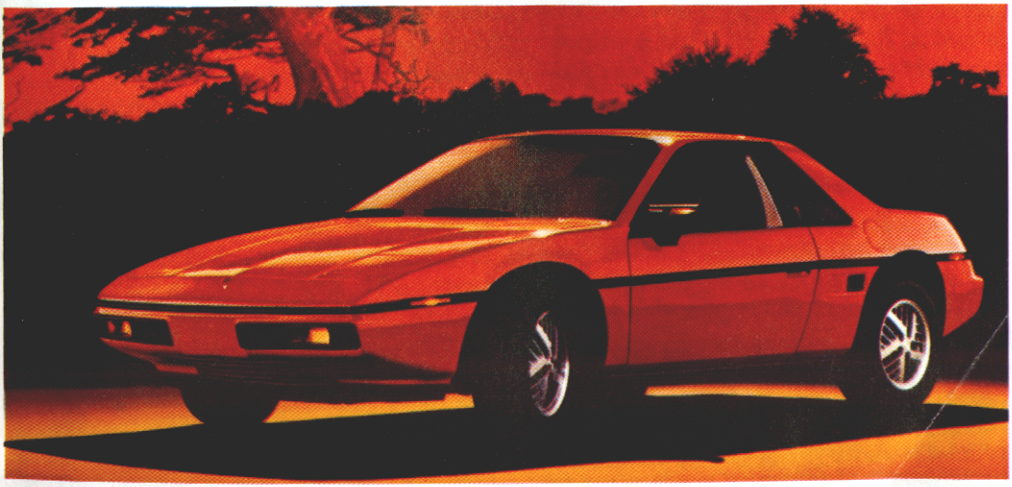
PONTIAC

1986 DO-IT-YOURSELF

FIERO

This book provides introductory "enthusiasts" information, "do-it-yourself" service procedures, and specifications for the 1986 Fiero. It supplements your Owner's Manual, Maintenance Schedule and Warranty and Owner Assistance Information booklet. We urge you to read these publications before driving your Fiero.

All information, illustrations, and specifications in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.



INTRODUCTION

SECTION 1

"Fiero." It means "Very Proud." This description applies, not only to your new Pontiac, but to individuals like yourself who have recognized an outstanding value in personal transportation.

Fiero is a world-class car, incorporating design features found in some of the world's most exotic offerings. Features like mid-car engine placement, 4-wheel independent suspension, 4-wheel disc brakes and electronic fuel injection are not commonplace in the automotive market. This kind of technology is reserved for an elite breed of automobile whose purpose in life is performance. Fiero is such an automobile.

Mid-Engine Design - Weight Where It Works

Fiero is a true mid-engined vehicle. Its engine is transversely mounted behind the passenger compartment, above and slightly ahead of the rear wheels.

This design provides a substantial measure of tractional competence, by putting the engine's weight over the drive wheels. It also allows for distinctive styling, as the front end need not be shaped to accommodate the engine.

While it is true that form should follow function, Pontiac believes that the form derived need be no less pleasing than the function it provides.

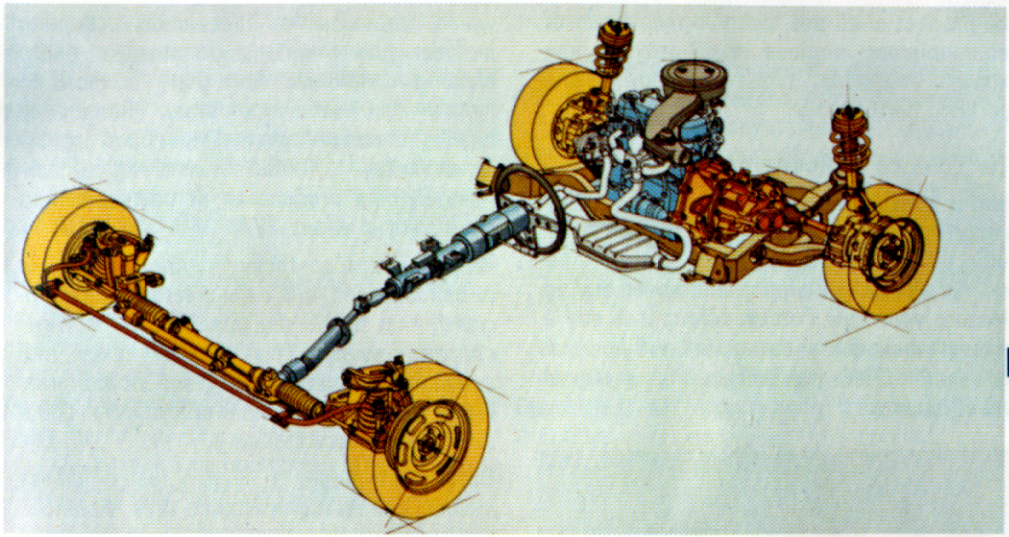
Fully Independent Suspension Means Road Compliance

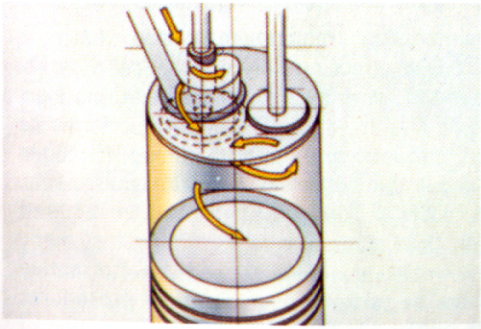
While nearly all rear-wheel drive cars have *front* wheels that are suspended independently of each other, very few have an independent *rear* suspension. Fiero's engine is coupled to a transaxle which drives the rear wheels through two half-shafts. This allows the rear wheels to be independently suspended by means of McPherson struts and control arms. This offers two main benefits. First, the jounce, or up-and-down movement, of one rear wheel does not affect the location or attitude of the other. Second, because there is no heavy, live rear axle, unsprung weight is reduced. The result is a ride which, although responsive, is pleasantly supple over rough roads.

Fiero - Power on Tap

When asked to accelerate, Fiero responds with its 2.5 liter 4-cylinder engine or its 2.8 liter 6-cylinder engine. The 2.5 liter engine comes equipped with Throttle-Body Fuel Injection (TBI). The 2.8 liter engine comes equipped with Multi-port Fuel Injection (MFI). Both systems are also called Electronic Fuel Injection (EFI).

The EFI system provides accurate and consistent fuel delivery over a wide range of operating conditions. The Electronic Control Module (ECM) - a small "on-board" microcomputer - is the heart of the system. Through a network of sensors, the ECM monitors throttle position, manifold vacuum, coolant temperature, exhaust oxygen content, RPM and vehicle speed. The ECM uses this information to modify



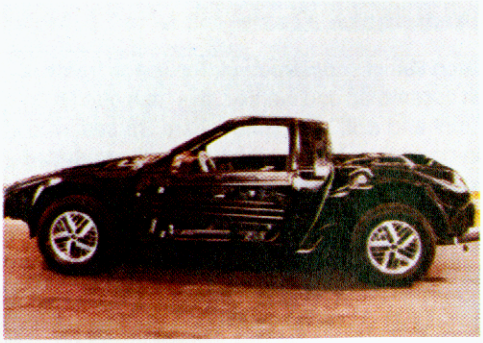


the amount of fuel delivered by the fuel injector. The object is to maintain an air/fuel ratio which is as close as possible to the Stoichiometric ideal of 14.7 to 1.

The ECM also uses sensor information to adjust spark timing as the vehicle is being operated. Thus, ignition occurs at just the right moment for conditions at hand.

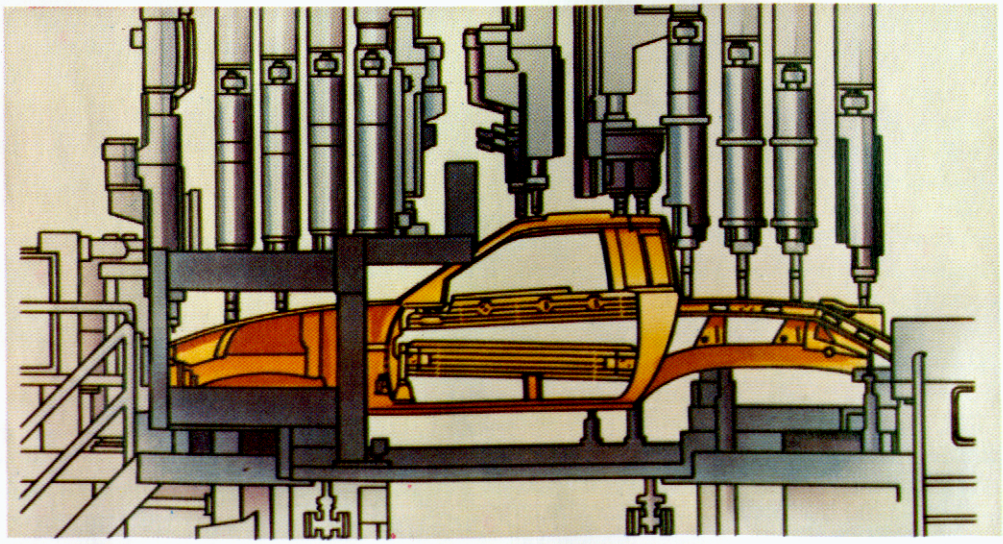
The 2.5 liter engine incorporates a swirl-port cylinder head, which is designed to force the intake air/fuel charge to follow a spiral path into the combustion chamber. The resulting turbulence creates a homogeneous mixture, which burns smoothly and completely. In addition, the cylinder head cavities and piston domes have been designed to achieve a compression ratio of 9.0 to 1.

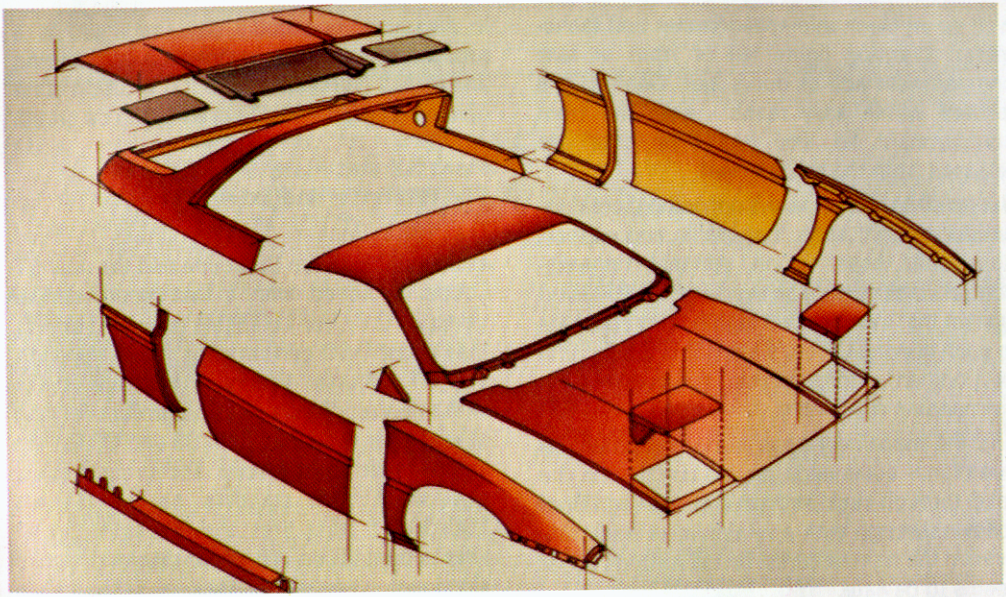
The 2.8 liter V6 engine operates in much the same way as the 2.5 liter 4-cylinder, except that it has an individual fuel injector for each cylinder. It is available with your choice of a 4-speed manual transaxle or a 3-speed automatic transaxle.



Pontiac engineers refer to as a "driveable chassis" - a mechanically complete "sub-car," so to speak. Since the driveable chassis lacks body panels and trim, engineers continue to have ready access to mechanical systems until late in the production cycle. This means that the car can be conveniently inspected, allowing for outstanding quality control.

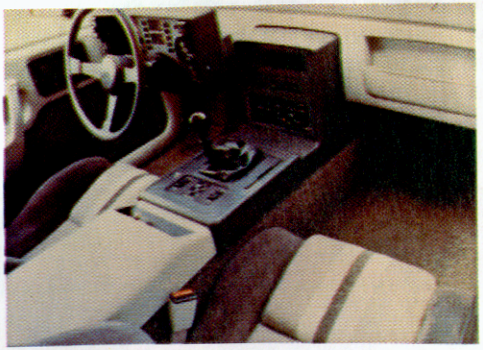
Meanwhile, the body skins, which will be attached to the driveable chassis, are fabricated from two space-age materials. The fenders, front fascia, doors and lower quarter panels are high-grade, glass flake reinforced RIM urethane, while the front and rear compartment lids, roof panels and upper quarter panels are rigid SMC (sheet molded compound). These non-corroding materials afford excellent dimensional control, while yielding a substantial weight saving over steel panels.





Before final assembly, the panels are painted, utilizing one of the most advanced paint-application systems in the world. In this process, a high-solid base coat and clear enamel gloss-coats are electrostatically applied, for a finish of striking beauty.

Finally, the body skins are *bolted* (for ease of removal and replacement) to the driveable chassis. Fiero is now complete - a visually pleasing package which, thanks to its unique construction, is as roadworthy as it is attractive.



You and Fiero - A Command Performance

Without question, this is a driver's car. Fiero's compact instrument cluster, which is futuristically suspended in front of the driver, includes a temperature gage and oil pressure gage, as

well as an electronic speedometer and tachometer. Warning lights tell of front or rear compartment lids or doors ajar. Controls are located within easy reach - even the front compartment lid and fuel filler door are released from the driver's seat.

But for all its utility, Fiero is not without creature comforts. From seats that cradle and support hour after hour, to an optional fingertip-controlled climate, to an available stereo sound system that includes two high fidelity speakers in each headrest, Fiero's interior is a delightful environment from which to control the surrounding machinery.

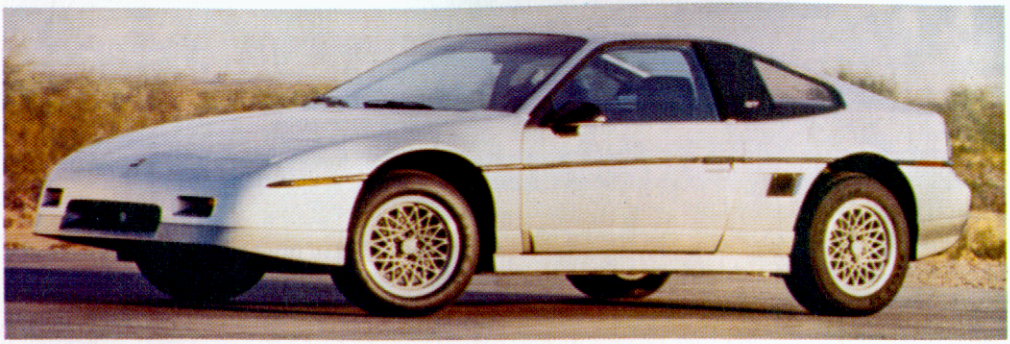
And the machinery begs to be controlled. As directional commands are transmitted to the road through rack and pinion steering, Fiero follows through with a minimum of body roll. Even in the tightest turns, its flat attitude never seems to deviate.

