to it is on the inside of the ¾" diagonal. Make sure that the angled edge of the extension is parallel with the ¾" diagonal tube in the center of the chassis.

Before bolting the Evaporator in place, making sure that there is enough room for the hoses to connect to the Evaporator. Mark holes on the 1" tube at the front of the footbox using the Evaporator Bracket as a reference.

Move the Evaporator out of the way and drill two holes with a 25/64" drill bit and install two ¼" riv-nuts.

Move the Evaporator unit back into place and bolt it in place using the supplied ¼"-20 bolts (7/16" socket).



Bolt the FFR supplied bracket to the back of the Evaporator (7/16" socket).

Drill two $^{3}/_{16}$" holes in the bracket, then through the 1.5" upright and rivet the bracket to the frame.

Screw the Extension onto the Evaporator.

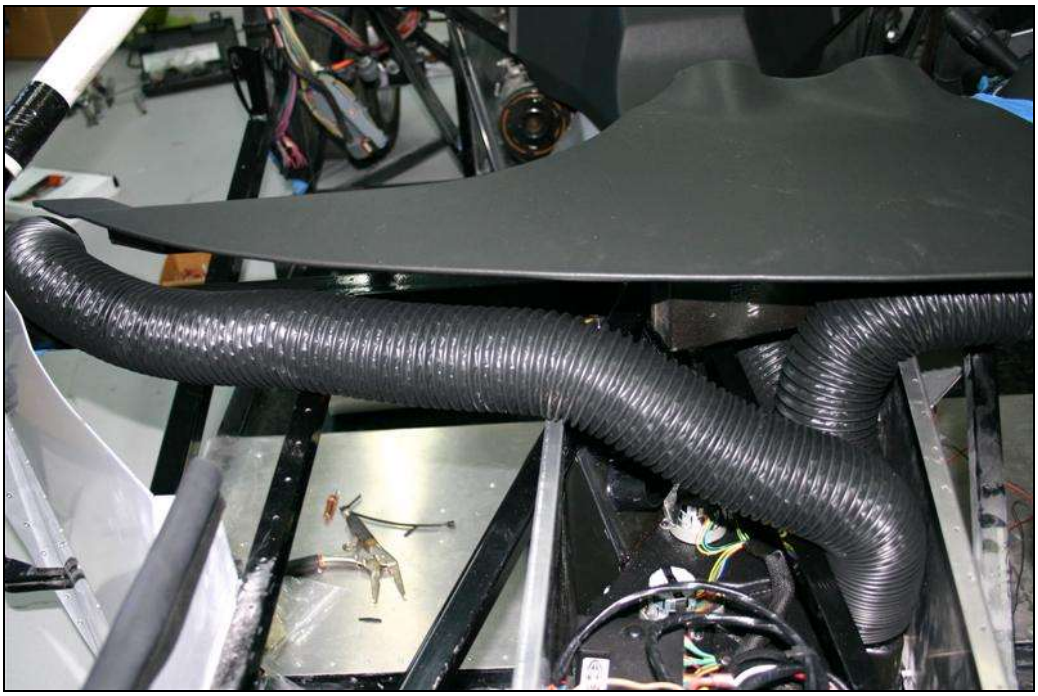
Screw the Blower Motor onto the Extension using the 6 supplied screws.

Install the supplied drain hose onto the port on the bottom of the Evaporator unit and route the hose to the bottom of the aluminum undercarriage panel. If possible, you can use one of the existing holes by opening it up with a 5/8" drill bit, or drill your own hole.

Following the manufacturer's instructions, wire the Heat/Air Conditioning unit and install the switch panel.

Trim the Footbox Center Roof Panel (FFR# 25181) to allow space for the dash vent and defroster duct hoses. Leave enough of the panel intact to cover the top of the footbox on the outside of the body and under the wiper enclosure.

Routing the hoses with footbox roof panel already trimmed.



