

# 2007 Saturn VUE Owner Manual

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This manual includes the latest information at the time it was printed. We reserve the right to make changes after that time without further notice.

This manual describes features that may be available in this model, but your vehicle may not have all of them. For example, more than one entertainment system may be offered or your vehicle may have been ordered without a front passenger or rear seats.

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Part No. 15860080 B Second Printing

Keep this manual in the vehicle so it will be there if it is needed. If the vehicle is sold, leave this manual in the vehicle.

## Canadian Owners

A French language copy of this manual can be obtained from your dealer/retailer or from:

Helm, Incorporated  
P.O. Box 07130  
Detroit, MI 48207

## About Driving Your Vehicle

As with other vehicles of this type, failure to operate this vehicle correctly may result in loss of control or an accident. Be sure to read the “on-pavement” and “off-road” driving guidelines in this manual. See *Your Driving, the Road, and Your Vehicle* on page 228 and *Off-Road Driving* on page 247.

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## How to Use This Manual

Many people read the owner manual from beginning to end when they first receive their new vehicle. If this is done, it can help you learn about the features and controls for the vehicle. Pictures and words work together in the owner manual to explain things.

## Index

A good place to quickly locate information about the vehicle is the Index in the back of the manual. It is an alphabetical list of what is in the manual and the page number where it can be found.

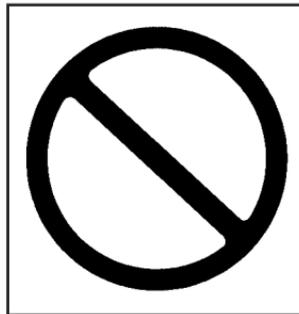
## Safety Warnings and Symbols

There are a number of safety cautions in this book. We use a box and the word CAUTION to tell about things that could hurt you if you were to ignore the warning.

### CAUTION:

**These mean there is something that could hurt you or other people.**

In the caution area, we tell you what the hazard is. Then we tell you what to do to help avoid or reduce the hazard. Please read these cautions. If you do not, you or others could be hurt.



You will also find a circle with a slash through it in this book. This safety symbol means “Do Not,” “Do Not do this” or “Do Not let this happen.”

## Vehicle Damage Warnings

Also, in this manual you will find these notices:

**Notice:** These mean there is something that could damage your vehicle.

A notice tells about something that can damage the vehicle. Many times, this damage would not be covered by your vehicle's warranty, and it could be costly. But the notice will tell what to do to help avoid the damage.

When you read other manuals, you might see CAUTION and NOTICE warnings in different colors or in different words.

There are also warning labels on the vehicle. They use the same words, CAUTION or NOTICE.

## Vehicle Symbols

The vehicle has components and labels that use symbols instead of text. Symbols are shown along with the text describing the operation or information relating to a specific component, control, message, gage, or indicator.

If you need help figuring out a specific name of a component, gage, or indicator, reference the following topics:

- Seats and Restraint Systems in Section 1
- Features and Controls in Section 2
- Instrument Panel Overview in Section 3
- Climate Controls in Section 3
- Warning Lights, Gages, and Indicators in Section 3
- Audio System(s) in Section 3
- Engine Compartment Overview in Section 5

These are some examples of symbols that may be found on the vehicle:

CAUTION POSSIBLE INJURY		LATCH BOTH LAP AND SHOULDER BELTS TO PROTECT OCCUPANT DO NOT TWIST SAFETY BELT WHEN ATTACHING	 	MASTER LIGHTING SWITCH		ENGINE COOLANT TEMP		TIRE PRESSURE			
PROTECT EYES BY SHIELDING		FASTEN SEAT BELTS		AIRBAG		TURN SIGNALS		BATTERY CHARGING SYSTEM		FUSE BOX ACCESS	
CAUSTIC BATTERY ACID COULD CAUSE BURNS		MOVE SEAT FULLY REARWARD SECURE CHILD SEAT		DO NOT INSTALL A REAR-FACING CHILD RESTRAINT IN THIS SEATING POSITION		PARKING LAMPS		BRAKE		ENGINE COOLANT FAN	
AVOID SPARKS OR FLAMES		PULL BELT OUT COMPLETELY THEN SECURE CHILD SEAT		DO NOT INSTALL A FORWARD-FACING CHILD RESTRAINT IN THIS SEATING POSITION		HAZARD WARNING FLASHER		COOLANT		FUEL	
SPARK OR FLAME COULD EXPLODE BATTERY		POWER WINDOW		DOOR LOCK UNLOCK		DAYTIME RUNNING LAMPS		ENGINE OIL PRESSURE		OWNER MANUAL	
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# Section 1    Seats and Restraint Systems

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# Section 1    Seats and Restraint Systems

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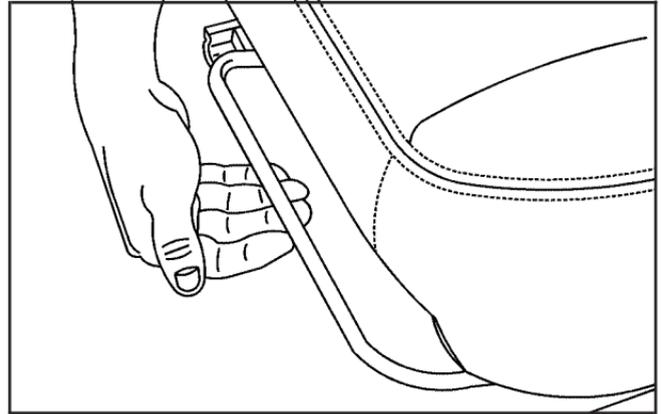
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## Front Seats

### Manual Seats

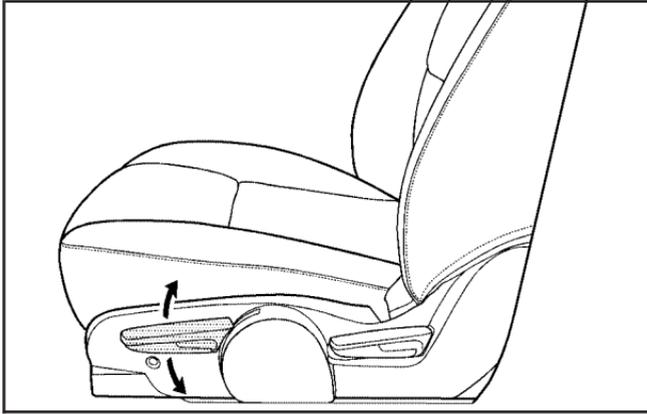
#### **CAUTION:**

**You can lose control of the vehicle if you try to adjust a manual driver's seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you do not want to. Adjust the driver's seat only when the vehicle is not moving.**



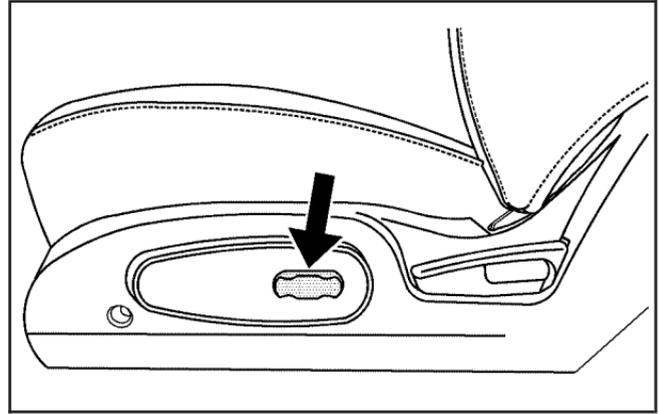
Lift the bar located under the front of the seat to unlock it. Slide the seat to where you want it and release the bar. Try to move the seat with your body to be sure the seat is locked in place.

## Driver Seat Height Adjuster



If your vehicle has a manual driver seat height adjuster, it is located on the outboard side of the seat near the front of the seat cushion. To raise the seat, move the lever upward repeatedly until the seat is at the desired height. To lower the seat, move the lever downward repeatedly until the seat is at the desired height.

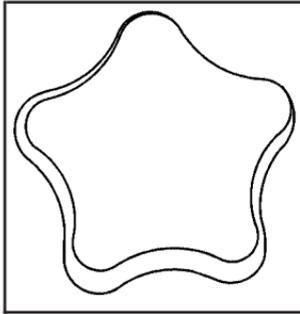
## Power Seat



If the vehicle has a power seat, the control used to operate it is located on the outboard side of the driver's seat. To adjust the seat do any of the following:

- Move the seat forward or rearward by sliding the control forward or rearward.
- Raise or lower the front part of the seat cushion by moving the front of the control up or down.
- Raise or lower the rear part of the seat cushion by moving the rear of the control up or down.

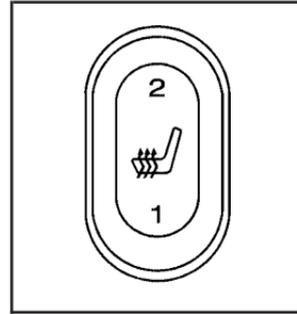
## Manual Lumbar



If your vehicle has this feature, the knob is located on the front of the driver seat lower cushion on the inboard side.

Turn the knob clockwise or counterclockwise to increase or decrease the lumbar support.

## Heated Seats



Your vehicle may have heated seats. The switches are located below the climate control system and forward of the shift lever.

Press 1 to warm the seat. Press 2 for a higher temperature setting. To turn this feature off, move the switch to the center position.

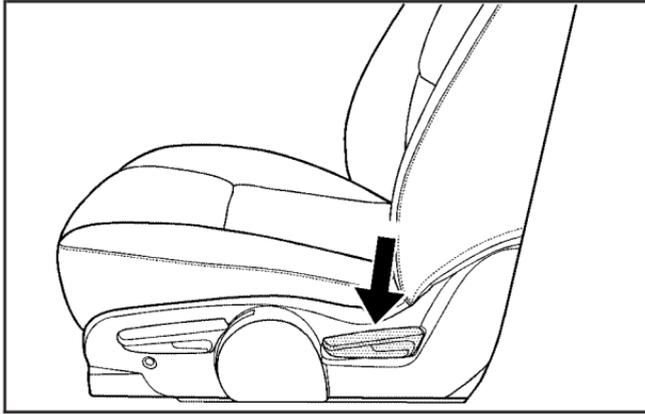
## Manual Reclining Seatbacks

### CAUTION:

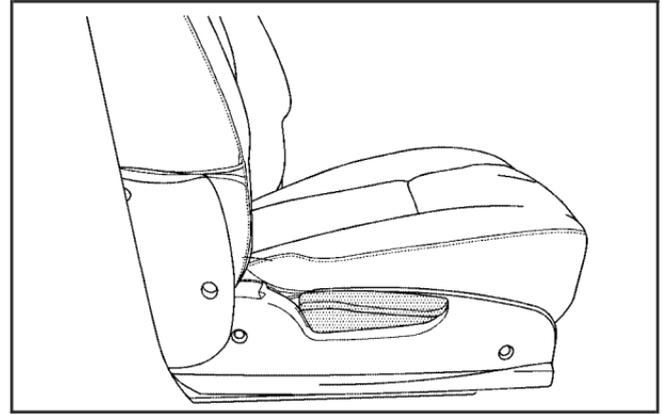
You can lose control of the vehicle if you try to adjust a manual driver's seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you do not want to. Adjust the driver's seat only when the vehicle is not moving.

### CAUTION:

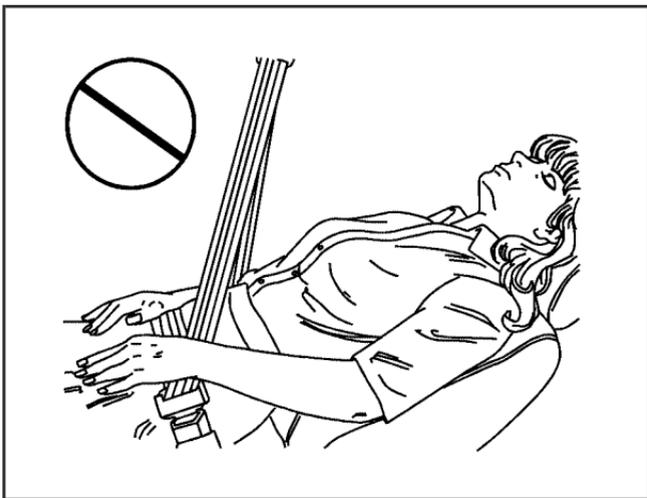
If the seatback is not locked, it could move forward in a sudden stop or crash. That could cause injury to the person sitting there. Always push and pull on the seatback to be sure it is locked.



To recline the seatback on the driver's seat, lift the lever on the rear outboard side of the seat and move the seatback to the desired position. Then release the lever to lock the seatback in place.



To recline the seatback on the front passenger's seat, lift the lever, located on the outboard side of the seat, up fully to disengage the seatback. Then move the seatback to the desired position. Release the lever to lock the seatback in place.



**⚠ CAUTION:**

**Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts cannot do their job when you are reclined like this.**

**The shoulder belt cannot do its job because it will not be against your body. Instead, it will be in front of you. In a crash, you could go into it, receiving neck or other injuries.**

**The lap belt cannot do its job either. In a crash, the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones. This could cause serious internal injuries.**

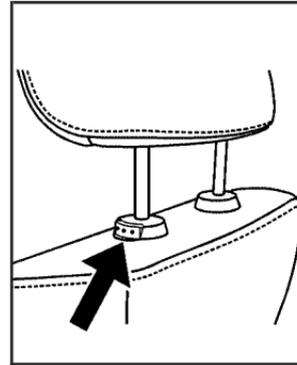
**For proper protection when the vehicle is in motion, have the seatback upright. Then sit well back in the seat and wear your safety belt properly.**

Do not have a seatback reclined if your vehicle is moving.

## Head Restraints



Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.



Pull the head restraint up to raise it. To lower the head restraint, press the button, located on the top of the seatback, and push the restraint down.

## Passenger Folding Seatback

The front passenger's seatback folds flat.

### CAUTION:

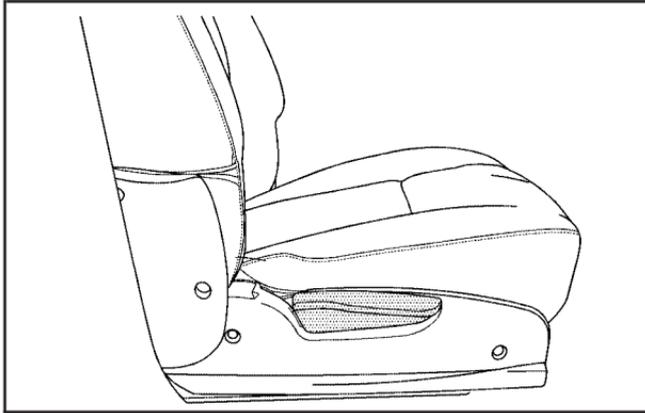
If you fold the seatback forward to carry longer objects, such as skis, be sure any such cargo is not near an airbag. In a crash, an inflating airbag might force that object toward a person. This could cause severe injury or even death. Secure objects away from the area in which an airbag would inflate. For more information, see *Where Are the Airbags?* on page 75 and *Loading Your Vehicle* on page 279.

### CAUTION:

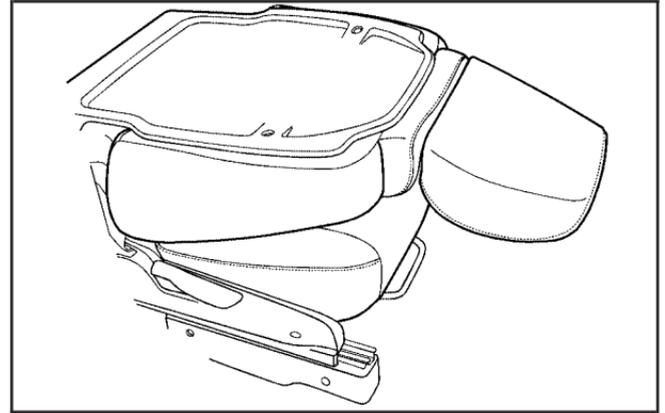
Things you put on this seatback can strike and injure people in a sudden stop or turn, or in a crash. Remove or secure all items before driving.

To fold the seatback, do the following:

1. Lower the head restraint all the way.
2. Lift the bar under the front of the seat to unlock it. Slide the seat as far back as it will go and release the bar. Try to move the seat back and forth to make sure it is locked into place.



3. Lift the recliner lever, located on the outboard side of the seat, up fully and fold the seatback forward until it disengages.



4. Continue to fold the seat forward until it locks in the folded position.
5. Pull up on the seatback to be sure it is locked.

To raise the seatback, do the following:

1. Lift the recliner lever, located on the outboard side of the seat, up fully and push up on the seatback.
2. Continue raising the seatback until the seatback re-engages.

 **CAUTION:**

**If the seatback is not locked, it could move forward in a sudden stop or crash. That could cause injury to the person sitting there. Always push and pull on the seatback to be sure it is locked.**

3. Push and pull on the seatback to make sure it is locked in place.

The recliner lever is also used to recline the seatback while a passenger is seated. See *Manual Reclining Seatbacks* on page 12.

## Rear Seats

### Split Folding Rear Seat

The rear split bench seatbacks have three available positions — folded forward, upright, or partially reclined. Each of the rear seatbacks can be moved to any of the three positions independent of the other seatback position.

 **CAUTION:**

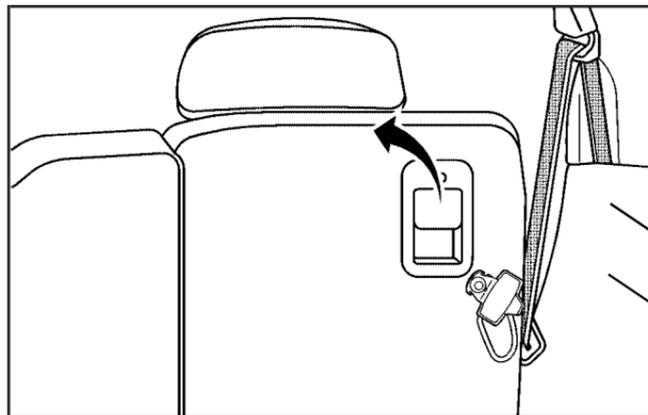
**A safety belt that is improperly routed, not properly attached, or twisted will not provide the protection needed in a crash. The person wearing the belt could be seriously injured. After raising the rear seatback, always check to be sure that the safety belts are properly routed and attached, and are not twisted.**

**Notice:** Folding a rear seat with the safety belts still fastened may cause damage to the seat or the safety belts. Always unbuckle the safety belts and return them to their normal stowed position before folding a rear seat.

Prior to lowering the seatback, ensure all three of the seatbelts are unbuckled and the front seats are not reclined.

**⚠ CAUTION:**

**If the seatback is not locked, it could move forward in a sudden stop or crash. That could cause injury to the person sitting there. Always push and pull on the seatback to be sure it is locked.**



Lift the lever on the upper back corner of the seatback to move it to the desired position and then release it. Push and pull on the seatback to be sure it is locked in place.

## Safety Belts

### Safety Belts: They Are for Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

#### CAUTION:

**Do not let anyone ride where he or she cannot wear a safety belt properly. If you are in a crash and you are not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be, if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.**

#### CAUTION:

**It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.**

Your vehicle has indicators to remind you and your passengers to buckle your safety belts. See *Safety Belt Reminder Light* on page 164 and *Passenger Safety Belt Reminder Light* on page 165.

In most states and in all Canadian provinces, the law says to wear safety belts. Here is why: *They work.*

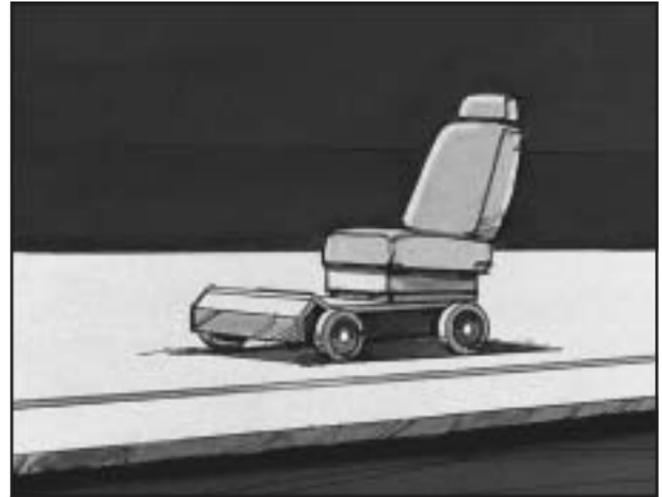
You never know if you will be in a crash. If you do have a crash, you do not know if it will be a bad one.

A few crashes are mild, and some crashes can be so serious that even buckled up, a person would not survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could have been badly hurt or killed.

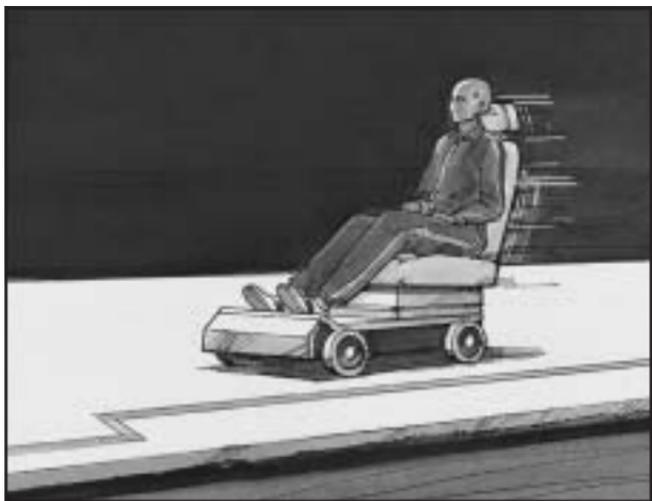
After more than 40 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter... a lot!

## Why Safety Belts Work

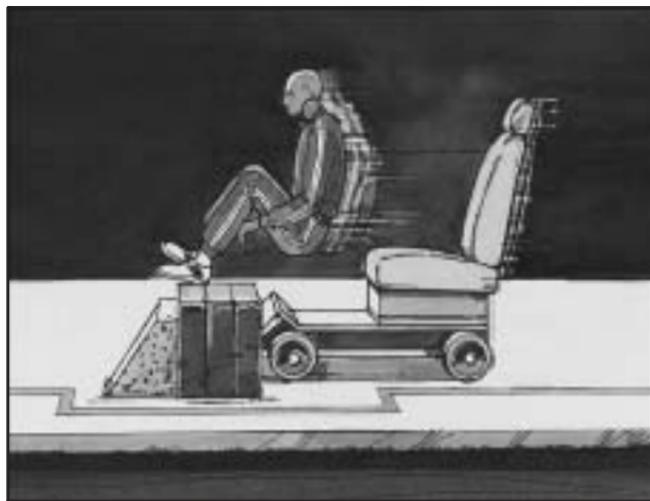
When you ride in or on anything, you go as fast as it goes.



Take the simplest vehicle. Suppose it is just a seat on wheels.



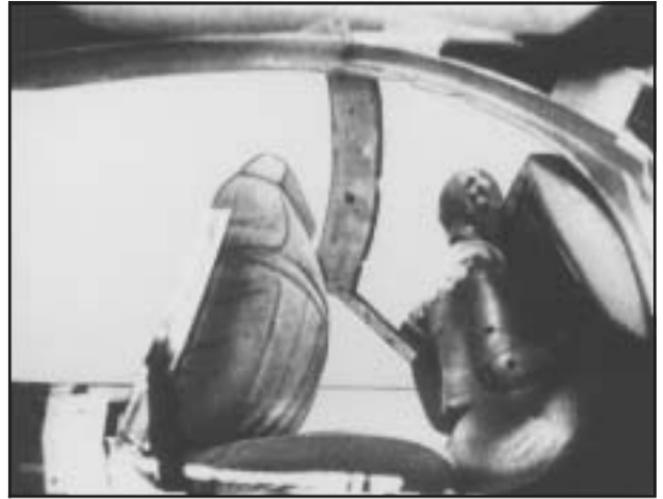
Put someone on it.



Get it up to speed. Then stop the vehicle.  
The rider does not stop.



The person keeps going until stopped by something. In a real vehicle, it could be the windshield...



or the instrument panel...



## Questions and Answers About Safety Belts

**Q:** Will I be trapped in the vehicle after an accident if I am wearing a safety belt?

**A:** You *could* be — whether you are wearing a safety belt or not. But you can unbuckle a safety belt, even if you are upside down. And your chance of being conscious during and after an accident, so you *can* unbuckle and get out, is *much* greater if you are belted.

**Q:** If my vehicle has airbags, why should I have to wear safety belts?

**A:** Airbags are supplemental systems only; so they work *with* safety belts — not instead of them. Every airbag system ever offered for sale has required the use of safety belts. Even if you are in a vehicle that has airbags, you still have to buckle up to get the most protection. That is true not only in frontal collisions, but especially in side and other collisions.

or the safety belts!

With safety belts, you slow down as the vehicle does. You get more time to stop. You stop over more distance, and your strongest bones take the forces. That is why safety belts make such good sense.

**Q:** If I am a good driver, and I never drive far from home, why should I wear safety belts?

**A:** You may be an excellent driver, but if you are in an accident — even one that is not your fault — you and your passengers can be hurt. Being a good driver does not protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

## How to Wear Safety Belts Properly

This part is only for people of adult size.

Be aware that there are special things to know about safety belts and children. And there are different rules for smaller children and babies. If a child will be riding in your vehicle, see *Older Children on page 42* or *Infants and Young Children on page 45*. Follow those rules for everyone's protection.

First, you will want to know which restraint systems your vehicle has.

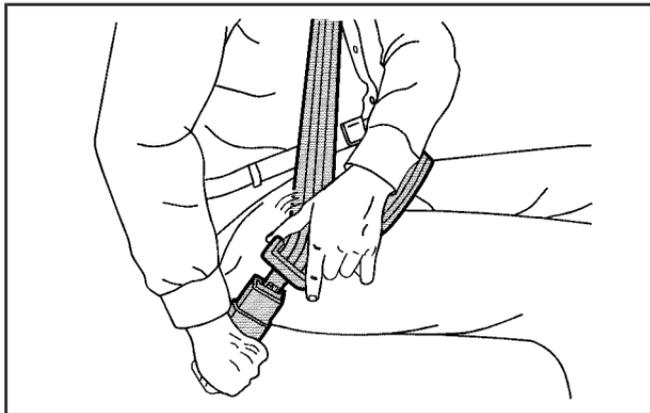
We will start with the driver position.

## Driver Position

### Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here is how to wear it properly.

1. Close and lock the door.
2. Adjust the seat so you can sit up straight. To see how, see “Seats” in the Index.



3. Pick up the latch plate and pull the belt across you. Do not let it get twisted.

The lap-shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it.

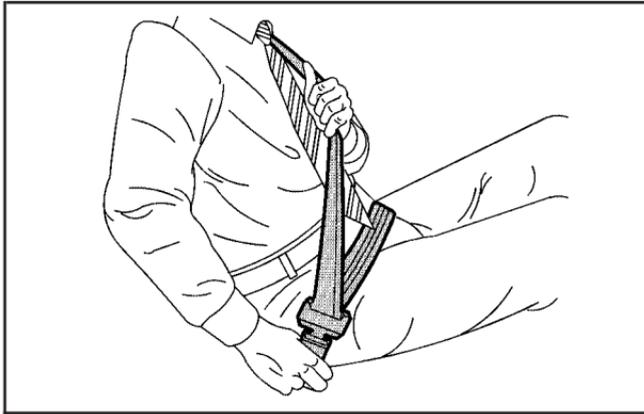
Then pull the belt across you more slowly.

4. Push the latch plate into the buckle until it clicks.

Pull up on the latch plate to make sure it is secure. If the belt is not long enough, see *Safety Belt Extender on page 41*.

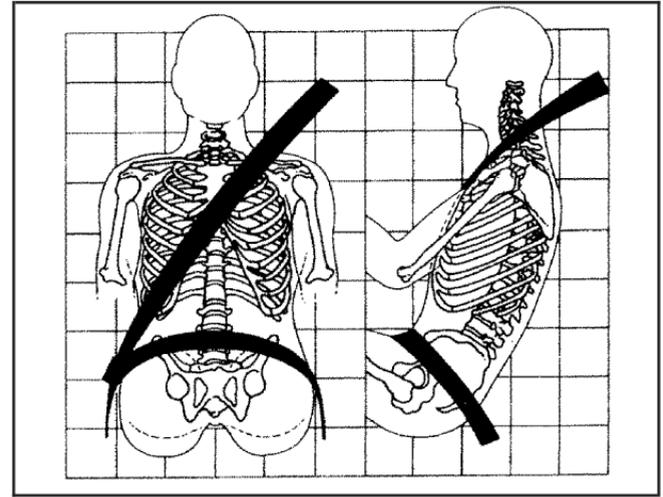
Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

5. Move the shoulder belt height adjuster to the height that is right for you. Improper shoulder belt height adjustment could reduce the effectiveness of the safety belt in a crash. See *Shoulder Belt Height Adjustment on page 34*.



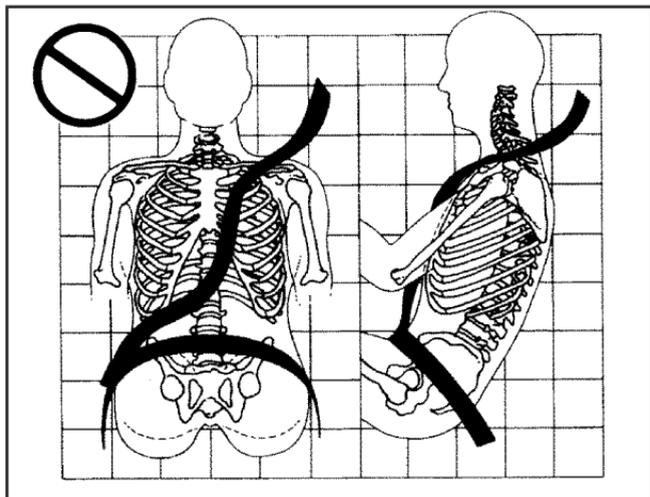
6. To make the lap part tight, pull up on the shoulder belt.

It may be necessary to pull stitching on the safety belt through the latch plate to fully tighten the lap belt on smaller occupants.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you would be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces. The safety belt locks if there is a sudden stop or crash.

**Q:** What is wrong with this?

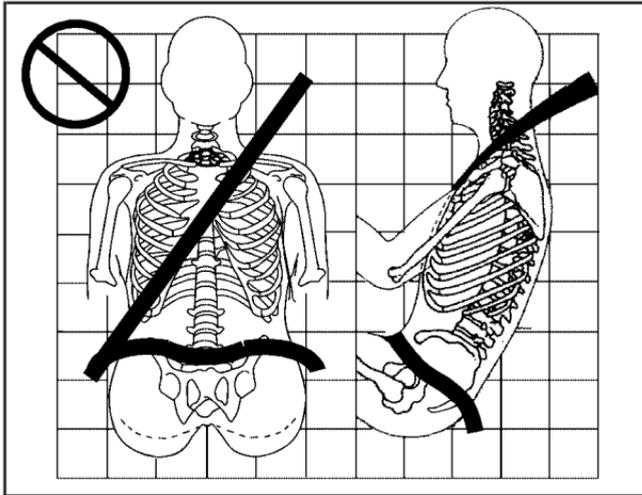


**A:** The shoulder belt is too loose. It will not give nearly as much protection this way.

**⚠ CAUTION:**

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

**Q:** What is wrong with this?

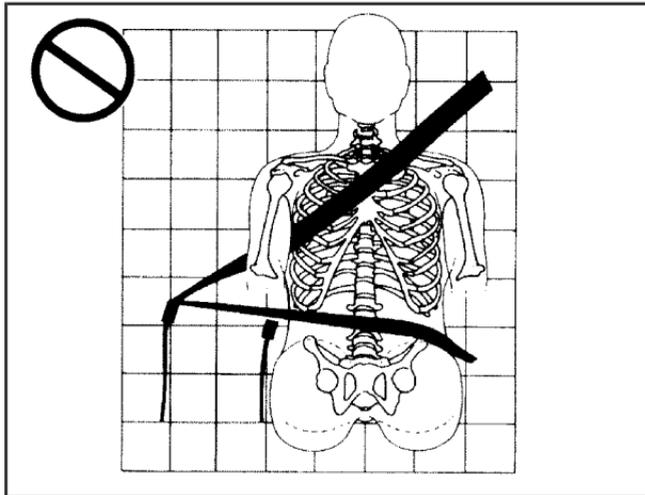


**A:** The lap belt is too loose. It will not give nearly as much protection this way.

**⚠ CAUTION:**

You can be seriously hurt if your lap belt is too loose. In a crash, you could slide under the lap belt and apply force at your abdomen. This could cause serious or even fatal injuries. The lap belt should be worn low and snug on the hips, just touching the thighs.

**Q:** What is wrong with this?

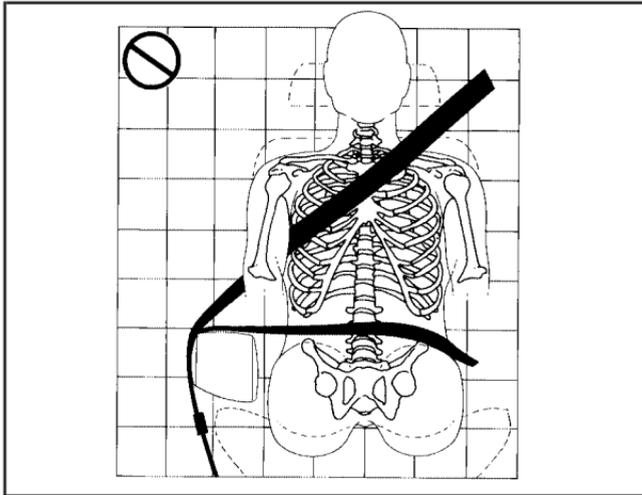


**A:** The belt is buckled in the wrong place.

**⚠ CAUTION:**

You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

**Q:** What is wrong with this?

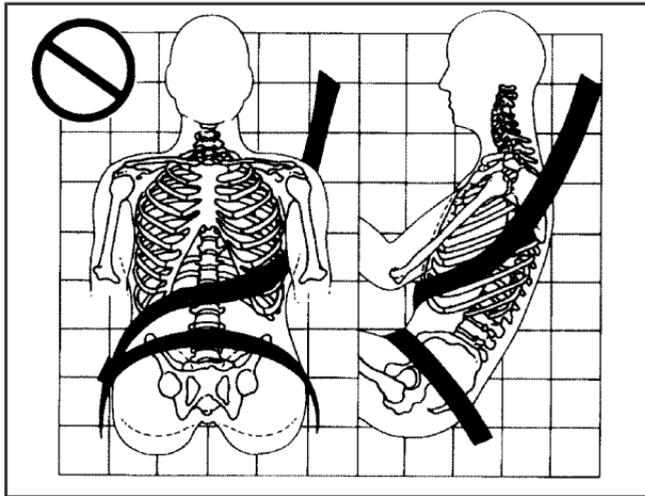


**A:** The belt is over an armrest.

**⚠ CAUTION:**

You can be seriously injured if your belt goes over an armrest like this. The belt would be much too high. In a crash, you can slide under the belt. The belt force would then be applied at the abdomen, not at the pelvic bones, and that could cause serious or fatal injuries. Be sure the belt goes under the armrests.

**Q:** What is wrong with this?

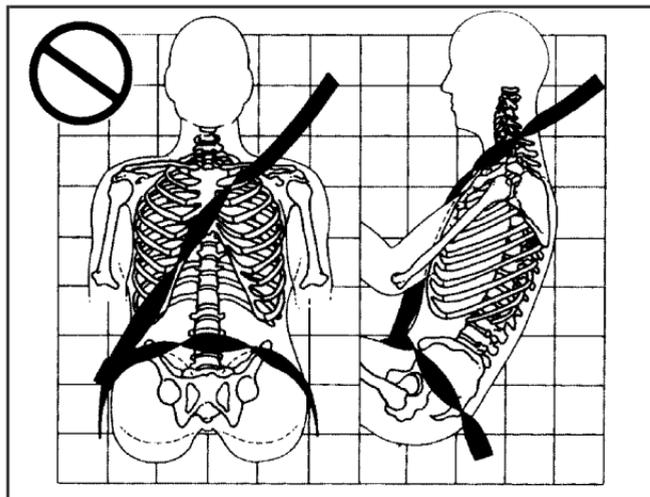


**A:** The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

**⚠ CAUTION:**

You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which are not as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

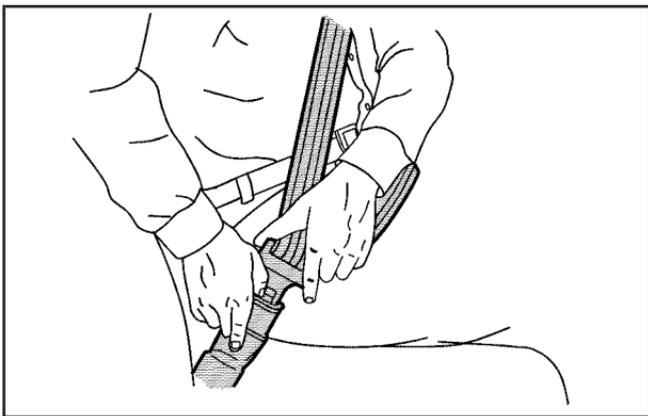
**Q:** What is wrong with this?



**A:** The belt is twisted across the body.

**⚠ CAUTION:**

You can be seriously injured by a twisted belt. In a crash, you would not have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your retailer to fix it.



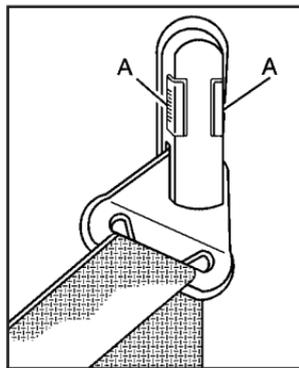
To unfasten the belt, push the button on the buckle. The belt should go back out of the way.

Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

## Shoulder Belt Height Adjustment

Before you begin to drive, move the shoulder belt height adjuster to the height that is right for you.

Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off your shoulder. Improper shoulder belt height adjustment could reduce the effectiveness of the safety belt in a crash.

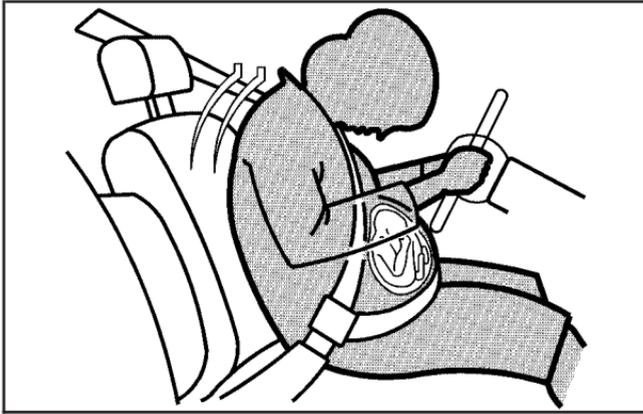


To move it up or down, squeeze the release buttons (A) together and move the height adjuster to the desired position.

After you move the height adjuster to where you want it, try to move it up or down without squeezing the release buttons to make sure it has locked into position.

## Safety Belt Use During Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they do not wear safety belts.



A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible, below the rounding, throughout the pregnancy.

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it is more likely that the fetus will not be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

## Right Front Passenger Position

To learn how to wear the right front passenger's safety belt properly, see *Driver Position on page 26*.

The right front passenger's safety belt works the same way as the driver's safety belt — except for one thing. If you ever pull the shoulder portion of the belt out all the way, you will engage the child restraint locking feature. If this happens, let the belt go back all the way and start again.

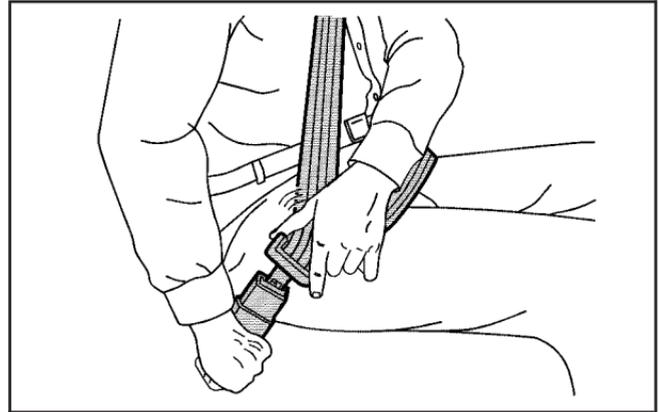
## Rear Seat Passengers

It is very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts.

Rear passengers who are not safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts.

## Lap-Shoulder Belt

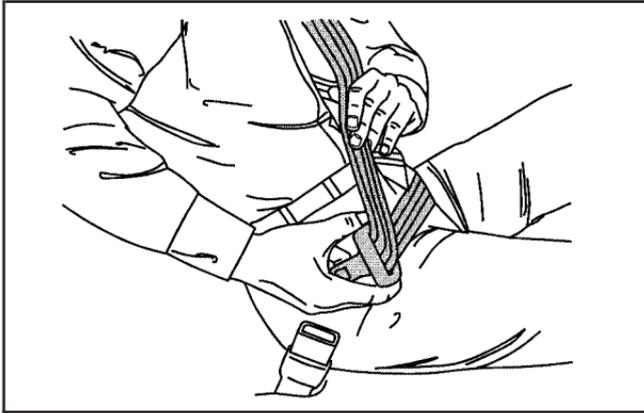
All rear seat positions have lap-shoulder belts. Here is how to wear one properly.



1. Pick up the latch plate and pull the belt across you. Do not let it get twisted.

The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.

2. Push the latch plate into the buckle until it clicks.



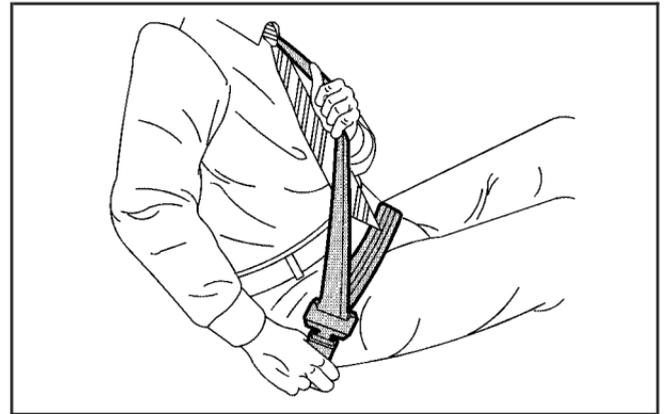
For the center rear position, if the belt stops before it reaches the buckle, tilt the latch plate and keep pulling until you can buckle it.

For the outboard rear positions, when the shoulder belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.

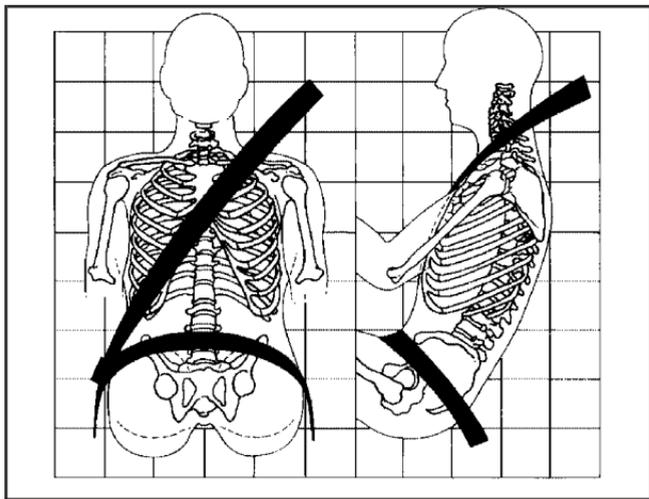
Pull up on the latch plate to make sure it is secure.

If the belt is not long enough, see *Safety Belt Extender* on page 41.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



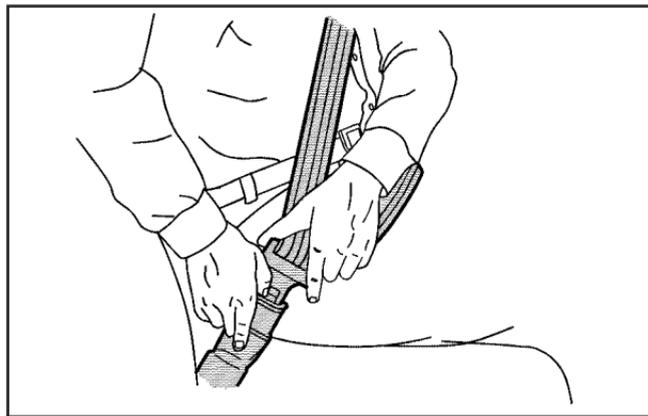
3. To make the lap part tight, pull up on the shoulder part.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you would be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces. The safety belt locks if there is a sudden stop or a crash.

**⚠ CAUTION:**

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.



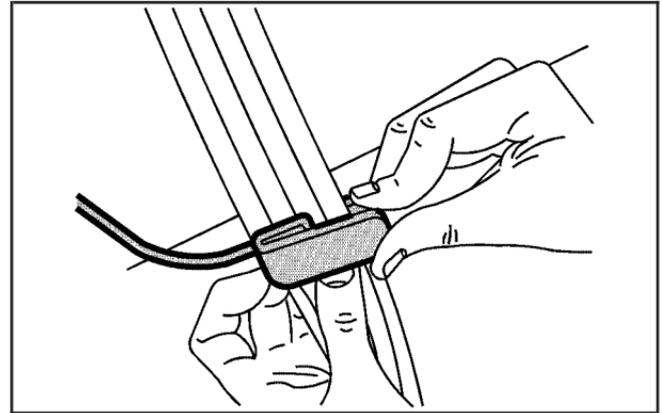
To unlatch the belt, push the button on the buckle.

## Rear Safety Belt Comfort Guides

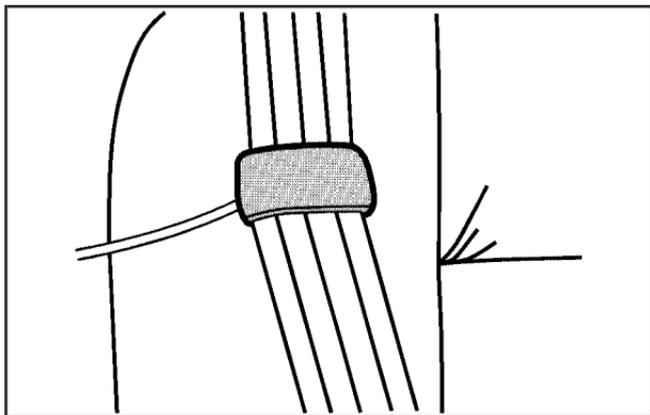
Rear shoulder belt comfort guides may provide added safety belt comfort for older children who have outgrown booster seats and for some adults. When installed on a shoulder belt, the comfort guide positions the belt away from the neck and head.

There is one guide for each outboard passenger position in the rear seat. Here is how to install a comfort guide to the safety belt:

1. Remove the guide from its storage clip, which is behind the seatback. Pull the elastic cord out from between the edge of the seatback and the interior body.



2. Slide the guide under and past the belt. The elastic cord must be under the belt. Then, place the guide over the belt, and insert the two edges of the belt into the slots of the guide.



3. Be sure that the belt is not twisted and it lies flat. The elastic cord must be under the belt and the guide on top.

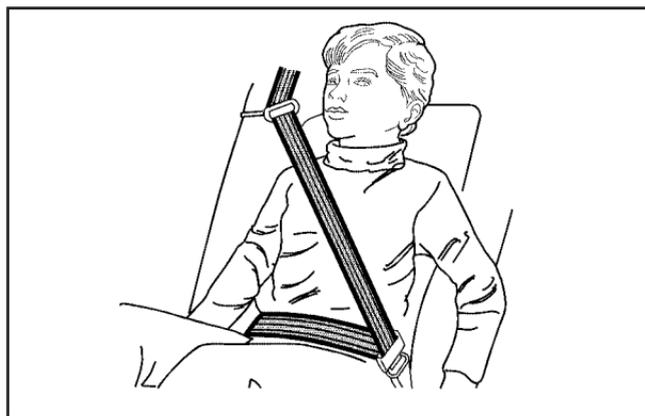
**⚠ CAUTION:**

**A safety belt that is not properly worn may not provide the protection needed in a crash. The person wearing the belt could**

**CAUTION: (Continued)**

**CAUTION: (Continued)**

**be seriously injured. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.**



4. Buckle, position, and release the safety belt as described in *Rear Seat Passengers on page 36*. Make sure that the shoulder belt crosses the shoulder.

To remove and store the comfort guide, squeeze the belt edges together so that you can take them out of the guide. Pull the guide upward to expose its storage clip, and then slide the guide onto the clip. Turn the guide and clip inward and slide them in between the seatback and the interior body, leaving only the loop of the elastic cord exposed.

## Safety Belt Pretensioners

Your vehicle has safety belt pretensioners for the driver and right front passenger. Although you cannot see them, they are part of the safety belt assembly. They help tighten the safety belts during the early stages of a moderate to severe frontal or near frontal crash if the threshold conditions for pretensioner activation are met. And, if your vehicle has roof-mounted rollover airbags, safety belt pretensioners can help tighten the safety belts in a side crash or a rollover event.

Pretensioners work only once. If they activate in a crash, you will need to get new ones, and probably other new parts for your safety belt system. See *Replacing Restraint System Parts After a Crash* on page 91.

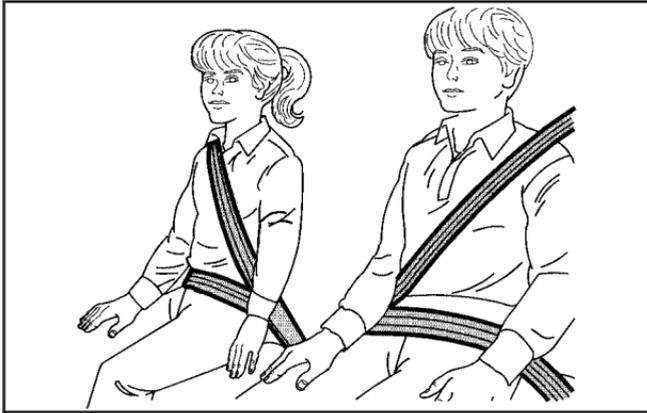
## Safety Belt Extender

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt is not long enough, your retailer will order you an extender. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. To help avoid personal injury, do not let someone else use it, and use it only for the seat it is made to fit. The extender has been designed for adults. Never use it for securing child seats. To wear it, just attach it to the regular safety belt. For more information, see the instruction sheet that comes with the extender.

# Child Restraints

## Older Children



Older children who have outgrown booster seats should wear the vehicle's safety belts.

**Q:** What is the proper way to wear safety belts?

**A:** An older child should wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide. The shoulder belt should not cross the face or neck. The lap belt should fit snugly below the hips, just touching the top of the thighs. It should never be worn over the abdomen, which could cause severe or even fatal internal injuries in a crash.

According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions.

In a crash, children who are not buckled up can strike other people who are buckled up, or can be thrown out of the vehicle. Older children need to use safety belts properly.

**⚠ CAUTION:**

**Never do this.**

**Here two children are wearing the same belt. The belt cannot properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.**



**Q: What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?**

**A:** If the child is sitting in a seat next to a window, move the child toward the center of the vehicle. Also see *Rear Safety Belt Comfort Guides* on page 39. If the child is sitting in the center rear seat passenger position, move the child toward the safety belt buckle. In either case, be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide.

**⚠ CAUTION:**

**Never do this.**

Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.



Wherever the child sits, the lap portion of the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

## Infants and Young Children

Everyone in a vehicle needs protection! This includes infants and all other children. Neither the distance traveled nor the age and size of the traveler changes the need, for everyone, to use safety restraints. In fact, the law in every state in the United States and in every Canadian province says children up to some age must be restrained while in a vehicle.

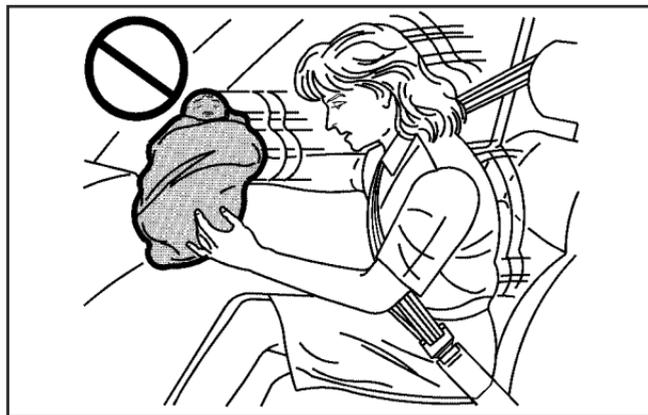
### CAUTION:

**Children can be seriously injured or strangled if a shoulder belt is wrapped around their neck and the safety belt continues to tighten. Never leave children unattended in a vehicle and never allow children to play with the safety belts.**

Every time infants and young children ride in vehicles, they should have the protection provided by appropriate restraints. Young children should not use the vehicle's adult safety belts alone, unless there is no other choice. Instead, they need to use a child restraint.

**⚠ CAUTION:**

People should never hold a baby in their arms while riding in a vehicle. A baby does not weigh much — until a crash. During a crash a baby will become so heavy it is not possible to hold it. For example, in a crash at only 25 mph (40 km/h), a 12 lb (5.5 kg) baby will suddenly become a 240 lb (110 kg) force on a person's arms. A baby should be secured in an appropriate restraint.



**⚠ CAUTION:**

Children who are up against, or very close to, any airbag when it inflates can be seriously injured or killed. Airbags plus lap-shoulder belts offer protection for adults and older children, but not for young children and infants. Neither the vehicle's safety belt system nor its airbag system is designed for them. Young children and infants need the protection that a child restraint system can provide.



**Q: What are the different types of add-on child restraints?**

**A:** Add-on child restraints, which are purchased by the vehicle's owner, are available in four basic types. Selection of a particular restraint should take into consideration not only the child's weight, height, and age but also whether or not the restraint will be compatible with the motor vehicle in which it will be used.

For most basic types of child restraints, there are many different models available. When purchasing a child restraint, be sure it is designed to be used in a motor vehicle. If it is, the restraint will have a label saying that it meets federal motor vehicle safety standards.

The restraint manufacturer's instructions that come with the restraint state the weight and height limitations for a particular child restraint. In addition, there are many kinds of restraints available for children with special needs.

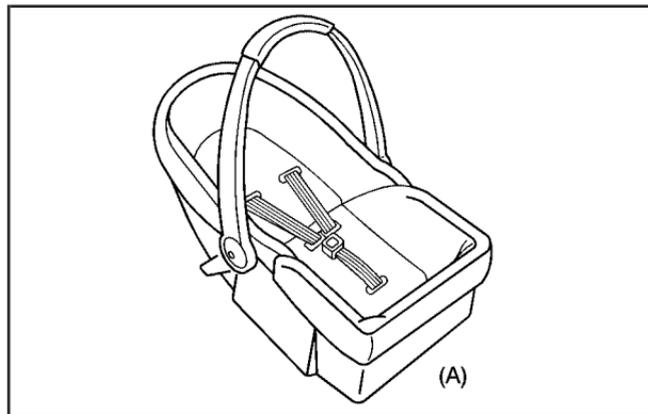
 **CAUTION:**

**Newborn infants need complete support, including support for the head and neck. This is necessary because a newborn infant's neck is weak and its head weighs so much compared with the rest of its body. In a crash, an infant in a rear-facing seat settles into the restraint, so the crash forces can be distributed across the strongest part of an infant's body, the back and shoulders. Infants always should be secured in appropriate infant restraints.**

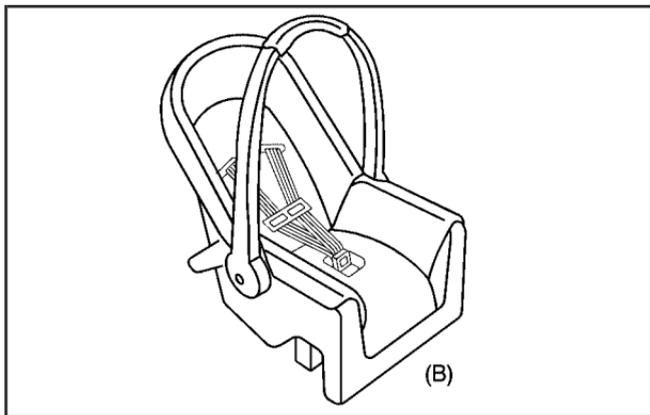
**⚠ CAUTION:**

The body structure of a young child is quite unlike that of an adult or older child, for whom the safety belts are designed. A young child's hip bones are still so small that the vehicle's regular safety belt may not remain low on the hip bones, as it should. Instead, it may settle up around the child's abdomen. In a crash, the belt would apply force on a body area that is unprotected by any bony structure. This alone could cause serious or fatal injuries. Young children always should be secured in appropriate child restraints.

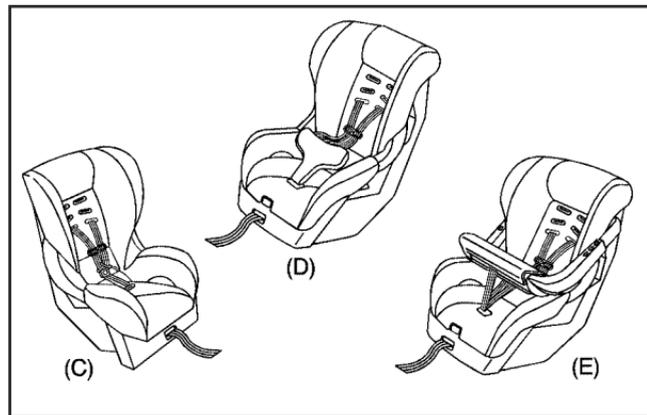
## Child Restraint Systems



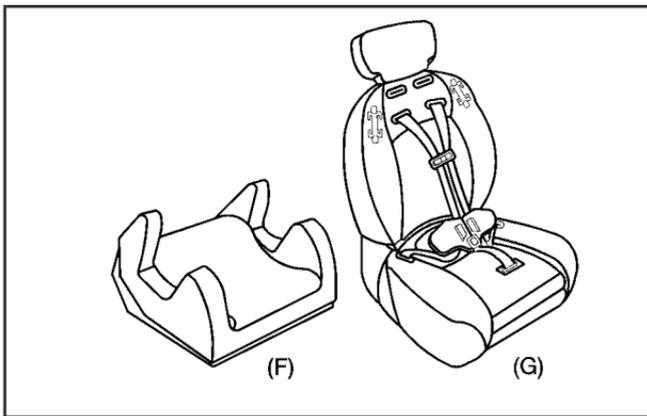
An infant car bed (A), a special bed made for use in a motor vehicle, is an infant restraint system designed to restrain or position a child on a continuous flat surface. Make sure that the infant's head rests toward the center of the vehicle.



A rear-facing infant seat (B) provides restraint with the seating surface against the back of the infant. The harness system holds the infant in place and, in a crash, acts to keep the infant positioned in the restraint.



A forward-facing child seat (C-E) provides restraint for the child's body with the harness and also sometimes with surfaces such as T-shaped or shelf-like shields.



A booster seat (F-G) is a child restraint designed to improve the fit of the vehicle's safety belt system. Some booster seats have a shoulder belt positioner, and some high-back booster seats have a five-point harness. A booster seat can also help a child to see out the window.

## **Q: How Should I Use a Child Restraint?**

**A:** A child restraint system is any device designed for use in a motor vehicle to restrain, seat, or position children. A built-in child restraint system is a permanent part of the motor vehicle. An add-on child restraint system is a portable one, which is purchased by the vehicle's owner. To help reduce injuries, an add-on child restraint must be secured in the vehicle. With built-in or add-on child restraints, the child has to be secured within the child restraint.

When choosing an add-on child restraint, be sure the child restraint is designed to be used in a vehicle. If it is, it will have a label saying that it meets federal motor vehicle safety standards. Then follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both.

## Securing an Add-on Child Restraint in the Vehicle

### CAUTION:

**A child can be seriously injured or killed in a crash if the child restraint is not properly secured in the vehicle. Make sure the child restraint is properly installed in the vehicle using the vehicle's safety belt or LATCH system, following the instructions that came with that restraint, and also the instructions in this manual.**

To help reduce the chance of injury, the child restraint must be secured in the vehicle. Child restraint systems must be secured in vehicle seats by lap belts or the lap belt portion of a lap-shoulder belt, or by the LATCH system. See *Lower Anchors and Tethers for Children (LATCH)* on page 55 for more information. A child can be endangered in a crash if the child restraint is not properly secured in the vehicle.

When securing an add-on child restraint, refer to the instructions that come with the restraint which may be on the restraint itself or in a booklet, or both, and to this manual. The child restraint instructions are important, so if they are not available, obtain a replacement copy from the manufacturer.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle — even when no child is in it.

## Securing the Child Within the Child Restraint

There are several systems for securing the child within the child restraint. One system, the three-point harness, has straps that come down over each of the infant's shoulders and buckle together at the crotch. The five-point harness system has two shoulder straps, two hip straps, and a crotch strap. A shield may take the place of hip straps. A T-shaped shield has shoulder straps that are attached to a flat pad which rests low against the child's body. A shelf- or armrest-type shield has straps that are attached to a wide, shelf-like shield that swings up or to the side.

### CAUTION:

**A child can be seriously injured or killed in a crash if the child is not properly secured in the child restraint. Make sure the child is properly secured, following the instructions that came with that restraint.**

Because there are different systems, it is important to refer to the instructions that come with the restraint. A child can be endangered in a crash if the child is not properly secured in the child restraint.

## Where to Put the Restraint

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat.

We recommend that children be secured in a rear seat, including: an infant or a child riding in a rear-facing child restraint; a child riding in a forward-facing child seat; an older child riding in a booster seat; and children, who are large enough, using safety belts.

A label on your sun visor says, “Never put a rear-facing child seat in the front.” This is because the risk to the rear-facing child is so great, if the airbag deploys.

 **CAUTION:**

**A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger’s airbag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating airbag.**

**Even though the passenger sensing system is designed to turn off the right front passenger’s frontal airbag if the system detects a rear-facing child restraint, no system is fail-safe, and no one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off.**

**CAUTION: (Continued)**

**CAUTION: (Continued)**

**We recommend that rear-facing child restraints be secured in the rear seat, even if the airbag is off.**

**If you need to secure a forward-facing child restraint in the right front seat, always move the front passenger seat as far back as it will go. It is better to secure the child restraint in a rear seat.**

If your vehicle does not have a rear seat that will accommodate a rear-facing child restraint, we recommend that rear-facing child restraints not be transported in your vehicle, even if the airbag is off.

Wherever you install a child restraint, be sure to secure the child restraint properly.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle — even when no child is in it.

## Lower Anchors and Tethers for Children (LATCH)

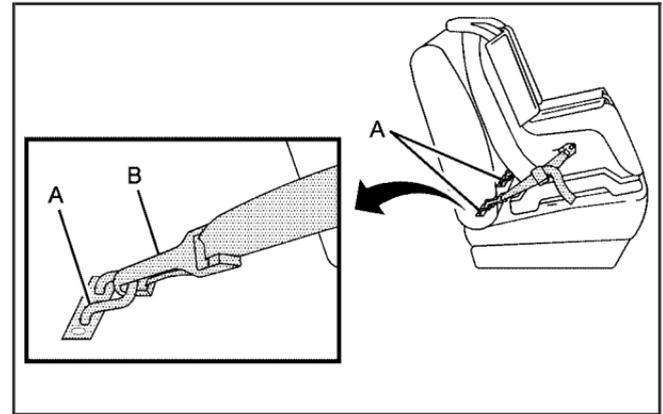
The LATCH system holds a child restraint during driving or in a crash. This system is designed to make installation of a child restraint easier. The LATCH system uses anchors in the vehicle and attachments on the child restraint that are made for use with the LATCH system.

Make sure that a LATCH-compatible child restraint is properly installed using the anchors, or use the vehicle's safety belts to secure the restraint, following the instructions that came with that restraint, and also the instructions in this manual. When installing a child restraint with a top tether, you must also use either the lower anchors or the safety belts to properly secure the child restraint. A child restraint must never be installed using only the top tether and anchor.

In order to use the LATCH system in your vehicle, you need a child restraint that has LATCH attachments. The child restraint manufacturer will provide you with instructions on how to use the child restraint and its attachments. The following explains how to attach a child restraint with these attachments in your vehicle.

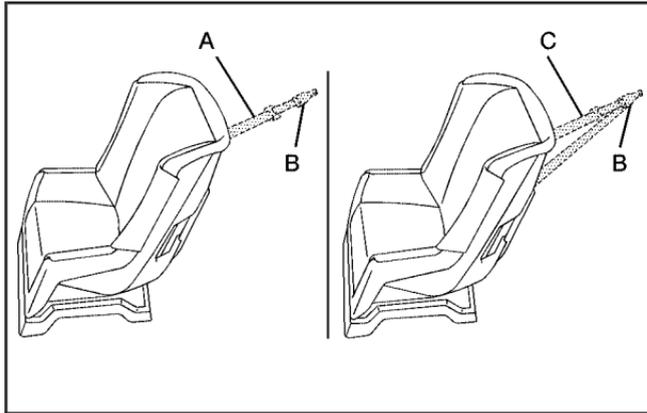
Not all vehicle seating positions or child restraints have lower anchors and attachments or top tether anchors and attachments.

### Lower Anchors



Lower anchors (A) are metal bars built into the vehicle. There are two lower anchors for each LATCH seating position that will accommodate a child restraint with lower attachments (B).

## Top Tether Anchor



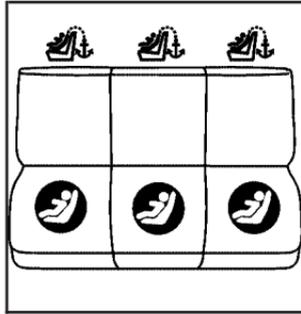
A top tether (A, C) anchors the top of the child restraint to the vehicle. A top tether anchor is built into the vehicle. The top tether attachment (B) on the child restraint connects to the top tether anchor in the vehicle in order to reduce the forward movement and rotation of the child restraint during driving or in a crash.

Your child restraint may have a single tether (A) or a dual tether (C). Either will have a single attachment (B) to secure the top tether to the anchor.

Some child restraints that have top tethers are designed for use with or without the top tether being attached. Others require the top tether always to be attached. In Canada, the law requires that forward-facing child restraints have a top tether, and that the tether be attached. In the United States, some child restraints also have a top tether. Be sure to read and follow the instructions for your child restraint.

If the child restraint does not have a top tether, one can be obtained, in kit form, for many child restraints. Ask the child restraint manufacturer whether or not a kit is available.

## Lower Anchor and Top Tether Anchor Locations



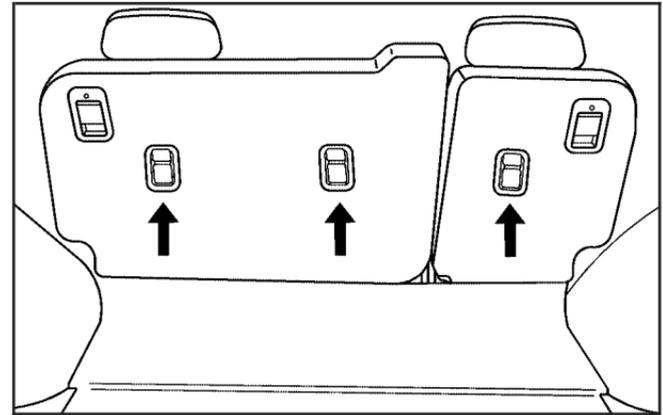
Rear Seat

Each rear seating position has exposed metal anchors located in the crease between the seatback and the seat cushion.

The top tether anchors are located on the back of the rear seatback. Be sure to use an anchor located on the same side of the vehicle as the seating position where the child restraint will be placed.

 (Top Tether Anchor): Seating positions with top tether anchors.

 (Lower Anchor): Seating positions with two lower anchors.



Do not secure a child restraint in the right front passenger's position if a national or local law requires that the top tether be attached, or if the instructions that come with the child restraint say that the top tether must be attached. There is no place to attach the top tether in this position.

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. See *Where to Put the Restraint* on page 53 for additional information.

## Securing a Child Restraint Designed for the LATCH System

### CAUTION:

If a LATCH-type child restraint is not attached to anchors, the restraint will not be able to protect the child correctly. In a crash, the child could be seriously injured or killed. Make sure that a LATCH-type child restraint is properly installed using the anchors, or use the vehicle's safety belts to secure the restraint, following the instructions that came with that restraint, and also the instructions in this manual.

### CAUTION:

Each top tether anchor and lower anchor in the vehicle is designed to hold only one child restraint. Attaching more than one child restraint to a single anchor could cause the anchor or attachment to come loose or even break during a crash. A child or others could be injured if this happens. To help prevent injury to people and damage to your vehicle, attach only one child restraint per anchor.

 **CAUTION:**

Children can be seriously injured or strangled if a shoulder belt is wrapped around their neck and the safety belt continues to tighten. Secure any unused safety belts behind the child restraint so children cannot reach them. Pull the shoulder belt all the way out of the retractor to set the lock, if your vehicle has one, after the child restraint has been installed. Be sure to follow the instructions of the child restraint manufacturer.

**Notice:** Contact between the child restraint or the LATCH attachment parts and the vehicle's safety belt assembly may cause damage to these parts. Make sure when securing unused safety belts behind the child restraint that there is no contact between the child restraint or the LATCH attachment parts and the vehicle's safety belt assembly.

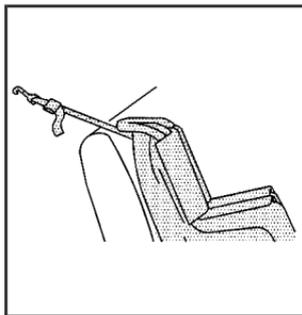
Folding an empty rear seat with the safety belts secured may cause damage to the safety belt or the seat. When removing the child restraint, always remember to return the safety belts to their normal, stowed position before folding the rear seat.

1. Attach and tighten the lower attachments to the lower anchors. If the child restraint does not have lower attachments or the desired seating position does not have lower anchors, secure the child restraint with the top tether and the safety belts. Refer to your child restraint manufacturer instructions and the instructions in this manual.
  - 1.1. Find the lower anchors for the desired seating position.
  - 1.2. Put the child restraint on the seat.
  - 1.3. Attach and tighten the lower attachments on the child restraint to the lower anchors.

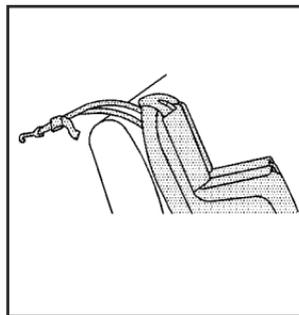
2. If the child restraint manufacturer recommends that the top tether be attached, attach and tighten the top tether to the top tether anchor, if equipped. Refer to the child restraint instructions and the following steps:

2.1. Find the top tether anchor.

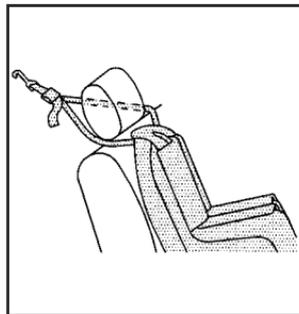
2.2. Route, attach, and tighten the top tether according to your child restraint instructions and the following instructions:



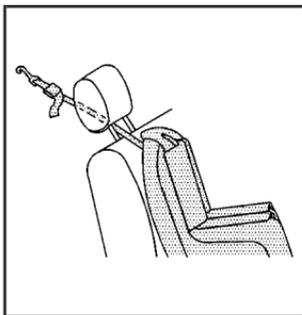
If the position you are using does not have a head restraint and you are using a single tether, route the tether over the seatback.



If the position you are using does not have a head restraint and you are using a dual tether, route the tether over the seatback.



If the position you are using has an adjustable head restraint and you are using a dual tether, route the tether around the head restraint.



If the position you are using has an adjustable head restraint and you are using a single tether, raise the head restraint and route the tether under the head restraint and in between the head restraint posts.