Fiero's fuel-injected power gives a feeling of competence underfoot - competence which is well matched by its braking performance, thanks to power-assisted discs at all four wheels. In all, the driving experience is reassuring, while providing a high level of enjoyment.

In summary, one could say that Fiero is a product of performance-oriented engineering and skilled workmanship. But it is also a state of mind. Enjoy it – you have a right to be proud.

Fiero SE and Fiero GT - Added Performance and Power

The 1986 Pontiac Fiero continues to build excitement with the SE Coupe and the new GT Coupe. Equipped with a four-speed manual transaxle 2.8 Liter V6 engine (standard on GT), they boast 0-60 performance in 8.5 seconds. The GT features distinctive fastback styling with a new rear fascia, with integral spoiler, and new quarter windows. Both SE and GT feature aerodynamic front fascias and ground effect side skirts. Also standard on the GT are 205/60R15 front tires and 215/60R15 rear tires mounted on 15 inch diamond spoke aluminum wheels. The look is performance with power and sleekness giving Fiero an unbeatable combination.



DO IT YOURSELF

SECTION 2

CONTENTS OF THIS SECTION

INTRODUCTION

You have demonstrated your appreciation for styling and durability in your purchase of this vehicle. Another attribute of the Fiero, which you may not be aware of, is its ease of serviceability. In fact, a number of basic services can be performed by the owner who takes pride in working on his or her own vehicle.

The services listed in the index are described in the following pages. When you turn to a service procedure, you will see a small symbol, consisting of one, two, or three wrenches, next to the title. This symbol represents the degree of difficulty of that procedure, and is interpreted as follows:

Easy: Generally no tools required; easy access.

More difficult: Common hand tools required; access may be more difficult, but it is generally not necessary to remove non-related components.

Most difficult: Common hand tools required; access difficult – it may be necessary to remove non-related components.

CAUTION: To help avoid personal injury, take care when making any check, doing any maintenance, or making any repair. Before beginning any procedure, make sure the parking brake has been firmly applied, and the transaxle has been shifted to Park (automatic) or Neutral (manual). Always wear safety glasses when working on your car.

Never get beneath the car when it is supported only by a jack. The jack provided with your car is designed for use only when changing wheels. Always use safety stands to support the car if it is necessary to get underneath.

Do not breathe exhaust gas because it contains carbon monoxide which by itself has no color or odor. Carbon monoxide is a dangerous gas. It can cause unconsciousness and can be lethal. Do not run engine in an enclosed area.

Some of the materials in the car may be hazardous if used, serviced, or handled improperly. Always observe recommended torque values when reassembling components. Improper or incomplete service could lead to the vehicle not working properly, which may result in personal injury or damage to the car or its equipment. If you have any questions about carrying out some service, have the service done by a qualified technician.

FIERO OWNER'S MANUAL

Section 5 of your Fiero Owner's Manual, "Service and Maintenance," contains additional information on caring for your Fiero. It covers such topics as tire pressure, maintenance, and a selection of proper lubricants and fluids for your engine, transaxle, brakes, etc. We recommend that you review this section of your Owner's Manual. The information provided, in combination with the "Do It Yourself" procedures, will help make caring for your Fiero a pleasant and rewarding experience.

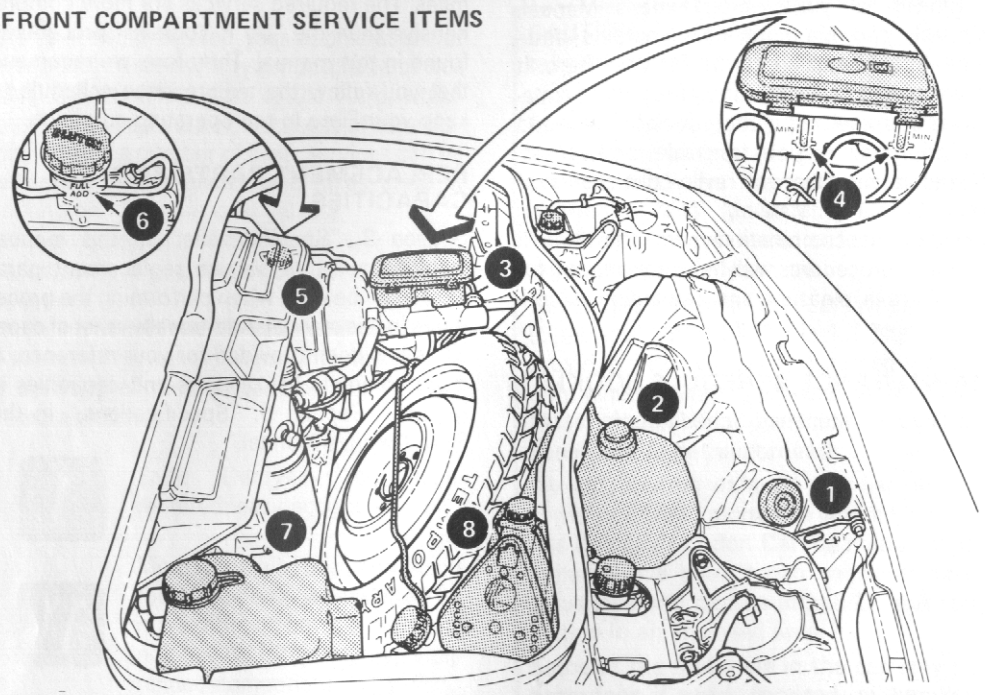
MAINTENANCE SCHEDULE BOOKLET

The Fiero Maintenance Schedule informs you of required maintenance intervals in time and miles. The required services are more comprehensive than the "Do It Yourself" procedures found in this manual. Therefore, we recomend that you follow the maintenance schedule to keep your Fiero in top operating condition.

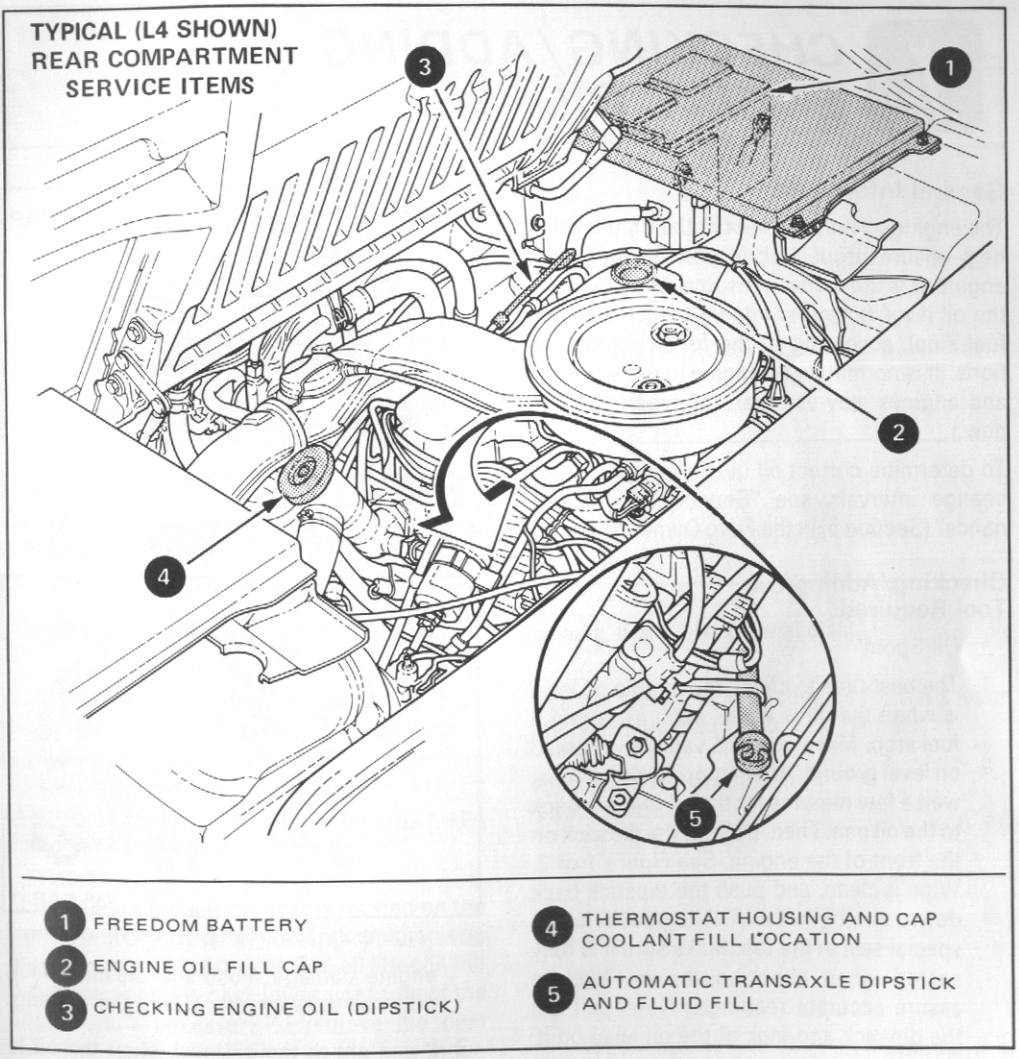
REPLACEMENT PARTS AND CAPACITIES

Section 3, "Specifications," in this manual includes a list of service replacement parts which can be used when performing the procedures in this manual. Additionally, a list of capacities has been provided for your reference. A more complete list of parts and capacities is found in Section 6, "Specifications," in the Fiero Owner's Manual.

FRONT COMPARTMENT SERVICE ITEMS



1. RADIATOR CAP
   NOTE: DO NOT ADD COOLANT AT THIS LOCATION.
2. ENGINE COOLANT RECOVERY TANK
3. BRAKE FLUID FILL CAP
4. BRAKE FLUID LEVEL CHECK
5. HYDRAULIC CLUTCH FLUID RESERVOIR (MANUAL TRANSAXLE CARS ONLY)
6. HYDRAULIC CLUTCH FLUID CHECK
7. WINDSHIELD WASHER BOTTLE
8. VEHICLE JACK



1. FREEDOM BATTERY
2. ENGINE OIL FILL CAP
3. CHECKING ENGINE OIL (DIPSTICK)
4. THERMOSTAT HOUSING AND CAP COOLANT FILL LOCATION
5. AUTOMATIC TRANSAXLE DIPSTICK AND FLUID FILL

CAUTION: To help avoid personal injury, never get beneath the car when it is supported only by a jack. The jack provided with your car is designed for use only when changing wheels. Always use safety stands to support the car if it is necessary to get underneath.

1. Locate oil plug on oil pan and position a bucket, or pan, beneath it. See Figure 1.

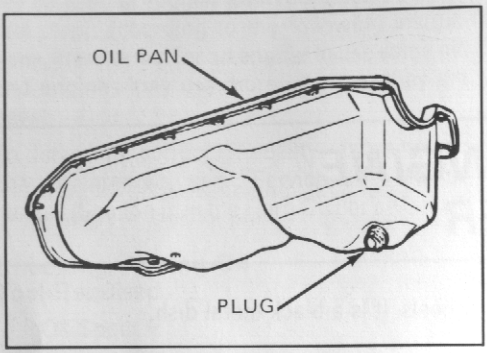


Figure 1 - Oil Pan Plug

2. Remove oil plug and allow oil to drain into bucket. Check oil for metal shavings, chips, etc.
3. If necessary to change the filter on the 6-cylinder, first remove the heat shield by removing the 2 bolts.
4. Place a bucket beneath the oil filter and remove the oil filter by unscrewing it. Make sure the filter gasket is also removed. See Figures 2 or 3.
5. Allow any more oil to drain from engine for at least 5 minutes.

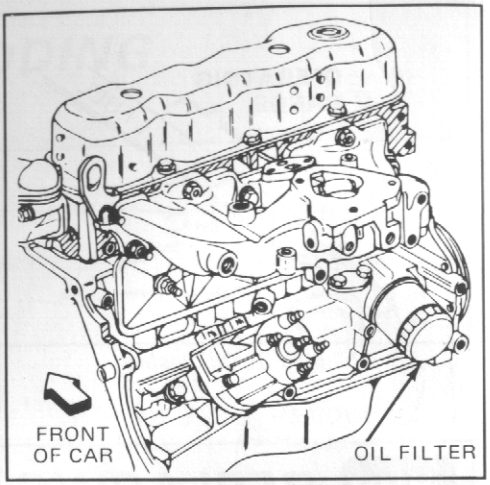


Figure 2 - Oil Filter, 4-Cylinder

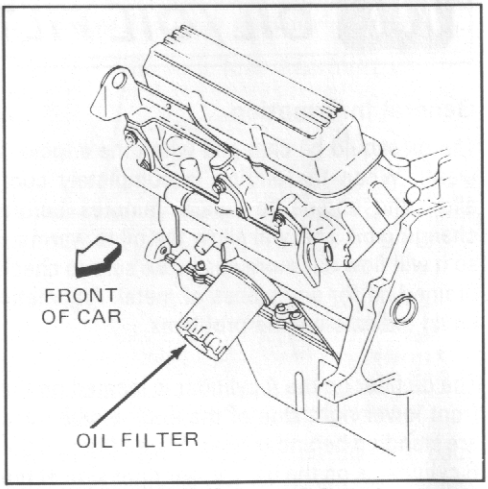


Figure 3 - Oil Filter, 6-Cylinder

6. With a clean shop towel, wipe the recess and sealing face of filter bracket.
7. Coat the sealing gasket of the new filter with oil.
8. Screw on the filter, by hand, until snug.
9. Hand-tighten the filter another 1/2 turn (or whatever filter manufacturer recommends).
10. On the 6-cylinder, reinstall the heat shield.
11. Clean oil plug and oil plug hole with clean shop towel.
12. Reinstall oil plug and tighten snugly.
13. Add quantity of oil specified in Section 3.
14. Run engine for 5 minutes, check oil level and adjust if necessary. Check for oil leaks around oil plug and oil filter.

CHECKING/ADDING AUTOMATIC TRANSAXLE FLUID

General Information

The automatic transaxle fluid level should be checked at each engine oil change. A low fluid level can cause slipping or loss of drive. Overfilling can cause foaming and loss of fluid. In either case, transaxle damage can result. Use only automatic transmission fluid labeled DEXRON ® II. You can buy this fluid from your Pontiac dealer or other service outlets. Use of other fluids may adversely affect the operation or service life of the transaxle.

Checking/Adding Fluid

Tools Required

Funnel

Can opener or oil spout

1. To check the fluid level, first set the parking brake. Then, with the transaxle in Park, start the engine. With the regular brakes applied, move the shift lever through all the gear ranges, ending in Park. You must check the fluid level with the engine running at slow idle, the car level, and the fluid at least at room temperature.

   You cannot read the correct fluid level if you have just driven the car for a long time at high speed, in city traffic in hot weather, or if the car has been pulling a trailer. Wait about 30 minutes until the fluid has cooled down.

2. Remove the dipstick located at the rear of the engine compartment. See Figure 1. Carefully touch the wet end of the dipstick to find out if the fluid is at least room temperature. If it feels cold, replace the dipstick and drive the car for at least five miles before checking again. If the fluid is at room temperature or hotter, clean the dipstick and push it back in until the cap seats. Pull out the dipstick and read the fluid level. The level should be in the cross-hatched area on the dipstick.

