

FIERO SECRETS

by S.J. Wynman, AAI.

It has now been three years since I have spent a great deal of my spare time working on the Fiero, working with its idiosyncracies, exploiting its advantages, and correcting its weaknesses. Here are a few of the things I have discovered over the years:

FILTERS. The Fiero has the same filters that virtually every other GM car uses. So what's the big deal with filters? Just one which is the vacuum power brake booster filter. This filter prevents dirt from entering the power brake booster. It does a great job and would normally last the life of a car. That is every car except the Fiero. In both the V-6 and I-4 engines, the power brake booster filter is located in the same spot, in the center of the fire wall. Here it is exposed to severe thermal cycling (with extremes in heat), due to the proximity to the exhaust manifolds, water, snow, road dirt, and a variety of other environmental conditions which wreck havoc on this little filter. The problem is not that the filter gets dirty faster than in any other car, it is the filter ends up cracking causing small vacuum leaks. These leaks contribute to a hotter running Fiero, poor idle quality, and possibly a harder brake effort resulting from less boost available to the power assist booster. The secret here is to replace this filter at 50,000 miles with another one from GM. The GM part number is 17070814. Replace the engine to brake booster vacuum line at this time also.

COOLANT LEAKS. Now that your Fiero is passing the 7 to 10 year old mark, some new types of failures will be coming your way. There are several areas in the Fiero that leak (both the 4 and 6 cylinder). Here are a couple of new things to consider:

On the 4 cylinder models the thermostat housing develops a leak under the mounting flange. This is the area between the housing and the cylinder head. The only correction is to replace the housing with a newly designed unit as the original unit actually warps. The new piece has a built-in RTV formed "O" ring. You can purchase it from GM under part number 10038440.

Every pipe carrying coolant in the Fiero is made of stainless steel, aluminum, plastic, or rubber. The only exception is the cross over pipe on the V-6 engine. On 6 cylinder models the cross over coolant tube is made of painted mild steel and it rusts out developing a leak. Your only option is to replace the cross over pipe. Now comes the problem - GM has come up with a new design under the old part number for the automatic transmissions and manual transmissions equipped Fieros. The new design does not fit the manual models of Fieros. The good news is that you can use the automatic part for all applications, except the 1988 models. You must still modify it slightly for a proper fit. The 1988 models have their own part numbers and once again you should stick with the automatic part number.

Both the 4 and 6 cylinder cars have many coolant hoses. The 4 cylinder has four radiator hoses and five heater hoses. The 6 cylinder has 5 radiator hoses and 7 heater hoses. Remember to replace them all at 70,000 mile intervals.

VIN NUMBERS. Buying another Fiero (or your first one)? Suspect that this Fiero may have belonged to a less than honest person. Well you can check with a reasonable level of confidence. GM has put the Vehicle Identification Number (VIN) of the Fiero in many places. The most obvious is where just about every car has its VIN displayed. This location is on the drivers side by the windshield. The next (not so obvious) place to look in just below the left front speaker. You'll need a

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small flat blade screw driver to pop up the grill, then use a 7 mm socket to remove the left front speaker. Under this speaker, on top of the steering column support/dash support, you will find another VIN plate. This must be the same number as the one displayed in the windshield. If you take apart the center console or the dash panel you will find that GM has placed several tags (paper tags about 1" by 3"). These tags contain trim or component information along with the VIN of your car.

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COOLING THE REAR ENGINE COMPARTMENT. Many methods exist for helping to lower the engine compartment temperature of your Fiero. Here are some more:

- (1) GM has placed a sound deadening material on the front (behind you when seated in the Fiero) and on the two sides of the engine compartment. It is effective in reducing engine noise as heard both outside and inside the Fiero. Keep in mind that the 2.5 liter 4 requires this sound insulation more than the 2.8 liter V-6, as it is louder. It is also a good heat insulator, trapping the engine heat inside the engine compartment. Another bad side effect is this insulation material is a sponge for dirt. Not only does it look dirty after some time, but it contributes to a dirty engine compartment.
- (2) There is a "hole" cut into the right side panel, on the right side of the battery. This hole is normally covered by the sound deadening material described in (1) above. Those who do not wish to remove all of this material because of either the additional noise problem or changing your Fiero from true stock status, can still open this hole. You will have to remove the battery from the Fiero. Next press your hand against the insulation until you find the perimeter of the hole. Now cut the insulation with a razor. This hole will allow some additional air to flow in the engine compartment cooling both the engine and battery.
- (3) Add some cooling vents to your front hood. The way the Fiero radiator draws its cooling air is from underneath the car. This type of cooling is referred to as a "belly breather". The cool outside air then travels through the front of the radiator and out the back. This heated exhaust air is then passed out underneath the Fiero. Unfortunately, a great deal of this air is then passed to the engine compartment which is then further heated by the catalytic converter before passing through the engine compartment. Adding hood vents will take the air heated by the radiator and remove it from the Fiero allowing cooler air to be drawn from the sides and cooling the engine compartment.
- (4) For 1985 through 1988 Fieros only. There are two grills on the left and right side of the rear deck lid. The large black ones. This is where most hot air gets exhausted from the Fiero engine compartment. There is a thin louvered plate underneath the grills. Their purpose is to hide that ugly engine and engine compartment. If you don't mind the way the engine compartment looks, and want a cooler running Fiero, remove these two louvered plates.
- (5) Use a header wrap. This product, made by a company called Thermo-Tec, is used to contain the heat normally given off by headers. The manufacturer claims that this translates into more engine output power. I do not know if this is true, but I do know it will lower the Fiero engine compartment temperature. What you should do is wrap up the pipe between the exhaust manifolds and the catalytic convertor. Not only will your engine compartment be cooler, but the catalytic will be operational longer as it will remain at its proper operating temperature. This will make the task simple enough for most to handle (without having to wrap up the actual manifold(s)

