2006 GMC TopKick 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. For vehicles first sold in Canada, substitute the name “General Motors of Canada Limited” for GM Medium Duty Truck Division when it appears in this manual.

Keep this manual in the vehicle, so it will be there if it is needed while you are on the road. If the vehicle is sold, leave this manual in the vehicle.

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Canadian Owners

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

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

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.

Litho in U.S.A.
Part No. 06TOPKICK A First Printing

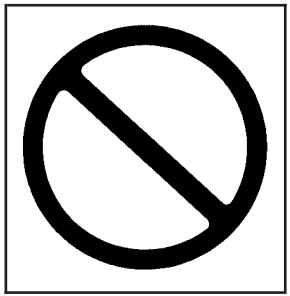
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Safety Warnings and Symbols

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.

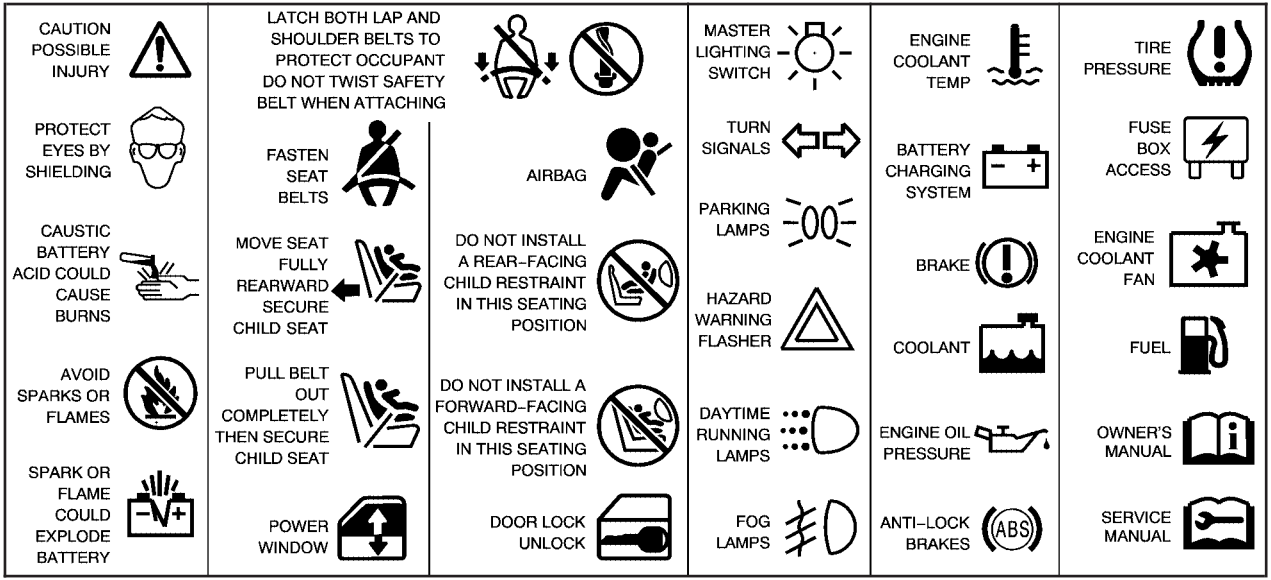
Vehicle Symbols

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:



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Front Seats

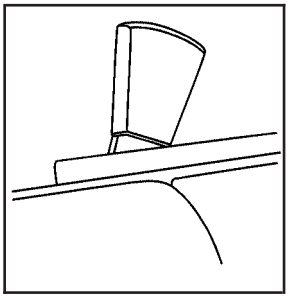
Bucket Seats

If your vehicle has bucket seats, you can adjust the seats several different ways.

Fore-and-Aft Adjustment

⚠ CAUTION:

You can lose control of the vehicle if you try to adjust the 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.

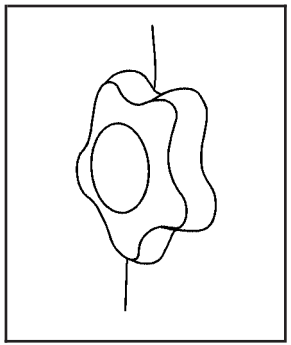


The fore-and-aft adjustment lever is located underneath the front of the driver's seat.

To slide the seat forward or rearward, move the lever toward the outboard side of the seat. The seat will lock in at 1/2 inch (1.5 cm) increments.

Lumbar Adjustment

Your vehicle may have this feature.

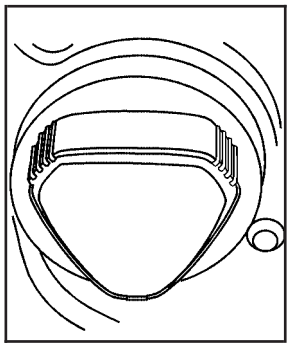


The lumbar adjustment knob is located on the seatback, on the inboard side of the driver's seat and on the outboard side of the passenger's seat.

For more support to your lower back, turn the lumbar adjustment knob clockwise. To decrease the amount of lumbar support, turn the knob counterclockwise.

Seatback Adjustment

Your vehicle will have one of the following seatback reclining mechanisms.

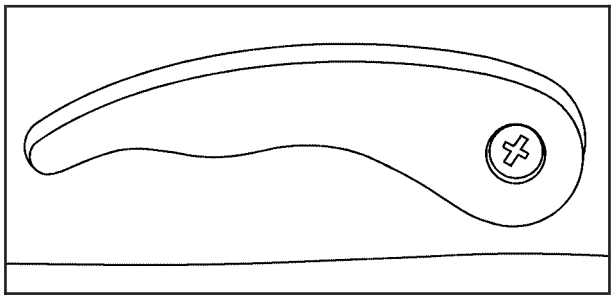


If your vehicle has this knob, it is located on the inboard side of the driver's seat cushion and the outboard side of the passenger's seat cushion.

⚠ 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 tilt the seatback rearward, turn the knob toward the rear of the vehicle. To tilt the seat forward turn the knob toward the front of the vehicle.



If your vehicle has this lever, it is located on the outboard side of the driver's and passenger's seat cushions.

⚠ 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. 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.

To recline the seatback, lift the lever and use your body to move the seatback. Release the lever to lock the seatback where you want it. Lean forward and pull up on the lever to return the seatback to an upright position.



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

Split Bench Seat (80/20 Split)

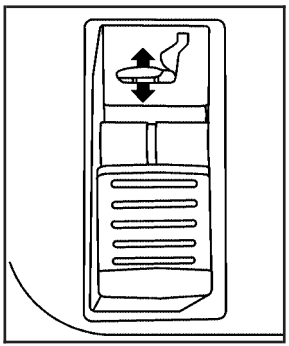
If your vehicle has a split bench seat, the passenger seat is not adjustable.

There is a storage area underneath the seat cushion. See *Storage Areas on page 2-48*.

Air Suspension Seats

Your vehicle may have a low-back or high-back air suspension seat. There are two ways you can adjust the seat.

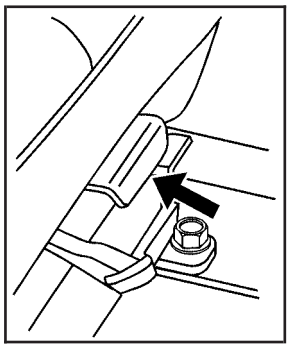
Height Adjustment



The suspension seat height adjustment lever is located on the front inboard side of the seat.

To adjust the height of the air suspension seat, pull the lever up to inflate. Push the lever down to deflate.

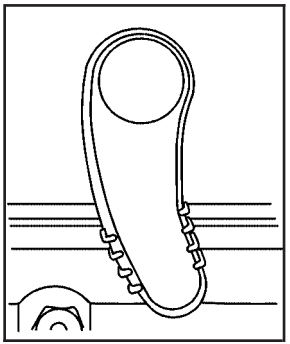
The seat cushion can also be raised or lowered.



The seat cushion height adjustment handle is located underneath the front of the seat.

To adjust the height of the cushion, lift the handle up and pull it forward. You can choose between two settings.

Chugger-Snubber Lock-Out Feature



If your vehicle has this feature, the handle is located on the outboard side of the driver's and passenger's seats.

Move the handle down to reduce any backslap experienced while in tractor/trailer operation or while operating a dump truck application.

Rear Seats

Rear Seat Operation

Folding the Rear Seat (Crew Cab)

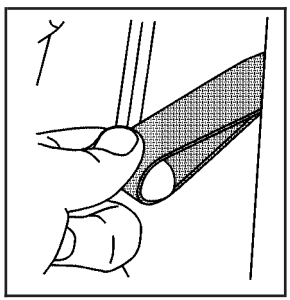
⚠ CAUTION:

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.

⚠ 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.

The rear bench seat on the crew cab can be folded down to provide more cargo space.



To fold down the seatback, pull this nylon strap located on the rear of the seat, while pulling the seatback down.

To raise a seatback, pull the nylon strap while raising the seatback until it locks upright.

After raising a seatback to an upright position, push and pull on the seatback to check that 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 a light that comes on as a reminder to buckle up. See *Safety Belt Reminder Light on page 3-26*.

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

You never know if you'll be in a crash. If you do have a crash, you don't 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 wouldn't 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 30 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter... a lot!

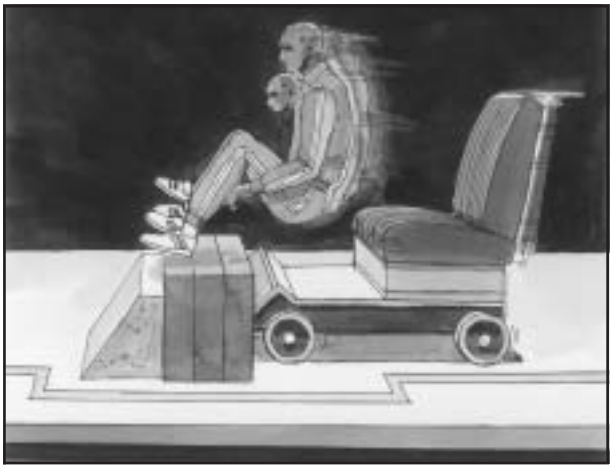
Why Safety Belts Work

Q: Aren't safety belts for kids?

A: Yes. And they're for adult truckers, and anyone else who rides in your vehicle.



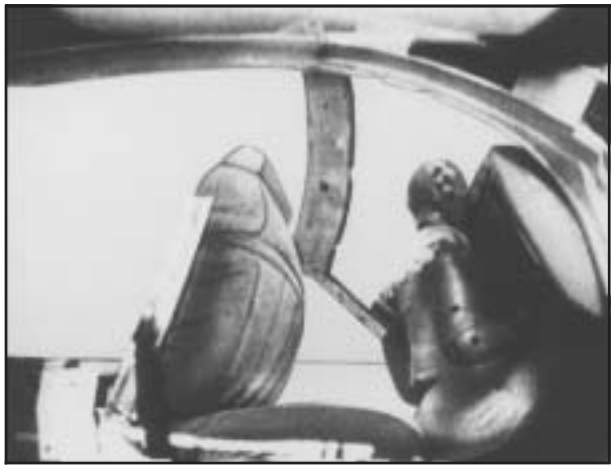
Here's why: when your vehicle goes, say, 30 mph (50 km/h), so do you and your passengers.



If the vehicle hits something, it stops – right then. But nothing stops the people. They keep moving.



Then something will stop them. It could be the windshield.



Or it could be the instrument panel.

Now, what if you and your passengers were to give that big vehicle a chance to deal with the force of the impact, instead of you?



With 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. Safety belts are for everyone.

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 in many vehicles today and will be in most of them in the future. But they 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.

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 1-26* or *Infants and Young Children on page 1-28*. Follow those rules for everyone's protection.

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

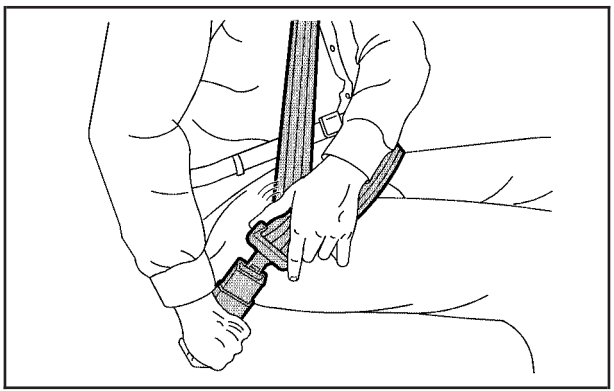
We will start with the driver position.

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.

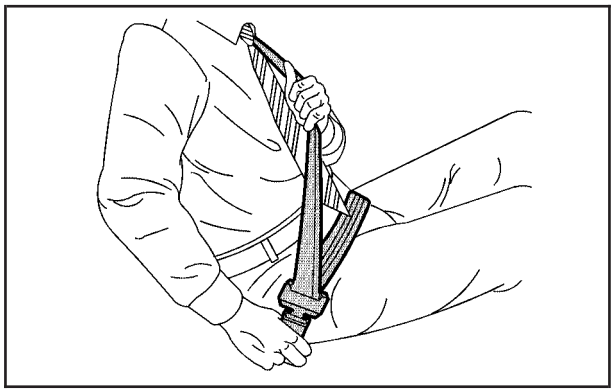


3. Pick up the latch plate and pull the belt across you. Do not let it get twisted.

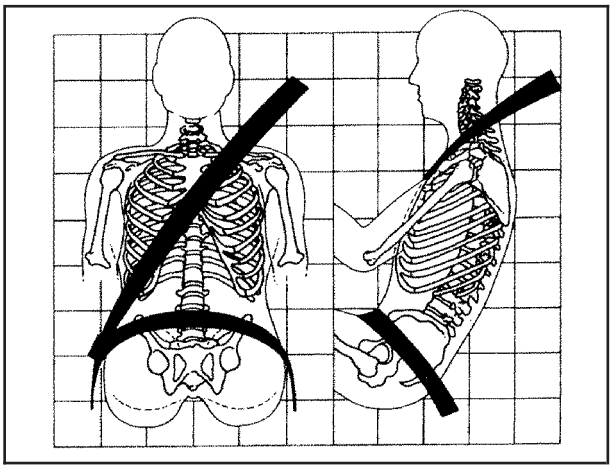
   The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.
4. Push the latch plate into the buckle until it clicks.

   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 1-25*.

   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. See *Shoulder Belt Height Adjustment on page 1-20*.



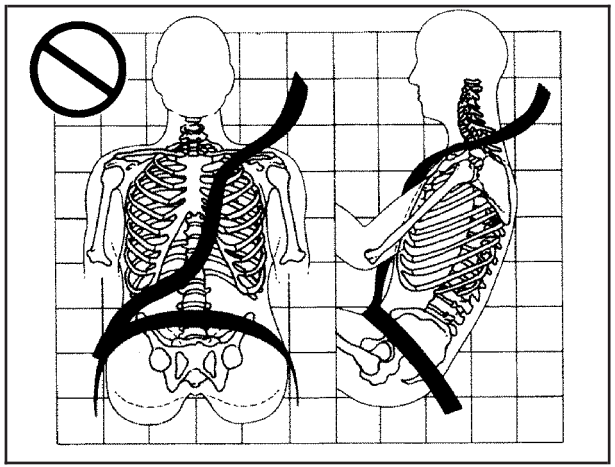
6. To make the lap part tight, pull up on the shoulder belt.



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, or if you pull the belt very quickly out of the retractor.

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

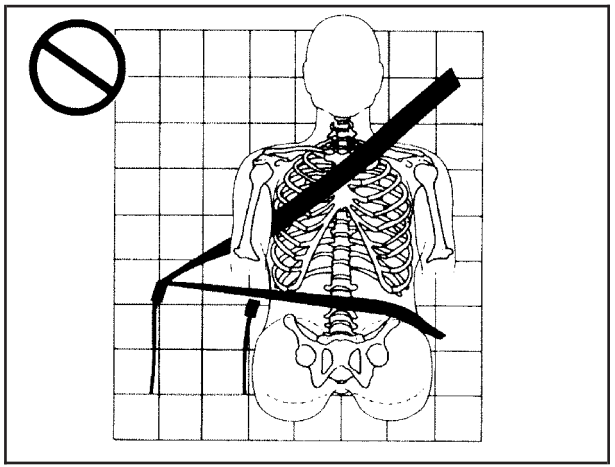


A: The shoulder belt is too loose. It will not give nearly as much protection this way.