Install the 2.5" duct hose for the dash vents using the 4 plenums on top of the Evaporator unit. The space between the plenums is pretty tight so you may want to tape or zip-tie the duct hose in place before moving on to the next hose. The center vents will need to be routed above the 1.5" square dash tube to clear the stereo.

Setting the dash in place temporarily as you route each hose will help to allow for the correct length and allow you plenty of access.

Use the forward most plenum for the passenger side pod duct, the rear two plenums for the center ducts and the plenum second from the front for the driver side dash vent.

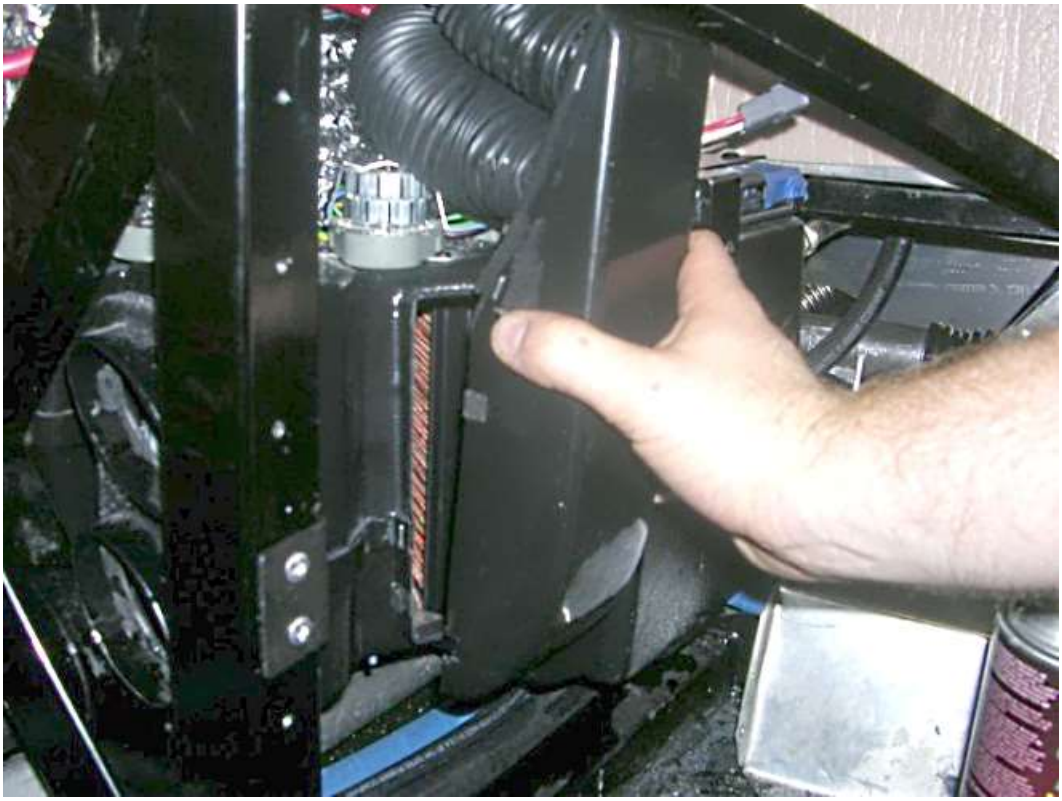
- Keep the hoses as tight as possible to maintain smooth air flow and lack of backpressure into the Evaporator.

Cut a small section of the 2.5” hose (about 4”) and fasten one end to the supplied hose adapter.

Install the other end to the top plenum on the back of the Evaporator unit (use a zip tie to hold each end in place) and route the hose to the bottom of the driver side inner footbox wall. Note the general location of the hose so you can locate the opening for the duct.

Using the supplied duct as a template you will need to trim an opening in the footbox inner wall aluminum.
Slide the hose over the duct and rivet the duct to the aluminum panel.
Repeat for the passenger side.