CAUTION: To help avoid personal injury, never get beneath the car when it is supported only by a jack. The jack provided with your car is designed for use only when changing wheels. Always use safety stands to support the car if it is necessary to get underneath.

1. Locate oil plug on oil pan and position a bucket, or pan, beneath it. See Figure 1.

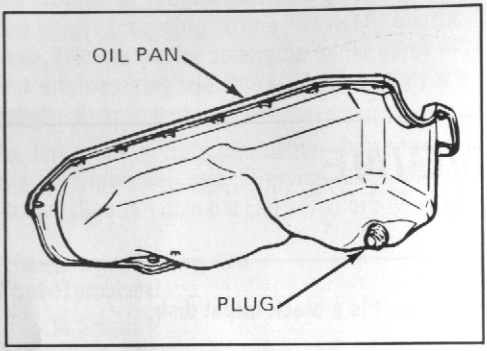


Figure 1 - Oil Pan Plug

2. Remove oil plug and allow oil to drain into bucket. Check oil for metal shavings, chips, etc.
3. If necessary to change the filter on the 6-cylinder, first remove the heat shield by removing the 2 bolts.
4. Place a bucket beneath the oil filter and remove the oil filter by unscrewing it. Make sure the filter gasket is also removed. See Figures 2 or 3.
5. Allow any more oil to drain from engine for at least 5 minutes.

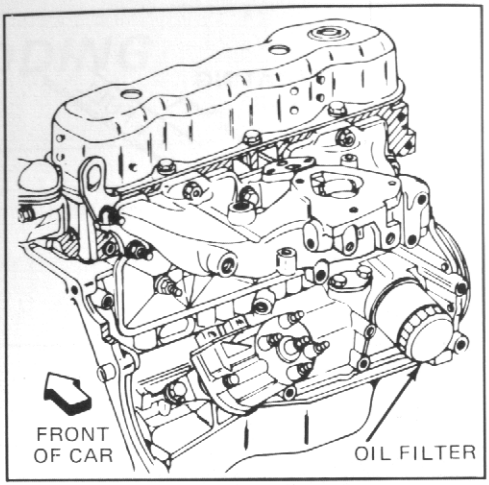


Figure 2 - Oil Filter, 4-Cylinder

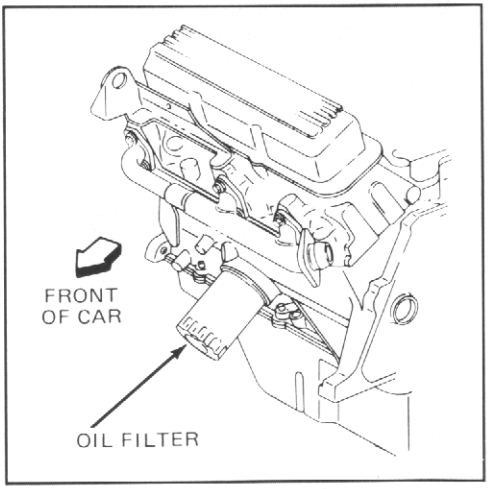


Figure 3 - Oil Filter, 6-Cylinder

6. With a clean shop towel, wipe the recess and sealing face of filter bracket.
7. Coat the sealing gasket of the new filter with oil.
8. Screw on the filter, by hand, until snug.
9. Hand-tighten the filter another 1/2 turn (or whatever filter manufacturer recommends).
10. On the 6-cylinder, reinstall the heat shield.
11. Clean oil plug and oil plug hole with clean shop towel.
12. Reinstall oil plug and tighten snugly.
13. Add quantity of oil specified in Section 3.
14. Run engine for 5 minutes, check oil level and adjust if necessary. Check for oil leaks around oil plug and oil filter.

CHECKING/ADDING AUTOMATIC TRANSAXLE FLUID

General Information

The automatic transaxle fluid level should be checked at each engine oil change. A low fluid level can cause slipping or loss of drive. Overfilling can cause foaming and loss of fluid. In either case, transaxle damage can result. Use only automatic transmission fluid labeled DEXRON ® II. You can buy this fluid from your Pontiac dealer or other service outlets. Use of other fluids may adversely affect the operation or service life of the transaxle.

Checking/Adding Fluid

Tools Required

Funnel

Can opener or oil spout

1. To check the fluid level, first set the parking brake. Then, with the transaxle in Park, start the engine. With the regular brakes applied, move the shift lever through all the gear ranges, ending in Park. You must check the fluid level with the engine running at slow idle, the car level, and the fluid at least at room temperature.

   You cannot read the correct fluid level if you have just driven the car for a long time at high speed, in city traffic in hot weather, or if the car has been pulling a trailer. Wait about 30 minutes until the fluid has cooled down.

2. Remove the dipstick located at the rear of the engine compartment. See Figure 1. Carefully touch the wet end of the dipstick to find out if the fluid is at least room temperature. If it feels cold, replace the dipstick and drive the car for at least five miles before checking again. If the fluid is at room temperature or hotter, clean the dipstick and push it back in until the cap seats. Pull out the dipstick and read the fluid level. The level should be in the cross-hatched area on the dipstick.

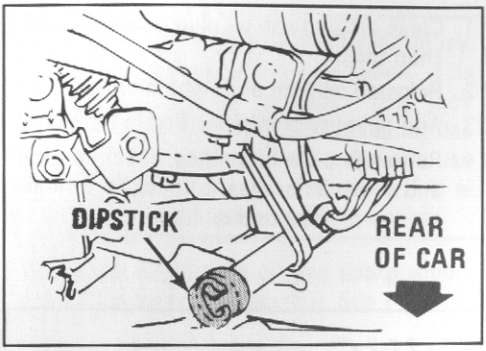


Figure 1 - Rear of engine (looking straight down)

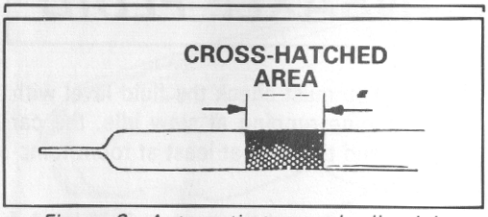


Figure 2 - Automatic transaxle dipstick

3. Using a long plastic funnel, add just enough DEXRON ® II fluid (at the dipstick tube) to fill the transaxle to the proper level. It takes only 0.5 liter (one pint) to raise the level from "ADD" to "FULL" with a hot transaxle.

CHECKING/ADDING MANUAL TRANSAXLE FLUID

General Information

The manual transaxle fluid level seldom needs to be checked. Consult your Maintenance Schedule for proper intervals. Use only SAE 5W-30 SF, SF/CC or SF/CD engine oil. Use of other fluids may adversely affect the operation or service life of the transaxle.

Checking/Adding Fluid

Tools Required

Funnel

12" rubber tube to fit over small end of funnel

Can opener or oil spout

1. Check the fluid level only when the engine is off, the vehicle is level and the transaxle

is cool enough to let you rest your fingers on the transaxle case. To check, carefully remove the speedometer fitting above the axle shaft on the driver's side of the case.

2. The fluid level should be between the "L" and "H" marks on this fitting. If needed, add enough SAE 5W-30 SF, SF/CC or SF/CD engine oil to bring the fluid level up to the "L" mark on the fitting . This can be done by inserting the end of a funnel into one end of a rubber tube and inserting the other end of the rubber tube into the speedometer fitting hole.
3. After checking and/or filling, reinstall the fitting making sure it is fully seated.

REPLACING AUTOMATIC TRANSAXLE FLUID/FILTER

General Information

The transaxle fluid pan is located under the car by the rear tire on the driver's side. The automatic transaxle fluid and filter should be replaced at the same time. The gasket between the pan and transaxle must also be replaced. See the Maintenance Schedule for the proper change interval.

Removal/Replacement

Tools Required

13mm nut driver
10mm nut driver

CAUTION: To help avoid personal injury, never get beneath the car when it is supported only by a jack. The jack provided with your car is designed for use only when changing wheels. Always use safety stands to support the car if it is necessary to get underneath.

1. Locate transaxle fluid pan.
2. Position bucket, or pan, beneath transaxle pan.
3. Remove 11 bolts with 13mm nut driver while holding up the pan.
4. Carefully tip the pan so the fluid runs into the bucket. Check fluid and pan for metal shavings that could indicate transmission damage.
5. Remove gasket.
6. Remove 2 bolts on filter with 10mm nut driver.
7. Install new filter and tighten bolts snugly.
8. Place new gasket on pan.
9. Install pan and tighten 11 bolts until snug.
10. Add quantity of fluid specified in Owner's Manual.
11. Check fluid level and adjust, if necessary, following "Checking/Adding Automatic Transaxle Fluid" procedure in this manual.
12. Check pan for any leaks.

REPLACING MANUAL TRANSAXLE FLUID

General Information

The manual transaxle fluid should be changed when the engine is warm. When the engine is completely cool, allow the engine to run 5 minutes before replacing fluid. The plug to the manual transaxle fluid reservoir is located under the car near the rear tire on the driver's side. The plug is a bolt with a tapered edge around the base.

See the Maintenance Schedule booklet for the proper change interval.

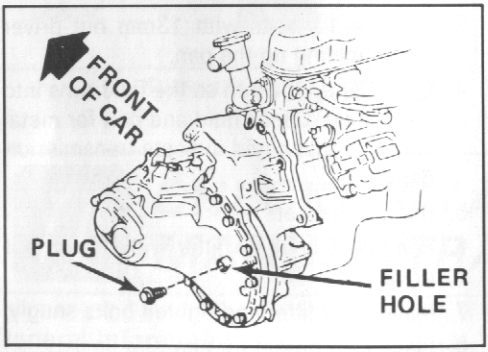


Figure 1 - Left hand side of transaxle

Removal/Replacement

Tools Required

13mm nut driver

15mm wrench

Funnel

12" rubber tube to fit over small end of funnel or oil spout

CAUTION: Never get beneath the car when it is supported only by a jack. The jack provided with your car is designed for use only when changing wheels. Always use safety stands to support the car if necessary to get underneath.

1. Locate plug to manual transaxle reservoir. (See Figure 1.)
2. Position a bucket or pan beneath plug.
3. Remove plug with 13mm nut driver.
4. Allow fluid to drain out.
5. Replace plug and tighten until it fits snugly.
6. Add quantity of fluid specified in Owner's Manual.
7. Check fluid level and adjust, if necessary, following the procedure under "Checking/Adding Manual Transaxle Fluid" in this manual.
8. Check plug for any leaks.

CHECKING/ADDING BRAKE FLUID

General Information

The brake fluid reservoir is part of the brake master cylinder, located under the front compartment lid on the driver's side of the vehicle. See Figure 1. The fluid in the reservoir should be checked each time your engine oil is changed.

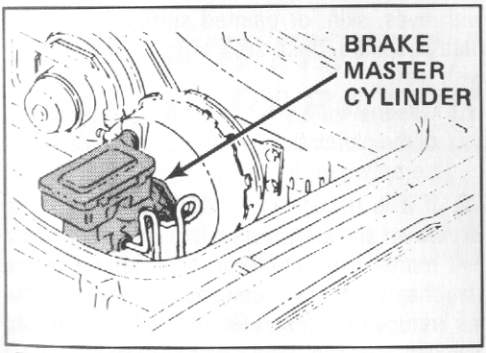


Figure 1 - Driver's side of front compartment

Checking/Adding Fluid

Tools Required

None

Use only Delco Supreme No. 11 or other DOT 3 specification brake fluid. Use of other fluids may adversely affect the operation or service life of the brake system. Before using brake fluid, read all cautions on the container. Do not allow anyone to depress the brake pedal while the brake fluid reservoir cover is not in place.

Do not allow brake fluid to come into contact with eyes, skin, or painted surfaces. If brake fluid is spilled, flush area of spill immediately with water.

1. Observe the brake fluid levels through the plastic wall of the reservoir. The levels in both the front and rear chambers of the reservoir must be above the "MIN" lines. See Figure 2.

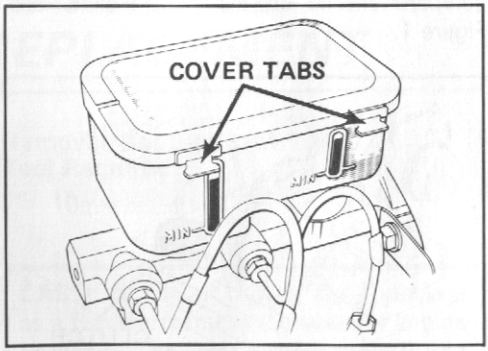


Figure 2 - Brake fluid reservoir

2. If it is necessary to add fluid, clean the cover and area around it to prevent foreign matter from entering the reservoir when the cover is removed. Grasp the tabs on the sides of the cover and lift it off the reservoir. See Figure 2.
3. Add brake fluid as necessary.

1. Remove the two nuts on top of the air cleaner. See Figure 1 or 2.

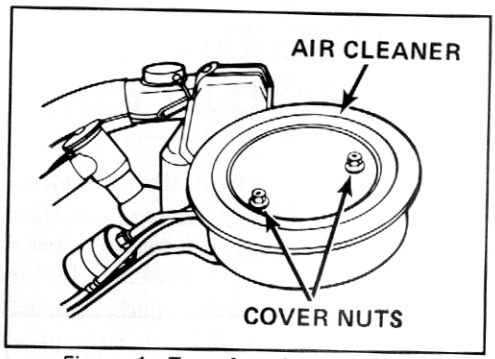


Figure 1 - Top of engine, 4-cylinder

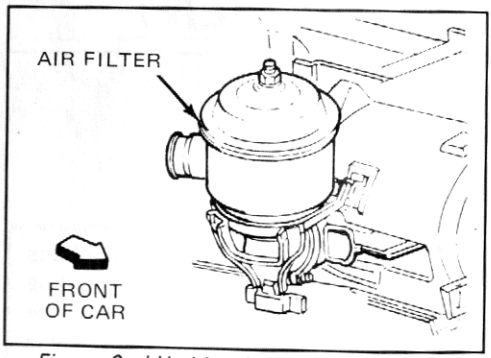


Figure 2 - LH side of rear compartment, 6-cylinder

2. Remove the air cleaner cover.
3. Remove the air filter from the air cleaner.
4. The crankcase separator (L4 only) is located between the air cleaner and valve cover. See Figure 3. With both hands, pull air cleaner up and away from the fuel injector unit and the separator. Do not disconnect any rubber tubing. Move the air cleaner off to the side.

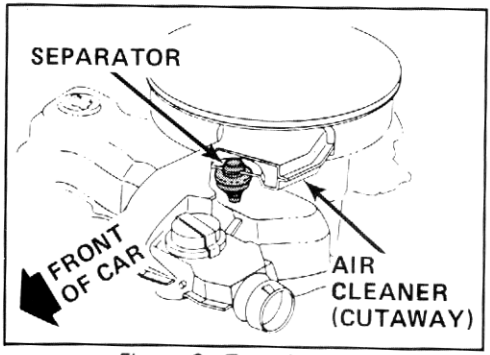


Figure 3 - Top of engine

5. Remove the separator from the valve cover by pulling straight up.
6. Install a new separator, making sure it is properly seated between the valve cover and air cleaner.
7. Remove any foreign material from inside the air cleaner. Do not allow any foreign material to enter the throttle body.
8. Install a new air filter with either side up.
9. Install the air cleaner cover. Tighten the cover nuts to 6 N·m (4 ft. lbs.).