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and/or cross over pipe) and should only take about 45 minutes to install. Use stainless steel hose clamps to hold the wrap in place.

THE REAR POWER HATCH RELEASE. About 50% of the Fieros have the power rear deck release option installed at the factory. This is a very convenient option. If your Fiero does not have this option, it can be added simply and you don't have to be a mechanic or engineer to install it. GM has conveniently installed the wiring harness into every Fiero. The only piece of the wiring harness missing is the run from the left or right hinge of the Fiero to the release solenoid.

All that is needed is a 4 foot length of wire with a 1/4" spade connector on one side with a bullet type of crimp connector on the other side. You will have to buy or remove from a wrecked Fiero the control switch (GM Part Numbers 10026609 for 1984 models and 10036559 for 1985 through 1988 models), the isolation relay (GM Part Number 25523703), and the hatch release solenoid (GM Part Number 20052845) which mounts to your existing rear deck latch mechanism with a 10 mm self tapping screw. As for what has to be done, here are some quick instructions:

- (1) Remove the right side switch panel (where the switch will be located), and make an opening to accommodate the switch. The screw mount terminals are already there. Use small 7 mm self tapping type (1/4" long) screws to attach the switch to the panel mount.
- (2) Locate the wiring harness which connects to the switch harness taped back onto the cluster harness. This harness may be more accessible if you remove the back panel of the instrument cluster (5 screws). Now just attach the harness to the switch. It will only fit one way. Reattach the switch panel to the instrument pod.
- (3) Go underneath the dash board and locate the unused connector just to the left of the stereo. Generally this connector is black in color and has three wires going to it. Install the isolation relay into this connector. Push the relay and connector back into the wiring harness area.
- (4) Locate the single wire connector found on the left hinge of the rear deck lid on 1984 and 1985 Fieros and the four wire connector found on the right hinge of the rear deck lid on 1986 to 1988 Fieros. Look for electrical Pin A of this connector.
- (5) Remove the knockout from the locking mechanism. Attach the release solenoid to the rear hatch locking mechanism with the 10 mm self tapping screw. Attach the 4 foot length of wire, with the spade connector to the solenoid. Run the wire inside the rear deck lid. Attach the other end to the connector mentioned in step (4) above.
- (6) To test the newly installed power hatch, turn off the engine and place the ignition switch to the run position. Set the parking brake (required if your Fiero has a manual transmission). Press the power hatch button and watch the rear deck lid unlock.

V-6 GAUGE INSTALLATION. In the later years, when the Fast Back Fiero GT and Formula were made, GM upgraded their gauge package. This upgrade moved the oil pressure gauge beside (the return of) the volt meter (last seen in 1984) to a new pod just above the center air conditioner ducts. The main instrument cluster, just as the new center pod, went to a new back lit design. This new design proved to be clearer and easier to read in both daylight and at night. Many people who own the non GT fast backs or Formulas wish they had this type of gauge package. Well it is possible - the hardest step in the process is finding these desirable gauges. Once you find a donor car, take the housing of the center gauge pod and the padded assembly just below it since this piece has the required cut out. Also grab the small wiring harness which connects the center gauge pod with the main Fiero wiring harness. If you are installing these gauges into a 1984, you must change the oil

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pressure sender unit on the engine. It is recommended that you purchase a brand new sender unit, since they do wear out, but you can take the sender from the car you are getting the new gauges from. If you are installing the gauges into a 4 cylinder car, follow the directions listed under Tachometer Conversion to have the new tachometer read correctly. Then follow the basic outline below to install the new gauges.

- (1) **1984 to 1985 Retrofit:** Remove the center console from the transmission shifter and forward. Make a five wire harness by running five two and a 2 1/2 foot lengths of wire together. Use the Table below to connect the new center gauge console to the wiring connector harness located behind right hand side of the main instrument cluster. Use 3M piggy back connectors to attach directly onto the instrument cluster wires listed below.

**Instrument Cluster Side
(Connector C3,
also called C206)**

Pin 6, Brown wire.
Pin 5, Pink/Black wire.
Pin 17, Tan wire.
Pin 11, Black wire.
Pin 3, Gray wire.

Gauge Pod Side

(with small wiring harness attached. Numbers in parenthesis indicate required pin on pod connector)

Brown wire. Alternator Field signal. (pin 1)
Pink wire with Black stripe. Switched +12 Volt. (pin 2)
Tan wire. Oil pressure sender signal. (pin 3)
Black wire. Ground for Instrument Pod. (pin 4)
Gray wire. Power for Instrument Pod night illumination. pin5

Screw this console into the holes used by the center front console. Now replace the center front console along with the other trim pieces which were removed.