To locate the opening in the dash for the defroster ducts, using the duct opening as a template, place the duct on the underside of the dash such that the center of the opening is approximately in line with the side flange of the dash. Make sure you account for the body lip that the dash will rest on – you will have to space the holes a few inches in from the edge of the dash. If the vinyl is wrapped over the location where you will cut the hole, trim away the material so that the duct will sit flush.
Hold the duct to the underside of the opening and place the aluminum bezel around the hole on the top of the dash and drill ⅛" holes using the precut holes in the bezel as a guide. Screw the bezel and duct in place.



Install the 2" defroster hoses to the plenums on the side of the Evaporator unit.

Set the dash in place and connect the hoses to the defroster ducts, then to each of the 4 dash vents. This will require you to lie on your back and reach up towards the underside of the dash to install the hoses. The defroster ducts will be a tight fit but will slide over the tabs on the ducts. The dash vent hoses should slide easily over the dash vents. Make sure the hoses are secure and that they don't have too much slack in them (again, this is to maintain uniform air flow and limit backpressure in the Evaporator unit). If necessary, trim any excess off the hoses.
Now that you have completed the duct work and all of the wiring you can install the console panel with the switches already in place and plug the switches in.
This completes the installation process for the Evaporator Unit. The procedure for installing the Heater Control Valve, hoses to the compressor, condenser, and accumulator are covered in the Hose Kit Instructions.

GTM A/C Hose

- Heater & A/C hose kit

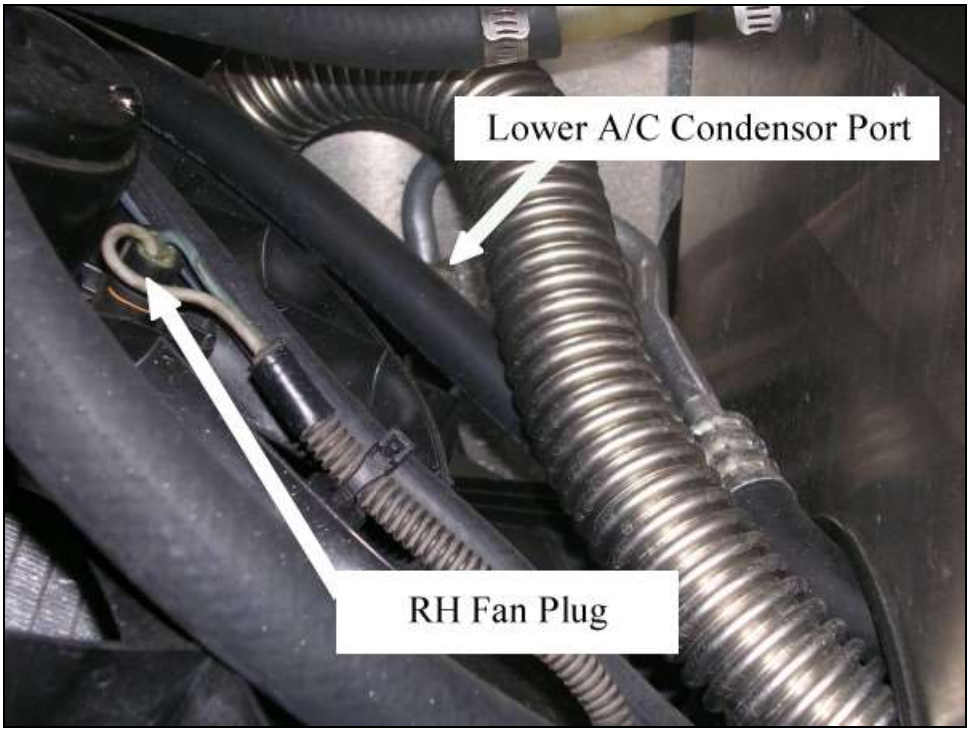
- 🛠 Rivnut tool, Wire cutters, Wire crimpers, 4 mm Hex key, 25/64" drill bit, Drill, 134a charge and oil kit
- ✋ Refer to the manufacturer's directions (See Appendices E, F) on routing the hoses for the A/C system. Before installing any of the lines, be sure that the supplied O-rings are in place and will give the proper seal.