3. Push and pull the child restraint in different directions to be sure it is secure.

## Securing a Child Restraint in a Rear Outside Seat Position

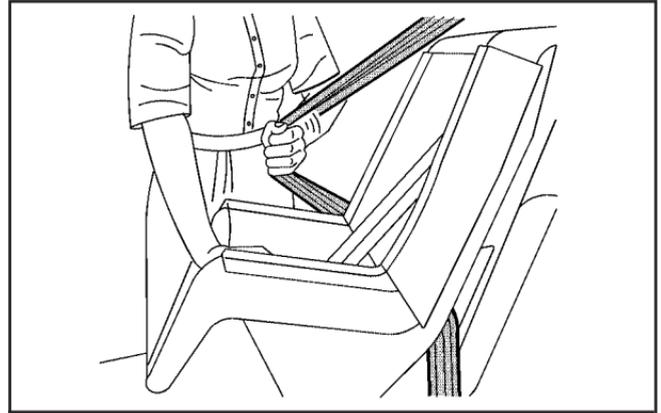
If your child restraint has the LATCH system, see *Lower Anchors and Tethers for Children (LATCH)* on page 55.

If your child restraint does not have the LATCH system, you will be using the lap-shoulder belt to secure the child restraint in this position. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

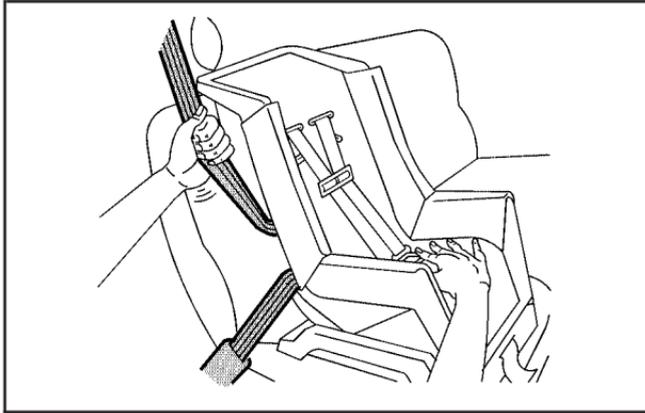
1. Put the child restraint on the seat.
2. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



3. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



4. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.



5. To tighten the belt, push down on the child restraint, pull the shoulder portion of the belt to tighten the lap portion of the belt, and feed the shoulder belt back into the retractor. If you are using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.

6. If your child restraint manufacturer recommends using a top tether, attach and tighten the top tether to the top tether anchor. Refer to the instructions that came with the child restraint and to *Lower Anchors and Tethers for Children (LATCH)* on page 55.
7. Push and pull the child restraint in different directions to be sure it is secure.

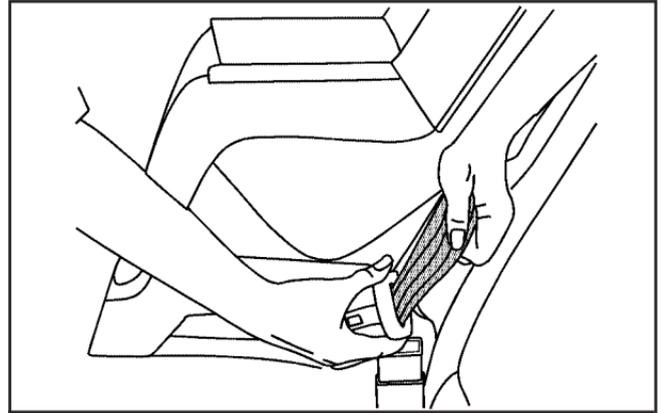
To remove the child restraint, if the top tether is attached to the top tether anchor, disconnect it. Unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

## Securing a Child Restraint in the Center Rear Seat Position

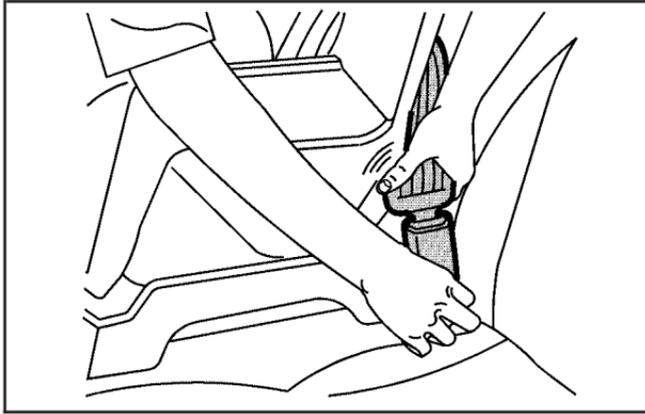
If your child restraint has the LATCH system, see *Lower Anchors and Tethers for Children (LATCH)* on page 55.

If your child restraint does not have the LATCH system, you will be using the lap-shoulder belt to secure the child restraint in this position. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

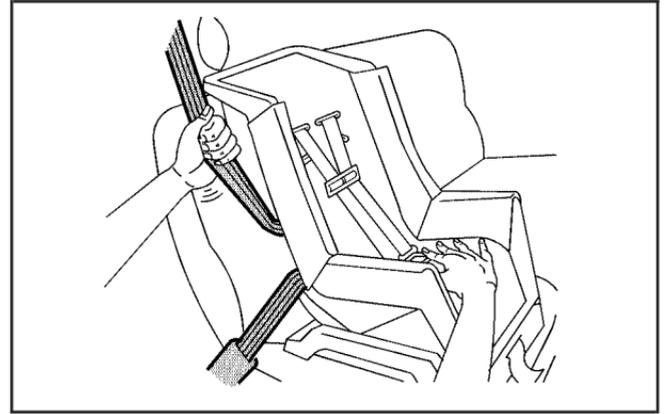
1. Put the child restraint on the seat.
2. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



Tilt the latch plate to adjust the belt if needed.



3. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



4. To tighten the belt, push down on the child restraint, pull the shoulder portion of the belt to tighten the lap portion of the belt, and feed the shoulder belt back into the retractor. If you are using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.

5. If your child restraint has a top tether, attach and tighten the top tether to the top tether anchor. Refer to the instructions that came with the child restraint and to *Lower Anchors and Tethers for Children (LATCH)* on page 55.
6. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, if the top tether is attached to the top tether anchor, disconnect it. Unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

## Securing a Child Restraint in the Right Front Seat Position

Your vehicle has a right front passenger's airbag. A rear seat is a safer place to secure a forward-facing child restraint. See *Where to Put the Restraint* on page 53.

In addition, your vehicle has a passenger sensing system. The passenger sensing system is designed to turn off the right front passenger's frontal airbag when an infant in a rear-facing infant seat or a small child in a forward-facing child restraint or booster seat is detected. See *Passenger Sensing System* on page 82 and *Passenger Airbag Status Indicator* on page 166 for more information on this including important safety information.

A label on your sun visor says, "Never put a rear-facing child seat in the front." This is because the risk to the rear-facing child is so great, if the airbag deploys.

 **CAUTION:**

**A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's airbag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating airbag.**

**Even though the passenger sensing system is designed to turn off the right front passenger's frontal airbag if the system detects a rear-facing child restraint, no system is fail-safe, and no one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off.**

**CAUTION: (Continued)**

**CAUTION: (Continued)**

**We recommend that rear-facing child restraints be secured in the rear seat, even if the airbag is off.**

**If you need to secure a forward-facing child restraint in the right front seat, always move the front passenger seat as far back as it will go. It is better to secure the child restraint in a rear seat.**

If your vehicle does not have a rear seat that will accommodate a rear-facing child restraint, we recommend that rear-facing child restraints not be transported in your vehicle, even if the airbag is off.

If your child restraint has the LATCH system, see *Lower Anchors and Tethers for Children (LATCH)* on page 55.

There is no top tether anchor at the right front seating position. Do not secure a child seat in this position if a national or local law requires that the top tether be anchored or if the instructions that come with the child restraint say that the top tether must be anchored. See *Lower Anchors and Tethers for Children (LATCH)* on page 55 if the child restraint has a top tether.

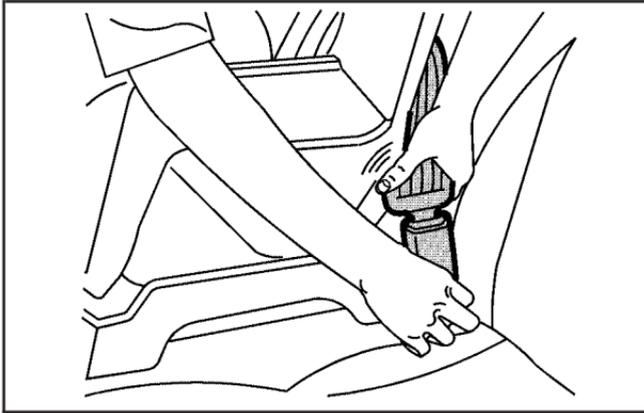
You will be using the lap-shoulder belt to secure the child restraint in this position. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

Your vehicle has a right front passenger's frontal airbag. See *Passenger Sensing System* on page 82. We recommend that rear-facing child restraints be secured in a rear seat, even if the airbag is off.

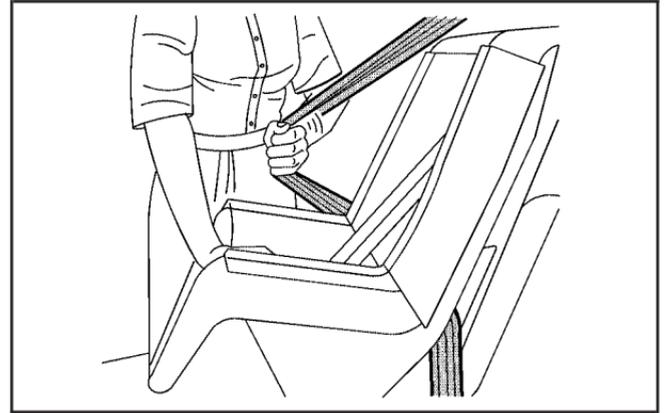
1. Move the seat as far back as it will go before securing the forward-facing child restraint. See *Manual Seats* on page 9.

When the passenger sensing system has turned off the right front passenger's frontal airbag, the off indicator in the passenger airbag status indicator should light and stay lit when you start the vehicle. See *Passenger Airbag Status Indicator* on page 166.

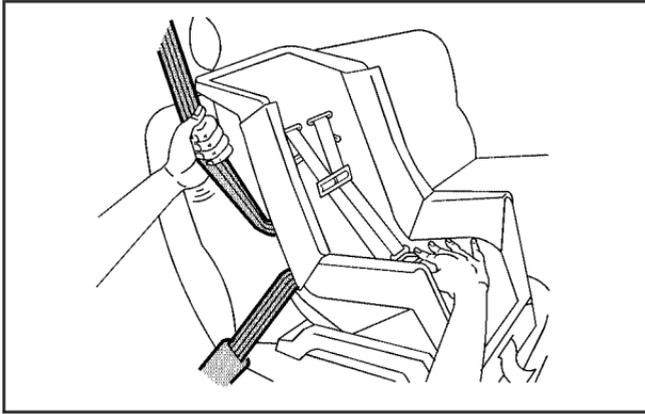
2. Put the child restraint on the seat.
3. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



4. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



5. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.



6. To tighten the belt, push down on the child restraint, pull the shoulder portion of the belt to tighten the lap portion of the belt, and feed the shoulder belt back into the retractor. If you are using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt. You should not be able to pull more of the belt from the retractor once the lock has been set.
7. Push and pull the child restraint in different directions to be sure it is secure.

If the airbag is off, the off indicator will be lit and stay lit when you start the vehicle.

If a child restraint has been installed and the on indicator is lit, turn the vehicle off. Remove the child restraint from the vehicle and reinstall the child restraint.

If, after reinstalling the child restraint and restarting the vehicle, the on indicator is still lit, check to make sure that the vehicle's seatback is not pressing the child restraint into the seat cushion. If this happens, slightly recline the vehicle's seatback and adjust the seat cushion if possible. Also make sure the child restraint is not trapped under the vehicle head restraint. If this happens, adjust the head restraint.

If the on indicator is still lit, secure the child in the child restraint in a rear seat position in the vehicle and check with your dealer/retailer.

To remove the child restraint, unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

## Airbag System

Your vehicle has a frontal airbag for the driver and a frontal airbag for the right front passenger. Your vehicle may also have roof-mounted side impact airbags designed for either side impact or rollover deployment. Roof-mounted side impact airbags are available for the driver and the passenger seated directly behind the driver and for the right front passenger and the passenger seated directly behind that passenger.

If your vehicle has roof-mounted side impact airbags, the words AIR BAG will appear on the airbag covering on the ceiling near the driver's and right front passenger's window.

Even if you have no right front passenger seat in your vehicle there is still an active frontal airbag in the right side of the instrument panel. Do not place cargo in front of this airbag.

### CAUTION:

**Be sure that cargo is not near an airbag. In a crash, an inflating airbag might force that object toward a person. This could cause severe injury or even death. Secure objects away from the area in which an airbag would inflate. For more information, see *Where Are the Airbags?* on page 75 and *Loading Your Vehicle* on page 279.**

Airbags are designed to supplement the protection provided by safety belts. Even though today's airbags are also designed to help reduce the risk of injury from the force of an inflating bag, all airbags must inflate very quickly to do their job.

Here are the most important things to know about the airbag system:

 **CAUTION:**

You can be severely injured or killed in a crash if you are not wearing your safety belt — even if you have airbags. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it. Airbags are “supplemental restraints” to the safety belts. All airbags are designed to work with safety belts but do not replace them.

**CAUTION: (Continued)**

**CAUTION: (Continued)**

Frontal airbags for the driver and right front passenger are designed to deploy in moderate to severe frontal and near frontal crashes. They are not designed to inflate in rollover, rear crashes, or in many side crashes. And, for some unrestrained occupants, frontal airbags may provide less protection in frontal crashes than more forceful airbags have provided in the past.

**CAUTION: (Continued)**

**CAUTION: (Continued)**

Roof-mounted rollover airbags are designed to inflate in moderate to severe crashes where something hits the side of your vehicle or during a vehicle rollover. They may inflate in some frontal crashes. They are not designed to inflate in rear crashes. If your vehicle has roof-mounted airbags, they are designed to provide both side impact protection and rollover protection. Everyone in your vehicle should wear a safety belt properly — whether or not there is an airbag for that person.



**CAUTION:**

Both frontal and roof-mounted side impact airbags inflate with great force, faster than the blink of an eye. If you are too close to an inflating airbag, as you would be if you were leaning forward, it could seriously injure you. Safety belts help keep you in position for airbag inflation before and during a crash. Always wear your safety belt even with frontal airbags. The driver should sit as far back as possible while still maintaining control of the vehicle. Occupants should not lean on or sleep against the door.

 **CAUTION:**

Anyone who is up against, or very close to, any airbag when it inflates can be seriously injured or killed. Airbags plus lap-shoulder belts offer the best protection for adults, but not for young children and infants. Neither the vehicle's safety belt system nor its airbag system is designed for them. Young children and infants need the protection that a child restraint system can provide. Always secure children properly in your vehicle. To read how, see *Older Children on page 42* or *Infants and Young Children on page 45*.



There is an airbag readiness light on the instrument panel cluster, which shows the airbag symbol.

The system checks the airbag electrical system for malfunctions. The light tells you if there is an electrical problem. See *Airbag Readiness Light on page 165* for more information.

## Where Are the Airbags?



The driver's frontal airbag is in the middle of the steering wheel.



The right front passenger's frontal airbag is in the instrument panel on the passenger's side.



If your vehicle has a roof-mounted side impact airbag for the driver and the person seated directly behind the driver, it is in the ceiling above the side windows.



If your vehicle has a roof-mounted side impact airbag for the right front passenger and the person seated directly behind that passenger, it is in the ceiling above the side windows.

 **CAUTION:**

**If something is between an occupant and an airbag, the bag might not inflate properly or it might force the object into that person causing severe injury or even death. The path of an inflating airbag must be kept clear. Do not put anything between an occupant and an airbag, and do not attach or put anything on the steering wheel hub or on or near any other airbag covering. And, if your vehicle has roof-mounted side impact airbags, never secure anything to the roof of your vehicle by routing the rope or tie down through any door or window opening. If you do, the path of an inflating side impact airbag will be blocked. The path of an inflating airbag must be kept clear.**

## **When Should an Airbag Inflate?**

The driver's and right front passenger's frontal airbags are designed to inflate in moderate to severe frontal or near-frontal crashes. But they are designed to inflate only if the impact exceeds a predetermined deployment threshold. Deployment thresholds take into account a variety of desired deployment and non-deployment events and are used to predict how severe a crash is likely to be in time for the airbags to inflate and help restrain the occupants. Whether your frontal airbags will or should deploy is not based on how fast your vehicle is traveling. It depends largely on what you hit, the direction of the impact, and how quickly your vehicle slows down.

In addition, your vehicle has “dual stage” frontal airbags, which adjust the restraint according to crash severity. For moderate frontal impacts, these airbags inflate at a level less than full deployment. For more severe frontal impacts, full deployment occurs. If the front of your vehicle goes straight into a wall that does not move or deform, the threshold level for the reduced deployment is about 10 to 15 mph (16 to 24 km/h), and the threshold level for a full deployment is about 17 to 25 mph (27 to 40 km/h). The threshold level can vary, however, with specific vehicle design, so that it can be somewhat above or below this range.

Frontal airbags may inflate at different crash speeds. For example:

- If the vehicle hits a stationary object, the airbags could inflate at a different crash speed than if the vehicle hits a moving object.
- If the vehicle hits an object that deforms, the airbags could inflate at a different crash speed than if the vehicle hits an object that does not deform.
- If the vehicle hits a narrow object (like a pole), the airbags could inflate at a different crash speed than if the vehicle hits a wide object (like a wall).
- If the vehicle goes into an object at an angle, the airbags could inflate at a different crash speed than if the vehicle goes straight into the object.

Frontal airbags (driver and right front passenger) are not intended to inflate during vehicle rollovers, rear impacts, or in many side impacts.

Your vehicle may or may not have roof-mounted side impact airbags and a rollover sensor. See *Airbag System on page 71*. These roof-mounted “rollover capable” side impact airbags are intended to inflate in moderate to severe side crashes, and during a rollover. They may also inflate in some frontal crashes. Both rollover capable side impact airbags will inflate if the crash severity is above the system’s designed “threshold level.” The threshold level can vary with specific vehicle design. Side impact airbags are not intended to inflate in rear impacts. Both side impact airbags will deploy when either side of the vehicle is struck. If your vehicle does not have a right front passenger seat and a rear seat, only the driver’s frontal airbag will deploy in a frontal impact.

In any particular crash, no one can say whether an airbag should have inflated simply because of the damage to a vehicle or because of what the repair costs were. For frontal airbags, inflation is determined by what the vehicle hits, the angle of the impact, and how quickly the vehicle slows down. For side impact airbags, inflation is determined by the location and severity of the impact.

## **What Makes an Airbag Inflate?**

In an impact of sufficient severity, the airbag sensing system detects that the vehicle is in a crash. Additionally, in the case of a “rollover capable” roof-mounted side impact airbag, the sensing system detects that the vehicle is about to roll over. The sensing system triggers a release of gas from the inflator, which inflates the airbag.

For the frontal airbags, the inflator, airbag, and related hardware are all part of the airbag modules inside the steering wheel and in the instrument panel in front of the right front passenger.

For vehicles with roof-mounted rollover airbags, the airbag modules, the inflator, and the airbags are located in the ceiling of the vehicle, near the side windows.

## How Does an Airbag Restrain?

In moderate to severe frontal or near frontal collisions, even belted occupants can contact the steering wheel or the instrument panel. In moderate to severe side collisions, even belted occupants can contact the inside of the vehicle. Airbags supplement the protection provided by safety belts. Airbags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But the frontal airbags would not help you in many types of collisions, including rollovers, rear impacts, and many side impacts, primarily because an occupant's motion is not toward the airbag. Roof-mounted rollover airbags would not help you in many types of collisions, including many frontal or near frontal collisions, and rear impacts.

Airbags should never be regarded as anything more than a supplement to safety belts, and then only in moderate to severe frontal or near-frontal collisions for the driver's and right front passenger's frontal airbags, and only in moderate to severe side collisions or rollovers for vehicles with roof-mounted rollover airbags.

## What Will You See After an Airbag Inflates?

After the airbag inflates, it quickly deflates, so quickly that some people may not even realize the airbag inflated. Some components of the airbag module may be hot for a short time. These components include the steering wheel hub for the driver's frontal airbag and the instrument panel for the right front passenger's frontal airbag. For vehicles with roof-mounted side impact airbags, the ceiling of your vehicle near the side windows may be hot. The parts of the airbag that come into contact with you may be warm, but not too hot to touch. There may be some smoke and dust coming from the vents in the deflated airbags. Airbag inflation does not prevent the driver from seeing or being able to steer the vehicle, nor does it prevent people from leaving the vehicle.

 **CAUTION:**

**When an airbag inflates, there may be dust in the air. This dust could cause breathing problems for people with a history of asthma or other breathing trouble. To avoid this, everyone in the vehicle should get out as soon as it is safe to do so. If you have breathing problems but cannot get out of the vehicle after an airbag inflates, then get fresh air by opening a window or a door. If you experience breathing problems following an airbag deployment, you should seek medical attention.**

Your vehicle has a feature that may automatically unlock the doors, turn the interior dome lamp on, and flash the exterior lamps on and off when the airbags inflate. You can lock the doors again and turn the interior lamps off by using the door lock and interior lamp controls. You must first, however, turn your ignition key to the following ignition switch positions:

1. Turn the ignition key to LOCK.
2. Turn the ignition key to RUN.

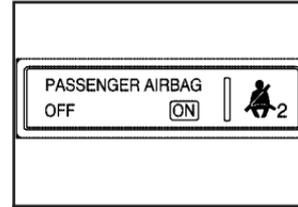
In many crashes severe enough to inflate an airbag, windshields are broken by vehicle deformation.

Additional windshield breakage may also occur from the right front passenger airbag.

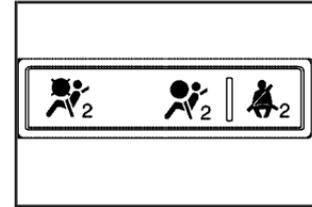
- Airbags are designed to inflate only once. After an airbag inflates, you will need some new parts for the airbag system. If you do not get them, the airbag system will not be there to help protect you in another crash. A new system will include airbag modules and possibly other parts. The service manual for your vehicle covers the need to replace other parts.
- Your vehicle has a crash sensing and diagnostic module which records information after a crash. See *Vehicle Data Recording and Privacy on page 455* and *Event Data Recorders on page 455*.
- Let only qualified technicians work on the airbag system. Improper service can mean that the airbag system will not work properly. See your retailer for service.

## Passenger Sensing System

Your vehicle has a passenger sensing system. The passenger airbag status indicator on the instrument panel will be visible when you turn your ignition key to RUN or START.



United States



Canada

The words ON and OFF or the symbol for on and off, will be visible during the system check. When the system check is complete, either the word ON or the word OFF, or the symbol for on or the symbol for off will be visible. See *Passenger Airbag Status Indicator on page 166*.

The passenger sensing system will turn off the right front passenger's frontal airbag under certain conditions. The driver's airbags are not part of the passenger sensing system.

The passenger sensing system works with sensors that are part of the right front passenger's seat. The sensors are designed to detect the presence of a properly-seated occupant and determine if the passenger's frontal airbag should be enabled (may inflate) or not.

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. We recommend that child restraints be secured in a rear seat, including an infant riding in a rear-facing infant seat, a child riding in a forward-facing child seat, and an older child riding in a booster seat.

If your vehicle has a rear seat that will accommodate a rear-facing child restraint, there is a label on your sun visor that says, "Never put a rear-facing child seat in the front." This is because the risk to the rear-facing child is so great if the airbag deploys.

 **CAUTION:**

**A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's airbag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating airbag.**

**Even though the passenger sensing system is designed to turn off the passenger's frontal airbag if the system detects a rear-facing child restraint, no system is fail-safe, and no one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off. We recommend that rear-facing child restraints be secured in the rear seat, even if the airbag is off.**

**If you need to secure a forward-facing child restraint in the right front seat, always move the front passenger seat as far back as it will go. It is better to secure the child restraint in a rear seat.**

If your vehicle does not have a rear seat that will accommodate a rear-facing child restraint, never put a child in a rear-facing child restraint in the right front passenger seat unless the passenger airbag status indicator shows off and the airbag is off. Here is why:

 **CAUTION:**

**A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's airbag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating airbag. Be sure the airbag is off before using a rear-facing child restraint in the right front seat position.**

**CAUTION: (Continued)**

**CAUTION: (Continued)**

**Even though the passenger sensing system is designed to turn off the passenger's frontal airbag if the system detects a rear-facing child restraint, no system is fail-safe, and no one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off. We recommend that rear-facing child restraints be transported in vehicles with a rear seat that will accommodate a rear-facing child restraint, whenever possible.**

**If you need to secure a forward-facing child restraint in the right front seat, always move the front passenger seat as far back as it will go. It is better to secure the child restraint in a rear seat.**

The passenger sensing system is designed to turn off the right front passenger's frontal airbag if:

- The right front passenger seat is unoccupied.
- The system determines that an infant is present in a rear-facing infant seat.
- The system determines that a small child is present in a forward-facing child restraint.
- The system determines that a small child is present in a booster seat.
- A right front passenger takes his/her weight off of the seat for a period of time.
- The right front passenger seat is occupied by a smaller person, such as a child who has outgrown child restraints.
- Or, there is a critical problem with the airbag system or the passenger sensing system.

When the passenger sensing system has turned off the right front passenger's frontal airbag, the off indicator on the instrument panel will light and stay lit to remind you that the airbag is off.

If a child restraint has been installed and the on indicator is lit, turn the vehicle off. Remove the child restraint from the vehicle and reinstall the child restraint following the child restraint

manufacturer's directions and refer to *Securing a Child Restraint in the Right Front Seat Position* on page 66.

If, after reinstalling the child restraint and restarting the vehicle, the on indicator is still lit, check to make sure that the vehicle's seatback is not pressing the child restraint into the seat cushion. If this happens, slightly recline the vehicle's seatback and adjust the seat cushion if possible. Also make sure the child restraint is not trapped under the vehicle head restraint. If this happens, adjust the head restraint.

If the on indicator is still lit, secure the child in the child restraint in a rear seat position in the vehicle if one is available and check with your retailer.

The passenger sensing system is designed to enable (may inflate) the right front passenger's frontal airbag anytime the system senses that a person of adult size is sitting properly in the right front passenger's seat. When the passenger sensing system has allowed the airbag to be enabled, the on indicator will light and stay lit to remind you that the airbag is active.

For some children who have outgrown child restraints and for very small adults, the passenger sensing system may or may not turn off the right front passenger's frontal airbag, depending upon the person's seating posture and body build. Everyone in your vehicle who has outgrown child restraints should wear a safety belt properly — whether or not there is an airbag for that person.

If a person of adult-size is sitting in the right front passenger's seat, but the off indicator is lit, it could be because that person is not sitting properly in the seat. If this happens, turn the vehicle off and ask the person to place the seatback in the fully upright position, then sit upright in the seat, centered on the seat cushion, with the person's legs comfortably extended. Restart the vehicle and have the person remain in this position for about two minutes. This will allow the system to detect that person and then enable the passenger's airbag.



 **CAUTION:**

**If the airbag readiness light in the instrument panel cluster ever comes on and stays on, it means that something may be wrong with the airbag system. If this ever happens, have the vehicle serviced promptly, because an adult-size person sitting in the right front passenger's seat may not have the protection of the airbag(s). See *Airbag Readiness Light* on page 165 for more on this, including important safety information.**

A thick layer of additional material such as a blanket, or aftermarket equipment such as seat covers, seat heaters, and seat massagers, can affect how well the passenger sensing system operates. Remove any additional material from the seat cushion before reinstalling or securing the child restraint and before a small occupant,

including a small adult, sits in the passenger position. You may want to consider not using seat covers or other aftermarket equipment if your vehicle has the passenger sensing system. See *Adding Equipment to Your Airbag-Equipped Vehicle* on page 89.

The passenger sensing system may suppress the airbag deployment when liquid is soaked into the seat. If this happens, the off indicator in the passenger airbag status indicator and the airbag readiness light on the instrument panel will be lit. The system should resume normal operation after the seat is allowed to dry. If the system operates incorrectly after the seat has dried, have your retailer check the system.

 **CAUTION:**

**Stowing of articles under the passenger's seat or between the passenger's seat cushion and seatback may interfere with the proper operation of the passenger sensing system.**

## Servicing Your Airbag-Equipped Vehicle

Airbags affect how your vehicle should be serviced. There are parts of the airbag system in several places around your vehicle. You do not want the system to inflate while someone is working on your vehicle. Your retailer and the service manual have information about servicing your vehicle and the airbag system. To purchase a service manual, see *Service Publications Ordering Information on page 453*.

### CAUTION:

**For up to 10 seconds, after the ignition is turned off and the battery is disconnected, an airbag can still inflate during improper service. You can be injured if you are close to an airbag when it inflates. Avoid yellow connectors. They are probably part of the airbag system. Be sure to follow proper service procedures, and make sure the person performing work for you is qualified to do so.**

The airbag system does not need regular maintenance.

## Adding Equipment to Your Airbag-Equipped Vehicle

**Q:** Is there anything I might add to the front or sides of the vehicle that could keep the airbags from working properly?

**A:** Yes. If you add things that change your vehicle's frame, bumper system, height, front end or side sheet metal, they may keep the airbag system from working properly. Also, the airbag system may not work properly if you relocate any of the airbag sensors. If you have any questions about this, you should contact Customer Assistance before you modify your vehicle. The phone numbers and addresses for Customer Assistance are in Step Two of the Customer Satisfaction Procedure in this manual. See *Customer Satisfaction Procedure on page 440*.

**Q:** Because I have a disability, I have to get my vehicle modified. How can I find out whether this will affect my airbag system?

**A:** Changing or moving any parts of the front seats, safety belts, the airbag sensing and diagnostic module, steering wheel, instrument panel, ceiling headliner, ceiling and pillar garnish trim, roof-mounted airbag modules, or airbag wiring can affect the operation of the airbag system. If you have questions, call Customer Assistance. The phone numbers and addresses for Customer Assistance are in Step Two of the Customer Satisfaction Procedure in this manual. See *Customer Satisfaction Procedure on page 440*.

# Restraint System Check

## Checking the Restraint Systems

Now and then, make sure the safety belt reminder light and all your belts, buckles, latch plates, retractors and anchorages are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from doing its job, have it repaired. See *Care of Safety Belts on page 402* for more information.

Torn or frayed safety belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.

Also look for any opened or broken airbag covers, and have them repaired or replaced. The airbag system does not need regular maintenance.

**Notice:** If you damage the covering for the driver's or the right front passenger's airbag, or the side impact airbag covering (if equipped) on the ceiling near the side windows, the airbag may not work properly. You may have to replace the airbag module in the steering wheel, both the airbag module and the instrument panel for the right front passenger's airbag, or side impact airbag module and ceiling covering for roof-mounted side impact airbags (if equipped.) Do not open or break the airbag coverings.

## Replacing Restraint System Parts After a Crash

### CAUTION:

**A crash can damage the restraint systems in your vehicle. A damaged restraint system may not properly protect the person using it, resulting in serious injury or even death in a crash. To help make sure your restraint systems are working properly after a crash, have them inspected and any necessary replacements made as soon as possible.**

If you have had a crash, do you need new belts or LATCH system parts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new parts.

If the LATCH system was being used during a more severe crash, you may need new LATCH system parts.

If belts are cut or damaged, replace them. Collision damage also may mean you will need to have LATCH system, safety belt or seat parts repaired or replaced. New parts and repairs may be necessary even if the belt or LATCH system was not being used at the time of the collision.

If an airbag inflates, you will need to replace airbag system parts. See the part on the airbag system earlier in this section.

If the frontal airbags inflate you will also need to replace the driver and front passenger's safety belt retractor assembly. Be sure to do so. Then the new retractor assembly will be there to help protect you in a collision.

After a crash you may need to replace the driver and front passenger's safety belt retractor assemblies, even if the frontal airbags have not deployed. The driver and front passenger's safety belt retractor assemblies contain the safety belt pretensioners. Have your safety belt pretensioners checked if your vehicle has been in a collision, or if your airbag readiness light stays on after you start your vehicle or while you are driving. See *Airbag Readiness Light* on page 165.



## Section 2 Features and Controls

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## Section 2    Features and Controls

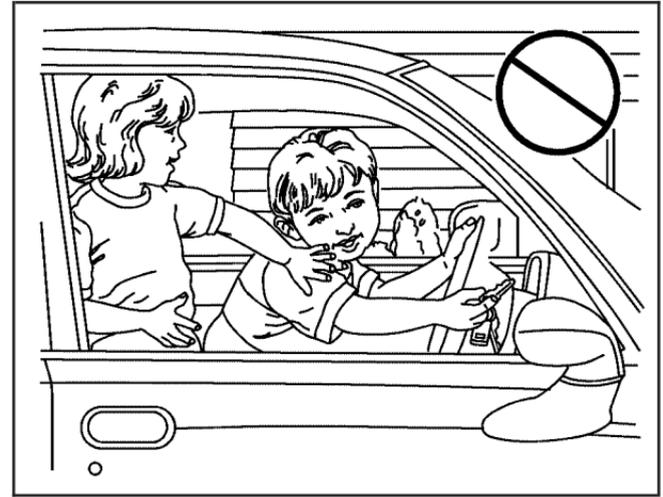
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## Keys

### CAUTION:

Leaving children in a vehicle with the ignition key is dangerous for many reasons, children or others could be badly injured or even killed. They could operate the power windows or other controls or even make the vehicle move. The windows will function with the keys in the ignition and they could be seriously injured or killed if caught in the path of a closing window. Do not leave the keys in a vehicle with children.



One key is used for the ignition and all of the locks.

Key code information can be obtained only at the dealer/retailer where your vehicle was purchased. These code numbers can be used to make new keys. Additional keys that are needed can be made at any dealer/retailer provided you have the key code information. Store this information in a safe place, but not in your vehicle.

Have extra keys made. Your service parts department can make extra keys for you.

**Notice:** If you ever lock your keys in your vehicle, you may have to damage the vehicle to get in. Be sure you have spare keys.

## Remote Keyless Entry (RKE) System

The remote keyless entry system operates on a radio frequency subject to Federal Communications Commission (FCC) Rules and with Industry Canada.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

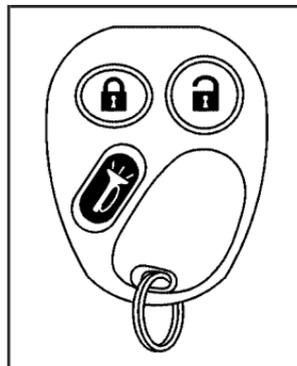
Changes or modifications to this system by other than an authorized service facility could void authorization to use this equipment.

At times you may notice a decrease in range. This is normal for any remote keyless entry system. If the transmitter does not work or if you have to stand closer to your vehicle for the transmitter to work, try this:

- Check the distance. You may be too far from your vehicle. You may need to stand closer during rainy or snowy weather.
- Check the location. Other vehicles or objects may be blocking the signal. Take a few steps to the left or right, hold the transmitter higher, and try again.
- Check to determine if battery replacement or resynchronization is necessary. See “Battery Replacement” and “Resynchronization” under *Remote Keyless Entry (RKE) System Operation on page 97*.
- If you are still having trouble, see your dealer/retailer or authorized service provider for service.

## Remote Keyless Entry (RKE) System Operation

With this feature, you can lock and unlock the doors from about 32 feet (10 m) away using the remote keyless entry transmitter supplied with your vehicle.



**🔒 (Lock):** Press this button on the remote keyless entry transmitter to lock the doors. This also arms the content theft-deterrent system. See *Content Theft-Deterrent on page 107* for information on arming the content theft-deterrent system.

Your vehicle can be programmed so that the parking lamps or Daytime Running Lamps (DRL) will flash and/or the horn will sound when you lock the doors with the remote keyless entry transmitter. See your retailer for more information on programming this feature.

 **(Unlock):** Press this button on the remote keyless entry transmitter to unlock the driver's door. This also disarms the content theft-deterrent system. See *Content Theft-Deterrent on page 107* for information on disarming the content theft-deterrent system. Press the button again within 5 seconds to unlock the rest of the doors.

Your vehicle can be programmed so that the parking lamps or DRL will flash and/or the horn will sound when you unlock the doors with the remote keyless entry transmitter. See your retailer for more information on programming this feature.

 **(Panic Alarm):** Press the button with the horn symbol when the ignition is turned off. The horn will sound and the parking lamps or DRL and dome lamp will flash for up to two minutes. To stop the panic alarm, press this button again.

## Matching Transmitter(s) to Your Vehicle

Each remote keyless entry transmitter is coded to prevent another transmitter from unlocking your vehicle. If a transmitter is lost or stolen, a replacement can be purchased through your retailer. Remember to bring any remaining transmitters with you when you go to your retailer. When the retailer matches the replacement transmitter to your vehicle, any remaining transmitters must also be matched. Once your retailer has coded the new transmitter, the lost transmitter will not unlock your vehicle. Each vehicle can have a maximum of four transmitters matched to it.

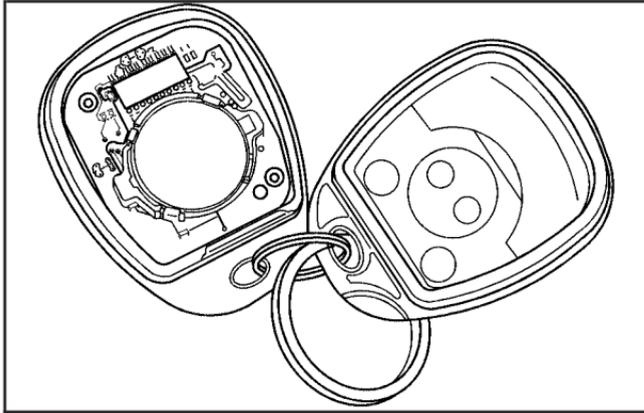
## Battery Replacement

Under normal use, the battery in your remote keyless entry transmitter should last about four years.

You can tell the battery is weak if the transmitter will not work at the normal range in any location. If you have to get close to your vehicle before the transmitter works, it is probably time to change the battery.

**Notice:** When replacing the battery, use care not to touch any of the circuitry. Static from your body transferred to these surfaces may damage the transmitter.

1. Use a flat thin object to pry open the transmitter.



2. Once the transmitter is separated, use a pencil or similar object to remove the old battery. Do not use a metal object.

3. Insert the new battery as the instructions under the cover indicate.
4. Snap the transmitter back together tightly to be sure no moisture can enter.
5. Check the operation of the transmitter.

If the transmitter does not work, try synchronizing your transmitter with your receiver. See "Resynchronization" for more information.

## Resynchronization

This is used to keep the transmitter of the vehicle communicating with the receiver of the vehicle. Resynchronization may be required due to the security method used by this system.

Your vehicle has an automatic resynchronization function built into the system. If your transmitter is not working properly and you have to manually resynchronize, press the lock and unlock buttons at the same time for seven seconds while you are near your vehicle. The doors will lock or unlock, depending on their starting position. If they do not, contact your retailer for service.

# Doors and Locks

## Door Locks

### CAUTION:

Unlocked doors can be dangerous.

- Passengers, especially children, can easily open the doors and fall out of a moving vehicle. When a door is locked, the handle will not open it. You increase the chance of being thrown out of the vehicle in a crash if the doors are not locked. So, wear safety belts properly and lock the doors whenever you drive.

**CAUTION: (Continued)**

### CAUTION: (Continued)

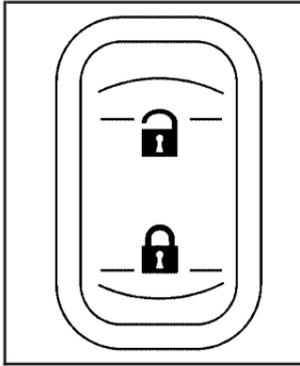
- Young children who get into unlocked vehicles may be unable to get out. A child can be overcome by extreme heat and can suffer permanent injuries or even death from heat stroke. Always lock your vehicle whenever you leave it.
- Outsiders can easily enter through an unlocked door when you slow down or stop your vehicle. Locking your doors can help prevent this from happening.

There are several ways to lock and unlock your vehicle.

From the outside, turn the key in the driver's door lock counterclockwise to lock the door and clockwise to unlock it or use the remote keyless entry transmitter.

From the inside, move the manual lock control on the door or use the power door lock switch.

## Power Door Locks



The power door lock switches are located on the driver's and front passenger's doors. Press the bottom of the switch to lock all doors. Press the top of the switch to unlock all doors.

## Delayed Locking

This feature will delay the actual locking of the doors and arming of the theft-deterrent system for five seconds when the power door lock switch or remote keyless entry transmitter is used to lock the vehicle.

If any door is open when locking the vehicle, three chimes will sound signaling that the delayed locking feature is active. Five seconds after the last door is closed, all of the doors will lock.

To cancel the delay and lock the doors immediately, press the lock button on the remote keyless entry transmitter or the power door lock switch a second time. The theft deterrent system will arm after 30 seconds.

## Programmable Automatic Door Locks

### Automatic Locking

If your vehicle has an automatic transaxle, all the doors and liftgate will automatically lock when the ignition is in RUN and the shift lever is moved out of PARK (P).

If your vehicle has a manual transaxle, all the doors and liftgate will automatically lock when the vehicle reaches a speed of more than 3 mph (5 km/h).

All doors must be closed. The automatic locking feature cannot be disabled.

In the following situations, all doors will lock again when:

- The brake pedal is applied, a door is opened and then closed, and the brake pedal is released, for a vehicle with an automatic transaxle.
- A door is opened and then closed while the vehicle is moving faster than 3 mph (5 km/h), for a vehicle with a manual transaxle.

## Programmable Automatic Unlocking

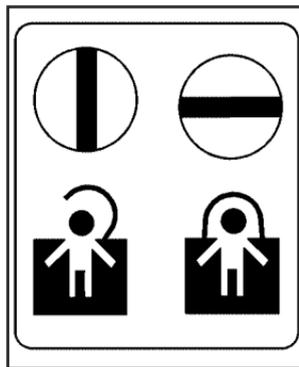
If your vehicle has an automatic transaxle, all the doors and liftgate will automatically unlock when the shift lever is moved into PARK (P).

If your vehicle has a manual transaxle, all the doors and liftgate will automatically unlock when the key is removed from the ignition.

The unlocking feature can be programmed on or off by turning the ignition to RUN, engine not running, and pressing the unlock part of the power door lock switch for eight seconds. The horn will chirp once when this feature is on and twice when it is off.

## Rear Door Security Locks

Your vehicle has rear door security locks that prevent passengers from opening the rear doors from the inside.



The rear door security locks are located on the inside edge of each rear door.

To set the rear door security locks, do the following:

1. Insert the key into the lock and turn it counterclockwise (left) for the driver's side and clockwise (right) for the passenger's side.
2. Close the door.

When you want to open a rear door when the security lock is on, do the following:

1. Unlock the door using the remote keyless entry transmitter, the power door lock switch, or by lifting the rear door manual lock.
2. Open the door from the outside.

To cancel the rear door security lock, do the following:

1. Unlock the door and open it from the outside.
2. Insert the key into the lock and turn it clockwise (right) for the driver's side and counterclockwise (left) for the passenger's side.

## Lockout Protection

If you press the power door lock switch when the key is in the ignition and any door is open, all the doors will lock and then the driver's door will unlock. Be sure to remove the key from the ignition when locking your vehicle.

If the remote keyless entry transmitter is used to lock the doors while the key is in the ignition, a chime will sound three times. All doors will then lock.

## Liftgate

### CAUTION:

**It can be dangerous to drive with the liftgate open because carbon monoxide (CO) gas can come into your vehicle. You cannot see or smell CO. It can cause unconsciousness and even death. If you must drive with the liftgate open or if electrical wiring or other cable connections must pass through the seal between the body and the liftgate:**

- Make sure all other windows are shut.
- Turn the fan on your heating or cooling system to its highest speed and select the control setting that will force outside air into your vehicle. See *Climate Control System on page 155*.
- If you have air outlets on or under the instrument panel, open them all the way. See *Engine Exhaust on page 123*.

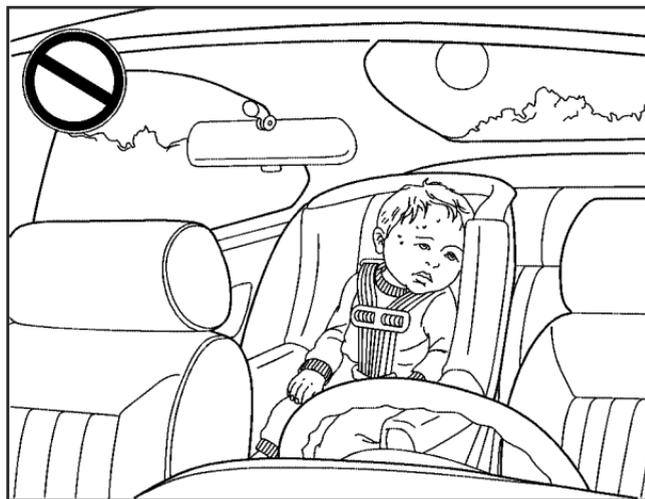
Use your remote keyless entry transmitter or power door lock switches to unlock the liftgate.

To open the liftgate, lift the handle located in the center of the liftgate.

## Windows

### CAUTION:

Leaving children, helpless adults, or pets in a vehicle with the windows closed is dangerous. They can be overcome by the extreme heat and suffer permanent injuries or even death from heat stroke. Never leave a child, a helpless adult, or a pet alone in a vehicle, especially with the windows closed in warm or hot weather.



## Power Windows

### CAUTION:

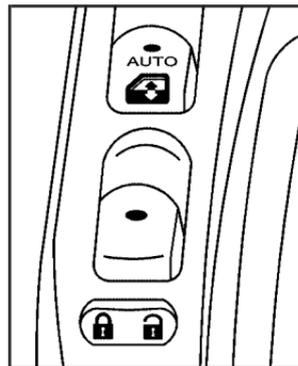
Leaving children, helpless adults, or pets in a vehicle with the windows closed is dangerous. They can be overcome from extreme heat in warm or hot weather and suffer permanent injuries or even death from heat stroke.

Leaving children in a vehicle with the ignition key is dangerous for many reasons, children or others could be badly injured or even killed. They could operate the power windows or other controls or even make the vehicle move. The windows will function with the keys in the ignition and they could be seriously injured or killed if caught in the path of a closing window. Do not leave keys in a vehicle with children.

**CAUTION: (Continued)**

### **CAUTION: (Continued)**

**When there are children in the rear seat use the window lockout button to prevent unintentional operation of the windows.**



The window switches are located on each side of the shift lever on the center console.

To lower a window, press the switch down.  
To raise a window, pull the switch up.

The power windows operate when the ignition is in RUN or ACC.

A window switch is also located on each rear door. Press the bottom of the switch to lower the window. Press the top of the switch to raise the window.

## **Express-Down Window**

The driver's window switch has an express-down feature that is labeled AUTO. This allows the driver's window to open fully without having to continuously press the switch. Press the switch to the second position and the driver's window will go all the way down. To stop the window from lowering, lift the switch all the way up and release it.

## **Window Lockout**

The driver's window switches also include a lockout switch. Press the left side of the switch to prevent rear passengers from using their window switches. The driver can still control all the windows with the lockout on. Press the right side of the window lockout switch to return to normal window operation.

## **Sun Visors**

To block out glare swing the visors down or to the side. The driver's sun visor can be detached from the center mount and slid along the rod to block different areas of the front window.

## **Visor Vanity Mirrors**

Your vehicle has covered visor vanity mirrors.

# Theft-Deterrent Systems

Vehicle theft is big business, especially in some cities. Although your vehicle has a number of theft-deterrent features, we know that nothing we put on it can make it impossible to steal.

## Content Theft-Deterrent

The remote keyless entry transmitter is used to arm/disarm the theft-deterrent system. Your vehicle's theft-deterrent system can be programmed to three different modes.

**Active Arming:** The system will arm when the lock button on the remote keyless entry transmitter is pressed. The system will disarm when the unlock button is pressed.

**Passive Arming:** The system will arm itself one minute after the ignition is turned off and the driver's door has been opened and closed. If the lock button on the transmitter is pressed before the minute has passed, the system will arm immediately. The system will disarm when the unlock button is pressed.

**Security System Disable:** The system will not arm.

To change the mode that your vehicle is programmed to, do the following:

1. Turn the ignition to RUN or ACC.
2. Press the panic alarm button on the transmitter slowly four times within five seconds.
3. You must complete one of the following within three seconds to change the mode.
  - To select the active arming mode, press the lock button on the transmitter.
  - To select the passive arming mode, press the lock button on the transmitter twice within 3 seconds.
  - To select the security system disable mode, press the unlock button on the transmitter.

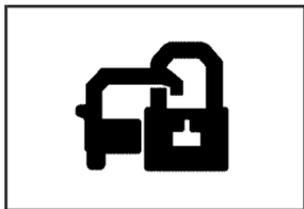
A chime will sound once the mode has been selected.

If you accidentally set off the alarm when entering/exiting the vehicle, you can shut it off by pressing any button on the remote keyless entry transmitter other than the panic alarm button.

If you hear three horn chirps when you press the unlock button on the transmitter, that means the vehicle's alarm was triggered while you were away.

## Passlock<sup>®</sup>

Your vehicle is equipped with the Passlock<sup>®</sup> theft-deterrent system.



This light will come on for the theft-deterent system.

Passlock<sup>®</sup> is a passive theft-deterrent system. Passlock<sup>®</sup> enables fuel if the ignition lock cylinder is turned with a valid key. If a correct key is not used or the ignition lock cylinder is tampered with, fuel is disabled.

During normal operation, the security light will go off approximately five seconds after the key is turned to RUN following an engine start.

If the engine stalls and the security light flashes, wait until the light stops flashing before trying to restart the engine. Remember to release the key from START as soon as the engine starts.

If the engine is running and the security light comes on, you will be able to restart the engine if you turn the engine off. However, your Passlock<sup>®</sup> system is not working properly and must be serviced by your retailer. Your vehicle is not protected by Passlock<sup>®</sup> at this time. You may also want to check the fuses, see *Fuses and Circuit Breakers on page 409*. See your retailer for service. Also, see *Roadside Assistance Program on page 445* for more information.

# Starting and Operating Your Vehicle

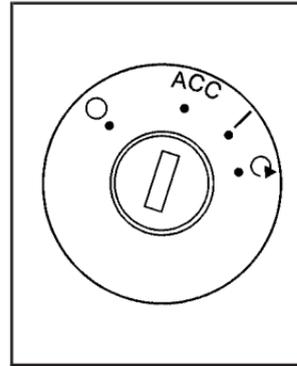
## New Vehicle Break-In

**Notice:** Your vehicle does not need an elaborate break-in. But it will perform better in the long run if you follow these guidelines:

- Do not drive at any one constant speed, fast or slow, for the first 500 miles (805 km). Do not make full-throttle starts. Avoid downshifting to brake, or slow, the vehicle.
- Avoid making hard stops for the first 200 miles (322 km) or so. During this time the new brake linings are not yet broken in. Hard stops with new linings can mean premature wear and earlier replacement. Follow this breaking-in guideline every time you get new brake linings.
- Do not tow a trailer during break-in. See *Towing a Trailer on page 290* for the trailer towing capabilities of your vehicle and more information.

Following break-in, engine speed and load can be gradually increased.

## Ignition Positions



With the key in the ignition switch, you can turn it to four different positions. A warning tone will sound if you open the driver's door when the key has not been removed from the ignition.

○ **(LOCK):** This position locks your steering column. It is a theft-deterrent feature. You will only be able to remove your key when the ignition is turned to LOCK.

If you have an automatic transaxle, the ignition switch cannot be turned to LOCK unless the shift lever is in PARK (P).

**Notice:** Using a tool to force the key from the ignition switch could cause damage or break the key. Use the correct key and turn the key only with your hand. Make sure the key is all the way in. If it is, turn the steering wheel left and right while you turn the key hard. If none of this works, then your vehicle needs service.

 **CAUTION:**

If you have a manual transaxle removing the key from the ignition switch will lock the steering column and result in a loss of ability to steer the vehicle. This could cause a collision. If you need to turn the engine off while the vehicle is moving, turn the key to ACC.

**ACC (Accessory):** This position operates some of your electrical accessories. It unlocks the steering wheel and ignition.

**I (RUN):** This is the position the switch returns to after you start your engine and release the switch. The switch stays in RUN when the engine is running. But even when the ignition is not running, you can use RUN to operate your electrical accessories and to display some warning and indicator lights.

The battery could be drained if you leave the key in the ACC or RUN position with the engine off. You may not be able to start your vehicle if the battery is allowed to drain for an extended period of time.

**Q (START):** This position starts the engine. When the engine starts, release the key. The ignition switch will return to RUN for normal driving.

## Key In the Ignition

Never leave your vehicle with the keys inside, as it is an easy target for joy riders or thieves. If you leave the key in the ignition and park your vehicle, a chime will sound, when you open the driver's door. Always remember to remove your key from the ignition and take it with you. This will lock your ignition and transaxle. Also, always remember to lock the doors.

The battery could be drained if you leave the key in the ignition while your vehicle is parked. You may not be able to start your vehicle after it has been parked for an extended period of time.

## Starting the Engine

Place the transaxle in the proper gear.

### Automatic Transaxle

Move your shift lever to PARK (P) or NEUTRAL (N). Your engine will not start in any other position -- this is a safety feature. To restart when you are already moving, use NEUTRAL (N) only.

**Notice:** Shifting into PARK (P) with the vehicle moving could damage the transaxle. Shift into PARK (P) only when your vehicle is stopped.

## Manual Transaxle

The shift lever should be in the neutral position and the parking brake engaged. Hold the clutch pedal to the floor and start the engine. Your vehicle will not start if the clutch pedal is not all the way down. That is a safety feature.

### Starting Procedure

1. With your foot off the accelerator pedal, turn the ignition key to START. When the engine starts, let go of the key. The idle speed will go down as your engine gets warm. Do not race the engine immediately after starting it. Operate the engine and transaxle gently to allow the oil to warm up and lubricate all moving parts.

Your vehicle has a Computer-Controlled Cranking System. This feature assists in starting the engine and protects components. If the ignition key is turned to the START position, and then released when the engine begins cranking, the engine will continue cranking for a few seconds or until the vehicle starts.

If the engine does not start and the key is held in START for many seconds, cranking will be stopped after 15 seconds to prevent cranking motor damage. To prevent gear damage, this system also prevents cranking if the engine is already running. Engine cranking can be stopped by turning the ignition switch to the ACC or LOCK position.

**Notice:** Cranking the engine for long periods of time, by returning the key to the START position immediately after cranking has ended, can overheat and damage the cranking motor, and drain the battery. Wait at least 15 seconds between each try, to allow the cranking motor to cool down.

2. If the engine does not start after 5-10 seconds, especially in very cold weather (below 0°F or -18°C), it could be flooded with too much gasoline. Try pushing the accelerator pedal all the way to the floor and holding it there as you

hold the key in START for up to a maximum of 15 seconds. Wait at least 15 seconds between each try, to allow the cranking motor to cool down. When the engine starts, let go of the key and accelerator. If the vehicle starts briefly but then stops again, do the same thing. This clears the extra gasoline from the engine. Do not race the engine immediately after starting it. Operate the engine and transaxle gently until the oil warms up and lubricates all moving parts.

**Notice:** Your engine is designed to work with the electronics in your vehicle. If you add electrical parts or accessories, you could change the way the engine operates. Before adding electrical equipment, check with your retailer. If you do not, your engine might not perform properly. Any resulting damage would not be covered by your vehicle's warranty.

## Engine Coolant Heater

Your vehicle may have this feature. In very cold weather, 0°F (-18°C) or colder, the engine coolant heater can provide easier starting and better fuel economy during engine warm-up. Usually, the coolant heater should be plugged in a minimum of four hours prior to starting your vehicle. At temperatures above 32°F (0°C), use of the coolant heater is not required. Your vehicle may also have an internal thermostat in the plug end of the cord. This will prevent operation of the engine coolant heater when the temperature is at or above 0°F (-18°C) as noted on the cord.

### To Use the Engine Coolant Heater

1. Turn off the engine.
2. Open the hood and unwrap the electrical cord. The engine coolant heater cord is located near the air cleaner box on the passenger side of the engine compartment. See *Engine Compartment Overview on page 314* for more information on location.
3. Plug the cord into a normal, grounded 110-volt AC outlet.

### CAUTION:

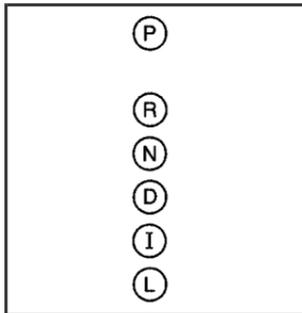
**Plugging the cord into an ungrounded outlet could cause an electrical shock. Also, the wrong kind of extension cord could overheat and cause a fire. You could be seriously injured. Plug the cord into a properly grounded three-prong 110-volt AC outlet. If the cord will not reach, use a heavy-duty three-prong extension cord rated for at least 15 amps.**

4. Before starting the engine, be sure to unplug and store the cord as it was before to keep it away from moving engine parts. If you do not, it could be damaged.

How long should you keep the coolant heater plugged in? The answer depends on the outside temperature, the kind of oil you have, and some other things. Instead of trying to list everything here, we ask that you contact your retailer in the area where you will be parking your vehicle. The dealer/retailer can give you the best advice for that particular area.

## Automatic Transaxle Operation

If your vehicle is equipped with an automatic transaxle, the shift lever is located on the console between the seats.



There are several different positions for the automatic transaxle.

**PARK (P):** This position locks your front wheels. It is the best position to use when you start your engine because your vehicle cannot move easily.

### CAUTION:

It is dangerous to get out of your vehicle if the shift lever is not fully in **PARK (P)** with the parking brake firmly set. Your vehicle can roll.

Do not leave your vehicle when the engine is running unless you have to. If you have left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle will not move, even when you are on fairly level ground, always set your parking brake and move the shift lever to **PARK (P)**. See *Shifting Into Park (P) (Automatic Transaxle)* on page 120. If you are pulling a trailer, see *Towing a Trailer* on page 290.

Make sure the shift lever is fully in PARK (P) before starting the engine. Your vehicle has an automatic transaxle shift lock control system. You have to fully apply your regular brakes first and then press the shift lever button before you can shift from PARK (P) when the ignition key is in RUN. If you cannot shift out of PARK (P), ease pressure on the shift lever and push the shift lever all the way into PARK (P) as you maintain brake application. Then press the shift lever button and move the shift lever into another gear. See *Shifting Out of Park (P)* on page 121.

**REVERSE (R):** Use this gear to back up.

**Notice:** Shifting to REVERSE (R) while your vehicle is moving forward could damage the transaxle. The repairs would not be covered by your warranty. Shift to REVERSE (R) only after your vehicle is stopped.

To rock your vehicle back and forth to get out of snow, ice or sand without damaging your transaxle, see *If Your Vehicle is Stuck in Sand, Mud, Ice, or Snow* on page 276.

**NEUTRAL (N):** In this position, your engine does not connect with the wheels. To restart when you are already moving, use NEUTRAL (N) only. Also, use NEUTRAL (N) when your vehicle is being towed.

 **CAUTION:**

**Shifting into a drive gear while your engine is running at high speed is dangerous. Unless your foot is firmly on the brake pedal, your vehicle could move very rapidly. You could lose control and hit people or objects. Do not shift into a drive gear while your engine is running at high speed.**

**Notice:** Shifting out of PARK (P) or NEUTRAL (N) while the engine is running at high speed may damage the transaxle. The repairs would not be covered by your warranty. Be sure the engine is not running at high speeds when shifting your vehicle.

**DRIVE (D):** This position is for normal driving with the automatic transaxle. It provides the best fuel economy for your vehicle. If you need more power for passing, and you are:

- Going less than about 35 mph (55 km/h), push your accelerator pedal about halfway down.
- Going about 35 mph (55 km/h), push your accelerator all the way down.

Downshifting the transaxle in slippery road conditions could result in skidding, see “Skidding” under *Loss of Control on page 245*.

**INTERMEDIATE (I):** This position is also used for normal driving. However, it reduces vehicle speed without using your brakes for slight downgrades where the vehicle would otherwise accelerate due to steepness of grade. If constant upshifting or downshifting occurs while driving up steep hills, this position can be used to prevent

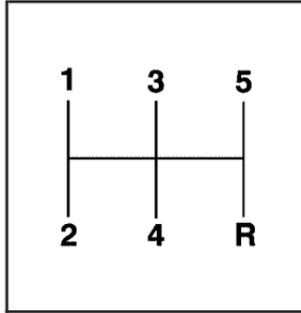
repetitive types of shifts. You might choose INTERMEDIATE (I) instead of DRIVE (D) when driving on hilly, winding roads and when towing a trailer, so that there is less shifting between gears.

**LOW (L):** This position reduces vehicle speed more than INTERMEDIATE (I) without actually using your brakes. You can use it on very steep hills, or in deep snow or mud. If the shift lever is put in LOW (L), the transaxle will not shift into LOW (L) until the vehicle is going slowly enough.

**Notice:** Spinning the tires or holding the vehicle in one place on a hill using only the accelerator pedal may damage the transaxle. If you are stuck, do not spin the tires. When stopping on a hill, use the brakes, or parking brake to hold the vehicle in place.

# Manual Transaxle Operation

## Five-Speed



This is your vehicle's shift pattern.

Here is how to operate your transaxle:

**FIRST (1):** Press the clutch pedal and shift into FIRST (1). Then, slowly let up on the clutch pedal as you press the accelerator pedal.

You can shift into FIRST (1) when you are going less than 20 mph (32 km/h). If you have come to a complete stop and it is hard to shift into FIRST (1), put the shift lever in NEUTRAL and let up on the clutch. Press the clutch pedal back down. Then shift into FIRST (1).

**SECOND (2):** Press the clutch pedal as you let up on the accelerator pedal and shift into SECOND (2). Then, slowly let up on the clutch pedal as you press the accelerator pedal.

**THIRD (3), FOURTH (4) and FIFTH (5):** Shift into THIRD (3), FOURTH (4) and FIFTH (5), the same way you do for SECOND (2). Slowly let up on the clutch pedal as you press the accelerator pedal.

To stop, let up on the accelerator pedal and press the brake pedal. Just before the vehicle stops, press the clutch pedal and the brake pedal, and shift to NEUTRAL.

**NEUTRAL:** Use this position when you start or idle your engine.

**REVERSE (R):** To back up, press down the clutch pedal and shift into REVERSE (R). Let up on the clutch pedal slowly while pressing the accelerator pedal.

**Notice:** Shifting to REVERSE (R) while your vehicle is moving forward could damage the transaxle. The repairs would not be covered by your warranty. Shift to REVERSE (R) only after your vehicle is stopped.

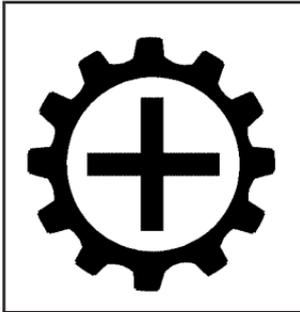
Also, use REVERSE (R), along with the parking brake, for parking your vehicle.

## Shift Speeds

### CAUTION:

If you skip a gear when you downshift, you could lose control of your vehicle. You could injure yourself or others. Do not shift down more than one gear at a time when you downshift.

## Up-Shift Light



United States Only

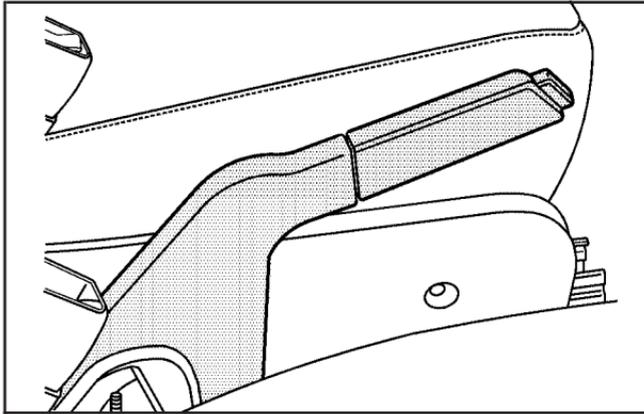
If your vehicle has a manual transaxle, you may have an up-shift light. This light will show you when to shift to the next higher gear for the best fuel economy.

When this light comes on, you can shift to the next higher gear if weather, road and traffic conditions let you. For the best fuel economy, accelerate slowly and shift when the light comes on.

While you accelerate, it is normal for the light to go on and off if you quickly change the position of the accelerator. Ignore the light when you downshift.

**Notice:** If you skip more than one gear when you downshift, or if you race the engine when you release the clutch pedal while downshifting, you could damage the engine, clutch, driveshaft, or the transaxle. Do not skip gears or race the engine when downshifting.

## Parking Brake



The parking brake lever is located to the right of the driver's seat.

To set the parking brake, hold the brake pedal down and pull up on the parking brake lever. If the ignition is on, the brake system warning light will come on.

To release the parking brake, hold the brake pedal down. Pull the parking brake lever up until you can press the release button. Hold the release button in as you move the brake lever all the way down.

Make sure to release the parking brake before driving the vehicle.

**Notice:** Driving with the parking brake on can overheat the brake system and cause premature wear or damage to brake system parts. Verify that the parking brake is fully released and the brake warning light is off before driving.

## Shifting Into Park (P) (Automatic Transaxle)

### CAUTION:

It can be dangerous to get out of your vehicle if the shift lever is not fully in PARK (P) with the parking brake firmly set. Your vehicle can roll. If you have left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle will not move, even when you are on fairly level ground, use the steps that follow. If you are pulling a trailer, see *Towing a Trailer* on page 290.

1. Hold the brake pedal down and set the parking brake.
2. Move the shift lever into PARK (P) by holding the button on the shift lever and pushing the lever all the way toward the front of the vehicle.
3. Turn the ignition key to LOCK.

4. Remove the key and take it with you. If you can leave your vehicle with the ignition key in your hand, your vehicle is in PARK (P).

## Leaving Your Vehicle With the Engine Running

### CAUTION:

It can be dangerous to leave your vehicle with the engine running. Your vehicle could move suddenly if the shift lever is not fully in PARK (P) with the parking brake firmly set. And, if you leave the vehicle with the engine running, it could overheat and even catch fire. You or others could be injured. Do not leave your vehicle with the engine running.

If you have to leave your vehicle with the engine running, be sure your vehicle is in PARK (P) and your parking brake is firmly set before you leave it. After you have moved the shift lever into PARK (P), hold the regular brake pedal down.

Then, see if you can move the shift lever away from PARK (P) without first pushing the button. If you can, it means that the shift lever was not fully locked into PARK (P).

## Torque Lock

If you are parking on a hill and you do not shift your transaxle into PARK (P) properly, the weight of the vehicle may put too much force on the parking pawl in the transaxle. You may find it difficult to pull the shift lever out of PARK (P). This is called “torque lock.” To prevent torque lock, set the parking brake and then shift into PARK (P) properly before you leave the driver’s seat. To find out how, see *Shifting Into Park (P) (Automatic Transaxle) on page 120*.

When you are ready to drive, move the shift lever out of PARK (P) *before* you release the parking brake.

If torque lock does occur, you may need to have another vehicle push yours a little uphill to take some of the pressure from the parking pawl in the transaxle, then you will be able to pull the shift lever out of PARK (P).

## Shifting Out of Park (P)

Your vehicle has an automatic transaxle shift lock control system. You have to fully apply your regular brakes before you can shift from PARK (P) when the ignition is in RUN. See *Automatic Transaxle Operation on page 114*.

To shift out of PARK (P):

1. Apply the regular brake pedal.
2. Then press the shift lever button.
3. Move the shift lever to the desired gear.

If you are still unable to shift out of PARK (P):

1. Fully release the shift lever button.
2. While holding down the brake pedal, press the shift lever button again.
3. Move the shift lever to the desired gear.

If you still cannot move the shift lever from PARK (P), consult your dealer.

## Shift Interlock By-Pass

Use the following steps, if for some reason the shifter is not released when you apply the brake, or if service or towing requires the car to be shifted out of PARK (P) without running the engine.

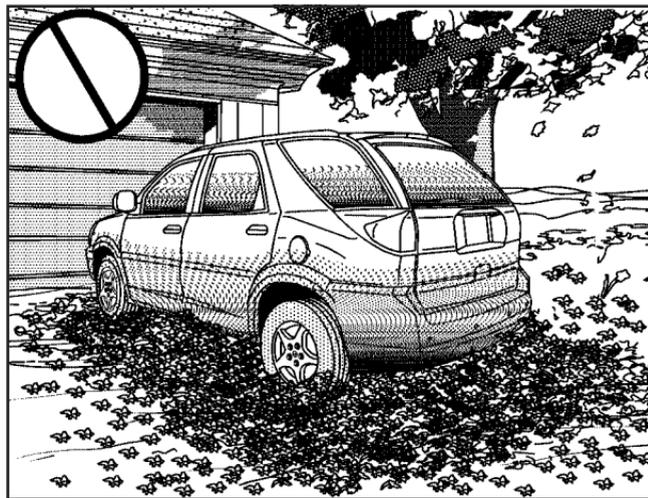
1. Apply and maintain the regular brakes.
2. Turn the ignition to the ACC (Accessory) position. See *Ignition Positions* on page 109 for more information.
3. Then, move the shift lever into NEUTRAL (N). The vehicle can now be started normally.

## Parking Your Vehicle (Manual Transaxle)

Before leaving your vehicle, fully press the clutch pedal in, move the shift lever into REVERSE (R), and firmly apply the parking brake. Once the shift lever has been placed in REVERSE (R) with the clutch pedal pressed in, you can turn the ignition key to LOCK, remove the key, and release the clutch.

See *Manual Transaxle Operation* on page 117.

## Parking Over Things That Burn



### CAUTION:

Things that can burn could touch hot exhaust parts under your vehicle and ignite. Do not park over papers, leaves, dry grass, or other things that can burn.

## Engine Exhaust

### CAUTION:

Engine exhaust can kill. It contains the gas carbon monoxide (CO), which you cannot see or smell. It can cause unconsciousness and death.

You might have exhaust coming in if:

- The exhaust system sounds strange or different.
- Your vehicle gets rusty underneath.
- Your vehicle was damaged in a collision.

CAUTION: (Continued)

### CAUTION: (Continued)

- Your vehicle was damaged when driving over high points on the road or over road debris.
- Repairs were not done correctly.
- Your vehicle or the exhaust system has been modified improperly.

If you ever suspect exhaust is coming into your vehicle:

- Drive it only with all the windows down to blow out any CO; and
- Have your vehicle fixed immediately.

## Running the Engine While Parked

It is better not to park with the engine running. But if you ever have to, here are some things to know.

### CAUTION:

Idling the engine with the climate control system off could allow dangerous exhaust into your vehicle. See the earlier caution under *Engine Exhaust on page 123*.

Also, idling in a closed-in place can let deadly carbon monoxide (CO) into your vehicle even if the climate control fan is at the highest setting. One place this can happen is a garage. Exhaust — with CO — can come in easily. **NEVER** park in a garage with the engine running.

Another closed-in place can be a blizzard. See *Winter Driving on page 272*.

### CAUTION:

It can be dangerous to get out of your vehicle if the shift lever is not fully in PARK (P) with the parking brake firmly set. Your vehicle can roll. Do not leave your vehicle when the engine is running unless you have to. If you have left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle will not move, even when you are on fairly level ground, always set the parking brake and move the shift lever to PARK (P).

Follow the proper steps to be sure your vehicle will not move. See *Shifting Into Park (P) (Automatic Transaxle) on page 120*.

If you are parking on a hill and if you are pulling a trailer, also see *Towing a Trailer on page 290*.

## Mirrors

### Automatic Dimming Rearview Mirror with OnStar<sup>®</sup>, Compass and Temperature Display

When on, an automatic dimming mirror automatically dims to the proper level to minimize glare from lights behind you after dark.