PCV VALVE SERVICE

General Information

Your car's engine is equipped with a closed positive crankcase ventilation (PCV) system. In a closed PCV system, fresh air is drawn through the crankcase separator under the air cleaner, into the engine crankcase. The air mixes with crankcase vapors. This mixture is then drawn through the PCV valve, into the intake manifold, and into the cylinders where it is burned. The PCV valve regulates the flow of this mixture and must be unobstructed for proper operation. Therefore, periodic replacement is necessary. Consult your Maintenance Schedule for replacement intervals.

The PCV valve is located inside the crankcase ventilation grommet on the valve cover, next to the oil filler cap. See Figure 1.

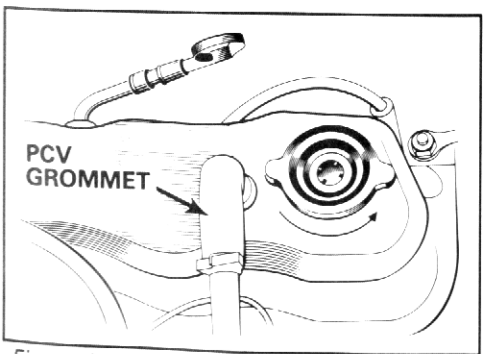


Figure 1 - Top of engine (PCV valve is inside grommet), 4-cylinder

Inspection/Diagnosis

CAUTION: Diagnosis of the PCV System requires the engine to be running. To help prevent personal injury, keep hands, tools and clothing away from the engine belts and pulleys.

1. Shift the automatic transaxle to Park or manual transaxle to Neutral. Firmly apply the parking brake. Start the engine and let it idle.
2. Remove the PCV valve from the crankcase ventilation grommet in the valve cover. (See "Removal/Replacement.") Leave the PCV valve hose attached to the PCV valve. See Figure 2.

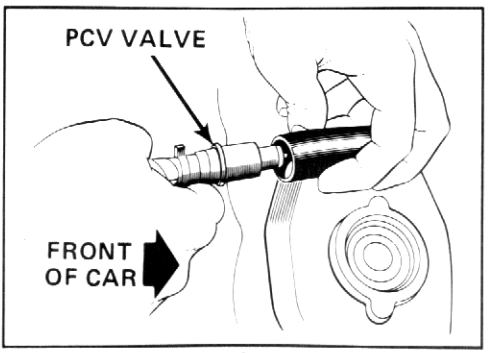


Figure 2 - Removing PCV valve from grommet

3. Check for vacuum by placing your thumb over the exposed end of the PCV valve. If no vacuum is felt, check for blockage in the PCV hose, or in the PCV valve itself. A plugged valve or hose must be replaced.
4. Shut off the engine. Check the PCV hose and grommet for cracking. A cracked hose or grommet must be replaced.
5. Remove the PCV valve from its hose. (See "Removal/Replacement.") Shake the valve and listen for a rattle. If the valve does not rattle, it must be replaced.

Removal/Replacement

Tools Required

Screw driver

See "Replacement Parts" in Section 3 of this manual for PCV valve part number.

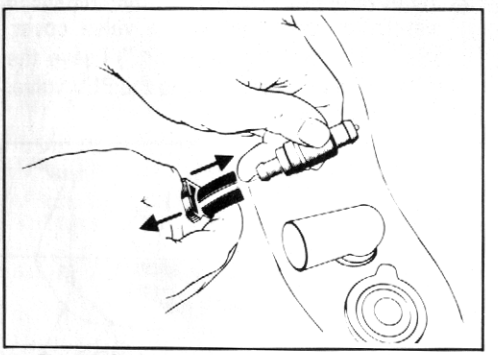


Figure 3 - PCV valve removed from hose

1. Firmly grasp the PCV valve (with hose attached) as close to the grommet as possible. Pull the valve out of the grommet with a twisting motion. See Figure 2. It may be necessary to roll the end of the grommet back in order to remove the PCV valve.
2. To open the clip which holds the rubber hose in place, push the clip tabs in opposite directions.
3. Separate the PCV valve from its hose by holding the hose steady and pulling the PCV valve with a twisting motion. See Figure 3.
4. Before replacement of the PCV valve, coat the end that is to be inserted into the rubber hose with a small amount of oil.

SUSPENSION LUBRICATION

General Information

Regular lubrication of suspension and steering pivot points is recommended for maximum performance and long wear. Consult your Maintenance Schedule for service intervals.

NOTICE: Ball joints should only be lubricated at temperatures of 10°F (-12°C) and higher. During cold weather, the vehicle should be allowed to warm up in a heated garage before the ball joints are lubricated. Lubricant must meet GM Specification 6031M. Use of other lubricants may adversely affect the operation or service life of the ball joints.

Lubrication

Tools Required

Shop cloth
Grease gun
Flexible hose for grease gun

CAUTION: To help avoid personal injury, never get beneath the car when it is supported only by a jack. The jack provided with your car is designed for use only when changing wheels. Always use safety stands to support the car if it is necessary to get underneath.

Front Suspension

1. Wipe the 6 grease fittings (3 on each side) clean with a cloth. See Figure 1.

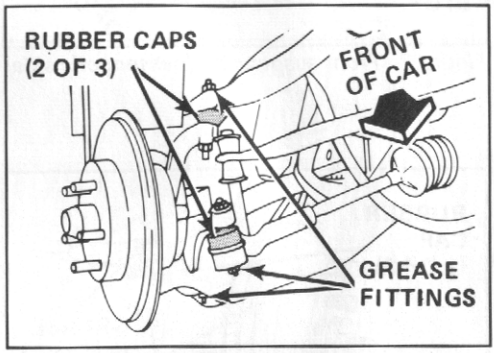


Figure 1 - Front suspension (passenger's side)

2. Apply chassis lubricant with the grease gun to all six grease fittings. Apply until the rubber caps begin to puff. Do not overlubricate, as the caps will separate from the suspension components to which they are attached.

3. Apply a small quantity of lubricant to the metal steering stops. See Figure 2.

SPARK PLUG SERVICE

Diagnosis

Worn-out spark plugs may cause one or more of the following symptoms:

- Poor mileage
- Poor performance
- Stalling
- Hard starting
- Missing

If any of these symptoms are present, worn-out spark plugs could be the cause. In addition, spark plug replacement is recommended as part of regular emission control maintenance. See your Maintenance Schedule for replacement intervals.

Removal/Replacement

Tools Required

5/8" deep socket
Universal joint socket extension
Ratchet
8" ratchet extension
Spark plug gapping tool
10mm nut driver
3" socket extension (6-cylinder engine)
Flex socket (6-cylinder engine)

See "Replacement Parts" in Section 3 of this manual for replacement spark plug number.

Spark plug removal should be attempted only after engine has sufficiently cooled.

It is advisable to remove and replace only one spark plug at a time. This will help prevent installing the spark plug wires in the wrong order.

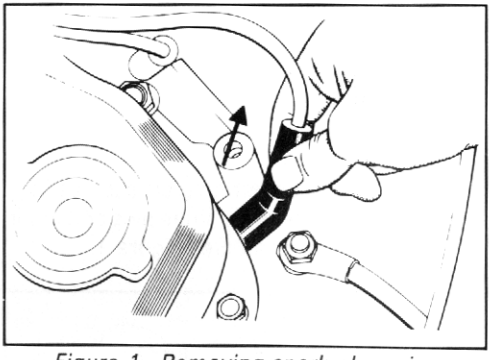


Figure 1 - Removing spark plug wire

NOTICE: If spark plug wires are installed in the wrong order, engine damage can result.

1. On the 4-cylinder, the spark plugs are located on the front of the engine, just below the valve cover. Remove the air cleaner and set it off to the side, without disconnecting any tubing or wiring. On 6-cylinder, remove the air induction hose and set aside.

   On the 6-cylinder, the spark plugs are located on both sides of the engine. Attach

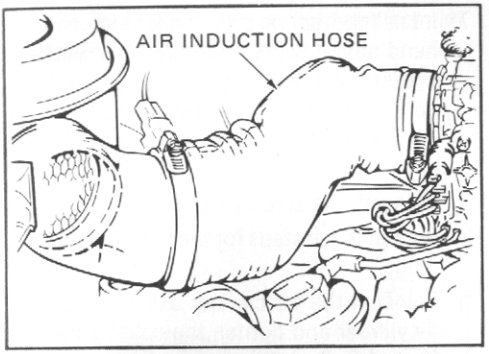


Figure 2 - Removing air induction hose

flex socket to the 5/8" deep socket for easier access to the spark plug.

2. Remove the first spark plug wire by pulling on the boot, not on the wire itself. (If the spark plug boot is stuck to the spark plug, a slight twisting motion on the boot will assist in breaking loose the boot.) See Figure 1. Pulling on the wire may separate the carbon center, causing the wire to fail and the engine to misfire. This can happen with no evidence of damage on the outer insulation. In case of wire damage, it is necessary to replace the complete wire, since a satisfactory repair cannot be made. Also, pull the boot by hand or with a special spark plug boot tool only — never use pliers.
3. Wipe the spark plug wire with a cloth. Carefully bend the wire to check for brittle or cracked insulation. A wire with defective insulation should be replaced.
4. If the wire is in good condition, check the terminals. Clean the terminals if they are dirty. Replace the wire if the terminals are broken or distorted. Check the distributor nipple and spark plug boot. Replace if broken or deteriorated.
5. Remove the first spark plug using a 5/8" deep socket. (Turn counter-clockwise.) See Figure 3 (4 cyl.) or Figure 4 (6 cyl.).

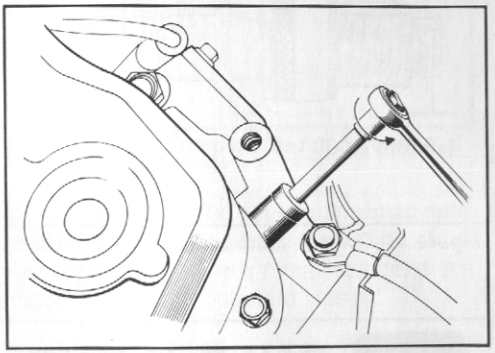


Figure 3 - Removing spark plug 4-cylinder

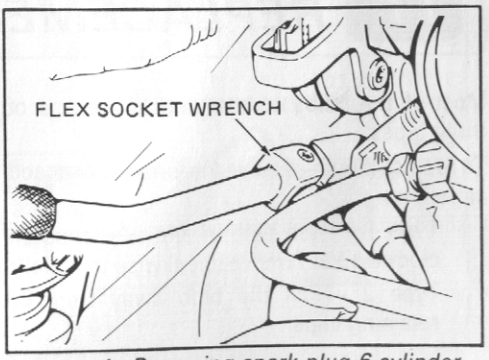


Figure 4 - Removing spark plug 6-cylinder

6. For the 4-cylinder, gap the new plug to 1.5mm (.060 in.). See Figure 5. For the 6-cylinder, gap the new plug to 1.1mm

(.045 in.). See Section 3 of this manual for correct replacement spark plug.

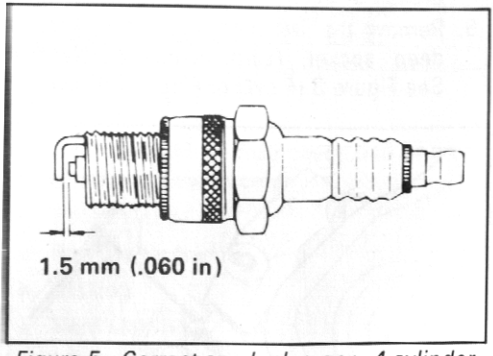


Figure 5 - Correct spark plug gap, 4-cylinder

7. Install the spark plug, screwing it in by hand until it seats correctly. This will help prevent cross-threading the spark plug and cylinder head. Using a 5/8" deep socket, tighten the spark plug to 15 N·m (11 ft. lbs.).
8. Reinstall the spark plug wire.
9. Repeat these steps for the remaining spark plugs.
10. Reinstall the air cleaner assembly on the 4-cylinder and tighten the cover nuts to 6 N·m (4 ft. lbs.).

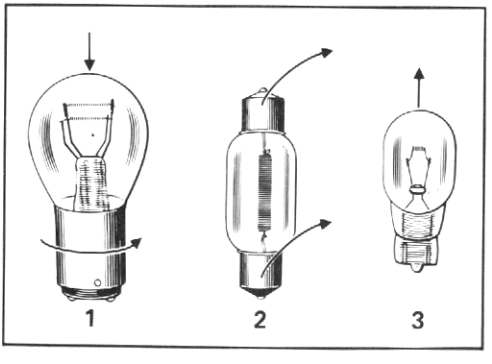
BULB/LENS REPLACEMENT

Most of the bulbs on the vehicle are one of three types.

To replace a bulb, remove the lens and proceed as follows:

Type 1 – Push bulb in and turn counter-clockwise to remove (clockwise to install).

Type 2 – Pull the bulb away from its retaining clips.



Type 3 – Pull the bulb straight out from its socket.

See Section 3 of this manual for bulb numbers. Figures 1 through 5 illustrate how to access and remove specific bulbs.

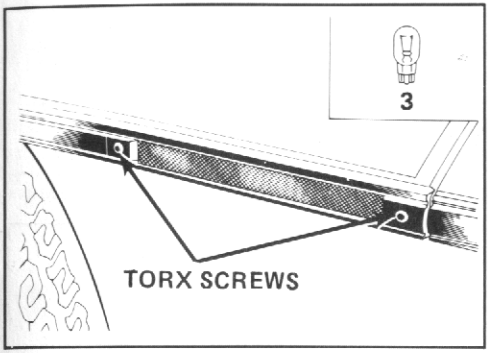


Figure 1 - Side marker light

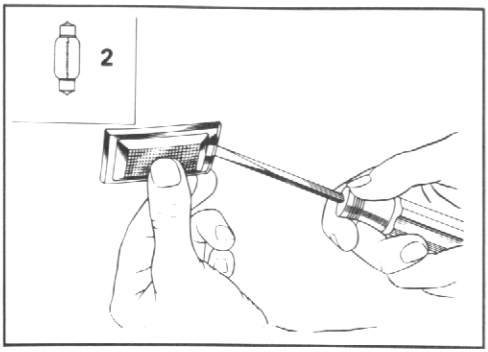


Figure 2 - Rear Compartment light (optional)

NOTE: If necessary, the entire dome/map light assembly may be removed by removing the 4 retaining screws. The rear retaining screws are located under the 2 outboard lenses.