Perform an inventory of all the parts included with the kit using the Vintage Air pack lists.
Install the two hard lines on the upper ports on the Evaporator unit according to the Vintage Air diagrams. If the Evaporator unit is bolted in position, it may help to unbolt the unit and move it into a position where you can tighten the hard lines in place. Leave the unit unbolted.

Locate the Corvette Accumulator on the chassis according to the picture below. Make sure that the line supplied by Vintage Air for the outside, larger line coming from the upper portion of the Evaporator unit (See hose routing diagram) will reach the Accumulator (Shown with hoses already installed).

Install a ¼”-20 Rivnut in the 1” tube and mount the Accumulator to the chassis with the Corvette bracket.

Install the upper, outside hose that connects the Evaporator unit and the Accumulator onto the hard line coming from the Evaporator unit (leave the Accumulator end disconnected for now).



Install the line connecting the lower port on the Condenser and the Evaporator port per the Vintage Air diagram.

Install the hard elbows onto the heater ports on the side of the Evaporator unit.
Now you will need to cut the ⅝" heater hose so that the end coming from the water pump can be connected to the heater outlet on the Evaporator unit and the other end of the hose you just cut can be hooked up to the elbow for the heater inlet.

Install the heater control valve in the 5/8" heater hose between the section you just installed onto the heater inlet elbow on the Evaporator and the Coolant Reservoir. Follow the supplied diagrams for instructions on how to wire the control valve.

Install the Orifice tube and A/C line according to the Vintage Air diagram/instructions.

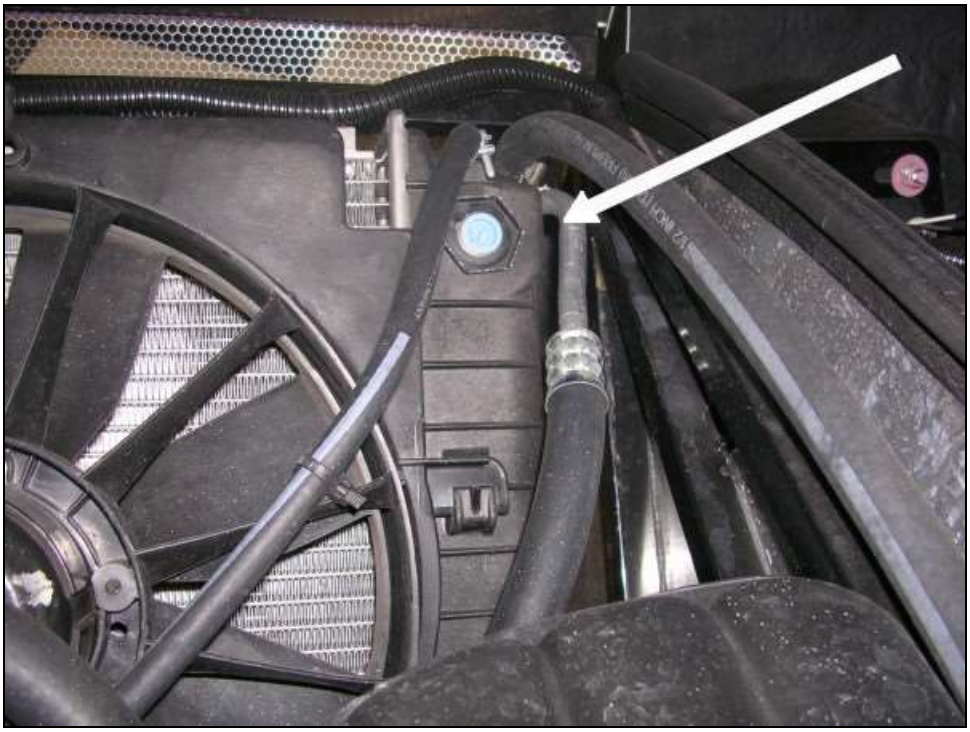
Locate the Corvette AC Pressure Sensor and O-ring. Attach the O-ring at the groove of the threaded NPT fitting of the short A/C line. Then attach the Corvette Pressure Sensor using a 10mm wrench.