- (2) **1986 to 1988 Retrofit:** Remove the center console from the transmission shifter and forward. Reach underneath the dash board and locate a six pin connector with five wires going to it. Attach the small wiring harness which was with the new gauge set and run it up and underneath the center A/C ducts. Plug the other end into the new center gauge console. Screw this console into the holes used by the center front console. Now replace the center front console along with the other trim pieces you removed.

TACHS FOR DIFFERENT ENGINES. Now it gets a little technical. The Tachometer design which GM uses on all of its newer cars is electronic. In an attempt to reduce cost and still maintain accuracy, GM has chosen a "pulse integrator" type of design. Simply put; your Fiero ignition module puts out "square waves". One for every spark plug output pulse. If you integrate the pulse, along with the "off period" (non-pulsed time) associated with the pulses you will attain an average voltage. The tachometer needle is displaying this voltage. The more ignition pulses, resulting from higher engine operation, the higher the displayed voltage. The actual integration is performed with a resistor and capacitor. GM changes the value of the capacitor depending upon whether you have a 4, 6, or 8 cylinder engine. If you change engines (4 to a 6, 4 to an 8, 6 to an 8, etc) the tachometer can read accurately again by replacing the integration capacitor. This capacitor looks like a small barrel with a silver wire coming out of each end and has the leads going to the circuit board. It is located on top of the tachometer circuit board. This means in order to gain access to the circuit board, you will have to remove the main instrument cluster from the car and disassemble it. Below is a Table showing which capacitor goes with each engine. Radio Shack should have these capacitors in stock for under a dollar. If the exact capacitor is not in stock, you can parallel them together to increase their value algebraically.

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Number of Cylinders	Capacitor Value in micro Farads
4	0.01 uF
6	0.0082 uF
8	0.0064 uF

ENGINE REMOVAL. Just about every maintenance manual and shop book on the Fiero informs you in order to replace or perform major engine work, you must remove the entire power train assembly (as one piece) from underneath the car. This is a great way to do the job providing you have a lift and cradle elevator to remove and replace the cradle. If you are working in your own garage (or driveway) this procedure becomes more difficult and even dangerous.

It is possible to remove the engine and transmission assembly (either the 4 or 6 cylinder engine) from the top of the engine compartment. A basic overview, or summary, of the steps required is being provided. For more details on some of the steps, consult your Fiero shop manual. For the V-6 engine, follow the basic outlined steps below:

- (1) Remove the two CV joints with drive shafts coming out of the transmission.
- (2) Remove all of the coolant hoses.
- (3) Remove the computer (ECM) and feed the wires out of the firewall. Drape the wiring harness over the engine. Remove the two battery cables. Disconnect the positive power feed at the positive battery block. Disconnect the (C100) connector and remove only the section of the connector associated with the wiring harness which will be removed from the car.
- (4) Remove the alternator and the alternator bracket.
- (5) Remove the upper and lower A/C compressor brackets and then the compressor itself. Tie the compressor onto the firewall of the car (DO Not allow it to hang from the A/C lines).
- (6) Remove the coolant transfer pipe located above the A/C compressor.
- (7) Remove the clutch slave cylinder and shift cables (manual transmissions) or transmission coolant lines with gear select cable (automatic transmissions).
- (8) Remove the coil and alternator air cooling pipes along with other heat shields.
- (9) Remove the engine and transmission mounts, including the dog bone mount.
- (10) Remove the engine and transmission as a single unit.
- (11) Reverse the process to reinstall the engine.

For the 4 cylinder engine, follow the basic outlined steps below:

- (1) Remove the two drive shafts coming out of the transmission.
- (2) Remove all of the coolant hoses.
- (3) Remove the computer (ECM) and feed the wires out of the firewall. Drape the wiring harness over the engine. Remove the two battery cables. Disconnect the positive power feed at the positive battery block. Disconnect the (C100) connector and remove only the section of the connector associated with the wiring harness which will be removed from the car.
- (4) Remove the alternator and the upper alternator bracket.
- (5) Remove the upper and lower A/C compressor brackets and then the compressor itself. Tie the compressor onto the firewall of the car (DO Not allow it to hang from the A/C lines).
- (6) Remove the clutch slave cylinder and shift cables (manual transmissions) or transmission coolant lines with gear select cable (automatic transmissions).

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- (7) Remove the engine and transmission mounts, including the dog bone mount.
- (8) Remove the engine and transmission as a single unit.
- (9) Reverse the process to reinstall the engine.

IDIOT LIGHTS. The auxiliary (center) gauge package contains two idiot lights. Hopefully yours will not light up unless they are going through self test during engine start up. Here is what they do:

The one for the alternator (located above the volt meter) actually jump starts the alternator. This lamp feeds the alternator field coil before the alternator regulator takes control over the situation. When the light stays on, you alternator voltage regulator or rotor is shorted out. If the bulb burns out, replace it. This will allow your alternator and battery to last much longer.