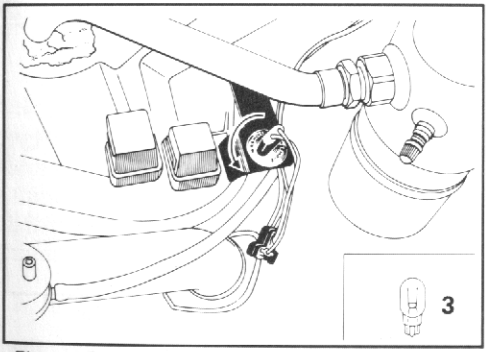


Figure 3 - Front compartment light (optional)

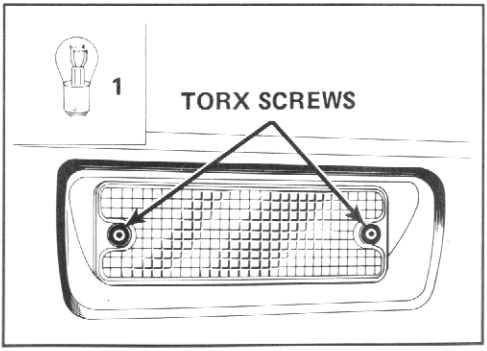


Figure 4 - Front turn light

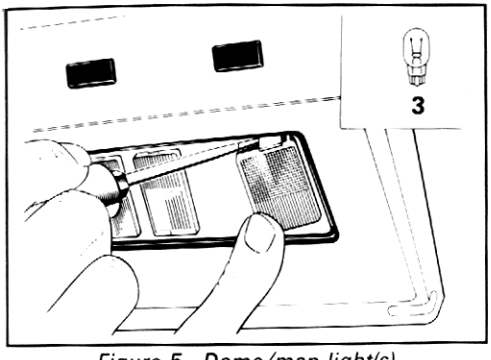


Figure 5 - Dome/map light(s)

TAIL LIGHT BULB/LENS REPLACEMENT

Tools Required

Phillips screw driver

See "Replacement Parts" in Section 3 of this manual for bulb number.

1. Open the rear compartment lid.
2. Remove the black caps from the body panel above the lens fixture with a suitable flat tool. See Figure 1.
3. Remove all three screws.
4. Protect the rear bumper with a shop towel, and gently pull the entire fixture out.
5. To remove the bulb socket from the fixture, push the locking tab on the bulb socket and turn the socket counter-clockwise. See Figure 2.
6. Remove the bulb by pushing it in slightly and turning counter-clockwise about one quarter turn. Do not wipe away the corrosion-protective grease in the bulb sockets.
7. After replacing the bulb(s), insert the bulb socket into the lens fixture and turn the fixture clockwise.

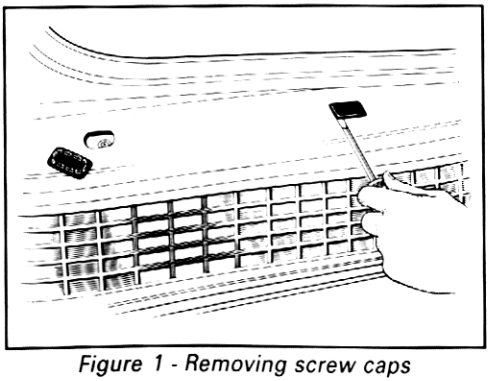


Figure 1 - Removing screw caps

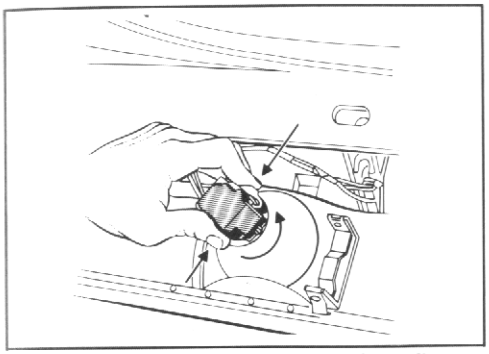


Figure 2 - Removing bulb socket from fixture

8. Reinstall the lens fixture into the body, taking care not to pinch any wires between the fixture and the body. Reinstall the three screws. Snap the black plastic caps back into place.

CONSOLE/ASHTRAY BULB REPLACEMENT

Tool Required

7mm nut driver

There are two light bulbs in the standard console assembly, one for each ashtray. In automatic transaxle-equipped vehicles, there is a third bulb which provides illumination for the shift indicator. The bulbs are located under the shifter trim plate. See Figure 2.

1. Remove the two ashtrays.
2. Using the nut driver, remove the 7mm bolts under **each** ashtray. See Figure 1.
3. Carefully lift the shifter trim plate just high enough to access the bulbs. It is not necessary to remove the trim or shifter assembly. See Figure 2.

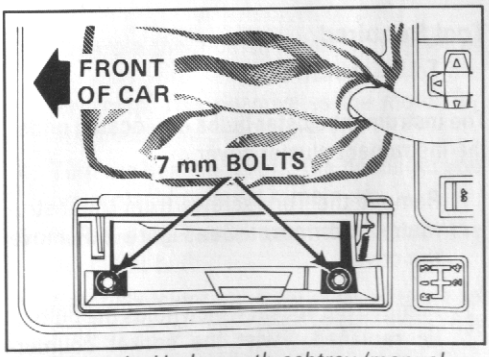


Figure 1 - Underneath ashtray (manual transaxle)

4. Remove the inoperative ashtray bulb(s) by pulling it straight out from the socket.
5. The shift indicator bulb socket is attached to the underside of the shifter trim plate.

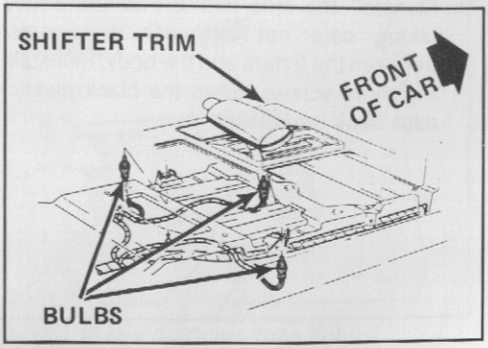


Figure 2 - Center console (automatic transaxle)

To remove the socket, twist it counterclockwise and pull. To remove the bulb, pull it straight out.

6. After replacing the bulb(s), reinstall the bolts under the ashtrays and torque to 1.5 N·m (1 ft. lb.).
7. Reinstall the ashtrays.

INSTRUMENT CLUSTER BULB REPLACEMENT

Tool Required

T-15 Torx driver

The instrument cluster bulbs are located under the instrument cluster cover.

1. Remove the Torx screws from the instrument cluster cover. See Figure 1. Remove the cover.
2. Remove the socket which holds the bulb to be replaced. Twist the socket counterclockwise, then pull it out. See Figure 2.
3. To remove the bulb from the socket, pull it straight out.

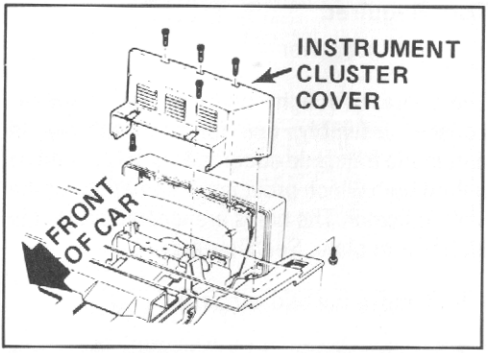


Figure 1 - Instrument cluster cover

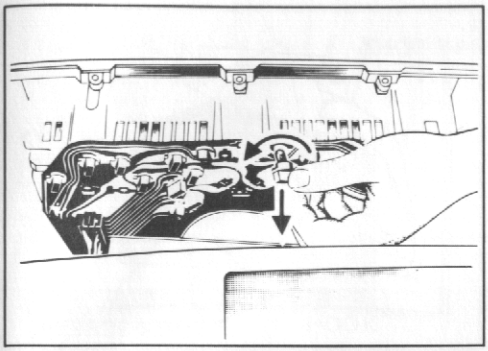


Figure 2 - Removing bulb socket

4. After replacing the bulb(s), reinstall the instrument cluster cover. Torque the bolts to 1.5 N·m (1 ft. lb.).

HEADLIGHT REPLACEMENT

Tools Required

T-15 Torx driver

Pliers

Phillips screw driver

10" stiff wire with a hook on the end (a stiff wire coat hanger will work)

CAUTION: To help prevent personal, injury keep hands, clothes, etc. away from headlight motors and mechanism while they are being operated. Headlight motors operate electrically whenever the headlights are turned on or off. These motors are very powerful.

1. Open the front compartment lid.
2. Turn the headlights on. The headlights will pop up.
3. Separate the 1-cavity black connector at the blue wire near the headlight you are replacing. This deactivates the motor for that headlight. See Figure 1.
4. Turn the headlights off. The headlight you are replacing should remain up.
5. Remove the connector at the back of the headlight bulb.
6. Carefully lower the front compartment lid until it is all the way down. It is not necessary to latch the compartment lid.
7. Remove the Torx screws from the upper corners of the black plastic outer bezel. See Figure 2.
8. Raise the front compartment lid until it latches.

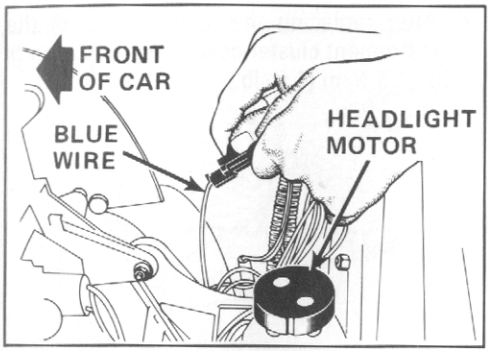


Figure 1 - Deactivating left hand headlight mechanism

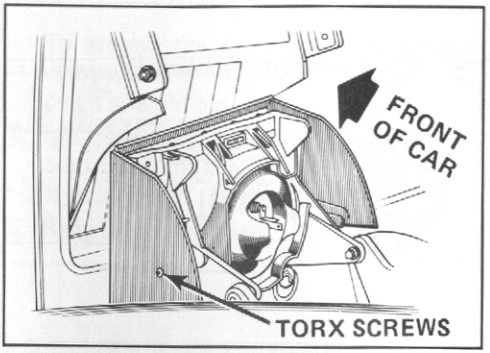


Figure 3 - Left side of left hand headlight

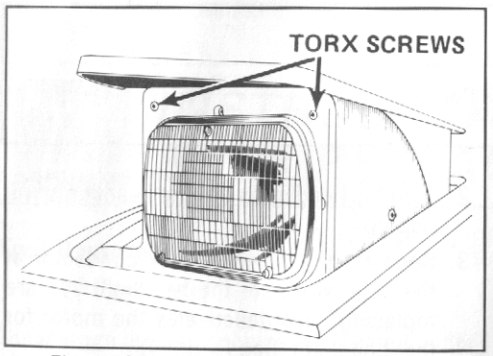


Figure 2 - Front of left hand headlight

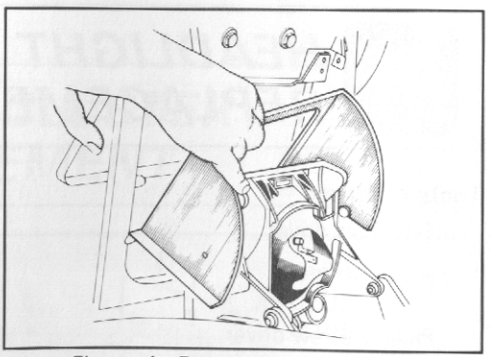


Figure 4 - Removing plastic bezel

9. Remove the Torx screws from each side of the black plastic outer bezel. See Figure 3.

10. Hold the spring-loaded headlight door open with one hand and remove the black plastic outer bezel by moving it up and then back over the headlight assembly (toward the passenger compartment). See Figure 4.

11. Carefully lower the front compartment lid. With the wire hook, pull the retaining spring away from the bottom corner of the headlight assembly. Use a shop towel to protect the finish in front of the headlight door. See Figure 5.

12. Rotate the headlight assembly slightly counter-clockwise until the retainer tabs are clear of the aiming screws. DO NOT remove or adjust these screws. See Figure 6.

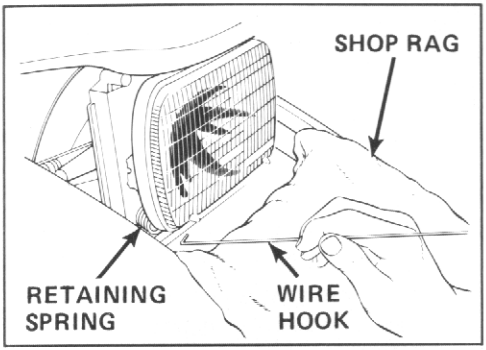


Figure 5 - Removing headlight retaining spring

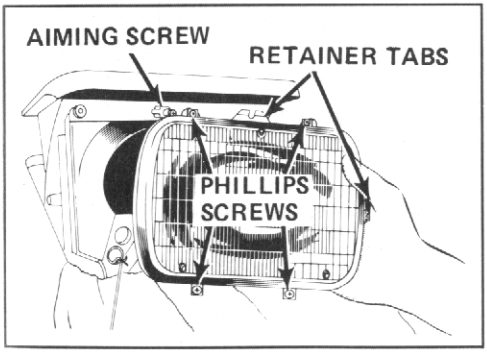


Figure 6 - Removing headlight with retainer

13. Remove the 4 Phillips screws from the 2-piece retainer which surrounds the headlight. See Figure 6. Separate the 2-piece retainer and remove the headlight.

14. Install new headlight into the 2-piece retainer. Install the retainer/headlight assembly, making sure the retainer tabs are properly located in the aiming screw slots. See Figure 7.

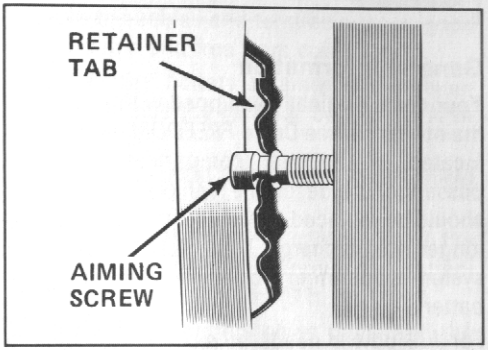


Figure 7 - Left side of left hand headlight (close-up)

15. Reinstall the headlight retaining spring. Reinstall the black plastic outer bezel and its two side retaining screws. Torque to 8 N·m (6 ft. lbs.). Close the front compartment lid and reinstall the two front bezel retaining screws. Torque to 8 N·m (6 ft. lbs.).
16. Open the front compartment lid and reconnect the headlight bulb. **Do not reconnect the single blue wire connector.**
17. Turn the headlights on. This will set the headlight motor relays in the open mode.
18. Reconnect the single blue wire connector.
19. Turn the headlights off. Both headlights should retract. Close the front compartment lid.

BATTERY REPLACEMENT

General Information

Your car is originally equipped with a long-life, maintenance-free Delco *FREEDOM* battery. It is located in the rear compartment, on the passenger's side of the vehicle. The battery should be replaced only if you are sure it will no longer hold a charge. Make sure the charging system is operating properly before faulting the battery.

For full power needs at replacement time, a Delco battery with the same catalog number as shown on the original battery's label is recommended.

Removal/Replacement

Tools Required

7mm nut driver

8mm & 13mm wrenches

CAUTION: Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:

- **Always shield your eyes, and avoid leaning over the battery whenever possible.**

(Continued)

CAUTION: (Continued)

- **Do not expose the battery to open flames or sparks.**
- **Be sure any replacement battery that has filler caps is properly filled with water.**
- **Do not allow battery acid to contact eyes or skin. Flush any contacted area with water immediately and thoroughly, and get medical help.**
- **Do not allow any metal object to come into contact with both battery terminals at once.**
- **Do not deviate from the following replacement procedure.**

1. Open the rear compartment lid.
2. Remove the two thumb screws holding the battery cover panel to the body and lift the panel out. See Figure 1.
3. Remove the negative cable from the battery (this is the black cable leading to the side of the battery marked "–").
4. Remove the positive cable from the battery (this is the cable leading to the side of the battery marked "+").
5. Remove the battery retainer by unscrewing the retainer bolt. See Figure 2.
6. Loosen the bolts which retain the heat shield and push the shield out of the way.