- the pressure switch and A/C line are shown mocked in the center tunnel of GTM frame. Actual installations will require routing the A/C line around the center tunnel obstructions such as coolant lines, and shift linkage.

Route the compressor lines through the tunnel and connect them to the back of the compressor. If you haven't done so already, it will help to remove the interior engine cover to access the hoses.

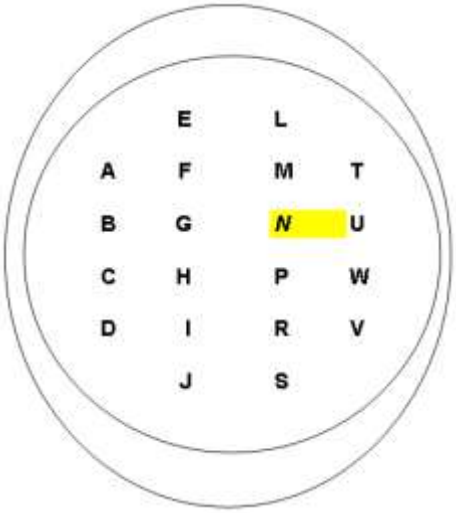
Once you have the hose routed through the tunnel, the end with the Low Side Service Port (blue cap, see diagram) will connect to the Accumulator using the Corvette bolt.