⚠ 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?

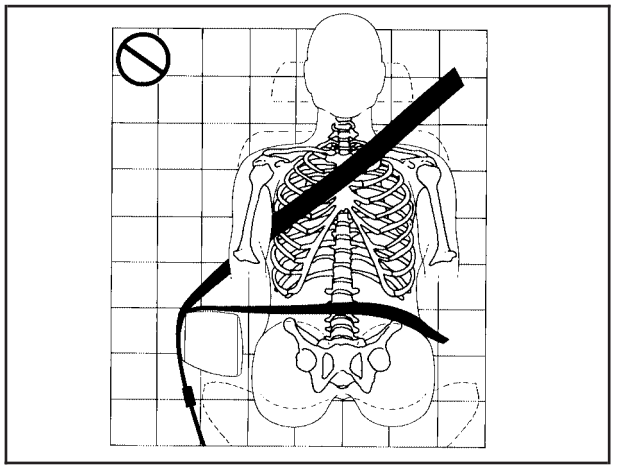


A: The belt is buckled in the wrong place.

⚠ 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?**

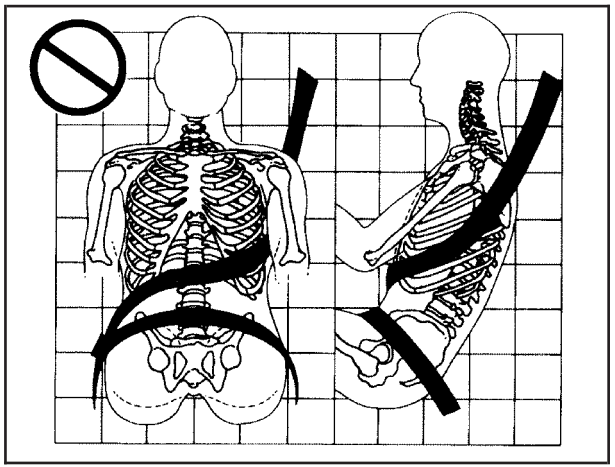


A: The belt is over an armrest.

⚠ 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?

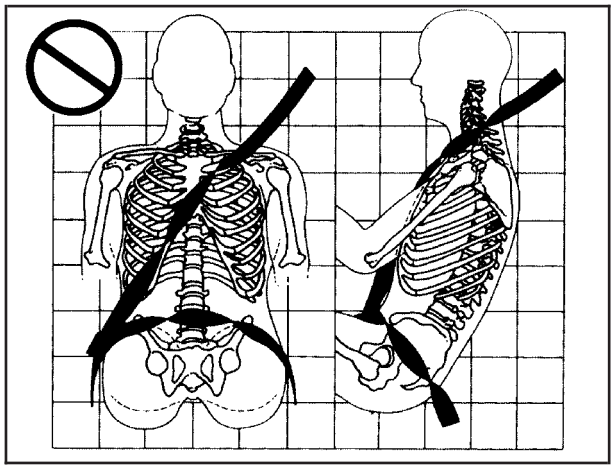


A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

⚠ 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.

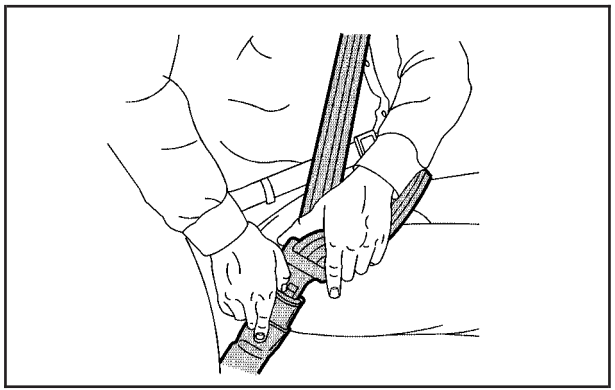
Q: **What is wrong with this?**



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 dealer to fix it.



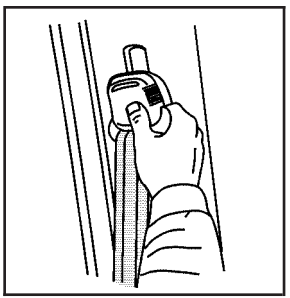
To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.

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.

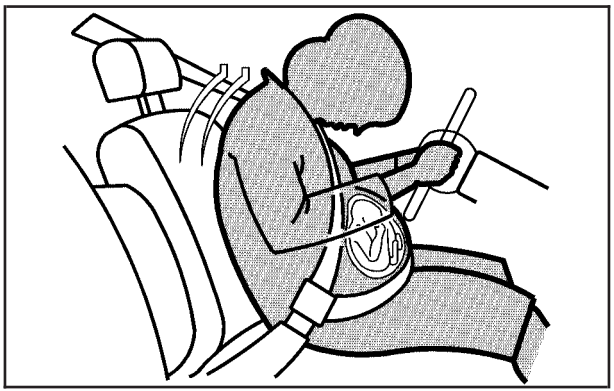


To move it down, press in at the top of the arrows and move the height adjuster to the desired position. You can move the height adjuster up just by pushing up on the shoulder belt guide.

After you move the height adjuster to where you want it, try to move it down without pressing in 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

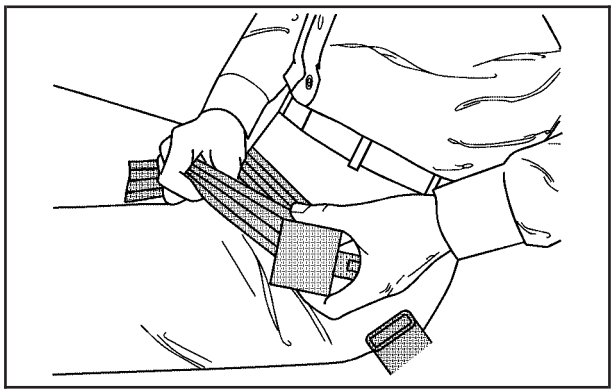
To learn how to wear the right front passenger's safety belt properly, see *Driver Position on page 1-13*.

The right front passenger's safety belt works the same way as the driver's safety belt. If your vehicle has a static seat in this position and 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, just let the belt go back all the way and start again.

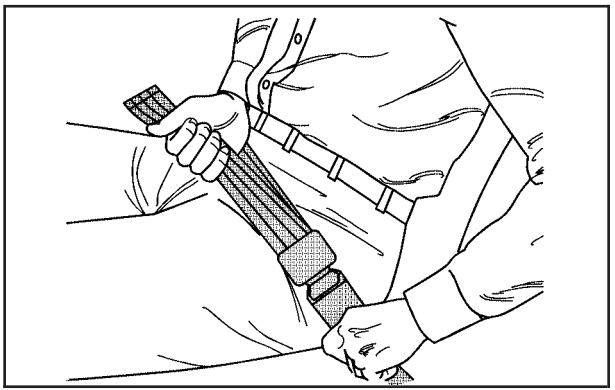
Center Passenger Position

Lap Belt

If your vehicle has a front bench seat, someone can sit in the center position. If your vehicle is a crew cab, someone can also sit in the center rear position.



When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.



To make the belt shorter, pull its free end as shown until the belt is snug.

Buckle, position and release it the same way as the lap part of a lap-shoulder belt. If the belt is not long enough, see *Safety Belt Extender on page 1-25*.

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.

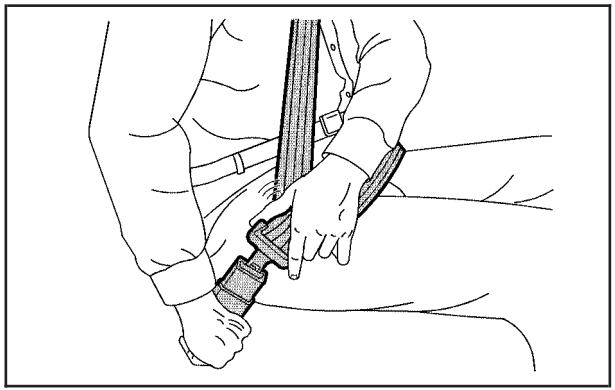
Rear Outside Passenger Positions (Crew Cab)

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

The positions next to the windows have lap-shoulder belts. Here is how to wear one properly.

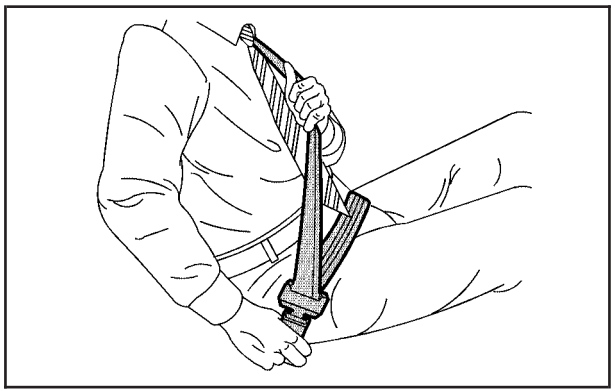


1. Pick up the latch plate and pull the belt across you. Do not let it get twisted.

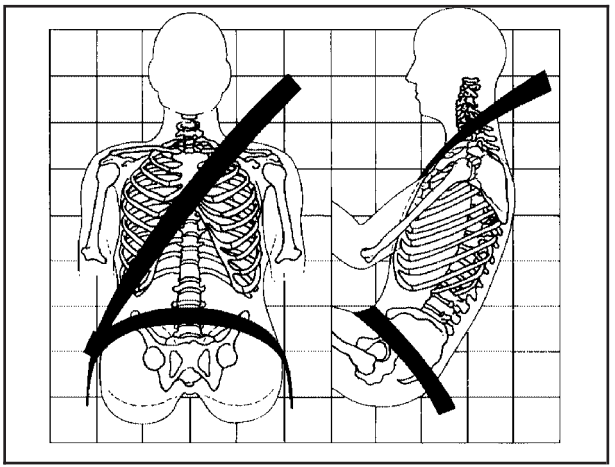
   The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.

2. Push the latch plate into the buckle until it clicks. Pull up on the latch plate to make sure it is secure.

   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. If the belt is not long enough, see *Safety Belt Extender on page 1-25*. 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.



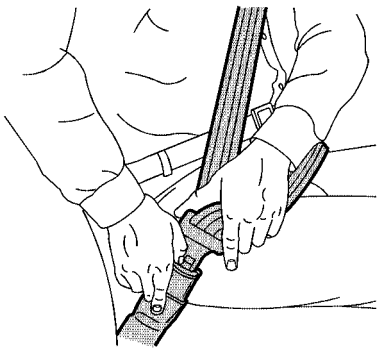
The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash this applies force to the strong pelvic bones. And you would be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or 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, or if you pull the belt very quickly out of the retractor.

Each position next to the windows has a shoulder belt height adjuster. See *Shoulder Belt Height Adjustment on page 1-20*.

⚠ 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, just push the button on the buckle.

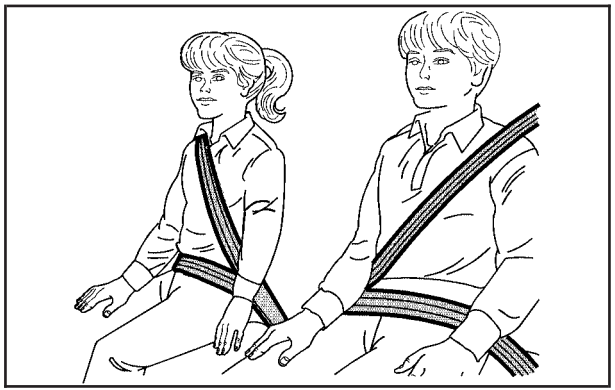
Safety Belt Extender

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

But if a safety belt is not long enough, your dealer will order you an extender. It is free. 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.

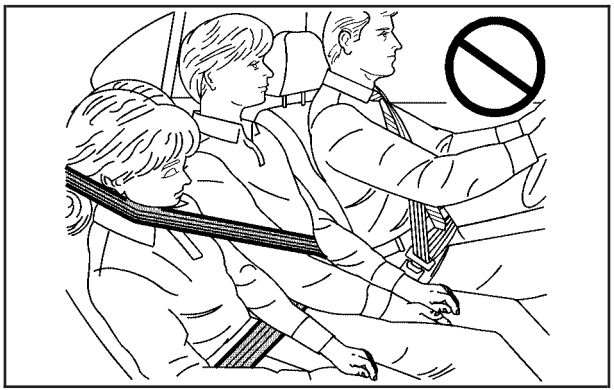
If you have the choice, a child should sit next to a window so the child can wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide.

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

A: If possible, 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.

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

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 can not 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: Move the child toward the center of the vehicle, but 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.

If the child is so small that the shoulder belt is still very close to the child's face or neck, you might want to place the child in a rear seat that has a lap belt, if your vehicle has one.



⚠ CAUTION:

Never do this.

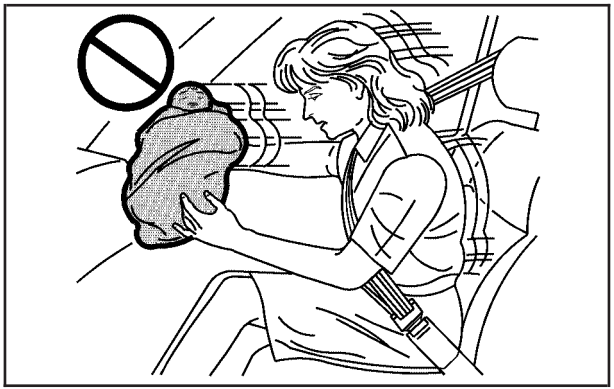
Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

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

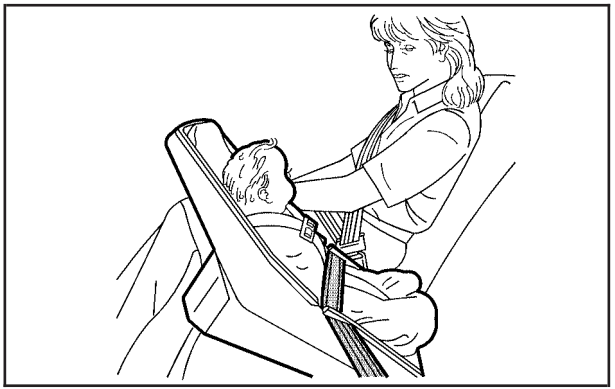
Everyone in a vehicle needs protection! This includes infants and all other children. Neither the distance traveled nor the age and size of the traveler changes the need, for everyone, to use safety restraints. In fact, the law in every state in the United States and in every Canadian province says children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

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.

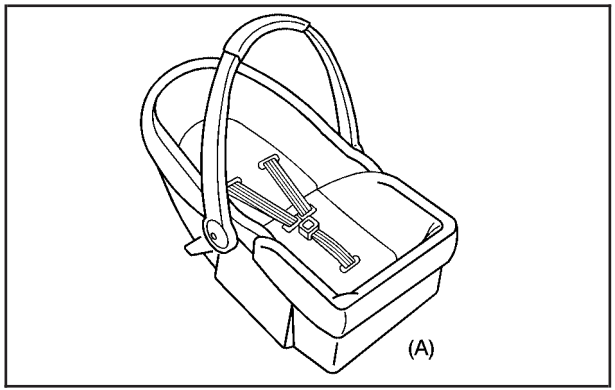
⚠ CAUTION:

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.