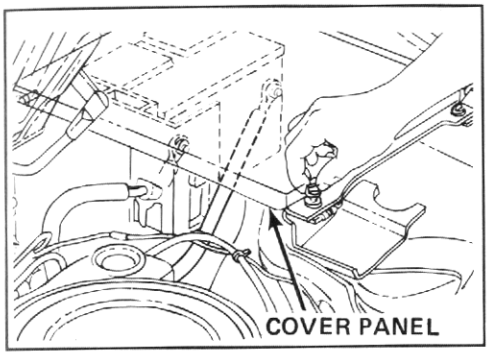


Figure 1 - RH side of rear compartment

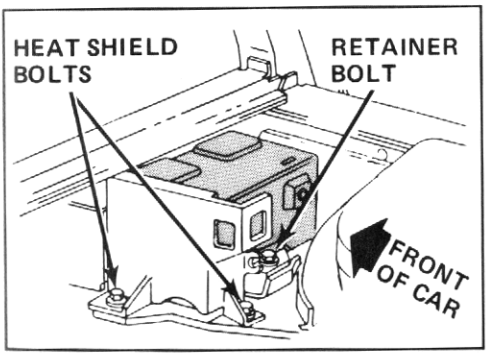


Figure 2 - Battery compartment

7. Carefully remove the battery without tipping it.
8. Before installing the new battery, make sure the cables and terminals are in good condition and free from corrosion.
9. Install the battery retainer and retainer bolt. Torque the retainer bolt to 18 N·m (14 ft. lbs.).
10. Install the heat shield and heat shield bolts.
11. Reconnect the battery cables. Make the "+" connection first. Torque the battery cable bolts to 12 N·m (9 ft. lbs.).
12. Reinstall the battery cover panel and the two thumb screws.

BATTERY REPLACEMENT

General Information

Your car is originally equipped with a long-life, maintenance-free Delco *FREEDOM* battery. It is located in the rear compartment, on the passenger's side of the vehicle. The battery should be replaced only if you are sure it will no longer hold a charge. Make sure the charging system is operating properly before faulting the battery.

For full power needs at replacement time, a Delco battery with the same catalog number as shown on the original battery's label is recommended.

Removal/Replacement

Tools Required

7mm nut driver

8mm & 13mm wrenches

CAUTION: Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:

- **Always shield your eyes, and avoid leaning over the battery whenever possible.**

(Continued)

CAUTION: (Continued)

- **Do not expose the battery to open flames or sparks.**
- **Be sure any replacement battery that has filler caps is properly filled with water.**
- **Do not allow battery acid to contact eyes or skin. Flush any contacted area with water immediately and thoroughly, and get medical help.**
- **Do not allow any metal object to come into contact with both battery terminals at once.**
- **Do not deviate from the following replacement procedure.**

1. Open the rear compartment lid.
2. Remove the two thumb screws holding the battery cover panel to the body and lift the panel out. See Figure 1.
3. Remove the negative cable from the battery (this is the black cable leading to the side of the battery marked "–").
4. Remove the positive cable from the battery (this is the cable leading to the side of the battery marked "+").
5. Remove the battery retainer by unscrewing the retainer bolt. See Figure 2.
6. Loosen the bolts which retain the heat shield and push the shield out of the way.

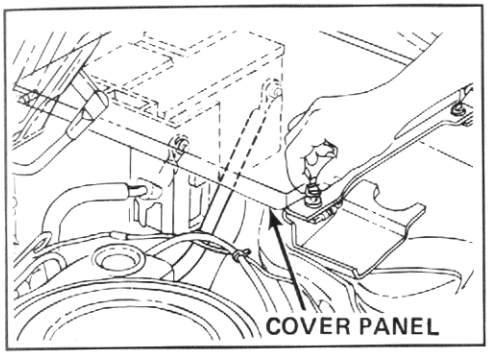


Figure 1 - RH side of rear compartment

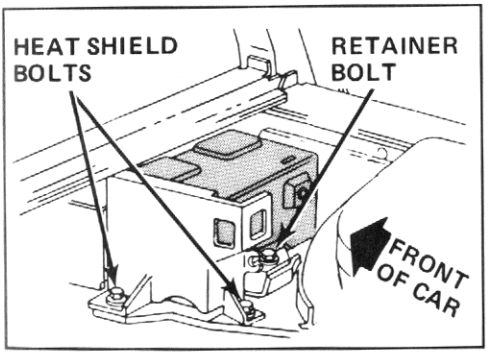


Figure 2 - Battery compartment

7. Carefully remove the battery without tipping it.
8. Before installing the new battery, make sure the cables and terminals are in good condition and free from corrosion.
9. Install the battery retainer and retainer bolt. Torque the retainer bolt to 18 N·m (14 ft. lbs.).
10. Install the heat shield and heat shield bolts.
11. Reconnect the battery cables. Make the "+" connection first. Torque the battery cable bolts to 12 N·m (9 ft. lbs.).
12. Reinstall the battery cover panel and the two thumb screws.

7. Disconnect blue, white and black connectors on left side of radio.
8. Pull radio the rest of the way out.
9. Install radio by connecting, from top to bottom, blue, white and black connectors. Then attach antenna lead and connector on right side of radio.
10. Place radio back in carrier assembly. Replace 4 screws and washer and torque to 1.5 N·m (1 ft. lb.).
11. Place plate on pad assembly by properly inserting the alignment pegs.
12. Replace 4 Torx screws and torque to 1.5 N·m (1 ft. lb.).
13. Reconnect negative battery cable.

INSTRUMENT PANEL SPEAKER REPLACEMENT

General Information

When replacing speakers, make sure the radio is "off", the key is out of the ignition, and the negative battery cable is disconnected. These precautions will ensure that the electricity in the car is off.

Be sure to use care when removing the speaker cover. The instrument panel is made of a soft material that can be easily damaged. A piece of sturdy, thin plywood should be used on top of the panel to support the screw driver. The wood should lend enough support so the panel will not be indented by the screw driver.

Speakers may be replaced with Delco-GM speakers, part number 16019282, or equivalent.

Tools Required

Flat screw driver
8mm wrench
7mm socket
Ratchet

CAUTION: Batteries produce explosive gases, contain corrosive acid, and supply levels of electric current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:

- **Always shield your eyes and avoid leaning over the battery whenever possible.**
- **Do not expose the battery to open flames or sparks.**
- **Be sure any replacement battery that has filler caps is properly filled with water.**
- **Do not allow battery acid to contact eyes or skin. Flush any contacted area with water immediately and thoroughly, and get medical help.**
- **Do not allow any metal object to come in contact with both battery terminals at once.**

1. Turn radio "off."
2. Remove key from ignition.
3. Disconnect negative battery cable as shown in steps 1-3 of "Battery Replacement" in this manual.
4. Place screw driver in the gap between the speaker and the instrument panel near one of the corners. See Figure 1.

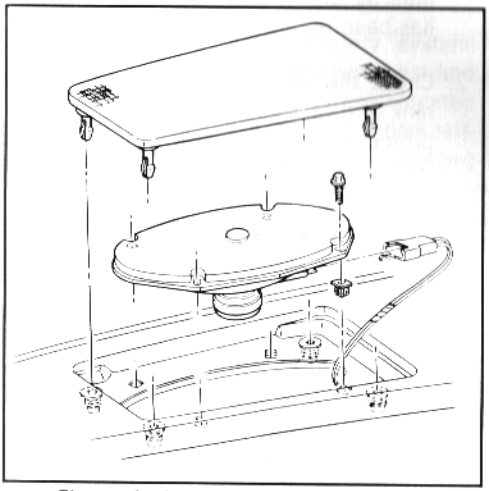


Figure 1 - Instrument panel speaker

5. Place plywood on the panel so that when you pry the speaker cover off, the screw driver will rest on the wood and not on the panel.
6. Gently pry one of the corners out.
7. Repeat procedure for the other three corners.
8. Lift the cover out.
9. Remove the four screws connecting the speaker to the instrument panel.
10. Gently lift the speaker out, just far enough to unhook the connector. Lift the speaker the rest of the way out.
11. Connect the replacement speaker and place it in the panel.
12. Reinstall the four screws and torque to 1.4 N·m (1 ft. lb.).
13. Reinstall cover.
14. Reconnect negative battery cable.

COOLING SYSTEM SERVICE

General Information

The cooling system should serviced at the intervals specified in the Maintenance Schedule.

CAUTION: To help prevent personal injury, keep hands, tools and clothing away from the engine cooling fan. This electric fan can come on whether or not the engine is running. The fan can start automatically in response to a heat sensor when the ignition key is in the "Run" position.

Maintenance

Tools Required

Radiator coolant tester

CAUTION: To help avoid being burned, do not remove the radiator cap, thermostat housing cap, or coolant recovery tank cap while the engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if any cap is taken off too soon.

1. Wash the radiator cap and filler neck with clean water. Wash the thermostat, the thermostat housing, and the cap. See Step 1 of "Coolant Replacement" for the proper procedure for removing the radiator cap, thermostat housing cap and thermostat. The "Coolant Replacement" procedure must be followed any time the radiator cap has been removed.

2. Check the coolant level in the recovery tank and test coolant for level of freeze protection following coolant tester manufacturer's instructions. Add ethylene glycol antifreeze, if needed, to maintain freeze protection to -37°C (-34°F).

3. Have the cooling system and radiator cap tested for a pressure capacity of about 105 kPa (15 psi). The pressure can be anywhere from 95 kPa (14 psi) to 120 kPa (18 psi). If a replacement cap is needed, use an AC cap or equivalent, designed for coolant recovery systems and specified for your car. See "Replacement Parts" in Section 3 of this manual for part numbers.

4. Tighten all radiator hose clamps and heater hose clamps and inspect all hoses. Replace the hoses if they are swollen, "checked," or otherwise worn.

NOTICE: Take care when tightening the hose clamps at the radiator. Overtightening could bend or collapse the radiator fittings.

5. Clean the front of the radiator core and air conditioning condenser to remove dirt and other foreign material.

CHECK/ADD COOLANT

General Information

Your car has a coolant recovery system. Coolant in the system expands with heat and overflows into the recovery tank located behind the radiator, under the front compartment lid. When the system cools down, coolant is drawn back into the radiator.

The cooling system was filled at the factory with a quality coolant that meets GM specifications. It is important to use proper coolant to prevent damage to cooling system components. Coolants meeting GM Specification 1825-M or those specially formulated for aluminum component protection should be used. The cooling system is designed to use coolant (a mixture of ethylene glycol, corrosion inhibitors and water) rather than plain water. The coolant solution must be used year round to provide:

- freezing protection down to -37°C (-34°F),
- boiling protection up to 128°C (262°F),
- protection against rust and corrosion in the cooling system,
- the proper engine temperature for efficient operation and emission control, and
- proper operation of the coolant temperature gage.

CAUTION: To help prevent personal injury, keep hands, tools and clothing away from the engine cooling fan. This electric fan can come on whether or not the engine is running. The fan can start automatically in response to a heat sensor when the ignition key is in the "Run" position.

To help avoid being burned, do not remove the radiator cap, thermostat housing cap, or coolant recovery tank cap while the engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if any cap is taken off too soon.

Under some conditions the ethylene glycol in engine coolant is combustible. To help avoid being burned when adding coolant, DO NOT spill it on the exhaust system or engine parts that may be hot. If there is any question, have this service performed by a qualified technician.

Tools Required

None

1. Lift front compartment lid.
2. Look at the "see-through" coolant recovery tank. When the engine is cold, the coolant level should be at, or slightly above, the "COLD" mark on the recovery tank. When the engine has fully warmed up, the level should be at or above the "FULL HOT" mark on the recovery tank.
3. If the coolant level is low, remove the cap on the coolant recovery tank. Follow all cautions.
4. Add to the recovery tank enough of a 50/50 mixture of water and good quality ethylene glycol antifreeze (meeting GM Specification 1825-M) to bring the level up to the proper mark.
5. Put the cap back on the recovery tank.

COOLANT REPLACEMENT

Tools Required

Ratchet

Ratchet extension

15mm socket

3/16" Allen wrench

CAUTION: To help avoid being burned, do not remove the radiator cap, thermostat housing cap, or coolant recovery tank cap while the engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if any cap is taken off too soon.

Do not deviate from the following coolant fill/replacement procedure.

1. When the engine is cool, open the rear compartment lid for access to the thermostat housing cap and the thermostat. The thermostat housing is located at the upper left hand portion of the 4-cylinder engine (upper right hand portion of the 6-cylinder engine). See Figure 1.

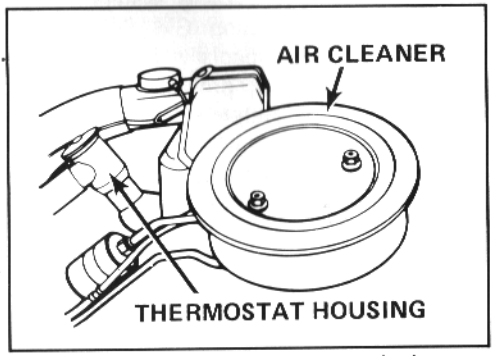


Figure 1 - Top of engine, typical

2. Turn the thermostat housing cap slowly counter-clockwise until it reaches a "stop." Do not press down while turning the cap.

3. Wait until any remaining pressure (indicated by a hissing sound) is relieved, then press down on the cap and continue turning it counter-clockwise. Remove the cap.
4. Pull the thermostat straight out. See Figure 2.

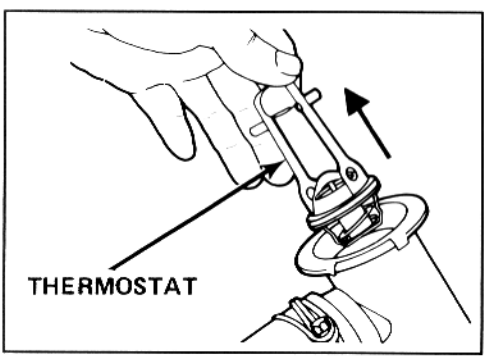


Figure 2 - Thermostat being removed

5. Install the thermostat housing cap and run the engine one minute (enough to circulate the coolant).
6. Stop the engine. Open the radiator drain valve to drain the coolant. See Figure 3. Drainage may be speeded by removing the drain plugs in the engine block and in the left and right coolant pipes. The coolant pipes run underneath the car. The coolant pipe plugs are located at the rear of each pipe just ahead of the rear tires. See Figure 4. The engine block drain plugs are located near the base of the block, just above the oil pan.
7. Run water through the thermostat opening until the drained liquid is nearly colorless.