DANGER/POISON

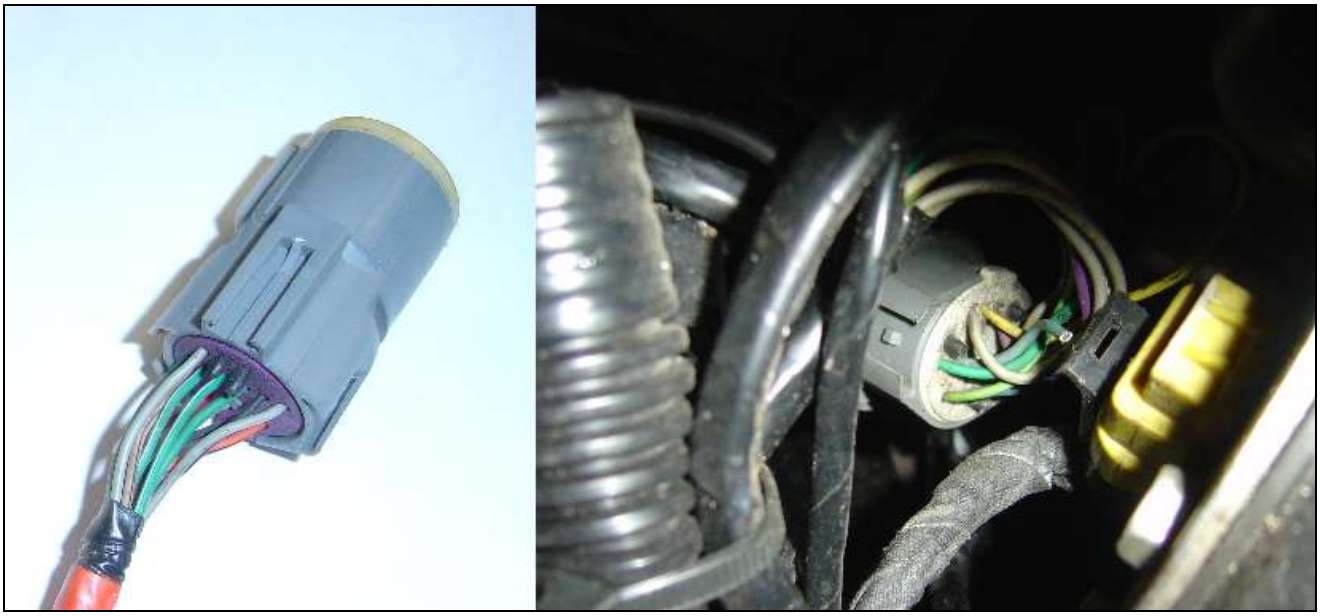


The other hose will connect to the upper port on the front side of the Condenser with the Corvette bolt.

Locate the “AC request signal wire” that the OEM HVAC used to tell the PCM to enable AC. This signal wire runs through connector C150 (the same connector used for OBDII signal and VSS signals), and is Dark Green and White. If you are using a stand-alone system, screw the safety switch onto the inline fitting specified on the Vintage Air Diagram as “Safety Switch” (See Appendix E) and wire according to the instructions.



- The pin that carries the AC request varies by model year (1997 Pin C, 1998-onwards Pin N). Consult your model year to find the AC request (which is Dark green and white), and trace it to connector C150. Be careful because pin L is also green and white but incorrect.