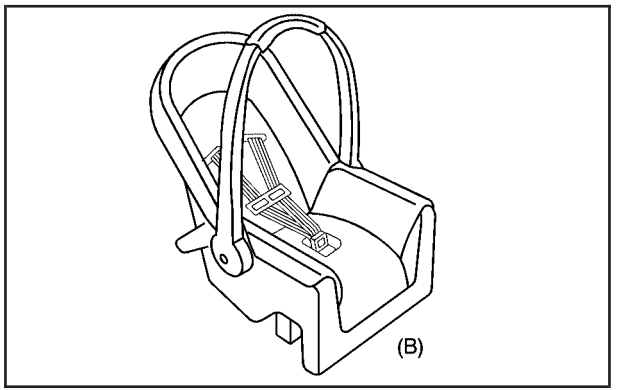
We know securing a child can present real problems in a medium-duty vehicle like yours.

If your vehicle is a regular cab model with an air-suspension seat in the right front passenger's position, there is no place in your vehicle to secure a child restraint. The only answer is to have smaller children make the trip in another vehicle, where they can get the protection they need.

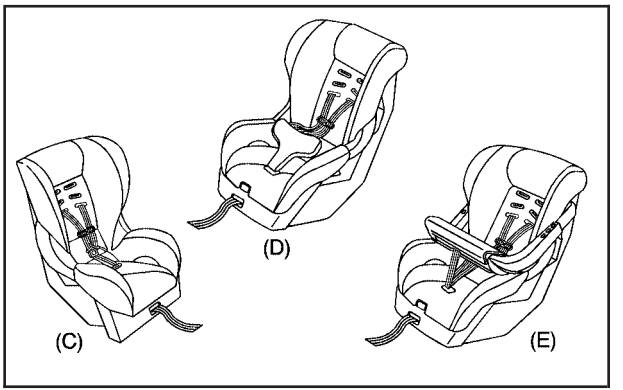
Child Restraint Systems



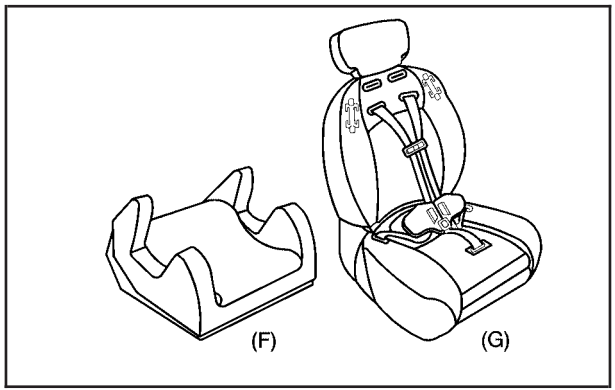
An infant car bed (A), a special bed made for use in a motor vehicle, is an infant restraint system designed to restrain or position a child on a continuous flat surface. Make sure that the infant's head rests toward the center of the vehicle.



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, 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. 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 (Regular Cab Models)

If your vehicle is a regular cab model with an air-suspension seat in the right front passenger's position, there is no place in your vehicle to secure a child restraint. The only answer is to have smaller children make the trip in another vehicle, where they can get the protection they need.

⚠ CAUTION:

A child restraint cannot be secured properly in an air-suspension type seat. This is because an air-suspension seat is designed to move up and down for an adult passenger. Do not use a child restraint in an air-suspension seat.

If your vehicle is a regular cab model with a static seat in the right front passenger's position, or if it has a bench seat, the child restraint must be secured properly in the right front passenger's seat. If your vehicle has airbags and you need to secure a child restraint in the right front passenger's seat, there is a switch on the instrument panel that you can use to turn off the passenger's airbag. See *Airbag Off Switch on page 1-56* and *Securing a Child Restraint in the Right Front Seat Position on page 1-44* for more on this, including important safety information.

Unless the passenger's airbag has been turned off, never put a rear-facing child restraint in this vehicle. Here is why:

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the 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 this vehicle unless the passenger's airbag has been turned off.

CAUTION: (Continued)

CAUTION: (Continued)

Even though the airbag off switch is designed to turn off the passenger's frontal airbag, 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 static seat or the right front bench seat, always move the passenger seat as far back as it will go.

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

Where to Put the Restraint (Crew Cab Models)

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 position, including an infant riding in a rear-racing infant seat, a child riding in a forward-facing child seat and an older child riding in a booster seat.

If your vehicle has airbags and you need to secure a child restraint in the right front passenger's seat, there is a switch on the instrument panel that you can use to turn off the passenger's airbag. See *Airbag Off Switch on page 1-56* and *Securing a Child Restraint in the Right Front Seat Position on page 1-44* for more on this, including important safety information.

Unless the passenger's airbag has been turned off, never put a rear-facing child restraint in this vehicle. 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 to turn off the airbag before using a rear-facing child restraint in the right front seat position.

Even though the airbag off switch is designed to turn off the passenger's airbag, 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 static seat or right front bench 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 has an air-suspension seat in the right front passenger's position, do not secure a child restraint there. Here is why:

> **⚠ CAUTION:**
>
> **A child restraint cannot be secured properly in an air-suspension type seat. This is because an air-suspension seat is designed to move up and down for an adult passenger. Do not use a child restraint in an air-suspension seat.**

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 — even when no child is in it.

Lower Anchors and Tethers for Children (LATCH)

Some child restraints have a LATCH system. As part of the LATCH system, your child restraint may have lower attachments and/or a top tether. The LATCH system can help hold the child restraint in place during driving or in a crash. Some vehicles have lower and/or top tether anchors designed to secure a child restraint with lower attachments and/or a top tether.

Some child restraints with a top tether are designed to be used whether the top tether is anchored or not. Other child restraints require that the top tether be anchored. A national or local law may require that the top tether be anchored.

In Canada, the law requires that forward-facing child restraints have a top tether, and that the tether be attached.

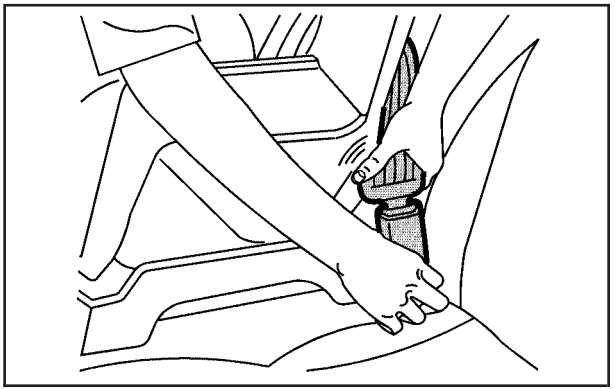
Your vehicle does not have lower anchors or top tether anchors to secure a child restraint with the LATCH system. If a national or local law requires that your top tether be anchored, do not use a child restraint in this vehicle because a top tether cannot be properly anchored. You must use the safety belts to secure your child restraint in this vehicle, unless a national or local law requires that the top tether be anchored. Refer to your child restraint instructions and instructions in this manual for securing a child restraint using the vehicle's safety belts.

Securing a Child Restraint in a Rear Outside Seat Position (Crew Cab Models)

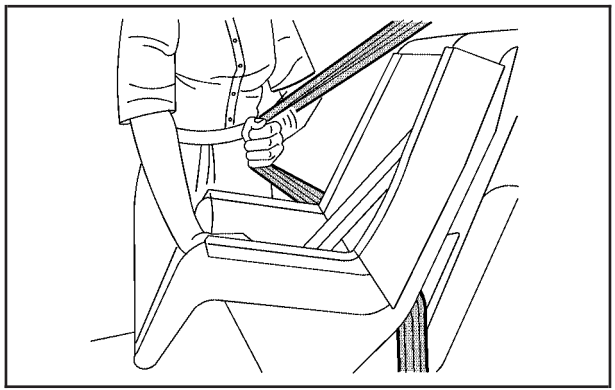
There are no top tether anchors in the rear outside seat positions. Do not secure a child seat in these positions if a national or local law requires that the top tether be anchored, or if the instructions that come with the child restraint say that the top tether must be anchored.

You will be using the lap-shoulder belt. 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.

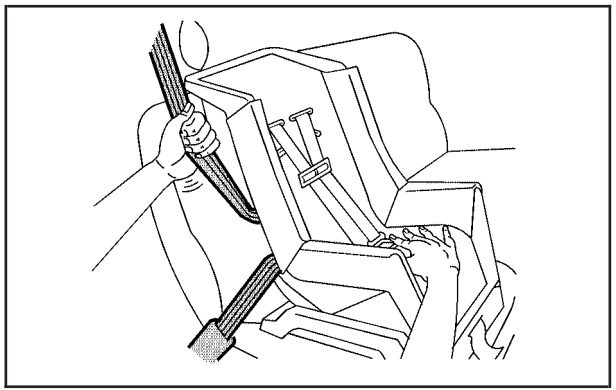
1. Put the child restraint on the seat.
2. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



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

To remove the child restraint, just 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 (Crew Cab) or Center Front Position

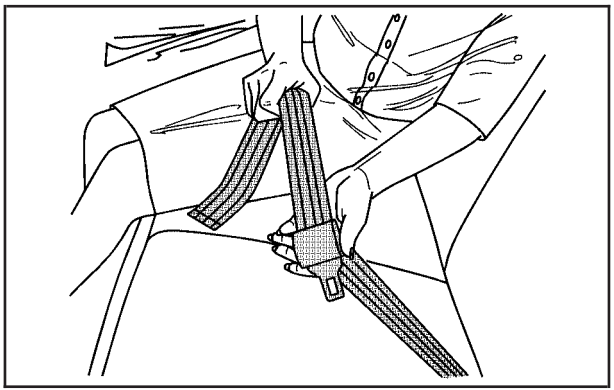
There are no top tether anchors in these positions. Do not secure a child seat in these positions if a national or local law requires that the top tether be anchored, or if the instructions that come with the child restraint say that the top tether must be anchored.

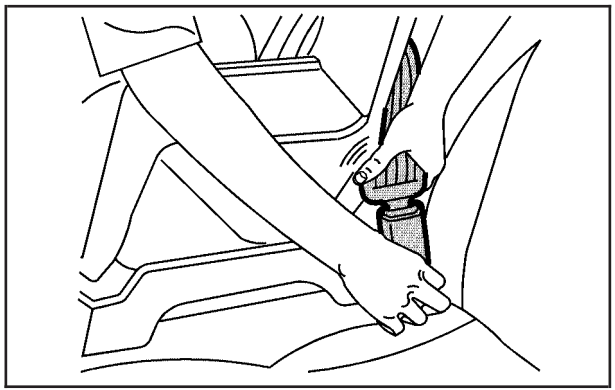
You will be using the lap belt.

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. But do not use the center front passenger position if your vehicle has airbags, or if the child restraint interferes with shifting gears.

⚠ CAUTION:

A child in a child restraint in the center front seat can be badly injured or killed by the right front passenger airbag if it inflates. If your vehicle has airbags, never secure a child restraint in the center front seat. It is always better to secure a child restraint in the rear seat if your vehicle has one. You may secure a forward-facing child restraint in the right front passenger static seat, but before you do, 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.





1. Make the belt as long as possible by tilting the latch plate and pulling it along the belt.
2. Put the child restraint on the seat.
3. Run 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. To tighten the belt, pull its free end while you push down on the child restraint. 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. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt. It will be ready to work for an adult or large child passenger.

Securing a Child Restraint in the Right Front Seat Position

Do not use a child restraint with an air suspension seat.

⚠ CAUTION:

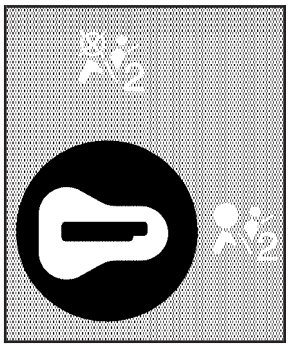
A child restraint cannot be secured properly in an air-suspension type seat. This is because an air-suspension seat is designed to move up and down for an adult passenger. Do not use a child restraint in an air-suspension seat.

There is no top tether anchor in this 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 1-39* if your child restraint has a top tether.

If your vehicle has a right front passenger's airbag, there is a switch on the instrument panel that you can use to turn off the right front passenger's airbag when you need to secure a child restraint in the right front passenger's position. See *Airbag Off Switch on page 1-56* for more on this, including important safety information.



United States



Canada

A rear seat is a safer place to secure a forward-facing child restraint. Never put a rear-facing child restraint in the right front passenger's seat unless the airbag is off.

Here is why:

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the 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 this vehicle unless the passenger's airbag has been turned off.

Even though the airbag off switch is designed to turn off the passenger's frontal airbag, 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.

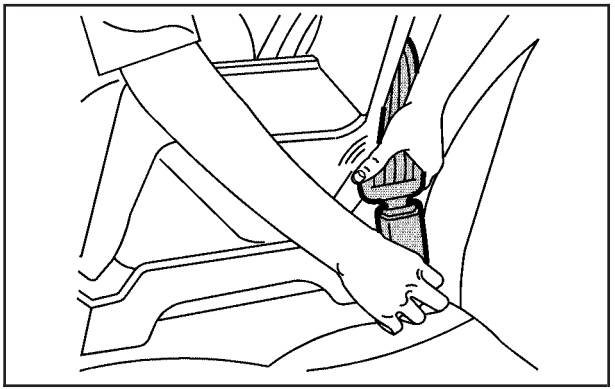
If you need to secure a forward-facing child restraint in the right front static seat or the right front bench seat, always move the passenger seat as far back as it will go.

⚠ CAUTION:

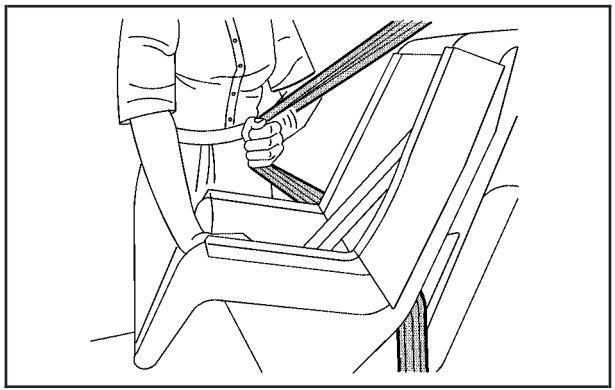
If the airbag readiness light ever comes on when you have turned off the airbag, it means that something may be wrong with the airbag system. The right front passenger's airbag could inflate even though the switch is off. If this ever happens, do not let anyone whom the national government has identified as a member of a passenger airbag risk group sit in the right front passenger's position (for example, do not secure a rear-facing child restraint in the right front passenger's seat) until you have your vehicle serviced. See *Airbag Off Switch on page 1-56* and *Airbag Readiness Light on page 3-27* for more on this, including important safety information.

You will be using the lap-shoulder belt. 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.

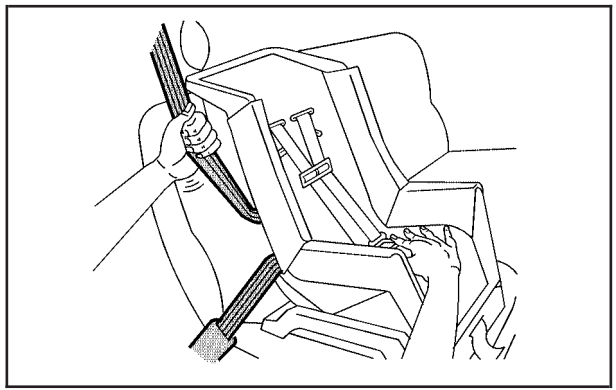
1. If your vehicle has a right front passenger's airbag see *Airbag Off Switch on page 1-56*. If your vehicle has a right front passenger's airbag and your child restraint is forward-facing, always move the seat as far back as it will go before securing it in this seat. See *Bucket Seats on page 1-2*. Never use a rear-facing child restraint in this seat unless the airbag is off.
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.
7. Push and pull the child restraint in different directions to be sure it is secure.