The light above the oil pressure gauge is connected to a solid state comparitor circuit. This circuit monitors the voltage level sent from the oil pressure sender to the oil pressure gauge. If the voltage drops too much (low oil pressure), the light will come on. The light will grab your attention faster then the dropping oil pressure gauge needle will.

GAGE ACCURACY. Your Fiero water temperature gage always reads a rock steady 195 degrees after it warms up. Your oil pressure gage is rock steady at 40 PSI. Your Fuel gage reads just past full after you fill the gas tank. Your volt meter reads a constant 14 volts. Then one day things begin to change, but the change is slow. Your water temperature creeps up to 200 degrees when running on the highway. Your oil pressure drops to 30 PSI after the engine warms. Your fuel gage reads a little less then full after a fill up. This leads you to believe you have a major problem or repair. You may be right, but then again your gages could be lying to you. Always start out trusting your gages. After all, if they were off by any real amount, why read them at all? Run the tests that you normally would (or have them run for you professionally) to verify that the indicated problem is not real. Of coarse if the problem is real, have it repaired immediately. After you determine the other tests reveal no real problem, it is time to check the gages. This is relatively easy on the Fiero. Your goal is to expose the back of the instrument cluster - this is done by removing the five Torx (T-15 torx head) and two bolts (7 mm head). Once the screws are removed you can remove the rear instrument cluster. GM uses a type of spring which makes a connection between the actual instrument and the flexible printed wire board. Look for any rust. (Yes rust.) Check for a rust discoloration around the spring and printed wire area. Now lift the spring enough to slip some 400 grit sand paper under it. Clean both the spring and printed wire area. Next spray either electrical contact or brake cleaner to finish up the job. Repeat this for all of the spring areas on the back of the instrument cluster. Those with Fiero GTs will have to do the same to the center gage package. If this still does not solve your problem, then check the gages sender unit.

DOG BONE BUSHINGS. So your rubber dog bone bushings are deteriorated. This is nothing new on the Fiero. The surprising thing is that you just replaced the dog bone mount less then a year ago and the original one lasted for a couple of years. Your problem is one (or more) of the transmission or engine mounts has gone south on you. These mounts deteriorate, and when they go your dog bone mount is soon to follow. If one of the other engine or transmission mounts is gone, replace all of them. This will not only save you time and money in the future, but may save your CV joints in the process.

URETHANE WINDOW SEALANT. Starting in the early 80's, GM started using a poly urethane sealer to hold the front and rear windows in place. Not only did this speed up window installation, but there was another benefit. The windows were bonded so securely to the car that the window had

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become a structural element of the car. The frame of the car is actually re-enforced by the glass. The draw back to this system is that specific installation techniques are required to either install or replace the glass. This includes special cleaning, the use of a urethane primers, and a mandatory curing time at a specified temperature. The secret here is to make sure a qualified glass installer replaces either your windshield or rear window.

One last note, although it does not apply to the Fiero, the windshield is now part of the "air bag" restraint system. After all, if the air bag deploys, it will have to stop a body from traveling forward. This means the windshield is actually the backing element which keep the air bag in place (once deployed). The air bag would not be too useful if your force against the air bag forced out the windshield. This is because the air bag would follow the windshield and guess who would be following the air bag.

COOLING THE IGNITION COIL. By now many Fiero owners have realized that the stock ignition coil does not provide the best performance, especially above 4000 RPM. The most popular replacement choice is the ACCEL Super Coil (part number 140008). You can add some more protection to this coil if you have the V-6 Engine (1985 to 1987 only). You should remove the left cooling tube which mounts with two 10 mm nuts onto the trunk wall. Cut it off 1.5" past the mounting flange and reinstall it onto your Fiero. Now go to your local home center and buy a plastic 1.5" 90 degree elbow. RTV it onto the stub remaining from the cooling tube you cut off. Point the unconnected end off the 90 degree elbow directly to the left side of the Fiero. Bolt on the ACCEL coil about 1" to the left of the elbow. This will provide cooling to the new coil in the same manner as the stock application, while also cleaning up the appearance of your engine compartment.

TRANSMISSION GEARS. Many people want increased horsepower or torque for faster acceleration. Their solution is to make dramatic improvements to the engine, or even swap in a bigger or more powerful engine. What all this does is increase the amount of torque being sent to the transmission. This is not only correct, but desirable. At this point the transmission increases the output torque of the engine. This is done through gear multiplication also known as gear reduction. The higher the numeric number found in the ratio between two gears (large gear and smaller gear), the more torque is multiplied and extractable from the second gear or smaller gear. Rotational speed is sacrificed in the process as the larger gear is rotating at a higher RPM than the smaller gear. This relates to your Fiero in that the total transmission gearing is very important in determining acceleration and in making comparisons between different car lines. Your top speed will drop somewhat as the engine will redline sooner. Fuel economy will decrease slightly, if at all. The Table below shows the manual transmissions used in the Fiero. You will notice with one exception all of the first gear ratios are very similar. GM basically did this for fuel economy and reducing the need to shift gears.

Many people joked about the "economy" transmission which GM offered in a few 1984 (only) Fieros. The reality of it is the transmissions used in the Fiero had a similar overall first gear ratio. This includes the desirable Getrag 5 speed found in many Fiero GTs. Approximately 55% to 60% of all Fieros produced in 1984 had the performance ratio transmission. The performance transmission offered in 1984 Fieros had a 4.10:1 final drive ratio unit.