The mirror also includes a dual display in the upper right corner of the mirror face. The compass reading and the outside temperature will both appear in the display at the same time.

 **(On/Off):** This is the on/off button.

### Automatic Dimming Mirror Operation

The automatic dimming mirror function is turned on automatically each time the ignition is started. To operate the automatic dimming mirror, do the following:

1. Make sure the indicator light, located to the left of the on/off button, is on. If it's not, press and hold the on/off button until the light comes on, indicating that the mirror is in automatic dimming mode.
2. Turn off the automatic dimming mirror function by pressing and holding the on/off button until the indicator light turns off.

### Temperature and Compass Display

Press the on/off button, located to the far left, briefly to turn the comp/temp display on or off.

If the display reads CAL, the compass needs to be calibrated. See the information following on calibration.

To adjust between Fahrenheit and Celsius, do the following:

1. Press and hold the on/off button until either a flashing °F or °C appears.
2. Press the button again to change the display to the desired unit of measurement. After approximately four seconds of inactivity, the new unit will be locked in and the display will return.

## Compass Calibration

The compass may need calibration from time to time.

In order to calibrate, CAL must be displayed in the mirror compass windows. If CAL is not displayed, push in the on/off button for approximately nine seconds or until CAL is displayed.

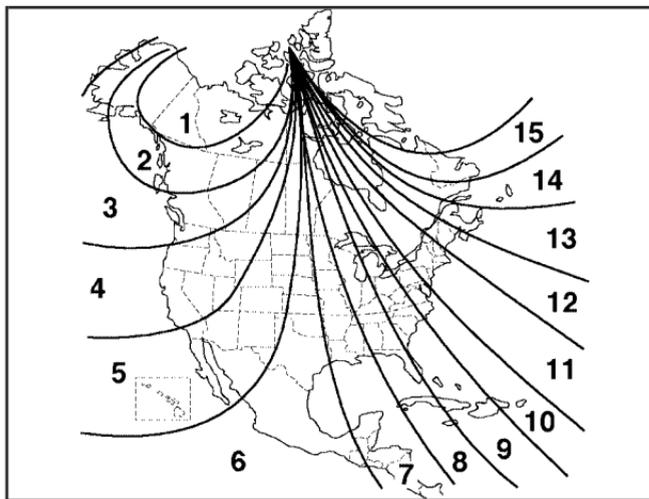
The compass can be calibrated by driving the vehicle in circles at 5 mph (8 km/h) or less until the display reads a direction, or the word CAL disappears.

## Compass Variance

The mirror is set in zone eight upon leaving the factory. It will be necessary to adjust the compass to compensate for compass variance if you live outside of zone eight. Under certain circumstances, as during a long distance cross-country trip, it will be necessary to adjust for compass variance. Compass variance is the difference between earth's magnetic north and true geographic north. If not adjusted to account for compass variance, your compass could give false readings.

To adjust for compass variance do the following:

1. Find your current location and variance zone number on the following zone map.

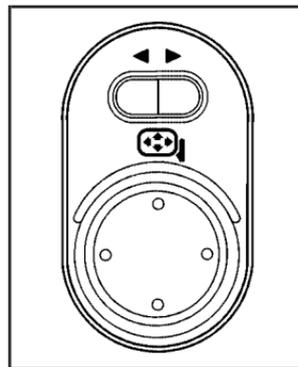


2. Press and hold the on/off button until a zone number appears in the display. The compass is now in zone mode.
3. Keep pressing the on/off button until the desired zone number appears in the display. Release the button. After approximately four seconds of inactivity, the new zone number will be locked in and the comp/temp display will return.

## Cleaning the Mirror

When cleaning the mirror, use a paper towel or similar material dampened with glass cleaner. Do not spray glass cleaner directly on the mirror as that may cause the liquid cleaner to enter the mirror housing.

## Outside Power Mirrors



The outside power mirror controls are located on the driver's side of the vehicle next to the shift lever.

Move the selector switch to the left or right to choose the mirror to be adjusted; then press the four-way control pad to adjust the direction of the mirror.

## Outside Convex Mirror

### CAUTION:

**A convex mirror can make things (like other vehicles) look farther away than they really are. If you cut too sharply into the right lane, you could hit a vehicle on your right. Check your inside mirror or glance over your shoulder before changing lanes.**

The passenger's side mirror is convex. A convex mirror's surface is curved so more can be seen from the driver's seat. It also makes things appear farther away than they really are.

## OnStar<sup>®</sup> System



OnStar<sup>®</sup> uses several innovative technologies and live advisors to provide you with a wide range of safety, security, information, and convenience services. If your airbags deploy, the system is designed to make an automatic call to OnStar<sup>®</sup> Emergency advisors who can request emergency services be sent to your location. If you lock your keys in the vehicle, call OnStar<sup>®</sup> at 1-888-4-ONSTAR and they can send a signal to unlock your doors. If you need roadside assistance, press the OnStar<sup>®</sup> button and they can contact Roadside Service for you.

OnStar® service is provided to you subject to the OnStar® Terms and Conditions. You may cancel your OnStar® service at any time by contacting OnStar® as provided below. A complete OnStar® Owners Guide and the OnStar® Terms and Conditions are included in the vehicle's OnStar® Subscriber glove box literature. For more information, visit [onstar.com](http://onstar.com) or [onstar.ca](http://onstar.ca), contact OnStar® at 1-888-4-ONSTAR (1-888-466-7827) or TTY 1-877-248-2080, or press the OnStar® button to speak with an OnStar® advisor 24 hours a day, 7 days a week.

Not all OnStar® features are available on all vehicles. To check if your vehicle is equipped to provide the services described below, or for a full description of OnStar® services and system limitations, see the OnStar® Owner's Guide in your glove box or visit [onstar.com](http://onstar.com).

## **OnStar® Services**

For new vehicles with OnStar®, the Safe & Sound Plan, or the Directions & Connections® Plan is included for one year from the date of purchase. You can extend this plan beyond the first year, or upgrade to the Directions & Connections® Plan.

For more information, press the OnStar® button to speak with an advisor. Some OnStar® services (such as Remote Door Unlock or Stolen Vehicle Location Assistance) may not be available until you register with OnStar®.

## **Available Services with Safe & Sound® Plan**

- Automatic Notification of Airbag Deployment
- Advanced Automatic Crash Notification (AACN) (If equipped)
- Link to Emergency Services
- Roadside Assistance
- Stolen Vehicle Location Assistance
- AccidentAssist
- Remote Door Unlock/Vehicle Alert
- OnStar® Vehicle Diagnostics
- GM Goodwrench® On Demand Diagnostics
- OnStar® Hands-Free Calling with 30 complimentary minutes
- OnStar® Virtual Advisor (U.S. Only)

## Available Services included with Directions & Connections® Plan

- All Safe and Sound Plan Services
- Driving Directions - Advisor delivered or OnStar® Turn-by-Turn Navigation (If equipped)
- RideAssist
- Information and Convenience Services

## OnStar® Hands-Free Calling

OnStar® Hands-Free Calling allows eligible OnStar® subscribers to make and receive calls using voice commands. Hands-Free Calling is fully integrated into the vehicle, and can be used with OnStar® Pre-Paid Minute Packages. Hands-Free Calling may also be linked to a Verizon Wireless service plan in the U.S. or a Bell Mobility service plan in Canada, depending on eligibility. To find out more, refer to the OnStar® Owners Guide in the vehicle's glove box, visit [www.onstar.com](http://www.onstar.com) or [www.onstar.ca](http://www.onstar.ca), or speak with an OnStar® advisor by pressing the OnStar® button or calling 1-888-4-ONSTAR (1-888-466-7827).

## OnStar® Virtual Advisor

OnStar® Virtual Advisor is a feature of OnStar® Hands-Free Calling that uses your minutes to access location-based weather, local traffic reports, and stock quotes. By pressing the phone button and giving a few simple voice commands, you can browse through the various topics. See the OnStar® Owners Guide for more information (Only available in the continental U.S.).

## OnStar® Steering Wheel Controls

Your vehicle may have a Talk/Mute button that can be used to interact with OnStar® Hands-Free Calling. See *Audio Steering Wheel Controls on page 223* for more information.

On some vehicles, you may have to hold the button for a few seconds and give the command "ONSTAR" in order to activate the OnStar® Hands-Free Calling feature.

On some vehicles, the mute button can be used to dial numbers into voicemail systems, or to dial phone extensions. See the OnStar® Owner's Guide for more information.

## How OnStar® Service Works

In order to provide you with OnStar® services, your vehicle's OnStar® system has the capability of recording and transmitting vehicle information. This information is automatically sent to an OnStar® Call Center at the time of an OnStar® button press, Emergency button press or if your airbags or AACN system deploys. The vehicle information usually includes your GPS location and, in the event of a crash, additional information regarding the accident that your vehicle has been involved in (e.g. the direction from which your vehicle was hit). When you use the Virtual Advisor feature of OnStar® Hands-Free Calling, your vehicle also sends OnStar® your GPS location so that we can provide you with location-based services.

OnStar® service cannot work unless your vehicle is in a place where OnStar® has an agreement with a wireless service provider for service in that area. OnStar® service also cannot work unless you are in a place where the wireless service provider OnStar® has hired for that area has coverage, network capacity and reception when the service is needed, and technology that is compatible with the

OnStar® service. Not all services are available everywhere, particularly in remote or enclosed areas, or at all times.

OnStar® service that involves location information about your vehicle cannot work unless GPS satellite signals are unobstructed and available in that place as well.

Your vehicle must have a working electrical system (including adequate battery power) for the OnStar® equipment to operate. There are other problems OnStar® cannot control that may prevent OnStar® from providing OnStar® service to you at any particular time or place. Some examples are damage to important parts of your vehicle in an accident, hills, tall buildings, tunnels, weather or wireless phone network congestion.

## Your Responsibility

You may need to increase the volume of your radio to hear the OnStar® advisor. If the light next to the OnStar® buttons is red, this means that your system is not functioning properly and should be checked by your dealer/retailer. If the light appears clear (no light is appearing), your OnStar® subscription has expired. You can always press the OnStar® button to confirm that your OnStar® equipment is active.

## **Storage Areas**

### **Glove Box**

To open the glove box, lift up on the lever.

### **Cupholder(s)**

Your vehicle has a removable cupholder liner and cupholder located inside the center console storage area. To access, pull the cover towards the rear of the vehicle. To remove the liner, pull it out of the cupholder. To replace, push the liner back in. To remove the cupholder, push the tab in near the passenger's seat and pull straight up. To replace, slide the two tabs at the rear of the cupholder into the slots at the rear of the center console and push the cupholder gently into place. There is additional storage underneath the cupholders. There are two more cupholders located at rear of the center console. Push the button to access.

### **Floor Console Storage Area**

Your vehicle may have a floor console storage area. Push the button to open.

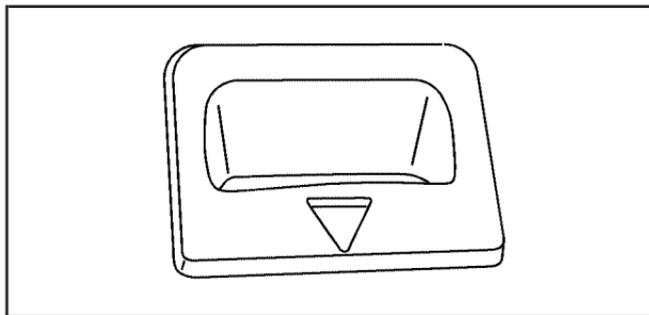
### **Center Console Storage Area**

Your vehicle has a center console storage area. To access, slide the cover back towards the rear of the vehicle. It is equipped with two accessory power outlets. One is located inside the storage area and another hidden under the cupholders. There is a hole in the storage area for a cellphone wire to be routed through.

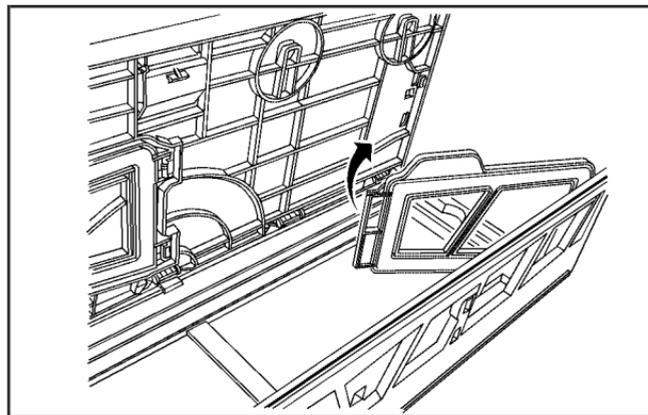
### **Cargo Area**

Your vehicle has a cargo area organizer, which is located in the rear of the vehicle. This storage space is designed to hold small items and includes integrated storage bins.

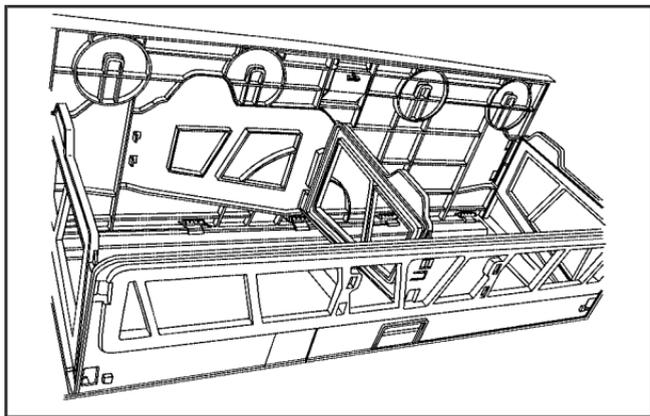
Use the following procedure to access and assemble the rear cargo organizer.



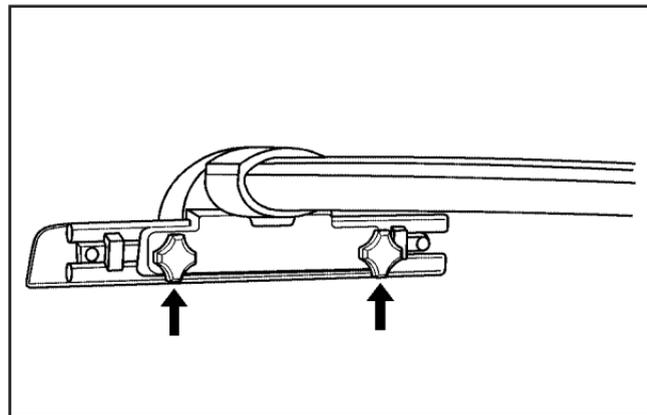
1. Pull up on the latch of the rear panel lid of the cargo organizer to open it.
2. Lift the front of the cargo organizer and fold out the end panels.



3. Turn the end panels forward and snap them into the rear panel lid.
4. Pull the center divider out from the rear panel lid.



## Roof Rack System



5. Turn the center divider rearward and snap it into the panel lid.
6. Reverse the above steps to stow the dividers and close the cargo organizer.

Push firmly on the rear panel lid to engage the latch of the organizer.

Your vehicle may be equipped with a roof rack system. To adjust the crossrails, turn both knobs on each side of the crossrail counterclockwise until it moves freely. Once the crossrail is in place, turn both knobs on each of side of the crossrail clockwise until it is secure.

 **CAUTION:**

If you try to carry something on top of your vehicle that is longer or wider than the luggage carrier — like paneling, plywood, a mattress and so forth — the wind can catch it as you drive along. This can cause you to lose control. What you are carrying could be violently torn off, and this could cause you or other drivers to have a collision, and of course damage your vehicle. You may be able to carry something like this inside. But, never carry something longer or wider than the luggage carrier on top of your vehicle.

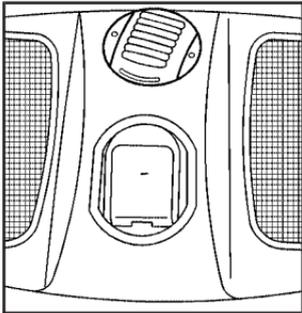
**Notice:** Loading cargo on the luggage carrier that weighs more than 100 lbs (45 kg) or hangs over the rear or sides of the vehicle may damage your vehicle. Load cargo so that it rests on the slats as far forward as possible and against the side rails, making sure to fasten it securely.

Do not exceed the maximum vehicle capacity when loading your vehicle. For more information on vehicle capacity and loading, see *Loading Your Vehicle* on page 279.

To prevent damage or loss of cargo as you are driving, check frequently to ensure your cargo is securely fastened.

## Sunroof

If your vehicle has a sunroof, the controls to operate it are located on the headliner above the rearview mirror. The ignition must be in RUN or ACC to operate the sunroof. See *Ignition Positions* on page 109.



To express-open the sunroof glass panel and sunshade, press the switch rearward and release it.

To stop the sunroof before it is completely open, press the switch rearward again. The sunshade cannot be closed with the sunroof open. To close the sunroof, press forward on the switch until it stops. The sunshade must be manually closed.

To put the sunroof in the vent position, pull down on the front of the switch. Push up on the front of the switch to close it. The sunshade must be manually opened and closed when the sunroof is in the vent position.

## Section 3 Instrument Panel

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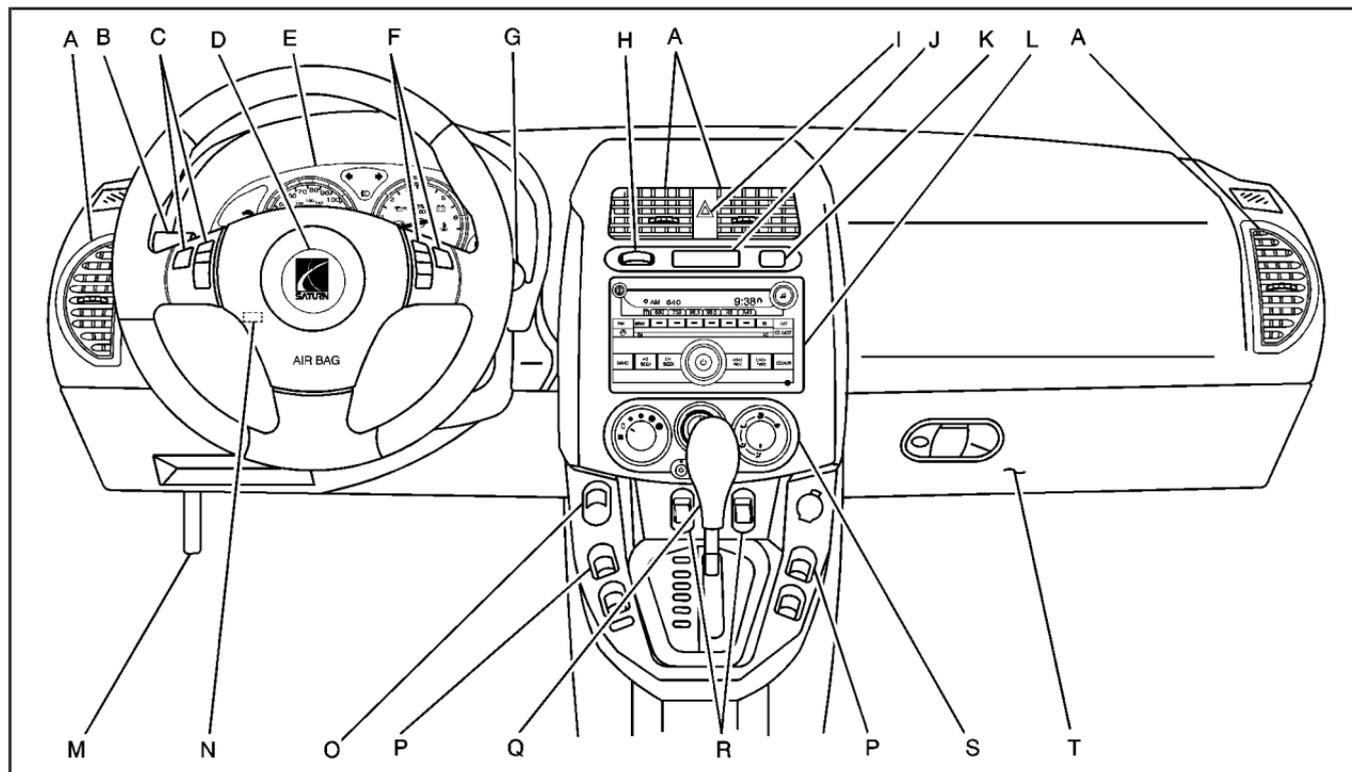
## Section 3 Instrument Panel

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# Instrument Panel Overview

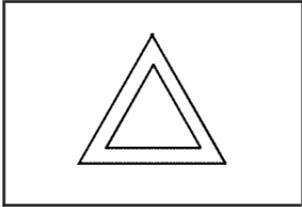


The main components of the instrument panel are the following:

- A. Air Outlets. See *Climate Control System on page 155*.
- B. Turn Signal/Multifunction Lever. See *Turn Signal/Multifunction Lever on page 143*.
- C. Cruise Control Buttons. See *Cruise Control on page 146*.
- D. Horn. See *Horn on page 142*.
- E. Instrument Panel Cluster. See *Instrument Panel Cluster on page 162*.
- F. Audio Steering Wheel Controls. See *Audio Steering Wheel Controls on page 223*.
- G. Windshield Wiper Lever. See *Windshield Wipers on page 144*.
- H. Instrument Panel Brightness Control. See *Instrument Panel Brightness on page 152*.
- I. Hazard Warning Flasher Button. See *Hazard Warning Flashers on page 142*.
- J. Passenger Air Bag Status Indicator. See *Passenger Airbag Status Indicator on page 166*.
- K. Fog Lamp Button (If Equipped) or Traction Control System Button (If Equipped). See *Fog Lamps on page 152* or *Traction Control System (TCS) on page 238*.
- L. Audio System. See *Audio System(s) on page 182*.
- M. Hood Release. See *Hood Release on page 313*.
- N. Tilt Wheel Lever. See *Tilt Wheel on page 142*.
- O. Power Mirror Control. See *Outside Power Mirrors on page 127*.
- P. Power Window Switches. See *Power Windows on page 105*.
- Q. Automatic Transaxle Shift Lever. See *Automatic Transaxle Operation on page 114*.
- R. Heated Seats Buttons or Footwell Lamps (If Equipped). See *Heated Seats on page 11* or *Footwell Lamps on page 153*.
- S. Climate Control. See *Climate Control System on page 155*.
- T. Glove Box. See *Glove Box on page 132*.

## Hazard Warning Flashers

The hazard warning flashers let you warn the police and others that you have a problem. The front and rear turn signal lamps will flash on and off.



The hazard warning flasher button is located in the center of the instrument panel.

Press the button to make the front and rear turn signal lamps flash on and off. Press the button again to turn the flashers off.

While the hazard warning flashers are on, the turn signals do not work.

The hazard warning flashers work no matter what position the key is in, and even if the key is not in the ignition switch.

## Horn

Press near or on the horn symbols on the steering wheel pad to sound the horn.

## Tilt Wheel

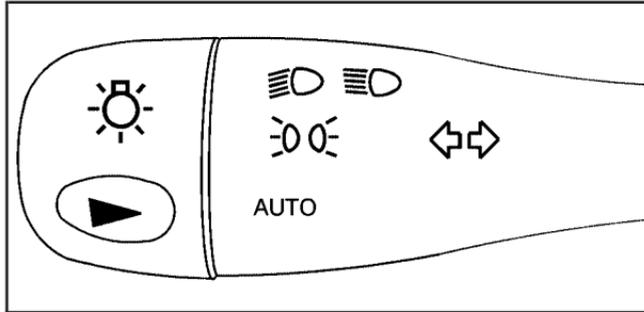
Your vehicle has a tilt wheel which allows you to adjust the steering wheel before you drive. You can raise it to the highest level to give your legs more room when you exit and enter the vehicle.



The lever that allows you to tilt the steering wheel is located on the left side of the steering column.

To tilt the wheel, hold the wheel and push the lever down. Then, move the wheel to a comfortable position and pull the lever up firmly to lock the column in place.

## Turn Signal/Multifunction Lever



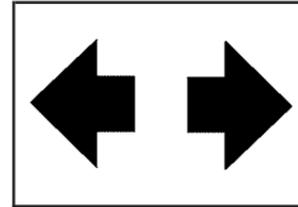
The lever on the left side of the steering column includes the following:

-  Turn and Lane-Change Signals. See *Turn and Lane-Change Signals* on page 143.
-  Exterior Lamp Control. See *Headlamps* on page 149.
-  Headlamp High/Low-Beam Changer. See *Headlamp High/Low-Beam Changer* on page 144.
- Flash-to-Pass Feature. See *Flash-to-Pass* on page 144.
- AUTO Automatic Headlamps. See *Automatic Headlamp System* on page 151.

## Turn and Lane-Change Signals

The turn signal has one upward (for right) and one downward (for left) positions. These positions allow you to signal a turn or a lane change.

To signal a turn, move the lever all the way up or down. When the turn is finished, the lever will return automatically.



An arrow on the instrument panel cluster will flash in the direction of the turn or lane change.

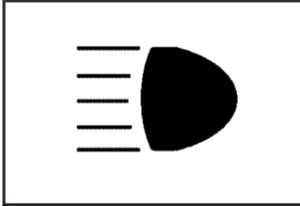
To signal a lane change, raise or lower the lever until the arrow starts to flash. Hold it there until you complete the lane change. The lever will return by itself when you release it.

As you signal a turn or a lane change, if the arrows flash rapidly, a signal bulb may be burned out and other drivers won't see your turn signal.

If a bulb is burned out, replace it to help avoid an accident. If the arrows do not go on at all when you signal a turn, check the fuse, see *Fuses and Circuit Breakers* on page 409 and for burned-out bulbs.

## Headlamp High/Low-Beam Changer

To change the headlamps from low beam to high or high beam to low, pull the turn signal lever all the way towards you. Then release it.



When the high beams are on, this light on the instrument panel cluster will also be on.

## Flash-to-Pass

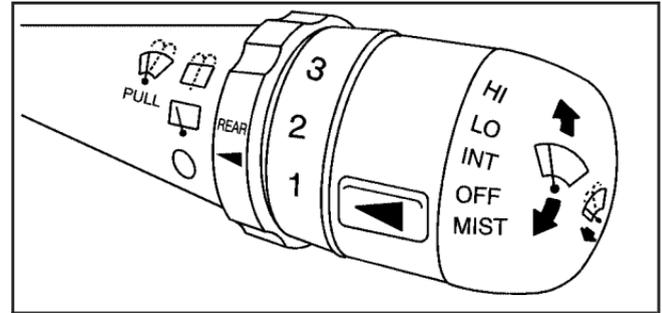
This feature lets you use your high-beam headlamps to signal a driver in front of you that you want to pass.

To flash the high beams from low beam, pull the turn signal/multifunction lever all the way towards you. Then release it.

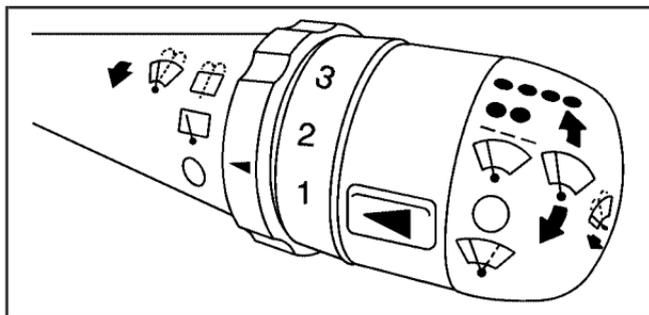
## Windshield Wipers

Be sure to clear ice and snow from the wiper blades before using them. If the wiper blades are frozen to the windshield, gently loosen or thaw them. If the blades do become damaged, install new blades or blade inserts. See *Windshield Wiper Blade Replacement* on page 364.

Heavy snow or ice can overload the wiper motor. A circuit breaker will stop the motor until it cools down. Clear away snow or ice to prevent an overload.



United States



Canada

The lever on the right side of the steering column operates the windshield wipers. Push up or pull down on the lever to place it in one of the following positions.

**MIST or  (Mist):** Pull the lever down and release it for a single wiping cycle. The lever will return to its original position. For more cycles, hold the lever down before releasing it.

**OFF or  (Off):** Move the lever to this position to turn off the wipers.

**INT or  (Intermittent):** Move the lever to this position to set a delay between wipes. To set for a shorter or longer delay between wipes, turn the

band with the arrow pointing to the numbers (1, 2, or 3). Select 3 for the most frequent movement; select 1 for the least frequent.

**LO or  (Low):** Move the lever to this position for slow, steady wiping cycles.

**HI or  (High):** Move the lever to this position for rapid wiping cycles.

## Windshield Washer

### CAUTION:

**In freezing weather, do not use your washer until the windshield is warmed. Otherwise the washer fluid can form ice on the windshield, blocking your vision.**

Pull the windshield wiper lever toward you to operate the windshield wipers. Washer fluid will squirt onto the windshield and the wipers will run for a few cycles to clear the windshield. For more wash cycles, pull the lever toward you and hold it there.

## Rear Window Wiper/Washer

The band on the wiper lever with the smaller arrow operates the rear wiper/washer.

○ **(Off):** Turn the band to this position to turn off the rear wiper.

☐ **(Rear Wiper):** Turn the band with the smaller arrow to this position to turn on the rear wiper. To set for a shorter or longer delay between wipes, turn the other band with the larger arrow pointing to the numbers (1, 2, or 3). Select 3 for the most frequent movement; select 1 for the least frequent. The band with the arrow pointing to the numbers (1, 2, or 3) will affect both the front and rear wipers if they are on at the same time.

☐ **(Wash):** Turn and hold the band in this position to spray washer fluid on the rear window. The rear wiper will also come on. Release the band when enough fluid has been sprayed on the window. The rear wiper will run a few additional times after you release it.

The rear window washer uses the same fluid bottle as the windshield washer. However, the rear window washer will run out of fluid before the windshield washer. If you can wash your windshield but not your rear window, check the fluid level.

## Cruise Control

With cruise control, you can maintain a speed of about 25 mph (40 km/h) or more without keeping your foot on the accelerator. This can really help on long trips. Cruise control does not work at speeds below 25 mph (40 km/h).

### CAUTION:

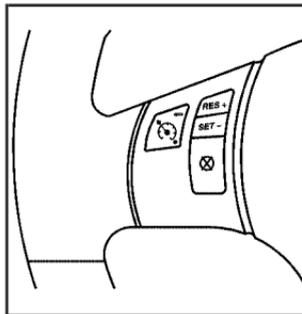
**Cruise control can be dangerous where you cannot drive safely at a steady speed. So, do not use your cruise control on winding roads or in heavy traffic.**

**Cruise control can be dangerous on slippery roads. On such roads, fast changes in tire traction can cause excessive wheel slip, and you could lose control. Do not use cruise control on slippery roads.**

## Setting Cruise Control

### CAUTION:

**If you leave your cruise control on when you are not using cruise, you might hit a button and go into cruise when you do not want to. You could be startled and even lose control. Keep the cruise control switch off until you want to use cruise control.**



The cruise control buttons are located on the steering wheel.

 **(On/Off):** Press this button to turn the cruise control system on and off. There is a indicator light on the button that will come on when cruise control is active.

**RES+ (Resume):** Press this button to resume a set speed and to accelerate the speed.

**SET- (Set):** Press this button to set a speed and to decrease the speed.

 **(Cancel):** Press this button to cancel cruise control.

To set a speed do the following:

1. Press the on/off symbol to turn cruise control on. The indicator light on the button will come on.
2. Get to the speed you want.
3. Press the SET- button and release it.
4. Take your foot off the accelerator pedal.

When the brakes are applied, the cruise control shuts off.

## Resuming a Set Speed

Suppose you set your cruise control at a desired speed and then you apply the brakes. This will disengage the cruise control. The indicator light on the cruise control button will go out when the cruise is no longer engaged. To return to the previously set speed, press the RES+ button briefly when the vehicle has reached a speed of about 25 mph (40 km/h) or more.

This will take you back up to your previously selected speed and stay there.

## Increasing Speed While Using Cruise Control

There are two ways to go to a higher speed.

- Disengage the cruise control, but do not turn it off.
- If the cruise control system is already engaged, press the RES+ button. Hold it there until you get up to the speed you want, and then release the button. To increase your speed in very small amounts, press the RES+ button briefly and then release it. Each time you do this, the vehicle will go about 1 mph (1.6 km/h) faster.

## Reducing Speed While Using Cruise Control

If the cruise control system is already engaged,

- Push and hold the SET- button until you reach the lower speed you want, then release it.
- To slow down in very small amounts, push the SET- button briefly. Each time you do this, you will go about 1 mph (1.6 km/h) slower.

## Passing Another Vehicle While Using Cruise Control

Use the accelerator pedal to increase your speed. When you take your foot off the pedal, the vehicle will slow down to the cruise control speed you set earlier.

## Using Cruise Control on Hills

How well your cruise control will work on hills depends upon your speed, load, and the steepness of the hills. When going up steep hills, you may have to step on the accelerator pedal to maintain the vehicle's speed.

When going downhill, you may have to brake or shift to a lower gear to keep the vehicle's speed down. Of course, applying the brakes ends cruise control. Many drivers find this to be too much trouble and do not use cruise control on steep hills.

## Ending Cruise Control

There are three ways to disengage the cruise control:

- Step lightly on the brake pedal or clutch; when cruise control disengages, the indicator light on the cruise control button will go out.
- Press the on/off button, this will turn off the cruise control system.
- Press the cancel button.

## Erasing Speed Memory

When you turn off the cruise control or the ignition, your cruise control set speed memory is erased.

## Headlamps

The exterior lamp control is located on the turn signal/multifunction lever.

 **(Exterior Lamp Control):** Turn the control with this symbol on it to operate the exterior lamps.

The exterior lamp control has the following three positions:

**AUTO (Automatic):** Turn the control to this position to put the headlamps in automatic mode. AUTO mode will turn the exterior lamps on and off depending upon how much light is available outside of the vehicle.

 **(Parking Lamps):** Turn the control to this position to turn on the parking lamps together with the following:

- Sidemarkers Lamps
- Taillamps
- License Plate Lamps
- Instrument Panel Lights

 **(Headlamps):** Turning the control to this position turns on the headlamps, together with the previously listed lamps and lights.

### Lamps On Reminder

If you open the driver's door with the ignition off and the lamps on, you will hear a warning chime.

## Daytime Running Lamps (DRL)

Daytime Running Lamps (DRL) can make it easier for others to see the front of your vehicle during the day. DRL can be helpful in many different driving conditions, but they can be especially helpful in the short periods after dawn and before sunset. Fully functional daytime running lamps are required on all vehicles first sold in Canada.

The DRL system will make your low-beam headlamps come on at a reduced brightness in daylight when the following conditions are met:

- The ignition is on,
- the exterior lamp band is in AUTO,
- the transaxle is not in PARK (P),
- the light sensor determines it is daytime, and
- the parking brake is released.

When the DRL are on, the low-beam headlamps will be on at a reduced brightness. The taillamps, sidemarker and other lamps will not be on. The instrument panel will not be lit up either.

When you turn the exterior lamp band to the headlamp position, your regular headlamps will come on. The other lamps that come on with your headlamps will also come on.

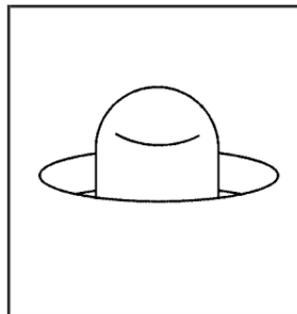
When you turn off the headlamps, the regular lamps will go off, and your low-beam headlamps will come on to the reduced brightness.

To idle your vehicle with the DRL off, move the shift lever to PARK (P). The DRL will stay off until you move the shift lever out of PARK (P). To override the DRL on manual transaxle vehicles, you must set the parking brake while the ignition is off and then start your vehicle. The DRL will stay off until you release the parking brake.

As with any vehicle, you should turn on the regular headlamp system when you need it.

## Automatic Headlamp System

When it is dark enough outside, the headlamps will come on automatically.

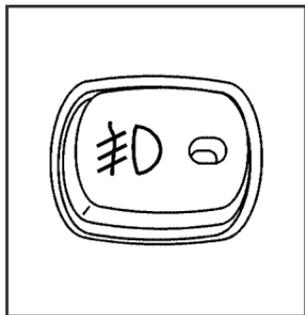


Your vehicle has a light sensor located on top of the instrument panel. Make sure it is not covered, or the headlamps will be on when you don't need them.

The system may also turn on the headlamps when driving through a parking garage or tunnel.

## Fog Lamps

If your vehicle has this feature, use your fog lamps for better visibility in foggy or misty conditions.



The button for your fog lamps is located on the instrument panel above the radio.

Push the button to turn the fog lamps on or off. When using fog lamps, the parking lamps or low-beam headlamps must be on.

A light on the button will come on when the fog lamps are on. Fog lamps will go off whenever the high-beam headlamps are turned on. When the high-beam headlamps are turned off, the fog lamps will come on again.

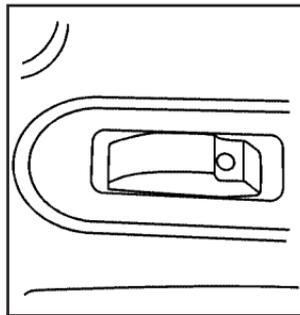
Some localities have laws that require the headlamps to be on along with the fog lamps.

## Interior Lamps

The liftgate lamps are located on the bottom left and right corner of the liftgate. They will come on when the liftgate or any door is opened. The liftgate lamps can be controlled by the dome lamp switch. See *Dome Lamp* on page 153.

## Instrument Panel Brightness

This feature controls the brightness of the instrument panel lights.



The thumbwheel for this feature is located on the center of the instrument panel.

Turn the thumbwheel to the right to brighten the lights or to the left to dim them.

## Dome Lamp

The dome lamp switch has three positions.

 **(Off):** The lamp will not come on as long as the switch is in this position.

 **(Automatic):** The lamp will come on when a door is opened. See *Entry Lighting on page 153*.

 **(On):** The lamp will stay on as long as the switch is in this position.

## Entry Lighting

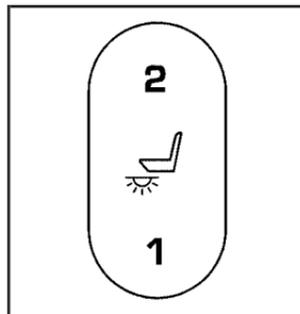
If the dome lamp is in the automatic position, the lamps inside your vehicle will come on when any door is opened. In addition, the lights will come on when the remote keyless entry unlock button is pressed. It will stay on for 20 seconds or until a door is opened. After the door is opened the lights will remain on and stay on for 20 seconds after the doors are closed, or until you put the key in the ignition and turn the key to RUN. The lights will then gradually dim until it is no longer lit.

## Map Lamps

The lamps are located on the headliner above the rearview mirror. To turn the lamps on, press the lens. Press the lens again to turn them off.

## Footwell Lamps

Your vehicle may have two footwell lamps. These lights are located under the driver and passenger seats. The switches are located on the instrument panel under the climate controls.



There are two different colors of light that can be selected. Press the upper part of the button for blue light and press the bottom part of the button for amber light. Each light will illuminate the front and rear area of the seat.

## Battery Run-Down Protection

Your vehicle is equipped with a battery saver feature designed to protect your vehicle's battery.

When any interior lamp is left on and the ignition is turned off, the battery rundown protection system will automatically turn the lamp off after 20 minutes. This will avoid draining the battery.

## Accessory Power Outlet(s)

The accessory power outlets can be used to connect electrical equipment such as a cellular phone or CB radio.

The accessory power outlets are located on the instrument panel near the climate controls, on the rear of the center console, and also inside the console under the cupholders.

To use the outlets, remove the cover. When not in use, always cover the outlet with the protective cap.

**Notice:** Leaving electrical equipment on for extended periods will drain the battery. Always turn off electrical equipment when not in use and do not plug in equipment that exceeds the maximum 20 ampere rating.

Certain electrical accessories may not be compatible with the accessory power outlet and could result in blown vehicle or adapter fuses. If you experience a problem, see your retailer for additional information on the accessory power outlet.

**Notice:** Adding any electrical equipment to your vehicle may damage it or keep other components from working as they should. The repairs would not be covered by your warranty. Check with your retailer before adding electrical equipment.

When adding electrical equipment, be sure to follow the installation instructions included with the equipment.

**Notice:** Improper use of the power outlet can cause damage not covered by your warranty. Do not hang any type of accessory or accessory bracket from the plug because the power outlets are designed for accessory plugs only.

## Cigarette Lighter

Your vehicle may have a cigarette lighter. To use the lighter, located on the instrument panel below the climate controls, push it in all the way and let go. When it is ready, it will pop back out by itself.

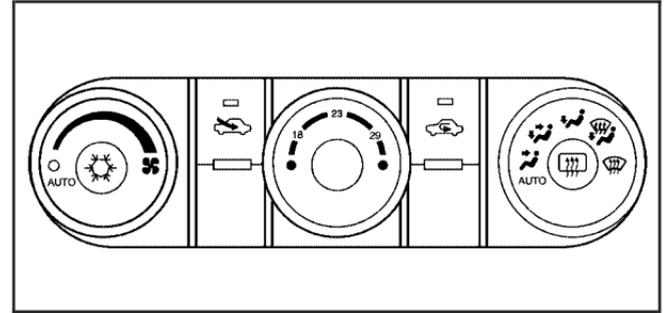
**Notice:** Holding a cigarette lighter in while it is heating does not let the lighter back away from the heating element when it is hot. Damage from overheating can occur to the lighter or heating element, or a fuse could be blown. Do not hold a cigarette lighter in while it is heating.

**Notice:** If you put papers, pins, or other flammable items in the ashtray, hot cigarettes or other smoking materials could ignite them and possibly damage your vehicle. Never put flammable items in the ashtray.

## Climate Controls

### Climate Control System

With this system you can control the heating, cooling and ventilation for your vehicle.



### Operation

To change the current mode, use the right knob to select one of the following:

**☪ (Vent):** This mode directs air to the instrument panel outlets.

 **(Bi-Level):** This mode directs air to the instrument panel outlets and to the floor outlets. Cooler air is directed to the upper outlets and warmer air to the floor outlets.

 **(Floor):** This mode directs most of the air to the floor outlets with some air directed to the windshield.

When you select this mode, the system will turn recirculation mode off and run the air conditioning compressor unless the outside air is at or below freezing. Recirculation mode cannot be selected while in floor mode. This helps prevent window fogging and moisture building up within the cabin.

The right knob can also be used to select defog or defrost mode. See “Defogging and Defrosting” later in this section.

 **(Fan):** Turn the left knob clockwise to increase the fan speed or counterclockwise to decrease the fan speed. To turn the fan off, turn the left knob all the way counterclockwise. In any setting other than off, the fan will run continuously with the ignition on. The fan must be turned on to run the air conditioning compressor. There will be

some airflow noticeable from the various outlets when driving, even with the fan in the off position. This is to ensure some fresh air is always available in the vehicle.

**Temperature Control:** Turn the center knob clockwise to increase or counterclockwise to decrease the temperature inside your vehicle.

 **(Recirculate):** Press this button to toggle between recirculate and outside air modes. The indicator light turns on when recirculate mode is selected. This mode can be used to prevent outside air and odors from entering your vehicle or to help heat or cool the air inside your vehicle more quickly. Avoid using the recirculate mode on during high periods of humidity or cool outside temperatures since this may result in increased window fogging. If window fogging is experienced, select the defrost mode.

Recirculation mode is not available in floor, defog, or defrost modes and will shut off automatically and change to outside air until a mode other than floor, defog, or defrost is selected. This helps prevent window fogging and moisture building up within the cabin.

 **(Air Conditioning):** Press this button to turn the air conditioning system on or off. When this button is pressed, an indicator light above the button will come on to let you know the air conditioning is activated. Air conditioning can be selected in any mode as long as the fan is on in any speed position.

On hot days, activate the air conditioning system, select maximum fan speed and the coldest temperature setting. Open the windows long enough to let the hot inside air escape, then close them. This helps reduce the time it takes for your vehicle to cool down. It also helps the system to operate more efficiently. Adjust fan speed and temperature setting as required to achieve comfort.

The air conditioning system removes moisture from the air, so you may sometimes notice a small amount of water dripping underneath your vehicle while idling or after turning off the engine. This is normal.

## Defogging and Defrosting

Fog on the inside of windows is a result of high humidity (moisture) condensing on the cool window glass. This can be minimized if the climate control system is used properly. There are two modes to clear fog or frost from your windshield and side windows. Use the defog mode to clear the windows of fog or moisture and warm the passengers. Use the defrost mode to remove fog or frost from the windshield more quickly. For best results, clear all snow and ice from the windshield before defrosting.

Turn the right knob to select the defog or defrost mode.

 **(Defog):** This mode directs air to the windshield, side window outlets and floor outlets. When you select this mode, the system will turn recirculation mode off and run the air conditioning compressor unless the outside air is at or below freezing. Recirculation mode cannot be selected while in defog mode. This helps prevent window fogging and moisture building up within the cabin. To defog the windows faster, turn the temperature knob clockwise to the warmest setting.

 **(Defrost):** This mode directs most of the air to the windshield, with some air directed to the side window outlets and the floor outlets. When you select this mode, the system will turn recirculation mode off automatically and will run the air conditioning compressor unless the outside air is at or below freezing. Recirculation mode cannot be selected while in defrost mode. This helps prevent window fogging and moisture building up within the cabin. To defrost the windows faster, turn the temperature knob clockwise to the warmest setting.

## Rear Window Defogger

The rear window defogger uses a warming grid to remove fog from the rear window.

The rear window defogger will only work when the ignition is in RUN.

 **(Rear Window Defogger):** Press the button to turn the rear window defogger on or off. An indicator light above the button will come on to let you know that the rear window defogger is activated.

The rear window defogger will stay on for approximately 15 minutes after the button is pressed, unless the ignition is turned to ACC or LOCK. If turned on again, the defogger will only run for approximately seven minutes before turning off. The defogger can also be turned off by pressing the button again or by turning off the engine.

***Notice:*** Do not use anything sharp on the inside of the rear window. If you do, you could cut or damage the warming grid, and the repairs would not be covered by your warranty. Do not attach a temporary vehicle license, tape, a decal or anything similar to the defogger grid.

## Outlet Adjustment

Use the louvers located on the air outlets to change the direction of the airflow.

### Operation Tips

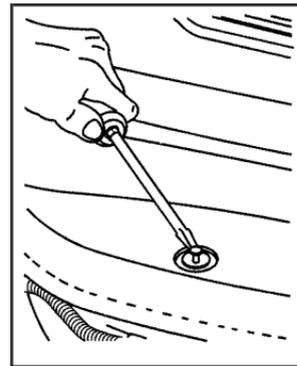
- Clear away any ice, snow, or leaves from the air inlets at the base of the vehicle that may block the flow of air into your vehicle.
- Do not use any non-GM approved hood deflectors that could adversely affect the performance of the system.
- Keep the path under the front seats clear of objects to help circulate the air inside of your vehicle more effectively.

## Passenger Compartment Air Filter

The passenger compartment air is routed through a passenger compartment filter. The filter removes certain particles from the air, including pollen and dust particles. Reductions in airflow, which may occur more quickly in dusty areas, indicate that the filter needs to be replaced.

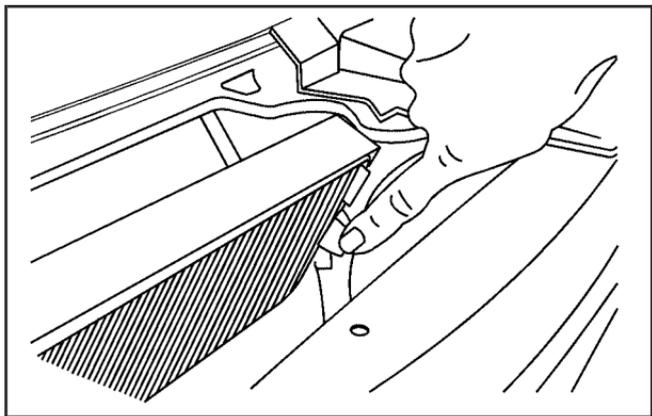
The filter should be replaced as part of routine scheduled maintenance. See *Scheduled Maintenance on page 420* for replacement intervals. To find out what type of filter to use, see *Normal Maintenance Replacement Parts on page 434*.

The passenger compartment air filter can be accessed from under the hood.

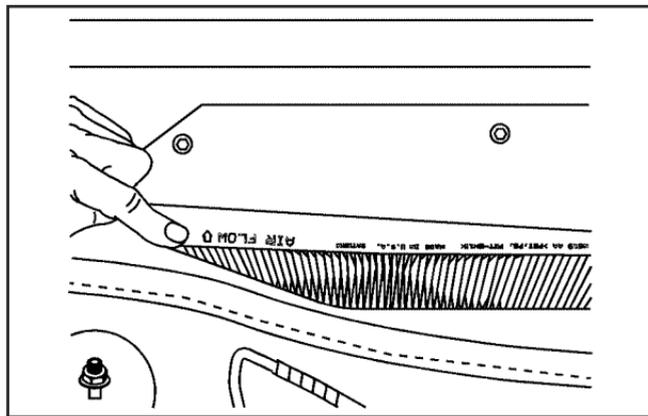


1. Remove the push pins from the air filter access panel.

2. Remove the air filter access panel.



3. Remove the air filter from the housing by pressing the tab on the inboard side of the housing.



4. Remove the filter by sliding it out of the housing.
5. Install the new air filter.  
When installing a new air filter make sure the AIR FLOW arrow is pointing rearward.
6. Reinstall the air filter access panel.
7. Reinstall the air filter access panel push pins.

## Warning Lights, Gages, and Indicators

This part describes the warning lights and gages on your vehicle. The pictures help to locate them.

Warning lights and gages can signal that something is wrong before it becomes serious enough to cause an expensive repair or replacement. Paying attention to the warning lights and gages could also save you or others from injury.

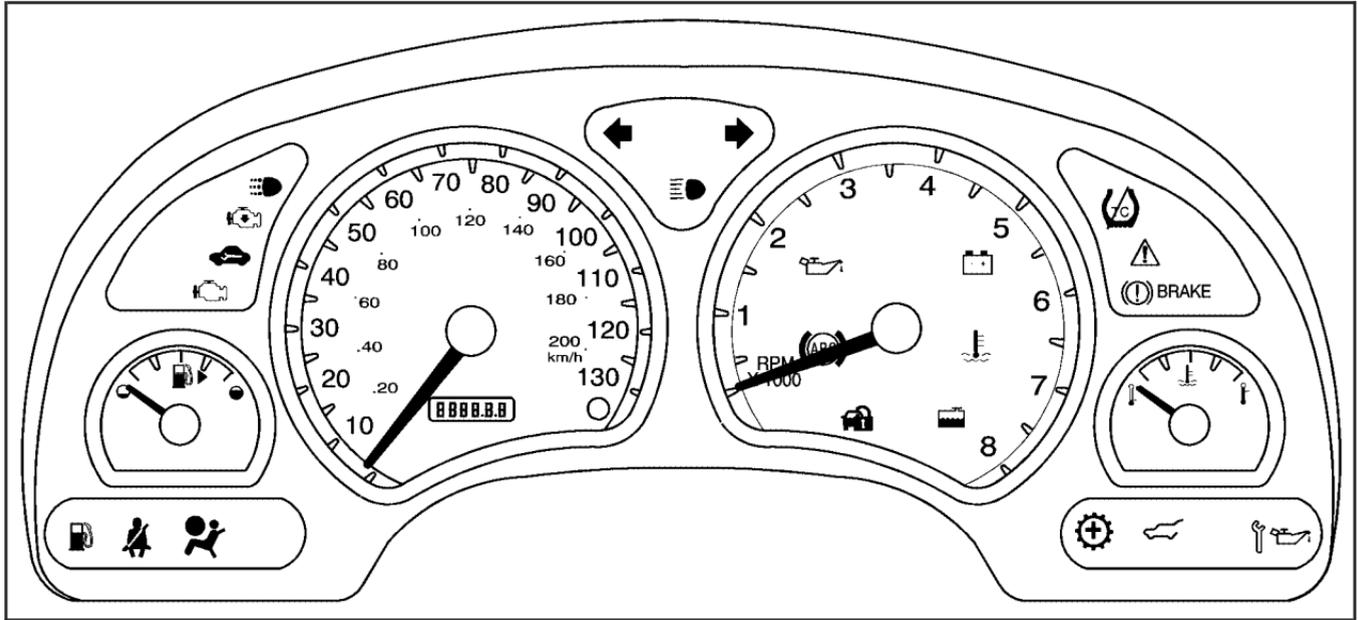
Warning lights come on when there may be or is a problem with one of your vehicle's functions. As the details show on the next few pages, some warning lights come on briefly when you start the engine just to let you know they are working. If you are familiar with this section, you should not be alarmed when this happens.

Gages can indicate when there may be or is a problem with one of your vehicle's functions. Often gages and warning lights work together to let you know when there is a problem with your vehicle.

When one of the warning lights comes on and stays on as you are driving, or when one of the gages shows there may be a problem, check the section that tells you what to do about it. Please follow this manual's advice. Waiting to do repairs can be costly and even dangerous. So please get to know your vehicle's warning lights and gages. They can be a big help.

## Instrument Panel Cluster

The instrument cluster is designed to let you know at a glance how the vehicle is running. You will know how fast you are going, about how much fuel you have used, and many other things you will need to know to drive safely and economically.



United States version shown, Canada similar

## Speedometer and Odometer

Your speedometer lets you see your speed in both miles per hour (mph) and kilometers per hour (km/h).

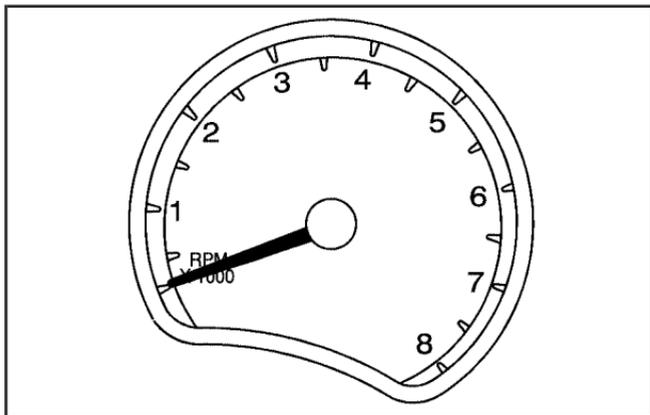
Your odometer shows how far your vehicle has been driven, in either miles or kilometers.

Your vehicle has a tamper-resistant odometer. If ERROR is displayed, this indicates someone has probably tampered with the odometer and the reading may not be accurate. You may wonder what happens if your vehicle needs a new odometer installed. The new one can be set to the mileage total of the old odometer, then that will be done. If not, it will be set at zero and a label must be put on the driver's door to show the old mileage reading when the new odometer was installed. If the mileage is unknown, the label should then indicate "previous mileage unknown".

## Trip Odometer

Your trip odometer is located on the instrument panel and shows how far your vehicle has been driven since the trip odometer was last reset. To reset the trip odometer to zero, press and hold the trip/reset button on the speedometer for about two seconds. Press the trip/reset button to switch between the trip odometer and odometer.

## Tachometer



The tachometer displays the engine speed in revolutions per minute (rpm).

**Notice:** If you operate the engine above 6,900 rpm, your vehicle could be damaged, and the damages would not be covered by your warranty. Do not operate the engine with the tachometer above 6,900 rpm.

**Notice:** For the VUE Redline, if you operate the engine with the tachometer in the shaded warning area, your vehicle could be damaged, and the damages would not be covered by your warranty. Do not operate the engine with the tachometer in the shaded warning area.

## Safety Belt Reminder Light

When the key is turned to RUN or START, a chime will come on for several seconds to remind people to fasten their safety belts, unless the driver's safety belt is already buckled.



The safety belt light will also come on and stay on for several seconds, then it will flash for several more.

This chime and light will be repeated if the driver remains unbuckled and the vehicle is in motion.

If the driver's belt is already buckled, neither the chime nor the light will come on.

## Passenger Safety Belt Reminder Light

Several seconds after the key is turned to RUN or START, a chime will sound for several seconds to remind the front passenger to buckle their safety belt. This would only occur if the passenger airbag is enabled. See *Passenger Sensing System on page 82* for more information. The passenger safety belt light will also come on and stay on for several seconds, then it will flash for several more.

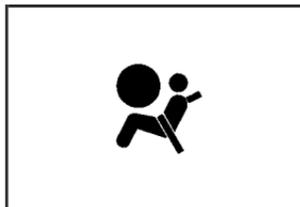


This chime and light will be repeated if the passenger remains unbuckled and the vehicle is in motion.

If the passenger's safety belt is buckled, neither the chime nor the light will come on.

## Airbag Readiness Light

There is an airbag readiness light on the instrument panel cluster, which shows the airbag symbol. The system checks the airbag's electrical system for malfunctions. The light tells you if there is an electrical problem. The system check includes the airbag sensor, the airbag modules, the wiring and the crash sensing and diagnostic module. For more information on the airbag system, see *Airbag System on page 71*.



This light will come on when you start your vehicle, and it will flash for a few seconds. Then the light should go out. This means the system is ready.

If the airbag readiness light stays on after you start the vehicle or comes on when you are driving, your airbag system may not work properly. Have your vehicle serviced right away.

**⚠ CAUTION:**

**If the airbag readiness light stays on after you start your vehicle, it means the airbag system may not be working properly. The airbags in your vehicle may not inflate in a crash, or they could even inflate without a crash. To help avoid injury to yourself or others, have your vehicle serviced right away if the airbag readiness light stays on after you start your vehicle.**

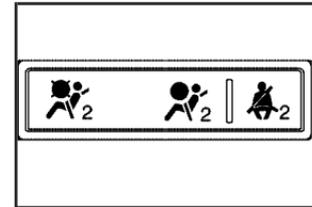
The airbag readiness light should flash for a few seconds when you turn the ignition key to RUN. If the light does not come on then, have it fixed so it will be ready to warn you if there is a problem.

## Passenger Airbag Status Indicator

Your vehicle has the passenger sensing system. Your instrument panel has a passenger airbag status indicator.



United States



Canada

When the ignition key is turned to RUN or START, the passenger airbag status indicator will light ON and OFF, or the symbol for on and off, for several seconds as a system check. Then, after several more seconds, the status indicator will light either ON or OFF, or either the on or off symbol to let you know the status of the right front passenger's frontal airbag.

If the word ON or the on symbol is lit on the passenger airbag status indicator, it means that the right front passenger's frontal airbag is enabled (may inflate).

 **CAUTION:**

**If the on indicator comes on when you have a rear-facing child restraint installed in the right front passenger's seat, it means that the passenger sensing system has not turned off the passenger's frontal airbag. A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's airbag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating airbag. Do not use a rear-facing child restraint in the right front passenger's seat if the airbag is turned on.**

If your vehicle has a rear seat that will accommodate a rear-facing child restraint, a label on your sun visor says, "Never put a rear-facing child seat in the front." This is because the risk to the rear-facing child is so great, if the airbag deploys.

 **CAUTION:**

**Even though the passenger sensing system is designed to turn off the right front passenger's frontal airbag if the system detects a rear-facing child restraint, no system is fail-safe, and no one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off. We recommend that rear-facing child restraints be secured in the rear seat, even if the airbag is off.**

If your vehicle does not have a rear seat that will accommodate a rear-facing child restraint, never put a child in a rear-facing child restraint in the right front passenger seat unless the passenger airbag status indicator shows off and the airbag is off. Here is why:

 **CAUTION:**

**Even though the passenger sensing system is designed to turn off the passenger's frontal airbag if the system detects a rear-facing child restraint, no system is fail-safe, and no one can guarantee that an airbag will not deploy under some unusual circumstance, even though it is turned off. We recommend that rear-facing child restraints be transported in vehicles with a rear seat that will accommodate a rear-facing child restraint, whenever possible.**

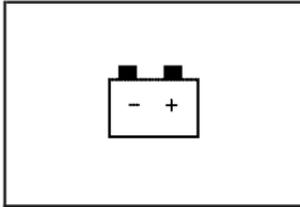
If the word OFF or the off symbol is lit on the airbag status indicator, it means that the passenger sensing system has turned off the right front passenger's frontal airbag. See *Passenger Sensing System on page 82* for more on this, including important safety information.

If, after several seconds, all status indicator lights remain on, or if there are no lights at all, there may be a problem with the lights or the passenger sensing system. See your retailer for service.

 **CAUTION:**

**If the off indicator and the airbag readiness light ever come on together, it means that something may be wrong with the airbag system. If this ever happens, have the vehicle serviced promptly, because an adult-size person sitting in the right front passenger seat may not have the protection of the frontal airbag. See *Airbag Readiness Light on page 165*.**

## Battery Warning Light



The battery warning light will come on briefly as a check, when you turn on the ignition. Then it should go out when the engine is started.

If the light does not come on when you start your vehicle, have your vehicle serviced right away. This condition may indicate your battery warning light is not functioning properly. If this light comes on while you are driving, be sure to turn off accessories such as the radio and climate control system. Have your vehicle serviced right away.

## Up-Shift Light

Your vehicle may have an up-shift light. When this light comes on, you should shift to the next higher gear if weather, road, and traffic conditions allow you to.



This light is located in your instrument panel cluster under your temperature gage.

**United States Only**

See *Manual Transaxle Operation* on page 117 for more information.

## Brake System Warning Light

Your vehicle's hydraulic brake system is divided into two parts. If one part is not working, the other part can still work and stop you. For good braking, though, you need both parts working well.

If the brake system warning light comes on, there is a brake problem. Have your brake system inspected right away.



United States



Canada

The brake light is located in the instrument panel cluster.

This light should come on briefly when you turn the ignition key to RUN. If it does not come on then, have it fixed so it will be ready to warn you if there is a problem.

When the ignition is on, the brake light will come on when you set your parking brake. The light will stay on if your parking brake does not release

fully. A chime will also sound if the parking brake is not fully released and the vehicle is moving. If it stays on after your parking brake is fully released, it means you have a brake problem.

The brake light will also come on to indicate a low brake fluid level. See *Brakes on page 343* for more information.

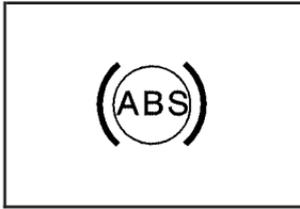
If the light comes on while you are driving, pull off the road and stop carefully. You may notice that the pedal is harder to push or the pedal may go closer to the floor. It may take longer to stop. If the light is still on, have the vehicle towed for service. See *Towing Your Vehicle on page 284*.

### CAUTION:

**Your brake system may not be working properly if the brake system warning light is on. Driving with the brake system warning light on can lead to an accident. If the light is still on after you have pulled off the road and stopped carefully, have the vehicle towed for service.**

## Anti-Lock Brake System Warning Light

If your vehicle has anti-lock brakes, the anti-lock brake system (ABS) warning light will come on briefly, as a check, when you start your vehicle. If it does not, have your vehicle serviced so that the light works properly when it needs to.



The ABS light is located in the instrument panel cluster, to the left of the engine coolant temperature gage.

If the light stays on longer than a few seconds after you start your engine, or comes on and stays on while you are driving, try resetting the system.

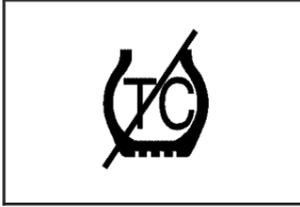
To reset the system, do the following:

1. If you are driving, pull over when it is safe to do so.
2. Be sure the vehicle is in PARK (P).
3. Turn off the ignition.
4. Then restart the engine.

If the light remains on after resetting the system or comes on again while driving, your vehicle needs service. If the ABS light is on, but the regular brake system warning light is not on, the anti-lock brakes are not working properly, but the regular brakes are still functioning. Have your vehicle serviced right away. If both brake lights are on, you do not have anti-lock brakes, and there's a problem with your regular brakes as well. Have your vehicle towed for service. See *Towing Your Vehicle* on page 284.

The anti-lock brake system warning light should come on briefly when you turn the ignition key to RUN. If the light does not come on then, have it fixed so it will be ready to warn you if there is a problem.

## Traction Control System (TCS) Warning Light



Your vehicle may have a traction control system warning light. The traction control system warning light may come on for the following reasons:

- For vehicles equipped with the 2.2L L4 engine, turn the system off by pressing the traction control button located on the instrument panel above the audio system. The warning light will come on and stay on. To turn the system back on, press the button again. The warning light should go off. See *Traction Control System (TCS) on page 238* for more information.

- For vehicles equipped with the 3.5L V6 engine, the traction control system will be turned off when the shift lever is in REVERSE (R) or LOW (L). The traction control system warning light will be displayed on the instrument panel. The traction control system can be activated again by selecting DRIVE (D) or INTERMEDIATE (I).
- If there is an engine-related and brake system problem that is specifically related to traction control, the traction control system will turn off and the warning light will come on.

If the traction control system warning light comes on and stays on for an extended period of time when the system is turned on, your vehicle needs service.

## Low Traction Light

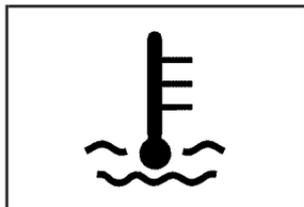


If your vehicle has the Traction Control System (TCS), this light will come on when the system is limiting wheel spin.

You may feel or hear the system working, but this is normal. The roads may be slippery if this light comes on. Adjust your driving accordingly.

The light will stay on for a few seconds after the system stops limiting wheel spin. This light should also come on for a few seconds when you start your vehicle. If it does not, have your vehicle serviced.

## Engine Coolant Temperature Warning Light



The engine coolant temperature warning light will come on when the engine has overheated.

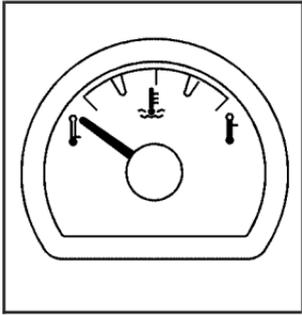
If this happens you should pull over and see *Engine Overheating on page 334* for more information.

**Notice:** Driving with the engine coolant temperature warning light on could cause your vehicle to overheat. See *Engine Overheating on page 334*. Your vehicle could be damaged, and it might not be covered by your warranty. Never drive with the engine coolant temperature warning light on.

This light will come on and flash when the temperature of the automatic transmission fluid is too high. If this happens you should pull over, shift into PARK (P) and let the engine idle until the light goes out.

This light will also come on briefly when starting your vehicle. If it does not, have your vehicle serviced.

## Engine Coolant Temperature Gage

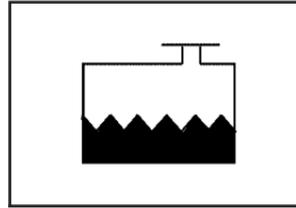


This gage displays the temperature of the vehicle's engine.

If the indicator needle moves into the shaded area, the engine is too hot. The engine coolant temperature warning light will also come on when the engine has overheated. See *Engine Coolant Temperature Warning Light* on page 173 for more information.

If you have been operating your vehicle under normal driving conditions, and the engine coolant temperature warning light comes on, you should pull off the road, stop your vehicle and turn off the engine as soon as possible.

## Low Coolant Warning Light



This light comes on briefly when you turn your ignition on.

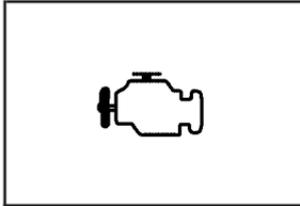
If this light comes on and stays on, the coolant level in your vehicle is low. If the light is on along with an overheat warning, you may have a serious overheating problem. See *Engine Coolant Temperature Gage* on page 174.

**Notice:** Driving with the low coolant warning light on could cause your vehicle to overheat. See “Engine Overheating” under *Engine Coolant* on page 331. Your vehicle could be damaged and the damages might not be covered by your warranty.

See *Engine Coolant* on page 331 for information on what to do. Your vehicle should be serviced as soon as possible.

# Malfunction Indicator Lamp

## Check Engine Light



Your vehicle has a computer which monitors operation of the fuel, ignition, and emission control systems.

This system is called OBD II (On-Board Diagnostics-Second Generation) and is intended to assure that emissions are at acceptable levels for the life of the vehicle, helping to produce a cleaner environment. The check engine light comes on to indicate that there is a problem and service is required. Malfunctions often will be indicated by the system before any problem is apparent. This may prevent more serious damage to your vehicle. This system is also designed to assist your service technician in correctly diagnosing any malfunction.

**Notice:** If you keep driving your vehicle with this light on, after awhile, the emission controls might not work as well, your vehicle's fuel economy might not be as good, and the engine might not run as smoothly. This could lead to costly repairs that might not be covered by your warranty.

**Notice:** Modifications made to the engine, transaxle, exhaust, intake, or fuel system of your vehicle or the replacement of the original tires with other than those of the same Tire Performance Criteria (TPC) can affect your vehicle's emission controls and may cause this light to come on. Modifications to these systems could lead to costly repairs not covered by your warranty. This may also result in a failure to pass a required Emission Inspection/Maintenance test. See *Accessories and Modifications on page 304*.

This light should come on, as a check to show you it is working, when the ignition is on and the engine is not running. If the light does not come on, have it repaired. This light will also come on during a malfunction in one of two ways:

- **Light Flashing** — A misfire condition has been detected. A misfire increases vehicle emissions and may damage the emission control system on your vehicle. Diagnosis and service may be required.
- **Light On Steady** — An emission control system malfunction has been detected on your vehicle. Diagnosis and service may be required.

## If the Light Is Flashing

The following may prevent more serious damage to your vehicle:

- Reducing vehicle speed
- Avoiding hard accelerations
- Avoiding steep uphill grades
- If you are towing a trailer, reduce the amount of cargo being hauled as soon as it is possible

If the light stops flashing and remains on steady, see “If the Light Is On Steady” following.

If the light continues to flash, when it is safe to do so, stop the vehicle. Find a safe place to park your vehicle. Turn the key off, wait at least 10 seconds and restart the engine. If the light remains on steady, see “If the Light Is On Steady” following. If the light is still flashing, follow the previous steps, and see your retailer for service as soon as possible.

## If the Light Is On Steady

You may be able to correct the emission system malfunction by considering the following:

Did you recently put fuel into your vehicle?

If so, reinstall the fuel cap, making sure to fully install the cap. See *Filling the Tank on page 309*. The diagnostic system can determine if the fuel cap has been left off or improperly installed. A loose or missing fuel cap will allow fuel to evaporate into the atmosphere. A few driving trips with the cap properly installed should turn the light off.

Did you just drive through a deep puddle of water?

If so, your electrical system may be wet. The condition will usually be corrected when the electrical system dries out. A few driving trips should turn the light off.

Have you recently changed brands of fuel?

If so, be sure to fuel your vehicle with quality fuel. See *Gasoline Octane on page 306*. Poor fuel quality will cause your engine not to run as efficiently as designed. You may notice this as stalling after start-up, stalling when you put the vehicle into gear, misfiring, hesitation on acceleration, or stumbling on acceleration. (These conditions may go away once the engine is warmed up.) This will be detected by the system and cause the light to turn on.

If you experience one or more of these conditions, change the fuel brand you use. It will require at least one full tank of the proper fuel to turn the light off.

If none of the above steps have made the light turn off, your retailer can check the vehicle. Your retailer has the proper test equipment and diagnostic tools to fix any mechanical or electrical problems that may have developed.

## Emissions Inspection and Maintenance Programs

Some state/provincial and local governments have or may begin programs to inspect the emission control equipment on your vehicle. Failure to pass this inspection could prevent you from getting a vehicle registration.

Here are some things you need to know in order to help your vehicle pass an inspection:

Your vehicle will not pass this inspection if the check engine light is on or not working properly.

Your vehicle will not pass this inspection if the OBD (on-board diagnostic) system determines that critical emission control systems have not been completely diagnosed by the system. The vehicle would be considered not ready for inspection. This can happen if you have recently replaced your battery or if your battery has run down. The diagnostic system is designed to evaluate critical emission control systems during normal driving. This may take several days of routine driving. If you have done this and your vehicle still does not pass the inspection for lack of OBD system readiness, your retailer can prepare the vehicle for inspection.