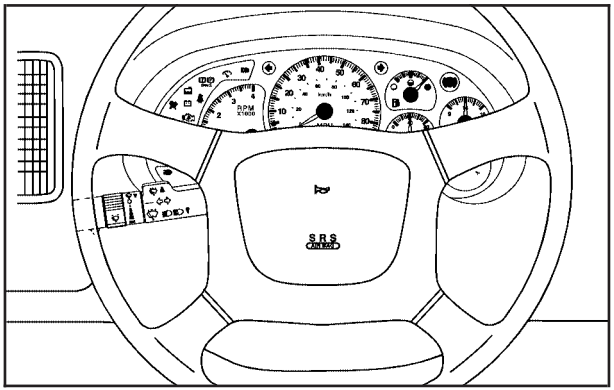
To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

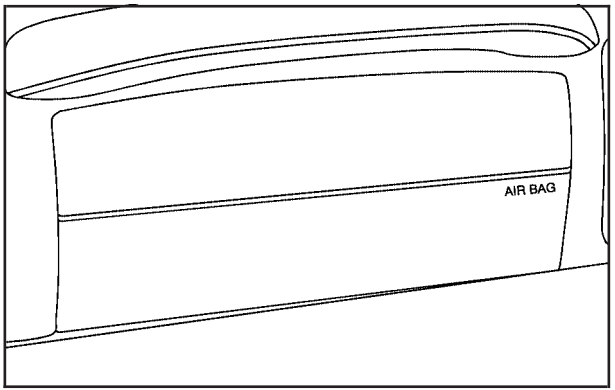
If you were using a child restraint in a vehicle equipped with a right front passenger's airbag, turn on the right front passenger's airbag when you remove the child restraint from the vehicle unless the person who will be sitting there is a member of a passenger airbag risk group. See *Airbag Off Switch on page 1-56*.

⚠ CAUTION:

If the right front passenger's airbag is turned off for a person who is not in a risk group identified by the national government, that person will not have the extra protection of an airbag. In a crash, the airbag will not be able to inflate and help protect the person sitting there. Do not turn off the passenger's airbag unless the person sitting there is in a risk group. See *Airbag Off Switch on page 1-56* for more on this, including important safety information.

Airbag System





If it says AIR BAG on the middle part of the steering wheel and AIR BAG on the instrument panel in front of the right front passenger's seat, your vehicle has an airbag for the driver and an airbag for the right front passenger.

If it says AIR BAG on the middle part of the steering wheel, but it does not say AIR BAG on the instrument panel in front of the right front passenger's seat, your vehicle has an airbag for the driver only.

If it says AIR BAG on the middle part of the steering wheel, but there is no right front passenger seat, your vehicle has an airbag for the driver only.

If it does not say AIR BAG on the middle part of the steering wheel, your vehicle does not have airbags.

Frontal airbags are designed to help reduce the risk of injury from the force of an inflating airbag. But these airbags must inflate very quickly to do their job and comply with federal regulations.

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. Airbags are designed to workwith safety belts, but do not replace them. Airbags are designed to deploy in moderate to severe frontal and near frontal crashes. They are not designed to inflate in rollover, rear

CAUTION: (Continued)

CAUTION: (Continued)

crashes, or in many side crashes. And, for some unrestrained occupants, airbags may provide less protection in frontal crashes than more forceful airbags have provided in the past. Everyone in your vehicle should wear a safety belt properly — whether or not there is an airbag for that person.

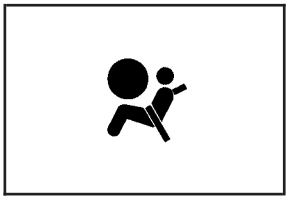
⚠ CAUTION:

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 before and during a crash. Always wear your safety belt, even with airbags. The driver should sit as far back as possible while still maintaining control of the vehicle.

If your vehicle has an airbag for the right front passenger, please read this:

⚠ 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 1-26* and *Infants and Young Children on page 1-28*.



There is an airbag readiness light on the instrument panel, 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 3-27* for more information.

Where Are the Airbags?



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



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

⚠ 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.

When Should an Airbag Inflate?

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. (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.

The frontal airbags are not intended to inflate during vehicle rollovers, rear impacts, or in many side impacts.

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. Inflation is determined by what the vehicle hits, the angle of the impact, and how quickly the vehicle slows down.

What Makes an Airbag Inflate?

In an impact of sufficient severity, the airbag sensing system detects that the vehicle is in a crash. The sensing system triggers a release of gas from the inflator, which inflates the airbag. 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.

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. 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 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 those airbags. 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.

What Will You See After an Airbag Inflates?

After an airbag inflates, it quickly deflates, so quickly that some people may not even realize the airbag inflated. Some components of the airbag module — the steering wheel hub for the driver's airbag or the instrument panel for the right front passenger's bag — may be hot for a short time. The parts of the bag that come into contact with you may be warm, but not too hot to touch. There will be some smoke and dust coming from the vents in the deflated airbags. Airbag inflation does not prevent the driver from seeing out of the windshield or being able to steer the vehicle, nor does it stop people from leaving the vehicle.

⚠ CAUTION:

When an airbag inflates, there is 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.

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.

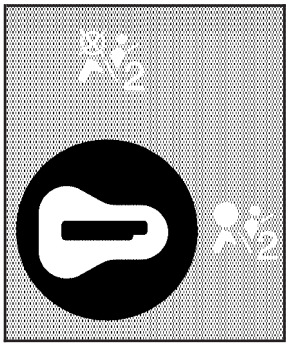
- Airbags are designed to inflate only once. After an airbag inflates, you will need some new parts for your airbag system. If you do not get them, the airbag system will not be there to help protect you in another crash. A new system will include airbag modules and possibly other parts. The service manual for your vehicle covers the need to replace other parts.
- Your vehicle is equipped with a crash sensing and diagnostic module which records information after a crash. See *Vehicle Data Collection and Event Data Recorders on page 7-6*.
- Let only qualified technicians work on your airbag system. Improper service can mean that your airbag system will not work properly. See your dealer for service.

Airbag Off Switch

If your vehicle has a right front passenger airbag, it has a switch on the instrument panel that you can use to turn off the right front passenger's airbag.



United States



Canada

This switch should only be turned to the off position if the person in the right front passenger's position is a member of a passenger risk group identified by the national government as follows:

Infant. *An infant (less than 1 year old) must ride in the front seat because:*

- *my vehicle has no rear seat;*
- *my vehicle has a rear seat too small to accommodate a rear-facing infant seat; or*
- *the infant has a medical condition which, according to the infant's physician, makes it necessary for the infant to ride in the front seat so that the driver can constantly monitor the child's condition.*

Child age 1 to 12. *A child age 1 to 12 must ride in the front seat because:*

- *my vehicle has no rear seat;*
- *although children ages 1 to 12 ride in the rear seat(s) whenever possible, children ages 1 to 12 sometimes must ride in the front because no space is available in the rear seat(s) of my vehicle; or*
- *the child has a medical condition which, according to the child's physician, makes it necessary for the child to ride in the front seat so that the driver can constantly monitor the child's condition.*

Medical Condition. *A passenger has a medical condition which, according to his or her physician:*

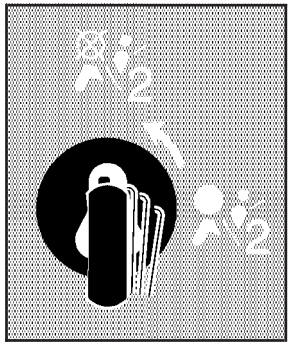
- *causes the passenger airbag to pose a special risk for the passenger; and*
- *makes the potential harm from the passenger airbag in a crash greater than the potential harm from turning off the airbag and allowing the passenger, even if belted, to hit the dashboard or windshield in a crash.*

⚠ CAUTION:

If the right front passenger's airbag is turned off for a person who is not in a risk group identified by the national government, that person will not have the extra protection of an airbag. In a crash, the airbag will not be able to inflate and help protect the person sitting there. Do not turn off the passenger's airbag unless the person sitting there is in a risk group.



United States



Canada

To turn off the right front passenger's airbag, insert your ignition key into the switch, push in, and move the switch to the off position.

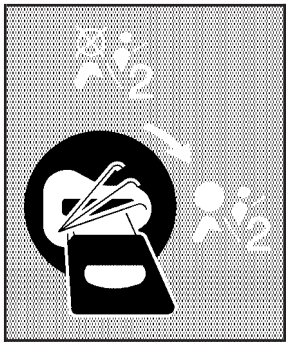
The airbag off light will come on to let you know that the right front passenger's airbag is off. The light will stay on to remind you that the airbag is off. The right front passenger's airbag will remain off until you turn it back on.

⚠ CAUTION:

If the airbag readiness light ever comes on when you have turned off the airbag, it means that something may be wrong with the airbag system. The right front passenger's airbag could inflate even though the switch is off. If this ever happens, do not let anyone whom the national government has identified as a member of a passenger airbag risk group sit in the right front passenger's position (for example, do not secure a rear-facing child restraint in the right front passenger's seat) until you have your vehicle serviced. See *Airbag Readiness Light on page 3-27* for additional information.



United States



Canada

To turn the right front passenger's airbag on, insert your ignition key into the switch, push in, and move the switch to the on position.

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 dealer 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 7-11*.

⚠ CAUTION:

For up to 10 seconds after the ignition key 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 wires, wires wrapped with yellow tape or 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 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, front end sheet metal or height, 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 on page 7-2*.

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.

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, the airbag may not work properly. You may have to replace the airbag module in the steering wheel or both the airbag module and the instrument panel for the right front passenger's airbag. 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?

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 belts are cut or damaged, replace them. Collision damage also may mean you will need to have safety belt or seat parts repaired or replaced. New parts and repairs may be necessary even if the belt 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.

NOTES

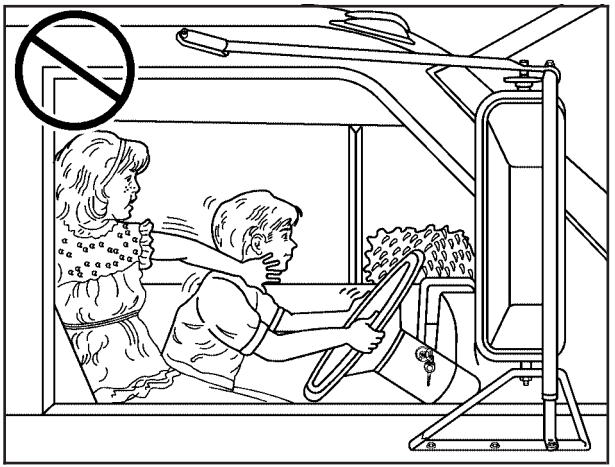
Section 2 Features and Controls

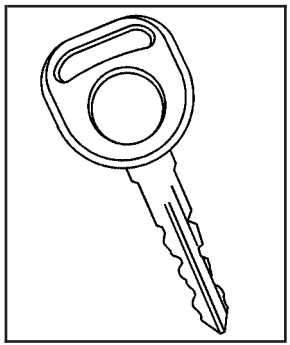
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Keys

⚠ CAUTION:

Leaving children in a vehicle with the ignition key is dangerous for many reasons. They could operate the power windows or other controls or even make the vehicle move. The children or others could be badly injured or even killed. Do not leave the keys in a vehicle with children.





Your vehicle has one double-sided key for the ignition and all door locks.

If you ever lose your key, your dealer will be able to assist you with obtaining a new one.

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.**

If you ever do get locked out of your vehicle, call GM Roadside Assistance Center. See *Roadside Assistance Program on page 7-5*.

Remote Keyless Entry System

If the vehicle has the keyless entry system, it 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.
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.
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.

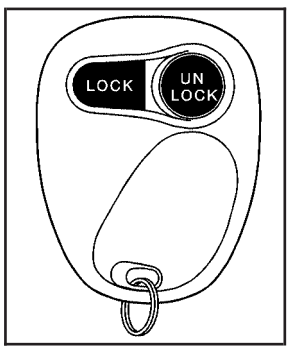
At times you may notice a decrease in range. This is normal for any remote keyless entry system. If the transmitter does not work or if you have to stand closer to your vehicle for the transmitter to work, try this:

- 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 is necessary. See “Battery Replacement” under *Remote Keyless Entry System Operation on page 2-3*.
- If you are still having trouble, see your dealer or a qualified technician for service.

Remote Keyless Entry System Operation

If your vehicle has this feature, you can lock and unlock your doors from about 3 feet (1 m) up to 30 feet (9 m) away using the remote keyless entry transmitter supplied with your vehicle.



To unlock the driver’s door, press the UNLOCK button once.

If you press the button again within five seconds, all of the doors will unlock. When the UNLOCK button is pressed, the interior dome lamps are turned on for about 40 seconds or until the ignition switch is activated. Press the LOCK button to lock all doors.

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 dealer. Remember to bring any remaining transmitters with you when you go to your dealer. When the dealer matches the replacement transmitter to your vehicle, any remaining transmitters must also be matched. Once your dealer 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.

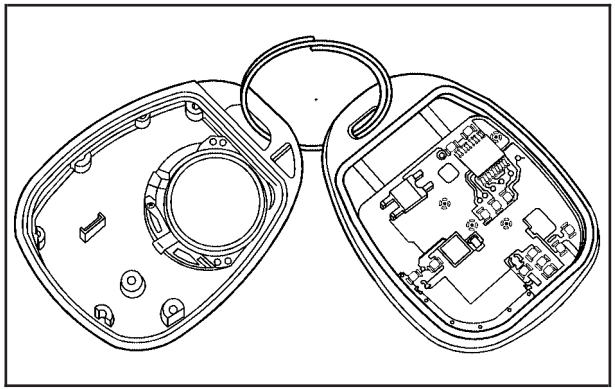
Battery Replacement

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

You can tell the battery is weak if the transmitter won't work at the normal range in any location. If you have to get close to your vehicle before the transmitter works, it's 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. Insert a thin object, such as a coin, into the slot between the covers of the transmitter near the key ring hole. Remove the bottom by twisting the object.
2. Remove and replace the battery, positive (+) side down. Use one CR2032 battery.



3. Align the covers and snap them together.
4. Check the operation of the transmitter. If the transmitter does not work after battery replacement, it may need to be resynchronized to your vehicle. See *Resynchronization* following.

Resynchronization

Resynchronization may be necessary due to the security method used by this system. The transmitter does not send the same signal twice to the receiver. The receiver will not respond to a signal it has been sent previously. This prevents anyone from recording and playing back the signal from the transmitter.

To resynchronize your transmitter, stand close to your vehicle and simultaneously press and hold the LOCK and UNLOCK buttons on the transmitter for at least five seconds. The door locks should cycle to confirm resynchronization. If the locks do not cycle, see your dealer for service.

Doors and Locks

Door Locks

⚠ CAUTION:

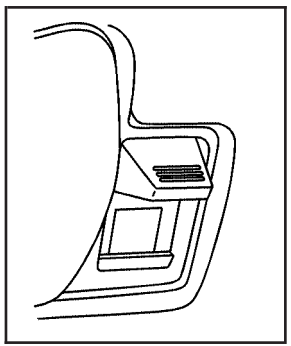
Unlocked doors can be dangerous.

- **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.**
- **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.

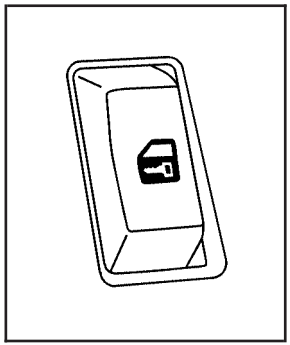
If your vehicle is equipped with keyless entry, you can use your transmitter to lock or unlock your vehicle. See *Remote Keyless Entry System Operation on page 2-4*.

To lock or unlock your door from the outside, use your key.



To lock the door from the inside, slide the manual lever on the door down. To unlock the door, slide the manual lever up.

Power Door Locks



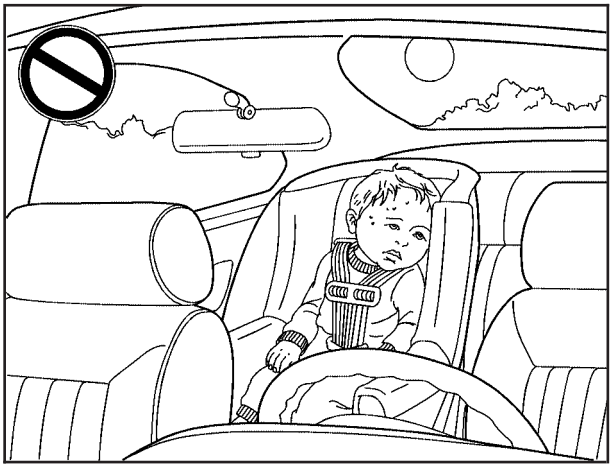
If your vehicle has power door locks, press the bottom of the power door lock switch to lock all the doors at once. To unlock all the doors at once, press the top of the power door lock switch.