The entire clutch set up is the same as all 4 speed Fiero set ups (all applicable years). As are the shift cables and slave clutch units. As a matter of fact, the entire 4.10 ratio transmission will bolt up to any 1984 through 1986 4 speed equipped Fieros. This includes all mounts, etc. You can install this transmission into any year (4 or 6 cylinder) Fiero, but you may need all new mounts clutch set up, slave cylinder, brackets, etc. Your 0 - 60 times should drop by 0.5 to 1.0 seconds. The junk yard

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price is \$100.00 to \$150.00 in the North East part of the country. Your used transmission could bring in around the same amount. Remember, there are only two transmission I.D. codes which had the performance ratio. These codes are UM and DW.

SEE GEAR RATIO CHART AT THE END OF THIS ARTICLE.

New Master/Slave Cylinder Clutch Parts: Just like your brake master cylinder and brake calipers can develop leaks, and either need rebuilding or replacing, your clutch master and slave cylinders can experience similar problems. If you decide to rebuild the defective parts, contact the F.O.C.O.A. They have the required kits which are easy to install and will save you some money in the process. If you want to bolt in a brand new part, don't go to your GM dealer. They can get it for you, but the price will shock you. Luckily, there are a couple of parts for the Fiero which the aftermarket supports. Go to your local parts store and ask for the BENDIX brand (only) replacement part(s). These parts are new and are of the same, or better quality than what you would get from your GM dealer.

Floating Brake Calipers: The mounting system for the brake calipers used on the Fiero are called floating type. This means the calipers have "O" rings which actually rides or floats on the caliper mounting pins. (All in all, this is a good design.) However, there is a problem in the way brake maintenance is performed. Most of the time when brake pads must be replaced, only the pads themselves are done. When you replace the pads, you should also replace the two "O" rings (per caliper). If you do not, you will end up with excessive movement, which affects braking performance and pad life. There are one or two solutions:

- (1) Buy the replacement brake pads from GM; they come with the new "O" rings.
- (2) Buy the new "O" rings alone directly from GM, part number 18001032.

Front End Alignments: Anyone who owns a Fiero has had it aligned at least once. Most of the alignment technicians despise the day the Fiero was made because of the amount of work required in performing the wheel alignments. The back of the Fiero is not that bad. Essentially it is the same as the front of a Citation (GM "X" car). All you have to set is the camber and toe in. The front end adjustments would be easier if you were not limited in what discrete settings could actually be made. Altogether there are three adjustments made to the front end.

- (1) Toe In. This adjustment is the same as it would be on most cars so there is no problem here.
- (2) Camber. This adjustment deals with the amount of wheel pitch the front tires have while pointing straight. This angle becomes compounded when the caster angle is added as the wheels are turned. In the Fiero you must turn the upper ball joint 180 degrees to set the camber. This means the camber setting can be set in only one of two positions. The technician must decide which of the two camber settings is closest to being ideal. Unfortunately, chances are it will not be where either the factory or you really want it. There are newly designed upper ball joints, which not only allow you to make the conventional changes, but allows for an additional 2 degrees of infinite adjustment. This will allow the technician to make the exact camber setting you wish.
- (3) Caster. This setting can annoy the technicians tremendously. The easy solution is for them to tell you that the caster is set just right, or that they made all of the necessary adjustments. However, the Fiero may feel like its pulling a little in the turns. To set the caster, the upper control arm must be partially disassembled. This

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allows for the installation of special washers (shims) which essentially moves the upper control arm either forward or backwards, thereby making the proper caster adjustment.

We can sell you a kit which allows for both the proper caster and camber settings to be made. The kit includes two new adjustable upper ball joints and a special shim set. Install the upper ball joint yourself prior to getting the wheel alignment, and give the shim kit to the technician performing the actual wheel alignment.

Head Rest Speakers: In my opinion GM has never made a good set of stereo speakers. GM realizes this as they have been installing BOSE Systems in their high end cars. GM then put low quality speakers in the head rests of 1984 and 1985 Fiero seats. Unless you are, or personally know an upholsterer, getting to the speakers is just about impossible. For 1986 through 1988 Fieros GM realized their mistake and put slightly better quality speakers into the "B" pillars. This is the area just behind the upper seat belt mounts. It will take some work and some metal cutting, but you can install quality 4" X 6" speakers into the later stock location.

To sum up what is required to install the new speakers: Remove the upper and lower seat belt mounts Remove the two rear left and right trim pieces, and cut the appropriate holes for your new speakers. Run the new wires down to meet the original head rest speaker seat connectors and wire them in parallel with the existing head set speakers. Remember these connectors have both right and left speaker signals so choose the appropriate wires to connect to. Reverse these steps to complete the installation. If you decide to run the new speakers along with the old head rest speakers, make sure the impedance of the new speakers is at least 8 ohms. This, in parallel with existing 10 ohm head rest speakers, gives a combined impedance of just over 4 ohms. The GM (and most other stereos) can handle this reduced impedance. If the impedance becomes too low, you will blow out the stereo.