## Oil Pressure Light



If you have a low engine oil pressure problem, this light will stay on after you start your engine, or come on when you are driving.

This indicates that your engine is not receiving enough oil. The engine could be low on oil, or could have some other oil problem. Have it fixed immediately.

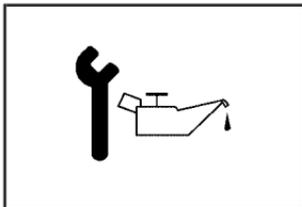
The oil light may also come on when the ignition is on but the engine is not running, the light will come on as a test to show you it is working, but the light will go out when you turn the ignition to START. If it does not come on with the ignition on, you may have a problem with the fuse or bulb. Have it fixed right away.

### CAUTION:

**Do not keep driving if the oil pressure is low. If you do, your engine can become so hot that it catches fire. You or others could be burned. Check your oil as soon as possible and have your vehicle serviced.**

***Notice:* Lack of proper engine oil maintenance may damage the engine. The repairs would not be covered by your warranty. Always follow the maintenance schedule in this manual for changing engine oil.**

## Change Engine Oil Light

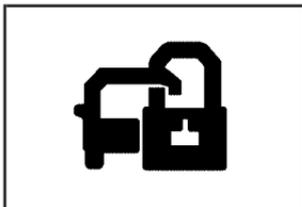


If this light comes on, it means that service is required for your vehicle.

See *Scheduled Maintenance on page 420* and *Engine Oil on page 318* for more information.

After having the oil changed you will need to reset the light. See *Engine Oil Life System on page 323* for more information.

## Security Light



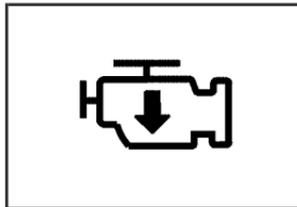
Your vehicle has a Passlock<sup>®</sup> theft-deterrent system.

With this system, the security light will flash as you open the door if your ignition is off.

This light will come on briefly when the vehicle is turned on.

For more information, see *Passlock<sup>®</sup> on page 108*.

## Reduced Engine Power Light

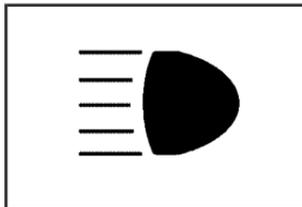


This light will come on briefly when you start the engine.

This light, along with the service engine soon light will be displayed when a noticeable reduction in the vehicle's performance may occur. Stop the vehicle and turn off the ignition. Wait for 10 seconds and restart your vehicle. This may correct the condition.

The vehicle may be driven at a reduced speed when the reduced engine power light is on but acceleration and speed may be reduced. The performance may be reduced until the next time you drive your vehicle. If this light stays on, see your retailer as soon as possible for diagnosis and repair.

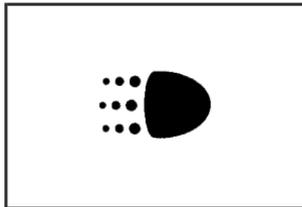
## Highbeam On Light



This light comes on when the high-beam headlamps are in use.

See *Headlamp High/Low-Beam Changer* on page 144 for more information.

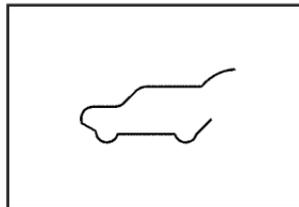
## Daytime Running Lamps (DRL) Indicator Light



This light is located on the instrument panel cluster. It comes on whenever the Daytime Running Lamps are on.

See *Daytime Running Lamps (DRL)* on page 150 for further information.

## Gate Ajar Light



If this light comes on, your liftgate is not completely closed. Driving with the liftgate open can cause carbon monoxide (CO) to enter the vehicle.

See *Engine Exhaust* on page 123 for more information.

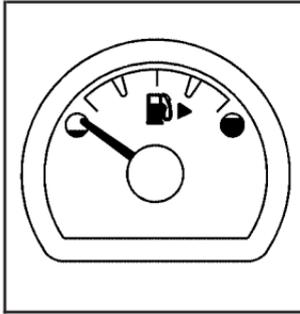
## Service Vehicle Soon Light



This light will come on if a condition exists that may require the vehicle to be taken in for service.

If the light comes on, take your vehicle to your dealer/retailer for service as soon as possible.

## Fuel Gage



When the ignition is on, the fuel gage tells you about how much fuel you have left in your tank.

When the indicator nears empty, the low fuel light will come on. You still have a little fuel left, but you should get more soon. See *Low Fuel Warning Light on page 181* for more information.

Here are four things that some owners ask about. None of these mean a condition exists with your fuel gage:

- At the service station, the fuel pump shuts off before the gage reads full.
- It takes a little more or less fuel to fill up than the gage indicated. For example, the gage may have indicated the tank was half full, but it actually took a little more or less than half the tank's capacity to fill the tank.

- The gage moves a little when you turn a corner or speed up.
- The gage takes a few seconds to stabilize after the ignition is turned on, and will go back to empty when you turn the ignition off.

For your fuel tank capacity, see *Capacities and Specifications on page 414*.

## Low Fuel Warning Light



The light next to the fuel gage will come on briefly when you are starting the engine.

This light also comes on when the fuel tank is low on fuel. When you add fuel the light should go off. If it doesn't, have your vehicle serviced.

## Audio System(s)

Determine which radio your vehicle has and then read the pages following to familiarize yourself with its features.

Driving without distraction is a necessity for a safer driving experience. See *Defensive Driving on page 230*. By taking a few moments to read this manual and get familiar with your vehicle's audio system, you can use it with less effort, as well as take advantage of its features. While your vehicle is parked, set up your audio system by presetting your favorite radio stations, setting the tone and adjusting the speakers. Then, when driving conditions permit, you can tune to your favorite stations using the presets and steering wheel controls if the vehicle has them.

### CAUTION:

**This system provides you with a far greater access to audio stations and song listings. Giving extended attention to entertainment tasks while driving can cause a crash and you or others can be injured or killed. Always keep your eyes on the road and your mind on the drive — avoid engaging in extended searching while driving.**

Keeping your mind on the drive is important for safe driving. Here are some ways in which you can help avoid distraction while driving.

While your vehicle is parked:

- Familiarize yourself with all of its controls.
- Familiarize yourself with its operation.
- Set up your audio system by presetting your favorite radio stations, setting the tone, and adjusting the speakers. Then, when driving conditions permit, you can tune to your favorite radio stations using the presets and steering wheel controls if the vehicle has them.

**Notice:** Before adding any sound equipment to your vehicle, such as an audio system, CD player, CB radio, mobile telephone, or two-way radio, make sure that it can be added by checking with your dealer/retailer. Also, check federal rules covering mobile radio and telephone units. If sound equipment can be added, it is very important to do it properly. Added sound equipment may interfere with the operation of your vehicle's engine, radio, or other systems, and even damage them. Your vehicle's systems may interfere with the operation of sound equipment that has been added.

## Setting the Time (Without Date Display)

If your vehicle has an AM/FM base radio with a single CD player and preset buttons numbered one through six, the radio has a clock button for setting the time. You can set the time by following these steps:

1. Turn the ignition key to ACC (accessory) or RUN. Press the power knob, located in the center of the radio, to turn the radio on.
2. Press the clock button until the hour numbers begin flashing on the display. Press the clock button a second time and the minute numbers begin flashing on the display.
3. While either the hour or the minute numbers are flashing, turn the tune knob, located on the upper right side of the radio, clockwise or counterclockwise to increase or decrease the time.

4. Press the clock button again until the clock display stops flashing to set the currently displayed time; otherwise, the flashing stops after five seconds and the current time displayed will be automatically set.

To change the time default setting from 12 hour to 24 hour, press the clock button and then the pushbutton located under the forward arrow label. Once the time 12H and 24H are displayed, press the pushbutton located under the desired option to select the default. Press the clock button again to apply the selected default, or let the screen time out.

## Setting the Time (With Date Display)

If your vehicle has a radio with a single CD player, the radio has a clock button for setting the time and date.

To set the time and date, follow these instructions:

1. Turn the ignition key to ACC (accessory) or RUN. Press the power knob, located in the center of the radio, to turn the radio on.
2. Press the clock button and the HR, MIN, MM, DD, YYYY (hour, minute, month, day, and year) displays.

3. Press the pushbutton located under any one of the labels that you want to change. Every time the pushbutton is pressed again, the time or the date if selected, increases by one.

- Another way to increase the time or date, is to press the right SEEK arrow or FWD (forward) button.
- To decrease the time or date, press the left SEEK arrow or REV (reverse) button, or turn the tune knob, located on the upper right side of the radio.

The date does not automatically display. To see the date press the clock button while the radio is on. The date with display times out after a few seconds and goes back to the normal radio and time display.

If your vehicle has a radio with a six-disc CD player, the radio has a MENU button instead of the clock button to set the time and date.

To set the time and date, follow these instructions:

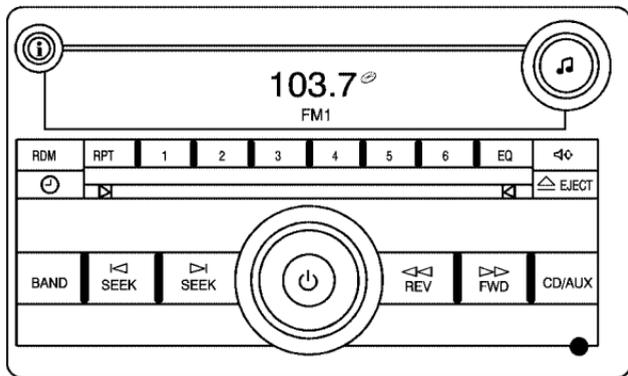
1. Turn the ignition key to ACC (accessory) or RUN. Press the power knob, located in the center of the radio, to turn the radio on.
2. Press the MENU button. Once the clock option is displayed.
3. Press the pushbutton located under that label. The HR, MIN, MM, DD, YYYY displays.
4. Press the pushbutton located under any one of the labels that you want to change. Every time the pushbutton is pressed again, the time or the date if selected, increases by one.
  - Another way to increase the time or date, is to press the right SEEK arrow or FWD (forward) button.
  - To decrease the time or date, press the left SEEK arrow or REV (reverse) button, or turn the tune knob, located on the upper right side of the radio.

The date does not automatically display. To see the date press the MENU button and then the clock button while the radio is on. The date with display times out after a few seconds and goes back to the normal radio and time display.

To change the time default setting from 12 hour to 24 hour or to change the date default setting from month/day/year to day/month/year, follow these instructions:

1. Press the clock button and then the pushbutton located under the forward arrow label. Once the time 12H and 24H, and the date MM/DD/YYYY (month, day, and year) and DD/MM/YYYY (day, month, and year) displays.
2. Press the pushbutton located under the desired option.
3. Press the clock or MENU button again to apply the selected default, or let the screen time out.

## Radio with CD (Base)



### Playing the Radio

**Power/Volume:** Press this knob to turn the system on and off.

Turn this knob clockwise or counterclockwise to increase or decrease the volume.

The radio plays at the previous volume setting whenever the radio is turned on. The volume can still be manually adjusted by using the volume knob.

### Finding a Station

**BAND:** Press this button to switch between FM1, FM2 or AM. The display shows the selection.

**(Tune):** Turn this knob to select radio stations.

**SEEK** : Press the right or left SEEK arrow to go to the next or to the previous station and stay there.

To scan stations, press and hold either SEEK arrow for a few seconds until a beep sounds. The radio goes to a station, plays for a few seconds, then goes to the next station. Press either SEEK arrow again to stop scanning.

The radio only seeks and scans stations with a strong signal that are in the selected band.

**(Information):** Press this button to switch the display between the radio station frequency and the time. While the ignition is off, press this button to display the time.

## Setting Preset Stations

Up to 18 stations (six FM1, six FM2, and six AM), can be programmed on the six numbered pushbuttons, by performing the following steps:

1. Turn the radio on.
2. Press BAND to select FM1, FM2, or AM.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons for three seconds until a beep sounds. When that pushbutton is pressed and released, the station that was set, returns.
5. Repeat the Steps 2 through 4 for each pushbutton.

## Setting the Tone (Bass/Treble)

**BASS/TREB (Bass/Treble):** To adjust the bass or treble, press the tune knob or bass/treble pushbutton until the desired tone control label displays. Turn the tune knob clockwise or counterclockwise to increase or decrease the setting. The setting can also be adjusted by pressing either the SEEK, FWD (forward), or REV (reverse) buttons. The display shows the current bass or treble level. If a station's frequency is weak or has static, decrease the treble.

**EQ (Equalization):** Press this button to select preset equalization settings.

To return to the manual mode, press the EQ button until Manual displays or start to manually adjust the bass or treble by pressing the tune knob.

## Adjusting the Speakers (Balance/Fade)

 **BAL/FADE (Balance/Fade):** To adjust the balance or fade, press this button or the tune knob until the desired speaker control label displays. Turn the tune knob clockwise or counterclockwise to adjust the setting. The setting can also be adjusted by pressing either the SEEK, FWD, or REV buttons.

## Radio Messages

**Calibration Error:** The audio system has been calibrated for your vehicle from the factory. If Calibration Error displays, the radio has not been configured properly and your vehicle must be returned to your retailer for service.

## Playing a CD (Single CD Player)

Insert a CD partway into the slot, label side up. The player pulls it in and the CD should begin playing.

If the ignition or radio is turned off with a CD in the player, it stays in the player. When the ignition or radio is turned on, the CD starts playing where it stopped, if it was the last selected audio source.

When a CD is inserted, the CD symbol appears on the radio display. As each new track starts to play, the track number displays.

The CD player can play the smaller 3 inch (8 cm) single CDs with an adapter ring. Full-size CDs and the smaller CDs are loaded in the same manner.

If playing a CD-R, the sound quality can be reduced due to CD-R quality, the method of recording, the quality of the music that has been recorded, and the way the CD-R has been handled. There can be an increase in skipping, difficulty in finding tracks, and/or difficulty in loading and ejecting. If these problems occur, check the bottom surface of the CD. If the surface of the CD

is damaged, such as cracked, broken, or scratched, the CD will not play properly. If the surface of the CD is soiled, see *Care of Your CDs and DVDs* on page 225 for more information.

If there is no apparent damage, try a known good CD.

Do not add any label to a CD, it could get caught in the CD player. If a CD is recorded on a personal computer and a description label is needed, try labeling the top of the recorded CD with a marking pen.

**Notice:** If a label is added to a CD, or more than one CD is inserted into the slot at a time, or an attempt is made to play scratched or damaged CDs, the CD player could be damaged. While using the CD player, use only CDs in good condition without any label, load one CD at a time, and keep the CD player and the loading slot free of foreign materials, liquids, and debris.

If an error displays, see “CD Messages” later in this section.

 **EJECT:** Press the CD eject button to eject the CD. If the CD is not removed, after several seconds, the CD automatically pulls back into the player.

 **(Tune):** Turn this knob to select tracks on the CD currently playing.

 **SEEK**  : Press the left SEEK arrow to go to the start of the current track, if more than ten seconds have played. Press the right SEEK arrow to go to the next track. If either SEEK arrow is held or pressed multiple times, the player continues moving backward or forward through the CD.

 **REV (Reverse):** Press and hold this button to reverse playback quickly within a track. Sound is heard at a reduced volume. Release this button to resume playing the track. The elapsed time of the track displays.

 **FWD (Fast Forward):** Press and hold this button to advance playback quickly within a track. Sound is heard at a reduced volume. Release this button to resume playing the track. The elapsed time of the track displays.

**RDM (Random):** With the random setting, the CD tracks can be listened to in random, rather than sequential order. To use random, do the following:

1. To play tracks from the CD in random order, press the RDM pushbutton. The random icon displays.
2. Press the same pushbutton again to turn off random play. The random icon displays.

**RPT (Repeat):** With repeat, one track or an entire CD can be repeated.

To use repeat, do the following:

- To repeat the track, press and release the RPT button. An arrow symbol displays. Press RPT again to turn off repeat play.
- To repeat the CD, PRESS and hold the RPT button for a few seconds. An arrow symbol displays. Press RPT again to turn off repeat play. When repeat is off, the symbol no longer displays.

**i (Information):** Press this button to switch the display between the track number, elapsed time of the track, and the time. When the ignition is off, press this button to display the time.

**BAND:** Press this button to listen to the radio when a CD is playing. The CD remains inside the radio for future listening.

**CD/AUX (CD/Auxiliary):** Press this button to play a CD when listening to the radio.

The CD icon and track number displays while a CD is in the player. Press this button again and the system automatically searches for an auxiliary input device such as a portable audio player.

## CD Messages

**CHECK DISC:** If this message displays and/or the CD ejects, it could be for one of the following reasons:

- It is very hot. When the temperature returns to normal, the CD should play.
- You are driving on a very rough road. When the road becomes smoother, the CD should play.
- The CD is dirty, scratched, wet, or upside down.
- The air is very humid. If so, wait about an hour and try again.
- There could have been a problem while burning the CD-R.
- The label could be caught in the CD player.

If the CD is not playing correctly, for any other reason, try a known good CD.

If any error occurs repeatedly or if an error cannot be corrected, contact your retailer. If the radio displays an error message, write it down and provide it to your retailer when reporting the problem.

## Using the Auxiliary Input Jack

Your radio system has an auxiliary input jack located on the lower right side of the faceplate. This is not an audio output; do not plug the headphone set into the front auxiliary input jack. However, an external audio device such as an iPod, laptop computer, MP3 player, CD changer, or cassette tape player, etc. can be connected to the auxiliary input jack for use as another source for audio listening.

Drivers are encouraged to set up any auxiliary device while the vehicle is in PARK (P). See *Defensive Driving on page 230* for more information on driver distraction.

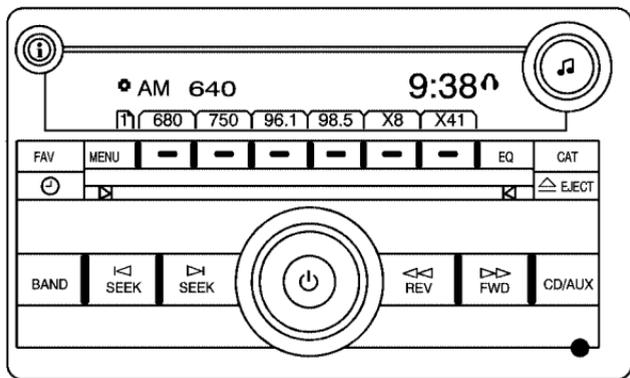
To use a portable audio player, connect a 3.5 mm (1/8 inch) cable to the radio's front auxiliary input jack. While a device is connected, press the radio CD/AUX button to begin playing audio from the device over the vehicle speakers.

 **(Power/Volume):** Turn this knob clockwise to increase or counterclockwise to decrease the volume of the portable player. Additional volume adjustments from the portable device might be needed if the volume is not loud or soft enough.

**BAND:** Press this button to listen to the radio when a portable audio device is playing. The portable audio device continues playing, so you might want to stop it or power it off.

**CD/AUX (CD/Auxiliary):** Press this button to play a CD when a portable audio device is playing. Press this button again and the system begins playing audio from the connected portable audio player. If a portable audio player is not connected, No Input Device Found displays.

## Radio with CD (MP3)



Radio with CD shown, Radio with Six-Disc CD (MP3) similar

## Radio Data System (RDS)

The audio system has a Radio Data System (RDS). The RDS feature is available for use only on FM stations that broadcast RDS information.

This system relies upon receiving specific information from these stations and only works when the information is available. While the radio is tuned to an FM-RDS station, the station name or call letters display. In rare cases, a radio station can broadcast incorrect information that causes the radio features to work improperly. If this happens, contact the radio station.

## XM™ Satellite Radio Service

XM™ is a satellite radio service that is based in the 48 contiguous United States and Canada. XM™ offers a large variety of coast-to-coast channels including music, news, sports, talk, traffic/weather (U.S. subscribers), and children's programming. XM™ provides digital quality audio and text information that includes song title and artist name. A service fee is required in order to receive the XM™ service. For more information, contact XM™; In the U.S. at [www.xmradio.com](http://www.xmradio.com) or call 1-800-852-XXXM (9696) or in Canada at [www.xmradio.ca](http://www.xmradio.ca) or call 1-877-GET-XMSR (438-9677).

## Playing the Radio

 **(Power/Volume):** Press this knob to turn the system on and off.

Turn this knob clockwise to increase or counterclockwise to decrease the volume.

## Finding a Station

**BAND:** Press this button to switch between AM, FM, or XM™ (if equipped). The display shows the selection.

 **(Tune):** Turn this knob to select radio stations.

**◀ SEEK ▶ :** Press the right or left SEEK arrow to go to the next or to the previous station and stay there.

To scan stations, press and hold either SEEK arrow for a few seconds until a beep sounds. The radio goes to a station, plays for a few seconds, then goes to the next station. Press either SEEK arrow again to stop scanning.

The radio only seeks and scans stations with a strong signal that are in the selected band.

**i (Information) (XM™ Satellite Radio Service, MP3, and RDS Features):** Press the information button to display additional text information related to the current FM-RDS or XM™ station, or MP3 song. A choice of additional information such as: Channel, Song, Artist, CAT can display. Continue pressing the information button to highlight the desired label, or press the pushbutton positioned under any one of the labels and the information about that label displays.

When information is not available, No Info displays.

## Storing a Radio Station as a Favorite

Drivers are encouraged to set up their radio station favorites while the vehicle is parked. Tune to your favorite stations using the presets, favorites button, and steering wheel controls, if your vehicle has them. See *Defensive Driving on page 230*.

**FAV (Favorites):** A maximum of 36 stations can be programmed as favorites using the six pushbuttons positioned below the radio station frequency labels and by using the radio favorites page button (FAV button). Press the FAV button to go through up to six pages of favorites, each having six favorite stations available per page.

Each page of favorites can contain any combination of AM, FM, or XM™ (if equipped) stations. To store a station as a favorite, perform the following steps:

1. Tune to the desired radio station.
2. Press the FAV button to display the page where you want the station stored.
3. Press and hold one of the six pushbuttons until a beep sounds. When that pushbutton is pressed and released, the station that was set, returns.
4. Repeat the steps for each pushbutton radio station you want stored as a favorite.

The number of favorites pages can be setup using the MENU button. To setup the number of favorites pages, perform the following steps:

1. Press the MENU button to display the radio setup menu.
2. Press the pushbutton located below the FAV 1-6 label.

3. Select the desired number of favorites pages by pressing the pushbutton located below the displayed page numbers.
4. Press the FAV button, or let the menu time out, to return to the original main radio screen showing the radio station frequency labels and to begin the process of programming your favorites for the chosen amount of numbered pages.

## Setting the Tone (Bass/Midrange/Treble)

### **BASS/MID/TREB (Bass, Midrange, or Treble):**

To adjust bass, midrange, or treble, press the tune knob until the tone control labels display. Continue pressing to highlight the desired label, or press the pushbutton positioned under the desired label. Turn the tune knob clockwise or counterclockwise to adjust the highlighted setting. The highlighted setting can also be adjusted by pressing either the SEEK, FWD (forward), or REV (reverse) button until the desired levels are obtained. If a station's frequency is weak, or has static, decrease the treble.

To quickly adjust bass, midrange, or treble to the middle position, press the pushbutton positioned under the BASS, MID, or TREB label for more than two seconds. A beep sounds and the level adjusts to the middle position.

To quickly adjust all tone and speaker controls to the middle position, press the tune knob for more than two seconds until a beep sounds.

**EQ (Equalization):** Press this button to select preset equalization settings.

To return to the manual mode, press the EQ button until Manual displays or start to manually adjust the bass, midrange, or treble by pressing the tune knob.

## Adjusting the Speakers (Balance/Fade)

**BAL/FADE (Balance/Fade):** To adjust balance or fade, press the tune knob until the speaker control labels display. Continue pressing to highlight the desired label, or press the pushbutton positioned under the desired label. Turn the tune knob clockwise or counterclockwise to adjust the highlighted setting. The highlighted setting can also be adjusted by pressing either the SEEK, FWD, or REV button until the desired levels are obtained.

To quickly adjust balance or fade to the middle position, press the pushbutton positioned under the BAL or FADE label for more than two seconds. A beep sounds and the level adjusts to the middle position.

To quickly adjust all speaker and tone controls to the middle position, press the tune knob for more than two seconds until a beep sounds.

## Finding a Category (CAT) Station

**CAT (Category):** The CAT button is used to find XM™ stations when the radio is in the XM™ mode. To find XM™ channels within a desired category, perform the following:

1. Press the BAND button until the XM™ frequency displays. Press the CAT button to display the category labels on the radio display. Continue pressing the CAT button until the desired category name displays.
2. Press either of the two buttons below the desired category label to immediately tune to the first XM™ station associated with that category.
3. Turn the tune knob, press the buttons below the right or left arrows displayed, or press the right or left SEEK buttons to go to the next or previous XM™ station within the selected category.
4. To exit the category search mode, press the FAV button or BAND button to display your favorites again.

Undesired XM™ categories can be removed through the setup menu. To remove an undesired category, perform the following:

1. Press the MENU button to display the radio setup menu.
2. Press the pushbutton located below the XM CAT label.
3. Turn the tune knob to display the category you want removed.
4. Press the pushbutton located under the Remove label until the category name along with the word Removed displays.
5. Repeat the steps to remove more categories.

Removed categories can be restored by pressing the pushbutton under the Add label when a removed category is displayed or by pressing the pushbutton under the Restore All label.

Categories cannot be removed or added while the vehicle is moving faster than 5 mph (8 km/h).

### Radio Messages for XM™ Only

See *XM Radio Messages on page 209* later in this section for further detail.

## Radio Messages

**Calibration Error:** The audio system has been calibrated for your vehicle from the factory. If Calibration Error displays, the radio has not been configured properly and your vehicle must be returned to your retailer for service.

### Playing a CD (Single CD Player)

Insert a CD partway into the slot, label side up. The player pulls it in and the CD should begin playing.

### Playing a CD(s) (Six-Disc CD Player)

**LOAD** : Press this button to load CDs into the CD player. This CD player holds up to six CDs.

To insert one CD, do the following:

1. Press and release the load button.
2. Wait for the message to insert the disc.
3. Load a CD. Insert the CD partway into the slot, label side up. The player pulls the CD in.

To insert multiple CDs, do the following:

1. Press and hold the load button for two seconds. A beep sounds and Load All Discs displays.
2. Follow the displayed instruction on when to insert the discs. The CD player takes up to six CDs.
3. Press the Load button again to cancel loading more CDs.

If the ignition or radio is turned off, with a CD in the player, it stays in the player. While the ignition or radio is turned on, the CD starts playing where it stopped, if it was the last selected audio source.

When a CD is inserted, the CD symbol displays on the CD. As each new track starts to play, the track number displays.

The CD player can play the smaller 3 inch (8 cm) single CDs with an adapter ring. Full-size CDs and the smaller CDs are loaded in the same manner.

If playing a CD-R, the sound quality can be reduced due to CD-R quality, the method of recording, the quality of the music that has been recorded, and the way the CD-R has been handled. There can be an increase in skipping, difficulty in finding tracks, and/or difficulty in loading and ejecting. If these problems occur, check the bottom surface of the CD. If the surface of the CD is damaged, such as cracked, broken, or scratched, the CD will not play properly. If the surface of the CD is soiled, see *Care of Your CDs and DVDs on page 225* for more information.

If there is no apparent damage, try a known good CD.

Do not add any label to a CD, it could get caught in the CD player. If a CD is recorded on a personal computer and a description label is needed, try labeling the top of the recorded CD with a marking pen.

**Notice:** If a label is added to a CD, or more than one CD is inserted into the slot at a time, or an attempt is made to play scratched or damaged CDs, the CD player could be damaged. While using the CD player, use only CDs in good condition without any label, load one CD at a time, and keep the CD player and the loading slot free of foreign materials, liquids, and debris.

If an error displays, see “CD Messages” later in this section.

 **EJECT:** Press the CD eject button to eject CD(s). To eject the CD that is currently playing, press and release this button. A beep sounds and Ejecting Disc displays. Once the disc is ejected, Remove Disc displays. The CD can be removed. If the CD is not removed, after several seconds, the CD automatically pulls back into the player and begins playing.

For the Six-Disc CD player, press and hold the eject button for two seconds to eject all discs.

**♪ (Tune):** Turn this knob to select tracks on the CD currently playing.

**◀ SEEK ▶ :** Press the left SEEK arrow to go to the start of the current track, if more than ten seconds have played. Press the right SEEK arrow to go to the next track. If either SEEK arrow is held, or pressed multiple times, the player continues moving backward or forward through the tracks on the CD.

**◀◀ REV (Reverse):** Press and hold this button to reverse playback quickly within a track. Sound is heard at a reduced volume. Release this button to resume playing the track. The elapsed time of the track displays.

**▶▶ FWD (Fast Forward):** Press and hold this button to advance playback quickly within a track. Sound is heard at a reduced volume. Release this button to resume playing the track. The elapsed time of the track displays.

**RDM (Random):** With the random setting, the tracks can be listened to in random, rather than sequential order, on one CD or all CDs in a six-disc CD player. To use random, do one of the following:

- To play the tracks from the CD in random order, press the pushbutton positioned under the RDM label until Random Current Disc displays. Press the pushbutton again to turn off random play.
- To play tracks from all CDs loaded in a six-disc CD player in random order, press the pushbutton positioned under the RDM label until Randomize All Discs displays. Press the same pushbutton again to turn off random play.

**BAND:** Press this button to listen to the radio when a CD is playing. The CD remains inside the radio for future listening.

**CD/AUX (CD/Auxiliary):** Press this button to play a CD when listening to the radio. The CD icon and track number displays when a CD is in the player.

Your radio system has an auxiliary input jack located on the lower right side of the faceplate. An external audio device such as a portable audio player can be connected to the auxiliary input jack for use as another source for playing CDs.

Press the CD/AUX button again and the system begins playing audio from the connected portable audio player. If a portable audio player is not connected, No Input Device Found displays.

### **Playing an MP3 CD-R or CD-RW Disc**

Your vehicle's radio system may have the MP3 feature. If it has this feature, it is capable of playing an MP3 CD-R or CD-RW disc. For more information on how to play an MP3 CD-R or CD-RW disc, see *Using an MP3 on page 202* later in this section.

## **CD Messages**

**CHECK DISC:** If this message displays and/or the CD comes out, it could be for one of the following reasons:

- It is very hot. When the temperature returns to normal, the CD should play.
- You are driving on a very rough road. When the road becomes smoother, the CD should play.
- The CD is dirty, scratched, wet, or upside down.
- The air is very humid. If so, wait about an hour and try again.
- There could have been a problem while burning the CD.
- The label could be caught in the CD player.

If the CD is not playing correctly, for any other reason, try a known good CD.

If any error occurs repeatedly or if an error cannot be corrected, contact your retailer. If the radio displays an error message, write it down and provide it to your retailer when reporting the problem.

## Using the Auxiliary Input Jack

The radio system has an auxiliary input jack located on the lower right side of the faceplate. This is not an audio output; do not plug the headphone set into the front auxiliary input jack. However, an external audio device such as an iPod, laptop computer, MP3 player, CD changer, or cassette tape player, etc. can be connected to the auxiliary input jack for use as another source for audio listening.

Drivers are encouraged to set up any auxiliary device while the vehicle is in PARK (P). See *Defensive Driving on page 230* for more information on driver distraction.

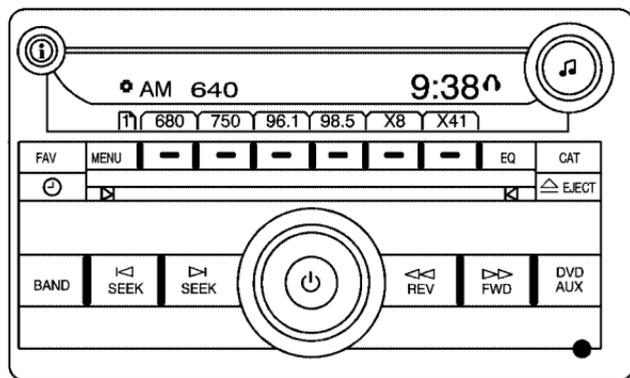
To use a portable audio player, connect a 3.5 mm (1/8 inch) cable to the radio's front auxiliary input jack. When a device is connected, press the radio CD/AUX button to begin playing audio from the device over the vehicle speakers.

 **(Power/Volume):** Turn this knob clockwise to increase or counterclockwise to decrease the volume of the portable player. Additional volume adjustments might be needed from the portable device if the volume is not loud or soft enough.

**BAND:** Press this button to listen to the radio when a portable audio device is playing. The portable audio device continues playing, so you might want to stop it or power it off.

**CD/AUX (CD/Auxiliary):** Press this button to play a CD when a portable audio device is playing. Press this button again and the system begins playing audio from the connected portable audio player. If a portable audio player is not connected, No Input Device Found displays.

## Radio with CD and DVD



If your vehicle has a Rear Seat Entertainment (RSE) system, the vehicle has a radio that accepts either CD audio or DVD video.

The radio with CD and DVD is very similar to the radio with CD (Base) or the radio with CD (MP3). If you are interested in learning more about the radio and CD audio functions for this type of radio system, see *Radio with CD (Base) on page 186* or *Radio with CD (MP3) on page 192* earlier in this section for more information.

If you are interested in learning more about the DVD functions of this radio system, see *Rear Seat Entertainment System on page 211* later in this section for more information.

## Using an MP3

### MP3 CD-R or CD-RW Disc

The radio plays MP3 files that were recorded on a CD-R or CD-RW disc. The files can be recorded with the following fixed bit rates: 32 kbps, 40 kbps, 56 kbps, 64 kbps, 80 kbps, 96 kbps, 112 kbps, 128 kbps, 160 kbps, 192 kbps, 224 kbps, 256 kbps, and 320 kbps or a variable bit rate. Song title, artist name, and album are available for display by the radio when recorded using ID3 tags version 1 and 2.

### Compressed Audio

The radio also plays discs that contain both uncompressed CD audio (.CDA files) and MP3 files. By default the radio reads only the uncompressed audio and ignore the MP3 files. Pressing the CAT (category) button toggles between compressed and uncompressed audio format.

## MP3 Format

If you burn your own MP3 disc on a personal computer:

- Make sure the MP3 files are recorded on a CD-R or CD-RW disc.
  - Avoid mixing standard audio and MP3 files on one disc.
  - The CD player is able to read and play a maximum of 50 folders, 50 playlists, and 255 files.
  - Create a folder structure that makes it easy to find songs while driving. Organize songs by albums using one folder for each album. Each folder or album should contain 18 songs or less.
  - Avoid subfolders. The system can support up to 8 subfolders deep, however, keep the total number of folders to a minimum in order to reduce the complexity and confusion in trying to locate a particular folder during playback.
  - Make sure playlists have a .mp3 or .wpl extension (other file extensions might not work).
- Minimize the length of the file, folder or playlist names. Long file, folder, or playlist names, or a combination of a large number of files and folders, or playlists can cause the player to be unable to play up to the maximum number of files, folders, playlists, or sessions. If you wish to play a large number of files, folders, playlists or sessions, minimize the length of the file, folder, or playlist name. Long names also take up more space on the display, potentially getting cut off.
  - Finalize the audio disc before you burn it. Trying to add music to an existing disc can cause the disc not to function in the player.

Change playlists by using the previous and next folder buttons, the tuner knob, or the seek buttons. You can also play an MP3 CD-R that was recorded using no file folders. If a CD-R contains more than the maximum of 50 folders, 50 playlists, and 255 files, the player lets you access and navigate up to the maximum, but all items over the maximum are not accessible.

## Root Directory

The root directory of the CD-R is treated as a folder. If the root directory has compressed audio files, the directory displays as F1 ROOT. All files contained directly under the root directory are accessed prior to any root directory folders. However, playlists (Px) are always accessed before root folders or files.

## Empty Directory or Folder

If a root directory or a folder exists somewhere in the file structure that contains only folders/subfolders and no compressed files directly beneath them, the player advances to the next folder in the file structure that contains compressed audio files. The empty folder does not display.

## No Folder

When the CD-R contains only compressed files, the files are located under the root folder. The next and previous folder functions do not display on a CD-R that was recorded without folders or playlists. When displaying the name of the folder the radio displays ROOT.

When the CD-R contains only playlists and compressed audio files, but no folders, all files are located under the root folder. The folder down and the folder up buttons searches playlists (Px) first and then go to the root folder. When the radio displays the name of the folder the radio displays ROOT.

## Order of Play

Tracks recorded to the CD-R are played in the following order:

- Play begins from the first track in the first playlist and continues sequentially through all tracks in each playlist. When the last track of the last playlist has played, play continues from the first track of the first playlist.
- Play begins from the first track in the first folder and continues sequentially through all tracks in each folder. When the last track of the last folder has been played, play continues from the first track of the first folder.

When play enters a new folder, the display does not automatically show the new folder name unless you have chosen the folder mode as the default display. The new track name displays.

## **File System and Naming**

The song name that is displayed is the song name that is contained in the ID3 tag. If the song name is not present in the ID3 tag, then the radio displays the file name without the extension (such as .mp3) as the track name.

Track names longer than 32 characters or four pages are shortened. The display does not show parts of words on the last page of text and the extension of the filename does not display.

## **Preprogrammed Playlists**

Preprogrammed playlists that were created using WinAmp™, MusicMatch™, or Real Jukebox™ software can be accessed, however, they cannot be edited using the radio. These playlists are treated as special folders containing compressed audio song files.

## **Playing an MP3**

Insert a CD-R partway into the slot (Single CD Player), or press the load button and wait for the message to insert disc (Six-Disc CD Player), label side up. The player pulls it in, and the CD-R should begin playing.

If you turn off the ignition or radio with a CD-R in the player it stays in the player. When you turn on the ignition or radio, the CD-R starts to play where it stopped, if it was the last selected audio source.

As each new track starts to play, the track number and song title displays.

The CD player can play the smaller 3 inch (8 cm) single CD-Rs with an adapter ring. Full-size CD-Rs and the smaller CD-Rs are loaded in the same manner.

If playing a CD-R, the sound quality can be reduced due to CD-R quality, the method of recording, the quality of the music that has been recorded, and the way the CD-R has been handled. There can be an increase in skipping, difficulty in finding tracks, and/or difficulty in loading and ejecting. If these problems occur, check the bottom surface of the CD. If the surface of the CD is damaged, such as cracked, broken, or scratched, the CD will not play properly. If the surface of the CD is soiled, see *Care of Your CDs and DVDs on page 225* for more information.

If there is no apparent damage, try a known good CD.

**Notice:** If a label is added to a CD, or more than one CD is inserted into the slot at a time, or an attempt is made to play scratched or damaged CDs, the CD player could be damaged. While using the CD player, use only CDs in good condition without any label, load one CD at a time, and keep the CD player and the loading slot free of foreign materials, liquids, and debris.

Do not add any label to a CD, it could get caught in the CD player. If a CD is recorded on a personal computer and a description label is needed, try labeling the top of the recorded CD with a marking pen.

If an error displays, see “CD Messages” later in this section.

 **EJECT:** Press the CD eject button to eject CD-R(s). To eject the CD-R that is currently playing, press and release this button. A beep sounds and Ejecting Disc displays. Once the disc is ejected, Remove Disc displays. The CD-R can be removed. If the CD-R is not removed, after several seconds, the CD-R automatically pulls back into the player and begins playing. For the Six-Disc CD player, press and hold the eject button for two seconds to eject all discs.

 **(Tune):** Turn this knob to select MP3 files on the CD-R currently playing.

◀ **SEEK** ▶ : Press the left SEEK arrow to go to the start of the current MP3 file, if more than ten seconds have played. Press the right SEEK arrow to go to the next MP3 file. If either SEEK arrow is held or pressed multiple times, the player continues moving backward or forward through MP3 files on the CD.

< 📁 **(Previous Folder)**: Press the pushbutton positioned under the Folder label to go to the first track in the previous folder.

📁 > **(Next Folder)**: Press the pushbutton positioned under the Folder label to go to the first track in the next folder.

◀◀ **REV (Reverse)**: Press and hold this button to reverse playback quickly within an MP3 file. Sound is heard at a reduced volume. Release this button to resume playing the file. The elapsed time of the file displays.

▶▶ **FWD (Fast Forward)**: Press and hold this button to advance playback quickly within an MP3 file. Sound is heard at a reduced volume. Release this button to resume playing the file. The elapsed time of the file displays.

**RDM (Random)**: With the random setting, MP3 files on the CD-R can be listened to in random, rather than sequential order, on one CD-R or all discs in a six-disc CD player. To use random, do one of the following:

1. To play MP3 files from the CD-R you are listening to in random order, press the pushbutton positioned under the RDM label until Random Current Disc displays. Press the same pushbutton again to turn off random play.
2. To play songs from all CDs loaded in a six-disc CD player in random order, press the pushbutton positioned under the RDM label until Randomize All Discs displays. Press the same pushbutton again to turn off random play.

 **(Music Navigator):** Use the music navigator feature to play MP3 files on the CD-R in order by artist or album. Press the pushbutton located below the music navigator label. The player scans the disc to sort the files by artist and album ID3 tag information. It can take several minutes to scan the disc depending on the number of MP3 files recorded to the CD-R. The radio can begin playing while it is scanning the disc in the background. When the scan is finished, the CD-R begins playing again.

Once the disc has been scanned, the player defaults to playing MP3 files in order by artist. The current artist playing is shown on the second line of the display between the arrows. Once all songs by that artist are played, the player moves to the next artist in alphabetical order on the CD-R and begins playing MP3 files by that artist. To listen to MP3 files by another artist, press the pushbutton located below either arrow button. The CD goes to the next or previous artist in alphabetical order. Continue pressing either button until the desired artist is displayed.

To change from playback by artist to playback by album, press the pushbutton located below the Sort By label. From the sort screen, push one of the buttons below the album button. Press the pushbutton below the back label to return to the main music navigator screen. Now the album name is displayed on the second line between the arrows and songs from the current album begins to play. Once all songs from that album are played, the player moves to the next album in alphabetical order on the CD-R and begins playing MP3 files from that album.

To exit music navigator mode, press the pushbutton below the Back label to return to normal MP3 playback.

**BAND:** Press this button to listen to the radio while a CD is playing. The CD remains inside the radio for future listening.

**CD/AUX (CD/Auxiliary):** Press this button to play a CD while listening to the radio. The CD icon and a message showing disc and/or track number displays while a CD is in the player. Press this button again and the system automatically searches for an auxiliary input device such as a portable audio player. If a portable audio player is not connected, No Aux Input Device displays.

## XM Radio Messages

Radio Display Message	Condition	Action Required
XL (Explicit Language Channels)	XL on the radio display, after the channel name, indicates content with explicit language.	These channels, or any others, can be blocked at a customer's request, by calling 1-800-852-XXMM (9696).
XM Updating	Updating encryption code	The encryption code in the receiver is being updated, and no action is required. This process should take no longer than 30 seconds.
No XM Signal	Loss of signal	The system is functioning correctly, but the vehicle is in a location that is blocking the XM™ signal. When you move into an open area, the signal should return.
Loading XM	Acquiring channel audio (after four second delay)	The audio system is acquiring and processing audio and text data. No action is needed. This message should disappear shortly.
Channel Off Air	Channel not in service	This channel is not currently in service. Tune to another channel.
Channel Unavail	Channel no longer available	This previously assigned channel is no longer assigned. Tune to another station. If this station was one of the presets, choose another station for that preset button.
No Artist Info	Artist Name/Feature not available	No artist information is available at this time on this channel. The system is working properly.
No Title Info	Song/Program Title not available	No song title information is available at this time on this channel. The system is working properly.

<b>Radio Display Message</b>	<b>Condition</b>	<b>Action Required</b>
No CAT Info	Category Name not available	No category information is available at this time on this channel. The system is working properly.
No Information	No Text/Informational message available	No text or informational messages are available at this time on this channel. The system is working properly.
CAT Not Found	No channel available for the chosen category	There are no channels available for the selected category. The system is working properly.
XM TheftLocked	Theftlock® active	The XM™ receiver in the vehicle could have previously been in another vehicle. For security purposes, XM™ receivers cannot be swapped between vehicles. If this message appears after having your vehicle serviced, check with your retailer.
XM Radio ID	Radio ID label (channel 0)	If tuned to channel 0, this message alternates with the XM™ Radio eight digit radio ID label. This label is needed to activate the service.
Unknown	Radio ID not known (should only be if hardware failure)	If this message is received when tuned to channel 0, there could be a receiver fault. Consult with your retailer.
Check XM Receivr	Hardware failure	If this message does not clear within a short period of time, the receiver could have a fault. Consult with your retailer.
XM Not Available	XM™ Not Available	If this message does not clear within a short period of time, the receiver could have a fault. Consult with your retailer.

## Rear Seat Entertainment System

Your vehicle may have a DVD Rear Seat Entertainment (RSE) system. The RSE system works with the vehicle's audio system and includes a radio that accepts CD audio or DVD video, a video display screen, two sets of wireless headphones, and a remote control.

### Before You Drive

The RSE is designed for rear seat passengers only. The driver cannot safely view the video screen while driving and should not try to do so.

In severe or extreme weather conditions the RSE system might not work until the temperature is within the operating range. The operating range for the RSE system is above  $-4^{\circ}\text{F}$  ( $-20^{\circ}\text{C}$ ) or below  $140^{\circ}\text{F}$  ( $60^{\circ}\text{C}$ ). If the temperature of your vehicle is outside of this range, heat or cool the vehicle until the temperature is within the operating range of the RSE system.

## Headphones

The RSE includes two sets of wireless headphones that are only dedicated to this system. These headphones are used to listen to the radio with CD and DVD or an auxiliary device connected to the RCA jacks. The wireless headphones have an ON/OFF switch and a volume control.

To use the headphones, turn the switch to ON. An indicator light on the headphones comes on. If the light does not come on, the batteries might need to be replaced. See "Battery Replacement" later in this section for more information. Switch the headphones to OFF when not in use.

The infrared transmitters are located in the display below the video screen. The headphones shut off automatically to save the battery power if the DVD system is shut off or if the headphones are out of range of the transmitters for more than three minutes. If you move too far forward or step out of the vehicle, the headphones lose the audio signal.

To adjust the volume on the headphones, use the volume control located on the right side.

**Notice:** Do not store the headphones in heat or direct sunlight. This could damage the headphones and repairs will not be covered by your warranty. Keep the headphones stored in a cool, dry place.

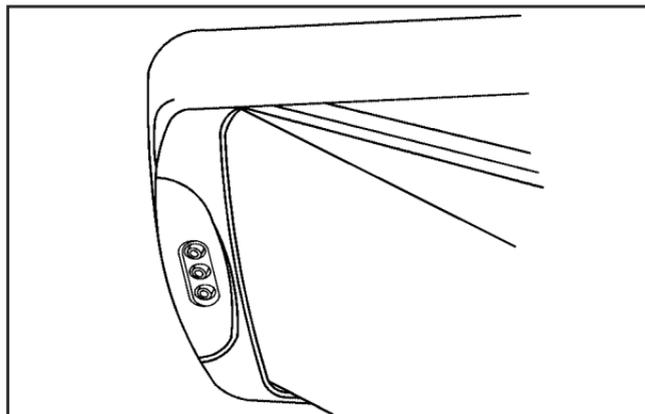
### Battery Replacement

To change the batteries, do the following:

1. Slide open the battery door located on the left side of the headphones.
2. Replace the two AAA batteries in the compartment. Make sure that they are installed correctly, using the diagram on the inside of the battery compartment.
3. Slide the battery door shut.

If the headphones are to be stored for a long period of time, remove the batteries and keep them in a cool, dry place.

### Stereo RCA Jacks



The RCA jacks are located behind the video screen on the overhead console. The RCA jacks allow audio or video signals to be connected from an auxiliary device such as a camcorder or a video game unit to the RSE. Adapter connectors or cables might be required to connect the auxiliary device to the RCA jacks. Refer to the manufacturer's instructions for proper usage.

The RCA jacks are color coded to match typical home entertainment system equipment. The yellow jack (right) is for the video input. The white jack (middle) is for the left audio input. The red jack (left) is for the right audio input. The red connector must always be used in order for the DVD system to recognize that an external source is plugged in. With the radio on, the screen automatically switches to the rear auxiliary input when the red connector cable is inserted.

Power for auxiliary devices is not supplied by the radio system.

To use the auxiliary function, connect a camcorder or a video game unit to the RCA jacks and turn on the auxiliary device. To view a DVD, insert the DVD into the CD/DVD loading slot on the radio. The system automatically switches to DVD and starts to play. To switch between the auxiliary device and the DVD, press the DVD/AUX button on the radio faceplate or the SRCE (source) button on the remote control. See “DVD Player” and “Remote Control” later in this section for more information.

## **Audio Output**

Only one audio source can be heard through the speakers at one time.

Press the power button to turn the radio on. The radio can be heard through all of the vehicle speakers.

When a DVD is inserted, playback is heard through the vehicle speakers and headphones.

Front seat passengers can listen to the radio by pressing the BAND button to select AM, FM or XM™ (if equipped). The rear seat speakers are muted for radio listening, and the DVD plays through the headphones (RSE Mode).

When RCA jacks are connected, the rear speakers are muted. The rear seat passengers are able to hear audio from the auxiliary device through the wireless headphones. The front seat passengers are able to listen to the radio through the front speakers, by pressing the BAND button to select AM, FM, or XM (if equipped), or listen to a CD that is inserted into the radio.

If a playback device is plugged into the radio's auxiliary input jack, the device can be heard through all of the vehicle speakers. In RSE mode the playback device is only heard through the front speakers.

## Video Screen

The video screen is located in the overhead console.

To use the video screen, do the following:

1. Push forward on the release button located on the DVD display console.
2. Pull the screen down, away from you, and adjust its position as desired.

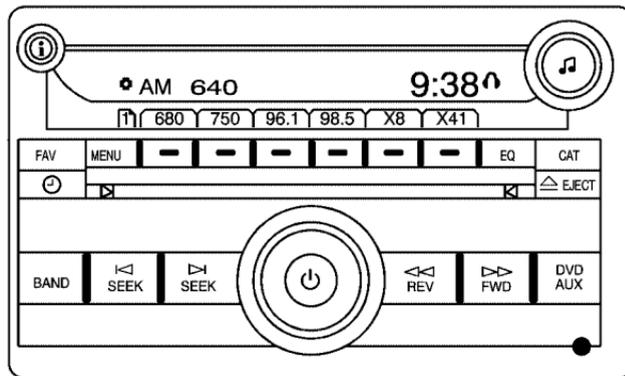
When the video screen is not in use, push it up into its locked position.

If a DVD is playing and the screen is raised to its locked position, the screen shuts off, but the DVD continues to play through the previous audio or video source.

The video screen contains the transmitters for the wireless headphones and the receivers for the remote control. If the screen is in the closed position, the signals are not available for the operation of the headphones or the remote control.

**Notice:** Avoid directly touching the video screen, as damage may occur. See “Cleaning the Video Screen” later in this section for more information.

## DVD Player



The DVD player is part of the radio and is located in the center of the instrument panel.

The DVD player is controlled by the buttons on the radio faceplate, or by the buttons on the remote control. See “Remote Control” later in this section for more information.

The DVD player is only compatible with DVDs that are authorized for use in the United States and Canada (Region Code 1). The DVD region code is printed on the jacket of most DVDs. Most audio CDs, CD-R, CD-RW, and MP3s can also be played by the radio with CD and DVD.

If an error message displays on the video screen or the radio, see “DVD Player Error Messages” later in this section.

### **Auxiliary Input Jack**

The radio system has an auxiliary input jack located on the lower right side of the faceplate. An external audio device such as an iPod, MP3 player, or cassette player can be connected to the auxiliary input jack for use as another source for audio listening.

### **DVD Player Buttons**

To learn about the DVD functions for this type of radio system, read the following for more information on the DVD player.

**DVD/AUX (Auxiliary):** While a DVD is playing, press this button to switch between front auxiliary and RSE.

To listen to a DVD through the headphones, press this button.

While a CD is playing, press this button to switch between playing a CD or the front auxiliary, if not in RSE mode. If the system is in RSE mode, press the power button on the remote control first, to listen to the CD through the headphones, while the front passengers listen to the front auxiliary.

 **(Power):** Press this knob to turn the radio/DVD player on. Turn this knob clockwise to or counterclockwise to increase or decrease the volume. A single press turns the radio off, a quick double press turns off the entire radio and rear seat entertainment system.

 **(Tune):** Turn this knob to change tracks on a CD or DVD, to manually tune a radio station, or to change clock or date settings, while in the clock or date setting mode. See *Setting the Time (Without Date Display)* on page 183 or *Setting the Time (With Date Display)* on page 184 for more information.

⏮ **SEEK (Previous Track/Chapter):** Press this button to return to the start of the current track or chapter. Press this button again to go to the previous track or chapter. This button might not work while the DVD is playing the copyright information or the previews.

⏭ **SEEK (Next Track/Chapter):** Press this button to advance to the beginning of the next track or chapter. This button might not work while the DVD is playing the copyright information or the previews.

⏪ **REV (Reverse):** Press this button to fast reverse the DVD or CD, five times the normal speed. The radio displays the elapsed time while in fast reverse. To stop fast reversing, press this button again. This button might not work while the DVD is playing the copyright information or the previews.

⏩ **FWD (Fast Forward):** Press this button to fast forward the DVD or CD. The radio displays the elapsed time and fast forwards five times the normal speed. To stop fast forwarding, press this button again. This button might not work while the DVD is playing the copyright information or the previews.

Some DVDs begins playing after the previews have finished, although there could be a delay of up to 30 seconds. If the DVD does not begin playing the movie automatically, press the pushbutton located under the play/pause symbol tag displayed on the radio. If the DVD still does not play, refer to the on-screen instructions, if available.

⏏ **(Eject):** Press this button to eject a DVD or CD. If a DVD or CD is ejected, but not removed, the player automatically pulls it back in after 15 seconds. If the DVD does not begin playing the movie automatically, press the pushbutton located under the play symbol tag displayed on the radio. If the DVD still does not play, refer to the on-screen instructions (if available).

## DVD Display Buttons

Once a DVD is inserted, a screen display menu shows several tag options for DVD playing. Press the pushbuttons located under any desired tag option during DVD playback. See the tag options listed below for more information:

 **(Play/Pause):** Press either the play or pause icon displayed on the radio system, to toggle between pausing or restarting playback of a DVD. If the forward arrow is showing on display, the system is in pause mode. If the pause icon is showing on display, the system is in playback mode.

 **(Stop):** Press this button to stop playing, rewinding, or fast forwarding a DVD.

 **(Enter):** Press this button to select the choices that are highlighted in any menu.

 **(Menu):** Press this button to access the DVD menu. The DVD menu is different on every DVD. Use the pushbuttons located under the navigation arrows to navigate the cursor through the DVD menu. After making a selection press the enter button. This button only operates when using a DVD.

**Nav (Navigate):** Press this button to display directional arrows for navigating through the menus.

 **(Return):** Press this button to exit the current active menu and return to the previous menu. This button operates only when a DVD is playing and a menu is active.

## Playing a Disc

To play a disc, gently insert the disc, with the label side up, into the loading slot. The player starts loading the disc into the system and display “Loading Disc” on the video screen. At the same time, the radio displays a softkey menu of options. The first option tag located on the left-hand side of the menu options, displays alternately the play or pause symbols. This indicates the system is loading the disc or is not yet ready to accept a play button press. The displayed symbol arrow remains until the disc is completely loaded or Promos and Copyright information has ended. The time can vary depending on the discs media type and format. Once the DVD is loaded into the system, a pause icon displays instead of the forward arrow. This indicates the system is in play mode, and the disc automatically starts playback.

Loading a disc into the system usually takes approximately 30 seconds for playback to begin.

If a DVD is already in the radio, press the play/pause button on the remote control, or press the pushbutton located under the play symbol tag displayed on the radio to start playing the disc, when the DVD system is active.

The DVD player might not accept some paper labeled media.

The DVD player/video screen can only be turned on by pressing the power button on the remote control or by inserting a DVD.

### **Playing an MP3 CD**

The CD player has the ability to recognize up to 255 folders, and up to 255 files per folder to a maximum of 512 total MP3 selections on a CD. Mixed media CD's are not supported.

### **Stopping and Resuming Playback**

To turn the RSE system off, press the power button twice on the radio.

To turn the RSE system back on again, press the power button on the radio, then press the DVD/AUX button. This brings up the softkey menu displayed on the radio. Press the play/pause icon to begin playback from where it had previously stopped.

To stop playing a DVD without turning off the system, press the stop button on the remote control, or press the pushbutton located under the stop or the play/pause symbol tags displayed on the radio.

To resume DVD playback, press the play/pause button on the remote control, or press the pushbutton located under the play/pause symbol tag displayed on the radio. The DVD should resume play from where it last stopped if the disc has not been ejected and the stop button has not been pressed twice on the remote control. If the disc has been ejected or the stop button has been pressed twice on the remote control, the disc resumes playing at the beginning of the disc.

## Ejecting a Disc

Press the eject button on the radio to eject the disc. If a disc is ejected from the radio, but not removed, the radio reloads the disc after a short period of time. The disc is stored in the radio. The radio does not resume play of the disc automatically.

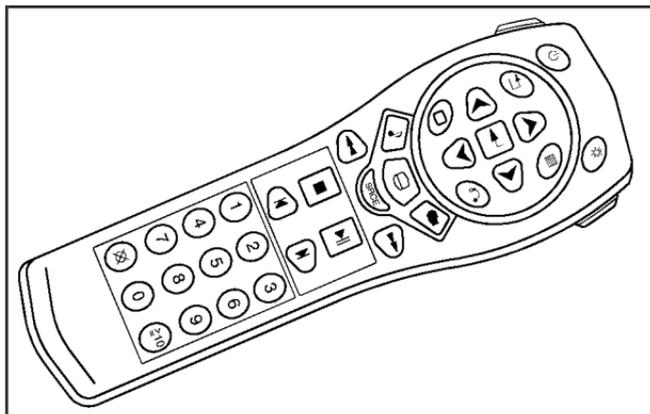
## Remote Control

To use the remote control, aim it at the transmitter window below the video screen and press the desired button. Direct sunlight or very bright light could affect the ability of the RSE transmitter to receive signals from the remote control. If the remote control does not seem to be working, the batteries might need to be replaced. See “Battery Replacement” later in this section. Objects blocking the line of sight could also affect the function of the remote control.

The DVD player can only be turned on by pressing the DVD/AUX button on the radio.

**Notice:** Storing the remote control in a hot area or in direct sunlight can damage it, and the repairs will not be covered by your warranty. Keep the remote control stored in a cool, dry place.

## Remote Control Buttons



 **(Power):** Press this button to turn the RSE screen on and off (also powers up the DVD player if a disc is loaded).

 **(Illumination):** Press this button to turn the remote control backlight on. The backlight times out after seven to ten seconds if no other button is pressed while the backlight is on.

 **(Title):** Press this button to return the DVD to the main menu of the DVD.

 **(Main DVD Menu):** Press this button to access the DVD menu. The DVD menu is different on every DVD. Use the up, down, left, and right arrow buttons to move the cursor around the DVD menu. After making a selection press the enter button. This button only operates when using a DVD.

 **(Menu Navigation Arrows):** Use the arrow buttons to navigate through a menu.

 **(Enter):** Press this button to select the choices that are highlighted in any menu.

 **(Display Menu):** Press this button to adjust the color, tint, brightness, contrast, and display mode (normal, full, or zoom). The dynamic range compression feature can be used to reduce loud audio and increase low audio produced by some DVDs.

 **(Return):** Press this button to exit the current active menu and return to the previous menu. This button operates only when a DVD is playing and a menu is active.

 **(Audio):** Press this button to display a menu that only appears when a DVD is playing. The format and content of this function varies for each disc.

 **(Subtitle):** Press this button to turn on subtitles and to move through subtitle options when a DVD is playing. The format and content of this function varies for each disc.

 **(Camera Angle):** Press this button to change camera angles on DVDs that have this feature when a DVD is playing. The format and content of this function varies for each disc.

 **(Fast Reverse):** Press this button to fast reverse the DVD or CD. To stop fast reversing, press this button again. This button might not work when the DVD is playing the copyright information or the previews.

**SRCE (Source):** Press this button to switch between the DVD player and an auxiliary source.

 **(Fast Forward):** Press this button to fast forward the DVD or CD. To stop fast forwarding, press this button again. This button might not work when the DVD is playing the copyright information or the previews.

 **(Stop):** Press this button to stop playing, rewinding, or fast forwarding a DVD. Press this button twice to return to the beginning of the DVD.

▶ || **(Play/Pause)**: Press this button to start play of a DVD or CD. Press this button while a DVD or CD is playing to pause it. Press this button again to continue playing the DVD.

While the DVD is playing, press the pause button then press the fast forward button. The DVD continues playing in a slow play mode. To cancel slow play mode, press the play/pause button.

◀ **(Previous Track/Chapter)**: Press this button to return to the start of the current track or chapter. Press this button again to go to the previous track or chapter. This button might not work when the DVD is playing the copyright information or the previews.

▶| **(Next Track/Chapter)**: Press this button to advance to the beginning of the next track or chapter. This button might not work when the DVD is playing the copyright information or the previews.

**1 through 0 (Numeric Keypad)**: The numeric keypad provides the capability of direct chapter, title, and track number selection.

⊗ **(Clear)**: Press this button, within three seconds after entering a numeric selection to clear all numeric inputs.

≥ **10 (Double Digit Entries)**: Press the button, to select chapter, title, and track numbers greater than nine. Press this button before inputting the number.

## Battery Replacement

To change the remote control batteries, do the following:

1. Remove the battery compartment door located on the bottom of the remote control.
2. Replace the two AA batteries in the compartment. Make sure that they are installed correctly, using the diagram on the inside of the battery compartment.
3. Close the battery door securely.

If the remote control is to be stored for a long period of time, remove the batteries and keep them in a cool, dry place.

## DVD Player Error Messages

The video screen could display one of the following:

**Disc Load/Eject Error:** This message displays when there are disc load or eject problems.

**Disc Format Error:** This message displays, if the disc is inserted with the disc label wrong side up, or if the disc is damaged.

**Disc Region Error:** This message displays, if the disc is not from a correct region.

**No Disc Inserted:** This message displays, if no disc is present when the EJECT or DVD/AUX button is pressed on the radio.

## DVD Distortion

Video distortion could occur when operating cellular phones, scanners, CB radios, Global Position Systems (GPS)\*, two-way radios, mobile fax, or walkie talkies.

It might be necessary to turn off the DVD player when operating one of these devices in or near the vehicle.

\*Excludes the OnStar<sup>®</sup> System.

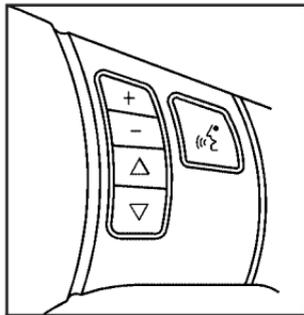
## Cleaning the DVD Player

When cleaning the outside DVD faceplate and buttons, use only a clean cloth dampened with clean water.

## Cleaning the Video Screen

When cleaning the video screen, use only a clean cloth dampened with clean water. Use care when directly touching or cleaning the screen, as damage could result.

## Audio Steering Wheel Controls



Some audio controls can be adjusted at the steering wheel. They include the following:

▼ ▲: Press the up or the down arrow to go to the next or to the previous radio station and stay there. The radio seeks stations only with a strong signal that are in the selected band.

To scan stations, press and hold either arrow for two seconds until SCAN displays and a beep sounds. The radio goes to a station, plays for a few seconds, then goes to the next station. Press either arrow again to stop scanning.

While a CD is playing, press the up or the down arrow to go to the next or previous track.

To scan the current CD, press and hold either up or down arrow for more than two seconds. The CD goes to the next track, plays the first 10 seconds, then goes to the next track. Press either up or down arrow again to stop scanning.

To scan all of the CDs loaded, press and hold either up or down arrow for more than four seconds. The CD goes to the next CD, plays the first 10 seconds of each track, then goes to the next CD. Press either up or down arrow again to stop scanning.

**+ – (Volume):** Press the plus or minus button to increase or to decrease the volume.

**⏏ (Mute):** Press this button to silence the system. Press this button again, to turn the sound on.

## Radio Reception

Frequency interference and static during normal radio reception can occur if items such as cellphone chargers, vehicle convenience accessories, and external electronic devices are plugged into the accessory power outlet. If there is interference or static, unplug the item from the accessory power outlet.

### AM

The range for most AM stations is greater than for FM, especially at night. The longer range can cause station frequencies to interfere with each other. For better radio reception, most AM radio stations boost the power levels during the day, and then reduce these levels during the night. Static can also occur when things like storms and power lines interfere with radio reception. When this happens, try reducing the treble on your radio.

### FM Stereo

FM stereo gives the best sound, but FM signals will reach only about 10 to 40 miles (16 to 65 km). Tall buildings or hills can interfere with FM signals, causing the sound to fade in and out.

### XM™ Satellite Radio Service

XM™ Satellite Radio Service gives digital radio reception from coast-to-coast in the 48 contiguous United States, and in Canada. Just as with FM, tall buildings or hills can interfere with satellite radio signals, causing the sound to fade in and out. In addition, traveling or standing under heavy foliage, bridges, garages, or tunnels could cause loss of XM signal for a period of time. The radio might display NO XM SIGNAL to indicate interference.

## Care of Your CDs and DVDs

Handle CDs carefully. Store them in their original cases or other protective cases and away from direct sunlight and dust. The CD player scans the bottom surface of the disc. If the surface of a CD is damaged, such as cracked, broken, or scratched, the CD does not play properly or not at all. If the surface of a CD is soiled, take a soft, lint free cloth or dampen a clean, soft cloth in a mild, neutral detergent solution mixed with water, and clean it. Make sure the wiping process starts from the center to the edge.

Do not touch the bottom side of a CD while handling it; this could damage the surface. Pick up CDs by grasping the outer edges or the edge of the hole and the outer edge.

## Care of the CD and DVD Player

The use of CD lens cleaners for CDs is not advised, due to the risk of contaminating the lens of the CD optics with lubricants internal to the CD mechanism.

## Fixed Mast Antenna

The fixed mast antenna can withstand most car washes without being damaged. If the mast should ever become slightly bent, straighten it out by hand. If the mast is badly bent, replace it.

Check occasionally to make sure the mast is still tightened to the antenna base. If tightening is required, tighten by hand.

## XM™ Satellite Radio Antenna System

The XM™ Satellite Radio antenna is located on the roof of your vehicle. Keep this antenna clear of snow and ice build up for clear radio reception.

A vehicle with a sunroof might not get the best performance from the XM™ system if the sunroof is open.

Loading items onto the roof of your vehicle can interfere with the performance of the XM™ system. Make sure the XM™ Satellite Radio antenna is not obstructed.



## Section 4 Driving Your Vehicle

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## Your Driving, the Road, and Your Vehicle

Whenever we drive, we are taking on an important responsibility. This is true for any motor vehicle — passenger car, van, truck, sport utility. Driver behavior, the driving environment, and the vehicle's design all affect how well a vehicle performs. But statistics show that the most important factor, by far, is how we drive.

Knowing how these three factors work together can help you understand how your vehicle handles and what you can do to avoid many types of crashes, including a rollover crash.

## Driver Behavior

The single most important thing is this: everyone in the vehicle, including the driver, should buckle up. See *Safety Belts: They Are for Everyone on page 20*. In fact, most serious injuries and fatalities to unbelted occupants can be reduced or prevented by the use of safety belts. In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a seat belt. In addition, avoiding excessive speed, sudden or abrupt turns, and drunken or aggressive driving can help make trips safer and avoid the possibility of a crash, especially a rollover crash. This section provides many useful tips to help you drive more safely.

## Driving Environment

You can also help avoid a rollover or other type of crash by being prepared for driving in inclement weather, at night, or during other times where visibility or traction may be limited, such as on curves, slippery roads, or hilly terrain. Unfamiliar surroundings can also have hidden hazards.

To help you learn more about driving in different conditions, this section contains information about city, freeway, and off-road driving, as well as other hints for driving in various weather conditions.

## Vehicle Design

According to the U.S. Department of Transportation, utility vehicles have a significantly higher rollover rate than other types of vehicles. Utility vehicles do have higher ground clearance and a narrower track or shorter wheelbase than passenger cars, to make them more capable for off-road driving. Specific design characteristics like these give the driver a better view of the road, but also give utility vehicles a higher center of gravity than other types of vehicles. This means that you should not expect a utility vehicle to handle the same way a vehicle with a lower center of gravity, like a car, would in similar situations.

But driver behavior factors are far more often the cause of a utility vehicle rollover than are environmental or vehicle factors. Safe driver behavior and understanding the environment in which you will be driving can help avoid a rollover crash in any type of vehicle, including utility vehicles.

## Defensive Driving

The best advice anyone can give about driving is:  
Drive defensively.

Please start with a very important safety device in your vehicle: Buckle up. See *Safety Belts: They Are for Everyone* on page 20.

### CAUTION:

**Defensive driving really means “Be ready for anything.” On city streets, rural roads, or expressways, it means “Always expect the unexpected.” Assume that pedestrians or other drivers are going to be careless and make mistakes. Anticipate what they might do and be ready. Rear-end collisions are about the most preventable of accidents. Yet they are common. Allow enough following distance. Defensive driving requires that a driver concentrate on the driving task. Anything that distracts from the driving task makes proper defensive driving more difficult and can even cause a collision, with resulting injury. Ask a passenger to help do these things, or pull off the road in a safe place to do them. These simple defensive driving techniques could save your life.**

## Drunken Driving

Death and injury associated with drinking and driving is a national tragedy. It is the number one contributor to the highway death toll, claiming thousands of victims every year.

Alcohol affects four things that anyone needs to drive a vehicle:

- Judgment
- Muscular Coordination
- Vision
- Attentiveness

Police records show that almost half of all motor vehicle-related deaths involve alcohol. In most cases, these deaths are the result of someone who was drinking and driving. In recent years, more than 16,000 annual motor vehicle-related deaths have been associated with the use of alcohol, with more than 300,000 people injured.

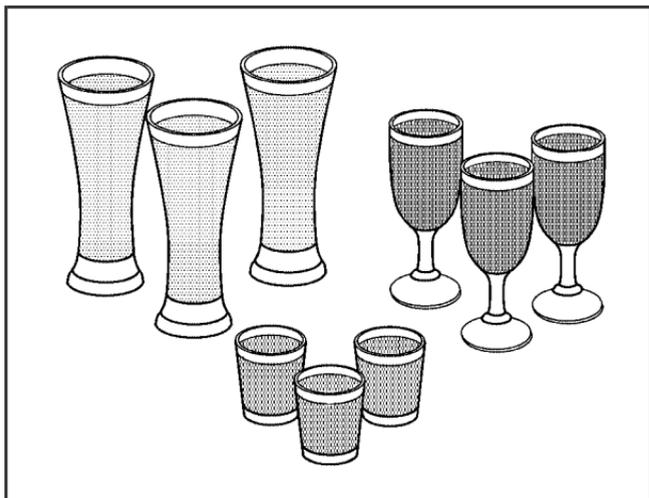
Many adults — by some estimates, nearly half the adult population — choose never to drink alcohol, so they never drive after drinking. For persons under 21, it is against the law in every U.S. state to drink alcohol. There are good medical, psychological, and developmental reasons for these laws.

The obvious way to eliminate the leading highway safety problem is for people never to drink alcohol and then drive. But what if people do? How much is “too much” if someone plans to drive? It is a lot less than many might think. Although it depends on each person and situation, here is some general information on the problem.

The Blood Alcohol Concentration (BAC) of someone who is drinking depends upon four things:

- The amount of alcohol consumed
- The drinker’s body weight
- The amount of food that is consumed before and during drinking
- The length of time it has taken the drinker to consume the alcohol

According to the American Medical Association, a 180 lb (82 kg) person who drinks three 12 ounce (355 ml) bottles of beer in an hour will end up with a BAC of about 0.06 percent. The person would reach the same BAC by drinking three 4 ounce (120 ml) glasses of wine or three mixed drinks if each had 1-1/2 ounces (45 ml) of liquors like whiskey, gin, or vodka.