When a door is locked, the inside door handle will not work.

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.

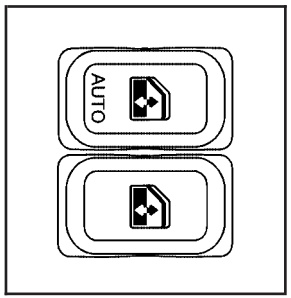


Manual Windows

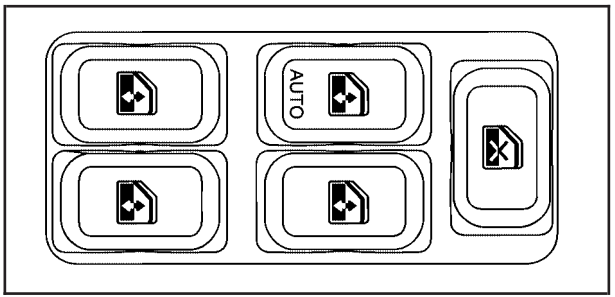
Turn the hand crank on each door to raise or lower the window.

Power Windows

If your vehicle has power windows, the switches for all windows are located on the driver's door. In addition, each passenger door has a switch for their own window.



Regular Cab Switches



Crew Cab Switches

Press the rearward part of the switch to lower the window. Press the forward part of the switch to raise the window.

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

Express-Down

The driver's window has an express-down feature. This allows the window to be lowered fully without continuously holding the switch. Press the switch down fully to initiate the express-down feature. Press the top of the switch to stop the window from lowering.

Window Lockout (Crew Cab)

(Window Lockout): The driver's window switches include a lockout feature. This prevents the passenger's from operating their windows. The driver can still operate all windows with the lockout on. Press the button to turn the lockout feature on and off.

Sliding Rear Window

To open the sliding rear window, pull the latch toward the driver's side of the vehicle.

To close the window, slide the window toward the passenger's side of the vehicle. The latch will automatically lock into place. Try to open the window without releasing the latch to be sure the window is in the locked position.

Sun Visors

To block out glare, you can swing down the visors. You can also swing them out to block glare from the side.

Starting and Operating Your Vehicle

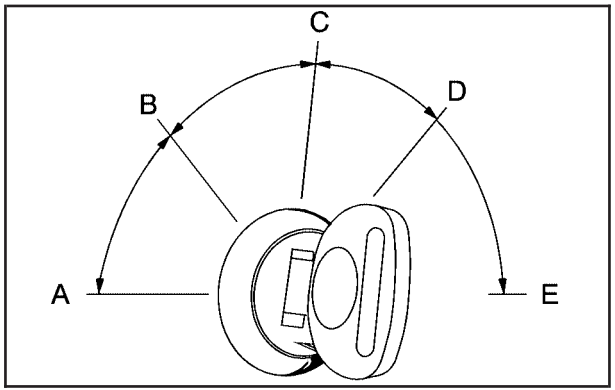
New Vehicle Break-In

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

- **Let your engine warm up before you operate your vehicle under load.**
- **Keep your speed at 55 mph (88 km/h) or less for the first 500 miles (805 km).**
- **Do not drive at any one speed, fast or slow, for the first 500 miles (805 km). Do not make full-throttle starts.**
- **Avoid making hard stops for the first 200 miles (322 km) or so. During this time your 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.**
- **Use the lowest gear you can when you start a loaded vehicle in motion and when going up hills to avoid overloading the engine.**
- **Check and adjust engine and transmission fluid levels often and be sure tires are properly inflated for the load you are carrying.**
- **If you have a Caterpillar® diesel engine, see the Caterpillar® Diesel Engine Operation and Maintenance Manual.**

Ignition Positions

With your key in the ignition switch, you can turn it to five different positions.



A (ACCESSORY): This position allows you to use things like the radio, power windows and the windshield wipers when the engine is off. To get into ACCESSORY, push in the key and turn it toward you. Your steering wheel will remain locked, just as it was before you inserted the key.

B (LOCK): This position locks your ignition, steering wheel and transmission. It is a theft-deterrent feature. You will only be able to remove your key when the ignition is turned to LOCK.

C (OFF): This position lets you turn off the engine but still turn the steering wheel. It does not lock the steering wheel like LOCK. Use OFF if you must have your vehicle in motion while the engine is off.

D (RUN): This is the position for driving.

E (START): This position starts your engine.

Engine Starter Over-Crank Protection

Your vehicle may have an engine starter over-crank protection system. If the starter motor overheats and shuts off due to over-cranking, the motor must cool down before it will reset and allow starter operation. It can take up to six minutes before the starter will work again.

Starting the Gasoline Engine

The 8th digit of your Vehicle Identification Number (VIN) shows the code letter for your engine. Use this number to verify the type of engine in your vehicle. See *Vehicle Identification Number (VIN) on page 5-91*. Follow the proper steps to start the engine.

To start a diesel engine, see *Starting the Diesel Engine on page 2-15*.

Automatic Transmission

Set the parking brake and move your shift lever to NEUTRAL (N) or PARK (P), if so equipped. Your engine will not start in any other position — that is a safety feature.

Manual Transmission

Set the parking brake, shift to neutral NEUTRAL (N) and hold the clutch pedal to the floor while starting the engine.

Starter Motor Operation

- The starter motor will disengage if you release the key or the engine reaches a predetermined engine speed.
- To prevent overheating, the starter motor will disengage after continuously operating for 15 seconds. You must release the key from the start position to re-engage the starter.
- The starter motor will not engage if the engine is already running.
- The starter motor will disengage if, after two seconds, the starter pinion gear does not engage the flywheel or there is no engine rpm signal from the engine speed sensor.

Starting Your Engine

1. Without pushing the accelerator pedal, turn your ignition key to START. When the engine starts, let go of the key. The idle speed will go down as your engine gets warm.
2. If the engine does not start in 10 seconds, push the accelerator pedal all the way down and crank the engine for five more seconds, unless it starts sooner.
3. If your engine still will not start, or starts but then stops, it could be flooded with too much gasoline.

   Wait 15 seconds to let the starter motor cool down. Do Steps 1 through 3 again.

   When the engine starts, let go of the key and the accelerator pedal.

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 dealer. If you do not, your engine might not perform properly. Any resulting damage would not be covered by your vehicle's warranty.**

If you ever need to have your vehicle towed, see *Towing Your Vehicle on page 4-35*.

Gasoline Engine Warm-Up

When you have started your engine, let it run for 20 or 30 seconds to warm up before you put a load on the engine.

Drive at moderate speeds for the first 2 to 3 miles (3.2 to 4.8 km), especially in cold weather. See *High Idle System on page 2-20*.

Restarting the Gasoline Engine While Moving (Automatic Transmission)

If you have to restart the engine while the vehicle is moving, you will first have to shift to NEUTRAL (N). This safety feature prevents starting the engine when the transmission is in a drive gear.

Stopping the Gasoline Engine

Let your engine idle for a few seconds before turning it off after you have finished driving your vehicle.

If you shift to NEUTRAL (N) or PARK (P), set the parking brake.

If your vehicle has a two-speed axle, put the range selector in low. To be sure the axle has shifted into low, engage the clutch and transmission; the vehicle may move slightly when you do this.

While your engine is idling and before you turn it off, you can make a list of any operational or handling concerns to give to responsible maintenance personnel so they can handle them right away.

Moisture will condense in a fuel tank that is almost empty if the engine has not run for a while, even just overnight under some conditions. So, it is always best to refuel your vehicle at the end of each run.

Starting the Diesel Engine

Your vehicle's diesel engine starts differently than a gasoline engine. Read the following pages to learn how to start, restart, warm-up, and stop your diesel engine.

The information applies to both Caterpillar® diesel engine and DURAMAX® diesel engine unless otherwise noted.

If you have a Caterpillar® diesel engine, also refer to your Caterpillar® diesel engine Operation & Maintenance Manual for the starting procedure.

Automatic Transmission

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

Notice: **Do not try to shift to PARK (P) if your vehicle is moving. If you do, you could damage the transmission. Shift to PARK (P) only when your vehicle is stopped.**

Manual Transmission

Move your shift lever to NEUTRAL and hold the clutch pedal to the floor while starting the engine. Your vehicle will not start if the clutch pedal is not all the way down — that is a safety feature.

Starting Your Engine

1. Turn your ignition key to RUN.

   Observe the wait to start light. See *Wait to Start Indicator (Diesel Engine) on page 3-35*. This light may not come on if the engine is hot.

   If you have a Caterpillar® diesel engine, see your Caterpillar® Diesel Engine Operation & Maintenance Manual for proper wait to start light operation.

2. As soon as the wait to start light goes off, immediately turn the ignition key to START. When the engine starts, let go of the key.

   If your vehicle is equipped with a DURAMAX® 6600 engine, it has a fast warm-up glow plug system. The wait to start light will illuminate for a much shorter time than most diesel engines, due to the rapid heating of the glow plug system.

Notice: **Holding your key in START for longer than 15 seconds at a time will cause your battery to be drained much sooner. And the excessive heat can damage your starter motor.**

Notice: **If the wait to start light stays on after starting your vehicle, your vehicle may not run properly. Have your vehicle serviced right away.**

3. If the engine does not start after 15 seconds of cranking, turn the ignition key to OFF. Wait one minute for the starter to cool, then try the same steps again.

If you are trying to start your engine after you have run out of fuel, see *Running Out of Fuel on page 5-16*.

When your engine is cold, let it run for a few minutes before you move your vehicle. This lets oil pressure build up. Your engine will sound louder when it is cold.

Notice: **If you are not in an idling vehicle and the engine overheats, you would not be there to see the overheated engine indication. This could damage your vehicle. Do not let your engine run when you are not in your vehicle.**

Cold Weather Starting

If your vehicle has the DURAMAX® Diesel Engine, the following notice applies:

Notice: **Your diesel engine has an electric air intake heater system which reduces white smoke and helps start the engine in cold weather. Do not spray starting fluid into the air intake where it can contact the heater elements.**

If you do not have the GM Automatic Ether Injection System, do not use starting fluid or you could damage your engine. If you have the GM system, use only GM approved starting fluid that has been tested to establish compatibility with the air inlet heater system.

The following tips will help you get good starting in cold weather.

- Use the recommended engine oil when the outside temperature drops below freezing. See *Engine Oil (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26*. When the outside temperature drops below 0°F (–18°C), use of the optional engine coolant block heater is recommended.
- If you experience longer cranking times, notice an unusual amount of exhaust smoke or are at higher altitudes (over 7,000 ft. or 2 135 m), you may use your optional engine coolant block heater. See *Engine Coolant Heater on page 2-25*.
- See *What Fuel to Use on page 5-7* for information on what fuel to use in cold weather.

Cold Weather Starting (Caterpillar® Diesel)

Because the diesel engine uses compression ignition, it is harder to start in cold weather than a gasoline engine. The air intake heater and use of the proper engine oil, optional engine coolant heaters and optional ether injection systems help cold weather starting. See the Caterpillar® Diesel Engine Operation & Maintenance Manual for more information.

Restarting the Diesel Engine While Moving (Automatic Transmission)

If you have to restart the engine while the vehicle is moving, you will first have to shift to NEUTRAL (N). This safety feature prevents starting the engine when the transmission is in a drive gear for more information.

Stopping the Diesel Engine

1. Set the parking brake and shift to NEUTRAL (N) or PARK (P).
2. Turn the ignition key to OFF.

   If your vehicle has a two-speed axle, see *Two-Speed Rear Axle Electric Shift Control on page 2-27*.

If you have a Caterpillar® diesel engine, see your Caterpillar® Diesel Engine Operation & Maintenance Manual for additional information.

Diesel Engine Warm-Up

Several factors affect how quickly your diesel engine warms up. These can include outside temperature, engine load, idle time and your vehicle's option content. Your vehicle may be equipped with some features that can help the engine reach operating temperature sooner. Some of these features are discussed below.

Also, remember that an automatic transmission adds heat to the cooling system through the heat exchanger in the radiator. Because of this, vehicles equipped with automatic transmissions are often able to retain engine coolant heat better than manual transmission vehicles.

See your Caterpillar® Operation & Maintenance manual for additional diesel engine warm-up information.

If Your Diesel Engine Will Not Start

If you have run out of fuel, see *Running Out of Fuel on page 5-16*.

If you are not out of fuel, and your engine will not start, do this:

Turn your ignition key to RUN. Immediately after the wait to start light goes off, turn the ignition key to START.

If the light does not go off, wait a few seconds, then try starting your engine again. And, see your dealer as soon as you can for a starting system check.

If the light comes on and then goes off and you know your batteries are charged, but your engine still will not start, your vehicle needs service.

If the light does not come on when the engine is cold, your vehicle needs service.

If your batteries do not have enough charge to start your engine, see *Battery on page 5-57*.

Be sure you have the right oil for your engine, and that you have changed the oil at the proper times. If you use the wrong oil, your engine may be harder to start.

Be sure you are using the proper fuel for existing weather conditions. See *What Fuel to Use on page 5-7*.

If the engine starts, runs a short time, then stops, your vehicle needs service.

> **⚠ CAUTION:**
>
> **Do not use gasoline or starting aids, such as ether, in the air intake. They could damage your engine. There could also be a fire, which could cause serious personal injury.**

Engine Alarm and Automatic Shutdown

Your check gages warning light will come on if the system senses high engine temperature or low engine oil pressure. If high engine temperature or low engine oil pressure is detected, you will also hear a tone alarm at two beats per second. The alarm and the light will remain on until the condition is fixed. If the engine temperature or oil pressure condition worsens, the tone alarm will go to five beats per second.

If the system senses low engine coolant, the five beat per second alarm and the low coolant warning light will come on.

The five beats per second tone alarm means that your engine will shut down in about 25 to 30 seconds. There is also an engine shutdown light to indicate that the engine will shut down. See *Engine Shutdown Warning Light on page 3-38*.

Pull off the road and shut off the engine. Do not start it until the reason for the problem is known, and the problem is fixed. If the engine shuts down when you are still in traffic, you can restart the engine and get another 25 to 30 seconds of operation. Do this only if you have to, since there is a problem that can harm the engine if it is not fixed. Engine automatic shutdown, for gasoline engines, requires activation by your dealer.

Notice: **If you try to operate the vehicle after the engine automatically shuts down, you may damage the vehicle. Have your vehicle repaired as soon as possible.**

Ambulance, Fire, and Rescue Packages

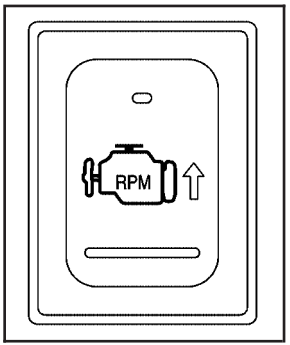
Your check gages warning light will come on if the system senses high engine temperature or low engine oil pressure. If high engine temperature or low engine oil pressure is detected, you will also hear a tone alarm at two beats per second. The alarm and the light will remain on until the condition is fixed. If the engine temperature or oil pressure condition worsens, the tone alarm will go to five beats per second.

If the system senses low engine coolant, the five beat per second alarm and the low coolant warning light will come on.

The engine will not shutdown, but you should have the vehicle checked as soon as you can.

High Idle System

High Idle System with Switch



If your vehicle has this feature, the manual high idle switch is located in the instrument panel switchbank.

This system can be used to increase your engine idle speed whenever the following conditions are met:

- The brake pedal is not pressed.
- The vehicle speed is below about 5 mph (8 km/h) for vehicles with diesel engines. The vehicle must not be moving and the accelerator must not be pressed for vehicles with gasoline engines.
- If the vehicle has manual transmission the clutch pedal is not pressed or, if the vehicle has the automatic transmission it is in NEUTRAL (N) or PARK (P).