Dead Pedal: Did you ever notice the non-carpeted area by the left front wheel well and wonder what it is called or used for. This area is known as a dead pedal. It is called a dead pedal because it does not do or control anything in itself. However, it does allow you to do something though. When you are pulling those high G's going around corners, it gives you a place to plant your left foot. With your left foot firmly planted, your body has a better chance of staying planted in the seat, where it belongs. This will allow you to enjoy those high speed turns. Those of you with manual transmissions will still have to perform a balancing act while you play with the clutch and shifter, but once in a while you can pre-select the next lower gear before entering the turn and make use of the dead pedal.

Rev Limiter: Did you ever wonder what would happen to your engine if you went beyond the redline shown on the tachometer. Will the engine blow up? No, the reality of it is the valves will begin to float. When the valves float they are not in constant contact with the cam shaft. What this means is that the lifters will come down hard onto the cam shaft's lobes, essentially a hammering affect. The overall affect is a reduction in power due to a new and excessive intake/exhaust valve opening overlap as well as the destruction of your cam shaft and lifters. GM actually likes your Fiero motor (this is really a warrantee concern when the Fiero was in production) so they took the proper precautions. GM built in a rev limiter into the V-6 engine. This rev limiter shuts off the fuel injectors at 6000 RPM. This way your motor is protected. The 4 cylinder may have a rev limiter built in by I have never found the need to get above 5000 RPM because the motor stops making power before that point. Unfortunately, when the rev limiter kicks in, you will notice it immedi-

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ately. You will feel as if your engine stalled (which it essentially does) and the brakes are being applied. Normal engine operation will resume when the RPMs drop below the red line. The information pertaining to the rev limiters engagement RPM is part of the computer code in your Fiero's ECM PROM.

New Heat Shield for the Alternator: One of the improvements made in the 1988 V-6 Fiero was a newly designed heat shield for the alternator. This heat shield bolts around the rear exhaust manifold using three of the existing manifold bolts. GM still sells this heat shield under part number 10065518. This is a low cost method of adding thermal protection to the alternator. Once installed, you can eliminate the heat shield attached directly behind the alternator. GM was so convinced this approach was better than the 1985 through 1987 design, they eliminated the supplemental cooling system.

Broken Clutch Slave Cylinder Mount: Just when you thought you heard all the Fiero clutch fixes you find out about one more. This one deals with the clutch slave cylinder mount. This is where the slave cylinder mounts onto the transmission. Fortunately (or unfortunately), depending on which Fiero you own), this problems only plagues the 1985 and 1986 V-6 Fieros with the 4 speed manual transmission. The clutch slave mount fractures. At the beginning you will notice the clutch not fully disengaging. It will eventually snap off completely, making your clutch pedal useless. You can get the Fiero home or to another destination, but it is not recommended for safety reasons. To get the Fiero home put it in first gear and turn the key. This will start the motor and get you moving immediately in first gear. Once you have some speed, pull it out of first and push it towards second gear. Change engine speed with the gas pedal until the shift lever drops into second gear. Do this for all 4 gears. Use the brake to stall the motor and stop.

Radio Tricks: Did you ever wish your GM Fiero stereo had more then four preset stations. Well it may have up to seven. This doesn't work on all GM stereos, but it works on most of them. Accessing the other three is actually very easy. Simply push two buttons simultaneously, which are next to each other. Setting the extra three stations is just as easy as selecting them. Tune in your station, press the set button, and then press the buttons for either the 5, 6, or 7 station selection.

Some Buicks (and other GM divisions) have an all push button radio model. This means that even the volume control level is made by pressing a button rather than turning a knob. Many of these radios are made in two sections, to allow for space considerations. You can make them one piece radios for installation in your Fiero. Simply order two mini cables, part numbers 16151004 and 16056833. On one of the cables you will have to switch some pins from one connector to another, but once the cables are in front of you it will become obvious what must be done.

Spare Front Trunk Release: Not often, but every once and a while, it is possible for you to run into an unfortunate situation. This could happen when you have to get into the front storage area of your Fiero. Pull the release handle, then hear and feel the release cable snap. Given Murphy's Law, the reason you were trying to get into the front storage area was to get the spare tire to replace a flat. Now you really feel stuck. Well, GM actually thought this one through. There is a second cable which runs right along side the first cable, all within the same housing. If you look just behind the release lever you will see a piece of metal, about 3/8" in diameter and 5/8" long. It actually sits in its own holder. Just pull it down out of its holder and pull straight back. Your front hood will pop up. Now you can get that spare and are able to replace that broken release cable.

How to Open the Gas Door: Your gas gage reads just past empty and you know your in trouble

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unless you find a gas station right away. When you finally find one and give a sigh of relief, you pull the gas door release lever and nothing happens; the cable has snapped. Now what do you do? Did you ever hear the commercial, "Don't leave home without it"? Take out your credit card, bend it slightly, and slip it into the small space between the gas door and body of the car, just where the locking mechanism is (towards the rear of the Fiero). Now the gas door opens. This trick works with most credit cards (or even your F.O.C.O.A. membership card - "Don't leave home without it").