It is the amount of alcohol that counts. For example, if the same person drank three double martinis (3 ounces or 90 ml of liquor each) within an hour, the person's BAC would be close to 0.12 percent. A person who consumes food just before or during drinking will have a somewhat lower BAC level.

There is a gender difference, too. Women generally have a lower relative percentage of body water than men. Since alcohol is carried in body water, this means that a woman generally will reach a higher BAC level than a man of her same body weight will when each has the same number of drinks.

The law in most U.S. states, and throughout Canada, sets the legal limit at 0.08 percent. In some other countries, the limit is even lower. For example, it is 0.05 percent in both France and Germany. The BAC limit for all commercial drivers in the United States is 0.04 percent.

The BAC will be over 0.10 percent after three to six drinks (in one hour). Of course, as we have seen, it depends on how much alcohol is in the drinks, and how quickly the person drinks them.

But the ability to drive is affected well below a BAC of 0.10 percent. Research shows that the driving skills of many people are impaired at a BAC approaching 0.05 percent, and that the effects are worse at night. All drivers are impaired at BAC levels above 0.05 percent. Statistics show that the chance of being in a collision increases sharply for drivers who have a BAC of 0.05 percent or above. A driver with a BAC level of 0.06 percent has doubled his or her chance of having a collision. At a BAC level of 0.10 percent, the chance of this driver having a collision is 12 times greater; at a level of 0.15 percent, the chance is 25 times greater!

The body takes about an hour to rid itself of the alcohol in one drink. No amount of coffee or number of cold showers will speed that up. "I will be careful" is not the right answer. What if there is an emergency, a need to take sudden action, as when a child darts into the street? A person with even a moderate BAC might not be able to react quickly enough to avoid the collision.

There is something else about drinking and driving that many people do not know. Medical research shows that alcohol in a person's system can make crash injuries worse, especially injuries to the brain, spinal cord, or heart. This means that when anyone who has been drinking — driver or passenger — is in a crash, that person's chance of being killed or permanently disabled is higher than if the person had not been drinking.

 **CAUTION:**

**Drinking and then driving is very dangerous. Your reflexes, perceptions, attentiveness, and judgment can be affected by even a small amount of alcohol. You can have a serious — or even fatal — collision if you drive after drinking. Please do not drink and drive or ride with a driver who has been drinking. Ride home in a cab; or if you are with a group, designate a driver who will not drink.**

## Control of a Vehicle

You have three systems that make your vehicle go where you want it to go. They are the brakes, the steering, and the accelerator. All three systems have to do their work at the places where the tires meet the road.

Sometimes, as when you are driving on snow or ice, it is easy to ask more of those control systems than the tires and road can provide. That means you can lose control of your vehicle. See *Traction Control System (TCS)* on page 238.

Adding non-Saturn accessories can affect your vehicle's performance. See *Accessories and Modifications* on page 304.

## Braking

See *Brake System Warning Light* on page 170.

Braking action involves perception time and reaction time.

First, you have to decide to push on the brake pedal. That is perception time. Then you have to bring up your foot and do it. That is reaction time.

Average reaction time is about three-fourths of a second. But that is only an average. It might be less with one driver and as long as two or three seconds or more with another. Age, physical condition, alertness, coordination, and eyesight all play a part. So do alcohol, drugs, and frustration. But even in three-fourths of a second, a vehicle moving at 60 mph (100 km/h) travels 66 feet (20 m). That could be a lot of distance in an emergency, so keeping enough space between your vehicle and others is important.

And, of course, actual stopping distances vary greatly with the surface of the road, whether it is pavement or gravel; the condition of the road, whether it is wet, dry, or icy; tire tread; the condition of the brakes; the weight of the vehicle; and the amount of brake force applied.

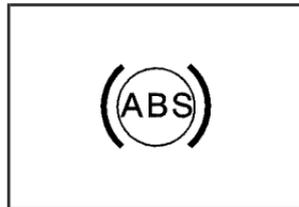
Avoid needless heavy braking. Some people drive in spurts — heavy acceleration followed by heavy braking — rather than keeping pace with traffic. This is a mistake. The brakes may not have time to cool between hard stops. The brakes will wear out much faster if you do a lot of heavy braking. If you keep pace with the traffic and allow realistic following distances, you will eliminate a lot of unnecessary braking. That means better braking and longer brake life.

If your vehicle's engine ever stops while you are driving, brake normally but do not pump the brakes. If you do, the pedal may get harder to push down. If the engine stops, you will still have some power brake assist. But you will use it when you brake. Once the power assist is used up, it may take longer to stop and the brake pedal will be harder to push.

Adding non-Saturn accessories can affect your vehicle's performance. See *Accessories and Modifications on page 304*.

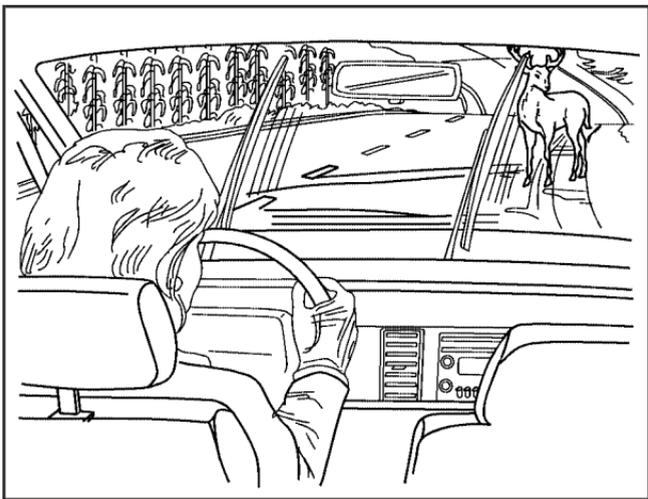
## Anti-Lock Brake System (ABS)

Your vehicle might have the Anti-Lock Brake System (ABS), an advanced electronic braking system that will help prevent a braking skid.



If your vehicle has ABS, this warning light on the instrument panel will come on briefly when you start your vehicle.

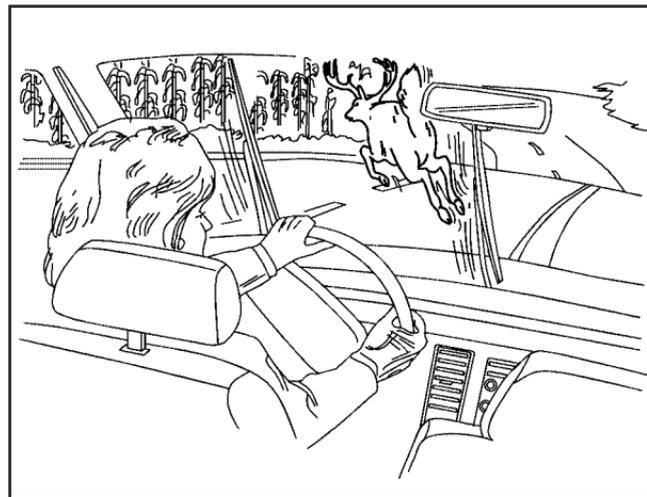
When you start the engine, or when you begin to drive away, ABS will check itself. You might hear a momentary motor or clicking noise while this test is going on, and you might even notice that the brake pedal moves or pulses a little. This is normal.



Let us say the road is wet and you are driving safely. Suddenly, an animal jumps out in front of you. You slam on the brakes and continue braking. Here is what happens with ABS:

A computer senses that wheels are slowing down. If one of the wheels is about to stop rolling, the computer will separately work the brakes at each wheel.

ABS can change the brake pressure faster than any driver could. The computer is programmed to make the most of available tire and road conditions. This can help you steer around the obstacle while braking hard.



As you brake, the computer keeps receiving updates on wheel speed and controls braking pressure accordingly.

Remember: ABS does not change the time you need to get your foot up to the brake pedal or always decrease stopping distance. If you get too close to the vehicle in front of you, you will not have time to apply the brakes if that vehicle suddenly slows or stops. Always leave enough room up ahead to stop, even though you have ABS.

## Using ABS

Do not pump the brakes. Just hold the brake pedal down firmly and let anti-lock work for you. You might feel a slight brake pedal pulsation or notice some noise, but this is normal.

## Braking in Emergencies

At some time, nearly every driver gets into a situation that requires hard braking.

If you have ABS, you can steer and brake at the same time. However, if you do not have ABS, your first reaction — to hit the brake pedal hard and hold it down — might be the wrong thing to do. Your wheels can stop rolling.

Once they do, the vehicle cannot respond to your steering. Momentum will carry it in whatever direction it was headed when the wheels stopped rolling. That could be off the road, into the very thing you were trying to avoid, or into traffic.

If you do not have ABS, use a “squeeze” braking technique. This will give you maximum braking while maintaining steering control. You can do this by pushing on the brake pedal with steadily increasing pressure.

In an emergency, you will probably want to squeeze the brakes hard without locking the wheels. If you hear or feel the wheels sliding, ease off the brake pedal. This will help you retain steering control. If you do have ABS, it is different. See *Anti-Lock Brake System (ABS)* on page 235.

In many emergencies, steering can help you more than even the very best braking.

## Traction Control System (TCS)

Your vehicle may have a traction control system that limits wheel spin. This is especially useful in slippery road conditions. The system operates only if it senses that one or both of the front wheels are spinning or beginning to lose traction. When this happens, the system reduces engine power to limit wheel spin.

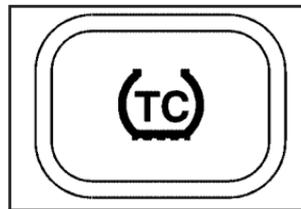


This light will come on when your traction control system is limiting wheel spin.

See *Low Traction Light* on page 173. You may feel or hear the system working, but this is normal.

The traction control system automatically comes on whenever you start your vehicle. To limit wheel spin, especially in slippery road conditions, you should always leave the system on.

But you can turn the traction control system off if you ever need to. You should turn the system off if your vehicle ever gets stuck in sand, mud, ice or snow and rocking the vehicle is required. See *Rocking Your Vehicle to Get It Out* on page 277 and *If Your Vehicle is Stuck in Sand, Mud, Ice, or Snow* on page 276 for more information.



If your vehicle is equipped with the 2.2L L4 engine, the traction control system can be turned off by pressing the traction control button.

It is located on the instrument panel above the audio system.

If your vehicle is equipped with the 3.5L V6 engine, the traction control system will be turned off when the shift lever is in REVERSE (R) or LOW (L). The traction control system warning light will be displayed on the instrument panel. See *Traction Control System (TCS) Warning Light* on page 172 for more information.

The traction control system can be activated again by pressing the traction control button for the 2.2L L4 engine, or by selecting DRIVE (D) or INTERMEDIATE (I) for the 3.5L V6 engine.

If the system is limiting wheel spin when you press the button, the system will not turn off until there is no longer a current need to limit wheel spin. You can turn the system back on at any time by pressing the button again. If the traction control warning light does not come on, you may not have traction control and your vehicle should be serviced at a retailer.

Adding non-Saturn accessories can affect your vehicle's performance. See *Accessories and Modifications on page 304* for more information.

## All-Wheel Drive (AWD) System

If your vehicle has all-wheel drive (AWD), the AWD system operates automatically without any action required by the driver. If the front drive wheels begin to slip, the rear wheels will automatically begin to drive the vehicle as required. There may be a slight engagement noise during hard use but this is normal.

During heavy AWD applications, the engine torque may be reduced to protect AWD system components. If the vehicle is exposed to extended heavy AWD usage, the AWD system will shut itself off to protect the system from overheating. When the system cools down, the AWD system will activate itself again automatically; this cool-down can take up to 20 minutes depending on outside temperature and vehicle use.

## Steering

### Electric Power Steering

If the engine stalls while you are driving, the power steering assist system will continue to operate until you are able to stop your vehicle. If you lose power steering assist because the electric power steering system is not functioning, you can steer, but it will take more effort.

If you turn the steering wheel in either direction several times until it stops, or hold the steering wheel in the stopped position for an extended amount of time, you may notice a reduced amount of power steering assist. The normal amount of power steering assist should return shortly after a few normal steering movements.

The electric power steering system does not require regular maintenance. If you suspect steering system problems and/or the Service Vehicle Soon light comes on, contact your dealer/retailer for service repairs.

## Steering Tips

It is important to take curves at a reasonable speed.

A lot of the “driver lost control” accidents mentioned on the news happen on curves. Here is why:

Experienced driver or beginner, each of us is subject to the same laws of physics when driving on curves. The traction of the tires against the road surface makes it possible for the vehicle to change its path when you turn the front wheels. If there is no traction, inertia will keep the vehicle going in the same direction. If you have ever tried to steer a vehicle on wet ice, you will understand this.

The traction you can get in a curve depends on the condition of the tires and the road surface, the angle at which the curve is banked, and your speed. While you are in a curve, speed is the one factor you can control.

Suppose you are steering through a sharp curve. Then you suddenly apply the brakes. Both control systems — steering and braking — have to do their work where the tires meet the road. Unless you have four-wheel anti-lock brakes, adding the hard braking can demand too much of those places. You can lose control.

The same thing can happen if you are steering through a sharp curve and you suddenly accelerate. Those two control systems — steering and acceleration — can overwhelm those places where the tires meet the road and make you lose control. See *Traction Control System (TCS)* on page 238.

What should you do if this ever happens? Ease up on the brake or accelerator pedal, steer the vehicle the way you want it to go, and slow down.

Speed limit signs near curves warn that you should adjust your speed. Of course, the posted speeds are based on good weather and road conditions. Under less favorable conditions you will want to go slower.

If you need to reduce your speed as you approach a curve, do it before you enter the curve, while the front wheels are straight ahead.

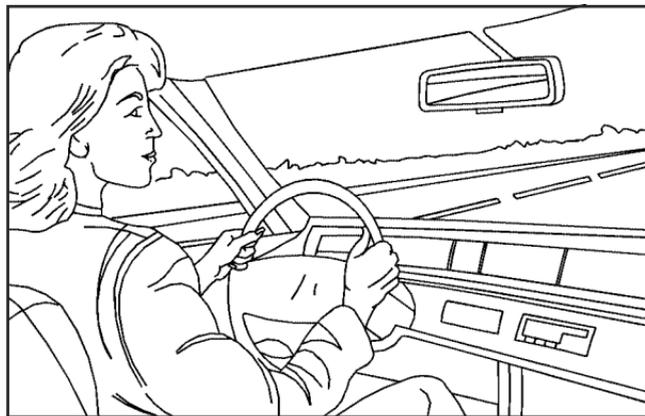
Try to adjust your speed so you can “drive” through the curve. Maintain a reasonable, steady speed. Wait to accelerate until you are out of the curve, and then accelerate gently into the straightaway.

Adding non-dealer/non-retailer accessories can affect your vehicle’s performance. See *Accessories and Modifications* on page 304.

## Steering in Emergencies

There are times when steering can be more effective than braking. For example, you come over a hill and find a truck stopped in your lane, or a car suddenly pulls out from nowhere, or a child darts out from between parked cars and stops right in front of you. You can avoid these problems by braking — if you can stop in time. But sometimes you cannot; there is not room. That is the time for evasive action — steering around the problem.

Your vehicle can perform very well in emergencies like these. First apply the brakes — but, unless you have anti-lock brakes, not enough to lock the wheels. See *Braking on page 234*. It is better to remove as much speed as you can from a possible collision. Then steer around the problem, to the left or right depending on the space available.

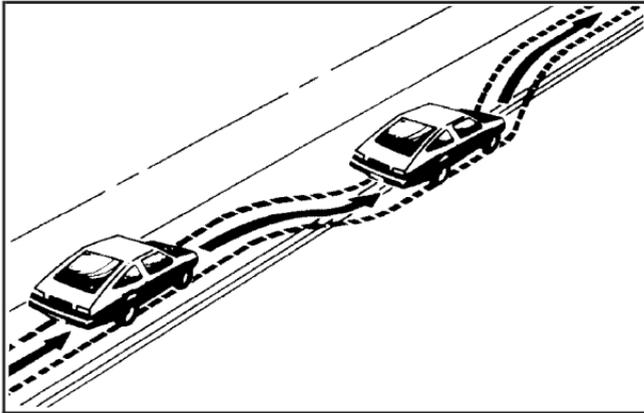


An emergency like this requires close attention and a quick decision. If you are holding the steering wheel at the recommended 9 and 3 o'clock positions, you can turn it a full 180 degrees very quickly without removing either hand. But you have to act fast, steer quickly, and just as quickly straighten the wheel once you have avoided the object.

The fact that such emergency situations are always possible is a good reason to practice defensive driving at all times and wear safety belts properly.

## Off-Road Recovery

You may find that your vehicle's right wheels have dropped off the edge of a road onto the shoulder while you are driving.



If the level of the shoulder is only slightly below the pavement, recovery should be fairly easy. Ease off the accelerator and then, if there is nothing in the way, steer so that your vehicle straddles the edge of the pavement. You can turn the steering wheel up to one-quarter turn until the right front tire contacts the pavement edge. Then turn the steering wheel to go straight down the roadway.

## Passing

The driver of a vehicle about to pass another on a two-lane highway waits for just the right moment, accelerates, moves around the vehicle ahead, then goes back into the right lane again. A simple maneuver?

Not necessarily! Passing another vehicle on a two-lane highway is a potentially dangerous move, since the passing vehicle occupies the same lane as oncoming traffic for several seconds. A miscalculation, an error in judgment, or a brief surrender to frustration or anger can suddenly put the passing driver face to face with the worst of all traffic accidents — the head-on collision.

So here are some tips for passing:

- Drive ahead. Look down the road, to the sides, and to crossroads for situations that might affect your passing patterns. If you have any doubt whatsoever about making a successful pass, wait for a better time.
- Watch for traffic signs, pavement markings, and lines. If you can see a sign up ahead that might indicate a turn or an intersection, delay your pass. A broken center line usually indicates it is all right to pass, providing the road ahead is clear. Never cross a solid line on your side of the lane or a double solid line, even if the road seems empty of approaching traffic.
- Do not get too close to the vehicle you want to pass while you are awaiting an opportunity. For one thing, following too closely reduces your area of vision, especially if you are following a larger vehicle. Also, you will not have adequate space if the vehicle ahead suddenly slows or stops. Keep back a reasonable distance.
- When it looks like a chance to pass is coming up, start to accelerate but stay in the right lane and do not get too close. Time your move so you will be increasing speed as the time comes to move into the other lane. If the way is clear to pass, you will have a running start that more than makes up for the distance you would lose by dropping back. And if something happens to cause you to cancel your pass, you need only slow down and drop back again and wait for another opportunity.
- If other vehicles are lined up to pass a slow vehicle, wait your turn. But take care that someone is not trying to pass you as you pull out to pass the slow vehicle. Remember to glance over your shoulder and check the blind spot.

- Check your vehicle's mirrors, glance over your shoulder, and start your left lane change signal before moving out of the right lane to pass. When you are far enough ahead of the passed vehicle to see its front in your vehicle's inside mirror, activate the right lane change signal and move back into the right lane. Remember that an outside convex mirror makes the vehicle you just passed seem farther away from you than it really is.
- Try not to pass more than one vehicle at a time on two-lane roads. Reconsider before passing the next vehicle.
- Do not overtake a slowly moving vehicle too rapidly. Even though the brake lamps are not flashing, it might be slowing down or starting to turn.
- If you are being passed, make it easy for the following driver to get ahead of you. Perhaps you can ease a little to the right.

## Loss of Control

Let us review what driving experts say about what happens when the three control systems — brakes, steering, and acceleration — do not have enough friction where the tires meet the road to do what the driver has asked.

In any emergency, do not give up. Keep trying to steer and constantly seek an escape route or area of less danger.

## Skidding

In a skid, a driver can lose control of the vehicle. Defensive drivers avoid most skids by taking reasonable care suited to existing conditions, and by not overdriving those conditions. But skids are always possible.

The three types of skids correspond to your vehicle's three control systems. In the braking skid, the wheels are not rolling. In the steering or cornering skid, too much speed or steering in a curve causes tires to slip and lose cornering force. And in the acceleration skid, too much throttle causes the driving wheels to spin.

A cornering skid is best handled by easing your foot off the accelerator pedal.

If you have the Traction Control System (TCS), remember: It helps avoid only the acceleration skid. See *Traction Control System (TCS) on page 238*. If you do not have this system, or if the system is off, then an acceleration skid is also best handled by easing your foot off the accelerator pedal.

If your vehicle starts to slide, ease your foot off the accelerator pedal and quickly steer the way you want the vehicle to go. If you start steering quickly enough, your vehicle may straighten out. Always be ready for a second skid if it occurs.

Of course, traction is reduced when water, snow, ice, gravel, or other material is on the road. For safety, you will want to slow down and adjust your driving to these conditions. It is important to slow down on slippery surfaces because stopping distance will be longer and vehicle control more limited.

While driving on a surface with reduced traction, try your best to avoid sudden steering, acceleration, or braking, including reducing vehicle speed by shifting to a lower gear. Any sudden changes could cause the tires to slide. You may not realize the surface is slippery until your vehicle is skidding. Learn to recognize warning clues — such as enough water, ice, or packed snow on the road to make a mirrored surface — and slow down when you have any doubt.

If you have the Anti-Lock Brake System (ABS), remember: It helps avoid only the braking skid. If you do not have ABS, then in a braking skid, where the wheels are no longer rolling, release enough pressure on the brakes to get the wheels rolling again. This restores steering control. Push the brake pedal down steadily when you have to stop suddenly. As long as the wheels are rolling, you will have steering control.

## Off-Road Driving

This off-road guide is for vehicles that have all-wheel drive. If your vehicle does not have all-wheel drive, you should not drive off-road unless you are on a level, solid surface.

Many of the same design features that help make your vehicle responsive on paved roads during poor weather conditions — features like all-wheel drive — help make it much better suited for off-road use. Its higher ground clearance also helps your vehicle step over some off-road obstacles. But your vehicle does not have features like special underbody shielding and a transfer case low gear range, things that are usually thought necessary for extended or severe off-road service.

Also, see *Braking on page 234*.

The airbag system is designed to work properly under a wide range of conditions, including off-road usage. Observe safe driving speeds, especially on rough terrain. As always, wear your safety belt.

Off-road driving can be great fun. But it does have some definite hazards. The greatest of these is the terrain itself.

“Off-roading” means you have left the North American road system behind. Traffic lanes are not marked. Curves are not banked. There are no road signs. Surfaces can be slippery, rough, uphill, or downhill. In short, you have gone right back to nature.

Off-road driving involves some new skills. And that is why it is very important that you read this guide. You will find many driving tips and suggestions. These will help make your off-road driving safer and more enjoyable.

### Before You Go Off-Roading

There are some things to do before you go out. For example, be sure to have all necessary maintenance and service work done. Is there enough fuel? Is the spare tire fully inflated? Are the fluid levels up where they should be? What are the local laws that apply to off-roading where you will be driving? If you do not know, you should check with law enforcement people in the area. Will you be on someone’s private land? If so, be sure to get the necessary permission.

## Loading Your Vehicle for Off-Road Driving

### CAUTION:

- **Cargo on the load floor piled higher than the seatbacks can be thrown forward during a sudden stop. You or your passengers could be injured. Keep cargo below the top of the seatbacks.**
- **Unsecured cargo on the load floor can be tossed about when driving over rough terrain. You or your passengers can be struck by flying objects. Secure the cargo properly.**
- **Heavy loads on the roof raise the vehicle's center of gravity, making it more likely to roll over. You can be seriously or fatally injured if the vehicle rolls over. Put heavy loads inside the cargo area, not on the roof. Keep cargo in the cargo area as far forward and low as possible.**

There are some important things to remember about how to load your vehicle.

- The heaviest things should be on the load floor and forward of the rear axle. Put heavier items as far forward as you can.
- Be sure the load is secured properly, so driving on the off-road terrain does not toss things around.

You will find other important information in this manual. See *Loading Your Vehicle* on page 279, *Roof Rack System* on page 134, and *Tires* on page 366.

## Environmental Concerns

Off-road driving can provide wholesome and satisfying recreation. However, it also raises environmental concerns. We recognize these concerns and urge every off-roader to follow these basic rules for protecting the environment:

- Always use established trails, roads, and areas that have been specially set aside for public off-road recreational driving; obey all posted regulations.
- Avoid any driving practice that could damage the environment — shrubs, flowers, trees, grasses — or disturb wildlife. This includes wheel-spinning, breaking down trees, or unnecessary driving through streams or over soft ground.
- Always carry a litter bag — make sure all refuse is removed from any campsite before leaving.

- Take extreme care with open fires where permitted, camp stoves, and lanterns.
- Never park your vehicle over dry grass or other combustible materials that could catch fire from the heat of the vehicle's exhaust system.

## Traveling to Remote Areas

It makes sense to plan your trip, especially when going to a remote area. Know the terrain and plan your route. You are much less likely to get bad surprises. Get accurate maps of trails and terrain. Try to learn of any blocked or closed roads.

It is also a good idea to travel with at least one other vehicle. If something happens to one of them, the other can help quickly.

## Getting Familiar with Off-Road Driving

It is a good idea to practice in an area that is safe and close to home before you go into the wilderness. Off-road driving does require some new and different driving skills. Here is what we mean.

Tune your senses to different kinds of signals. Your eyes, for example, need to constantly sweep the terrain for unexpected obstacles. Your ears need to listen for unusual tire or engine sounds. With your arms, hands, feet, and body, you will need to respond to vibrations and vehicle bounce.

Controlling your vehicle is the key to successful off-road driving. One of the best ways to control your vehicle is to control your speed.

Here are some things to keep in mind. At higher speeds:

- You approach things faster and you have less time to scan the terrain for obstacles.
- You have less time to react.
- You have more vehicle bounce when you drive over obstacles.
- You will need more distance for braking, especially since you are on an unpaved surface.

### CAUTION:

**When you are driving off-road, bouncing and quick changes in direction can easily throw you out of position. This could cause you to lose control and crash. So, whether you are driving on or off the road, you and your passengers should wear safety belts.**

## Scanning the Terrain

Off-road driving can take you over many different kinds of terrain. You need to be familiar with the terrain and its many different features. Here are some things to consider.

**Surface Conditions:** Off-roading can take you over hard-packed dirt, gravel, rocks, grass, sand, mud, snow, or ice. Each of these surfaces affects the steering, acceleration, and braking of your vehicle in different ways. Depending upon the kind of surface you are on, you may experience slipping, sliding, wheel spinning, delayed acceleration, poor traction, and longer braking distances.

**Surface Obstacles:** Unseen or hidden obstacles can be hazardous. A rock, log, hole, rut, or bump can startle you if you are not prepared for them. Often these obstacles are hidden by grass, bushes, snow, or even the rise and fall of the terrain itself. Here are some things to consider:

- Is the path ahead clear?
- Will the surface texture change abruptly up ahead?
- Does the travel take you uphill or downhill? There is more discussion of these subjects later.
- Will you have to stop suddenly or change direction quickly?

When you drive over obstacles or rough terrain, keep a firm grip on the steering wheel. Ruts, troughs, or other surface features can jerk the wheel out of your hands if you are not prepared.

When you drive over bumps, rocks, or other obstacles, the wheels can leave the ground. If this happens, even with one or two wheels, you cannot control the vehicle as well or at all.

Because you will be on an unpaved surface, it is especially important to avoid sudden acceleration, sudden turns, or sudden braking.

In a way, off-road driving requires a different kind of alertness from driving on paved roads and highways. There are no road signs, posted speed limits, or signal lights. You have to use your own good judgment about what is safe and what is not.

Drinking and driving can be very dangerous on any road. And this is certainly true for off-road driving. At the very time you need special alertness and driving skills, your reflexes, perceptions, and judgment can be affected by even a small amount of alcohol. You could have a serious — or even fatal — accident if you drink and drive or ride with a driver who has been drinking. See *Drunken Driving on page 231*.

## Driving on Off-Road Hills

Off-road driving often takes you up, down, or across a hill. Driving safely on hills requires good judgment and understanding of what your vehicle can and cannot do. There are some hills that simply cannot be driven, no matter how well built the vehicle.

### CAUTION:

**Many hills are simply too steep for any vehicle. If you drive up them, you will stall. If you drive down them, you cannot control your speed. If you drive across them, you will roll over. You could be seriously injured or killed. If you have any doubt about the steepness, do not drive the hill.**

## Approaching a Hill

When you approach a hill, you need to decide if it is one of those hills that is just too steep to climb, descend, or cross. Steepness can be hard to judge. On a very small hill, for example, there may be a smooth, constant incline with only a small change in elevation where you can easily see all the way to the top. On a large hill, the incline may get steeper as you near the top, but you may not see this because the crest of the hill is hidden by bushes, grass, or shrubs.

Here are some other things to consider as you approach a hill.

- Is there a constant incline, or does the hill get sharply steeper in places?
- Is there good traction on the hillside, or will the surface cause tire slipping?
- Is there a straight path up or down the hill so you will not have to make turning maneuvers?
- Are there obstructions on the hill that can block your path, such as boulders, trees, logs, or ruts?
- What is beyond the hill? Is there a cliff, an embankment, a drop-off, a fence? Get out and walk the hill if you do not know. It is the smart way to find out.
- Is the hill simply too rough? Steep hills often have ruts, gullies, troughs, and exposed rocks because they are more susceptible to the effects of erosion.

## Driving Uphill

Once you decide you can safely drive up the hill, you need to take some special steps.

- Use a low gear and get a firm grip on the steering wheel.
- Get a smooth start up the hill and try to maintain speed. Do not use more power than you need, because you do not want the wheels to start spinning or sliding.

### CAUTION:

**Turning or driving across steep hills can be dangerous. You could lose traction, slide sideways, and possibly roll over. You could be seriously injured or killed. When driving up hills, always try to go straight up.**

- Try to drive straight up the hill if at all possible. If the path twists and turns, you might want to find another route.

- Ease up on the speed as you approach the top of the hill.
- Attach a flag to the vehicle to make it more visible to approaching traffic on trails or hills.
- Sound the horn as you approach the top of the hill to let opposing traffic know you are there.
- Use your headlamps even during the day. They make your vehicle more visible to oncoming traffic.

### CAUTION:

**Driving to the top (crest) of a hill at full speed can cause an accident. There could be a drop-off, embankment, cliff, or even another vehicle. You could be seriously injured or killed. As you near the top of a hill, slow down and stay alert.**

**Q: What should I do if my vehicle stalls, or is about to stall, and I cannot make it up the hill?**

**A:** If this happens, there are some things you should do, and there are some things you must not do. First, here is what you *should* do:

- Push the brake pedal to stop the vehicle and keep it from rolling backwards. Also, apply the parking brake.
- If the engine is still running, shift the transaxle to REVERSE (R), release the parking brake, and slowly back down the hill in REVERSE (R).
- If the engine has stopped running, you will need to restart it. With the brake pedal pressed and the parking brake still applied, shift the transaxle to PARK (P), or shift to NEUTRAL if you have a manual transaxle, and restart the engine. Then shift to REVERSE (R), release the parking brake, and slowly back down the hill as straight as possible in REVERSE (R).

- As you are backing down the hill, put your left hand on the steering wheel at the 12 o'clock position. This way you will be able to tell if the wheels are straight and maneuver as you back down. It is best that you back down the hill with the wheels straight rather than in the left or right direction. Turning the wheel too far to the left or right will increase the possibility of a rollover.

Here are some things you *must not* do if you stall, or are about to stall, when going up a hill.

- Never attempt to prevent a stall by shifting into NEUTRAL (N), or pressing the clutch if you have a manual transaxle, to rev-up the engine and regain forward momentum. This will not work. Your vehicle will roll backwards very quickly and you could go out of control. Instead, apply the regular brake to stop the vehicle. Then apply the parking brake. Shift to REVERSE (R), release the parking brake, and slowly back straight down.
- Never attempt to turn around if you are about to stall when going up a hill. If the hill is steep enough to stall your vehicle, it is steep enough to cause it to roll over if you turn around. If you cannot make it up the hill you must back straight down the hill.

**Q: Suppose, after stalling, I try to back down the hill and decide I just cannot do it. What should I do?**

**A:** Set the parking brake, put your transaxle in PARK (P), or FIRST (1) if your vehicle has a manual transaxle, and turn off the engine. Leave the vehicle and go get some help. Exit on the uphill side and stay clear of the path the vehicle would take if it rolled downhill.

## Driving Downhill

When off-roading takes you downhill, you will want to consider a number of things:

- How steep is the downhill? Will I be able to maintain vehicle control?
- What is the surface like? Smooth? Rough? Slippery? Hard-packed dirt? Gravel?
- Are there hidden surface obstacles? Ruts? Logs? Boulders?
- What is at the bottom of the hill? Is there a hidden creek bank or even a river bottom with large rocks?

If you decide you can go down a hill safely, then try to keep your vehicle headed straight down, and use a low gear. This way, engine drag can help the brakes and they will not have to do all the work. Descend slowly, keeping your vehicle under control at all times.

### **CAUTION:**

**Heavy braking when going down a hill can cause your brakes to overheat and fade. This could cause loss of control and a serious accident. Apply the brakes lightly when descending a hill and use a low gear to keep vehicle speed under control.**

**Q: Are there some things I should not do when driving down a hill?**

**A:** Yes! These are important because if you ignore them you could lose control and have a serious accident.

- When driving downhill, avoid turns that take you across the incline of the hill. A hill that is not too steep to drive down may be too steep to drive across. Your vehicle could roll over if you do not drive straight down.
- Never go downhill with the transaxle in NEUTRAL (N). This is called “free wheeling.” The brakes will have to do all the work and could overheat and fade.
- Unless your vehicle has anti-lock brakes, avoid braking so hard that you lock the wheels when going downhill. If the wheels are locked, you cannot steer your vehicle. If the wheels lock up during downhill braking, you may feel the vehicle starting to slide sideways. To regain your direction, just ease off the brakes and steer to keep the front of the vehicle pointing straight downhill.

**Q: Am I likely to stall when going downhill?**

**A:** It is much more likely to happen going uphill. But if it happens going downhill, here is what to do.

1. Stop your vehicle by applying the regular brakes. Apply the parking brake.
2. Shift to PARK (P), or NEUTRAL if you have a manual transaxle, and, while still braking, restart the engine.
3. Shift back to a low gear, release the parking brake, and drive straight down.
4. If the engine will not start, get out and get help.

## Driving Across an Incline

Sooner or later, an off-road trail will probably go across the incline of a hill. If this happens, you have to decide whether to try to drive across the incline. Here are some things to consider:

### CAUTION:

**Driving across an incline that is too steep will make your vehicle roll over. You could be seriously injured or killed. If you have any doubt about the steepness of the incline, do not drive across it. Find another route instead.**

- A hill that can be driven straight up or down may be too steep to drive across. When you go straight up or down a hill, the length of the wheel base — the distance from the front wheels to the rear wheels — reduces the likelihood the vehicle will tumble end over end.

But when you drive across an incline, the much more narrow track width — the distance between the left and right wheels — may not prevent the vehicle from tilting and rolling over. Also, driving across an incline puts more weight on the downhill wheels. This could cause a downhill slide or a rollover.

- Surface conditions can be a problem when you drive across a hill. Loose gravel, muddy spots, or even wet grass can cause your tires to slip sideways, downhill. If the vehicle slips sideways, it can hit something that will trip it — a rock, a rut, etc. — and roll over.
- Hidden obstacles can make the steepness of the incline even worse. If you drive across a rock with the uphill wheels, or if the downhill wheels drop into a rut or depression, your vehicle can tilt even more.

For reasons like these, you need to decide carefully whether to try to drive across an incline. Just because the trail goes across the incline does not mean you have to drive it. The last vehicle to try it might have rolled over.

**Q:** What if I am driving across an incline that is not too steep, but I hit some loose gravel and start to slide downhill. What should I do?

**A:** If you feel your vehicle starting to slide sideways, turn downhill. This should help straighten out the vehicle and prevent the side slipping. However, a much better way to prevent this is to get out and “walk the course” so you know what the surface is like before you drive it.

## Stalling on an Incline

### **CAUTION:**

**Getting out on the downhill (low) side of a vehicle stopped across an incline is dangerous. If the vehicle rolls over, you could be crushed or killed. Always get out on the uphill (high) side of the vehicle and stay well clear of the rollover path.**

If your vehicle stalls when you are crossing an incline, be sure you, and any passengers, get out on the uphill side, even if the door there is harder to open. If you get out on the downhill side and the vehicle starts to roll over, you will be right in its path.

If you have to walk down the slope, stay out of the path the vehicle will take if it does roll over.

## Driving in Mud, Sand, Snow, or Ice

When you drive in mud, snow, or sand, the wheels will not get good traction. You cannot accelerate as quickly, turning is more difficult, and you will need longer braking distances.

It is best to use a low gear when you are in mud —the deeper the mud, the lower the gear. In really deep mud, the idea is to keep your vehicle moving so you do not get stuck.

When you drive on sand, you will sense a change in wheel traction. But it will depend upon how loosely packed the sand is. On loosely packed sand, such as on beaches or sand dunes, your tires will tend to sink into the sand. This has an effect on steering, accelerating, and braking. Drive at a reduced speed and avoid sharp turns or abrupt maneuvers.

Hard packed snow and ice offer the worst tire traction. On these surfaces, it is very easy to lose control. On wet ice, for example, the traction is so poor that you will have difficulty accelerating. And, if you do get moving, poor steering and difficult braking can cause you to slide out of control.

### CAUTION:

**Driving on frozen lakes, ponds, or rivers can be dangerous. Underwater springs, currents under the ice, or sudden thaws can weaken the ice. Your vehicle could fall through the ice and you and your passengers could drown. Drive your vehicle on safe surfaces only.**

## Driving in Water

### **CAUTION:**

**Driving through rushing water can be dangerous. Deep water can sweep your vehicle downstream and you and your passengers could drown. If it is only shallow water, it can still wash away the ground from under your tires, and you could lose traction and roll the vehicle over. Do not drive through rushing water.**

Heavy rain can mean flash flooding, and flood waters demand extreme caution.

Find out how deep the water is before you drive through it. If it is deep enough to cover the wheel hubs, axles, or exhaust pipe, do not try it — you probably will not get through. Also, water that deep can damage the axle and other vehicle parts.

If the water is not too deep, drive slowly through it. At faster speeds, water splashes on the ignition system and your vehicle can stall. Stalling can also occur if you get the tailpipe under water. And, as long as the tailpipe is under water, you will never be able to start the engine. When you go through water, remember that when the brakes get wet, it may take you longer to stop.

See *Driving in Rain and on Wet Roads on page 264* for more information on driving through water.

## After Off-Road Driving

Remove any brush or debris that has collected on the underbody, chassis, or under the hood. These accumulations can be a fire hazard.

After operation in mud or sand, have the brake linings cleaned and checked. These substances can cause glazing and uneven braking. Check the body structure, steering, suspension, wheels, tires, and exhaust system for damage. Also, check the fuel lines and cooling system for any leakage.

Your vehicle will require more frequent service due to off-road use. Refer to the Maintenance Schedule for additional information.

## Driving at Night

Night driving is more dangerous than day driving. One reason is that some drivers are likely to be impaired — by alcohol or drugs, with night vision problems, or by fatigue.

Here are some tips on night driving.

- Drive defensively.
- Do not drink and drive.
- Adjust the inside rearview mirror to reduce the glare from headlamps behind you.
- Since you cannot see as well, slow down and keep more space between you and other vehicles.
- Slow down, especially on higher speed roads. Your vehicle's headlamps can light up only so much road ahead.
- In remote areas, watch for animals.
- If you are tired, pull off the road in a safe place and rest.

No one can see as well at night as in the daytime. But as we get older these differences increase. A 50-year-old driver might require at least twice as much light to see the same thing at night as a 20-year-old.

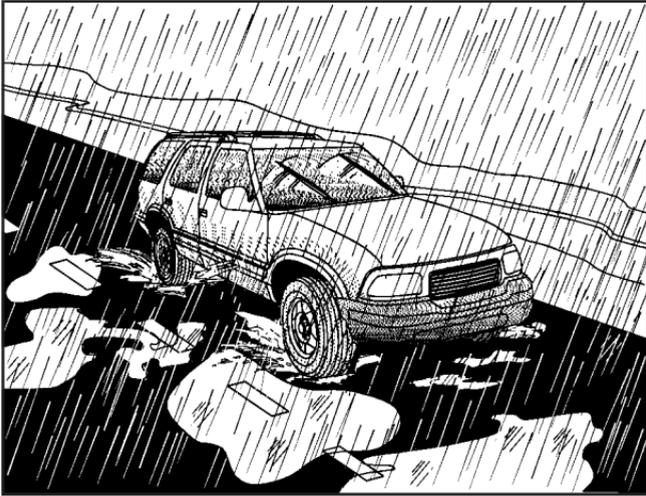
What you do in the daytime can also affect your night vision. For example, if you spend the day in bright sunshine you are wise to wear sunglasses. Your eyes will have less trouble adjusting to night. But if you are driving, do not wear sunglasses at night. They might cut down on glare from headlamps, but they also make a lot of things invisible.

You can be temporarily blinded by approaching headlamps. It can take a second or two, or even several seconds, for your eyes to re-adjust to the dark. When you are faced with severe glare, as from a driver who does not lower the high beams, or a vehicle with misaimed headlamps, slow down a little. Avoid staring directly into the approaching headlamps.

Keep the windshield and all the glass on your vehicle clean — inside and out. Glare at night is made much worse by dirt on the glass. Even the inside of the glass can build up a film caused by dust. Dirty glass makes lights dazzle and flash more than clean glass would, making the pupils of your eyes contract repeatedly.

Remember that the headlamps light up far less of a roadway when you are in a turn or curve. Keep your eyes moving; that way, it is easier to pick out dimly lighted objects. Just as the headlamps should be checked regularly for proper aim, so should your eyes be examined regularly. Some drivers suffer from night blindness — the inability to see in dim light — and are not even aware of it.

## Driving in Rain and on Wet Roads



Rain and wet roads can mean driving trouble. On a wet road, you cannot stop, accelerate, or turn as well because your tire-to-road traction is not as good as on dry roads.

And, if your tires do not have much tread left, you will get even less traction. It is always wise to go slower and be cautious if rain starts to fall while you are driving. The surface may get wet suddenly when your reflexes are tuned for driving on dry pavement.

The heavier the rain, the harder it is to see. Even if your windshield wiper blades are in good shape, a heavy rain can make it harder to see road signs and traffic signals, pavement markings, the edge of the road, and even people walking.

It is wise to keep your wiping equipment in good shape and keep your windshield washer fluid reservoir filled with washer fluid. Replace your windshield wiper inserts when they show signs of streaking or missing areas on the windshield, or when strips of rubber start to separate from the inserts.

 **CAUTION:**

**Wet brakes can cause accidents. They may not work as well in a quick stop and may cause pulling to one side. You could lose control of the vehicle.**

**After driving through a large puddle of water or a car wash, apply the brake pedal lightly until the brakes work normally.**

Driving too fast through large water puddles or even going through some car washes can cause problems, too. The water may affect your brakes. Try to avoid puddles. But if you cannot, try to slow down before you hit them.

## Hydroplaning

Hydroplaning is dangerous. So much water can build up under your tires that they can actually ride on the water. This can happen if the road is wet enough and you are going fast enough. When your vehicle is hydroplaning, it has little or no contact with the road.

Hydroplaning does not happen often. But it can if your tires do not have much tread or if the pressure in one or more is low. It can happen if a lot of water is standing on the road. If you can see reflections from trees, telephone poles, or other vehicles, and raindrops dimple the water's surface, there could be hydroplaning.

Hydroplaning usually happens at higher speeds. There just is not a hard and fast rule about hydroplaning. The best advice is to slow down when it is raining.

## Driving Through Deep Standing Water

**Notice:** If you drive too quickly through deep puddles or standing water, water can come in through the engine's air intake and badly damage the engine. Never drive through water that is slightly lower than the underbody of your vehicle. If you cannot avoid deep puddles or standing water, drive through them very slowly.

## Driving Through Flowing Water

### CAUTION:

**Flowing or rushing water creates strong forces. If you try to drive through flowing water, as you might at a low water crossing, your vehicle can be carried away. As little as six inches of flowing water can carry away a smaller vehicle.**

**CAUTION: (Continued)**

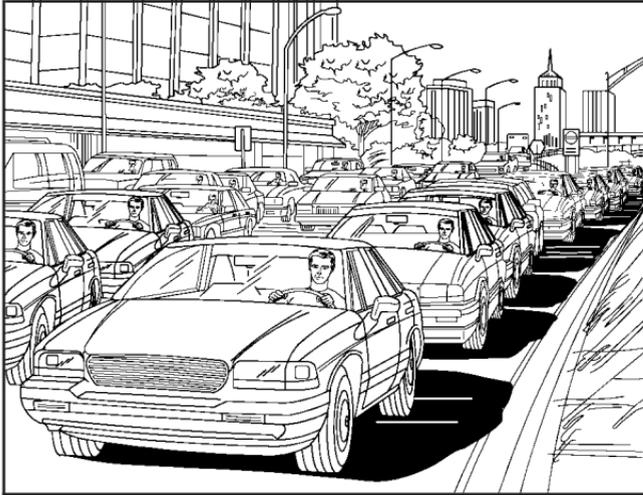
### CAUTION: (Continued)

**If this happens, you and other vehicle occupants could drown. Do not ignore police warning signs, and otherwise be very cautious about trying to drive through flowing water.**

## Some Other Rainy Weather Tips

- Besides slowing down, allow some extra following distance. And be especially careful when you pass another vehicle. Allow yourself more clear room ahead, and be prepared to have your view restricted by road spray.
- Have good tires with proper tread depth. See *Tires on page 366*.

## City Driving



One of the biggest problems with city streets is the amount of traffic on them. You will want to watch out for what the other drivers are doing and pay attention to traffic signals.

Here are ways to increase your safety in city driving:

- Know the best way to get to where you are going. Get a city map and plan your trip into an unknown part of the city just as you would for a cross-country trip.
- Try to use the freeways that rim and crisscross most large cities. You will save time and energy. See *Freeway Driving* on page 268.
- Treat a green light as a warning signal. A traffic light is there because the corner is busy enough to need it. When a light turns green, and just before you start to move, check both ways for vehicles that have not cleared the intersection or may be running the red light.

## Freeway Driving



Mile for mile, freeways — also called thruways, parkways, expressways, turnpikes, or superhighways — are the safest of all roads. But they have their own special rules.

The most important advice on freeway driving is: Keep up with traffic and keep to the right. Drive at the same speed most of the other drivers are driving. Too-fast or too-slow driving breaks a smooth traffic flow. Treat the left lane on a freeway as a passing lane.

At the entrance, there is usually a ramp that leads to the freeway. If you have a clear view of the freeway as you drive along the entrance ramp, you should begin to check traffic. Try to determine where you expect to blend with the flow. Try to merge into the gap at close to the prevailing speed. Switch on your turn signal, check your mirrors, and glance over your shoulder as often as necessary. Try to blend smoothly with the traffic flow.

Once you are on the freeway, adjust your speed to the posted limit or to the prevailing rate if it is slower. Stay in the right lane unless you want to pass.

Before changing lanes, check your mirrors. Then use your turn signal.

Just before you leave the lane, glance quickly over your shoulder to make sure there is not another vehicle in your blind spot.

Once you are moving on the freeway, make certain you allow a reasonable following distance. Expect to move slightly slower at night.

When you want to leave the freeway, move to the proper lane well in advance. If you miss your exit, do not, under any circumstances, stop and back up. Drive on to the next exit.

The exit ramp can be curved, sometimes quite sharply. The exit speed is usually posted.

Reduce your speed according to your speedometer, not to your sense of motion. After driving for any distance at higher speeds, you may tend to think you are going slower than you actually are.

## Before Leaving on a Long Trip

Make sure you are ready. Try to be well rested. If you must start when you are not fresh — such as after a day's work — do not plan to make too many miles that first part of the journey. Wear comfortable clothing and shoes you can easily drive in.

Is your vehicle ready for a long trip? If you keep it serviced and maintained, it is ready to go. If it needs service, have it done before starting out.

Of course, you will find experienced and able service experts at dealers/retailers all across the United States and Canada. They are ready and willing to help if you need it.

Here are some things you can check before a trip:

- *Windshield Washer Fluid:* Is the reservoir full? Are all windows clean inside and outside?
- *Wiper Blades:* Are they in good shape?
- *Fuel, Engine Oil, Other Fluids:* Have you checked all levels?
- *Lamps:* Are they all working? Are the lenses clean?
- *Tires:* They are vitally important to a safe, trouble-free trip. Is the tread good enough for long-distance driving? Are the tires all inflated to the recommended pressure?
- *Weather Forecasts:* What is the weather outlook along your route? Should you delay your trip a short time to avoid a major storm system?
- *Maps:* Do you have up-to-date maps?

## Highway Hypnosis

Is there actually such a condition as highway hypnosis? Or is it just plain falling asleep at the wheel? Call it highway hypnosis, lack of awareness, or whatever.

There is something about an easy stretch of road with the same scenery, along with the hum of the tires on the road, the drone of the engine, and the rush of the wind against the vehicle that can make you sleepy. Do not let it happen to you! If it does, your vehicle can leave the road in less than a second, and you could crash and be injured.

What can you do about highway hypnosis? First, be aware that it can happen.

Then here are some tips:

- Make sure your vehicle is well ventilated, with a comfortably cool interior.
- Keep your eyes moving. Scan the road ahead and to the sides. Check your rearview mirrors and your instruments frequently.

- If you get sleepy, pull off the road into a rest, service, or parking area and take a nap, get some exercise, or both. For safety, treat drowsiness on the highway as an emergency.

## Hill and Mountain Roads



Driving on steep hills or mountains is different from driving in flat or rolling terrain.

If you drive regularly in steep country, or if you are planning to visit there, here are some tips that can make your trips safer and more enjoyable.

- Keep your vehicle in good shape. Check all fluid levels and also the brakes, tires, cooling system, and transaxle. These parts can work hard on mountain roads.

 **CAUTION:**

**If you do not shift down, the brakes could get so hot that they would not work well. You would then have poor braking or even none going down a hill. You could crash. Shift down to let the engine assist the brakes on a steep downhill slope.**

 **CAUTION:**

**Coasting downhill in NEUTRAL (N) or with the ignition off is dangerous. The brakes will have to do all the work of slowing down. They could get so hot that they would not work well. You would then have poor braking or even none going down a hill. You could crash. Always have the engine running and your vehicle in gear when you go downhill.**

- Know how to go down hills. The most important thing to know is this: let your engine do some of the slowing down. Shift to a lower gear when you go down a steep or long hill.
- Know how to go uphill. You may want to shift down to a lower gear. The lower gears help cool your engine and transaxle, and you can climb the hill better.

- Stay in your own lane when driving on two-lane roads in hills or mountains. Do not swing wide or cut across the center of the road. Drive at speeds that let you stay in your own lane.
- As you go over the top of a hill, be alert. There could be something in your lane, like a stalled car or an accident.
- You may see highway signs on mountains that warn of special problems. Examples are long grades, passing or no-passing zones, a falling rocks area, or winding roads. Be alert to these and take appropriate action.

## Winter Driving



Here are some tips for winter driving:

- Have your vehicle in good shape for winter.
- You may want to put winter emergency supplies in your vehicle.

Also see *Tires* on page 366.

Include an ice scraper, a small brush or broom, a supply of windshield washer fluid, a rag, some winter outer clothing, a small shovel, a flashlight, a red cloth, and reflective warning triangles. And, if you will be driving under severe conditions, include a small bag of sand, a piece of old carpet, or a couple of burlap bags to help provide traction. Be sure you properly secure these items in your vehicle.

## Driving on Snow or Ice

Most of the time, those places where the tires meet the road probably have good traction.

However, if there is snow or ice between the tires and the road, you can have a very slippery situation. You will have a lot less traction, or grip, and will need to be very careful.



What is the worst time for this? Wet ice. Very cold snow or ice can be slick and hard to drive on. But wet ice can be even more trouble because it may offer the least traction of all. You can get wet ice when it is about freezing, 32°F (0°C), and freezing rain begins to fall. Try to avoid driving on wet ice until salt and sand crews can get there.

Whatever the condition — smooth ice, packed, blowing, or loose snow — drive with caution.

Accelerate gently. Try not to break the fragile traction. If you accelerate too fast, the drive wheels will spin and polish the surface under the tires even more.

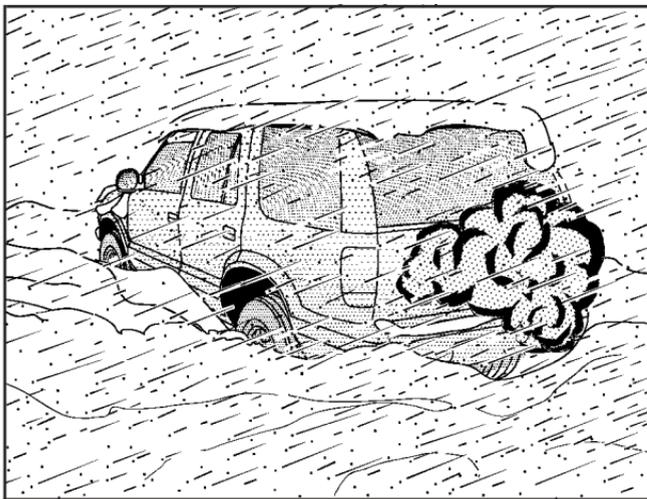
The Anti-Lock Brake System (ABS) improves your vehicle's stability when you make a hard stop on a slippery road. Even though you have ABS, you will want to begin stopping sooner than you would on dry pavement. See *Anti-Lock Brake System (ABS) on page 235*.

- Allow greater following distance on any slippery road.
- Watch for slippery spots. The road might be fine until you hit a spot that is covered with ice. On an otherwise clear road, ice patches may appear in shaded areas where the sun cannot reach, such as around clumps of trees, behind buildings, or under bridges. Sometimes the surface of a curve or an overpass may remain icy when the surrounding roads are clear. If you see a patch of ice ahead of you, brake before you are on it. Try not to brake while you are actually on the ice, and avoid sudden steering maneuvers.

## If You Are Caught in a Blizzard

If you are stopped by heavy snow, you could be in a serious situation. You should probably stay with your vehicle unless you know for sure that you are near help and you can hike through the snow. Here are some things to do to summon help and keep yourself and your passengers safe:

- Turn on your hazard flashers.
- Tie a red cloth to your vehicle to alert police that you have been stopped by the snow.
- Put on extra clothing or wrap a blanket around you. If you do not have blankets or extra clothing, make body insulators from newspapers, burlap bags, rags, floor mats — anything you can wrap around yourself or tuck under your clothing to keep warm.



You can run the engine to keep warm, but be careful.

**⚠ CAUTION:**

**Snow can trap exhaust gases under your vehicle. This can cause deadly CO (carbon monoxide) gas to get inside. CO could overcome you and kill you. You cannot see it or smell it, so you might not know it is in your vehicle. Clear away snow from around the base of your vehicle, especially any that is blocking the exhaust pipe. And check around again from time to time to be sure snow does not collect there.**

**Open a window just a little on the side of the vehicle that is away from the wind. This will help keep CO out.**

Run your engine only as long as you must. This saves fuel. When you run the engine, make it go a little faster than just idle. That is, push the accelerator slightly. This uses less fuel for the heat that you get and it keeps the battery charged.

You will need a well-charged battery to restart the vehicle, and possibly for signaling later on with your headlamps. Let the heater run for a while.

Then, shut the engine off and close the window almost all the way to preserve the heat. Start the engine again and repeat this only when you feel really uncomfortable from the cold. But do it as little as possible. Preserve the fuel as long as you can. To help keep warm, you can get out of the vehicle and do some fairly vigorous exercises every half hour or so until help comes.

## **If Your Vehicle is Stuck in Sand, Mud, Ice, or Snow**

In order to free your vehicle when it is stuck, you will need to spin the wheels, but you do not want to spin your wheels too fast. The method known as rocking can help you get out when you are stuck, but you must use caution.

### **CAUTION:**

**If you let your vehicle's tires spin at high speed, they can explode, and you or others could be injured. And, the transaxle or other parts of the vehicle can overheat. That could cause an engine compartment fire or other damage. When you are stuck, spin the wheels as little as possible. Do not spin the wheels above 35 mph (55 km/h) as shown on the speedometer.**

***Notice:*** Spinning the wheels can destroy parts of your vehicle as well as the tires. If you spin the wheels too fast while shifting the transaxle back and forth, you can destroy the transaxle. See *Rocking Your Vehicle to Get It Out* on page 277.

For information about using tire chains on your vehicle, see *Tire Chains* on page 384.

## Rocking Your Vehicle to Get It Out

First, turn the steering wheel left and right. That will clear the area around the front wheels. If your vehicle has traction control, you should turn the system off. See *Traction Control System (TCS)* on page 238. Then shift back and forth between REVERSE (R) and a forward gear, or with a manual transaxle, between FIRST (1) or SECOND (2) and REVERSE (R), spinning the wheels as little as possible. Release the accelerator pedal while you shift, and press lightly on the accelerator pedal when the transaxle is in gear. By slowly spinning the wheels in the forward and reverse directions, you will cause a rocking motion that may free your vehicle. If that does not get your vehicle out after a few tries, it may need to be towed out. Or, you can use the recovery hook if your vehicle has one. If your vehicle does need to be towed out, see *Towing Your Vehicle* on page 284.

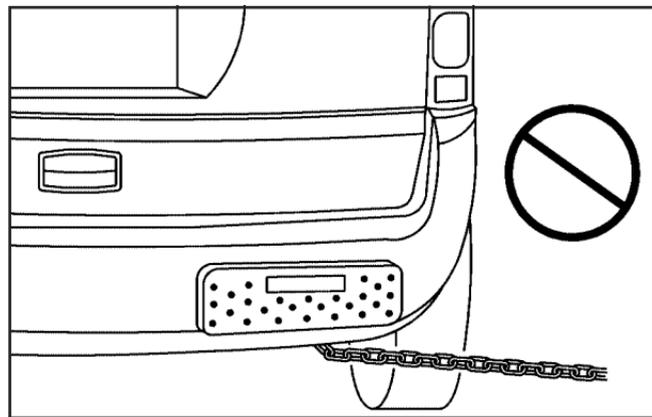
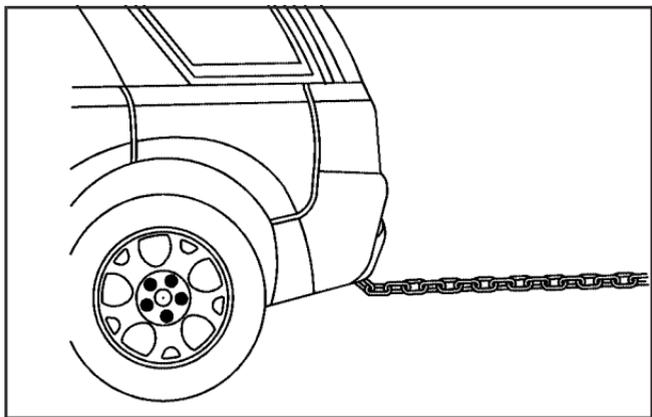
## Recovery Hook

### CAUTION:

**The recovery hook, when used, is under a lot of force. Always pull the vehicle straight out. Never pull on the hook at a sideways angle. The hook could break off and you or others could be injured from the chain or cable snapping back.**

**Notice:** Never use the recovery hook to tow the vehicle. Your vehicle could be damaged and it would not be covered by warranty.

Contact your dealer/retailer if you would like to have a recovery hook installed on your vehicle.



The recovery hook is located at the rear of your vehicle. It can only be used for pulling the vehicle out if it is stuck, not for towing the vehicle.

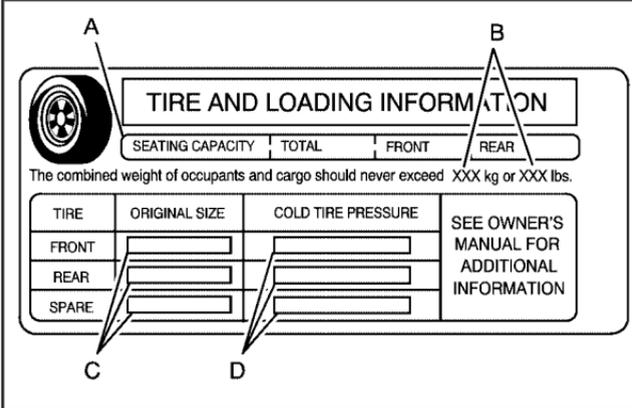
## Loading Your Vehicle

It is very important to know how much weight your vehicle can carry. This weight is called the vehicle capacity weight and includes the weight of all occupants, cargo, and all nonfactory-installed options. Two labels on your vehicle show how much weight it may properly carry, the Tire and Loading Information label and the Certification/Tire label.

### CAUTION:

**Do not load your vehicle any heavier than the Gross Vehicle Weight Rating (GVWR), or either the maximum front or rear Gross Axle Weight Rating (GAWR). If you do, parts on your vehicle can break, and it can change the way your vehicle handles. These could cause you to lose control and crash. Also, overloading can shorten the life of your vehicle.**

## Tire and Loading Information Label



**TIRE AND LOADING INFORMATION**

SEATING CAPACITY TOTAL FRONT REAR

The combined weight of occupants and cargo should never exceed XXX kg or XXX lbs.

TIRE	ORIGINAL SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT			
REAR			
SPARE			

**Example Label**

A vehicle specific Tire and Loading Information label is attached to the center pillar (B-pillar). With the driver's door open, you will find the label attached below the door lock post (striker). The tire and loading information label shows the number of occupant seating positions (A), and the maximum vehicle capacity weight (B) in kilograms and pounds.

The Tire and Loading Information label also shows the size of the original equipment tires (C) and the recommended cold tire inflation pressures (D). For more information on tires and inflation see *Tires on page 366* and *Inflation - Tire Pressure on page 374*.

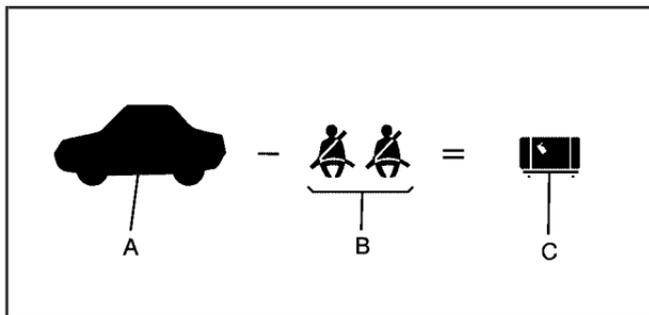
There is also important loading information on the vehicle Certification/Tire label. It tells you the Gross Vehicle Weight Rating (GVWR) and the Gross Axle Weight Rating (GAWR) for the front and rear axle. See “Certification/Tire Label” later in this section.

### **Steps for Determining Correct Load Limit**

1. Locate the statement “The combined weight of occupants and cargo should never exceed XXX lbs” on your vehicle’s placard.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kg or XXX lbs.

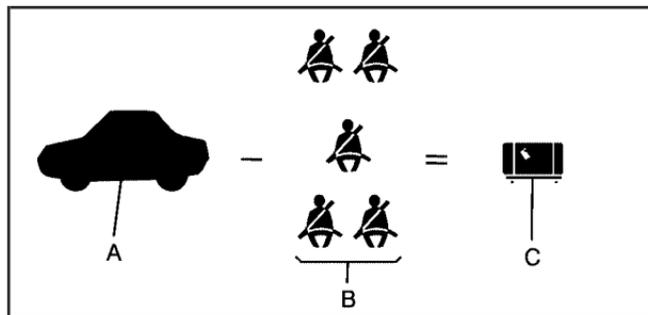
4. The resulting figure equals the available amount of cargo and luggage load capacity. For example, if the “XXX” amount equals 1400 lbs and there will be five 150 lb passengers in your vehicle, the amount of available cargo and luggage load capacity is 650 lbs (1400 – 750 (5 x 150) = 650 lbs).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity calculated in Step 4.
6. If your vehicle will be towing a trailer, the load from your trailer will be transferred to your vehicle. Consult this manual to determine how this reduces the available cargo and luggage load capacity of your vehicle.

See *Towing a Trailer on page 290* for important information on towing a trailer, towing safety rules and trailering tips.



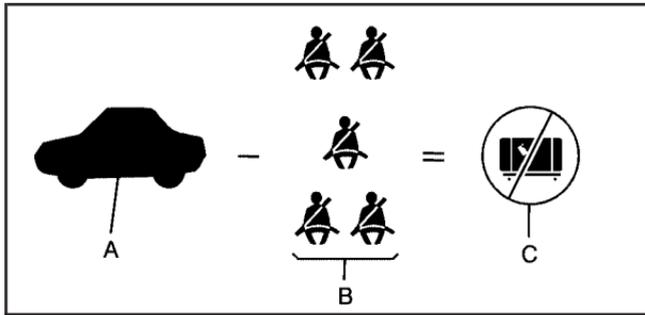
**Example 1**

Item	Description	Total
A	Vehicle Capacity Weight for Example 1 =	1,000 lbs (453 kg)
B	Subtract Occupant Weight $150 \text{ lbs (68 kg)} \times 2 =$	300 lbs (136 kg)
C	Available Occupant and Cargo Weight =	700 lbs (317 kg)



**Example 2**

Item	Description	Total
A	Vehicle Capacity Weight for Example 2 =	1,000 lbs (453 kg)
B	Subtract Occupant Weight $150 \text{ lbs (68 kg)} \times 5 =$	750 lbs (340 kg)
C	Available Occupant and Cargo Weight =	250 lbs (113 kg)



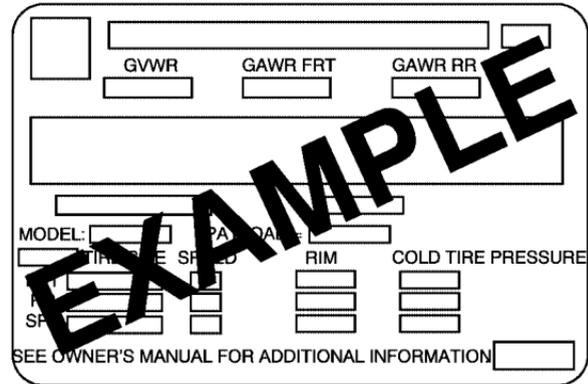
Example 3

Item	Description	Total
A	Vehicle Capacity Weight for Example 3 =	1,000 lbs (453 kg)
B	Subtract Occupant Weight 200 lbs (91 kg) × 5 =	1,000 lbs (453 kg)
C	Available Occupant and Cargo Weight =	0 lbs (0 kg)

Refer to your vehicle's tire and loading information label for specific information about your vehicle's capacity weight and seating positions.

The combined weight of the driver, passengers and cargo should never exceed your vehicle's maximum vehicle capacity weight.

## Certification/Tire Label



A vehicle specific Certification/Tire label is attached to the rear edge of the driver's door. The label shows the gross weight capacity of your vehicle. This is called the Gross Vehicle Weight Rating (GVWR). The GVWR includes the weight of the vehicle, all occupants, fuel, cargo, and trailer tongue weight, if your vehicle is pulling a trailer.

The Certification/Tire label also tells you the maximum weights for the front and rear axles, called Gross Axle Weight Rating (GAWR). To find out the actual loads on your front and rear axles, you need to go to a weigh station and weigh your vehicle. Your retailer can help you with this. Be sure to spread out your load equally on both sides of the centerline.

Never exceed the GVWR for your vehicle, or the GAWR for either the front or rear axle.

Similar looking vehicles may have different GVWRs and payloads. Please consult your vehicle's Certification/Tire label or your retailer for additional details.

 **CAUTION:**

**Do not load your vehicle any heavier than the Gross Vehicle Weight Rating (GVWR), or either the maximum front or rear Gross Axle Weight Rating (GAWR). If you do, parts on your vehicle can break, and it can change the way your vehicle handles. These could cause you to lose control and crash. Also, overloading can shorten the life of your vehicle.**

Using heavier suspension components to get added durability might not change your vehicle's weight ratings. Ask your retailer to help you load your vehicle correctly if you are using these components.

**Notice:** Overloading your vehicle may cause damage. Repairs would not be covered by your warranty. Do not overload your vehicle.

If you put things inside your vehicle — like suitcases, tools, packages, or anything else — they will go as fast as the vehicle goes. If you have to stop or turn quickly, or if there is a crash, they will keep going.

 **CAUTION:**

**Things you put inside your vehicle can strike and injure people in a sudden stop or turn, or in a crash.**

- **Put things in the cargo area of your vehicle. Try to spread the weight evenly.**
- **Never stack heavier things, like suitcases, inside the vehicle so that some of them are above the tops of the seats.**
- **Do not leave an unsecured child restraint in your vehicle.**
- **When you carry something inside the vehicle, secure it whenever you can.**
- **Do not leave a seat folded down unless you need to.**

## Towing

### Towing Your Vehicle

Consult your retailer or a professional towing service if you need to have your disabled vehicle towed. See *Roadside Assistance Program on page 445*.

If you want to tow your vehicle behind another vehicle for recreational purposes (such as behind a motorhome), see “Recreational Vehicle Towing” following.

## Recreational Vehicle Towing

Recreational vehicle towing means towing your vehicle behind another vehicle – such as behind a motorhome. The two most common types of recreational vehicle towing are known as “dinghy towing” (towing your vehicle with all four wheels on the ground) and “dolly towing” (towing your vehicle with two wheels on the ground and two wheels up on a device known as a “dolly”).

With the proper preparation and equipment, many vehicles can be towed in these ways. See “Dinghy Towing” and “Dolly Towing” following in this section.

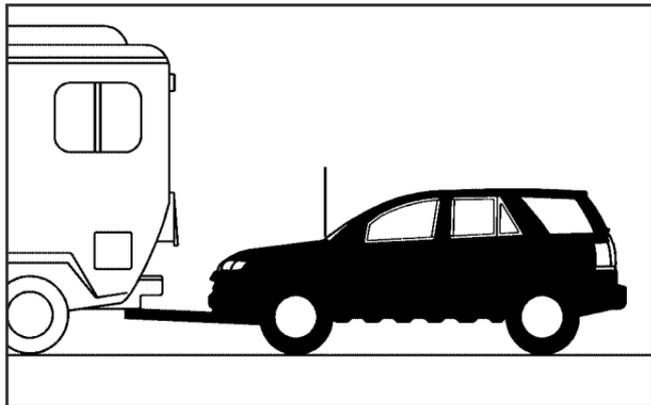
Here are some important things to consider before you do recreational vehicle towing:

- What’s the towing capacity of the towing vehicle? Be sure you read the tow vehicle manufacturer’s recommendations.
- How far will you tow? Some vehicles have restrictions on how far and how long they can tow.
- Do you have the proper towing equipment? See your dealer/retailer or trailering professional for additional advice and equipment recommendations.
- Is your vehicle ready to be towed? Just as you would prepare your vehicle for a long trip, you’ll want to make sure your vehicle is prepared to be towed. See *Before Leaving on a Long Trip* on page 269.

## Dinghy Towing

Front-wheel-drive vehicles equipped with a manual transmission, four-speed automatic transmission or five-speed automatic transmission may be dinghy towed from the front. These vehicles may also be towed by putting the front wheels on a dolly. See “Dolly Towing” later in this section.

All-wheel-drive vehicles with the five-speed automatic transmission can be dinghy towed from the front. You can also tow these vehicles by placing them on a platform trailer with all four wheels off of the ground. These vehicles cannot be towed using a dolly.



To tow your vehicle from the front with all four wheels on the ground, do the following:

1. Position and attach the vehicle to tow it behind the recreational vehicle.
2. Turn the ignition key to ACC.
3. Turn fog lamps and all accessories off.
4. If your vehicle has the manual transmission, shift your transmission to NEUTRAL and let the engine run for three minutes, then turn it off.

If your vehicle has the five-speed automatic transmission, shift your transmission from DRIVE (D) to NEUTRAL (N) and let the engine run for three minutes. Then turn it off.

Due to transmission fluid drain back, the transmission lubrication procedure in Step 4 is required every seven hours after the initial procedure has been completed, regardless of the vehicle being towed or parked. Once the procedure is performed, the transmission is adequately lubricated and can be recreational vehicle towed for seven hours prior to repeating the lubrication procedure.

As an example, if you initially perform the lubrication procedure and tow your vehicle for three hours, then park for four hours, the lubrication procedure will need to be performed again, prior to dinghy towing the vehicle.