The manual high idle feature is activated by pressing the switch on the instrument panel. When the switch is pressed again, or any of the previous conditions are not met, manual high idle will be deactivated.

The manual high idle has been preset at the factory. Your dealer may change the setting to fit your needs.

For vehicles with Caterpillar® diesel engines, the high idle switch can be used to set any desired high idle speed.

To set a new temporary engine idle speed do the following:

1. Make sure all of the previously described conditions are met.
2. Press the accelerator pedal to the desired engine speed.
3. Momentarily press the manual high idle switch.

The temporary high idle speed will be set. This new high idle rpm level will be remembered by the system until either the ignition is turned to OFF or a new high idle speed is set.

Automatic High Idle System

The automatic high idle feature will engage whenever you start your vehicle and the engine is below the preset operating temperature. This will help decrease engine warm-up time.

On vehicles that have the Caterpillar® diesel engine you may have an exhaust restrictor that will operate in High Idle mode. The exhaust brake switch must be on for this feature to operate. See *Diesel Engine Exhaust Brake on page 2-26* for more information.

Idle speed will then return to normal under any of the following conditions:

- The engine reaches the preset operating temperature or has been operating for at least 10 minutes.
- The brake pedal is pressed.
- The manual transmission clutch pedal is pressed or, if the vehicle has automatic transmission, it is shifted from NEUTRAL (N) or PARK (P).
- The vehicle speed exceeds about 5 mph (8 km/h).
- The throttle is pressed.

Exhaust Restrictor (Engine Warm-Up)

Exhaust Restrictor

If your vehicle has a DURAMAX® 7800 or Caterpillar® diesel engine, it may have a feature called an Exhaust Restrictor (NPE), which uses an air actuated valve in the exhaust system to restrict exhaust gas flow which enhances the engine and heater warm-up.

Automatic Quick Warm-Up

If your vehicle has with a DURAMAX® 6600 engine, it has a feature called an Automatic Quick Warm-Up, which uses the turbocharger to restrict the exhaust gas flow which enhances the engine and heater warm-up.

In both systems, exhaust restrictor or automatic quick warm-up, the cold temperature high idle feature elevates the engines idle speed, up to 1500 rpm, and restricts the exhaust gas flow, when outside temperatures are below 32°F (0°C), and the engine coolant temperature is below certain levels. This feature enhances heater performance by raising the engine coolant temperature faster.

For all engines this feature is already turned on. The automatic quick warm-up on the DURAMAX® engine can be turned off and on by doing the following procedure:

1. Turn the ignition to RUN, with the vehicle off.
2. Press the accelerator pedal to the floor and hold it while quickly pressing and fully releasing the brake pedal three times in less than eight seconds.
3. Release the accelerator pedal and start the engine. The green exhaust brake/restrictor light below the radio controls will be lit for 10 seconds.

   If this feature is turned off, by doing the procedure described previously, and then the engine is started, the exhaust brake/restrictor light will flash for 10 seconds and then it will turn off.

When the engine is started, it will slowly increase to the high idle speed after a delay of a few seconds; up to about two minutes. For this method to work properly there must be no throttle or brake pedal faults, and the throttle pedal must not fall below 75 percent of wide open throttle while pressing the brake pedal.

The engine idle speed will return to normal once the following conditions are met:

- Once engine coolant temperature reaches about 150°F (65°C).
- The intake temperature reaches a certain level.

The high idle speed will be temporarily interrupted and the engine speed will return to normal if any of the following conditions occur:

- The brake pedal is applied.
- The accelerator pedal is pressed.
- The automatic transmission is shifted out of PARK (P) or NEUTRAL (N).
- The clutch pedal on the manual transmission is pressed.
- Vehicle speed is detected.

Once these conditions no longer exist, the engine idle speed will slowly increase to high idle after the normal delay, if the conditions for engine coolant temperature and air intake temperature are still met.

Engine Checks Before Operating

When you have started your engine, let it run for 20 to 30 seconds before you put a load on the engine. But do not leave the vehicle while the engine is running.

Avoid unnecessary idling of diesel engine equipped vehicles.

If the engine idles too long, the temperature of the engine coolant will fall below the normal operating range. Low engine operating temperature causes several conditions which affect engine operation and reduce engine life.

The engine should be permitted to go through a warm-up period. Operate the vehicle at a minimum of 600 rpm during the warm-up period. During this period and during operation, the following observations should be made.

During this warm-up period, check your warning lights and gages:

- If oil pressure does not begin to rise within 15 seconds of starting, stop the engine and find the cause. See *Oil Pressure Gage on page 3-36* for more information.
- If the engine coolant temperature gage needle goes into the hot area on the gage, stop the engine and find the cause of the overheating. See *Engine Coolant Temperature Gage on page 3-34* for more information.
- If you have air brakes, the dual-needle air pressure gage should read at least 115 psi (790 kPa) for both service systems before you try to move the vehicle. When air pressure is below 60 psi (420 kPa), the LOW AIR light will come on and you will hear a tone alarm. See *Brake System Warning Light on page 3-31* for more information. If the pressure does not build up or drops during warm-up, stop the engine and find the cause before you try to move the vehicle. Recommended air pressure before driving is 120 psi (830 kPa). See *Air Pressure Gage on page 3-42* for more information.
- The charging system light should come on when the ignition key is turned to RUN or START and should go out when the engine is running above idle. If the light does not go out or comes back on during normal engine operation, have the charging system checked right away. (This light tells you if the generator is not charging; it does not reflect the condition of the battery.) See *Charging System Light on page 3-29* for more information.
- The voltmeter charge indicator gage tells you the condition of your battery's charge. The gage should be in the center area during engine operation. The red area on the left indicates an undercharge condition; the red area on the right indicates an overcharge. If the gage is in either red area, have the battery and charging system checked right away. See *Voltmeter Gage on page 3-30* for more information.

Notice: **Do not allow the engine to operate at low idle for more than five minutes. This can cause low engine operating temperatures which can affect engine operation and reduce engine life. Engine idle speed should be increased to 1200 rpm whenever extended idle is required. Once started, the engine should be placed under load to allow the engine coolant temperature to reach 150°F (66°C) before shutting off the engine.**

Engine Coolant Heater

Your vehicle may be equipped with this feature.

In very cold weather, 0°F (–18°C) or colder, the engine coolant heater can help. You will get 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.

To Use the Engine Coolant Heater

1. Turn off the engine.
2. Find the plug-in outlet located under the driver's door.
3. Plug it 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.

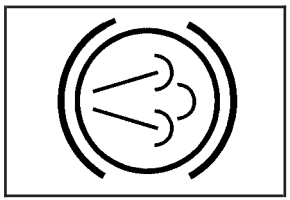
How long should you keep the coolant heater plugged in? The answer depends on the outside temperature, the kind of oil you have, and some other things. Instead of trying to list everything here, we ask that you contact your dealer in the area where you will be parking your vehicle. The dealer can give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

Diesel Engine Exhaust Brake

If your vehicle has a DURAMAX® 7800 or Caterpillar® diesel engine, it may have an exhaust brake, which is located in the exhaust system.

If your vehicle has a 6.6L DURAMAX® 6600 diesel engine, it may have an exhaust brake, which is controlled through the turbocharger.

The exhuast brake for both engines operates the same.



The exhaust brake switch is located in the instrument panel switchbank.

Push the bottom of the switch to turn the exhaust brake on. When you push the top of the switch, the exhaust brake will turn off.

There is an indicator light on the instrument panel similar to the symbol on the switch, that will come on when the exhaust brake is active. See *Exhaust Brake Indicator Light on page 3-39* for more information.

When using the exhaust brake, the proper gear range selection is important. The exhaust brake will be most effective if the gear range selected is the lowest possible range that does not allow the engine rpm to go more than 200 rpm above rated (full load) rpm. If you have a Caterpillar® diesel engine, do not exceed 2900 rpm. If you have a DURAMAX® 7800 diesel engine, do not exceed 2550 rpm. If you have a DURAMAX® 6600 diesel engine, do not exceed 3600 rpm.

If your vehicle has an Allison® 1000/2200/2300/2500 series automatic transmission and press this button, the transmission will downshift to a factory default setting of third gear. To change the default setting, or for more information on factory default settings, contact your dealer for assistance.

The accelerator and clutch pedals must be released in order for the exhaust brake to engage. The exhaust brake will automatically shut off when the anti-lock brake system is active.

If your vehicle has a Caterpillar® diesel engine or a DURAMAX® 6600 diesel engine, the exhaust brake will become active in cruise control when you exceed the set speed by 3 to 5 mph.

Two-Speed Rear Axle Electric Shift Control

If your vehicle is equipped with this feature, you will find a label on the headliner above the windshield or in another place near the driver that shows how to use it. Be sure to follow the directions carefully.

Use the following directions based on the type of shift control you have.



The rear axle shift control switch for a manual transmission is located on the shift lever.

When the switch is up, the rear axle is in the high range. Push the switch down to change to low range.

The two-speed axle should be in low when you park the vehicle. You will need to engage the transmission, even move the vehicle a little, to be sure the axle is in the low range. Then apply the parking brake, shift into NEUTRAL and shut off the engine.

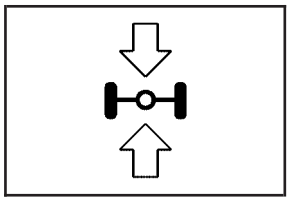
Also, always start the vehicle in motion with the two-speed axle in the low range. To shift up from low to high, do the following:

1. Move the switch up for the high range.
2. Disengage the clutch.
3. After a brief pause, engage the clutch and then press down on the accelerator.

To shift down from high to low, do the following:

1. Move the switch down to low.
2. Release the accelerator and then quickly apply it again.

Air Shift Control (Automatic Transmission)



The rear axle shift control switch for an automatic transmission is located in the instrument panel switchbank.

Press the bottom of the switch to get to the low range. The switch indicator light will come on when the vehicle is in low range. Press the top of the switch to return to the high range.

The two-speed axle should be in low range when you park the vehicle. You will need to engage the transmission, even moving the vehicle a little, to be sure the axle is in low range. Then shift into PARK (P), apply the parking brake and shut off the engine.

To shift up from low to high, press the top of the rear axle shift control switch and press down on the accelerator. When you shift the axle from high to low, press the bottom of the switch, release the accelerator and then quickly press it down again.

To operate off-road or under a heavy load, shift into low range when the vehicle is standing still and then operate the transmission normally.

On the highway, with the axle in low range and the transmission in top gear, you may shift the axle to high range by raising the switch and releasing the accelerator momentarily. Re-apply the accelerator after you shift.

Under light load conditions, first shift the axle into the high range with the vehicle at a standstill and then operate the transmission normally.

Automatic Transmission Operation

We build vehicles with Allison® five and six-speed automatic transmissions. This part of the manual covers the basics of these. With these transmissions, you will find another Allison® manual in your vehicle that goes into more detail. On the headliner, in front of and above the driver, or in some other place near the driver, you will see a label that describes important operating facts about the automatic transmission in your vehicle. Make sure you follow the instructions on this label.

Be sure to keep your parking brake set until you are ready to shift into DRIVE (D), and press the brake pedal while shifting from NEUTRAL (N) or PARK (P) to a drive gear.

All vehicles equipped with automatic transmissions can be started in PARK (P), if equipped, or in NEUTRAL (N). See the Allison® Transmission Operator's Manual in your vehicle for more information about this.

⚠ CAUTION:

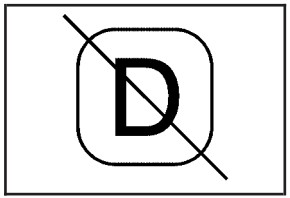
It can be dangerous to get out of your vehicle without the parking brake firmly set. Your vehicle can roll. If you have left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle will not move, even when you are on fairly level ground, always set the parking brake.

⚠ 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.

Overdrive Defeat

If your vehicle has this feature, you can select not to shift up to fifth gear. This is useful when towing or under a heavy load.



The overdrive defeat switch is located in the instrument panel to the right of the steering column.

Press the switch to limit the transmission to fourth gear. This will allow for fewer downshifts while pulling a trailer or under a heavy load. The indicator light in the switch will come on whenever overdrive defeat is active.

Manual Transmission Operation

Using the Clutch

When you are starting to move the vehicle, it is important to begin with the engine speed at idle. Then start to engage the clutch and listen for an engine speed drop of about 100 rpm. At this point, the clutch is engaging, so you should increase the engine speed and fully engage the clutch.

It is important not to increase the engine speed sooner or before the clutch begins its engagement. If you do, you can cause damage to your vehicle.

Double-Clutching

You must use the double-clutching method when you shift an unsynchronized gear set. Disengage the clutch, shift to NEUTRAL and engage the clutch. When upshifting, slow the engine until the engine rpm and road speed match. When downshifting, accelerate the engine until the engine rpm and road speed match. Then quickly disengage the clutch and move the shift lever to the next gear position and engage the clutch.

Eaton® Fuller® Five and Six-Speed Transmissions and TTC Spicer Seven-Speed Transmissions

These transmissions have gears that automatically synchronize when you shift up or down (except FIRST (1) gear on the five-speed and seven-speed transmission which is unsynchronized). Choose the gear that will maintain the road speed you want while keeping the engine above two-thirds of the governed speed. When the engine speed drops below two-thirds of the governed speed, shift into the next lower gear before your engine begins to lug. When you shift down, be sure to double-clutch if required.

ZF Six-Speed Transmission

Here is how to operate your transmission.



This six-speed pattern is unique to GM manual transmissions.

The transmission always repositions the shift lever to NEUTRAL, which is located between FOURTH (4) and FIFTH (5) gear.

To prevent unintentional gear selections, additional force is required to move the shift lever into REVERSE (R) or FIRST (1). Use FIRST (1) when trailer towing, driving with a heavier payload or launching on a grade. Otherwise, start in SECOND (2) gear. Only shift into FIRST (1) when the vehicle has stopped moving.

During the first 500 miles (805 km) of vehicle use, start the vehicle moving in FIRST (1) gear. This allows the clutch components to wear-in properly.

FIRST (1): With the vehicle at a stop, release the brake, press the clutch pedal and shift into FIRST (1). Then, slowly let up on the clutch pedal as you press the accelerator pedal. Only downshift into FIRST (1) when the vehicle has come to a complete stop. If the shift lever will not go into FIRST (1), put the lever in NEUTRAL and let up on the clutch pedal to fully engage the clutch. Press the clutch pedal again. Then, shift into FIRST (1).

SECOND (2): With the vehicle at a stop, release the brake, press the clutch pedal and shift into SECOND (2). Then, slowly let up on the clutch pedal as you press the accelerator pedal. With the vehicle moving, press the clutch pedal and upshift into SECOND (2) from FIRST (1) while applying light pressure to the right on the shifter. Then, slowly let up on the clutch pedal as you press the accelerator pedal. If you come to a complete stop and the shift lever will not go into SECOND (2), put the lever in NEUTRAL and let up on the clutch pedal to fully engage the clutch. Press the clutch pedal again. Then, shift into SECOND (2).

THIRD (3): Press the clutch pedal and upshift into THIRD (3). Then, slowly let up on the clutch pedal as you press the accelerator pedal.

FOURTH (4), FIFTH (5) and SIXTH (6): Upshift into the higher forward gears the same way as you do THIRD (3). Slowly let up on the clutch pedal as you press the accelerator pedal.

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

REVERSE (R): To back up, press the clutch pedal. Wait for the vehicle to stop moving and then, shift to REVERSE (R). Let up on the clutch slowly while pressing the accelerator pedal. Also, use REVERSE (R), along with the parking brake, when turning off your engine and parking your vehicle.

Eaton® Fuller® Nine and Ten-Speed Non-Synchronized Manual Transmissions

If your vehicle has one of these transmissions the engine rpm and road speed must match when upshifting and downshifting. The label above the windshield will tell you the operating basics you need to know.

The following are driving tips.