MAT Sensor: This is only for the V-6 equipped Fieros. There is a sensor located inside the air cleaner housing, which is one of the most important sensors that your V-6 Fiero uses. This sensor is called the Manifold Air Temperature Sensor, or MAT Sensor for short. The MAT Sensor measures the temperature of the air entering your V-6 Fiero engine.

The newer GM Fuel Injected cars control the air/fuel ratio by using one of two methods:

The first method uses a Mass Air Flow (MAF) Sensor as its primary input. This Sensor actually measures the density of the air which is about to enter the throttle body. When the ECM calculates the amount of air entering the engine, based on the input from the MAF Sensor and the Throttle Position Sensor (TPS), the ECM knows how much fuel the engine needs.

The second method is called a speed density measurement system. This is the system your V-6 Fiero engine uses. It bases fuel delivery requirements on input from the MAT Sensor, the TPS, and the Manifold Air Pressure (MAP) Sensor. The assumption is, if you know what air temperature the engine is about to use, and the angle of the TPS tells the ECM how much air volume can physically enter the engine, the ECM can then calculate the fuel delivery requirements.

Now the problem may be a little easier to understand. Although the sensor is on the "clean" side of the air cleaner, it is still living in a semi-harsh environment. This occurs from the constant thermal cycling and a varying moisture environment. I don't mean the sensor gets wet, but the relative humidity can vary quite a bit, allowing for moisture to build up and then dry off. The result: Your MAT sensor loses its accuracy. Not only does it lose its accuracy, but its entire dynamic resistance range shifts in a direction to indicate the temperature of the air is higher than it actually is. The ECM compensates by reducing the fuel flow through the injectors. What you have is a Fiero which is not performing up to its potential. The ECM will not detect any errors in the form of a trouble code, unless the sensor is either totally shorted out or goes open circuit. The good news is this sensor only costs about \$15.00 from AC Delco and it is one of the easiest sensors to replace. Simply remove the left side engine grill, remove the two wire connector, and with a 3/4 (19 mm) wrench - remove the sensor. To replace it, reverse these steps. The part number for the MAT sensor is 25036751.

Hard Starts: Does it take longer to start your Fiero than it did just a short time ago? Does this problem really show itself for the first start of the day? Well than one of your Fiero's fuel system components may have a problem. Before you begin testing, have your fuel injectors cleaned. This problem can exist on either the 4 or 6 cylinder Fieros. Assuming your ignition system is in good shape, and there is a delay in starting your Fiero, one of the following parts could be causing your problem:

- (1) Leaking Fuel Injector(s)
- (2) Leaking or Defective Cold Start Injector
- (3) Defective Fuel Pump Check Valve
- (4) Defective Fuel Pressure Regulator

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- (5) Defective ECM Fuel Pump Relay Driver
- (6) Fuel Pump Control Relay.

To isolate the problem, or at least perform a partial isolation, you will need your ears, a mechanical fuel pressure gage, and a voltmeter.

- (a) The first test is to listen to the fuel pump. Does it turn on for 1 to 5 seconds when the key is first turned on? If you hear the pump turn on immediately, go to (b). If not, remove the plastic cover around the cigarette lighter. Using the voltmeter, place the negative into pin A and the positive lead into pin G of the ALDL Test Connector. Repeat the test and look for a voltage above 6 volts. This voltage will not last long as the ECM turns off the fuel pump relay. If no voltage is present, the problem is with the ECM Fuel Pump Relay Driver. Your easiest choice is to replace the ECM, but it is possible to replace the applicable driver power transistor for a total cost of \$8.00. If a voltage is present, the fuel pump relay is probably defective. The fuel pump relay is found on the left side of the firewall. There are several relays there, however look for the one with 4 wires colored orange/black, black, black/white, and dark green/white. Replace the relay with part number 10034222.
- (b) If (a) did not solve your problem, then it is an internal fuel leak. Although this type of leak is not dangerous, it can be a nuisance. These next steps require the talents of a professional technician as working with pressurized gasoline can be dangerous. Place the fuel pressure gage directly in line with the fuel pump output line. Turn the ignition on for five seconds, off for ten seconds, and back on for 5 seconds. This should maximize the fuel pump output pressure. The pressure will be very high as the fuel pump output is being dead ended. Watch it bleed down. It may bleed down to about 35 pounds quickly, but it should not drop below 30 pounds. If it does, either your fuel pump internal check valve, fuel injectors, or fuel pressure regulator is defective. Continue onto the next step to isolate the problem.
- (c) Remove the vacuum line from the fuel pressure regulator. Next remove the return line from the fuel return pipe just off the fuel rail. Place a rag at this point to catch any fuel dripping out of the return line. Turn the ignition on for five seconds, off for ten seconds, and back on for 5 seconds. This should maximize the fuel pump output pressure. If the fuel regulator seal is good, no additional fuel should be leaking out of the return line. If there is more than a few CC's of gasoline coming out of the return pipe, then the regulator is defective. Another area to look for here is the vacuum port on the fuel pressure regulator. Check for any gasoline at this point. If there is, once again, the fuel pressure regulator is bad and will need replacing.
- (d) Now connect the fuel pressure gage directly to the output of the fuel pump by removing the pressure feed from the fuel rail. Turn the ignition on for five seconds, off for ten seconds, and back on for 5 seconds. This should maximize the fuel pump output pressure. The pressure will be very high as the fuel pump output is being dead ended. Watch it bleed down. It may bleed down to about 35 pounds quickly, but it should not drop below 30 pounds. If it does your fuel pump internal check valve is defective and the pump will have to be replaced to correct the problem.
- (e) If steps (a), (b), (c), and (d) have not provided you with any answers to the problem, then you have either one or more leaking fuel injectors and/or a leaking cold start injector. The proper method to check both possibilities is to remove all of the injectors (including the cold start injector) from the Fiero and pressure test them all individually.