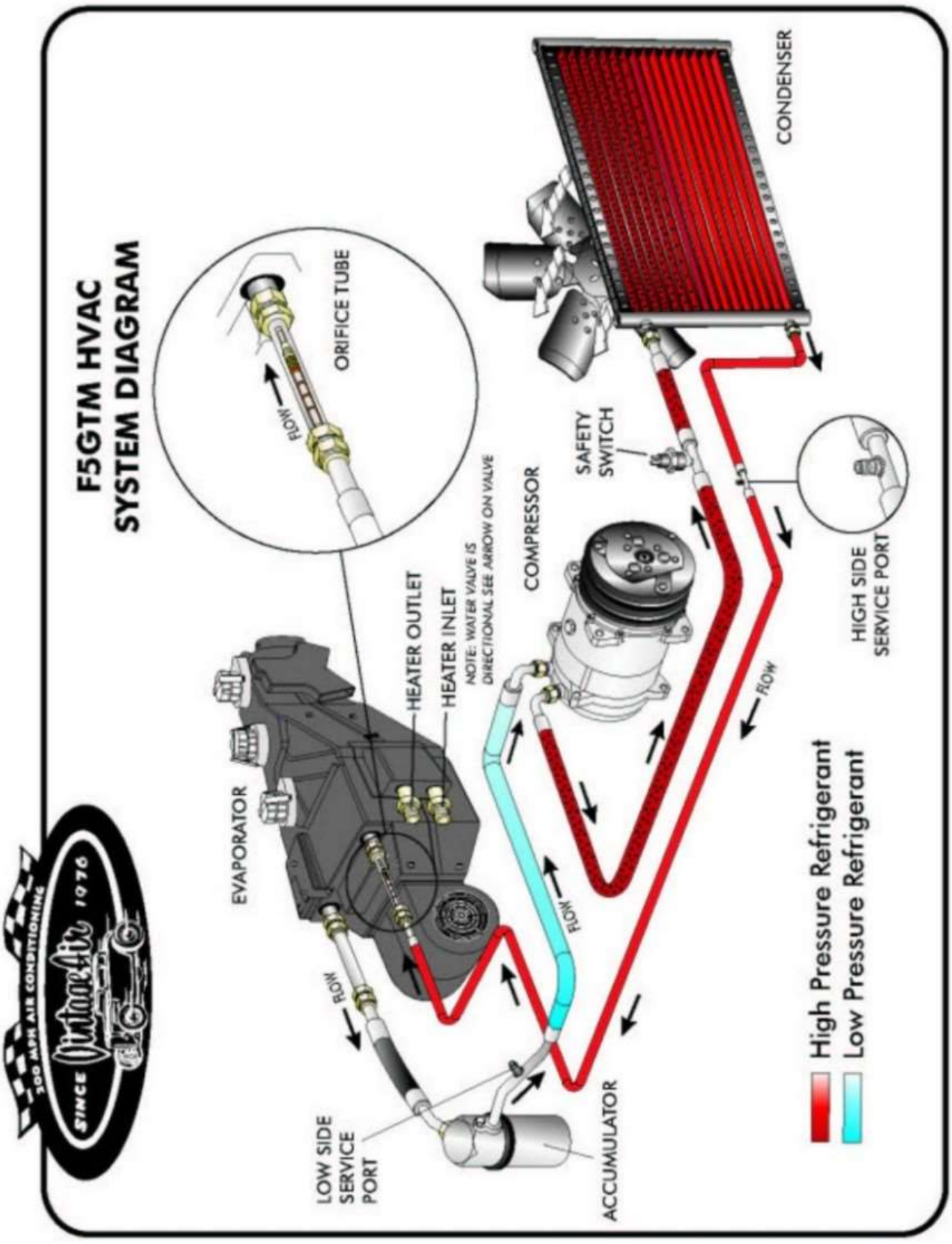


Supply power to the A/C request signal wire by connecting the blue 12V source wire from the Vintage air unit to the A/C signal wire (the vintage air power wire is Blue).

- You will need to keep the OEM compressor control wiring which are two wires. One is dark green and runs from the OEM fuse block C3 - Pin B9 to the compressor. The other is a black ground wire. 1997 Model Years differ***

Re-bolt the Evaporator unit back into place.
If your system had coolant in it already, you will have to re-burp the system according to the instructions in the assembly manual to keep the car from over heating.
Before installing the interior aluminum panels, you will want to have the A/C system charged by a professional shop and have them test for leaks. Once that is done and you have confirmed that the system is working properly, you can install the aluminum panels.

Heat & A/C Hose kit Routing Diagram



200 MPH AIR CONDITIONING
SINCE Vintage Air 1976

F5GTM HVAC SYSTEM
SERVICING PROCEDURE

- A/C SYSTEM REFRIGERANT CHARGING/FILLING TO BE PERFORMED BY ASE TRAINED & CERTIFIED PROFESSIONALS ONLY.
- USED COMPONENTS MUST BE FLUSHED BEFORE INSTALLATION & OPERATION. FAILURE TO FLUSH COMPONENTS MAY RESULT IN POOR A/C PERFORMANCE AND OR DAMAGE TO A/C COMPONENTS
- DISCARD USED ACCUMULATOR, REPLACE WITH NEW ACCUMULATOR BEFORE INSTALLATION AND ANY TIME SYSTEM IS OPENED FOR SERVICE.
- LUBRICATE ALL O-RINGS WITH SUPPLIED REFRIGERANT OIL.
- A/C REFRIGERANT CAPACITY: 24 oz TYPE 134a
- A/C REFRIGERANT OIL CAPACITY: 8 oz *PAG 150 OIL GM PRT# 12345923

ORIFICE TUBE INSTALLATION

- DETERMINE ORIFICE TUBE APPLICATION BY USE (SEE BELOW)

ORIFICE TUBE SPECS:

STANDARD DUTY .0471" BROWN
STANDARD DUTY APPLICATIONS:
(AMBIENT TEMPS TYPICALLY UNDER 98°)

SEVERE DUTY .059" ORANGE
SEVERE DUTY APPLICATIONS:
(AMBIENT TEMPS TYPICALLY OVER 98°)

- WITH LUBRICATED O-RINGS, GENTLY PUSH ORIFICE TUBE INTO HARDLINE STARTING FROM THE INLET SIDE. PUSH UNTIL ORIFICE TUBE IS FLUSH WITH THE OUTLET END OF THE HARDLINE. ***USE CAUTION- ORIFICE TUBE CAN BE DAMAGED UPON MISUSE.***