**Notice:** Towing your vehicle after shifting the automatic transaxle (four-speed or five-speed) from anything other than DRIVE (D) to NEUTRAL (N) can cause internal damage to the automatic transaxle. Always shift the automatic transaxle (four-speed or five-speed) from DRIVE (D) to NEUTRAL (N) as the last shift before towing.

5. Locate and remove the large IGN fuse from the underhood fuse block. See *Underhood Fuse Block on page 411*.

**Notice:** If you tow your vehicle without performing each of the steps listed under “Dinghy Towing,” you could damage the automatic transmission. Be sure to follow all steps of the dinghy towing procedure prior to and after towing your vehicle.

**Notice:** If your vehicle has a four-speed automatic transmission, it can be dinghy towed from the front for unlimited miles at 65 mph (105 km/h). If you exceed 65 mph (105 km/h) while towing your vehicle, it could be damaged. The repairs would not be covered by your warranty. Never exceed 65 mph (105 km/h) while towing your vehicle.

**Notice:** If your vehicle has a five-speed automatic transmission and it is towed for more than seven hours without performing lubrication process or at speeds greater than 65 mph (105 km/h), you could damage the automatic transmission. The repairs would not be covered by your warranty. Do not tow your vehicle for extended periods of time or at speeds greater than 65 mph (105 km/h).

After seven hours, repeat Step 4 above for the five-speed automatic transmission.

Once you have reached your destination, do the following:

1. Set the parking brake.
2. Shift the transmission to REVERSE (R) for a manual transmission. Shift the transmission to PARK (P) for an automatic transmission.
3. Turn the ignition key to LOCK and remove the key from the ignition.
4. Reinstall the large IGN fuse.

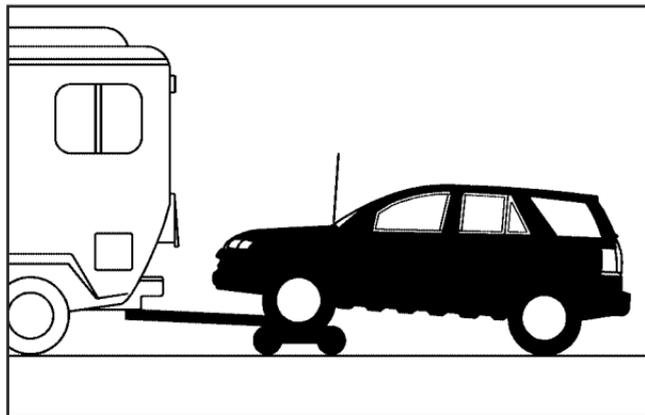
**Notice:** Too much or too little fluid can damage the transmission. Be sure that the transaxle fluid is at the proper level before towing with all four wheels on the ground.

**Notice:** Don't tow a vehicle with the front drive wheels on the ground if one of the front tires is a compact spare tire. Towing with two different tire sizes on the front of the vehicle can cause severe damage to the transmission.

## Dolly Towing (All-Wheel-Drive Vehicles)

All-wheel-drive vehicles should not be towed with two wheels on the ground. To properly tow these vehicles, they should be placed on a platform trailer with all four wheels off of the ground or dinghy towed from the front.

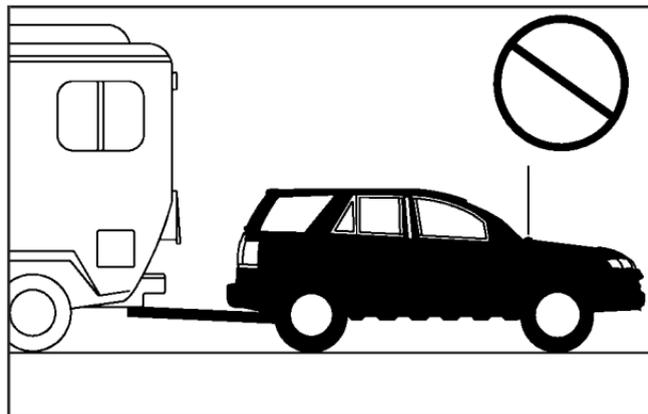
## Dolly Towing (Front-Wheel-Drive Vehicles)



To tow your front-wheel-drive vehicle from the front with two wheels on the ground, do the following:

1. Put the front wheels on a dolly.
2. If you have a five-speed automatic transmission or four-speed automatic transmission, move the shift lever to PARK (P). If you have a manual transmission, move the shift lever to SECOND (2).
3. Set the parking brake and then remove the key.
4. Clamp the steering wheel in a straight-ahead position with a clamping device designed for towing.
5. Release the parking brake.

## Towing Your Vehicle From the Rear



**Notice:** Towing your vehicle from the rear could damage it. Also, repairs would not be covered by the warranty. Never have your vehicle towed from the rear.

Do not tow your vehicle from the rear.

## Towing a Trailer

### CAUTION:

**If you do not use the correct equipment and drive properly, you can lose control when you pull a trailer. For example, if the trailer is too heavy, the brakes may not work well — or even at all. You and your passengers could be seriously injured. You may also damage your vehicle; the resulting repairs would not be covered by your warranty. Pull a trailer only if you have followed all the steps in this section. Ask your dealer/retailer for advice and information about towing a trailer with your vehicle.**

**Notice:** Pulling a trailer improperly can damage your vehicle and result in costly repairs not covered by your warranty. To pull a trailer correctly, follow the advice in this part and see your dealer/retailer for important information about towing a trailer with your vehicle.

Your vehicle can tow a trailer if it is equipped with the proper trailer towing equipment. To identify the trailering capacity of your vehicle, you should read the information in “Weight of the Trailer” that appears later in this section. Trailering is different than just driving your vehicle by itself. Trailering means changes in handling, acceleration, braking, durability and fuel economy. Successful, safe trailering takes correct equipment, and it has to be used properly.

That’s the reason for this part. In it are many time-tested, important trailering tips and safety rules. Many of these are important for your safety and that of your passengers. So please read this section carefully before you pull a trailer.

Load-pulling components such as the engine, transmission, rear axle, wheel assemblies and tires are forced to work harder against the drag of the added weight. The engine is required to operate at relatively higher speeds and under greater loads, generating extra heat. What’s more, the trailer adds considerably to wind resistance, increasing the pulling requirements.

## If You Do Decide to Pull a Trailer

If you do, here are some important points:

- There are many different laws, including speed limit restrictions, having to do with trailering. Make sure your rig will be legal, not only where you live but also where you'll be driving. A good source for this information can be state or provincial police.
- Consider using a sway control. See "Hitches" later in this section.
- Don't tow a trailer at all during the first 500 miles (805 km) your new vehicle is driven. Your engine, axle or other parts could be damaged. The repairs would not be covered by your warranty.
- Then, during the first 500 miles (805 km) that you tow a trailer, don't drive over 50 mph (80 km/h) and don't make starts at full throttle. This helps your engine and other parts of your vehicle wear in at the heavier loads.

- If you have an automatic transmission, you can use INTERMEDIATE (I) or as you need to, a lower gear which will minimize heat buildup and extend the life of your transmission.
- If you have a manual transmission, you should not use FIFTH (5) gear. Drive in FOURTH (4) gear or as you need to a lower gear.
- Obey speed limit restrictions when towing a trailer. Don't drive faster than the maximum posted speed for trailers, or no more than 55 mph (90 km/h), to save wear on your vehicle's parts.
- Don't tow a trailer when the outside temperature is above 100°F (38°C).

Three important considerations have to do with weight:

- the weight of the trailer
- the weight of the trailer tongue
- and the total weight on your vehicle's tires

## Weight of the Trailer

How heavy can a trailer safely be?

It should never weigh more than 1,500 lbs (680 kg). But even that can be too heavy.

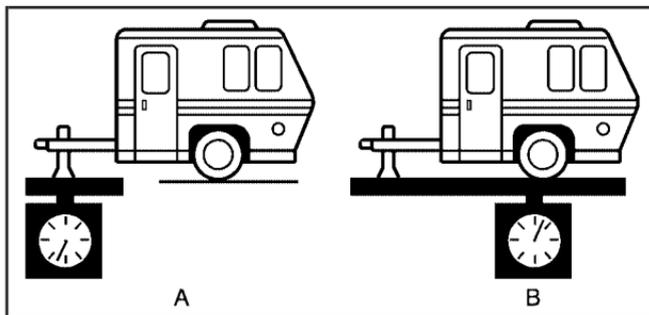
It depends on how you plan to use your rig. For example, speed, altitude, road grades, outside temperature and how much your vehicle is used to pull a trailer are all important. It can also depend on any special equipment that you have on your vehicle, and the amount of tongue weight the vehicle can carry. See “Weight of the Trailer Tongue” later in this section for more information.

Maximum trailer weight is calculated assuming only the driver is in the tow vehicle and it has all the required trailering equipment. The weight of additional optional equipment, passengers and cargo must be subtracted from the maximum trailer weight.

You can ask your retailer for trailering information or advice.

## Weight of the Trailer Tongue

The tongue load (A) of any trailer is an important weight to measure because it affects the total or gross weight of your vehicle. The Gross Vehicle Weight (GVW) includes the curb weight of the vehicle, any cargo you may carry in it, and the people who will be riding in the vehicle. If you have a lot of options, equipment, passengers or cargo in your vehicle, it will reduce the tongue weight your vehicle can carry, which will also reduce the trailer weight your vehicle can tow. And if you tow a trailer, you must add the tongue load to the GVW because your vehicle will be carrying that weight, too. See *Loading Your Vehicle on page 279* for more information about your vehicle’s maximum load capacity.



If you're using a weight-carrying hitch, the trailer tongue (A) should weigh 10 percent of the total loaded trailer weight (B). If you're using a weight-distributing hitch, the trailer tongue (A) should weigh 12 percent of the total loaded trailer weight (B).

After you've loaded your trailer, weigh the trailer and then the tongue, separately, to see if the weights are proper. If they aren't, you may be able to get them right simply by moving some items around in the trailer.

Trailerage may be limited by the vehicle's ability to carry tongue weight. Tongue weight cannot cause the vehicle to exceed the GVWR (Gross Vehicle Weight Rating) or the RGAWR (Rear Gross Axle Weight Rating). The effect of additional weight may reduce your trailerage capacity more than the total of the additional weight.

Consider the following example:

A vehicle model base weight is 5,500 lbs (2 495 kg); 2,800 lbs (1 270 kg) at the front axle and 2,700 lbs (1 225 kg) at the rear axle. It has a GVWR of 7,200 lbs (3 266 kg), a RGAWR of 4,000 lbs (1 814 kg) and a GCWR (Gross Combination Weight Rating) of 14,000 lbs (6 350 kg).

The trailer rating should be:

14,000 lbs (6350 kg)	GCWR
<u>-5,500 lbs (2495 kg)</u>	Vehicle Weight
8,500 lbs (3855 kg)	Trailer Rating

You can expect tongue weight to be at least 10 percent of trailer weight (850 lbs (386 kg)) and because the weight is applied well behind the rear axle, the effect on the rear axle will be greater than just the weight itself, as much as 1.5 times as much. The weight at the rear axle could be 850 lbs (386 kg) X 1.5 = 1,275 lbs (578 kg). Since the rear axle already weighs 2,700 lbs (1 225 kg), adding 1,275 lbs (578 kg) brings the total to 3,975 lbs (1 803 kg). This is very close to, but within the limit for RGAWR as well. The vehicle is set to trailer up to 8,500 lbs (3 856 kg).

But let's say your specific vehicle is equipped with some of the latest options and you have a front seat passenger and two rear seat passengers with some luggage and gear in the vehicle as well.

You may add 300 lbs (136 kg) to the front axle weight and 400 lbs (181 kg) to the rear axle weight. Your vehicle now weighs:

2,800 lbs (1270 kg)	+	300 lbs (136 kg)	Front
<u>2,700 lbs (1225 kg)</u>	+	<u>400 lbs (181 kg)</u>	Rear
6,200 lbs (2812 kg)			Total

Weight is still below 7,200 lbs (3 266 kg) and you may think that you should subtract 700 additional pounds (318 kg) from your trailering capacity to stay within GCWR limits. Your maximum trailer would only be 7,800 lbs (3 538 kg). You may go further and think you must limit tongue weight to less than 1,000 lbs (454 kg) to avoid exceeding GVWR. But, you must still consider the effect on the rear axle. Because your rear axle now weighs 3,100 lbs (1 406 kg), you can only put 900 lbs (408 kg) on the rear axle without exceeding RGAWR. The effect of tongue weight is about 1.5 times the actual weight. Dividing the 900 lbs (408 kg) by 1.5 leaves you with being able to handle only 600 lbs (272 kg) of tongue weight.

Since tongue weight is usually at least 10 percent of total loaded trailer weight, you can expect that the largest trailer your vehicle can properly handle is 6,000 lbs (2 721 kg).

It is important that you make sure your vehicle does not exceed any of its ratings — GCWR, GVWR, RGAWR, Maximum Trailer Rating or Tongue Weight. The only way to be sure you are not exceeding any of these ratings is to weigh your vehicle and trailer.

## **Total Weight on Your Vehicle's Tires**

Be sure your vehicle's tires are inflated to the upper limit for cold tires. You will find these numbers on the Tire and Loading Information label. See *Loading Your Vehicle on page 279*. Then be sure you don't go over the GVW limit for your vehicle or the Gross Axle Weight Rating (GAWR), including the weight of the trailer tongue.

## **Hitches**

It's important to have the correct hitch equipment. Crosswinds, large trucks going by and rough roads are a few reasons why you will need the right hitch. Here are some rules to follow:

- The rear bumper on your vehicle is not intended for hitches. Do not attach rental hitches or other bumper-type hitches to it. Use only a frame-mounted hitch that does not attach to the bumper.
- Will you have to make any holes in the body of your vehicle when you install a trailer hitch? If you do, then be sure to seal the holes later when you remove the hitch. If you don't seal them, deadly carbon monoxide (CO) from your exhaust can get into your vehicle. See *Engine Exhaust on page 123*. Dirt and water can, too.

## Safety Chains

You should always attach chains between your vehicle and your trailer. Cross the safety chains under the tongue of the trailer so that the tongue will not drop to the road if it becomes separated from the hitch. Instructions about safety chains may be provided by the hitch manufacturer or by the trailer manufacturer. Follow the manufacturer's recommendation for attaching safety chains and do not attach them to the bumper. Always leave just enough slack so you can turn with your rig. And, never allow safety chains to drag on the ground.

## Trailer Brakes

If your vehicle has anti-lock brakes, don't try to tap into your vehicle's hydraulic brake system. If you do, both brake systems won't work well, or at all.

Be sure to read and follow the instructions for the trailer brakes, so you'll be able to install, adjust and maintain them properly.

## Driving with a Trailer

Towing a trailer requires a certain amount of experience. Before setting out for the open road, you'll want to get to know your rig. Acquaint yourself with the feel of handling and braking with the added weight of the trailer. And always keep in mind that the vehicle you are driving is now a good deal longer and not nearly as responsive as your vehicle is by itself.

Before you start, check all trailer hitch parts and attachments, safety chains, electrical connector, lamps, tires and mirror adjustment. If the trailer has electric brakes, start your vehicle and trailer moving and then apply the trailer brake controller by hand to be sure the brakes are working. This lets you check your electrical connection at the same time.

During your trip, check occasionally to be sure that the load is secure, and that the lamps and any trailer brakes are still working.

## Following Distance

Stay at least twice as far behind the vehicle ahead as you would when driving your vehicle without a trailer. This can help you avoid situations that require heavy braking and sudden turns.

## Passing

You'll need more passing distance up ahead when you're towing a trailer. And, because you're a good deal longer when towing a trailer, you'll need to go much farther beyond the passed vehicle before you can return to your lane.

## Backing Up

Hold the bottom of the steering wheel with one hand. Then, to move the trailer to the left, just move that hand to the left. To move the trailer to the right, move your hand to the right. Always back up slowly and, if possible, have someone guide you.

## Making Turns

**Notice:** Making very sharp turns while trailering could cause the trailer to come in contact with the vehicle. Your vehicle could be damaged. Avoid making very sharp turns while trailering.

When you're turning with a trailer, make wider turns than normal. Do this so your trailer won't strike soft shoulders, curbs, road signs, trees or other objects. Avoid jerky or sudden maneuvers. Signal well in advance.

## Turn Signals When Towing a Trailer

When you tow a trailer, your vehicle may need a different turn signal flasher and/or extra wiring. See your retailer if you need information. The arrows on your instrument panel will flash whenever you signal a turn or lane change. Properly hooked up, the trailer lamps will also flash, telling other drivers you're about to turn, change lanes or stop.

When towing a trailer, the arrows on your instrument panel will flash for turns even if the bulbs on the trailer are burned out.

Thus, you may think drivers behind you are seeing your signal when they are not. It's important to check occasionally to be sure the trailer bulbs are still working.

## Driving on Grades

**Notice:** Do not tow on steep continuous grades exceeding 6 miles (9.6 km). Extended, higher than normal engine and transmission temperatures may result and damage your vehicle. Frequent stops are very important to allow the engine and transmission to cool.

Reduce speed and shift to a lower gear before you start down a long or steep downgrade. If you don't shift down, you might have to use your brakes so much that they would get hot and no longer work well.

On a long uphill grade, shift down and reduce your speed to around 45 mph (70 km/h) to reduce the possibility of the engine and the transmission overheating. If your engine does overheat, see *Engine Overheating on page 334*.

## Parking on Hills

### CAUTION:

**You really should not park your vehicle, with a trailer attached, on a hill. If something goes wrong, your rig could start to move. People can be injured, and both your vehicle and the trailer can be damaged.**

But if you ever have to park your rig on a hill, here's how to do it:

1. Apply your regular brakes, but don't shift into PARK (P) for an automatic transmission, or into gear for a manual transmission.  
When parking uphill, turn your wheels away from the curb. When parking downhill, turn your wheels into the curb.
2. Have someone place chocks behind the trailer wheels.

3. When the chocks are in place, release the regular brakes until the chocks absorb the load.
4. Reapply the regular brakes. Then apply your parking brake and shift into PARK (P) for an automatic transmission or REVERSE (R) for a manual transmission.
5. Release the regular brakes.

## **When You Are Ready to Leave After Parking on a Hill**

1. Apply your regular brakes and hold the pedal down while you:
  - start your engine,
  - shift into a gear, and
  - release the parking brake.
2. Let up on the brake pedal.
3. Drive slowly until the trailer is clear of the chocks.
4. Stop and have someone pick up and store the chocks.

## **Maintenance When Trailer Towing**

Your vehicle will need service more often when you're pulling a trailer. See *Scheduled Maintenance on page 420* for more information. Things that are especially important in trailer operation are automatic transmission fluid (don't overfill), engine oil, axle lubricant, drive belt, cooling system and brake system. Each of these is covered in this manual, and the Index will help you find them quickly. If you're trailering, it's a good idea to review this information before you start your trip.

Check periodically to see that all hitch nuts and bolts are tight.

## **Engine Cooling When Trailer Towing**

Your cooling system may temporarily overheat during severe operating conditions. See *Engine Overheating on page 334*.

## **Changing a Tire When Trailer Towing**

If you get a flat tire while towing a trailer, be sure to secure the trailer and disconnect it from the vehicle before changing the tire.

## Trailer Wiring

Additional wire length has been provided for connecting trailer wiring to your vehicle. A loop of five wires is stored below the jack, which is located on the driver's side of the cargo area. The wires are fused in both the underhood and instrument fuse block. See *Instrument Panel Fuse Block on page 410* and *Underhood Fuse Block on page 411*.

The wires do not have a connector and should be wired to the trailer by a qualified electrical technician. The technician can use the following information when connecting a trailer wiring harness to your vehicle.

- Yellow: Left Turn Signal
- Brown: Parking Lamps
- Light Blue: Stop Lamps
- Black: Ground Wire
- Dark Green: Right Turn Signal

When connecting a trailer harness, be sure you leave it loose enough so the wiring does not bend or break, but not so loose that it drags on the ground. Store harness below jack in the cargo area when it is not in use. Wrap the harness together and tie it neatly so it will not be damaged.

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## Service

Your Saturn retailer knows your vehicle best and wants you to be happy with it. We hope you will go to your retailer for all your service needs. You will get genuine Saturn parts and Saturn-trained and supported service people.

We hope you will want to keep your Saturn vehicle all Saturn.

Genuine Saturn parts have one of these marks.

***ACDelco***<sup>®</sup>

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## Accessories and Modifications

When you add non-Saturn accessories to your vehicle they can affect your vehicle's performance and safety, including such things as, airbags, braking, stability, ride and handling, emissions systems, aerodynamics, durability, and electronic systems like anti-lock brakes, traction control, and stability control. Some of these accessories may even cause malfunction or damage not covered by warranty.

Saturn accessories are designed to complement and function with other systems on your vehicle. Your Saturn retailer can accessorize your vehicle using genuine Saturn accessories. When you go to your Saturn retailer and ask for Saturn accessories, you will know that Saturn-trained and supported service technicians will perform the work using genuine Saturn accessories.

## California Proposition 65 Warning

Most motor vehicles, including this one, contain and/or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Engine exhaust, many parts and systems (including some inside the vehicle), many fluids, and some component wear by-products contain and/or emit these chemicals.

## Doing Your Own Service Work

### CAUTION:

**You can be injured and your vehicle could be damaged if you try to do service work on a vehicle without knowing enough about it.**

- **Be sure you have sufficient knowledge, experience, the proper replacement parts, and tools before you attempt any vehicle maintenance task.**
- **Be sure to use the proper nuts, bolts, and other fasteners. English and metric fasteners can be easily confused. If you use the wrong fasteners, parts can later break or fall off. You could be hurt.**

If you want to do some of your own service work, you should use the proper service manual. It tells you much more about how to service your vehicle than this manual can. To order the proper service manual, see *Service Publications Ordering Information on page 453*.

Your vehicle has an airbag system. Before attempting to do your own service work, see *Servicing Your Airbag-Equipped Vehicle on page 88*.

You should keep a record with all parts receipts and list the mileage and the date of any service work you perform. See *Maintenance Record on page 436*.

## **Adding Equipment to the Outside of Your Vehicle**

Things you might add to the outside of your vehicle can affect the airflow around it. This may cause wind noise and affect windshield washer performance. Check with your retailer before adding equipment to the outside of your vehicle.

## **Fuel**

Use of the recommended fuel is an important part of the proper maintenance of your vehicle. To help keep the engine clean and maintain optimum vehicle performance, Saturn recommends the use of gasoline advertised as TOP TIER Detergent Gasoline.

## **Gasoline Octane**

Use regular unleaded gasoline with a posted octane rating of 87 or higher. If the octane rating is less than 87, you might notice an audible knocking noise when you drive, commonly referred to as spark knock. If this occurs, use a gasoline rated at 87 octane or higher as soon as possible. If you are using gasoline rated at 87 octane or higher and you hear heavy knocking, the engine needs service.

## **Gasoline Specifications**

At a minimum, gasoline should meet ASTM specification D 4814 in the United States or CAN/CGSB-3.5 in Canada. Some gasolines may contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT). Saturn recommends against the use of gasolines containing MMT. See *Additives on page 307* for additional information.

## California Fuel

If your vehicle is certified to meet California Emissions Standards, it is designed to operate on fuels that meet California specifications. See the underhood emission control label. If this fuel is not available in states adopting California emissions standards, your vehicle will operate satisfactorily on fuels meeting federal specifications, but emission control system performance may be affected. The malfunction indicator lamp may turn on and your vehicle may fail a smog-check test. See *Malfunction Indicator Lamp on page 175*. If this occurs, return to your authorized Saturn retailer for diagnosis. If it is determined that the condition is caused by the type of fuel used, repairs may not be covered by your warranty.

## Additives

To provide cleaner air, all gasolines in the United States are now required to contain additives that will help prevent engine and fuel system deposits from forming, allowing your emission control system to work properly. In most cases, you should not have to add anything to your fuel. However, some gasolines contain only the minimum amount of additive required to meet U.S. Environmental Protection Agency regulations. To help keep fuel injectors and intake valves clean, or if your vehicle experiences problems due to dirty injectors or valves, look for gasoline that is advertised as TOP TIER Detergent Gasoline. Also, your retailer has additives that will help correct and prevent most deposit-related problems.

Gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area. We recommend that you use these gasolines if they comply with the specifications described earlier. However, E85 (85% ethanol) and other fuels containing more than 10% ethanol must not be used in vehicles that were not designed for those fuels.

**Notice:** Your vehicle was not designed for fuel that contains methanol. Do not use fuel containing methanol. It can corrode metal parts in the fuel system and also damage plastic and rubber parts. That damage would not be covered under your warranty.

Some gasolines that are not reformulated for low emissions may contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT); ask the attendant where you buy gasoline whether the fuel contains MMT.

We recommend against the use of such gasolines. Fuels containing MMT can reduce the life of spark plugs and the performance of the emission control system may be affected. The malfunction indicator lamp may turn on. If this occurs, return to your retailer for service.

## Fuels in Foreign Countries

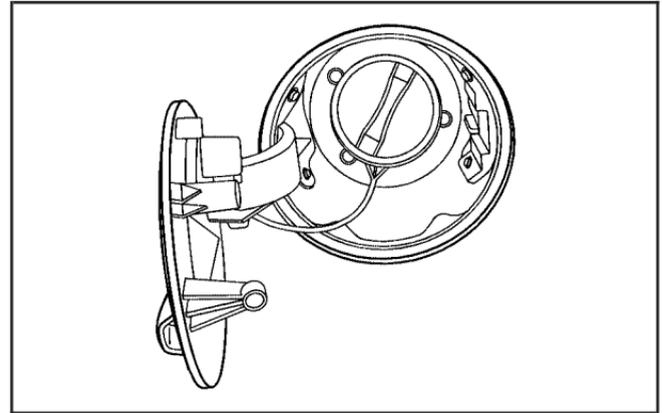
If you plan on driving in another country outside the United States or Canada, the proper fuel might be hard to find. Never use leaded gasoline or any other fuel not recommended in the previous text on fuel. Costly repairs caused by use of improper fuel would not be covered by your warranty.

To check the fuel availability, ask an auto club, or contact a major oil company that does business in the country where you will be driving.

## Filling the Tank

### CAUTION:

Fuel vapor burns violently and a fuel fire can cause bad injuries. To help avoid injuries to you and others, read and follow all the instructions on the pump island. Turn off your engine when you are refueling. Do not smoke if you are near fuel or refueling your vehicle. Do not use cellular phones. Keep sparks, flames, and smoking materials away from fuel. Do not leave the fuel pump unattended when refueling your vehicle. This is against the law in some places. Do not re-enter the vehicle while pumping fuel. Keep children away from the fuel pump; never let children pump fuel.



The tethered fuel cap is located behind a hinged fuel door on the passenger's side of the vehicle.

To remove the fuel cap, turn it slowly counterclockwise. The fuel cap has a spring in it; if the cap is released too soon, it will spring back to the right.

 **CAUTION:**

**Fuel can spray out on you if you open the fuel cap too quickly. If you spill fuel and then something ignites it, you could be badly burned. This spray can happen if your tank is nearly full, and is more likely in hot weather. Open the fuel cap slowly and wait for any hiss noise to stop. Then unscrew the cap all the way.**

Be careful not to spill fuel. Do not top off or overfill the tank and wait a few seconds after you have finished pumping before removing the nozzle. Clean fuel from painted surfaces as soon as possible. See *Washing Your Vehicle on page 402*.

When replacing the fuel cap, turn it clockwise until it clicks. Make sure the cap is fully installed. The diagnostic system can determine if the fuel cap has been left off or improperly installed. This would allow fuel to evaporate into the atmosphere. See *Malfunction Indicator Lamp on page 175*.

 **CAUTION:**

**If a fire starts while you are refueling, do not remove the nozzle. Shut off the flow of fuel by shutting off the pump or by notifying the station attendant. Leave the area immediately.**

**Notice:** If you need a new fuel cap, be sure to get the right type. Your dealer/ retailer can get one for you. If you get the wrong type, it may not fit properly. This may cause your malfunction indicator lamp to light and may damage your fuel tank and emissions system. See *Malfunction Indicator Lamp on page 175*.

## Filling a Portable Fuel Container

### CAUTION:

Never fill a portable fuel container while it is in your vehicle. Static electricity discharge from the container can ignite the gasoline vapor. You can be badly burned and your vehicle damaged if this occurs. To help avoid injury to you and others:

- Dispense gasoline only into approved containers.
- Do not fill a container while it is inside a vehicle, in a vehicle's trunk, pickup bed, or on any surface other than the ground.

CAUTION: (Continued)

### CAUTION: (Continued)

- Bring the fill nozzle in contact with the inside of the fill opening before operating the nozzle. Contact should be maintained until the filling is complete.
- Do not smoke while pumping gasoline.
- Do not use a cellular phone while pumping gasoline.

## Checking Things Under the Hood

### CAUTION:

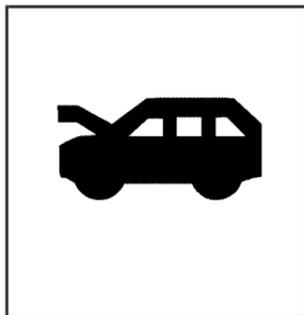
An electric fan under the hood can start up and injure you even when the engine is not running. Keep hands, clothing, and tools away from any underhood electric fan.

### CAUTION:

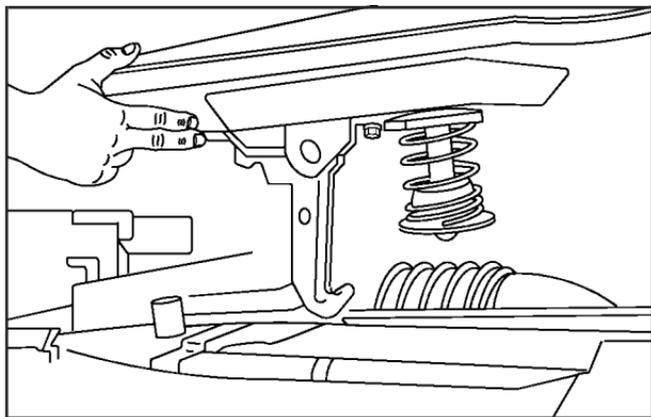
Things that burn can get on hot engine parts and start a fire. These include liquids like fuel, oil, coolant, brake fluid, windshield washer and other fluids, and plastic or rubber. You or others could be burned. Be careful not to drop or spill things that will burn onto a hot engine.

## Hood Release

To open the hood, do the following:



1. Pull the handle with this symbol on it. It is located under the instrument panel on the driver's side of the vehicle.

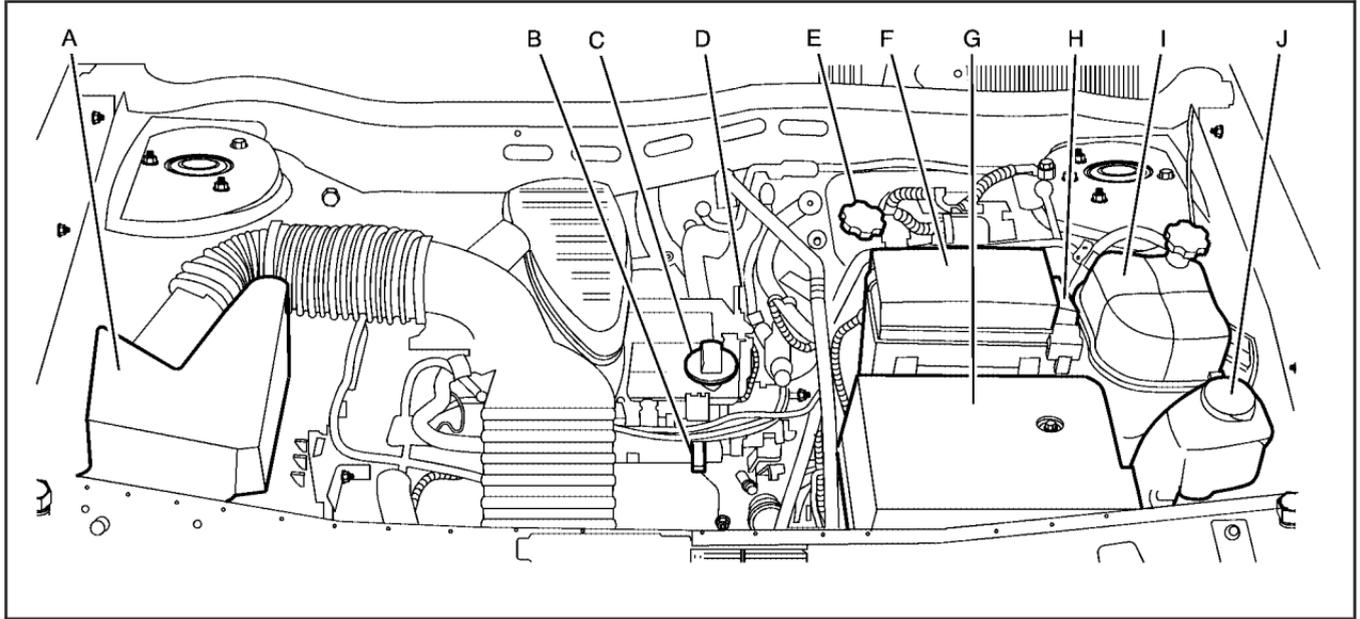


2. Then go to the front of the vehicle and lift up on the secondary hood release lever.
3. Lift the hood.

Before closing the hood, be sure all the filler caps are on properly. Then pull the hood down and close it firmly.

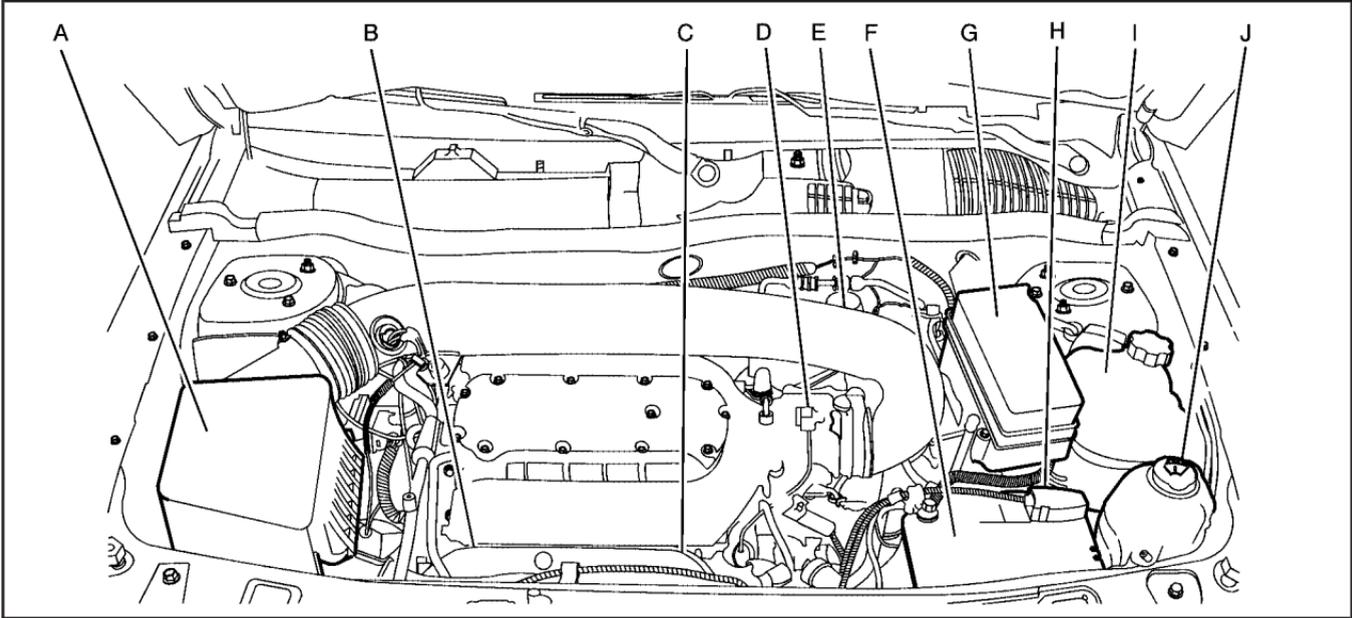
## Engine Compartment Overview

When you open the hood on the 2.2L L4 engine, you will see the following:



- A. Engine Air Cleaner/Filter. See *Engine Air Cleaner/Filter on page 324*.
- B. Engine Oil Dipstick. See “Checking Engine Oil” under *Engine Oil on page 318*.
- C. Engine Oil Fill Cap. See “When to Add Engine Oil” under *Engine Oil on page 318*.
- D. Remote Negative (–) Terminal. See *Jump Starting on page 348*.
- E. Brake/Clutch Cylinder Fluid. See *Brakes on page 343* and *Hydraulic Clutch on page 331*.
- F. Underhood Fuse Block. See *Underhood Fuse Block on page 411*.
- G. Battery. See *Battery on page 347*.
- H. Remote Positive (+) Terminal. See *Jump Starting on page 348*.
  - I. Engine Coolant Surge Tank. See “Checking Coolant” under *Engine Coolant on page 331*.
- J. Windshield Washer Fluid Reservoir. See “Adding Washer Fluid” under *Windshield Washer Fluid on page 341*.

When you open the hood on the 3.5L V6 engine, you will see the following:



- A. Engine Air Cleaner/Filter. See *Engine Air Cleaner/Filter on page 324*.
- B. Engine Oil Dipstick (Out of View). See “Checking Engine Oil” under *Engine Oil on page 318*.
- C. Engine Oil Fill Cap (Out of View). See “When to Add Engine Oil” under *Engine Oil on page 318*.
- D. Remote Negative (–) Terminal. See *Jump Starting on page 348*.
- E. Brake Fluid Reservoir. See *Brakes on page 343*.
- F. Battery. See *Battery on page 347*.
- G. Underhood Fuse Block. See *Underhood Fuse Block on page 411*.
- H. Remote Positive (+) Terminal (Out of View). See *Jump Starting on page 348*.
- I. Engine Coolant Surge Tank. See “Checking Coolant” under *Engine Coolant on page 331*.
- J. Windshield Washer Fluid Reservoir. See “Adding Washer Fluid” under *Windshield Washer Fluid on page 341*.

## Engine Oil

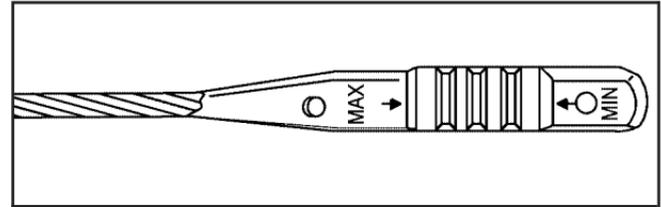
### Checking Engine Oil

It is a good idea to check the engine oil every time you get fuel. In order to get an accurate reading, the oil must be warm and the vehicle must be on level ground.

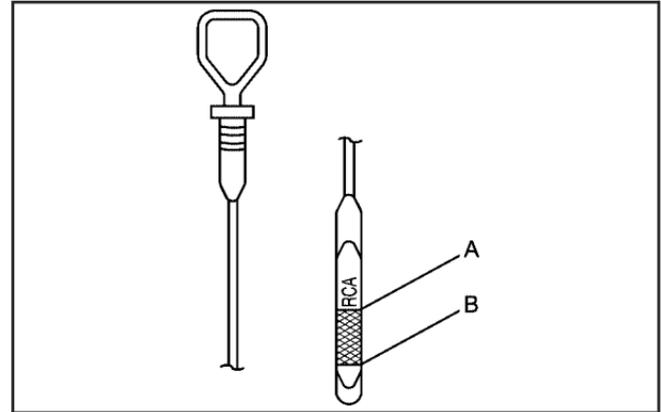
The engine oil dipstick handle is a yellow loop for the 2.2L L4 engine and an orange loop for the 3.5L V6 engine. See *Engine Compartment Overview on page 314* for the location of the engine oil dipstick.

1. Turn off the engine and give the oil several minutes to drain back into the oil pan. If you do not do this, the oil dipstick might not show the actual level.
2. Pull out the dipstick and clean it with a paper towel or cloth, then push it back in all the way. Remove it again, keeping the tip down, and check the level.

### When to Add Engine Oil



2.2L L4 Engine



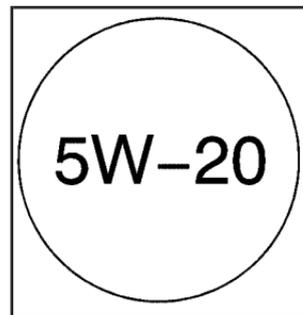
3.5L V6 Engine

If the oil is below the MIN (minimum) mark for the 2.2L L4 engine or below the lower mark (B) for the 3.5L V6 engine, you need to add at least one quart/liter of oil. But you must use the right kind. This section explains what kind of oil to use. For engine oil crankcase capacity, see *Capacities and Specifications on page 414*.

**Notice:** Do not add too much oil. If the engine has so much oil that the oil level gets above the upper mark that shows the proper operating range, the engine could be damaged.



2.2L L4 Engine

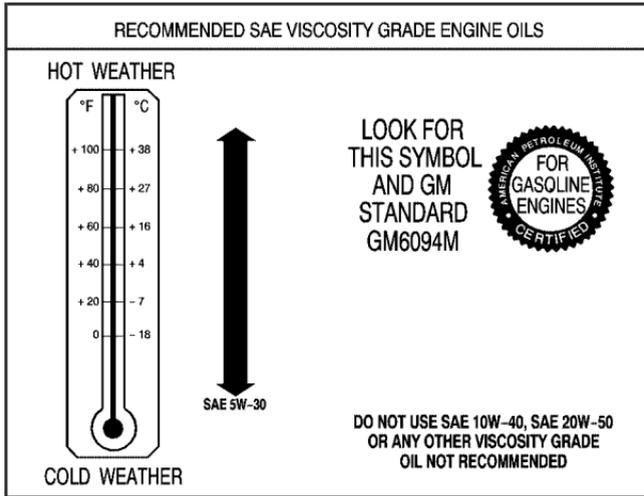


3.5L V6 Engine

See *Engine Compartment Overview on page 314* for the location of the engine oil fill cap.

Be sure to add enough oil to put the level somewhere in the proper operating range. Push the dipstick all the way back in when you are through.

## What Kind of Engine Oil to Use For Vehicles with the 2.2L L4 Engine Only



Look for three things:

- GM6094M

Your vehicle's engine requires oil meeting GM Standard GM6094M. Look for and use only an oil that meets GM Standard GM6094M.

- SAE 5W-30

As shown in the viscosity chart, SAE 5W-30 is best for your vehicle.

These numbers on an oil container show its viscosity, or thickness. Do not use other viscosity oils such as SAE 20W-50.



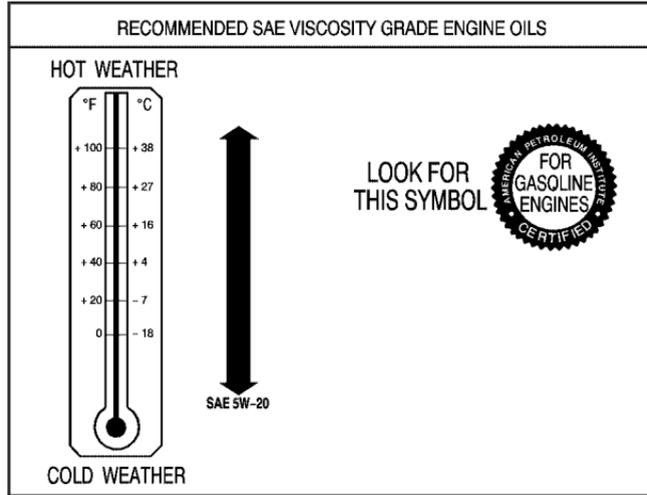
- Oils meeting these requirements should have the starburst symbol on the container. This symbol indicates that the oil has been certified by the American Petroleum Institute (API).

Look for this information on the oil container, and use only those oils that are identified as meeting GM Standard GM6094M and have the starburst symbol on the front of the oil container.

**Notice:** Use only engine oil identified as meeting GM Standard GM6094M and showing the American Petroleum Institute Certified For Gasoline Engines starburst symbol. Failure to use the recommended oil can result in engine damage not covered by your warranty.

If you are in an area of extreme cold, where the temperature falls below  $-20^{\circ}\text{F}$  ( $-29^{\circ}\text{C}$ ), it is recommended that you use either an SAE 5W-30 synthetic oil or an SAE 0W-30 oil. Both provide easier cold starting and better protection for the engine at extremely low temperatures.

## For Vehicles with the 3.5L V6 Engine Only



As shown in the viscosity chart, SAE 5W-20 is best for your vehicle.

These numbers on an oil container show its viscosity, or thickness. Do not use other viscosity oils such as SAE 20W-50.



Oils meeting these requirements should also have the starburst symbol on the container. This symbol indicates that the oil has been certified by the American Petroleum Institute (API).

Look for this information on the oil container, and use only those oils that have the starburst symbol on the front of the oil container.

**Notice:** Use only engine oil with the American Petroleum Institute Certified For Gasoline Engines starburst symbol. Failure to use the recommended oil can result in engine damage not covered by your warranty.

### Engine Oil Additives

Do not add anything to the oil. The recommended oil with the starburst symbol are all you need for good performance and engine protection.

# Engine Oil Life System

## When to Change Engine Oil

Your vehicle has a computer system that lets you know when to change the engine oil and filter. This is based on engine revolutions and engine temperature, and not on mileage. Based on driving conditions, the mileage at which an oil change will be indicated can vary considerably. For the oil life system to work properly, you must reset the system every time the oil is changed.

When the system has calculated that oil life has been diminished, it will indicate that an oil change is necessary. A change engine oil light will come on. See *Change Engine Oil Light on page 179*. Change the oil as soon as possible within the next 600 miles (1 000 km). It is possible that, if you are driving under the best conditions, the oil life system might not indicate that an oil change is necessary for over a year. However, the engine oil and filter must be changed at least once a year and at this time the system must be reset. Your dealer/retailer has trained service people who will perform this work using genuine parts and reset the system. It is also important to check the oil regularly and keep it at the proper level.

If the system is ever reset accidentally, you must change the oil at 3,000 miles (5 000 km) since your last oil change. Remember to reset the oil life system whenever the oil is changed.

## How to Reset the Engine Oil Life System

The Engine Oil Life System calculates when to change the engine oil and filter based on vehicle use. Whenever the oil is changed, reset the system so it can calculate when the next oil change is required. If a situation occurs where you change the oil prior to a change engine oil light being turned on, reset the system.

After changing the engine oil, reset the system:

1. Turn the ignition key to RUN with the engine off.
2. Fully press and release the accelerator pedal three times within five seconds.

If the change engine oil light is flashing, the system is reset. The light will flash for up to 30 seconds or until the ignition is turned off.

If the light comes on again and stays on for 30 seconds at the next ignition cycle, it did not reset. You will need to reset the system again.

## What to Do with Used Oil

Used engine oil contains certain elements that can be unhealthy for your skin and could even cause cancer. Do not let used oil stay on your skin for very long. Clean your skin and nails with soap and water, or a good hand cleaner. Wash or properly dispose of clothing or rags containing used engine oil. See the manufacturer's warnings about the use and disposal of oil products.

Used oil can be a threat to the environment. If you change your own oil, be sure to drain all the oil from the filter before disposal. Never dispose of oil by putting it in the trash, pouring it on the ground, into sewers, or into streams or bodies of water. Instead, recycle it by taking it to a place that collects used oil. If you have a problem properly disposing of used oil, ask your dealer/retailer, a service station, or a local recycling center for help.

## Engine Air Cleaner/Filter

See *Engine Compartment Overview on page 314* for the location of the engine air cleaner/filter.

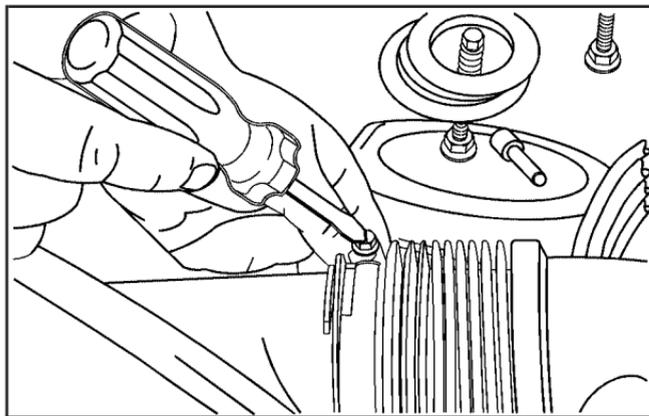
### When to Inspect the Engine Air Cleaner/Filter

Inspect the air cleaner/filter at the Maintenance II intervals and replace it at the first oil change after each 50,000 mile (83 000 km) interval. See *Scheduled Maintenance on page 420* for more information. If you are driving in dusty/dirty conditions, inspect the filter at each engine oil change.

### How to Inspect the Engine Air Cleaner/Filter

To inspect the air cleaner/filter remove the filter from the vehicle and lightly shake the filter to release loose dust and dirt. If the filter remains caked with dirt, a new filter is required.

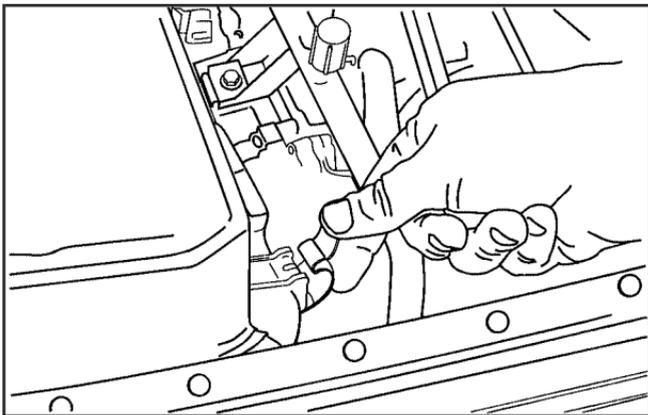
To inspect or replace the engine air cleaner/filter, do the following:



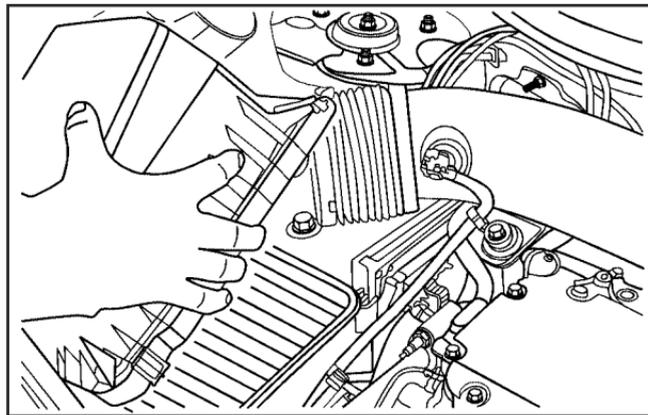
1. Unscrew the clamp on the air duct hose.



2. Disconnect the hose.



3. Release the clamps on the side of the air cleaner assembly.
4. Turn the cover upward to disengage the cover hinges.



5. Remove the air cleaner cover assembly and air filter element.
6. Inspect or replace the air filter element.  
If the air filter element is dirty, you should replace it. If it is only dusty, it may be cleaned by blowing compressed air through it from the clean side.  
Make sure you are away from the engine compartment when cleaning the air filter with compressed air.

Wipe all dust from inside of the housing and inspect the air cleaner and air outlet duct for cracks, cuts and deterioration. The air outlet duct must be replaced if damaged.

- Reverse Steps 1 through 5 to reinstall the engine air cleaner/filter cover and air duct hose.

### CAUTION:

**Operating the engine with the air cleaner/filter off can cause you or others to be burned. The air cleaner not only cleans the air; it helps to stop flames if the engine backfires. If it is not there and the engine backfires, you could be burned. Do not drive with it off, and be careful working on the engine with the air cleaner/filter off.**

**Notice:** If the air cleaner/filter is off, a backfire can cause a damaging engine fire. And, dirt can easily get into your engine, which will damage it. Always have the air cleaner/filter in place when you are driving.

## Automatic Transaxle Fluid (2.2L L4 Engine)

### When to Check and Change Automatic Transaxle Fluid

A good time to check your automatic transaxle fluid level is when the engine oil is changed.

Change the fluid at the intervals listed in *Additional Required Services on page 423*, and be sure to use the transaxle fluid listed in *Recommended Fluids and Lubricants on page 432*.

### How to Check Automatic Transaxle Fluid

If your vehicle is equipped with the 2.2L L4 engine, you will have to have this procedure done at your retailer's service department.

**Notice:** Use of the incorrect automatic transaxle fluid may damage your vehicle, and the damages may not be covered by your warranty. Always use the automatic transaxle fluid listed in *Recommended Fluids and Lubricants on page 432*.

## Automatic Transaxle Fluid (3.5L V6 Engine)

### When to Check and Change Automatic Transaxle Fluid

A good time to check your automatic transaxle fluid level is when the engine oil is changed.

Change the fluid at the intervals listed in *Additional Required Services on page 423*, and be sure to use the transaxle fluid listed in *Recommended Fluids and Lubricants on page 432*.

### How to Check Automatic Transaxle Fluid

Because this operation can be a little difficult, you may choose to have this done at your retailer's service department.

If you do it yourself, be sure to follow all the instructions here, or you could get a false reading on the dipstick.

**Notice:** Too much or too little fluid can damage the transaxle. Too much can mean that some of the fluid could come out and fall on hot engine or exhaust system parts, starting a fire. Too little fluid could cause the transaxle to overheat. Be sure to get an accurate reading if you check the transaxle fluid.

Wait at least 30 minutes before checking the transaxle fluid level if you have been driving:

- When outside temperatures are above 90°F (32°C).
- At high speed for quite a while.
- In heavy traffic — especially in hot weather.
- While pulling a trailer.

To get the right reading, the fluid should be at normal operating temperature, which is 180°F to 200°F (82°C to 93°C).

Get the vehicle warmed up by driving about 15 miles (24 km) when outside temperatures are above 50°F (10°C). If it is colder than 50°F (10°C), you may have to drive longer.

## Checking the Fluid Level

Prepare your vehicle as follows:

1. Park your vehicle on a level place.
2. Warm the engine to normal operating temperature until the electric radiator fan turns on at least once.
3. With the parking brake applied, place the shift lever in PARK (P).
4. With your foot on the brake pedal, move the shift lever through each gear range, pausing for about three seconds in each range. Then, position the shift lever in PARK (P).

Then, turn off the engine and follow these steps:

The transaxle fluid dipstick handle is the black loop near the rear of the engine compartment, toward the center.

1. Pull out the dipstick and wipe it with a clean rag or paper towel.
2. Push it back in all the way, wait three seconds and then pull it back out again.
3. Check both sides of the dipstick, and read the lower level. The fluid level must be between the upper mark and the lower mark.
4. If the fluid level is in the acceptable range, push the dipstick back in all the way.

## How to Add Automatic Transaxle Fluid

Refer to the Maintenance Schedule to determine what kind of transaxle fluid to use. See *Recommended Fluids and Lubricants on page 432*.

If the fluid level is low, add only enough of the proper fluid to bring the level into the cross-hatched area on the dipstick.

1. Pull out the dipstick.
2. Using a long-neck funnel, add enough fluid at the dipstick hole to bring it to the proper level.

It does not take much fluid, generally less than one pint (0.5 L). Do not overfill.

**Notice:** Use of the incorrect automatic transaxle fluid may damage your vehicle, and the damages may not be covered by your warranty. Always use the automatic transaxle fluid listed in *Recommended Fluids and Lubricants on page 432*.

3. After adding fluid, recheck the fluid level as described under “How to Check Automatic Transaxle Fluid,” earlier in this section.
4. When the correct fluid level is obtained, push the dipstick back in all the way.

## Manual Transaxle Fluid

It is not necessary to check the transaxle fluid level. A transaxle fluid leak is the only reason for fluid loss. If a leak occurs, take the vehicle to your retailer’s service department and have it repaired as soon as possible. See *Recommended Fluids and Lubricants on page 432* for the proper fluid to use.

**Notice:** Use of manual transaxle fluid other than that listed in the Maintenance Schedule may damage your vehicle, and the damages may not be covered by your warranty. Always use the correct manual transaxle fluid in your vehicle. See *Recommended Fluids and Lubricants on page 432* for the correct manual transaxle fluid.

## Hydraulic Clutch

The hydraulic clutch linkage in your vehicle is self-adjusting. The hydraulic clutch system does not have its own reservoir. The system receives fluid from the brake master cylinder reservoir. It is filled with DOT-3 brake fluid. See *Brakes on page 343* for more information.

## Engine Coolant

The cooling system in your vehicle is filled with DEX-COOL<sup>®</sup> engine coolant. This coolant is designed to remain in your vehicle for five years or 150,000 miles (240 000 km), whichever occurs first, if you add only DEX-COOL<sup>®</sup> extended life coolant.

The following explains your cooling system and how to add coolant when it is low. If you have a problem with engine overheating, see *Engine Overheating on page 334*.

A 50/50 mixture of clean, drinkable water and DEX-COOL<sup>®</sup> coolant will:

- Give freezing protection down to  $-34^{\circ}\text{F}$  ( $-37^{\circ}\text{C}$ ).
- Give boiling protection up to  $265^{\circ}\text{F}$  ( $129^{\circ}\text{C}$ ).
- Protect against rust and corrosion.
- Help keep the proper engine temperature.
- Let the warning lights and gages work as they should.

**Notice:** Using coolant other than DEX-COOL<sup>®</sup> may cause premature engine, heater core, or radiator corrosion. In addition, the engine coolant may require changing sooner, at the first maintenance service after each 30,000 miles (50 000 km) or 24 months, whichever occurs first. Any repairs would not be covered by your warranty. Always use DEX-COOL<sup>®</sup> (silicate-free) coolant in your vehicle.

## What to Use

Use a mixture of one-half clean, drinkable water and one-half DEX-COOL<sup>®</sup> coolant which will not damage aluminum parts. If you use this coolant mixture, you do not need to add anything else.

### CAUTION:

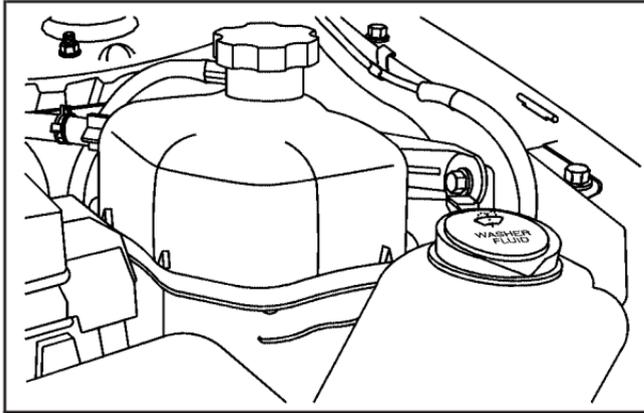
Adding only plain water to your cooling system can be dangerous. Plain water, or some other liquid such as alcohol, can boil before the proper coolant mixture will. Your vehicle's coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, your engine could get too hot but you would not get the overheat warning. Your engine could catch fire and you or others could be burned. Use a 50/50 mixture of clean, drinkable water and DEX-COOL<sup>®</sup> coolant.

**Notice:** If you use an improper coolant mixture, your engine could overheat and be badly damaged. The repair cost would not be covered by your warranty. Too much water in the mixture can freeze and crack the engine, radiator, heater core, and other parts.

If you have to add coolant more than four times a year, have your retailer check your cooling system.

**Notice:** If you use extra inhibitors and/or additives in your vehicle's cooling system, you could damage your vehicle. Use only the proper mixture of the engine coolant listed in this manual for the cooling system. See *Recommended Fluids and Lubricants* on page 432 for more information.

## Checking Coolant



The surge tank is located on the driver's side of the engine compartment. See *Engine Compartment Overview on page 314* for more information on location.

### CAUTION:

Turning the surge tank pressure cap when the engine and radiator are hot can allow steam and scalding liquids to blow out and burn you badly. Never turn the surge tank pressure cap — even a little — when the engine and radiator are hot.

The vehicle must be on a level surface. When your engine is cold, the coolant level should be at the COLD FILL line. When your engine is warm, the level should be at the COLD FILL line or a little higher.

## Adding Coolant

If you need more coolant, add the proper DEX-COOL<sup>®</sup> coolant mixture at the surge tank, but only when the engine is cool. See *Engine Overheating on page 334* for instructions on “How to Add Coolant to the Coolant Surge Tank.”

### CAUTION:

**You can be burned if you spill coolant on hot engine parts. Coolant contains ethylene glycol, and it will burn if the engine parts are hot enough. Do not spill coolant on a hot engine.**

When replacing the pressure cap, make sure it is hand-tight and fully seated.

## Coolant Surge Tank Pressure Cap

**Notice:** If the pressure cap is not tightly installed, coolant loss and possible engine damage may occur. Be sure the cap is properly and tightly secured.

If you need to replace your coolant surge tank pressure cap, see your retailer.

## Engine Overheating

You will find a coolant temperature gage and a coolant temperature warning light on your vehicle's instrument panel. See *Engine Coolant Temperature Gage on page 174* and *Engine Coolant Temperature Warning Light on page 173*.

## If Steam Is Coming From Your Engine

### CAUTION:

**Steam from an overheated engine can burn you badly, even if you just open the hood. Stay away from the engine if you see or hear steam coming from it. Just turn it off and get everyone away from the vehicle until it cools down. Wait until there is no sign of steam or coolant before you open the hood.**

**If you keep driving when your engine is overheated, the liquids in it can catch fire. You or others could be badly burned. Stop your engine if it overheats, and get out of the vehicle until the engine is cool.**

**Notice:** If your engine catches fire because you keep driving with no coolant, your vehicle can be badly damaged. The costly repairs would not be covered by your warranty.

## If No Steam Is Coming From Your Engine

If you get an engine overheat warning, but see or hear no steam, the problem may not be too serious. Sometimes the engine can get a little too hot when you:

- Climb a long hill on a hot day.
- Stop after high-speed driving.
- Idle for long periods in traffic.
- Tow a trailer.

If you get the overheat warning with no sign of steam, try this for a minute or so:

1. If you have an air conditioner and it is on, turn it off.
2. Turn on your heater to full hot at the highest fan speed and open the windows as necessary.
3. Try to minimize engine load. If you are in a traffic jam, shift to NEUTRAL (N); otherwise, shift to the highest gear possible while driving.

If you no longer have the overheat warning, you can drive. Just to be safe, drive slower for about ten minutes. If the warning does not come back on, you can drive normally.

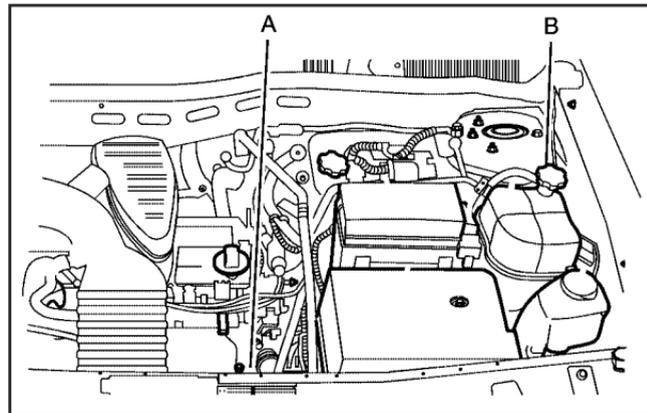
If the warning continues and you have not stopped, pull over, stop, and park your vehicle right away.

If there is still no sign of steam, you can idle the engine for three minutes while you are parked. If you still have the warning, turn off the engine and get everyone out of the vehicle until it cools down.

You may decide not to lift the hood but to get service help right away.

## Cooling System

When you decide it is safe to lift the hood, here is what you will see:



**2.2L L4 Engine shown, 3.5L V6 Engine similar**

- A. Electric Engine Fan
- B. Coolant Surge Tank with Pressure Cap

 **CAUTION:**

An electric engine cooling fan under the hood can start up even when the engine is not running and can injure you. Keep hands, clothing, and tools away from any underhood electric fan.

If the coolant inside the coolant surge tank is boiling, do not do anything else until it cools down. The vehicle should be parked on a level surface.

The coolant level should be at the COLD FILL line. If it is not, you may have a leak at the radiator hoses, heater hoses, radiator, water pump, or somewhere else in the cooling system.

 **CAUTION:**

Heater and radiator hoses, and other engine parts, can be very hot. Do not touch them. If you do, you can be burned.

**CAUTION: (Continued)**

**CAUTION: (Continued)**

Do not run the engine if there is a leak. If you run the engine, it could lose all coolant. That could cause an engine fire, and you could be burned. Get any leak fixed before you drive the vehicle.

If there seems to be no leak, with the engine on, check to see if the electric engine cooling fan is running. If the engine is overheating, the fan should be running. If it is not, your vehicle needs service. Turn off the engine.

**Notice: Engine damage from running your engine without coolant is not covered by your warranty.**

**Notice: Using coolant other than DEX-COOL<sup>®</sup> may cause premature engine, heater core, or radiator corrosion. In addition, the engine coolant could require changing sooner, at 30,000 miles (50 000 km) or 24 months, whichever occurs first. Any repairs would not be covered by your warranty. Always use DEX-COOL<sup>®</sup> (silicate-free) coolant in your vehicle.**

## How to Add Coolant to the Coolant Surge Tank

**Notice:** This vehicle has a specific coolant fill procedure. Failure to follow this procedure could cause your engine to overheat and be severely damaged.

If you have not found a problem yet, check to see if coolant is visible in the surge tank. If coolant is visible but the coolant level is not at the COLD FILL line, add a 50/50 mixture of clean, drinkable water and DEX-COOL<sup>®</sup> coolant at the coolant surge tank, but be sure the cooling system, including the coolant surge tank pressure cap, is cool before you do it. See *Engine Coolant on page 331* for more information.

### CAUTION:

Steam and scalding liquids from a hot cooling system can blow out and burn you badly. They are under pressure, and if you turn the coolant surge tank pressure cap — even a little — they can come out at high speed. Never turn the cap when the cooling system, including the coolant surge tank pressure cap, is hot. Wait for the cooling system and coolant surge tank pressure cap to cool if you ever have to turn the pressure cap.

 **CAUTION:**

Adding only plain water to your cooling system can be dangerous. Plain water, or some other liquid such as alcohol, can boil before the proper coolant mixture will. Your vehicle's coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, your engine could get too hot but you would not get the overheat warning. Your engine could catch fire and you or others could be burned. Use a 50/50 mixture of clean, drinkable water and DEX-COOL<sup>®</sup> coolant.

**Notice:** In cold weather, water can freeze and crack the engine, radiator, heater core and other parts. Use the recommended coolant and the proper coolant mixture.

 **CAUTION:**

You can be burned if you spill coolant on hot engine parts. Coolant contains ethylene glycol and it will burn if the engine parts are hot enough. Do not spill coolant on a hot engine.



1. You can remove the coolant surge tank pressure cap when the cooling system, including the coolant surge tank pressure cap and upper radiator hose, is no longer hot. Turn the pressure cap slowly counterclockwise about one-quarter of a turn.

If you hear a hiss, wait for that to stop. This will allow any pressure still left to be vented out the discharge hose.

2. Then keep turning the pressure cap slowly, and remove it.



3. Fill the coolant surge tank with the proper DEX-COOL<sup>®</sup> coolant mixture, to the COLD FILL line.



4. With the coolant surge tank pressure cap off, start the engine and let it run until you can feel the upper radiator hose getting hot. Watch out for the engine cooling fan.

By this time, the coolant level inside the coolant surge tank may be lower. If the level is lower, add more of the proper DEX-COOL<sup>®</sup> coolant mixture to the coolant surge tank until the level reaches the COLD FILL line.

5. Then replace the pressure cap. Be sure the pressure cap is hand-tight.

Check the level in the surge tank when the cooling system has cooled down. If the coolant is not at the proper level, repeat Steps 1 through 3 and reinstall the pressure cap. If the coolant still is not at the proper level when the system cools down again, see your retailer.

## Windshield Washer Fluid

### What to Use

When you need windshield or rear window washer fluid, be sure to read the manufacturer's instructions before use. If you will be operating your vehicle in an area where the temperature may fall below freezing, use a fluid that has sufficient protection against freezing.

## Adding Windshield Washer Fluid



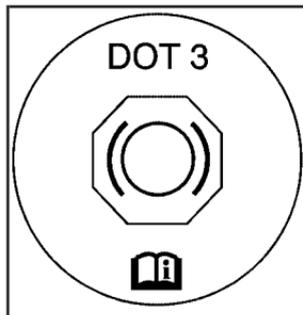
Open the cap with the washer symbol on it. Add washer fluid until the tank is full. See *Engine Compartment Overview on page 314* for reservoir location.

### **Notice:**

- **When using concentrated washer fluid, follow the manufacturer's instructions for adding water.**
- **Do not mix water with ready-to-use washer fluid. Water can cause the solution to freeze and damage your washer fluid tank and other parts of the washer system. Also, water does not clean as well as washer fluid.**
- **Fill the washer fluid tank only three-quarters full when it is very cold. This allows for fluid expansion if freezing occurs, which could damage the tank if it is completely full.**
- **Do not use engine coolant (antifreeze) in your windshield washer. It can damage the vehicle's windshield washer system and paint.**

## Brakes

### Brake Fluid



The brake master cylinder reservoir is filled with DOT-3 brake fluid. See *Engine Compartment Overview on page 314* for the location of the reservoir.

There are only two reasons why the brake fluid level in the reservoir might go down. The first is that the brake fluid goes down to an acceptable level during normal brake lining wear. When new linings are put in, the fluid level goes back up. The other reason is that fluid is leaking out of the brake system. If it is, you should have the brake system fixed, since a leak means that sooner or later the brakes will not work well.

So, it is not a good idea to top off the brake fluid. Adding brake fluid will not correct a leak. If you add fluid when the linings are worn, then you will have too much fluid when you get new brake linings. You should add or remove brake fluid, as necessary, only when work is done on the brake hydraulic system.

#### **CAUTION:**

**If your vehicle has too much brake fluid, it can spill on the engine. The fluid will burn if the engine is hot enough. You or others could be burned, and your vehicle could be damaged. Add brake fluid only when work is done on the brake hydraulic system.**

When the brake fluid falls to a low level, the brake warning light will come on. See *Brake System Warning Light on page 170*.

## What to Add

When you do need brake fluid, use only DOT-3 brake fluid. Use new brake fluid from a sealed container only. See *Recommended Fluids and Lubricants on page 432*.

Always clean the brake fluid reservoir cap and the area around the cap before removing it. This will help keep dirt from entering the reservoir.

### CAUTION:

**With the wrong kind of fluid in the brake system, the brakes may not work well. This could cause a crash. Always use the proper brake fluid.**

### Notice:

- **Using the wrong fluid can badly damage brake system parts. For example, just a few drops of mineral-based oil, such as engine oil, in the brake system can damage brake system parts so badly that they will have to be replaced. Do not let someone put in the wrong kind of fluid.**
- **If you spill brake fluid on your vehicle's painted surfaces, the paint finish can be damaged. Be careful not to spill brake fluid on your vehicle. If you do, wash it off immediately. See *Washing Your Vehicle on page 402*.**

## Brake Wear

Your vehicle has front disc brakes and rear drum brakes.

Disc brake pads have built-in wear indicators that make a high-pitched warning sound when the brake pads are worn and new pads are needed. The sound can come and go or be heard all the time your vehicle is moving, except when you are pushing on the brake pedal firmly.

### CAUTION:

**The brake wear warning sound means that soon the brakes will not work well. That could lead to an accident. When you hear the brake wear warning sound, have your vehicle serviced.**

**Notice:** Continuing to drive with worn-out brake pads could result in costly brake repair.

Some driving conditions or climates can cause a brake squeal when the brakes are first applied or lightly applied. This does not mean something is wrong with the brakes.

Properly torqued wheel nuts are necessary to help prevent brake pulsation. When tires are rotated, inspect brake pads for wear and evenly tighten wheel nuts in the proper sequence to torque specifications in *Capacities and Specifications on page 414*.

The rear drum brakes do not have wear indicators, but if you ever hear a rear brake rubbing noise, have the rear brake linings inspected immediately. Also, the rear brake drums should be removed and inspected each time the tires are removed for rotation or changing. When you have the front brake pads replaced, have the rear brakes inspected, too.