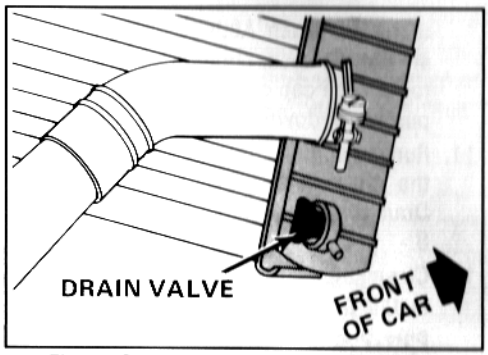


Figure 3 - Lower RH corner of radiator

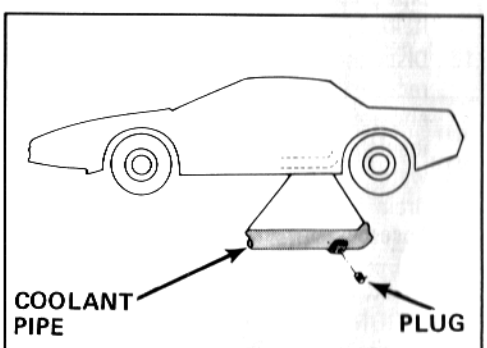


Figure 4 - One coolant pipe drain plug is on each side of the car

8. Install the block drain plug and coolant pipe plugs, if removed, and close the radiator drain valve.
9. Remove the radiator cap and add water through the thermostat housing until the water reaches the level of the radiator neck.
10. Install the radiator and thermostat housing caps. (Do not install the thermostat at this time.) Tighten the thermostat housing cap

to the first notch. At this point, there will be an audible click, and you will not be able to turn the cap counter-clockwise without pushing it down.

11. Run the engine until the hose connected to the thermostat housing becomes hot. Drain the system again as you did in Step 6.
12. Close the radiator drain valve tightly. Install the block drain plug and coolant pipe plugs, if removed. The block drain plug should be fully seated. The coolant pipe plugs should be torqued to 12 N·m (8 ft. lbs.).
13. Disconnect all hoses from the coolant recovery tank. Remove the recovery tank and pour out any fluid. Scrub and clean the inside of the recovery tank with soap and water. Flush it well with clean water, then drain it. Reinstall the recovery tank and hoses.

CAUTION: Under some conditions the ethylene glycol in engine coolant is combustible. To help avoid being burned when adding coolant, DO NOT spill it on the exhaust system or engine parts that may be hot. If there is any question, have this service performed by a qualified technician.

NOTICE: Do not use methanol-base antifreeze, or alcohol, or plain water alone, in your car at any time. These will boil at a (Continued)

NOTICE: (Continued)
lower point than that at which the temperature gage will warn of overheating. Also, they do not provide proper protection against corrosion.

14. Add enough water and ethylene glycol antifreeze (meeting GM Specification 1825-M) to provide the required cooling, freezing and corrosion protection. Use a solution that is at least 50 percent antifreeze, but no more than 70 percent antifreeze. **With the engine off**, remove the radiator cap. Add coolant through the **thermostat housing** until the coolant reaches the spill point of the radiator neck.
15. Install the radiator and thermostat housing caps. (Do not install thermostat at this time.) Tighten the thermostat housing cap to the first notch. At this point, there will be an audible click, and you will not be able to turn the cap counter-clockwise without pushing it down.
16. Add 3 liters (3.2 quarts) of coolant to the coolant reservoir.

NOTICE: When running the engine, particularly after replacing coolant, check the coolant temperature gage periodically to make sure the engine is not overheating.

17. Run the engine at normal idle for 3 minutes, then at a fast idle for an additional 15-20 seconds. Turn the engine off.
18. Remove the thermostat housing cap. (See Step 1 of this procedure.) Add coolant to

the thermostat housing until it reaches the housing cap seat.

19. Install the thermostat and cap, making sure that the thermostat is fully seated and the arrows on the cap line up with the coolant hose at the thermostat housing.
20. When the engine has gone through a complete warm-up and cool cycle, the coolant in the reservoir should be adjusted to a level between the "Add" and "Full" lines.

THERMOSTAT CHECK

General Information

The thermostat housing is located at the upper left hand portion of the 4-cylinder engine; on the 6-cylinder engine, it is located on the upper right hand (passenger's side) portion of the engine.

Tools Required:

None

CAUTION: To help avoid being burned, do not remove the radiator cap, thermostat housing cap, or coolant recovery tank cap while the engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if any cap is taken off too soon.

To help prevent personal injury, keep hands, tools and clothing away from the engine cooling fan. This electric fan can come on whether or not the engine is running. The fan can start automatically (Continued)

CAUTION: (Continued)
in response to a heat sensor when the ignition key is in the "Run" position.

1. When the engine is cool, open the rear compartment lid for access to the thermostat housing cap and thermostat. See Figure 1.

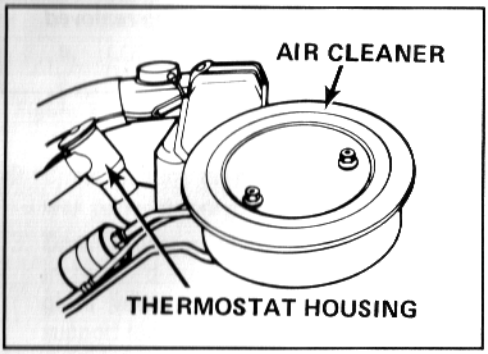


Figure 1 - Top of engine, typical

2. Turn the thermostat housing cap slowly counter-clockwise until it reaches a

"stop". Do not press down while turning the cap.

3. Wait until any remaining pressure (indicated by a hissing sound) is relieved, the press down on the cap and continue turning counter-clockwise. Remove the cap.
4. Pull the thermostat straight out. See Figure 2.

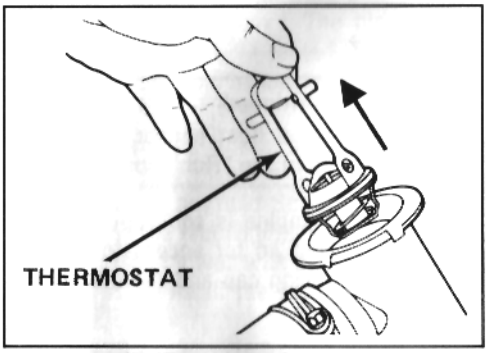


Figure 2 - Thermostat being removed

5. Visually inspect thermostat for corrosion and proper sealing of valve and seat.
6. If the thermostat appears damaged or non-functioning, it should be replaced.
7. Install the thermostat and cap, making sure the thermostat is fully seated and the arrows on the cap line up with the coolant hose at the thermostat housing.

REARVIEW MIRROR SUPPORT REPLACEMENT

General Information

When replacing the rearview mirror support you should use Loctite Inside Mirror Adhesive Kit (GM part number 1052369), or equivalent. If a new rearview mirror support is needed, use part number 983106 or equivalent. To ensure maximum adhesion, make sure the windshield and the support (mounting bracket) are completely clean.

CAUTION: To help prevent personal injury, the following precautions, as well as those on the adhesive kit package, should be taken:

- **Avoid eye and skin contact. Contains acrylic acid and methylacrylic ester. In case of eye contact, flush with water for 15 minutes; get medical attention. Since it may irritate sensitive skin, wash skin after contact.**
- **Accelerator contains trichloroethyene. Use with adequate ventilation. Avoid breathing its harmful vapor. Do not heat or store at temperatures above 120°F (40°C).**
- **Keep both adhesive and accelerator out of the reach of children.**

Tools Needed:

Fine grit (number 320 or 360) emery cloth or sandpaper

Flat screw driver

1. Locate support position at center of glass 623mm (24 9/16 inches) from base of glass to base of support. See Figure 1.

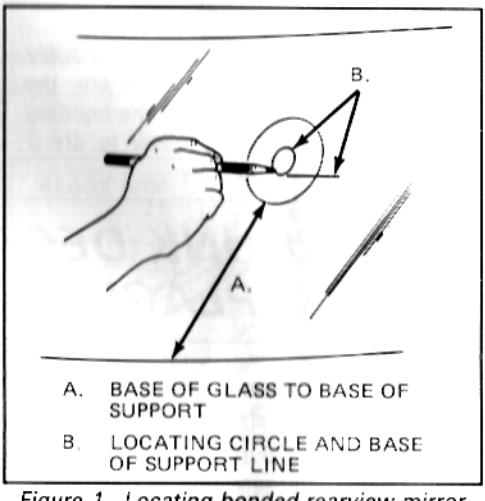


Figure 1 - Locating bonded rearview mirror support on glass

2. Circle location on outside of glass with a wax pencil or crayon.
3. Draw a larger circle, approximately 3 inches in diameter, on the outside of the glass with a wax pencil, around the support location.
4. On the inside of the glass, clean the area with household cleaner and dry.
5. Clean the same area again with alcohol and dry.

6. Sand bonding surface of the support. If the original support is being used, all traces of the previous adhesive must be removed.
7. Clean support with alcohol and allow it to air dry.
8. In order to remove the previous adhesive, it may be necessary to clean the windshield and support with a single-edge razor blade or equivalent.
9. Crush Accelerator vial and apply Accelerator to windshield, where the support will be located, and the bonding surface of the support. Allow to dry 3 minutes or until visibly dry.
10. Apply a small amount of adhesive to the bonding surface of the support. Spread film over the entire surface.
11. Position support to location with the round end up.
12. Press support against the windshield and apply firm pressure for one minute.
13. Allow 5 minutes for adhesive to set.
14. Excess adhesive can be removed after 5 minutes with alcohol.
15. Mount rearview mirror to support.

TRUNK DECAL REPLACEMENT

General Information

When replacing the "Fiero 2M4," "Fiero 2M6" or "Fiero GT" rear compartment lid decal, it is important to make sure that the application surface is entirely clean. This will allow the decal to adhere completely and ensure the best possible appearance.

Tools Needed:

None

1. Make sure the application area is entirely clean.
2. Remove backing paper from decal.
3. Align bottom edge of carrier paper with rear compartment lid edge.
4. Align vertical edge of carrier paper to rear compartment lid edge.
5. Press down and smooth decal.

WINDSHIELD WIPER BLADE REPLACEMENT

General Information

When replacing your Fiero's windshield wiper blades it is important to replace them with high quality blades of the same length and general shape. Replacement blades can be found at most auto parts stores.

The easiest way to replace windshield wiper blades is to have your wipers in the "up" position. This can be accomplished by turning your wipers "on" when the key is "off." Next, turn the key "on", then turn it "off" when the wipers are up. Take the key out of the ignition to ensure that the wipers will not move while you are working on them. Damage to the windshield and windshield wiper system could occur if this precaution is not taken.

Removal/Replacement

Tools Required

None

1. Put the windshield wipers in the "up" position.
2. Lift the windshield wiper blade with your hand.
3. Locate the release lever, which is located approximately in the middle of the blade. See Figure 1.
4. While pressing down on the release lever, support the arm and gently, but firmly, pull the blade straight off. See Figure 2.

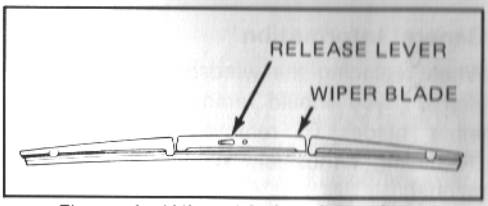


Figure 1 - Wiper blade release lever

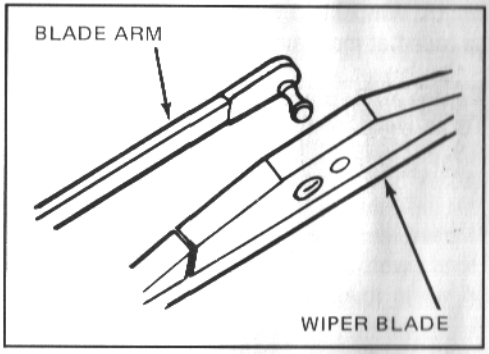


Figure 2 - Removing wiper blade

5. If it is necessary to set the arm down, gently place it on the windshield. Protect the windshield with a soft cloth.
6. To put on the new blade, set the blade on the arm by positioning the pin in the hole on the blade.
7. Press down on the blade so the pin is engaged with the blade.

WINDSHIELD WIPER BLADE ELEMENT REPLACEMENT

General Information

When replacing the windshield wiper blade element, you should remove the windshield wiper blade. To remove the blade, see "Replacing Windshield Wiper Blade" in this manual.

Replace your element with an element of equal length. Windshield wiper blade elements can be found at most auto parts stores.

Removal/Replacement

Tools Required

Flat screw driver

1. Remove the wiper blade.
2. Insert screw driver between the rubber element and plastic housing.
3. Rotate the screw driver and pull on the element, so the element pops out.
4. Pull out the element.
5. To replace the element, slide the new element through the housing, starting at one end of the blade.
6. Slide the element all the way through so it is fully seated.
7. Replace the blade on the arm.

TIRE INFLATION CHECK

General Information

To reduce the risk of loss of vehicle control, which could cause personal injury or vehicle damage, the tires of your Fiero must be kept properly inflated. Proper inflation will result in the best balance of fuel economy, tire life, riding comfort, and handling under normal driving conditions.

Incorrect tire inflation pressures can have adverse effects on tire life and car performance. Too low air pressure causes increased tire flexing and heat build up. This weakens the tire and increases the chance of damage or failure. It can also result in tire overloading, abnormal tire wear, adverse vehicle handling, and reduced fuel economy. Too high air pressure can result in abnormal wear and harsh ride, and can increase the chance of damage from road hazards.

When adding air to your tires, press the compressor down as long as necessary to inflate the tire to approximately the right air pressure. Do not try to add the air all at once. It is better to add air a few times, rather than harm the tire by severely over inflating.

Correct inflation pressures can be found on the Tire Placard. The placard is located on the driver's door of your car. Do not load your car beyond the load limits (total kilograms or pounds) shown on the Tire Placard.

Tools Required

Tire gage
Air compressor

1. The "cold" tire inflation pressure is the tire pressure when a car has not been driven more than 1 mile (1.6 kilometer) after sitting for 3 hours or more. This is the most accurate pressure reading.
2. Remove valve cap with fingers.
3. Place gage over valve and, in one quick motion, press the gage all the way down, so it seals with the valve, and pull back up.
4. Read the inflation pressure on gage.
5. If the pressure of the tire is below the recommended value, add air with the air compressor. Seal the air compressor down on the valve and hold it down until approximately the right amount of air is added.
6. If the air pressure exceeds the recommended value, remove air by depressing the valve core with the small stick on the opposite side of the pressure gage. You can tell that air is being removed by a hissing sound.
7. While removing or adding air, check the tire frequently for the desired air pressure.
8. Check the air pressure and properly inflate all of the tires including the spare. Notice that the spare is a compact spare, and requires 60 psi.
9. Replace all valve caps.

ROTATING TIRES

General Information

Front and rear tires perform different jobs and can wear differently, depending on the types of roads driven, your driving habits, etc. For longer tire life, you should rotate your tires at the intervals recommended in the Maintenance Schedule.

Tools Required

Jack
Spare tire
Lug wrench

- These tools are all from your car.

CAUTION: In order to reduce the possibility of personal injury:

- **Follow all jacking and stowage instructions.**
- **Use the jack only for lifting the vehicle during wheel changing.**
- **Never get beneath the car while it is supported only by a jack.**

1. Raise car with jack and remove tire as shown in Section 3, "In Case of Emergency," in your Owner's Manual. Be sure to follow all cautions.
2. Replace removed tire with your spare tire.
3. There are three patterns you can use to rotate your tires. See Figure 1.