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You may have an additional clue by pulling the spark plugs and checking to see if they are wet from gasoline.

Another Coolant Leak: Just when you think you have replaced all of the possible parts which could cause coolant leaks, along comes another one. This one is only for those with the V-6 motor. The thermostat housing has two small additional lines going to it. These are lines which carry the heated coolant to the throttle body. The purpose of running the coolant through the throttle body is to ensure it is operating at a temperature above freezing. This keeps the throttle plates from icing up in the winter.

The two small mild steel pipes connected to the thermostat housing are pressed into the housing, and are then brazed in place. Over time guess what? The area around the small pipes rusts out and the little pipes literally pop out of the thermostat housing. You end up getting all of you coolant pumped out of the engine within a few minutes. The moral of the story is to replace the thermostat housing every five or six years and your Fiero is at least that old now. Have you changed your thermostat housing lately?

Fiero Improvements.

Rear Power Door Opener: This falls in the category of making your life a little easier. How many times did you have to put something in your Fiero trunk only to have to find the door key moments later to open the drivers side (or passengers side) door? GM thought this was a real problem with Cadillac owners so they installed a trunk mounted power door lock opener. You can add the same feature to your Fiero, provided you already have power door locks. The switch part number is 25553772, and it has the proper door symbol printed on it. Wiring it up is easy also. The hardest part is running the two wires from the switch to the left door harness. Connect two wires to the back of the switch, and find a convenient place to mount the switch. Run the wires in the wiring harness on the left side of the Fiero. There is a large rubber bushing which the parking brake cable runs through into the cabin of the Fiero. Force the two wires through this bushing (along side the parking brake cable). Remove the necessary trim pieces and run the wires to the left side door wiring harness connector, near your left shin. Connect the two wires to the orange and black colored wires, and your finished.

Power Rear View Mirror: Due to the fact that the Fiero sits so low, you are more prone to being blinded by the headlights of the cars behind you. GM has come up with an answer, the power rear view mirror. This mirror will automatically switch to the night time mode when a car with bright head light approaches from the rear. You still have increased visual sensitivity when there are no bright lights behind you. The mirror has two more features, a sensitivity control (which controls when the mirror switches modes, as a function of the distance of the offending car lights behind you), and an automatic return to normal mode when you put the Fiero into reverse. The new mirror will slip onto the same windshield mount as the old mirror. You may break one or two trim clips which hold the molding to the "A" pillar. Just in case you should need them. Their part number is 20462090. This new clip design may also reduce or eliminate any squeaking noises coming from the "A" pillar area. The three electrical connections are simple to make and all the necessary hardware and instructions are included in the kit. The part number of this mirror is 12341282. The cost ranges from \$75.00 to \$130.00, depending on the mood of the GM parts salesman. This is considered a special accessory and has no real list price, so the dealer marks it up from their cost.

Better Radiator Cooling: GM has developed an auxiliary cooling fan. This cooling fan is mounted

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on the front of either your radiator or A/C Condenser. The fan is considered a pusher type as it pushes air through the radiator from front to back. The advantage this fan has over aftermarket fans is that it has a very low obstruction to air flow when it is off. When it is switched on, it will move enough air to keep your Fiero cooler, even at idle. The part number for the fan kit is 14044870. As it is a kit, just about everything you need to mount it is included.

Radar/Laser Detector Power. Many Fiero owners also have their own Radar/Laser Detectors. Most of the detectors require 12 Volts DC to operate. They come with a cigarette lighter adaptor, but then you have to deal with that power cord draping all over the interior of your Fiero. Not only is this a bother but:

- (1) You loose the use of the cigarette lighter for other devices
- (2) The fact that you have a Detector is now visible (by seeing the draping power cord) to any law official who may be wondering why your going a little fast
- (3) The fact that you have a Detector is now visible to a potential thief who feels he needs the detector more than you do.

The best thing you can do is "hard wire" the detector into your Fiero. This is relatively easy: Remove the triple dome light over the front center of the headliner. Cut the detector power cord approximately 18 to 24 inches from the detector connector. Use 3M type quick connectors to make the actual connections to your Fiero. To remove the dome light assembly you will need a T-15 Torx Driver and a phillips (no. 2) screw driver. Once the dome light assembly has been lowered attach the positive wire of the detector power cord to the orange wire found inside the dome light assembly. Make sure you have the positive side of the cable. This can be verified with a volt meter. The negative wire from the detector power cord should go to the black wire found inside the dome light assembly. Now run the detector power cord between the headliner and roof near the sun visor of your choice (drivers or passengers side). Replace the dome light assembly and you are finished.

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