- Always choose an initial starting gear suitable for the load and terrain.
- Always use double-clutching procedures when shifting.
- Never move the range shift lever to the LO speed gear position after HI range preselection, or anytime the transmission is in the HI range.
- Never move the range knob or lever with the shift lever in NEUTRAL while the vehicle is moving.
- Never make a range shift while moving in REVERSE (R).

Clutch Brake (Vehicles with Non-Synchronized Transmission)

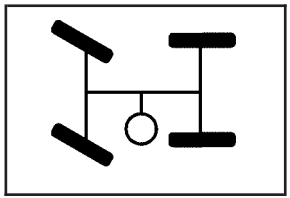
A clutch brake is used to stop transmission input shaft rotation so that FIRST (1) or REVERSE (R) gear selection can be initiated when the vehicle is at a standstill and the engine is idling.

Press the clutch pedal all the way down to the floorboard to apply the clutch brake.

When using the clutch brake, disengage the clutch pedal and shift the transmission into either the initial starting gear or REVERSE (R). If the tooth-butting occurs between the clutching teeth, re-engage the clutch while applying light pressure to the shift lever. This will provide for a smooth shift into either FIRST (1) or REVERSE (R) gear.

Notice: **Using the clutch brake for shifting into any gear other than FIRST (1) or REVERSE (R) may cause premature wear of the clutch brake and make gear shift effort more difficult. Do not use the clutch brake for shifting after engaging FIRST (1) or REVERSE (R).**

Power Take-Off (PTO)



If your vehicle is equipped for the addition of a PTO, this factory installed switch will be located in the instrument panel.

When the PTO switch is in the ON position, engine speed is limited to maximum PTO speed if PTO is activated during driving; therefore limiting overall vehicle speed.

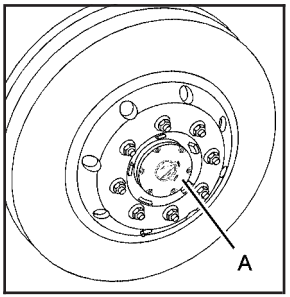
Before using a PTO, refer to the manufacturer's or installer's instructions.

Four-Wheel Drive

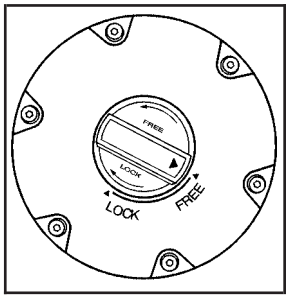
If your vehicle has four-wheel drive, you can send your engine's driving power to all four wheels for extra traction. To get the most satisfaction out of four-wheel drive, you must be familiar with its operation. Read the part that follows before using four-wheel drive. You should use two-wheel drive high for most normal driving conditions.

Notice: **Driving on clean, dry pavement in four-wheel drive for an extended period of time may cause premature wear on your vehicle's powertrain. Do not drive on clean, dry pavement in four-wheel drive for extended periods of time.**

Locking Hubs



Hublock Dial Location

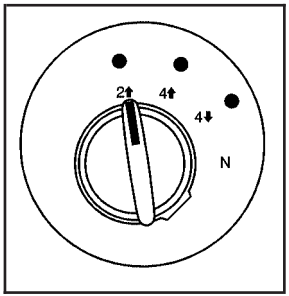


Hublock Dial

Turn the dial of the hublock (A) from the "Free" position to the "Lock" position to lock the front axle.

Turn the dial of the hublock (A) from the "Lock" position to the "Free" position to unlock the axle.

You do not have to back the vehicle up to disengage the hublocks.



If your vehicle is equipped with four-wheel drive, the transfer case knob is located to the right of the steering wheel on the instrument panel. Use this knob to shift into and out of four-wheel drive.

An indicator light will show you which position the transfer case is in. The indicator lights will come on briefly when you turn on the ignition and one will stay on. If the lights do not come on, you should take your vehicle to your dealer for service. An indicator light will flash while shifting the transfer case. It will remain illuminated when the shift is complete. If for some reason the transfer case cannot make a requested shift, it will return to the last chosen setting.

Recommended Transfer Case Settings

Driving Conditions	Transfer Case Settings			
	2 ↑	4 ↑	4 ↓	N
Normal	YES			
Severe		YES		
Extreme			YES	
Vehicle in Tow*				YES

*See *Towing Your Vehicle on page 4-35* for further information.

2↑ (Two-Wheel High): This setting is for driving in most street and highway situations. The transfer case does not drive the front axle in two-wheel drive. The front-axle will spin if the front wheel hubs are locked. Be sure to unlock the hubs to achieve the best fuel economy.

4↑ (Four-Wheel High): Use Four-Wheel High when you need extra traction, such as on snowy or icy roads or in most off-road situations. Be sure the front wheel hubs are locked when you want to drive in Four-Wheel High.

4↓ (Four-Wheel Low): This setting sends maximum power to all four wheels. You might choose Four-Wheel Low if you are driving off-road in deep sand, deep mud, and climbing or descending steep hills. Be sure the front wheel hubs are locked when you want to drive in Four-Wheel Low.

⚠ CAUTION:

Shifting the transfer case to NEUTRAL can cause your vehicle to roll even if the transmission is in PARK (P). You or someone else could be injured. If you are going to leave your vehicle, set the parking brake and shift the transmission to PARK (P) and make sure the transfer case is in a drive gear.

Notice: **If your vehicle has an Allison® transmission and you try to put the transmission in PARK (P) while the transfer case is in Four-Wheel Low, the transmission may not go into PARK (P) and could damage your vehicle. When parking your vehicle, make sure the transfer case is in Two-Wheel High or Four-Wheel High.**

NEUTRAL: Shift the vehicle's transfer case to NEUTRAL only when towing your vehicle.

Shifting Into Four-Wheel High

Turn the knob to four-wheel high. This can be done at 3 mph or less and when you are shifting out of Four-Wheel Low. The indicator light will flash while shifting. It will remain illuminated when the shift is complete.

Shifting Into Two-Wheel High

Turn the knob to Two-Wheel High. This can be done at 3 mph or less and when you are shifting out of Four-Wheel Low.

Shifting Into Four-Wheel Low

To shift to Four-Wheel Low, the vehicle's engine must be running and the vehicle must be stopped or moving less than 3 mph (5 km/h) with the transmission in NEUTRAL (N). The preferred method for shifting into Four-Wheel Low is to have your vehicle moving 1 or 2 mph (1.6 to 3.2 km/h). Turn the knob to Four-Wheel Low. You must wait for the Four-Wheel Low indicator light to stop flashing and remain illuminated before shifting your transmission into gear.

Notice: **Shifting the transmission into gear before the Four-Wheel Low indicator light has stopped flashing could damage the transfer case. To help avoid damaging your vehicle, always wait for the Four-Wheel Low indicator light to stop flashing before shifting the transmission into gear.**

If you turn the knob to Four-Wheel Low when your vehicle is in gear and/or moving, the Four-Wheel Low indicator light will flash for 30 seconds and not complete the shift unless your vehicle is moving less than 3 mph (4.8 km/h) and the transmission is in NEUTRAL (N). After 30 seconds, the transfer case will return to the setting last chosen. If your vehicle is in gear and moving less than 3 mph (4.8 km/h), the transfer case will shift to Four-Wheel High.

Shifting Out of Four-Wheel Low

To shift from Four-Wheel Low to Four-Wheel High or Two-Wheel High, your vehicle must be stopped or moving less than 3 mph (5 km/h) with the transmission in NEUTRAL (N) and the engine running. The preferred method for shifting out of Four-Wheel Low is to have your vehicle moving 1 or 2 mph (1.6 to 3.2 km/h). Turn the knob to Four-Wheel High or Two-Wheel High. You must wait for the Four-Wheel High or Two-Wheel High indicator light to stop flashing and remain illuminated before shifting your transmission into gear.

Notice: **Shifting the transmission into gear before the Four-Wheel High or Two-Wheel High indicator light has stopped flashing could damage the transfer case. To help avoid damaging your vehicle, always wait for the Four-Wheel High or Two-Wheel High indicator light to stop flashing before shifting the transmission into gear.**

If the knob is turned to Four-Wheel High or Two-Wheel High when your vehicle is in gear and/or moving, the Four-Wheel High or Two-Wheel high indicator light will flash for 30 seconds. It will not complete the shift unless your vehicle is moving less than 3 mph (5 km/h) with the transmission in NEUTRAL (N).

Shifting Into NEUTRAL

Before shifting the transfer case to NEUTRAL, first make sure the vehicle is parked so that it will not roll.

1. Set the parking brake.
2. Start the vehicle.
3. Put the transmission in NEUTRAL (N).
4. Shift the transfer case to Two-Wheel High.
5. Turn the transfer case knob all of the way past Four-Wheel Low and hold it there for a minimum of 10 seconds. The neutral indicator light will come on.
6. Shift the transmission to REVERSE (R) for one second, then shift the transmission to DRIVE (D) for one second.
7. Turn the ignition to OFF.
8. Place the transmission shift lever in PARK. (P).
9. Turn the ignition to LOCK.

Shifting Out of NEUTRAL

To shift the transfer case out of NEUTRAL, do the following:

1. Set the parking brake and apply the regular brake pedal.
2. Turn the ignition to RUN with the engine off.
3. Put the transmission in NEUTRAL (N).
4. Turn the transfer case knob to the desired shift position (Two-Wheel High, Four-Wheel High, Four-Wheel Low).
5. After the transfer case has shifted out of NEUTRAL, the indicator light will go out.

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.**

6. Release the parking brake.
7. Start the engine and shift the transmission lever to the desired position.

Excessively shifting the transfer case into or out of the different modes may cause the transfer case to enter the shift protection mode. This will protect the transfer case from possible damage and will only allow the transfer case to respond to one shift per 10 seconds. The transfer case may stay in this mode for up to three minutes.

Parking

⚠ CAUTION:

If you do not park your vehicle properly, it can roll. If you have left the engine running, it can move very quickly. You or others could be injured. To be sure your vehicle will not move, even when you are on level ground, follow the steps below.

Two-Speed Rear Axle

1. With the engine running, shift the two-speed rear axle into low. To be sure it is in low, you will need to move the vehicle in gear just a little.
2. Hold the regular brake pedal down with your right foot.
3. Apply the parking brake.
4. Shift the transmission to NEUTRAL for manual transmission or PARK (P) for automatic transmission.

Hydraulic Brakes (Parking Brake Operation)

If your vehicle has hydraulic brakes, it has either a parking brake foot pedal or hand lever. If you have the parking brake foot pedal, it is located below the instrument panel to the left of the steering column.



Parking Brake Hand Lever Shown

If you have the parking brake hand lever, it is located to the right of the driver, on the floor.

To set the foot pedal parking brake, hold the regular brake pedal down with your right foot. Push down the parking brake pedal with your left foot.

To set the hand lever parking brake, hold the regular brake pedal down with your right foot. Pull up on the handle with your right hand, until it stops.

If the ignition is on when the parking brake is set, the brake system warning light will come on.

To release the foot pedal parking brake, hold the regular brake pedal down. Pull the brake release handle, located just above the parking brake pedal, to release the parking brake.

To release the hand lever parking brake, hold the regular brake pedal down and push down on the handle until it stops.

If the ignition is on when the parking brake is released, the brake system warning light will go off.

Propshaft Brake Burnish Procedure

It is recommended that the propshaft-mounted parking brake be burnished as part of the new vehicle break-in. The parking brake will work best after it has been burnished following these instructions:

Make 10 stops, using the parking brake hand lever or foot pedal, from 20 mph (32 km/h) about 2 1/2 miles (4 km) apart. Between stops, drive the vehicle at 20 mph (32 km/h) to allow the brake to cool.

Notice: **Driving with the parking brake on can damage the transmission and brake system parts. Verify that the parking brake is fully released and the brake warning light is off before driving.**

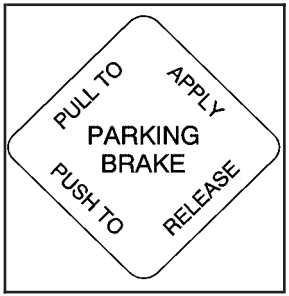
Rear Wheel Park Brake Burnish Procedure

It is recommended that the rear wheel mounted parking brake be burnished as part of the new vehicle break-in. The parking brake will work best after it has been burnished following these instructions:

Make one or two stops using the parking brake hand lever or foot pedal from 55 mph (92 km/h) to a stop with moderate apply. Each stop should occur within 1/4 of a mile.

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.**

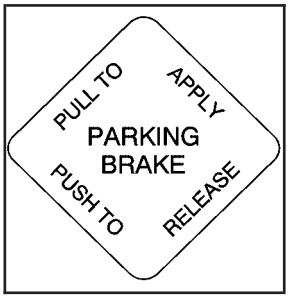
Air Brake

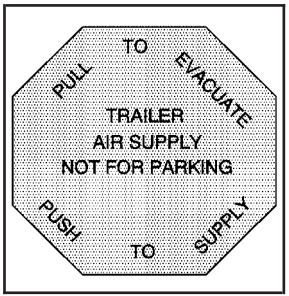


If your vehicle has air brakes, you will have this parking brake. It is located above the radio in the instrument panel.

Pulling it out applies the parking brake. The parking brake light will come on when the air parking brake is applied.

Vehicles built for use as tractors or towing vehicles have two air brake controls. They look like this:





⚠ CAUTION:

When the yellow PARKING BRAKE and the red TRAILER AIR SUPPLY knobs are both pushed in, your rig will be free to move. It could strike someone or something. When both of these knobs are pushed in, hold the regular brake pedal down to keep your rig from moving.

To charge a trailer's air brake system do the following:

1. Move your vehicle into the proper position.
2. Apply the parking brake by pulling the yellow parking brake knob out.
3. Hook up the trailer air system properly.
4. Get into the vehicle.
5. Push and hold down the regular brake pedal.
6. Push in both the yellow parking brake and the red trailer air supply knobs. This will charge your trailer's air system.

After a few minutes, the trailer system should be fully charged. When it is, the air pressure gage will show about 125 to 135 psi (862 to 931 kPa). See *Air Pressure Gage on page 3-42* for more information.

For driving with a trailer, the yellow and red, if equipped, knobs must be pushed in. When you are not pulling a trailer, the red trailer air supply knob must be pulled out.

⚠ CAUTION:

If you apply any one of the air brake parking controls while the vehicle is moving, your rig will stop suddenly. If you are not ready for this, you or others could be injured. Do not apply any one of these controls while you are driving, unless you have to make an emergency stop.

If the air pressure drops below 60 to 70 psi (413 to 482 kPa), the primary brake light and warning buzzer will come on. If the air pressure drops to 35 to 45 psi (241 to 310 kPa), the red trailer air supply knob will automatically pop out and apply the spring brakes on the trailer.

If the air pressure drops to 35 to 45 psi (241 to 310 kPa), the yellow park brake knob will automatically pop out and apply the spring brakes on the truck or tractor.

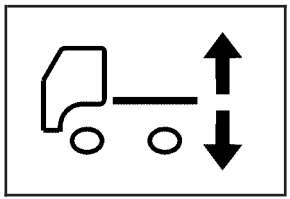
If you ever have a complete loss of air so that your air brakes automatically apply, there is a way that the tow operator can release the parking brakes to tow the vehicle. See *Towing Your Vehicle on page 4-35*.

Air Suspension

Your vehicle may have the Hendrickson HAS Series single-axle air suspension which is designed for a single-axle on-highway use. This feature is available in 19,000 lb (8 613.3 kg), 21,000 lb (9 525.4 kg) and 23,000 lb (10 432.6 kg) capacities.

Rear Air Suspension Dump Control

If your vehicle is equipped with the Hendrickson HAS Series single-axle air suspension, you may have this control. The air suspension dump control allows the operator to lower the deck height approximately 4.5 inches (11.5 cm) from the normal frame height.