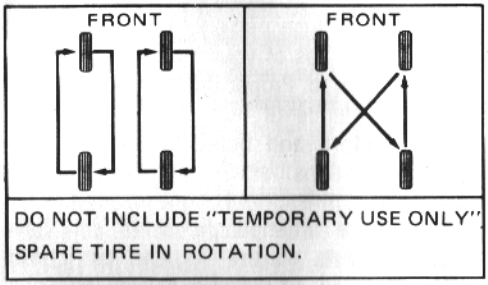
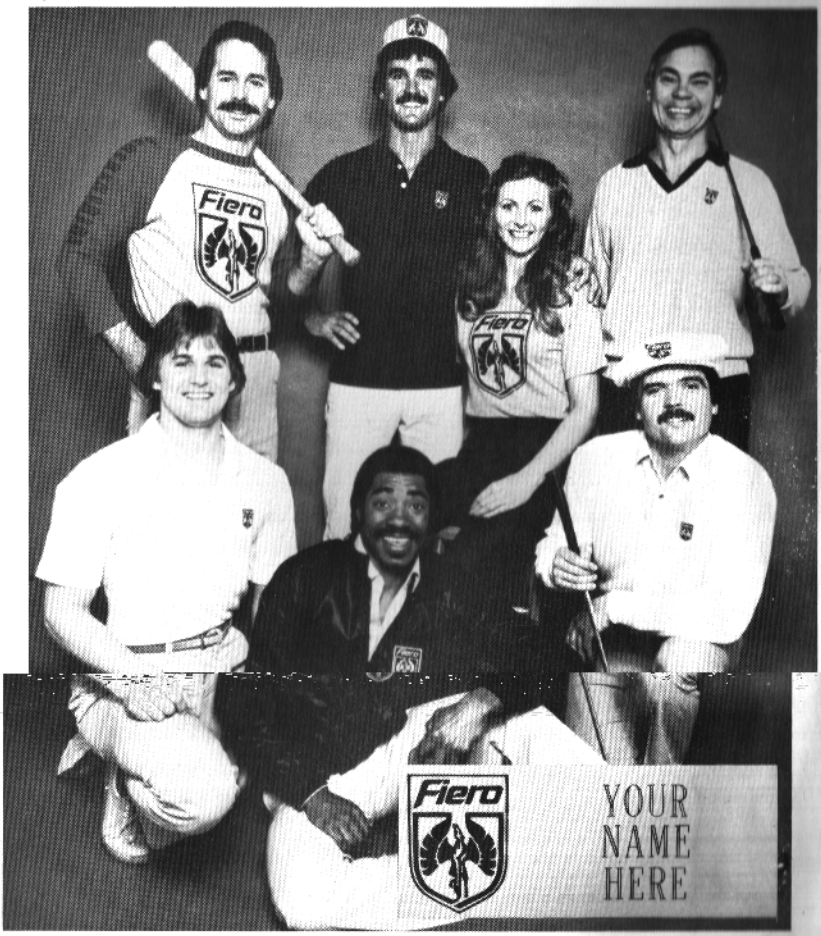


Figure 1 - Tire rotation

4. Remove the next tire in the rotation order and replace it with the previously removed tire.
5. Repeat this procedure until all of the wheels have been rotated.
6. Replace the spare tire with the final tire. Do not leave the spare tire on the car.
7. Stow your jack and spare tire following all stowage instructions.
8. Adjust the front and rear tire pressures and be sure to check wheel nut tightness.

FIERO FASHIONS



- BASEBALL JERSEY — $8.50 each
- SPORT SHIRT — $18.50 each
- T-SHIRT — $5.50 each
- V-NECK SWEATER — $28.50 each
- CARDIGAN SWEATER — $28.50 each
- FASHION JACKET — $39.00 each
- GOLF CAP — $5.00 each
- GATSBY HAT — $6.00 each
- DASH NAMEPLATE — $10.00 each.

PVL, INC. • 1523 N. MAIN • ROYAL OAK, MICHIGAN 48067 • (313) 548-1550

FIERO FASHION ORDER FORM

ITEM DESCRIPTION	QTY.	AMOUNT
BASEBALL JERSEY — White Body and Red Sleeves **$8.50 each** Small_____ Medium_____ Large_____ X-Large_____		
SPORTS SHIRT — $18.50 each White: Small _____ Medium _____ Large _____ X-Large _____ Black:Small _____ Medium _____ Large _____ X-Large _____		
T-SHIRT — Gray Only. **$5.50 each.** Small_____ Medium_____ Large_____ X-Large_____		
V-NECK SWEATER — Gray Only. **$28.50 each.** Small_____ Medium_____ Large_____ X-Large_____		
CARDIGAN SWEATER — White Only. **$28.50 each.** Small_____ Medium_____ Large_____ X-Large_____		
FASHION JACKET — Black Only. **$39.00 each.** XS ___ Small ___ Medium ___ Large ___ X-Large ___		
GOLF CAP — Gold Only. **$5.00 each.**		
GATSBY HAT — White Only. **$6.00 each.**		
DASH NAMEPLATE — $10.00 each.		
NAMEPLATE **NAME HERE** • **(Please Print)** •		

SHIPPING CHART

Orders Under $25.00	$2.60
$25.00 - $99.00	$3.50
$100.00 - $199.00	$4.50
$200.00 or More	$5.50

Item Total $ _____

4% Sales Tax (Michigan Residents Only) _____

Shipping & Handling (See Chart) $ _____

Total Amount $ _____

PLEASE ALLOW 4-6 WEEKS FOR DELIVERY

SHIP TO (Please Print)

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

TELEPHONE # _____

Check or Money Orders Payable to;

PVL, INC.
1523 N. Main
Royal Oak,
Michigan 48067
(313) 548-1550

METHOD OF PAYMENT

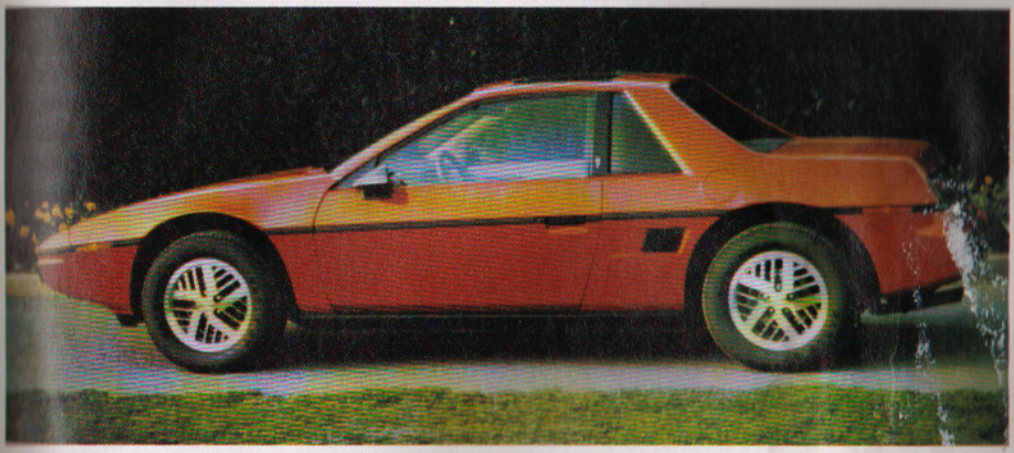
☐ CHECK (ENCLOSED) ☐ MONEY ORDER (ENCLOSED)
☐ MASTERCARD ☐ VISA

Card No. _____ EXPIRATION DATE Month Day Year

SIGNATURE _____ DATE _____

SPECIFICATIONS

SECTION 3



ENGINE SPECIFICATIONS

4-Cylinder Engine

Type	transverse mounted, cast iron block
Bore & Stroke	4.00" x 3.00"
Displacement	2.5 liters (151 C.I.D.)
Fuel System	single point throttle body fuel injection
Emission Controls	3-way catalytic converter, computer controlled fuel/air ratio, exhaust gas recirculation
Valve Train	overhead valves, pushrods, hydraulic lifters
Head Design	cast iron with swirl-port combustion chamber
Power (SAE net)	92 hp @ 4400 RPM
Torque (SAE net)	134 ft. lbs. @ 2800 RPM

Drive Train

5-Speed Manual Transaxle

Final Drive Ratio	3.35
First Gear Ratio	3.73
Second Gear Ratio	2.04
Third Gear Ratio	1.45
Fourth Gear Ratio	1.03
Fifth Gear Ratio	0.74
Reverse Gear Ratio	3.50

Automatic Transaxle

Final Drive Ratio	3.18
First Gear Ratio	2.84
Second Gear Ratio	1.60
Third Gear Ratio	1.00
Reverse Gear Ratio	2.07

6-Cylinder Engine

Type	transverse mounted, cast iron block
Bore & Stroke	3.50" x 2.99"
Displacement	2.8 liters (173 C.I.D.)
Fuel System	multi-port fuel injection

Emission Controls	3-way catalytic converter, computer controlled fuel/air ratio, exhaust gas recirculation
Valve Train	overhead valves, pushrods, hydraulic lifters
Head Design	cast iron
Power (SAE net)	140 hp @ 5200 RPM
Torque (SAE net)	170 ft. lbs. @ 3600 RPM

Manual Transaxle

Final Drive Ratio	3.65
First Gear Ratio	3.31
Second Gear Ratio	1.95
Third Gear Ratio	1.24
Fourth Gear Ratio	0.81
Reverse Gear Ratio	3.42

Automatic Transaxle

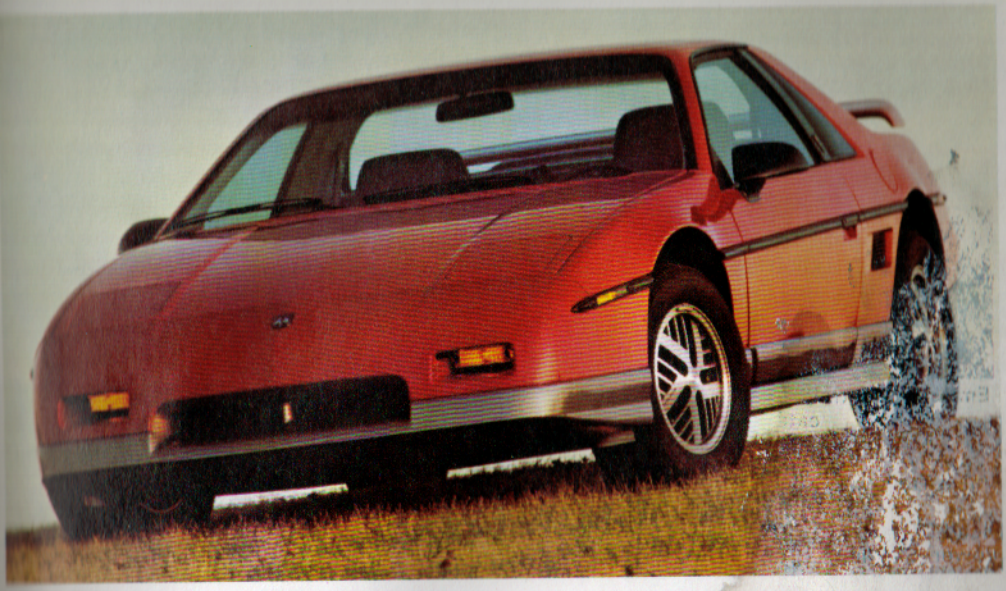
Final Drive Ratio	3.18
First Gear Ratio	2.84
Second Gear Ratio	1.60
Third Gear Ratio	1.00
Reverse Gear Ratio	2.07

GENERAL SPECIFICATIONS

DIMENSIONS

Wheelbase	2373 mm (93.4 in.)

Track (Except SE and GT)	
Front	1468 mm (57.8 in.)
Rear	1492 mm (58.7 in.)
Track (SE or GT)	
Front	1482 mm (58.4 in.)
Rear	1506 mm (59.3 in.)
Length	
Except SE and GT	4082 mm (160.7 in.)
SE or GT	4193 mm (165.8 in.)
Width	1752 mm (68.9 in.)
Height	1192 mm (46.9 in.)
Weight distribution (F/R %)	44/56
SUSPENSION	
Front	Independent s/a w/coil springs, 23mm stabilizer bar
Rear	Independent struts
STEERING	
Type	manual rack and pinion
Turns lock-to-lock	3.00
BRAKES	
Front	9.72" x .43" disc
Rear	9.72" x .50" disc
Power Assist	vacuum
Calipers	semi-metallic
WHEELS	
Size & Type	13" x 5.5" steel
SE	14" x 6.0" aluminum
GT	15" x 6.0" aluminum
TIRES	
Size & Type	185/80R13 steel radial
SE	195/70R14 steel radial
GT Front	205/60R15 steel radial
GT Rear	215/60R15 steel radial



REPLACEMENT PARTS

Spark Plugs	
4-Cyl.	AC Type R43CTS
6-Cyl.	AC Type R42CTS
Spark Plug Gap	
4-Cylinder	1.5 mm (0.060")
6-Cylinder	1.1 mm (0.045")
PCV Valve	
4-Cyl.	AC Type CV881C
6-Cyl.	AC Type CV892C
Cooling System	
Radiator Cap	AC Type RC27
Thermostat Housing Cap	AC Type RC40
Thermostat Temp Spec	91°C (195°F)
Filters	
Air	
4-Cyl.	AC Type A913C
6-Cyl.	AC Type A925C
Crankcase Separator	
4-Cyl.	AC Type FB88
Engine Oil	
4-Cyl.	AC Type PF47
6-Cyl.	AC Type PF47
Fuel	AC Type GF481

REPLACEMENT BULBS (TYPE)

Replace With GM Guide Lamps

Exterior	
Back Up	1156
Headlight	H6054
License	194
Park/Front Turn	2057
Side Marker - Front & Rear	194
Tail/Stop/Rear Turn	2057

CAPACITIES (APPROXIMATE)

Fuel Tank ..... 38.6 L (10.3 gal.)
Cooling System
4-Cyl.
Without Air. Cond. ..... 13.0 L (13.8 qt.)
Air Cond./Man. Trans. ..... 13.3 L (14.1 qt.)
Air Cond./Auto. Trans. ..... 13.1 L (13.8 qt.)
H.D. Cooling ..... 13.0 L (13.8 qt.)
6-Cyl. ..... 13.0 L (13.8 qt.)

Crankcase
4-Cyl. ..... 2.8 L (3.0 qt.) *
6-Cyl. ..... 3.8 L (4.0 qt.) *

* Approximate capacity with or without oil filter change. Recheck oil level after refill.

4-Speed Man. Transaxle ..... 2.8 L (5.9 pt.)
5-Speed Man. Transaxle ..... 2.5 L (5.3 pt.)
Automatic Transaxle
Refill after draining ..... 3.8 L (8.0 pt.) ●
Refill after disassembly ..... 4.7 L (10.0 pt.) ●

● After adding fluid, check for correct fluid level using the dipstick. All fluid level checks must be made with the car on a level surface, the engine running and the transaxle in Park or Neutral.

Litho in U.S.A.

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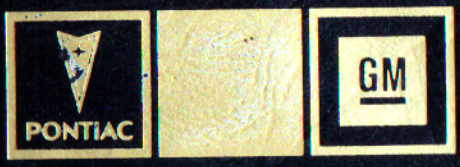
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