Brake linings should always be replaced as complete axle sets.

## **Brake Pedal Travel**

See your dealer/retailer if the brake pedal does not return to normal height or if there is a rapid increase in pedal travel. This could be a sign that brake service might be required.

## **Brake Adjustment**

Every time you make a moderate brake stop, the brakes adjust for wear. If you rarely make a moderate or heavier stop, then the brakes might not adjust correctly. If you drive in that way, then — very carefully — make a few moderate brake stops about every 1,000 miles (1 600 km), so the brakes will adjust properly.

## **Replacing Brake System Parts**

The braking system on a vehicle is complex. Its many parts have to be of top quality and work well together if the vehicle is to have really good braking. Your vehicle was designed and tested with top-quality brake parts. When you replace parts of the braking system — for example, when the brake linings wear down and you need new ones put in — be sure you get new approved replacement parts. If you do not, the brakes might not work properly. For example, if someone puts in brake linings that are wrong for your vehicle, the balance between the front and rear brakes can change — for the worse. The braking performance you have come to expect can change in many other ways if someone puts in the wrong replacement brake parts.

## Battery

Your vehicle has a maintenance free battery. When it is time for a new battery, get one that has the replacement number shown on the original battery's label. We recommend an ACDelco<sup>®</sup> replacement battery. See *Engine Compartment Overview on page 314* for battery location.

**Warning:** Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

## Vehicle Storage

If you are not going to drive your vehicle for 25 days or more, remove the black, negative (-) cable from the battery. This will help keep the battery from running down.

### CAUTION:

**Batteries have acid that can burn you and gas that can explode. You can be badly hurt if you are not careful. See *Jump Starting on page 348* for tips on working around a battery without getting hurt.**

## Jump Starting

If your vehicle's battery has run down, you may want to use another vehicle and some jumper cables to start your vehicle. Be sure to use the following steps to do it safely.

### CAUTION:

**Batteries can hurt you. They can be dangerous because:**

- They contain acid that can burn you.
- They contain gas that can explode or ignite.
- They contain enough electricity to burn you.

**If you do not follow these steps exactly, some or all of these things can hurt you.**

**Notice:** Ignoring these steps could result in costly damage to your vehicle that would not be covered by your warranty.

**Trying to start your vehicle by pushing or pulling it will not work, and it could damage your vehicle.**

1. Check the other vehicle. It must have a 12-volt battery with a negative ground system.

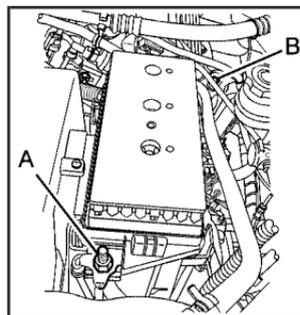
**Notice:** If the other vehicle's system is not a 12-volt system with a negative ground, both vehicles can be damaged. Only use vehicles with 12-volt systems with negative grounds to jump start your vehicle.

2. Get the vehicles close enough so the jumper cables can reach, but be sure the vehicles are not touching each other. If they are, it could cause a ground connection you do not want. You would not be able to start your vehicle, and the bad grounding could damage the electrical systems.

To avoid the possibility of the vehicles rolling, set the parking brake firmly on both vehicles involved in the jump start procedure. Put an automatic transaxle in PARK (P) or a manual transaxle in NEUTRAL before setting the parking brake.

**Notice:** If you leave your radio or other accessories on during the jump starting procedure, they could be damaged. The repairs would not be covered by your warranty. Always turn off your radio and other accessories when jump starting your vehicle.

3. Turn off the ignition on both vehicles. Unplug unnecessary accessories plugged into the cigarette lighter or the accessory power outlet. Turn off the radio and all lamps that are not needed. This will avoid sparks and help save both batteries. And it could save the radio!
4. Open the hood on the other vehicle and locate the positive (+) and negative (-) terminal locations on that vehicle.  
Open the hood on your vehicle and find the remote positive (+) and remote negative (-) jump starting terminals.



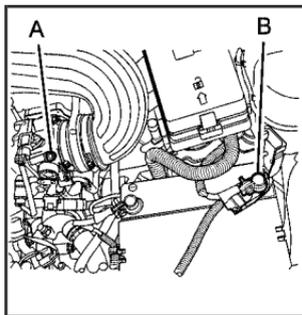
**2.2L L4 Engine**

- A. Remote Positive
- B. Remote Negative

Vehicles equipped with the 2.2L L4 engine, the remote positive (+) terminal is located in the engine compartment on the driver's side of the vehicle, on the underhood fuse block. See *Engine Compartment Overview on page 314* for more information on location.

Access the remote positive (+) terminal by removing the fuse block cover.

The remote negative (-) terminal is the lift hook, which is located towards the rear of the engine on the driver's side.



- A. Remote Negative
- B. Positive Terminal

### 3.5L V6 Engine

Vehicle equipped with the 3.5L V6 engine, the positive (+) terminal is located in the engine compartment on the driver's side of the vehicle on the battery. The negative (-) terminal is located in the engine compartment on the driver's side of the vehicle. See *Engine Compartment Overview on page 314* for more information on location.

After unsnapping and opening the black cap on the positive (+) terminal on the top of the battery, clamp the jumper cable to the terminal.

Place the negative (-) jumper cable clamp on the nut on the end of the engine.

### CAUTION:

**An electric fan can start up even when the engine is not running and can injure you. Keep hands, clothing and tools away from any underhood electric fan.**

 **CAUTION:**

Using a match near a battery can cause battery gas to explode. People have been hurt doing this, and some have been blinded. Use a flashlight if you need more light.

Be sure the battery has enough water. You do not need to add water to the battery installed in your new vehicle. But if a battery has filler caps, be sure the right amount of fluid is there. If it is low, add water to take care of that first. If you do not, explosive gas could be present.

Battery fluid contains acid that can burn you. Do not get it on you. If you accidentally get it in your eyes or on your skin, flush the place with water and get medical help immediately.

 **CAUTION:**

Fans or other moving engine parts can injure you badly. Keep your hands away from moving parts once the engine is running.

5. Check that the jumper cables do not have loose or missing insulation. If they do, you could get a shock. The vehicles could be damaged too.

Before you connect the cables, here are some basic things you should know. Positive (+) will go to positive (+) or to a remote positive (+) terminal if the vehicle has one. Negative (-) will go to a heavy, unpainted metal engine part or to a remote negative (-) terminal if the vehicle has one.

Do not connect positive (+) to negative (-) or you will get a short that would damage the battery and maybe other parts too. And do not connect the negative (-) cable to the negative (-) terminal on the dead battery because this can cause sparks.

6. Connect the red positive (+) cable to the positive (+) terminal on the vehicle with the dead battery. Use a remote positive (+) terminal if the vehicle has one.
7. Do not let the other end touch metal. Connect it to the positive (+) terminal of the good battery. Use a remote positive (+) terminal if the vehicle has one.
8. Now connect the black negative (-) cable to the negative (-) terminal of the good battery. Use a remote negative (-) terminal if the vehicle has one.

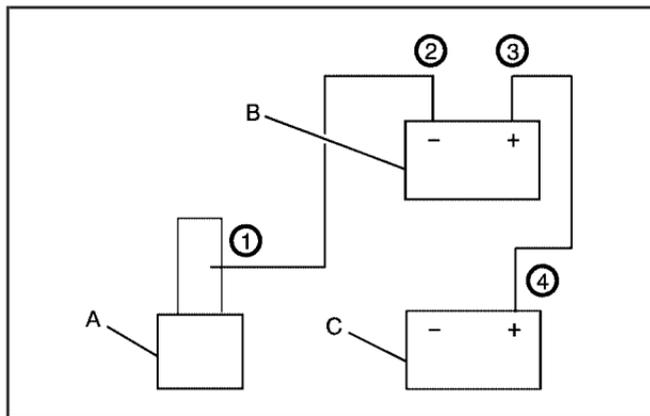
Do not let the other end touch anything until the next step. The other end of the negative (-) cable does not go to the dead battery. It goes to a heavy, unpainted metal engine part or to a remote negative (-) terminal on the vehicle with the dead battery.

9. Connect the other end of the negative (-) cable away from the dead battery, but not near engine parts that move. The electrical connection is just as good there, and the chance of sparks getting back to the battery is much less.

Your vehicle has a remote negative (-) terminal for this purpose.

10. Now start the vehicle with the good battery and run the engine for a while.
11. Press the unlock symbol on the remote keyless entry transmitter to disarm your security system, if equipped.
12. Try to start the vehicle that had the dead battery. If it will not start after a few tries, it probably needs service.

**Notice:** If the jumper cables are connected or removed in the wrong order, electrical shorting may occur and damage the vehicle. The repairs would not be covered by your warranty. Always connect and remove the jumper cables in the correct order, making sure that the cables do not touch each other or other metal.



#### Jumper Cable Removal

- A. Heavy, Unpainted Metal Engine Part or Remote Negative (-) Terminal
- B. Good Battery or Remote Positive (+) and Remote Negative (-) Terminals
- C. Dead Battery or Remote Positive (+) Terminal

To disconnect the jumper cables from both vehicles, do the following:

1. Disconnect the black negative (-) cable from the vehicle that had the dead battery.
2. Disconnect the black negative (-) cable from the vehicle with the good battery.
3. Disconnect the red positive (+) cable from the vehicle with the good battery.
4. Disconnect the red positive (+) cable from the other vehicle.
5. Return the underhood fuse block cover to its original position, if applicable.

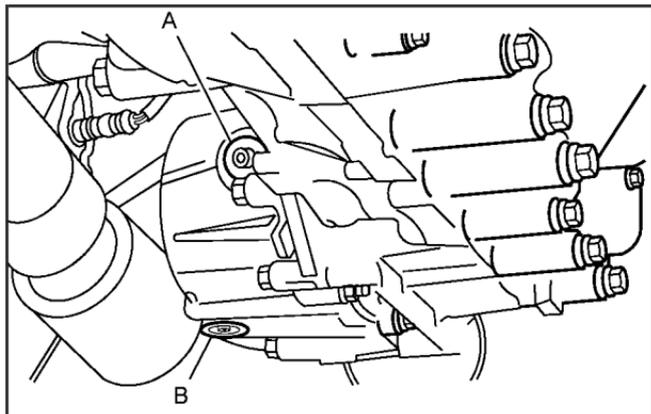
## All-Wheel Drive

If you have an all-wheel-drive vehicle, be sure to perform the lubricant checks described in this section. There are two additional systems that need lubrication.

## Transfer Case (3.5L V6 Engine) When to Check and Change Lubricant

Refer to the Maintenance Schedule to determine how often to check the lubricant and when to change it. See *Scheduled Maintenance on page 420*.

### How to Check Lubricant



- A. Fill Plug
- B. Drain Plug

To get an accurate reading, the vehicle should be on a level surface.

If the level is below the bottom of the filler plug hole, located on the transfer case, you'll need to add some lubricant. Add enough lubricant to raise the level to the bottom of the filler plug hole. A fluid loss could indicate a problem; check and have it repaired, if needed.

### What to Use

Refer to the Maintenance Schedule to determine what kind of lubricant to use. See *Recommended Fluids and Lubricants on page 432*.

# Headlamp Aiming

The visual optical headlamp aiming system has been preset at the factory and should need no further adjustment.

However, if the vehicle is damaged in an accident, the aim of the headlamps may be affected and adjustment may be necessary.

If oncoming vehicles flash their high beams at you, this may mean the vertical aim of your headlamps needs to be adjusted.

It is recommended that the vehicle is taken to your dealer/retailer for service if the headlamps need to be adjusted. It is possible however, to re-aim the headlamps as described.

The vehicle should be properly prepared as follows:

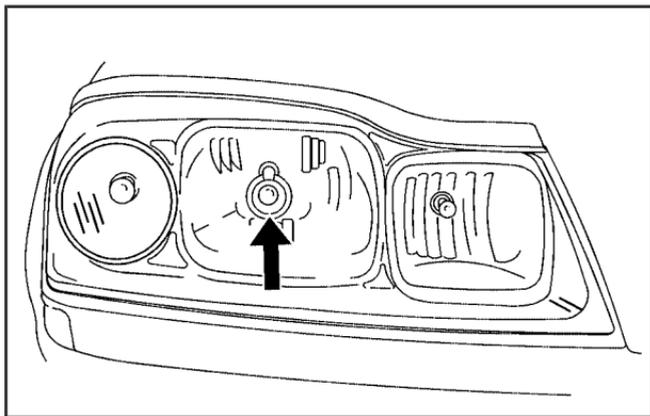
- The vehicle should be placed so the headlamps are 25 ft. (7.6 m) from a light colored wall.
- The vehicle must have all four tires on a level surface which is level all the way to the wall.

- The vehicle should be placed so it is perpendicular to the wall or other flat surface.
- The vehicle should not have any snow, ice, or mud on it.
- The vehicle should be fully assembled and all other work stopped while headlamp aiming is being performed.
- The vehicle should be normally loaded with a full tank of fuel and one person or 160 lbs (75 kg) sitting on the driver's seat.
- Tires should be properly inflated.
- The spare tire is in its proper location in the vehicle.

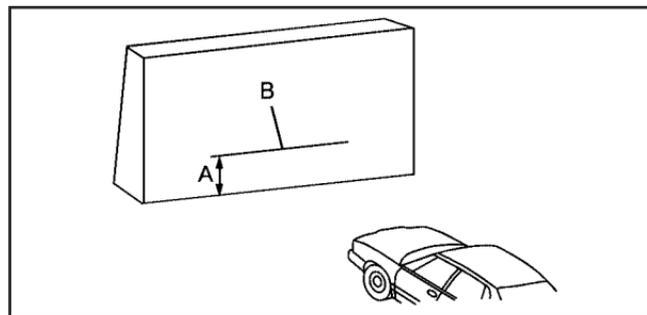
Headlamp aiming is done with the vehicle's low-beam headlamps. The high-beam headlamps will be correctly aimed if the low-beam headlamps are aimed properly.

To adjust the vertical aim:

1. Open the hood. See *Hood Release* on page 313 for more information.



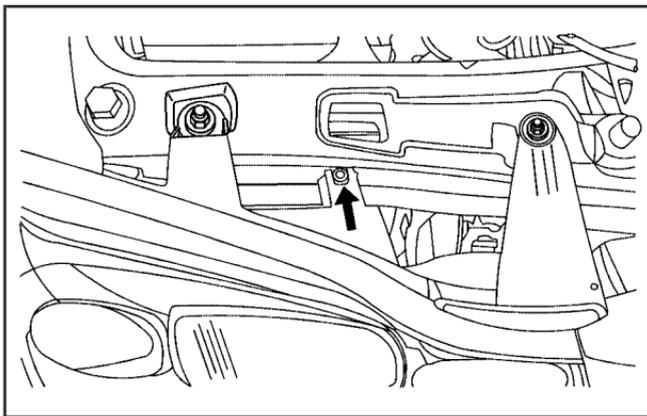
2. Locate the aim dot on the lens of the low-beam headlamp.
3. Measure the distance from the ground to the aim dot on the low-beam headlamp. Record the distance.



4. At the wall measure from the ground upward (A) to the recorded distance from Step 3 and mark it.
5. Draw or tape a horizontal line (B) on the wall the width of the vehicle at the height of the mark in Step 4.

**Notice:** Do not cover a headlamp to improve beam cut-off when aiming. Covering a headlamp may cause excessive heat build-up which may cause damage to the headlamp.

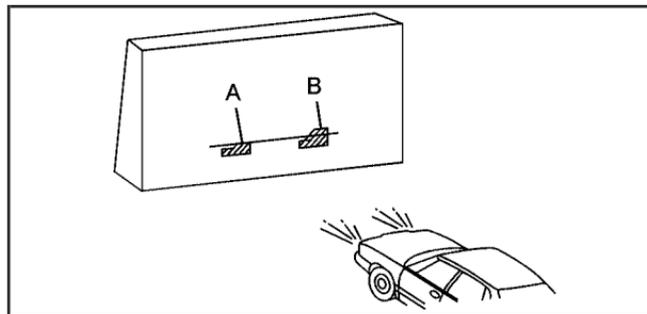
6. Turn on the low-beam headlamps and place a piece of cardboard or equivalent in front of the headlamp not being adjusted. This allows only the beam of light from the headlamp being adjusted to be seen on the flat surface.



7. Locate the vertical headlamp aiming screws, which are under the hood near each headlamp assembly.

The adjustment screw can be turned with a 6 mm socket.

8. Turn the vertical aiming screw until the headlamp beam is aimed to the horizontal tape line. Turn it clockwise or counterclockwise to raise or lower the angle of the beam.



9. Make sure that the light from the headlamp is positioned at the bottom edge of the horizontal tape line. The lamp on the left (A) shows the correct headlamp aim. The lamp on the right (B) shows the incorrect headlamp aim.
10. Repeat Steps 7 through 9 for the opposite headlamp.

## Bulb Replacement

For the type of bulb to use, see *Replacement Bulbs* on page 364.

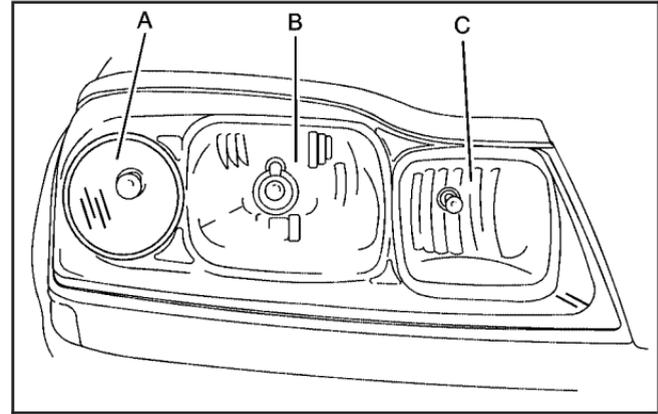
For any bulb changing procedure not listed in this section, contact your retailer.

### Halogen Bulbs

#### CAUTION:

Halogen bulbs have pressurized gas inside and can burst if you drop or scratch the bulb. You or others could be injured. Be sure to read and follow the instructions on the bulb package.

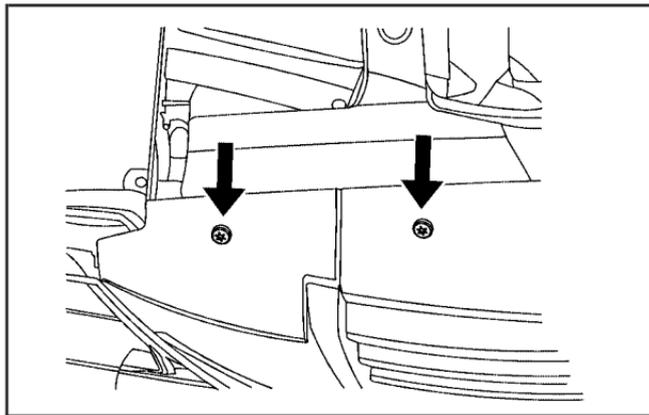
## Headlamps



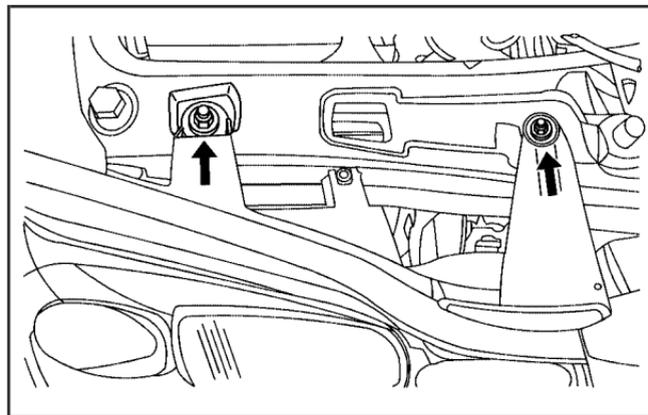
- A. Parking/Turn Signal Lamp
- B. Low-beam Headlamp/Daytime Running Lamp (DRL)
- C. High-beam Headlamp

To replace one of the headlamp bulbs, use the following procedure. To replace the parking/turn signal lamp bulb, see *Front Turn Signal and Parking Lamps* on page 361.

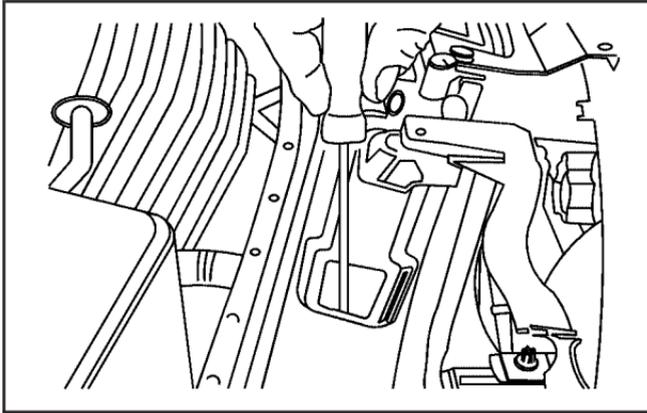
1. Open the hood. See *Hood Release* on page 313 for more information.



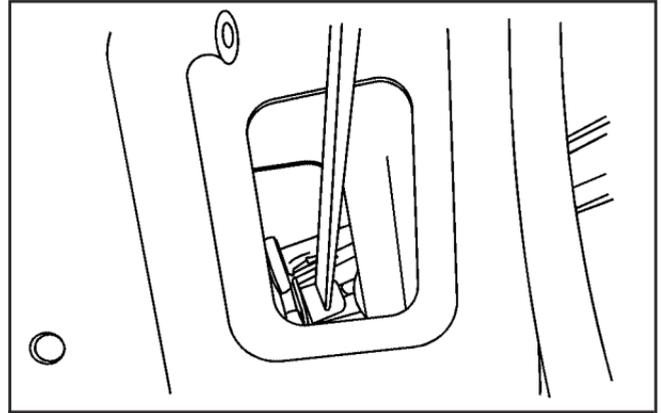
2. Remove the two screws from the top of the front fascia and grille. They are inboard of the headlamp assembly.



3. Remove the two screws retaining the headlamp assembly.



4. Insert a flat blade tool through the opening in the top. Make sure the tool fits through the opening in the headlamp bracket lower arm.

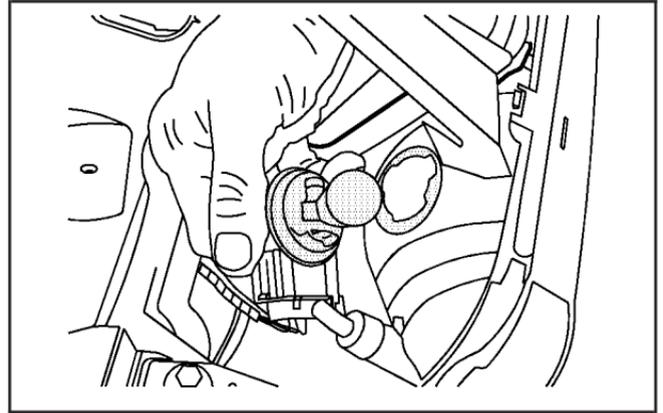


5. Push the locking tab toward the rear of the vehicle with the tool to lift the headlamp bracket lower arm.
6. Pull back on the front fascia and then pull the headlamp assembly out from the vehicle. You may need someone to assist you with this step.
7. Disconnect the electrical connector from the bulb assembly.
8. Turn the bulb assembly counterclockwise to remove it from the housing.
9. Replace the old bulb with a new one.
10. Reverse Steps 1 through 8 to reinstall.

## Front Turn Signal and Parking Lamps

To replace a front turn signal or parking lamp bulb, do the following:

1. Follow Steps 1 through 6 under *Headlamps on page 358* to access the front turn signal or parking lamp.
2. Turn the bulb to be replaced counterclockwise to remove it from the headlamp assembly.
3. Pull the bulb out of the bulb socket assembly.

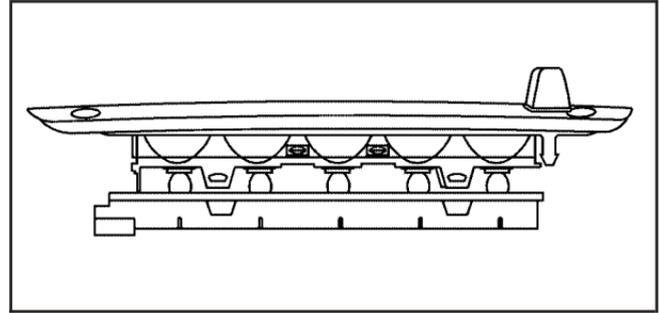


4. Push the new bulb into the bulb socket assembly.
5. Insert the bulb assembly into the headlamp assembly.
6. Turn the bulb assembly clockwise until seated.
7. Reverse the steps to reinstall the headlamp assembly.

## Center High-Mounted Stoplamp (CHMSL)

To replace a CHMSL bulb, do the following:

1. Remove the center high-mounted stoplamp (CHMSL) fasteners from the outside of the vehicle.
2. Pull the CHMSL out of the liftgate.
3. Disconnect the rear washer hose from the rear washer nozzle.
4. Disconnect the electrical connector from the CHMSL.

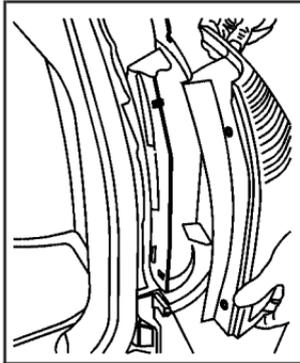


5. Depress the tabs on the CHMSL lens to separate the CHMSL bulb from the CHMSL lens.
6. Pull the CHMSL bulb out of the assembly.
7. Replace the old bulb with a new one.
8. Align the tabs on the CHMSL lens with the CHMSL bulb assembly, and push to install.
9. Reverse Steps 1 through 4 to reinstall the CHMSL assembly.

## Taillamps, Turn Signal, Stoplamps and Back-up Lamps

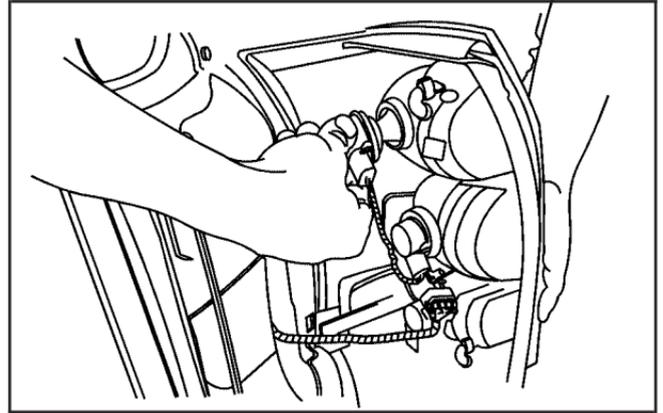
To replace one of these bulbs, do the following:

1. Open the liftgate. See *Liftgate* on page 103 for more information.
2. Remove the two screws retaining the taillamp assembly.



3. Slide the taillamp assembly rearward and away from the vehicle.

4. Disconnect the electrical connector and remove it from the taillamp assembly.

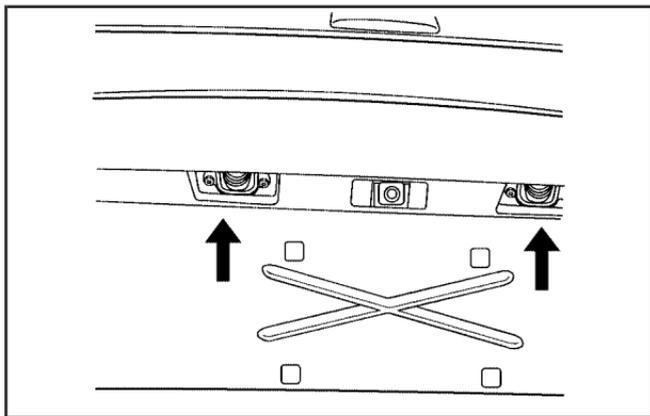


5. Turn the bulb socket being replaced counterclockwise to disconnect it.
6. Pull the bulb out of the bulb socket.
7. Push the new bulb into the bulb socket.
8. Reverse Steps 2 through 4 to reinstall the taillamp assembly.

## License Plate Lamp

To replace one of these bulbs, do the following:

1. Remove the two screws holding each of the license plate lamps to the fascia.



2. Turn and pull the license plate lamp forward through the fascia opening.
3. Turn the bulb socket counterclockwise and pull the bulb straight out of the socket.
4. Install the new bulb.
5. Reverse Steps 1 through 3 to reinstall the license plate lamp.

## Replacement Bulbs

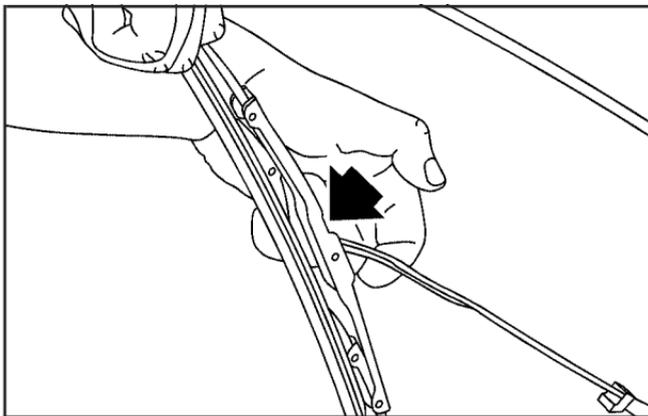
Exterior Lamp	Bulb Number
Back-up	3156
CHMSL	W5W
Front Turn Signal/Parking	3157K
Headlamps	
High-beam	9005 or HB3
Low-beam/DRL	9006 or HB4
Rear Turn Signal, Stoplamp and Taillamp	3057

For replacement bulbs not listed here, contact your dealer/retailer.

## Windshield Wiper Blade Replacement

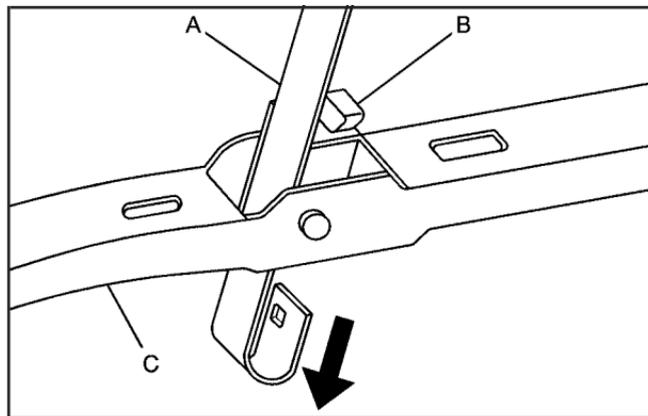
Windshield wiper blades should be inspected for wear and cracking. See *Scheduled Maintenance on page 420* for more information.

Replacement blades come in different types and are removed in different ways. For proper type and length, see *Normal Maintenance Replacement Parts on page 434*.



To replace the windshield wiper blade assembly do the following:

1. Lift the wiper arm away from the windshield.



2. Push the release lever (B) to disengage the hook and push the wiper arm (A) out of the blade (C).
3. Push the new wiper blade securely on the wiper arm until you hear the release lever click into place.

To replace the rear wiper blade, follow the steps listed above.

# Tires

Your new vehicle comes with high-quality tires made by a leading tire manufacturer. If you ever have questions about your tire warranty and where to obtain service, see your Saturn Warranty booklet for details. For additional information refer to the tire manufacturer's booklet included with your vehicle.

## CAUTION:

Poorly maintained and improperly used tires are dangerous.

- **Overloading your vehicle's tires can cause overheating as a result of too much friction. You could have an air-out and a serious accident. See *Loading Your Vehicle on page 279.***
- **Underinflated tires pose the same danger as overloaded tires. The resulting accident could cause serious injury. Check all tires frequently to maintain the recommended pressure.**

**CAUTION: (Continued)**

## **CAUTION: (Continued)**

**Tire pressure should be checked when your vehicle's tires are cold. See *Inflation - Tire Pressure on page 374.***

- **Overinflated tires are more likely to be cut, punctured, or broken by a sudden impact — such as when you hit a pothole. Keep tires at the recommended pressure.**
- **Worn, old tires can cause accidents. If the tire's tread is badly worn, or if your vehicle's tires have been damaged, replace them.**

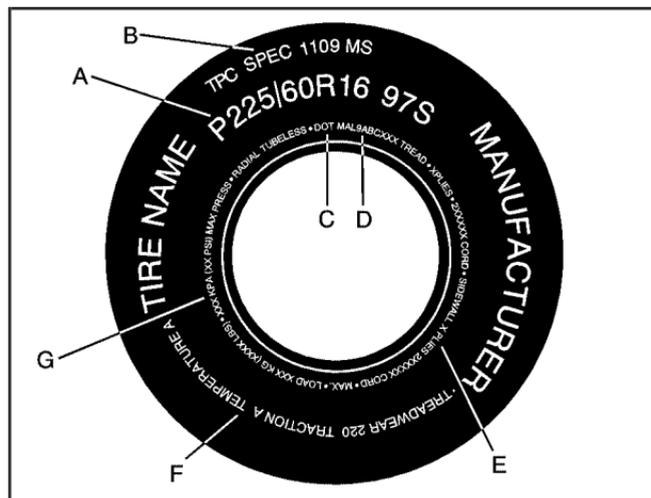
## **Low-Profile Performance Tire (Red Line)**

If your vehicle has P245/50R18 size tires, they are classified as low-profile performance tires. These tires are designed for very responsive driving on wet or dry pavement. You may also notice more road noise with low-profile performance tires and that they tend to wear faster.

**Notice:** If your vehicle has low-profile tires, they are more susceptible to damage from road hazards or curb impact than standard profile tires. Tire and/or wheel assembly damage can occur when coming into contact with road hazards like, potholes, or sharp edged objects, or when sliding into a curb. Your Saturn Warranty does not cover this type of damage. Keep tires set to the correct inflation pressure and, when possible avoid contact with curbs, potholes, and other road hazards.

## Tire Sidewall Labeling

Useful information about a tire is molded into its sidewall. The examples below show a typical passenger vehicle tire and a compact spare tire sidewall.



**Passenger (P-Metric) Tire Example**

**(A) Tire Size:** The tire size is a combination of letters and numbers used to define a particular tire's width, height, aspect ratio, construction type, and service description. See the "Tire Size" illustration later in this section for more detail.

**(B) TPC Spec (Tire Performance Criteria Specification):** Original equipment tires designed to GM's specific tire performance criteria have a TPC specification code molded onto the sidewall. GM's TPC specifications meet or exceed all federal safety guidelines.

**(C) DOT (Department of Transportation):** The Department of Transportation (DOT) code indicates that the tire is in compliance with the U.S. Department of Transportation Motor Vehicle Safety Standards.

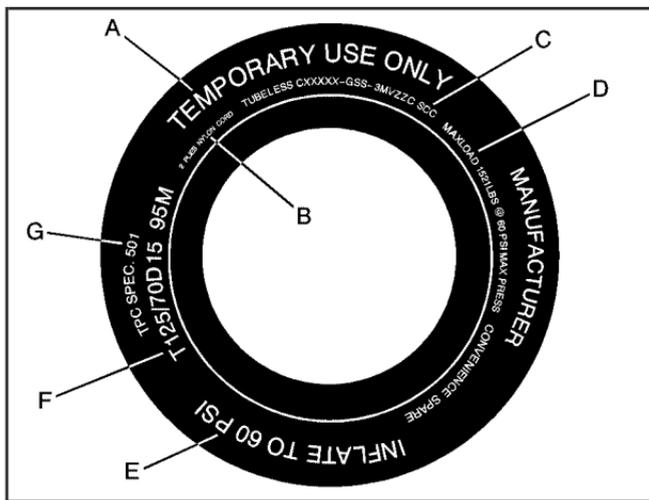
**(D) Tire Identification Number (TIN):** The letters and numbers following DOT (Department of Transportation) code is the Tire Identification Number (TIN). The TIN shows the manufacturer and plant code, tire size, and date the tire was manufactured. The TIN is molded onto both sides of the tire, although only one side may have the date of manufacture.

**(E) Tire Ply Material:** The type of cord and number of plies in the sidewall and under the tread.

**(F) Uniform Tire Quality Grading (UTQG):** Tire manufacturers are required to grade tires based on three performance factors: treadwear, traction, and temperature resistance. For more information see *Uniform Tire Quality Grading on page 380*.

**(G) Maximum Cold Inflation Load**

**Limit:** Maximum load that can be carried and the maximum pressure needed to support that load.



**Compact Spare Tire Example**

**(A) Temporary Use Only:** The compact spare tire or temporary use tire has a tread life of approximately 3,000 miles (5 000 km) and should not be driven at speeds over 65 mph (105 km/h). The compact spare tire is for emergency use when a regular road tire has lost air and gone flat. If your vehicle has a compact spare tire, see *Compact Spare Tire on page 398* and *If a Tire Goes Flat on page 385*.

**(B) Tire Ply Material:** The type of cord and number of plies in the sidewall and under the tread.

**(C) Tire Identification Number (TIN):** The letters and numbers following the DOT (Department of Transportation) code is the Tire Identification Number (TIN). The TIN shows the manufacturer and plant code, tire size, and date the tire was manufactured. The TIN is molded onto both sides of the tire, although only one side may have the date of manufacture.

**(D) Maximum Cold Inflation Load Limit:** Maximum load that can be carried and the maximum pressure needed to support that load.

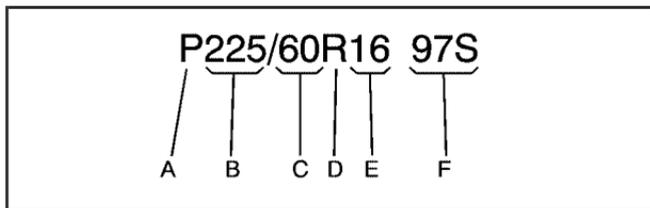
**(E) Tire Inflation:** The temporary use tire or compact spare tire should be inflated to 60 psi (420 kPa). For more information on tire pressure and inflation see *Inflation - Tire Pressure on page 374*.

**(F) Tire Size:** A combination of letters and numbers define a tire's width, height, aspect ratio, construction type, and service description. The letter T as the first character in the tire size means the tire is for temporary use only.

**(G) TPC Spec (Tire Performance Criteria Specification):** Original equipment tires designed to GM's specific tire performance criteria have a TPC specification code molded onto the sidewall. GM's TPC specifications meet or exceed all federal safety guidelines.

## Tire Size

The following illustration shows an example of a typical passenger vehicle tire size.



**(A) Passenger (P-Metric) Tire:** The United States version of a metric tire sizing system. The letter P as the first character in the tire size

means a passenger vehicle tire engineered to standards set by the U.S. Tire and Rim Association.

**(B) Tire Width:** The three-digit number indicates the tire section width in millimeters from sidewall to sidewall.

**(C) Aspect Ratio:** A two-digit number that indicates the tire height-to-width measurements. For example, if the tire size aspect ratio is 60, as shown in item C of the illustration, it would mean that the tire's sidewall is 60 percent as high as it is wide.

**(D) Construction Code:** A letter code is used to indicate the type of ply construction in the tire. The letter R means radial ply construction; the letter D means diagonal or bias ply construction; and the letter B means belted-bias ply construction.

**(E) Rim Diameter:** Diameter of the wheel in inches.

**(F) Service Description:** These characters represent the load range and speed rating of the tire. The load index represents the load carry capacity a tire is certified to carry. The load index can range from 1 to 279. The speed rating is the maximum speed a tire is certified to carry a load. Speed ratings range from A to Z.

## Tire Terminology and Definitions

**Air Pressure:** The amount of air inside the tire pressing outward on each square inch of the tire. Air pressure is expressed in pounds per square inch (psi) or kilopascal (kPa).

**Accessory Weight:** This means the combined weight of optional accessories. Some examples of optional accessories are, automatic transmission, power steering, power brakes, power windows, power seats, and air conditioning.

**Aspect Ratio:** The relationship of a tire's height to its width.

**Belt:** A rubber coated layer of cords that is located between the plies and the tread. Cords may be made from steel or other reinforcing materials.

**Bead:** The tire bead contains steel wires wrapped by steel cords that hold the tire onto the rim.

**Bias Ply Tire:** A pneumatic tire in which the plies are laid at alternate angles less than 90 degrees to the centerline of the tread.

**Cold Tire Pressure:** The amount of air pressure in a tire, measured in pounds per square inch (psi) or kilopascals (kPa) before a tire has built up heat from driving. See *Inflation - Tire Pressure on page 374*.

**Curb Weight:** This means the weight of a motor vehicle with standard and optional equipment including the maximum capacity of fuel, oil, and coolant, but without passengers and cargo.

**DOT Markings:** A code molded into the sidewall of a tire signifying that the tire is in compliance with the U.S. Department of Transportation (DOT) motor vehicle safety standards. The DOT code includes the Tire Identification Number (TIN), an alphanumeric designator which can also identify the tire manufacturer, production plant, brand, and date of production.

**GVWR:** Gross Vehicle Weight Rating. See *Loading Your Vehicle on page 279*.

**GAWR FRT:** Gross Axle Weight Rating for the front axle. See *Loading Your Vehicle on page 279*.

**GAWR RR:** Gross Axle Weight Rating for the rear axle. See *Loading Your Vehicle on page 279*.

**Intended Outboard Sidewall:** The side of an asymmetrical tire, that must always face outward when mounted on a vehicle.

**Kilopascal (kPa):** The metric unit for air pressure.

**Light Truck (LT-Metric) Tire:** A tire used on light duty trucks and some multipurpose passenger vehicles.

**Load Index:** An assigned number ranging from 1 to 279 that corresponds to the load carrying capacity of a tire.

**Maximum Inflation Pressure:** The maximum air pressure to which a cold tire may be inflated. The maximum air pressure is molded onto the sidewall.

**Maximum Load Rating:** The load rating for a tire at the maximum permissible inflation pressure for that tire.

**Maximum Loaded Vehicle Weight:** The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

**Normal Occupant Weight:** The number of occupants a vehicle is designed to seat multiplied by 150 lbs (68 kg). See *Loading Your Vehicle on page 279*.

**Occupant Distribution:** Designated seating positions.

**Outward Facing Sidewall:** The side of an asymmetrical tire that has a particular side that faces outward when mounted on a vehicle. The side of the tire that contains a whitewall, bears white lettering, or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same moldings on the other sidewall of the tire.

**Passenger (P-Metric) Tire:** A tire used on passenger cars and some light duty trucks and multipurpose vehicles.

**Recommended Inflation Pressure:** Vehicle manufacturer's recommended tire inflation pressure as shown on the tire placard. See *Inflation - Tire Pressure on page 374* and *Loading Your Vehicle on page 279*.

**Radial Ply Tire:** A pneumatic tire in which the ply cords that extend to the beads are laid at 90 degrees to the centerline of the tread.

**Rim:** A metal support for a tire and upon which the tire beads are seated.

**Sidewall:** The portion of a tire between the tread and the bead.

**Speed Rating:** An alphanumeric code assigned to a tire indicating the maximum speed at which a tire can operate.

**Traction:** The friction between the tire and the road surface. The amount of grip provided.

**Tread:** The portion of a tire that comes into contact with the road.

**Treadwear Indicators:** Narrow bands, sometimes called wear bars, that show across the tread of a tire when only 1/16 inch (1.6 mm) of tread remains. See *When It Is Time for New Tires on page 377*.

**UTQGS (Uniform Tire Quality Grading Standards):** A tire information system that provides consumers with ratings for a tire's traction, temperature, and treadwear. Ratings are determined by tire manufacturers using government testing procedures. The ratings are molded into the sidewall of the tire. See *Uniform Tire Quality Grading on page 380*.

**Vehicle Capacity Weight:** The number of designated seating positions multiplied by 150 lbs (68 kg) plus the rated cargo load. See *Loading Your Vehicle on page 279*.

**Vehicle Maximum Load on the Tire:** Load on an individual tire due to curb weight, accessory weight, occupant weight, and cargo weight.

**Vehicle Placard:** A label permanently attached to a vehicle showing the vehicle's capacity weight and the original equipment tire size and recommended inflation pressure. See "Tire and Loading Information Label" under *Loading Your Vehicle on page 279*.

## Inflation - Tire Pressure

Tires need the correct amount of air pressure to operate effectively.

**Notice:** Do not let anyone tell you that under-inflation or over-inflation is all right. It is not. If your tires do not have enough air (under-inflation), you can get the following:

- Too much flexing
- Too much heat
- Tire overloading
- Premature or irregular wear
- Poor handling
- Reduced fuel economy

If your tires have too much air (over-inflation), you can get the following:

- Unusual wear
- Poor handling
- Rough ride
- Needless damage from road hazards

A Tire and Loading Information label is attached to the vehicle's center pillar (B-pillar). This label shows your vehicle's original equipment tires and the correct inflation pressures for your tires when they are cold. The recommended cold tire inflation pressure, shown on the label, is the minimum amount of air pressure needed to support your vehicle's maximum load carrying capacity.

For additional information regarding how much weight your vehicle can carry, and an example of the Tire and Loading Information label, see *Loading Your Vehicle on page 279*. How you load your vehicle affects vehicle handling and ride comfort. Never load your vehicle with more weight than it was designed to carry.

### When to Check

Check your tires once a month or more. Do not forget to check the compact spare tire, it should be at 60 psi (420 kPa). For additional information regarding the compact spare tire, see *Compact Spare Tire on page 398*.

## How to Check

Use a good quality pocket-type gage to check tire pressure. You cannot tell if your tires are properly inflated simply by looking at them. Radial tires may look properly inflated even when they are under-inflated. Check the tire's inflation pressure when the tires are cold. Cold means your vehicle has been sitting for at least three hours or driven no more than 1 mile (1.6 km).

Remove the valve cap from the tire valve stem. Press the tire gage firmly onto the valve to get a pressure measurement. If the cold tire inflation pressure matches the recommended pressure on the Tire and Loading Information label, no further adjustment is necessary. If the inflation pressure is low, add air until you reach the recommended amount.

If you overfill the tire, release air by pushing on the metal stem in the center of the tire valve. Re-check the tire pressure with the tire gage.

Be sure to put the valve caps back on the valve stems. They help prevent leaks by keeping out dirt and moisture.

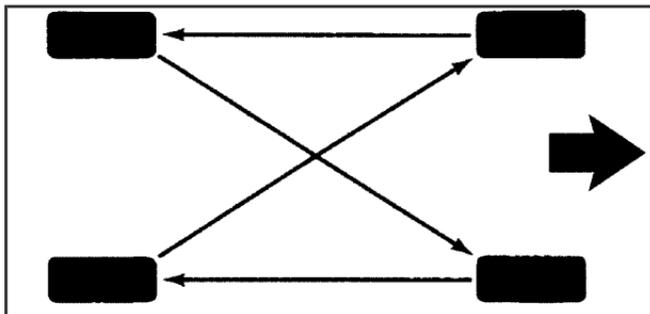
## Tire Inspection and Rotation

Tires should be rotated every 5,000 to 8,000 miles (8 000 to 13 000 km).

Any time you notice unusual wear, rotate your tires as soon as possible and check wheel alignment. Also check for damaged tires or wheels. See *When It Is Time for New Tires on page 377* and *Wheel Replacement on page 382* for more information.

The purpose of regular rotation is to achieve more uniform wear for all tires on the vehicle. The first rotation is the most important. See *Scheduled Maintenance on page 420*.

When towing your vehicle with all four wheels on the ground, the vehicle's odometer will not record the miles generated while towing. Keep a record of how many miles your vehicle was towed so they can be added to the mileage on the vehicle's odometer when following your maintenance schedule for recommended services.



When rotating your tires, always use the correct rotation pattern shown here.

Do not include the compact spare tire in your tire rotation.

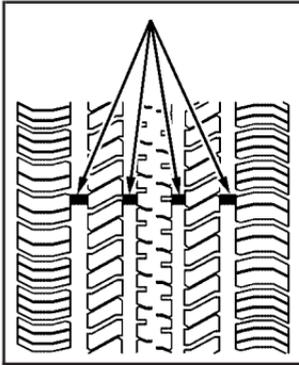
After the tires have been rotated, adjust the front and rear inflation pressures as shown on the Tire and Loading Information label. See *Loading Your Vehicle* on page 279.

Make certain that all wheel nuts are properly tightened. See “Wheel Nut Torque” under *Capacities and Specifications* on page 414.

**⚠ CAUTION:**

Rust or dirt on a wheel, or on the parts to which it is fastened, can make wheel nuts become loose after time. The wheel could come off and cause an accident. When you change a wheel, remove any rust or dirt from places where the wheel attaches to the vehicle. In an emergency, you can use a cloth or a paper towel to do this; but be sure to use a scraper or wire brush later, if needed, to get all the rust or dirt off. See *Changing a Flat Tire* on page 386.

## When It Is Time for New Tires



One way to tell when it is time for new tires is to check the treadwear indicators, which will appear when your tires have only 1/16 inch (1.6 mm) or less of tread remaining.

You need a new tire if any of the following statements are true:

- You can see the indicators at three or more places around the tire.
- You can see cord or fabric showing through the tire's rubber.

- The tread or sidewall is cracked, cut, or snagged deep enough to show cord or fabric.
- The tire has a bump, bulge, or split.
- The tire has a puncture, cut, or other damage that cannot be repaired well because of the size or location of the damage.

## Buying New Tires

GM has developed and matched specific tires for your vehicle. The original equipment tires installed on your vehicle, when it was new, were designed to meet General Motors Tire Performance Criteria Specification (TPC spec) system rating. If you need replacement tires, GM strongly recommends that you get tires with the same TPC Spec rating. This way, your vehicle will continue to have tires that are designed to give the same performance and vehicle safety, during normal use, as the original tires.

GM's exclusive TPC Spec system considers over a dozen critical specifications that impact the overall performance of your vehicle, including brake system performance, ride and handling, traction control, and tire pressure monitoring performance. GM's TPC Spec number is molded onto the tire's sidewall by the tire manufacturer. If the tires have an all-season tread design, the TPC spec number will be followed by an MS for mud and snow. See *Tire Sidewall Labeling* on page 367 for additional information.

 **CAUTION:**

**Mixing tires could cause you to lose control while driving. If you mix tires of different sizes, brands, or types (radial and bias-belted tires), the vehicle may not handle properly, and you could have a crash. Using tires of different sizes,**

**CAUTION: (Continued)**

**CAUTION: (Continued)**

**brands, or types may also cause damage to your vehicle. Be sure to use the correct size, brand, and type of tires on all wheels. It is all right to drive with your compact spare temporarily, as it was developed for use on your vehicle. See *Compact Spare Tire* on page 398.**

 **CAUTION:**

**If you use bias-ply tires on your vehicle, the wheel rim flanges could develop cracks after many miles of driving. A tire and/or wheel could fail suddenly, causing a crash. Use only radial-ply tires with the wheels on your vehicle.**

If you must replace your vehicle's tires with those that do not have a TPC Spec number, make sure they are the same size, load range, speed rating, and construction type (radial and bias-belted tires) as your vehicle's original tires.

Your vehicle's original equipment tires are listed on the Tire and Loading Information label. This label is attached to the vehicle's center pillar (B-pillar). See *Loading Your Vehicle on page 279*, for more information about the Tire and Loading Information label and its location on your vehicle.

## Different Size Tires and Wheels

If you add wheels or tires that are a different size than your original equipment wheels and tires, this may affect the way your vehicle performs, including its braking, ride and handling characteristics, stability, and resistance to rollover. Additionally, if your vehicle has electronic systems such as, anti-lock brakes, traction control, and stability control, the performance of these systems can be affected.

### CAUTION:

**If you add different sized wheels, your vehicle may not provide an acceptable level of performance and safety if tires not recommended for those wheels are selected. You may increase the chance that you will crash and suffer serious injury. Only use Saturn specific wheel and tire systems developed for your vehicle, and have them properly installed by a Saturn certified technician.**

See *Buying New Tires on page 377* and *Accessories and Modifications on page 304* for additional information.

## Uniform Tire Quality Grading

Quality grades can be found where applicable on the tire sidewall between tread shoulder and maximum section width. For example:

### **Treadwear 200 Traction AA Temperature A**

The following information relates to the system developed by the United States National Highway Traffic Safety Administration (NHTSA), which grades tires by treadwear, traction, and temperature performance. This applies only to vehicles sold in the United States. The grades are molded on the sidewalls of most passenger car tires. The Uniform Tire Quality Grading (UTQG) system does not apply to deep tread, winter-type snow tires, space-saver, or temporary use spare tires, tires with nominal rim diameters of 10 to 12 inches (25 to 30 cm), or to some limited-production tires.

While the tires available on General Motors passenger cars and light trucks may vary with respect to these grades, they must also conform to federal safety requirements and additional General Motors Tire Performance Criteria (TPC) standards.

### **Treadwear**

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example, a tire graded 150 would wear one and a half (1.5) times as well on the government course as a tire graded 100. The relative performance of tires depends upon the actual conditions of their use, however, and may depart significantly from the norm due to variations in driving habits, service practices, and differences in road characteristics and climate.

## Traction – AA, A, B, C

The traction grades, from highest to lowest, are AA, A, B, and C. Those grades represent the tire's ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete. A tire marked C may have poor traction performance.

**Warning:** The traction grade assigned to this tire is based on straight-ahead braking traction tests, and does not include acceleration, cornering, hydroplaning, or peak traction characteristics.

## Temperature – A, B, C

The temperature grades are A (the highest), B, and C, representing the tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel. Sustained high temperature can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure. The grade C corresponds to a level of performance which all passenger car tires must meet under the Federal Motor Vehicle Safety Standard No. 109. Grades B and A represent higher levels of performance on the laboratory test wheel than the minimum required by law.

**Warning:** The temperature grade for this tire is established for a tire that is properly inflated and not overloaded. Excessive speed, underinflation, or excessive loading, either separately or in combination, can cause heat buildup and possible tire failure.

## Wheel Alignment and Tire Balance

The tires and wheels on your vehicle were aligned and balanced carefully at the factory to give you the longest tire life and best overall performance. Adjustments to wheel alignment and tire balancing will not be necessary on a regular basis. However, if you notice unusual tire wear or your vehicle pulling to one side or the other, the alignment may need to be checked. If you notice your vehicle vibrating when driving on a smooth road, your tires and wheels may need to be rebalanced. See your retailer for proper diagnosis.

## Wheel Replacement

Replace any wheel that is bent, cracked or badly rusted or corroded. If wheel nuts keep coming loose, the wheel, wheel bolts and wheel nuts should be replaced. If the wheel leaks air, replace it (except some aluminum wheels, which can sometimes be repaired). See your dealer/retailer if any of these conditions exist.

Your dealer/retailer will know the kind of wheel you need.

Each new wheel should have the same load-carrying capacity, diameter, width, offset and be mounted the same way as the one it replaces.

If you need to replace any of your wheels, wheel bolts or wheel nuts, replace them only with new Saturn original equipment parts. This way, you will be sure to have the right wheel, wheel bolts and wheel nuts for your vehicle.

 **CAUTION:**

Using the wrong replacement wheels, wheel bolts, or wheel nuts on your vehicle can be dangerous. It could affect the braking and handling of your vehicle, make your tires lose air and make you lose control. You could have a collision in which you or others could be injured. Always use the correct wheel, wheel bolts, and wheel nuts for replacement.

**Notice:** The wrong wheel can also cause problems with bearing life, brake cooling, speedometer or odometer calibration, headlamp aim, bumper height, vehicle ground clearance, and tire or tire chain clearance to the body and chassis.

See *Changing a Flat Tire* on page 386 for more information.

## Used Replacement Wheels

 **CAUTION:**

Putting a used wheel on your vehicle is dangerous. You cannot know how it has been used or how far it has been driven. It could fail suddenly and cause a crash. If you have to replace a wheel, use a new Saturn original equipment wheel.

## Tire Chains

### CAUTION:

If your vehicle has P235/65R16, P235/60R17, or P245/50R18 size tires, do not use tire chains. They can damage your vehicle because there is not enough clearance.

Tire chains used on a vehicle without the proper amount of clearance can cause damage to the brakes, suspension, or other vehicle parts. The area damaged by the tire chains could cause you to lose control of your vehicle and you or others may be injured in a crash.

Use another type of traction device only if its manufacturer recommends it for use on your vehicle and tire size combination and road conditions. Follow that manufacturer's instructions. To help avoid

CAUTION: (Continued)

### CAUTION: (Continued)

damage to your vehicle, drive slowly, readjust, or remove the device if it is contacting your vehicle, and do not spin your wheels.

If you do find traction devices that will fit, install them on the front tires.

**Notice:** If your vehicle has a tire size other than P235/65R16, P235/60R17, or P245/50R18 size tires, use tire chains only where legal and only when you must. Use only SAE Class "S" type chains that are the proper size for your tires. Install them on the front tires and tighten them as tightly as possible with the ends securely fastened. Drive slowly and follow the chain manufacturer's instructions. If you can hear the chains contacting your vehicle, stop and retighten them. If the contact continues, slow down until it stops. Driving too fast or spinning the wheels with chains on will damage your vehicle.

## If a Tire Goes Flat

It is unusual for a tire to blowout while you are driving, especially if you maintain your vehicle's tires properly. If air goes out of a tire, it is much more likely to leak out slowly. But if you should ever have a blowout, here are a few tips about what to expect and what to do:

If a front tire fails, the flat tire will create a drag that pulls the vehicle toward that side. Take your foot off the accelerator pedal and grip the steering wheel firmly. Steer to maintain lane position, and then gently brake to a stop well out of the traffic lane.

A rear blowout, particularly on a curve, acts much like a skid and may require the same correction you would use in a skid. In any rear blowout remove your foot from the accelerator pedal. Get the vehicle under control by steering the way you want the vehicle to go. It may be very bumpy and noisy, but you can still steer. Gently brake to a stop, well off the road if possible.

### CAUTION:

**Lifting a vehicle and getting under it to do maintenance or repairs is dangerous without the appropriate safety equipment and training. The jack provided with your vehicle is designed only for changing a flat tire. If it is used for anything else, you or others could be badly injured or killed if the vehicle slips off the jack. Use the jack provided with your vehicle only for changing a flat tire.**

If a tire goes flat, the next part shows how to use the jacking equipment to change a flat tire safely.

## Changing a Flat Tire

If a tire goes flat, avoid further tire and wheel damage by driving slowly to a level place. Turn on your hazard warning flashers.

### CAUTION:

Changing a tire can be dangerous. The vehicle can slip off the jack and roll over or fall on you or other people. You and they could be badly injured or even killed. Find a level place to change your tire. To help prevent the vehicle from moving:

1. Set the parking brake firmly.
2. Put an automatic transaxle shift lever in **PARK (P)**, or shift a manual transaxle to **FIRST (1)** or **REVERSE (R)**.

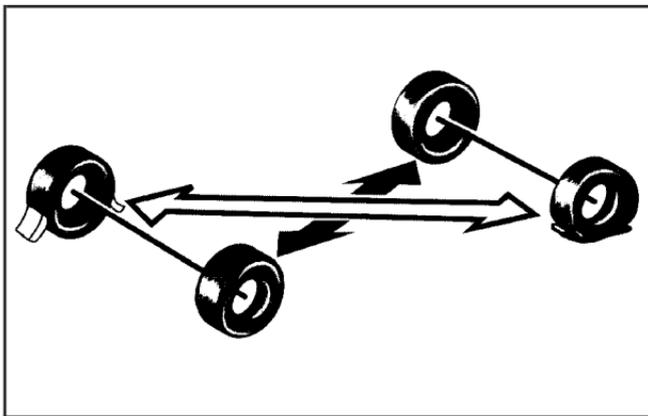
**CAUTION: (Continued)**

### **CAUTION: (Continued)**

3. Turn off the engine and do not restart while the vehicle is raised.
4. Do not allow passengers to remain in the vehicle.

To be even more certain the vehicle will not move, you should put blocks at the front and rear of the tire farthest away from the one being changed. That would be the tire on the other side, at the opposite end of the vehicle.

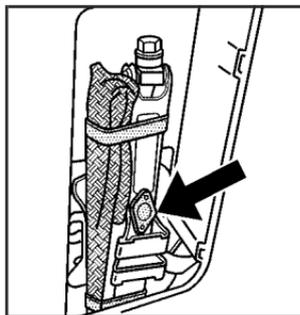
When you have a flat tire, use the following example as a guide to assist you in the placement of wheel blocks.



The following information will tell you how to use the jack and change a tire.

## Removing the Spare Tire and Tools

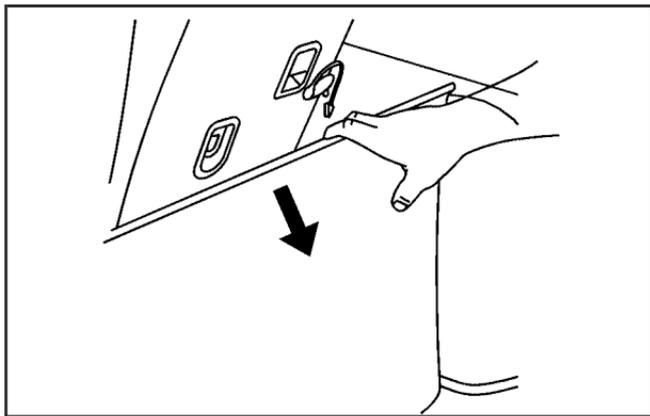
The tools you will need are located on the driver's side of the rear cargo area. To access the tools, do the following:



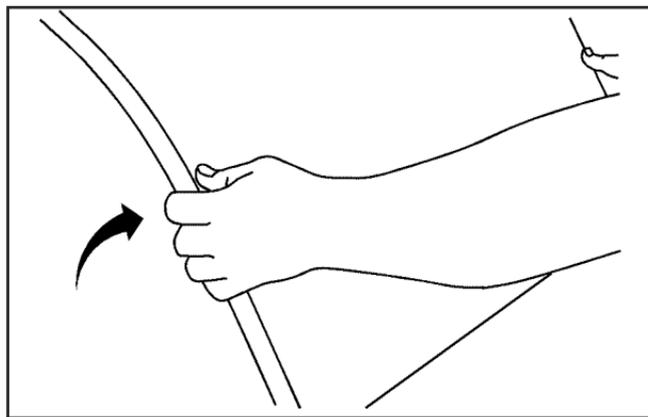
1. Remove the wing-bolt from the jack.

2. Remove the jack and wheel wrench.
3. Remove the straps holding the bag containing the wheel wrench. Then remove the wheel wrench from the bag.
4. Fold out the socket portion of the wrench from the handle.

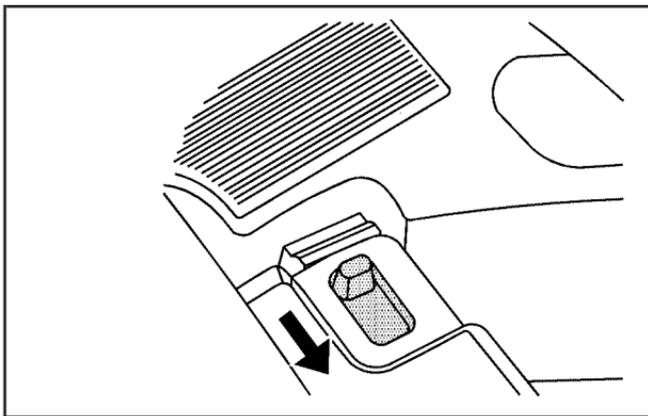
To access the spare tire, do the following:



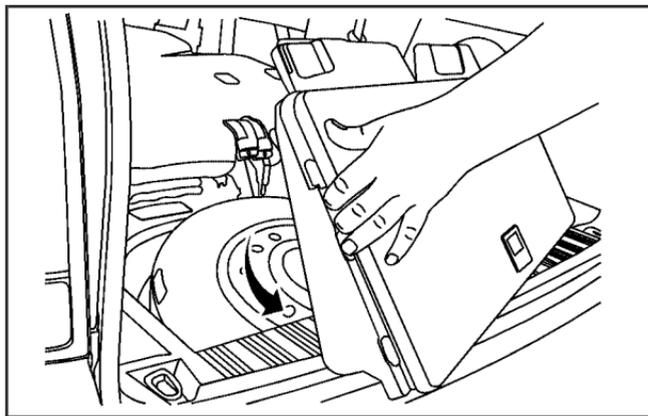
1. Lift the forward floor panel of the load floor cargo organizer.



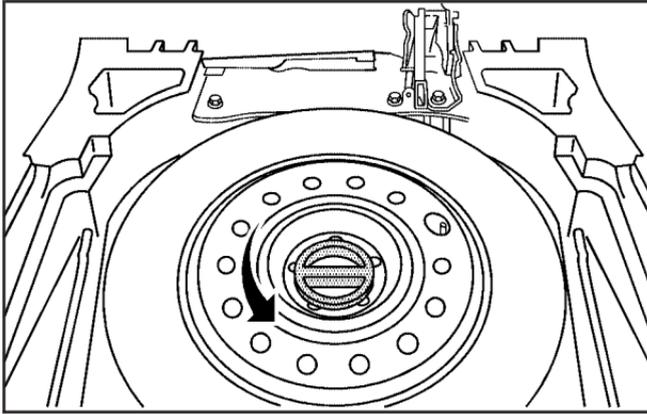
2. Remove the forward floor panel of the load floor cargo organizer and place it in the vehicle while you are removing the spare tire.



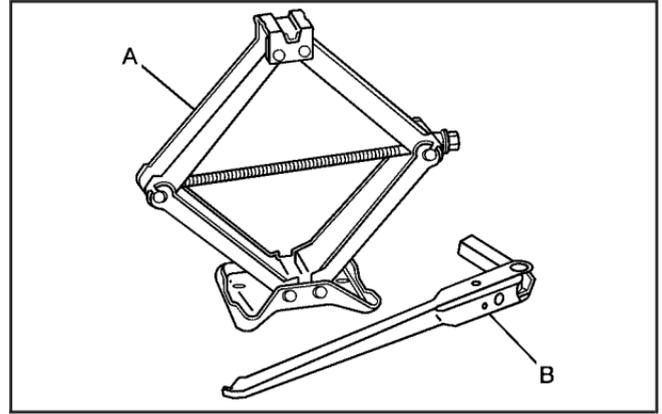
3. Open the floor cargo organizer locks, located on the top left and right corners of the organizer, by pushing inward on them.



4. Remove the load floor cargo organizer.



5. Remove the wheel retainer bolt holding down the spare tire by turning it counterclockwise.
6. Remove the compact spare tire. See *Compact Spare Tire* on page 398 for more information.



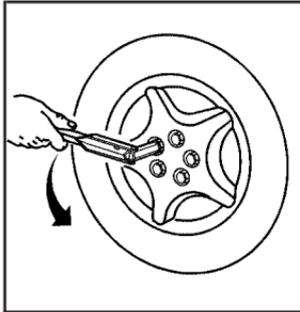
The tools you will be using include the jack (A) and wheel wrench (B).

## Removing the Flat Tire and Installing the Spare Tire

The wheel cover or hubcap needs to be removed in order to reach the wheel bolts.

For steel wheels with full plastic covers and aluminum wheels with large circular center caps, do the following:

1. It is recommended that a safety check is done before proceeding. See *Changing a Flat Tire* on page 386 for more information.

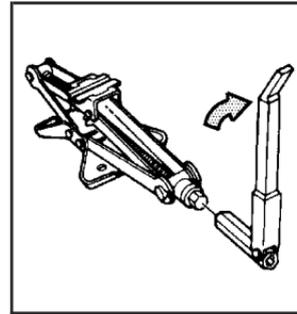


2. Loosen all plastic caps by turning the wheel wrench counterclockwise. Do not try to remove plastic caps from the cover or center cap.

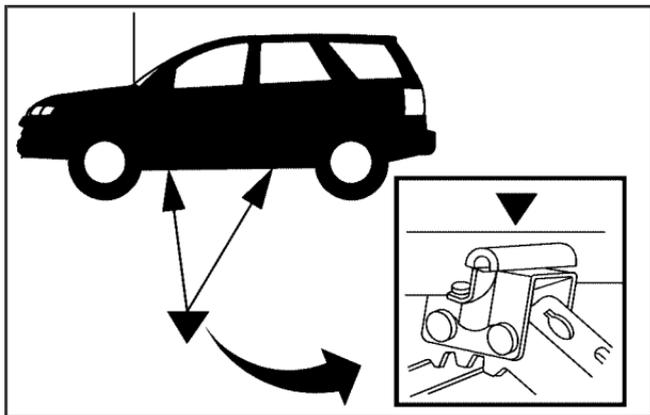
3. Pull the cover or center cap away from the wheel and place it in the trunk.

When reinstalling full plastic covers or center caps, tighten all the plastic caps hand snug, then tighten with the wheel wrench an additional one-quarter of a turn.

1. Use the wheel wrench to loosen all the wheel nuts. Do not remove them yet.



2. Attach the wheel wrench to the jack bolt head and rotate the wheel wrench clockwise. That will raise the lift head a little.



3. Position the lift head at the jack location nearest the flat tire. Make sure all of the jack lift head is touching the jacking flange under the body. Do not place the jack under a body panel. The lower body panel has an arrow to aid in locating the jacking location.
4. Put the compact spare tire near you.

**⚠ CAUTION:**

Getting under a vehicle when it is jacked up is dangerous. If the vehicle slips off the jack you could be badly injured or killed. Never get under a vehicle when it is supported only by a jack.

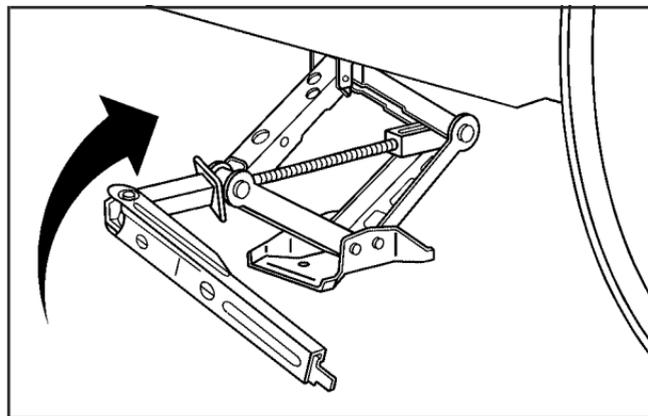
**⚠ CAUTION:**

Raising your vehicle with the jack improperly positioned can damage the vehicle and even make the vehicle fall. To help avoid personal injury and vehicle damage, be sure to fit the jack lift head into the proper location before raising the vehicle.

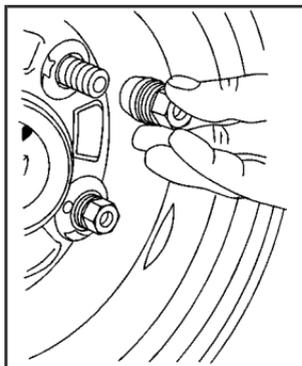
**⚠ CAUTION:**

Lifting a vehicle and getting under it to do maintenance or repairs is dangerous without the appropriate safety equipment and training. The jack provided with your vehicle is designed only for changing a flat tire. If it is used for anything else, you or others could be badly injured or killed if the vehicle slips off the jack. Use the jack provided with your vehicle only for changing a flat tire.

**Notice:** Make sure that the jack lift head is in the correct position or you may damage your vehicle. The repairs would not be covered by your warranty.



5. Raise the vehicle by turning the jack handle clockwise. Raise the vehicle far enough off the ground so there is enough room for the road tire to be removed.

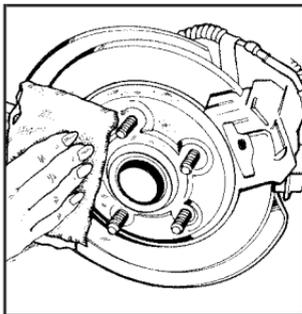


6. Remove all of the wheel nuts.

7. Take off the flat tire.

**⚠ CAUTION:**

Rust or dirt on the wheel, or on the parts to which it is fastened, can make the wheel nuts become loose after time. The wheel could come off and cause an accident. When changing a wheel, remove any rust or dirt from the places where the wheel attaches to the vehicle. In an emergency, a cloth or a paper towel can be used to do this; but be sure to use a scraper or wire brush later, if needed, to get all the rust or dirt off.



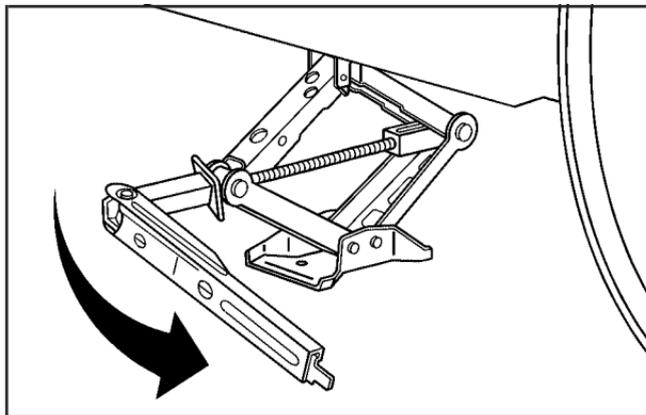
8. Remove any rust or dirt from the wheel bolts, mounting surfaces and spare wheel.

9. Place the compact spare tire on the wheel-mounting surface.

**⚠ CAUTION:**

**Never use oil or grease on studs or nuts. Because the nuts might come loose. The vehicle's wheel could fall off, causing a serious accident.**

10. Reinstall the wheel nuts. Tighten each nut by hand until the wheel is held against the hub.

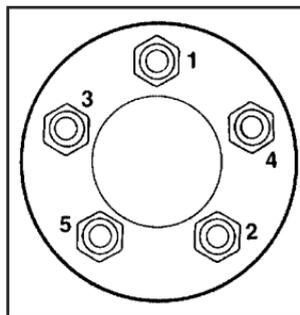


11. Lower the vehicle by turning the jack handle counterclockwise.

**⚠ CAUTION:**

Incorrect wheel nuts or improperly tightened wheel nuts can cause the wheel to come loose and even come off. This could lead to an accident. Be sure to use the correct wheel nuts. If you have to replace them, be sure to get new GM original equipment wheel nuts. Stop somewhere as soon as you can and have the nuts tightened with a torque wrench to the proper torque specification. See *Capacities and Specifications on page 414* for wheel nut torque specification.

**Notice:** Improperly tightened wheel nuts can lead to brake pulsation and rotor damage. To avoid expensive brake repairs, evenly tighten the wheel nuts in the proper sequence and to the proper torque specification. See *Capacities and Specifications on page 414* for the wheel nut torque specification.



12. Tighten the wheel nuts firmly in a crisscross sequence, as shown.

13. Lower the jack all the way and remove the jack from under the vehicle.

14. Tighten the bolts firmly with the wheel wrench.

**Notice:** Wheel covers will not fit on your vehicle's compact spare. If you try to put a wheel cover on the compact spare, the cover or the spare could be damaged.

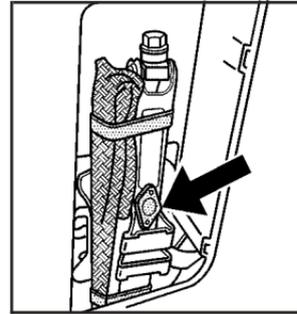
## Storing a Flat or Spare Tire and Tools

### CAUTION:

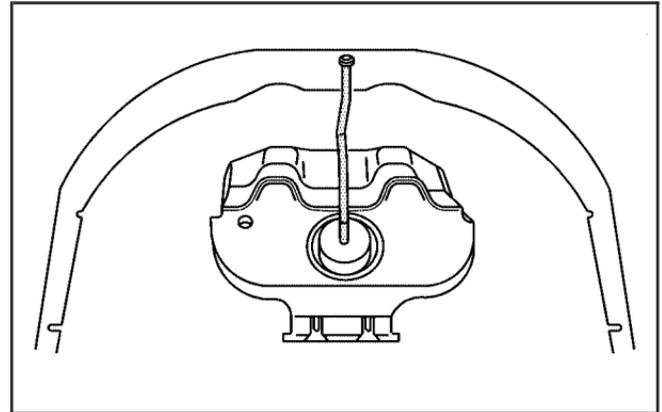
Storing a jack, a tire, or other equipment in the passenger compartment of the vehicle could cause injury. In a sudden stop or collision, loose equipment could strike someone. Store all these in the proper place.

To store the flat or spare tire and tools, do the following:

1. Place the wheel wrench into the bag and use the straps to secure the bag to the fully collapsed jack.



2. Install the jack in the driver's side panel of the rear cargo area and secure with the wing bolt.



3. Remove the wheel stow rod from the upper left side of the floor compartment.

4. Screw the threaded wheel stow rod onto the spare tire bracket. The final position of the wheel stow rod must be rotated to the farthest forward position so that the top of the rod faces forward.
5. Reverse Steps 1 through 4 under *Removing the Spare Tire and Tools on page 387* to replace the floor cargo organizer and lock in place.
6. Place the flat, or damaged tire, face down, on the load floor with the threaded wheel stow rod sticking up through the center hole of the load floor and center hole of the wheel.  

Vehicles equipped with the 3.5L V6 (L66) engine and aluminum wheels, must remove the center cap from the wheel prior to placing it on the load floor. To remove the center cap, tap the cap from the backside of the wheel, then place the wheel on the load floor.
7. Place the wheel retainer bolt onto the wheel stow rod and tighten.

The compact spare is for temporary use only. Replace the compact spare tire with a full-size tire as soon as you can.

## Compact Spare Tire

Although the compact spare tire was fully inflated when the vehicle was new, it can lose air after a time. Check the inflation pressure regularly. It should be 60 psi (420 kPa).

After installing the compact spare on the vehicle, stop as soon as possible and make sure the spare tire is correctly inflated. The compact spare is made to perform well at speeds up to 65 mph (105 km/h) for distances up to 3,000 miles (5 000 km), so you can finish your trip and have the full-size tire repaired or replaced at your convenience. Of course, it is best to replace the spare with a full-size tire as soon as possible. The spare tire will last longer and be in good shape in case it is needed again.

**Notice:** When the compact spare is installed, do not take your vehicle through an automatic car wash with guide rails. The compact spare can get caught on the rails. That can damage the tire and wheel, and maybe other parts of your vehicle.

Do not use the compact spare on other vehicles.

And do not mix the compact spare tire or wheel with other wheels or tires. They will not fit. Keep the spare tire and its wheel together.

**Notice:** Tire chains will not fit your compact spare. Using them can damage your vehicle and can damage the chains too. Do not use tire chains on your compact spare.

## Appearance Care

### Cleaning the Inside of Your Vehicle

Your vehicle's interior will continue to look its best if it is cleaned often. Although not always visible, dust and dirt can accumulate on your upholstery. Dirt can damage carpet, fabric, leather, and plastic surfaces. Regular vacuuming is recommended to remove particles from your upholstery. It is important to keep your upholstery from becoming and remaining heavily soiled. Soils should be removed as quickly as possible. Your vehicle's interior may experience extremes of heat that could cause stains to set rapidly.

Lighter colored interiors may require more frequent cleaning. Use care because newspapers and garments that transfer color to your home furnishings may also transfer color to your vehicle's interior.

When cleaning your vehicle's interior, only use cleaners specifically designed for the surfaces being cleaned. Permanent damage may result from using cleaners on surfaces for which they were not intended. Use glass cleaner only on glass. Remove any accidental over-spray from other surfaces immediately. To prevent over-spray, apply cleaner directly to the cleaning cloth.

**Notice:** If you use abrasive cleaners when cleaning glass surfaces on your vehicle, you could scratch the glass and/or cause damage to the rear window defogger. When cleaning the glass on your vehicle, use only a soft cloth and glass cleaner.

Many cleaners contain solvents that may become concentrated in your vehicle's breathing space. Before using cleaners, read and adhere to all safety instructions on the label. While cleaning your vehicle's interior, maintain adequate ventilation by opening your vehicle's doors and windows.

Dust may be removed from small buttons and knobs using a small brush with soft bristles.

Your retailer has a product for cleaning your vehicle's glass. Should it become necessary, you can also obtain a product from your retailer to remove odors from your vehicle's upholstery.

Do not clean your vehicle using the following cleaners or techniques:

- Never use a knife or any other sharp object to remove a soil from any interior surface.
- Never use a stiff brush. It can cause damage to your vehicle's interior surfaces.
- Never apply heavy pressure or rub aggressively with a cleaning cloth. Use of heavy pressure can damage your interior and does not improve the effectiveness of soil removal.
- Use only mild, neutral-pH soaps. Avoid laundry detergents or dishwashing soaps with degreasers. Using too much soap will leave a residue that leaves streaks and attracts dirt. For liquid cleaners, about 20 drops per gallon (3.78 L) of water is a good guide.

- Do not heavily saturate your upholstery while cleaning.
- Damage to your vehicle's interior may result from the use of many organic solvents such as naphtha, alcohol, etc.

## **Fabric/Carpet**

Use a vacuum cleaner with a soft brush attachment frequently to remove dust and loose dirt. A canister vacuum with a beater bar in the nozzle may only be used on floor carpet and carpeted floor mats. For soils, always try to remove them first with plain water or club soda. Before cleaning, gently remove as much of the soil as possible using one of the following techniques:

- For liquids: gently blot the remaining soil with a paper towel. Allow the soil to absorb into the paper towel until no more can be removed.
- For solid dry soils: remove as much as possible and then vacuum.

To clean, use the following instructions:

1. Saturate a lint-free, clean white cloth with water or club soda.
2. Wring the cloth to remove excess moisture.
3. Start on the outside edge of the soil and gently rub toward the center. Continue cleaning, using a clean area of the cloth each time it becomes soiled.
4. Continue to gently rub the soiled area until the cleaning cloth remains clean.
5. If the soil is not completely removed, use a mild soap solution and repeat the cleaning process that was used with plain water.

If any of the soil remains, a commercial fabric cleaner or spot lifter may be necessary. When a commercial upholstery cleaner or spot lifter is to be used, test a small hidden area for colorfastness first. If the locally cleaned area gives any impression that a ring formation may result, clean the entire surface.

After the cleaning process has been completed, a paper towel can be used to blot excess moisture from the fabric or carpet.

## **Instrument Panel, Vinyl, and Other Plastic Surfaces**

A soft cloth dampened with water may be used to remove dust. If a more thorough cleaning is necessary, a clean soft cloth dampened with a mild soap solution can be used to gently remove dust and dirt. Never use spot lifters or removers on plastic surfaces. Many commercial cleaners and coatings that are sold to preserve and protect soft plastic surfaces may permanently change the appearance and feel of your interior and are not recommended. Do not use silicone or wax-based products, or those containing organic solvents to clean your vehicle's interior because they can alter the appearance by increasing the gloss in a non-uniform manner.

Some commercial products may increase gloss on your instrument panel. The increase in gloss may cause annoying reflections in the windshield and even make it difficult to see through the windshield under certain conditions.

## Care of Safety Belts

Keep belts clean and dry.

### CAUTION:

**Do not bleach or dye safety belts. If you do, it may severely weaken them. In a crash, they might not be able to provide adequate protection. Clean safety belts only with mild soap and lukewarm water.**

## Weatherstrips

Silicone grease on weatherstrips will make them last longer, seal better, and not stick or squeak. Apply silicone grease with a clean cloth. During very cold, damp weather frequent application may be required. See *Recommended Fluids and Lubricants on page 432*.

## Washing Your Vehicle

The paint finish on your vehicle provides beauty, depth of color, gloss retention, and durability.

The best way to preserve your vehicle's finish is to keep it clean by washing it often with lukewarm or cold water.

Do not wash your vehicle in the direct rays of the sun. Use a car washing soap. Do not use strong soaps or chemical detergents. Be sure to rinse the vehicle well, removing all soap residue completely. You can get approved cleaning products from your retailer. See *Vehicle Care/Appearance Materials on page 407*. Do not use cleaning agents that are petroleum based, or that contain acid or abrasives. All cleaning agents should be flushed promptly and not allowed to dry on the surface, or they could stain. Dry the finish with a soft, clean chamois or an all-cotton towel to avoid surface scratches and water spotting.

High pressure car washes may cause water to enter your vehicle.

## Cleaning Exterior Lamps/Lenses

Use only lukewarm or cold water, a soft cloth and a car washing soap to clean exterior lamps and lenses. Follow instructions under *Washing Your Vehicle* on page 402.

## Finish Care

Occasional waxing or mild polishing of your vehicle by hand may be necessary to remove residue from the paint finish. You can get approved cleaning products from your Saturn retailer. See *Vehicle Care/Appearance Materials* on page 407.

Your vehicle has a basecoat/clearcoat paint finish. The clearcoat gives more depth and gloss to the colored basecoat. Always use waxes and polishes that are non-abrasive and made for a basecoat/clearcoat paint finish.

**Notice:** Machine compounding or aggressive polishing on a basecoat/clearcoat paint finish may damage it. Use only non-abrasive waxes and polishes that are made for a basecoat/clearcoat paint finish on your vehicle.

Foreign materials such as calcium chloride and other salts, ice melting agents, road oil and tar, tree sap, bird droppings, chemicals from industrial chimneys, etc., can damage your vehicle's finish if they remain on painted surfaces. Wash the vehicle as soon as possible. If necessary, use non-abrasive cleaners that are marked safe for painted surfaces to remove foreign matter.

Exterior painted surfaces are subject to aging, weather, and chemical fallout that can take their toll over a period of years. You can help to keep the paint finish looking new by keeping your vehicle in a garage or covered whenever possible.

## Windshield and Wiper Blades

Clean the outside of the windshield with glass cleaner.

Clean the rubber blades using a lint free cloth or paper towel soaked with windshield washer fluid or a mild detergent. Wash the windshield thoroughly when cleaning the blades. Bugs, road grime, sap, and a buildup of vehicle wash/wax treatments may cause wiper streaking. Replace the wiper blades if they are worn or damaged.

Wipers can be damaged by:

- Extreme dusty conditions
- Sand and salt
- Heat and sun
- Snow and ice, without proper removal

## Aluminum Wheels

**Notice:** Chrome wheels and other chrome trim may be damaged if you do not wash your vehicle after driving on roads that have been sprayed with magnesium, calcium or sodium chloride. These chlorides are used on roads for conditions such as ice and dust. Always wash your vehicle's chrome with soap and water after exposure.

**Notice:** If you use strong soaps, chemicals, abrasive polishes, cleaners, brushes, or cleaners that contain acid on aluminum or chrome-plated wheels, you could damage the surface of the wheel(s). The repairs would not be covered by your warranty. Use only approved cleaners on aluminum or chrome-plated wheels.

Keep the wheels clean using a soft clean cloth with mild soap and water. Rinse with clean water. After rinsing thoroughly, dry with a soft clean towel. A wax may then be applied.

**Notice:** Using chrome polish on aluminum wheels could damage the wheels. The repairs would not be covered by your warranty. Use chrome polish on chrome wheels only.

The surface of these wheels is similar to the painted surface of the vehicle. Do not use strong soaps, chemicals, abrasive polishes, abrasive cleaners, cleaners with acid, or abrasive cleaning brushes on them because the surface could be damaged. Do not use chrome polish on aluminum wheels.

**Notice:** If you drive your vehicle through an automatic car wash that has silicone carbide tire cleaning brushes, you could damage the aluminum or chrome-plated wheels. The repairs would not be covered by your warranty. Never drive a vehicle equipped with aluminum or chrome-plated wheels through an automatic car wash that uses silicone carbide tire cleaning brushes.

## Tires

To clean the tires, use a stiff brush with tire cleaner.

**Notice:** Using petroleum-based tire dressing products on your vehicle may damage the paint finish and/or tires. When applying a tire dressing, always wipe off any overspray from all painted surfaces on your vehicle.

## Sheet Metal Damage

If the vehicle is damaged and requires sheet metal repair or replacement, make sure the body repair shop applies anti-corrosion material to parts repaired or replaced to restore corrosion protection.

Original manufacturer replacement parts will provide the corrosion protection while maintaining the warranty.

## Finish Damage

Any stone chips, fractures or deep scratches in the finish should be repaired right away. Bare metal will corrode quickly and may develop into major repair expense.

Minor chips and scratches can be repaired with touch-up materials available from your Saturn retailer. Larger areas of finish damage can be corrected in your Saturn retailer's body and paint shop.

## Underbody Maintenance

Chemicals used for ice and snow removal and dust control can collect on the underbody. If these are not removed, corrosion and rust can develop on the underbody parts such as fuel lines, frame, floor pan and exhaust system even though they have corrosion protection.

At least every spring, flush these materials from the underbody with plain water. Clean any areas where mud and debris can collect. Dirt packed in close areas of the frame should be loosened before being flushed. Your Saturn retailer or an underbody car washing system can do this for you.

## Chemical Paint Spotting

Some weather and atmospheric conditions can create a chemical fallout. Airborne pollutants can fall upon and attack painted surfaces on your vehicle. This damage can take two forms: blotchy, ring-shaped discolorations, and small, irregular dark spots etched into the paint surface.

Although no defect in the paint job causes this, we will repair, at no charge to the owner, the surfaces of new vehicles damaged by this fallout condition within 12 months or 12,000 miles (20 000 km) of purchase, whichever occurs first.

## Vehicle Care/Appearance Materials

Description	Usage
Polishing Cloth Wax-Treated	Interior and exterior polishing cloth.
Tar and Road Oil Remover	Removes tar, road oil, and asphalt.
Chrome Cleaner and Polish	Use on chrome or stainless steel.
White Sidewall Tire Cleaner	Removes soil and black marks from whitewalls.
Vinyl Cleaner	Cleans vinyl.
Glass Cleaner	Removes dirt, grime, smoke, and fingerprints.
Chrome and Wire Wheel Cleaner	Removes dirt and grime from chrome wheels and wire wheel covers.
Finish Enhancer	Removes dust, fingerprints, and surface contaminants. Spray on wipe off.

Description	Usage
Swirl Remover Polish	Removes swirl marks, fine scratches, and other light surface contamination.
Cleaner Wax	Removes light scratches and protects finish.
Foaming Tire Shine Low Gloss	Cleans, shines, and protects in one easy step. No wiping necessary.
Wash Wax Concentrate	Medium foaming shampoo. Cleans and lightly waxes. Biodegradable and phosphate free.
Spot Lifter	Quickly and easily removes spots and stains from carpets, vinyl, and cloth upholstery.
Odor Eliminator	Odorless spray odor eliminator used on fabrics, vinyl, leather, and carpet.

# Vehicle Identification

## Vehicle Identification Number (VIN)



This is the legal identifier for your vehicle. It appears on a plate in the front corner of the instrument panel, on the driver side. You can see it if you look through the windshield from outside your vehicle. The VIN also appears on the Certification/Tire and Service Parts labels and the certificates of title and registration.

## Engine Identification

The eighth character in the VIN is the engine code. This code helps you identify your vehicle's engine, specifications, and replacement parts.

## Service Parts Identification Label

This label is on the rear edge of the driver side rear door. It is very helpful if you ever need to order parts. The label has the following information:

- Vehicle Identification Number (VIN)
- Model designation
- Paint information
- Production options and special equipment

Do not remove this label from the vehicle.

## Electrical System

### Add-On Electrical Equipment

**Notice:** Do not add anything electrical to your vehicle unless you check with your retailer first. Some electrical equipment can damage your vehicle and the damage would not be covered by your warranty. Some add-on electrical equipment can keep other components from working as they should.

Your vehicle has an airbag system. Before attempting to add anything electrical to your vehicle, see *Servicing Your Airbag-Equipped Vehicle* on page 88.

### Windshield Wiper Fuses

The windshield wiper motor is protected by a circuit breaker and a fuse. If the motor overheats due to heavy snow or ice, the wiper will stop until the motor cools. If the overload is caused by some electrical problem, have it fixed.

## Power Windows and Other Power Options

Circuit breakers in the fuse panel protect the power windows and other power accessories. When the current load is too heavy, the circuit breaker opens and closes, protecting the circuit until the problem is fixed.

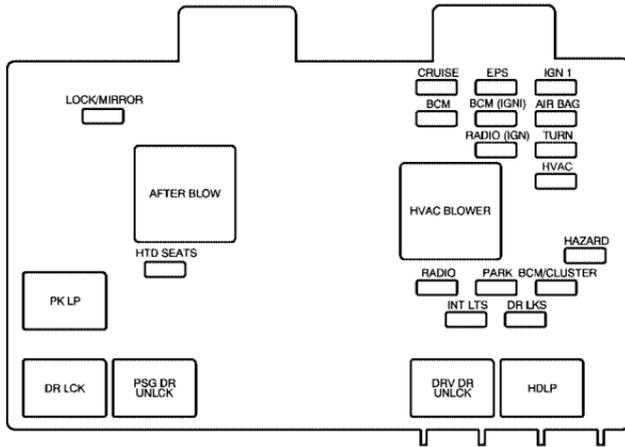
### Fuses and Circuit Breakers

The wiring circuits in your vehicle are protected from short circuits by fuses. This greatly reduces the chance of circuit overload and fire caused by electrical problems.

There are two fuse blocks — the underhood fuse block, and the instrument panel fuse block.

To identify and check fuses and relays, refer to the Fuse Usage Chart on the inside surface of the fuse panel door.

## Instrument Panel Fuse Block



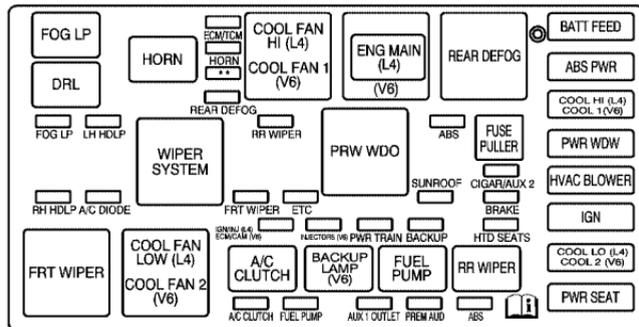
The instrument panel fuse block is located on the passenger's side of the lower console.

Fuses	Usage
CRUISE	Cruise Control Switch, Brake Switch
EPS	Electronic Power Steering
IGN 1	Instrument Cluster, Brake Transmission Shift Interlock Solenoid, Traction Switch, Fog Lamp Switch
LOCK/MIRROR	Power Door Locks, Power Mirror, Entry Control
BCM	Body Control Module, Front Wipers, Windows, Sunroof
BCM (IGN 1)	Body Control Module
AIR BAG	Sensing and Diagnostic Module
RADIO (IGN)	Radio, Power Mirror, Premium Radio Amplifier
TURN	Turn Lamps
HVAC	HVAC Control Head
HAZARD	Hazard Lamps
HTD SEATS	Heated Seats
RADIO	Radio, Data Link Connector
PARK	Park Lamps, Taillamps, Side Marker Lamps, License Lamps

Fuses	Usage
BCM/CLUSTER	Body Control Module, Instrument Cluster
INT LTS	Body Control Module, OnStar®
DR LKS	Door Locks

Relays	Usage
AFTER BLOW	Not Used
HVAC BLOWER	HVAC Control Head
PK LP	Parking Lamps
DR LCK	All Door Lock Switch
PSG DR UNLCK	Passenger Door Unlock Switch
DRV DR UNLCK	Driver Door Unlock Switch
HDLP	Headlamps

## Underhood Fuse Block



The underhood fuse block is located in the forward part of the engine compartment near the battery.

Fuses	Usage
ECM/TCM	Battery Voltage to ECM, TCM, PCM (3.5L V6 (L66))
BATT FEED	Instrument Panel Fuse Box
HORN	Horn
**	Emissions

Fuses	Usage
ABS PWR	Anti-lock Brake System Battery
REAR DEFOG	Rear Defogger
COOL HI (L4)/ COOL 1 (V6)	Cooling Fans High (L4)/Cooling Fan 1 (V6)
FOG LP	Fog Lamps
LH HDLP	Driver's Side Headlamp
RR WIPER	Rear Wiper
ABS	Anti-lock Brake System Module
PWR WDW	Power Window Relay and Sunroof
CIGAR/AUX2	Cigarette Lighter
HVAC BLOWER	HVAC Blower Motor
RH HDLP	Right Headlamp
FRT WIPER	Front Wiper
ETC	Engine Control Module (ECM), Electronic Throttle Control (V6)
SUNROOF	Sunroof Module
BRAKE	Stoplamps
IGN	Ignition switch

Fuses	Usage
IGN/INJ (L4), ECM/ CAM (V6)	Engine Ignition Module, Fuel Injectors (2.2L L4 (L61)) Camshaft Sensor, Main Relay Voltage To PCM, Ignition Coils 1-6
INJECTORS (3.5L V6 (L66))	Fuel Injection
PWR TRAIN	Engine Control Module (ECM), Transaxle Control Module (TCM), Transaxle, L66 Powertrain Control Module (PCM)
BACKUP	Low Coolant Switch, Backup Lamps (2.2L L4 (L61)), Vehicle Speed Sensor (Manual), Transaxle Range Switch (2.2L L4 (L61))
HTD SEATS	Heated Seats
COOL LO (L4)/ COOL 2 (V6)	Cooling Fan Low (L4), Cooling Fan (V6)
A/C CLUTCH	Air Conditioning Clutch, Back Up Lamps (3.5L V6 (L66))
FUEL PUMP	Fuel Pump
AUX 1 OUTLET	Front Auxiliary Power Outlet

<b>Fuses</b>	<b>Usage</b>
PREM AUD	Premium Radio Amplifier
ABS	Anti-lock Brake System Ignition
PWR SEAT	Power Seats

<b>Relays</b>	<b>Usage</b>
FOG LP	Fog Lamps
COOL FAN HI (L4)	Cooling Fan Motor High
ENG MAIN	Engine Control Module/CAM, Emissions, Injectors, Electronic Throttle Control
REAR DEFOG	Rear Defog System
HORN	Horn
DRL	Daytime Running Lamps
COOL FAN 1 (V6)	Cooling Fan
WIPER SYSTEM	Wiper System

<b>Relays</b>	<b>Usage</b>
PRW WDO	Power Window Switch, Sunroof Module
FRT WIPER	Front Wiper System
COOL FAN LOW (L4)	Cooling Fan Motor Low
A/C CLUTCH	Air Conditioning Clutch
BACKUP LAMPS (V6)	Back-up Lamps (V6)
FUEL PUMP	Fuel Pump System
RR WIPER	Rear Wiper System
COOL FAN 2 (V6)	Cooling Fan (V6)

<b>Misc.</b>	<b>Usage</b>
FUSE PULLER	Fuse Puller
Diode	Air Conditioning Diode

## Capacities and Specifications

Application	Capacities	
	English	Metric
Air Conditioning Refrigerant R134a	For the air conditioning system refrigerant charge amount, see the refrigerant caution label located under the hood. See your dealer for more information.	
Cooling System		
2.2L L4 Automatic Engine	8.8 qt	8.3 L
2.2L L4 Manual Engine	9.1 qt	8.6 L
3.5L V6 Engine	10.3 qt	9.7 L
Engine Oil with Filter		
2.2L L4 Engine	5.0 qt	4.7 L
3.5L V6 Engine	4.5 qt	4.3 L
Fuel Tank	16.6 gal	62.8 L
Transaxle		
Five-Speed Automatic	4.5 qt	4.3 L
Five-Speed Automatic AWD	4.1 qt	3.9 L
Four-Speed Automatic	7.0 qt	6.6 L
Five-Speed Manual	1.7 qt	1.6 L
Wheel Nut Torque	100 ft lb	140 N•m
All capacities are approximate. When adding, be sure to fill to the approximate level, as recommended in this manual. Recheck fluid level after filling.		

## Engine Specifications

Engine	VIN Code	Transaxle	Spark Plug Gap
2.2L L4 (L61)	D	Automatic Manual	0.040 inches (1.01 mm)
3.5L V6 (L66)	4	Automatic	0.043 inches (1.1 mm)



## Section 6 Maintenance Schedule

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# Maintenance Schedule

## Introduction

**Important: Keep engine oil at the proper level and change as recommended.**

## Maintenance Requirements

**Notice:** Maintenance intervals, checks, inspections, replacement parts, and recommended fluids and lubricants as prescribed in this manual are necessary to keep your vehicle in good working condition. Any damage caused by failure to follow scheduled maintenance might not be covered by warranty.

## Your Vehicle and the Environment

Proper vehicle maintenance not only helps to keep your vehicle in good working condition, but also helps the environment. All recommended maintenance is important. Improper vehicle maintenance can even affect the quality of the air we breathe. Improper fluid levels or the wrong tire inflation can increase the level of emissions from your vehicle. To help protect our environment, and to keep your vehicle in good condition, be sure to maintain your vehicle properly.

## Using the Maintenance Schedule

We at Saturn want to help you keep your vehicle in good working condition. But we do not know exactly how you will drive it. You may drive very short distances only a few times a week. Or you may drive long distances all the time in very hot, dusty weather. You may use your vehicle in making deliveries. Or you may drive it to work, to do errands, or in many other ways.

Because of all the different ways people use their vehicles, maintenance needs vary. You may need more frequent checks and replacements. So please read the following and note how you drive. If you have any questions on how to keep your vehicle in good condition, see your Saturn retailer.

This schedule is for vehicles that:

- carry passengers and cargo within recommended limits. You will find these limits on the Tire and Loading Information label. See *Loading Your Vehicle on page 279*.
- are driven on reasonable road surfaces within legal driving limits.
- are driven off-road in the recommended manner. See *Off-Road Driving on page 247*.
- use the recommended fuel. See *Gasoline Octane on page 306*.

The services in *Scheduled Maintenance on page 420* should be performed when indicated. See *Additional Required Services on page 423* and *Maintenance Footnotes on page 425* for further information.

## CAUTION:

**Performing maintenance work on a vehicle can be dangerous. In trying to do some jobs, you can be seriously injured. Do your own maintenance work only if you have the required know-how and the proper tools and equipment for the job. If you have any doubt, see your retailer to have a qualified technician do the work. See *Doing Your Own Service Work on page 305*.**

Some maintenance services can be complex. So, unless you are technically qualified and have the necessary equipment, you should have your Saturn retailer do these jobs.

When you go to your Saturn retailer for your service needs, you will know that Saturn-trained and supported service technicians will perform the work using genuine Saturn parts.

If you want to purchase service information, see *Service Publications Ordering Information on page 453*.

*Owner Checks and Services on page 427* tells you what should be checked, when to check it, and what you can easily do to help keep your vehicle in good condition.

The proper replacement parts, fluids, and lubricants to use are listed in *Recommended Fluids and Lubricants on page 432* and *Normal Maintenance Replacement Parts on page 434*. When your vehicle is serviced, make sure these are used. All parts should be replaced and all necessary repairs done before you or anyone else drives the vehicle. We recommend the use of genuine Saturn parts.

## Scheduled Maintenance

When the Change Engine Oil light comes on, it means that service is required for your vehicle. Have your vehicle serviced as soon as possible within the next 600 miles (1 000 km). It is possible that, if you are driving under the best conditions, the engine oil life system may not indicate that vehicle service is necessary for over a year. However, the engine oil and filter must be changed at least once a year and at this time the system must be reset. Your Saturn retailer has Saturn-trained service technicians who will perform this work using genuine Saturn parts and reset the system.

If the engine oil life system is ever reset accidentally, you must service your vehicle within 3,000 miles (5 000 km) since your last service. Remember to reset the oil life system whenever the oil is changed. See *Engine Oil Life System on page 323* for information on the Engine Oil Life System and resetting the system.

When the Change Engine Oil light appears, certain services, checks, and inspections are required. Required services are described in the following for “Maintenance I” and “Maintenance II.” Generally, it is recommended that your first service be Maintenance I, your second service be Maintenance II, and that you alternate Maintenance I and Maintenance II thereafter. However, in some cases, Maintenance II may be required more often.

**Maintenance I** — Use Maintenance I if the Change Engine Oil light comes on within 10 months since the vehicle was purchased or Maintenance II was performed.

**Maintenance II** — Use Maintenance II if the previous service performed was Maintenance I. Always use Maintenance II whenever the light comes on 10 months or more since the last service or if the light has not come on at all for one year.

### Scheduled Maintenance

Service	Maintenance I	Maintenance II
Change engine oil and filter. See <i>Engine Oil</i> on page 318. Reset oil life system. See <i>Engine Oil Life System</i> on page 323. <i>An Emission Control Service</i> .	•	•
Visually check for any leaks or damage. See footnote (j).	•	•
Inspect engine air cleaner filter. If necessary, replace filter. See <i>Engine Air Cleaner/Filter</i> on page 324. See footnote (l).		•
Rotate tires and check inflation pressures and wear. See <i>Tire Inspection and Rotation</i> on page 375 and “Tire Wear Inspection” in <i>At Least Once a Month</i> on page 428.	•	•
Inspect brake system. See footnote (a).	•	•

## Scheduled Maintenance (cont'd)

Service	Maintenance I	Maintenance II
Check engine coolant and windshield washer fluid levels and add fluid as needed.	•	•
Perform any needed additional services. See "Additional Required Services" in this section.	•	•
Inspect suspension and steering components. <i>See footnote (b).</i>		•
Inspect engine cooling system. <i>See footnote (c).</i>		•
Inspect wiper blades. <i>See footnote (d).</i>		•
Inspect restraint system components. <i>See footnote (e).</i>		•
Lubricate body components. <i>See footnote (f).</i>		•
Automatic Transaxle Only: Check automatic transaxle fluid level and add fluid as needed.		•
Replace passenger compartment air filter. <i>See footnote (k).</i>		•
L4 engine: Inspect throttle system. <i>See footnote (g).</i>		•

## Additional Required Services

The following services should be performed at the first maintenance service (I or II) after the indicated miles (kilometers) shown for each item.

### Additional Required Services

Service and Miles (Kilometers)	25,000 (40 000)	50,000 (80 000)	75,000 (120 000)	100,000 (160 000)	125,000 (200 000)	150,000 (240 000)
Inspect fuel system for damage or leaks.	•	•	•	•	•	•
Inspect exhaust system for loose or damaged components.	•	•	•	•	•	•
Replace engine air cleaner filter. See <i>Engine Air Cleaner/Filter on page 324</i> .		•		•		•
L4 engine: Change automatic transaxle fluid (severe service). See <i>footnote (h)</i> .		•		•		•
L4 engine: Change automatic transaxle fluid (normal service).				•		
V6 engine: Change automatic transaxle fluid (severe service). See <i>footnote (h)</i> .	•	•	•	•	•	•
V6 engine: Change automatic transaxle fluid (normal service). See <i>footnote (m)</i> .				•		•
Replace spark plugs. An <i>Emission Control Service</i> .				•		

### Additional Required Services (cont'd)

Service and Miles (Kilometers)	25,000 (40 000)	50,000 (80 000)	75,000 (120 000)	100,000 (160 000)	125,000 (200 000)	150,000 (240 000)
V6 engine: Replace timing belt (normal service). <i>An Emission Control Service. See footnote †.</i>				•		
V6 engine: Replace timing belt (severe service). <i>An Emission Control Service. See footnotes † and (n).</i>		•		•		•
L4 engine: Change rear drive module and power takeoff unit fluid (severe service). <i>See footnote (h).</i>		•		•		•
L4 engine: Change rear drive module and power takeoff unit fluid (normal service).				•		
V6 engine: Change transfer assembly fluid (severe service). <i>See footnote (h).</i>	•	•	•	•	•	•
V6 engine: Change transfer assembly fluid (normal service). <i>See footnote (m).</i>				•		•
V6 engine: Change rear drive module fluid (severe service). <i>See footnote (h).</i>		•		•		•
V6 engine: Change rear drive module fluid (normal service).				•		

### Additional Required Services (cont'd)

Service and Miles (Kilometers)	25,000 (40 000)	50,000 (80 000)	75,000 (120 000)	100,000 (160 000)	125,000 (200 000)	150,000 (240 000)
V6 engine: Inspect valve clearance.				•		
Engine cooling system service (or every five years, whichever occurs first). <i>An Emission Control Service.</i> <i>See footnote (i).</i>						•
Inspect engine accessory drive belt. <i>An Emission Control Service.</i> <i>See footnote (p).</i>						•

### Maintenance Footnotes

† *The U.S. Environmental Protection Agency or the California Air Resources Board has determined that the failure to perform this maintenance item will not nullify the emission warranty or limit recall liability prior to the completion of the vehicle's useful life. We, however, urge that all recommended maintenance services be performed at the indicated intervals and the maintenance be recorded.*

(a) *Visually inspect brake lines and hoses for proper hook-up, binding, leaks, cracks, chafing, etc. Inspect disc brake pads for wear and rotors for surface condition. Inspect drum brake linings/shoes for wear or cracks. Inspect other brake parts, including drums, wheel cylinders, calipers, parking brake, etc.*

(b) *Visually inspect front and rear suspension and steering system for damaged, loose, or missing parts or signs of wear.*

(c) *Visually inspect hoses and have them replaced if they are cracked, swollen, or deteriorated. Inspect all pipes, fittings, and clamps; replace with genuine Saturn parts as needed. To help ensure proper operation, a pressure test of the cooling system and pressure cap and cleaning the outside of the radiator and air conditioning condenser is recommended at least once a year.*

(d) *Visually inspect wiper blades for wear or cracking. Replace wiper blades that appear worn or damaged or that streak or miss areas of the windshield.*

(e) *Make sure the safety belt reminder light and all your belts, buckles, latch plates, retractors, and anchorages are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from doing its job, have it repaired. Have any torn or frayed safety belts replaced. Also look for any opened or broken airbag coverings, and have them repaired or replaced. The airbag system does not need regular maintenance.*

(f) *Lubricate all key lock cylinders, door hinges and latches, hood hinges and latches, glove box hinges, sunroof (if equipped), and any folding seat hardware. More frequent lubrication may be*

*required when exposed to a corrosive environment. Applying silicone grease on weatherstrips with a clean cloth will make them last longer, seal better, and not stick or squeak.*

(g) *Check system for interference or binding and for damaged or missing parts. Replace parts as needed. Replace any components that have high effort or excessive wear.*

(h) *Severe service is when the vehicle is mainly driven under one or more of these conditions:*

- In heavy city traffic where the outside temperature regularly reaches 90°F (32°C) or higher.*
- In hilly or mountainous terrain.*
- When doing frequent trailer towing.*
- Uses such as found in taxi, police, or delivery service.*

(i) *Drain, flush, and refill cooling system. This service can be complex; you should have your retailer perform this service. See Engine Coolant on page 331 for what to use. Inspect hoses. Clean radiator, condenser, pressure cap, and filler neck. Pressure test the cooling system and pressure cap.*

(j) *A fluid loss in any vehicle system could indicate a problem. Have the system inspected and repaired and the fluid level checked. Add fluid if needed.*

(k) *Or every 12 months, whichever occurs first. If you drive regularly under dusty conditions, the filter may require replacement more often.*

(l) *If you drive regularly under dusty conditions, inspect the filter at each engine oil change.*

(m) *Change the fluid the first time the vehicle is serviced after 100,000 miles (166 000 km) and when the vehicle is serviced after each subsequent 50,000 miles (83 000 km).*

(n) *Severe service is when the vehicle is mainly driven under one or more of these conditions:*

- In very high temperatures — over 110°F (43°C).*
- In very low temperatures — under -20°F (-29°C).*
- When doing frequent trailer towing.*

(p) *Visually inspect belt for fraying, excessive cracks, or obvious damage. Replace belt if necessary.*

## **Owner Checks and Services**

These owner checks and services should be performed at the intervals specified to help ensure the safety, dependability, and emission control performance of your vehicle. Your Saturn retailer can assist you with these checks and services.

Be sure any necessary repairs are completed at once. Whenever any fluids or lubricants are added to your vehicle, make sure they are the proper ones, as shown in *Recommended Fluids and Lubricants* on page 432.

## At Each Fuel Fill

*It is important to perform these underhood checks at each fuel fill.*

### Engine Oil Level Check

Check the engine oil level and add the proper oil if necessary. See *Engine Oil on page 318* for further details.

**Notice:** It is important to check the engine oil regularly and keep it at the proper level. Failure to keep the engine oil at the proper level can cause damage to the engine not covered by your warranty.

### Engine Coolant Level Check

Check the engine coolant level and add DEX-COOL<sup>®</sup> coolant mixture if necessary. See *Engine Coolant on page 331* for further details.

### Windshield Washer Fluid Level Check

Check the windshield washer fluid level in the windshield washer fluid reservoir and add the proper fluid if necessary.

## At Least Once a Month

### Tire Inflation Check

Inspect your vehicle's tires and make sure they are inflated to the correct pressures. Do not forget to check the spare tire. See *Inflation - Tire Pressure on page 374*. Check to make sure the spare tire is stored securely. See *Changing a Flat Tire on page 386*.

### Tire Wear Inspection

Tire rotation may be required for high mileage highway drivers prior to the Engine Oil Life System service notification. Check the tires for wear and, if necessary, rotate the tires. See *Tire Inspection and Rotation on page 375*.

## At Least Once a Year

### Starter Switch Check

 **CAUTION:**

**When you are doing this inspection, the vehicle could move suddenly. If the vehicle moves, you or others could be injured.**

1. Before you start, be sure you have enough room around the vehicle.
2. Firmly apply both the parking brake and the regular brake. See *Parking Brake on page 119*.

Do not use the accelerator pedal, and be ready to turn off the engine immediately if it starts.

3. On automatic transaxle vehicles, try to start the engine in each gear. The vehicle should start only in PARK (P) or NEUTRAL (N). If the vehicle starts in any other position, contact your Saturn retailer for service.

On manual transaxle vehicles, put the shift lever in NEUTRAL, push the clutch pedal down halfway, and try to start the engine. The vehicle should start only when the clutch pedal is pushed down all the way to the floor. If the vehicle starts when the clutch pedal is not pushed all the way down, contact your Saturn retailer for service.

## Automatic Transaxle Shift Lock Control System Check

### CAUTION:

**When you are doing this inspection, the vehicle could move suddenly. If the vehicle moves, you or others could be injured.**

1. Before you start, be sure you have enough room around the vehicle. It should be parked on a level surface.
2. Firmly apply the parking brake. See *Parking Brake on page 119*.  
Be ready to apply the regular brake immediately if the vehicle begins to move.

3. With the engine off, turn the ignition to RUN, but do not start the engine. Without applying the regular brake, try to move the shift lever out of PARK (P) with normal effort. If the shift lever moves out of PARK (P), contact your Saturn retailer for service.

## Ignition Transaxle Lock Check

While parked, and with the parking brake set, try to turn the ignition to LOCK in each shift lever position.

- With an automatic transaxle, the ignition should turn to LOCK only when the shift lever is in PARK (P). The ignition key should come out only in LOCK.
- With a manual transaxle, the ignition key should come out only in LOCK.

Contact your Saturn retailer if service is required.

## Parking Brake and Automatic Transaxle Park (P) Mechanism Check

### CAUTION:

**When you are doing this check, your vehicle could begin to move. You or others could be injured and property could be damaged. Make sure there is room in front of your vehicle in case it begins to roll. Be ready to apply the regular brake at once should the vehicle begin to move.**

Park on a fairly steep hill, with the vehicle facing downhill. Keeping your foot on the regular brake, set the parking brake.

- To check the parking brake's holding ability: With the engine running and transaxle in NEUTRAL (N), slowly remove foot pressure from the regular brake pedal. Do this until the vehicle is held by the parking brake only.
- To check the PARK (P) mechanism's holding ability: With the engine running, shift to PARK (P). Then release the parking brake followed by the regular brake.

Contact your Saturn retailer if service is required.

### **Underbody Flushing Service**

At least every spring, use plain water to flush any corrosive materials from the underbody. Take care to clean thoroughly any areas where mud and other debris can collect.

## Recommended Fluids and Lubricants

Fluids and lubricants identified below by name, part number, or specification can be obtained from your retailer.

Usage	Fluid/Lubricant
Engine Oil (2.2L L4 engine)	Engine oil which meets GM Standard GM6094M and displays the American Petroleum Institute Certified for Gasoline Engines starburst symbol. GM Goodwrench® oil meets all the requirements for your vehicle. To determine the proper viscosity for your vehicle's engine, see <i>Engine Oil on page 318</i> .
Engine Oil (3.5L V6 engine)	Engine oil which displays the American Petroleum Institute Certified for Gasoline Engines starburst symbol. GM Goodwrench® oil meets all the requirements for your vehicle. To determine the proper viscosity for your vehicle's engine, see <i>Engine Oil on page 318</i> .

Usage	Fluid/Lubricant
Engine Coolant	50/50 mixture of clean, drinkable water and use only DEX-COOL® Coolant. See <i>Engine Coolant on page 331</i> .
Hydraulic Brake System	Delco® Supreme 11 Brake Fluid or equivalent DOT-3 brake fluid.
Windshield Washer	Optikleen® Washer Solvent
Parking Brake Cable Guides	Chassis Lubricant (GM Part No. 12377985, in Canada 88901242) or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Hydraulic Clutch System	Delco® Supreme 11 Brake Fluid or equivalent DOT-3 brake fluid (Saturn Part No. 21013073).
Manual Transaxle	Manual Transmission Fluid (GM Part No. U.S. 88861800, in Canada 88861801).
Automatic Transaxle (with 2.2L L4 engine)	DEXRON®-VI Automatic Transmission Fluid.

<b>Usage</b>	<b>Fluid/Lubricant</b>
Automatic Transaxle (with 3.5L V6 engine)	ATF Z1 Automatic Transmission Fluid (Saturn Part No. 22717466).
Rear Drive Module and Power Transfer Unit (except with 3.5L V6 engine)	VERSATRAK® Fluid (GM Part No. U.S. 12378514, in Canada 88901045).
Rear Drive Module (with 3.5L V6 engine)	VERSATRAK® Fluid (GM Part No. U.S. 12378514, in Canada 88901045).
Transfer Case (with 3.5L V6 engine)	Synthetic Axle Lubricant (GM Part No. U.S. 12378261, in Canada 10953455).
Key Lock Cylinders	Multi-Purpose Lubricant, Superlube (GM Part No. U.S. 12346241, in Canada 10953474).

<b>Usage</b>	<b>Fluid/Lubricant</b>
Hood Latch Assembly, Secondary Latch, Pivots, Spring Anchor, and Release Pawl	Lubriplate Lubricant Aerosol (Saturn Part No. 21038869 or GM Part No. U.S. 12346293, in Canada 992723) or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Hood, Liftgate Door, and Rear Folding Seat Hinges	Multi-Purpose Lubricant, Superlube (GM Part No. U.S. 12346241, in Canada 10953474).
Sunroof Track	Lubriplate Lubricant Aerosol (Saturn Part No. 21038869 or GM Part No. U.S. 12346293, in Canada 992723) or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Weatherstrip Conditioning	Weatherstrip Lubricant (GM Part No. U.S. 3634770, in Canada 10953518) or Dielectric Silicone Grease (GM Part No. U.S. 12345579, in Canada 992887).

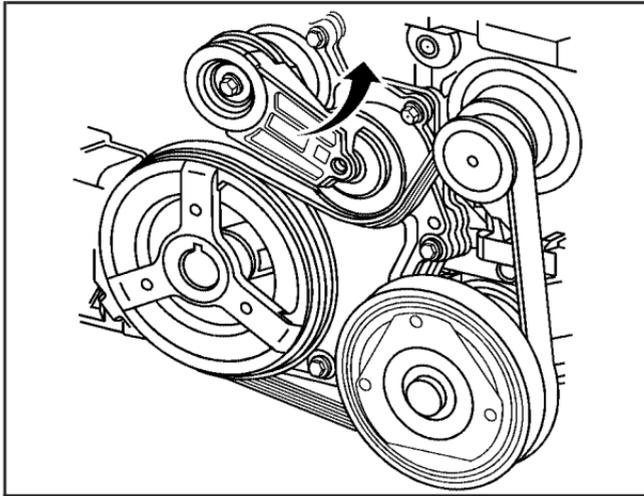
## Normal Maintenance Replacement Parts

Replacement parts identified below by name, part number, or specification can be obtained from your retailer.

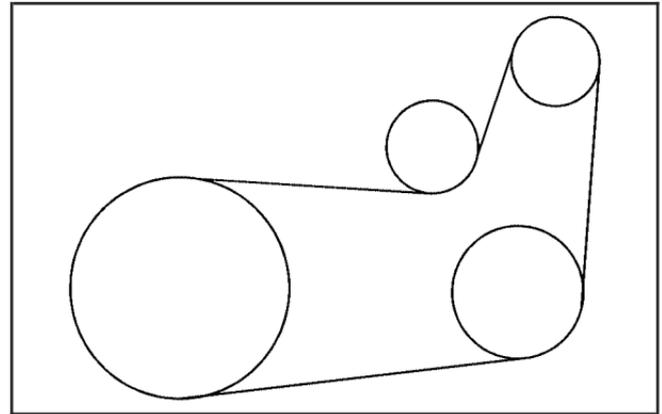
Part	Saturn Part Number	ACDelco® Part Number
Engine Air Cleaner/Filter	22676970	A1627C
Engine Oil Filter		
2.2L L4	12605566	PF457G
3.5L V6	12582255	—
Passenger Compartment Air Filter Element	15822812	—
Spark Plugs		
2.2L L4	12607280	41-105
3.5L V6	12582002	—
Wiper Blades		
Driver's Side – 24 inches (60.0 cm)	22703508	—
Passenger's Side – 19 inches (47.5 cm)	22703507	—
Rear – 11.0 inches (28.0 cm)	22665007	—

## Engine Drive Belt Routing

If your vehicle has a hybrid engine, see “Engine Drive Belt Routing” in the Saturn Vue Hybrid Owners Manual.



**2.2L L4 (L61) Engine**



**3.5L V6 (L66) Engine**

## Maintenance Record

After the scheduled services are performed, record the date, odometer reading, who performed the service, and the type of services performed in the boxes provided. See *Maintenance Requirements on page 418*. Any additional information from *Owner Checks and Services on page 427* can be added on the following record pages. You should retain all maintenance receipts.

### Maintenance Record

Date	Odometer Reading	Serviced By	Maintenance I or Maintenance II	Services Performed

### Maintenance Record (cont'd)

Date	Odometer Reading	Serviced By	Maintenance I or Maintenance II	Services Performed



## Section 7 Customer Assistance Information

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# Customer Assistance and Information

## Customer Satisfaction Procedure

Your satisfaction and goodwill are important to your retailer and to Saturn. Together we are committed to providing our customers with unparalleled service, before, during, and after the purchase of a Saturn vehicle, for total customer satisfaction. We call this the Saturn Difference. Normally, any concerns with the sales transaction or the operation of your vehicle are resolved by your retailer's sales or service departments. If, for any reason, your ownership experience falls below your expectations, we suggest you take the following action:

**STEP ONE:** Contact the Retail Customer Assistance Liaison. Any member of the retail management team has the authority and the desire to resolve your concerns. Normally, concerns can be quickly resolved at this level.

**STEP TWO:** Should you need additional assistance, in the U.S., contact the Saturn Customer Assistance Center by calling 1-800-553-6000. In Canada, contact the Saturn Customer Communication Centre at 1-800-263-1999. A Saturn Customer Assistance Center team member will handle your call and assist in providing product and warranty information, the nearest retailer location, roadside assistance, brochures, literature and discuss any concerns you may have.

We encourage you to call the toll-free number in order to give your inquiry prompt attention. Please have the following information available to give the Customer Assistance Representative:

- Vehicle Identification Number (VIN). This 17-digit number can be found on the vehicle registration or title, on the upper driver side corner of the dash, or on your roadside assistance key card.
- The name of your selling and servicing retail facility.
- Vehicle delivery date and present mileage.
- Your daytime and evening phone numbers.

When contacting Saturn, please remember that your concern will likely be resolved at a retailer's facility. That is why we suggest you follow Step One first if you have a concern.

**STEP THREE (U.S. Owners):** Both Saturn and its retailers are committed to making sure you are completely satisfied with your Saturn vehicle. However, if you continue to remain unsatisfied after following the procedure outlined in Steps One and Two, Saturn and its retailers offer the additional assistance of a neutral party through our voluntary participation in a mediation/arbitration program called Better Business Bureau (BBB) Auto Line.

The BBB Auto Line Program is an out-of-court program administered by the Council of Better Business Bureaus to settle automotive disputes regarding vehicle repairs or the interpretation of the New Vehicle Limited Warranty. This program is available at no cost to you, our customer.

Although you may be required to resort to this informal dispute resolution program prior to filing a court action, use of the program is free of charge and your case is generally heard within 40 days. If you do not agree with the decision given in your case, you can reject it and proceed with any other venue for relief available to you.

Contact the BBB Auto Line Program by using the toll-free telephone number or by writing them at the following address:

BBB Auto Line Program  
Council of Better Business Bureaus, Inc.  
4200 Wilson Boulevard  
Suite 800  
Arlington, VA 22203-1838  
Telephone: 1-800-955-5100

This program is available in all 50 states and the District of Columbia. Eligibility is limited by vehicle age, mileage and other factors. Saturn Corporation reserves the right to change eligibility limitations and/or discontinue its participation in this program.

### **STEP THREE (Canadian Owners):**

#### **General Motors Participation in the Mediation/Arbitration Program**

In the event that you do not feel your concerns have been addressed after following the procedure outlined in Steps 1 and 2, General Motors of Canada Limited has committed to binding arbitration of owner disputes involving factory-related vehicle service claims. The program provides for the review of the facts involved by an impartial third party arbiter, and may include an informal hearing before the arbiter. The program is designed so that the entire dispute settlement process, from the time you file your complaint to the final decision, should be completed in approximately 70 days. We believe our impartial program offers advantages over courts in most jurisdictions because it is informal, quick, and free of charge.

For further information concerning eligibility in the Canadian Motor Vehicle Arbitration Plan (CAMVAP), call toll-free 1-800-207-0685. Alternatively, you may call the Saturn Customer Communication Centre, 1-800-263-1999, or you may write to:

Mediation/Arbitration Program  
c/o Customer Communication Centre  
General Motors of Canada Limited  
Mail Code: CA1-163-005  
1908 Colonel Sam Drive  
Oshawa, Ontario L1H 8P7  
Telephone: 1-800-955-5100

Your inquiry should be accompanied by your Vehicle Identification Number (VIN).

## Online Owner Center

### Online Owner Center (United States only)

The Owner Center is a resource for your Saturn ownership needs. Specific vehicle information can be found in one place.

#### **The Online Owner Center allows you to:**

- Get e-mail service reminders.
- Access information about your specific vehicle, including tips and videos and an electronic version of this owner manual.
- Keep track of your vehicle's service history and maintenance schedule.
- Find Saturn retailers for service nationwide.
- Receive special promotions and privileges only available to members.

Refer to [www.saturn.com](http://www.saturn.com) on the web for updated information and to register your vehicle.

## My GM Canada (Canada only)

My GM Canada is a password-protected section of [gmcanada.com](http://gmcanada.com) where you can save information on GM vehicles, get personalized offers, and use handy tools and forms with greater ease.

Here are a few of the valuable tools and services you will have access to:

- My Showroom: Find and save information on vehicles and current offers in your area.
- My Dealers/Retailers: Save details such as address and phone number for each of your preferred GM Dealers or Retailers.
- My Driveway: Receive service reminders and helpful advice on owning and maintaining your vehicle.
- My Preferences: Manage your profile, subscribe to E-News and use tools and forms with greater ease.

To sign up to My GM Canada, visit the My GM Canada section within [www.gmcanada.com](http://www.gmcanada.com).

## **Customer Assistance for Text Telephone (TTY) Users**

To assist owners who have hearing difficulties, Saturn has installed special TDD (Telecommunication Devices for the Deaf) equipment in its Saturn Customer Assistance Center.

Any hearing- or speech-impaired customer who has access to a TDD or to a conventional Text Telephone (TTY) can communicate with Saturn by dialing 1-800-TDD-6000. TTY users in Canada may dial 1-800-263-3830.

## **Customer Assistance Offices**

Saturn encourages customers to call the toll-free number for assistance. If a customer wishes to write to Saturn, the letter should be addressed to:

Saturn Customer Assistance Center  
100 Saturn Parkway  
Mail Code 371-999-S24  
Spring Hill, TN 37174-1500

1-800-553-6000  
1-800-833-6000 (For Text Telephone devices (TTYs))  
Roadside Assistance: 1-800-553-6000

In Canada, write to:

Saturn Customer Communication Centre  
General Motors of Canada Ltd.  
CA1-163-005  
1908 Colonel Sam Drive  
Oshawa, Ontario L1H 8P7  
[www.gmcanada.com](http://www.gmcanada.com)  
1-800-263-1999  
1-800-263-3830 (For Text Telephone devices (TTYs))  
Roadside Assistance: 1-800-268-6800

## GM Mobility Reimbursement Program



This program, available to qualified applicants, can reimburse you up to \$1,000 toward eligible aftermarket driver or passenger adaptive equipment you may require for your vehicle such as hand controls, wheelchair/scooter lifts, etc.

The offer is available for a limited period of time from the date of vehicle purchase/lease.

For more details, or to determine your vehicle's eligibility, visit your Saturn retailer or call the Saturn Customer Assistance Center at 1-800-553-6000. Text telephone (TTY) users, call 1-800-833-6000.

In Canada, customers may call the Saturn Customer Communication Centre at 1-800-263-1999. TTY users in Canada may call 1-800-263-3830.

## Roadside Assistance Program

For vehicles purchased in the U.S., call **1-800-553-6000 (TTY: 1-800-833-6000)**.

For vehicles purchased in Canada, call **1-800-268-6800**.

Service is available 24 hours a day, 365 days a year.

As the owner of a new Saturn vehicle, you are automatically enrolled in the Saturn Roadside Assistance Program.

### Who is Covered?

Roadside Assistance coverage is for the vehicle operator, regardless of ownership. In Canada, a person driving this vehicle without the consent of the owner is not eligible for coverage.

The following services are provided in the U.S. during the Bumper-to-Bumper warranty period and in Canada, during the Base Warranty coverage period of the New Vehicle Limited Warranty, up to a maximum coverage of \$100.

- **Fuel Delivery:** Delivery of enough fuel for the vehicle to get to the nearest service station (approximately \$5 Canada). Service to provide diesel may be restricted. For safety reasons, propane and other alternative fuels are not provided through this service.
- **Lock-out Service:** To ensure security, the driver must present personal identification before lock-out service is provided. In Canada, the vehicle registration is also required. Lock-out service is covered at no charge if you are unable to gain entry into your vehicle. A remote unlock may be available if you have an active OnStar<sup>®</sup> subscription.
- **Emergency Tow From a Public Roadway or Highway:** Tow to the nearest Saturn retailer for warranty service or in the event of a vehicle-disabling accident. Winch-out assistance provided when the vehicle is mired in sand, mud, or snow.

- **Flat Tire Change:** Installation of a spare tire in good condition, when equipped and properly inflated is covered at no charge. The customer is responsible for the repair or replacement of the tire if not covered by a warrantable failure.
- **Jump Start:** No-start occurrences which require a battery jump start are covered at no charge.
- **Trip Routing Service (Canada only):** Upon request, Roadside Assistance will send you detailed, computer personalized maps, highlighting your choice of either the most direct route or the most scenic route to your destination, anywhere in North America, along with helpful travel information pertaining to your trip.

We make every attempt to send your personalized trip routing as quickly as possible, but it is best to allow three weeks before your planned departure date. Trip routing requests are limited to six per calendar year.

- **Trip Interruption Benefits and Assistance (Canada only):** In the event of a warranty related vehicle disablement, while en route and over 250 kilometres from the original point of departure, you might qualify for trip interruption expense assistance. This assistance covers reasonable reimbursement of up to a maximum of \$500 (Canadian) for (A) meals (maximum of \$50/day), (B) lodging (maximum of \$100/night), and (C) alternate ground transportation (maximum of \$40/day). This benefit is to assist you with some of the unplanned expense you may incur while waiting for your vehicle to be repaired.

Pre-authorization, original detailed receipts, and a copy of the repair order are required.

Once authorization has been given, your advisor will help you make any necessary arrangements and explain how to claim for trip interruption expense assistance.

- **Alternative Service (Canada only):** There could be times when Roadside Assistance cannot provide timely assistance. Your advisor may authorize you to secure local emergency

road service, and you will be reimbursed up to \$100 upon submission of the original receipt to Roadside Assistance.

In many instances, mechanical failures are covered under Saturn's Bumper-to-Bumper warranty for U.S. customers, and the duration of the Base Warranty Coverage for Canadian customers of the New Vehicle Limited Warranty. However, any cost for parts and labor for non-warranty repairs are the responsibility of the driver.

For prompt and efficient assistance when calling, please provide the following to the Roadside Assistance Representatives:

- Your name, home address, and home telephone number
- Telephone number of your location
- Location of the vehicle
- Model, year, color, and license plate number
- Odometer reading, Vehicle Identification Number (VIN) and delivery date of the vehicle
- Description of the problem

While we hope you never have the occasion to use our service, it is added security while traveling for you and your family. Remember we are only a phone call away. Saturn Roadside Assistance: **1-800-553-6000** ; text telephone (TTY) users, call **1-800-833-6000**. Canadian customers call **1-800-268-6800**.

Saturn and General Motors of Canada Limited reserve the right to limit services or reimbursement to an owner or driver when, in their sole discretion, the claims become excessive in frequency or type of occurrence.

Roadside Assistance is not part of or included in the coverage provided by the New Vehicle Limited Warranty. Saturn and General Motors of Canada Limited reserve the right to make any changes or discontinue the Roadside Assistance program at any time without notification.

## **Towing and Road Service Exclusions**

Specifically excluded from Roadside Assistance coverage are towing or services for vehicles operated on a non-public roadway or highway, fines, impound towing caused by a violation of local, Municipal, State, Provincial or Federal law, and mounting, dismounting or changing of snow tires, chains or other traction devices.

## **Collision Damage Repair**

If your vehicle is involved in a collision and it is damaged, have the damage repaired by a qualified technician using the proper equipment and quality replacement parts. Poorly performed collision repairs diminish your vehicle's resale value, and safety performance can be compromised in subsequent collisions.

## Collision Parts

Genuine GM Collision parts are new parts made with the same materials and construction methods as the parts with which your vehicle was originally built. Genuine GM Collision parts are your best choice to assure that your vehicle's designed appearance, durability, and safety are preserved. The use of Genuine GM parts can help maintain your GM New Vehicle Warranty.

Recycled original equipment parts may also be used for repair. These parts are typically removed from vehicles that were total losses in prior accidents. In most cases, the parts being recycled are from undamaged sections of the vehicle. A recycled original equipment GM part, may be an acceptable choice to maintain your vehicle's originally designed appearance and safety performance, however, the history of these parts is not known. Such parts are not covered by your GM New Vehicle Limited Warranty, and any related failures are not covered by that warranty.

Aftermarket collision parts are also available. These are made by companies other than GM and may not have been tested for your vehicle. As a result, these parts may fit poorly, exhibit premature durability/corrosion problems, and may not perform properly in subsequent collisions. Aftermarket parts are not covered by your GM New Vehicle Limited Warranty, and any vehicle failure related to such parts are not covered by that warranty.

## Repair Facility

GM also recommends that you choose a collision repair facility that meets your needs before you ever need collision repairs. Your Saturn retailer may have a collision repair center with GM-trained technicians and state of the art equipment, or be able to recommend a collision repair center that has GM-trained technicians and comparable equipment.

## Insuring Your Vehicle

Protect your investment in your GM vehicle with comprehensive and collision insurance coverage. There are significant differences in the quality of coverage afforded by various insurance policy terms. Many insurance policies provide reduced protection to your GM vehicle by limiting compensation for damage repairs by using aftermarket collision parts. Some insurance companies will not specify aftermarket collision parts. When purchasing insurance, we recommend that you assure your vehicle will be repaired with GM original equipment collision parts. If such insurance coverage is not available from your current insurance carrier, consider switching to another insurance carrier.

If your vehicle is leased, the leasing company may require you to have insurance that assures repairs with Genuine GM Original Equipment Manufacturer (OEM) parts or Genuine Manufacturer replacement parts. Read your lease carefully, as you may be charged at the end of your lease for poor quality repairs.

## If an Accident Occurs

Here is what to do if you are involved in an accident.

- Try to relax and then check to make sure you are all right. If you are uninjured, make sure that no one else in your vehicle, or the other vehicle, is injured.
- If there has been an injury, call 911 for help. Do not leave the scene of an accident until all matters have been taken care of. Move your vehicle only if its position puts you in danger or you are instructed to move it by a police officer.
- Give only the necessary and requested information to police and other parties involved in the accident. Do not discuss your personal condition, mental frame of mind, or anything unrelated to the accident. This helps guard against post-accident legal action.
- If you need roadside assistance, call GM Roadside Assistance. See *Roadside Assistance Program on page 445* for more information.

- If your vehicle cannot be driven, know where the towing service is taking it. Get a card from the tow truck operator or write down the driver's name, the service's name, and the phone number.
- Remove any valuables from your vehicle before it is towed away. Make sure this includes your insurance information and registration if you keep these items in your vehicle.
- Gather the important information you need from the other driver. Things like name, address, phone number, driver's license number, vehicle license plate, vehicle make, model and model year, Vehicle Identification Number (VIN), insurance company and policy number, and a general description of the damage to the other vehicle.
- If possible, call your insurance company from the scene of the accident. They will walk you through the information they need. If they ask for a police report, phone or go to the police department headquarters the next day and you can get a copy of the report for a nominal fee. In some states/provinces with "no fault" insurance

laws, a report may not be necessary. This is especially true if there are no injuries and both vehicles are driveable.

- Choose a reputable collision repair facility for your vehicle. Whether you select a Saturn retailer or a private collision repair facility to fix the damage, make sure you are comfortable with them. Remember, you will have to feel comfortable with their work for a long time.
- Once you have an estimate, read it carefully and make sure you understand what work will be performed on your vehicle. If you have a question, ask for an explanation. Reputable shops welcome this opportunity.

## **Managing the Vehicle Damage Repair Process**

In the event that your vehicle requires damage repairs, GM recommends that you take an active role in its repair. If you have a pre-determined repair facility of choice, take your vehicle there, or have it towed there. Specify to the facility that any required replacement collision parts be original equipment parts, either new Genuine GM parts or recycled original GM parts. Remember, recycled parts are not covered by your GM vehicle warranty.

Insurance pays the bill for the repair, but you must live with the repair. Depending on your policy limits, your insurance company may initially value the repair using aftermarket parts. Discuss this with your repair professional, and insist on Genuine GM parts. Remember if your vehicle is leased you may be obligated to have the vehicle repaired with Genuine GM parts, even if your insurance coverage does not pay the full cost.

If another party's insurance company is paying for the repairs, you are not obligated to accept a repair valuation based on that insurance company's collision policy repair limits, as you have no contractual limits with that company. In such cases, you can have control of the repair and parts choices as long as cost stays within reasonable limits.

## Reporting Safety Defects

### Reporting Safety Defects to the United States Government

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA), in addition to notifying Saturn Corporation.

If NHTSA receives similar complaints, it could open an investigation, and if it finds that a safety defect exists in a group of vehicles, it could order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your retailer or Saturn Corporation.

To contact NHTSA, call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to <http://www.safercar.gov>; or write to:

Administrator, NHTSA  
400 Seventh Street, SW.  
Washington, D.C. 20590

You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

## **Reporting Safety Defects to the Canadian Government**

If you live in Canada, and you believe that your vehicle has a safety defect, you should immediately notify Transport Canada, in addition to notifying General Motors of Canada Limited. You may call them at 1-800-333-0510 or write to:

Transport Canada  
Road Safety Branch  
2780 Sheffield Road  
Ottawa, Ontario K1B 3V9

## **Reporting Safety Defects to Saturn**

In addition to notifying NHTSA (or Transport Canada) in a situation like this, we certainly hope you will notify us.

U.S. customers can call the Saturn Customer Assistance Center at 1-800-553-6000, or write:

Saturn Corporation  
100 Saturn Parkway  
Mail Drop 371-999-S24  
Spring Hill, TN 37174-1500

In Canada, please call us at 1-800-263-1999. Or, write to:

Saturn Customer Communication Centre  
General Motors of Canada Limited  
CA1-163-005  
1908 Colonel Sam Drive  
Oshawa, Ontario L1H 8P7

## **Service Publications Ordering Information**

### **Service Manuals**

A variety of publications are available to you. Saturn service manuals are written for trained technicians, and in some cases, specialized tools and equipment are necessary to complete certain repairs. However, the manuals are available to owners who either have the training, or wish to gain a greater understanding of the technical aspect of their Saturn.

For additional publications information or to order publications in the United States, call toll free 1-800-2-SATURN or visit [www.saturn-publications.com](http://www.saturn-publications.com) to order on-line.

In Canada, Saturn service manuals are available by calling toll free 1-800-551-4123.

## Owner Publications

Information on how to obtain product bulletins and as described below is applicable only in the fifty U.S. states and the District of Columbia, and only for cars and light trucks with a Gross Vehicle Weight Rating (GVWR) less than 10,000 pounds (4 536 kg). Copies of individual bulletins are also at your participating Saturn retailer. You can ask to see them.

In Canada, information relating to product service bulletins can be obtained by contacting your Saturn retailer.

## Service Bulletins

Saturn regularly sends its retailers useful service bulletins about Saturn products. Saturn monitors product performance in the field. We then prepare bulletins for servicing our products better. You can get these bulletins, too.

Bulletins cover various subjects. Some pertain to the proper use and care of your vehicle. Some describe costly repairs. Others describe inexpensive repairs which, if done on time with the latest parts, may avoid future costly repairs.

Some bulletins tell a technician how to repair a new or unexpected condition. Others describe a quicker way to fix your vehicle. They can help a technician service your vehicle better.

Most bulletins apply to conditions affecting a small number of vehicles. Your Saturn retailer or a qualified technician may have to determine if a specific bulletin applies to your vehicle. To order Saturn bulletins, call Saturn Publications at 1-800-2-SATURN or visit [www.saturn-publications.com](http://www.saturn-publications.com) to order online.

## Vehicle Data Recording and Privacy

Your GM vehicle has a number of sophisticated computers that record information about the vehicle's performance and how it is driven. For example, your vehicle uses computer modules to monitor and control engine and transmission performance, to monitor the conditions for airbag deployment and deploy airbags in a crash and, if so equipped, to provide anti-lock braking to help the driver control the vehicle. These modules may store data to help your dealer/retailer technician service your vehicle. Some modules may also store data about how you operate the vehicle, such as rate of fuel consumption or average speed. These modules may also retain the owner's personal preferences, such as radio pre-sets, seat positions, and temperature settings.

## Event Data Recorders

Some information about your vehicle's performance and how it is driven may be recorded on various modules if a crash occurs. Some people refer to these modules as **event data recorders (EDRs)**. These modules may record several seconds of pre-crash and crash data, such as data related to **engine speed, brake application, throttle position, vehicle speed, yaw rate, steering wheel angle, lateral acceleration, safety belt usage, airbag readiness, airbag performance and the severity of the collision**. Unlike the flight data recorders on airplanes, these modules do not record sounds or conversations.

To retrieve this data, special equipment and access to the vehicle or the module that stores the data are required. Certain data may also be sent to or retrieved by OnStar<sup>®</sup> (see below). GM will not access this information or share it with others except: with the consent of the vehicle owner or, if the vehicle is leased, with the consent of the lessee; in response to an official request of police or

similar government office; as part of GM's defense of litigation through the discovery process; or, as required by law. Data that GM collects or receives may also be used for GM research needs or may be made available to others for research purposes, where a need is shown and the data is not tied to a specific vehicle or vehicle owner.

Others may be able to retrieve this data if they have access to the vehicle and have the special equipment necessary to download the data.

## OnStar

If your vehicle has OnStar<sup>®</sup> and you subscribe to the OnStar<sup>®</sup> services, please refer to the OnStar<sup>®</sup> Terms and Conditions for information on data collection and use. See also *OnStar<sup>®</sup> System on page 128* for more information.

## Navigation System

If your vehicle has a **navigation system**, use of the system may result in the storage of **destinations, addresses, telephone numbers, and other trip information**. Please refer to the navigation system operating manual for information on stored data and for deletion instructions.

## Radio Frequency Identification (RFID)

**RFID** technology is used in some vehicles for functions such as tire pressure monitoring and ignition system security, as well as in connection with conveniences such as key fobs for remote door locking/unlocking and starting, and in-vehicle transmitters for garage door openers. RFID technology in GM vehicles does not use or record personal information or link with any other GM system containing personal information.

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