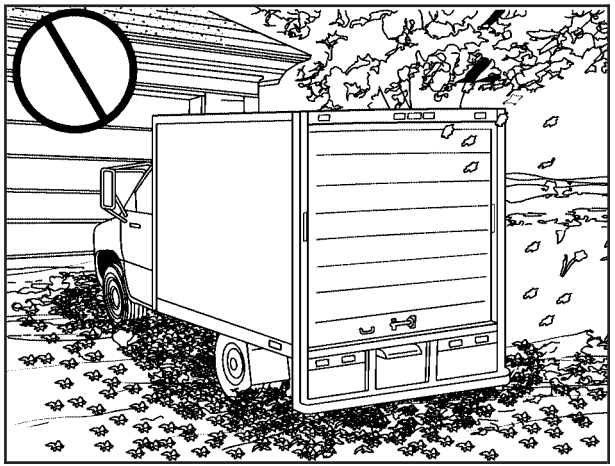


The switch to deflate and inflate the air suspension is located in the instrument panel.

Press the bottom of the switch to deflate the air suspension and lower the deck height. Press the top of the switch to return the suspension to normal deck height.

An indicator light will come on and stay on whenever the switch is in the dumped position.

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:

- **Your exhaust system sounds strange or different.**
- **Your vehicle gets rusty underneath.**
- **Your vehicle was damaged in a collision.**
- **Your vehicle was damaged when driving over high points on the road or over road debris.**
- **Repairs were not done correctly.**
- **Your vehicle or exhaust system had 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 2-44*.

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 4-25*.

⚠ CAUTION:

It can be dangerous to get out of your vehicle if the automatic transmission 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 it is on fairly level ground, always set the parking brake and move the automatic transmission shift lever to PARK (P), or the manual transmission shift lever to NEUTRAL.

Follow the proper steps to be sure your vehicle will not move.

Mirrors

Manual Rearview Mirror

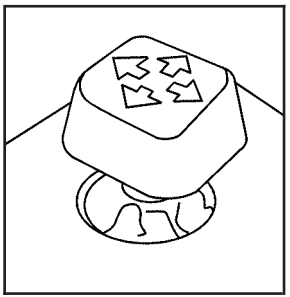
If your vehicle has this feature, pull the tab under the mirror toward you to reduce glare from headlamps behind you after dark. Push the tab away from you to restore the mirror to the daytime position.

Outside Manual Mirrors

Adjust the outside rearview mirrors so you can see a little of the side of your vehicle, and the area beside your vehicle from a comfortable driving position. All mirrors can be folded in to enter narrow passageways.

Outside Power Mirrors

If you have outside power mirrors, they can be adjusted from the inside of the vehicle.



The control for this feature is located on the driver's door.

Select the mirror you want to move by turning the switch clockwise to adjust the passenger's side mirror, or counterclockwise to adjust the driver's side mirror. The center position is neutral.

Then, adjust the mirror by pressing the outer arrows on the switch until the mirror is in the desired position.

Outside Convex Mirrors

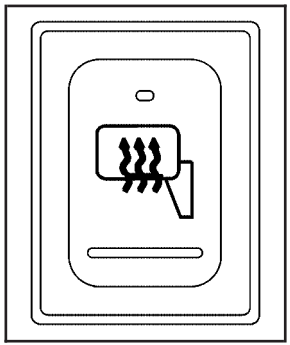
⚠ CAUTION:

A convex mirror can make things (like other vehicles) look farther away than they really are. If you cut too sharply into the right or left lane, you could hit a vehicle. Check your regular outside mirrors (or your inside mirror, if you have one) before changing lanes.

Your vehicle may have convex mirrors on both the driver's side and the passenger's side. They are curved to allow more to be seen from the driver's seat. A convex mirror can make things look farther away than they really are.

Outside Heated Mirrors

If your vehicle has this feature, your outside rearview mirrors can be defrosted.



The switch for this feature is located in the instrument panel switchbank.

Push the bottom of the switch to turn the outside heated rearview mirrors on. The switch indicator light will come on and stay on whenever the outside heated rearview mirrors are activated.

If your vehicle has a crew cab, your vehicle may be equipped with a rear window defogger. It will also come on each time the outside heated mirror feature is activated. See "Rear Window Defogger" under *Climate Control System on page 3-19*.

Storage Areas

Your vehicle includes a number of storage compartments.

Some vehicles have storage areas in the instrument panel. Another small storage area may be located overhead. Other models may have more storage area underneath the front passenger's bench seat. Lift the seat cushion to use the storage area.

Your vehicle may have a storage tray located behind the driver and passenger seats.

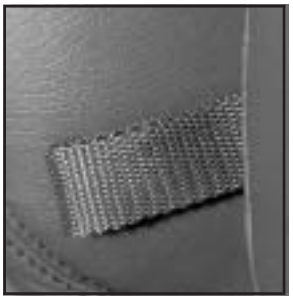
All models have storage pockets and cupholders on each of the doors. Some models may have additional cupholders in the center floor console.

All models also have storage compartments located beneath the floorboard on both sides of the vehicle.

Center Console Storage Area

Your vehicle may have a center console compartment if you have the bucket or suspension seats.

The back of your center bench seat may also fold forward to reveal a console compartment.



The release strap for the center console is located between the center seat and passenger's seat.

To expose the storage compartment, pull the strap to release the seatback. Then fold the seatback forward.

To open the storage compartment, press the release button and lift the lid rearward. With the lid closed, it can be used as a clipboard to hold papers in place.

Before returning the seatback to the upright position, make sure the console is snapped shut. Lift the seatback all the way up until it clicks. Push and pull on the seatback to make sure the seat is locked in place.

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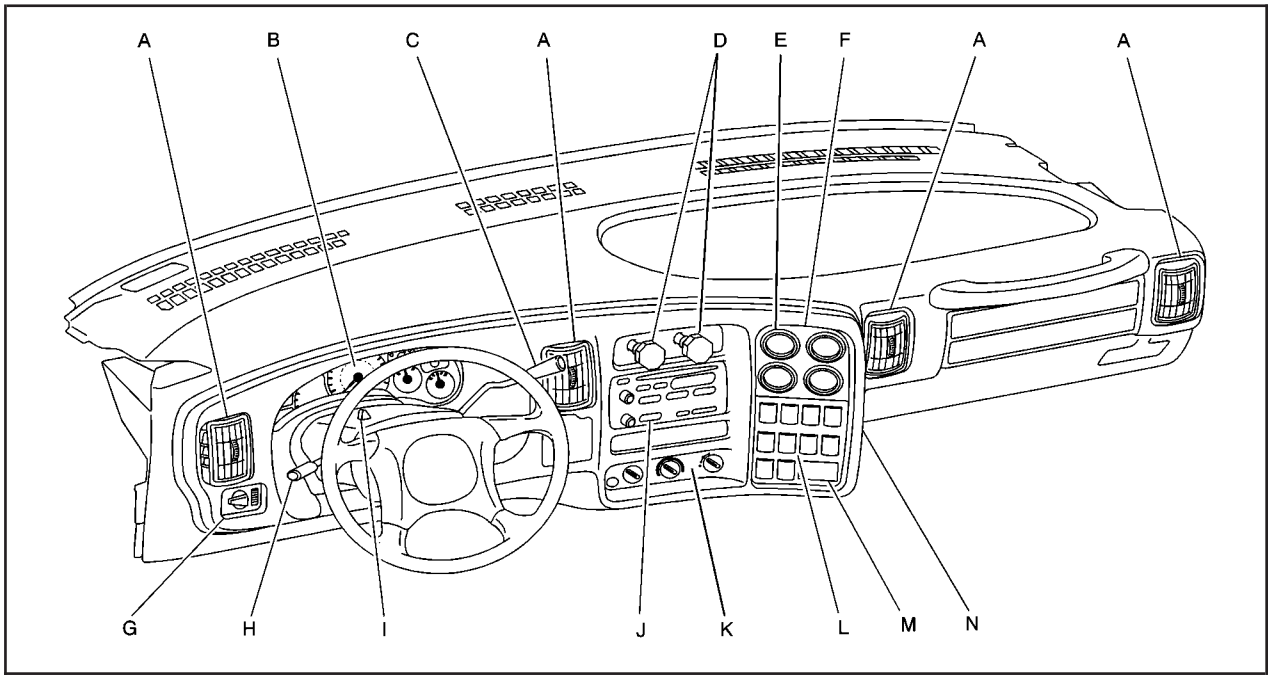
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Instrument Panel Overview



Automatic Transmission Shown

A. Air Outlets. See *Outlet Adjustment on page 3-22*.

B. Instrument Panel Cluster. See *Instrument Panel Cluster on page 3-24*.

C. Shift Lever. See *Automatic Transmission Operation on page 2-28* or *Manual Transmission Operation on page 2-30*.

D. Air Brake Controls. See *Air Brake on page 2-41*.

E. Transfer Case Controls (If Equipped). See *Four-Wheel Drive on page 2-34*. Air Filter Gage (If Equipped). See *Air Filter Restriction Indicator on page 3-42*.

F. Auxiliary Gages. See *Warning Lights, Gages, and Indicators on page 3-23*.

G. Exterior Lamp Control. See *Exterior Lamps on page 3-13*.

H. Turn Signal/Multifunction Lever. See *Turn Signal/Multifunction Lever on page 3-7*.

I. Hazard Warning Flashers Button. See *Hazard Warning Flashers on page 3-6*.

J. Audio System(s). See *Audio System(s) on page 3-43*.

K. Climate Controls. See *Climate Control System on page 3-19*.

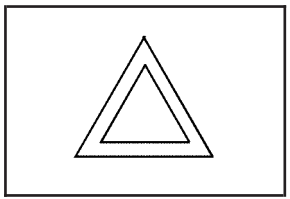
L. Instrument Panel Switchbank. See *Instrument Panel Switchbank on page 3-17*.

M. Airbag Off Switch. See *Airbag Off Switch on page 1-56*.

N. Accessory Power Outlets. See *Accessory Power Outlet(s) on page 3-18*.

Hazard Warning Flashers

Your hazard warning flashers let you warn others. They also let police know you have a problem. Your front and rear turn signal lamps will flash on and off.



The hazard warning flasher button is located on top of the steering column.

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

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.

When the hazard warning flashers are on, your turn signals will not work.

Other Warning Devices

If you carry reflective triangles, you can set them up at the side of the road about 300 feet (100 m) behind your vehicle.

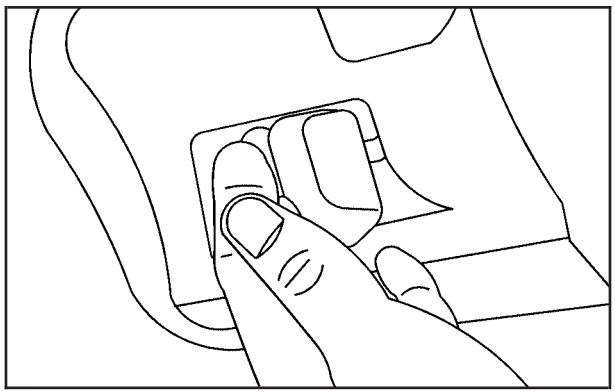
Horn

Sound the horn by pushing the center of the steering wheel. If you have the optional air horn, it is controlled by a cord that you will find up above and to the left of the driver. The harder you pull on the cord, the louder the air horn will sound. The air horn works only after your air brake system pressure gets up to about 115 psi (790 kPa). The air horn will work properly unless the air brake system pressure drops below 60 psi (415 kPa).

Tilt Wheel

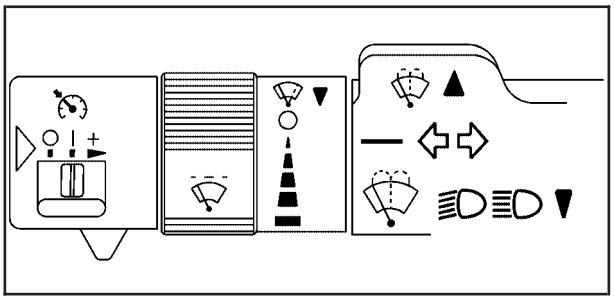
A tilt wheel allows you to adjust the steering wheel before you drive. You can raise it to the highest level to give your legs more room when you exit and enter the vehicle.

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 pull the lever. Then move the wheel to a comfortable position and release the lever to lock the wheel in place.

Turn Signal/Multifunction Lever



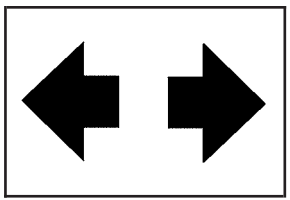
The lever located on the left side of the steering column includes the following:

- Turn and Lane-Change Signals. See *Turn and Lane-Change Signals on page 3-8*.
- Headlamp High/Low-Beam Changer. See *Headlamp High/Low-Beam Changer on page 3-8*.
- Windshield Wipers. See *Windshield Wipers on page 3-8*.
- Windshield Washer. See *Windshield Washer on page 3-9*.
- Cruise Control (Option). See *Cruise Control on page 3-10*.

Turn and Lane-Change Signals

The turn signal has two upward (for right) and two 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.

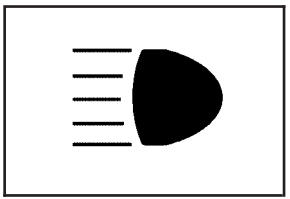
To signal a lane change, just raise or lower the lever until the arrow starts to flash. Hold it there until you complete your lane change. The lever will return by itself when you release it.

As you signal a turn or a lane change, if the arrows don't flash but just stay on, check the turn signal flasher and circuit breaker. See *Fuses and Circuit Breakers on page 5-93*.

If a bulb is burned out, replace it to help avoid an accident. If the arrows don't go on at all when you signal a turn, check the circuit breaker and for burned-out bulbs.

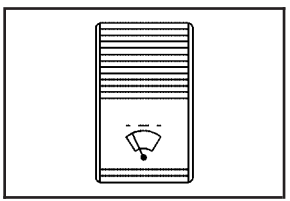
Headlamp High/Low-Beam Changer

To change the headlamps from low to high beam or high to low beam, pull the multifunction lever all the way toward you, then release it.



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

Windshield Wipers



You control the windshield wipers by turning the band with the wiper symbol on it.

◯ **(Off):** Turn the band on the lever to this symbol to turn off the windshield wipers.

(Mist): For a single wiping cycle, turn the band to this symbol. Hold it there until the wipers start, then let go. The wipers will stop after one cycle. If you want more cycles, hold the band on mist longer.

You can set the wiper speed for a long or short delay between wipes. This can be very useful in light rain or snow. Turn the band to select the delay time. The farther the band is turned upward, the longer the delay will be. The farther the band is turned downward, the shorter the delay will be.

For steady wiping at low speed, turn the band toward you to the first solid band below the delay settings.

For high-speed wiping, turn the band farther, to the last solid band below the delay settings. To stop the wipers, move the band to off.

Be sure to clear ice and snow from the wiper blades before using them. If they are frozen to the windshield, carefully loosen or thaw them. If your blades do become worn or damaged, get new blades or blade inserts. For more information, see *Windshield Wiper Blade Replacement on page 5-67*.

Heavy snow or ice can overload your wipers. The windshield wiper motor is protected from overload 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. Although the circuit is protected from electrical overload, overload due to heavy snow or ice may cause wiper linkage damage. Always clear ice and heavy snow from the windshield before using your windshield wipers.

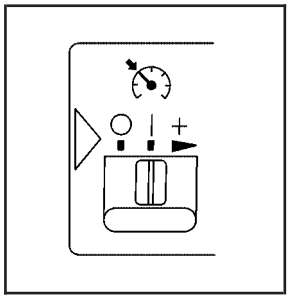
Windshield Washer

(Washer Fluid): There is a paddle marked with the windshield washer symbol at the top of the multifunction lever. To spray washer fluid on the windshield, press the paddle. The wipers will clear the window and then either stop or return to your preset speed.

⚠ 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.

Cruise Control



If your vehicle has this feature, it is located at the end of the multifunction lever.

(Set): Pressing in this button at the end of the lever sets the cruise control speed.

(Off): Moving the switch to this position turns off the cruise control.

(On): Moving the switch to this position turns on the cruise control.

(Resume/Accelerate): Moving the switch to this position turns on resume/accelerate.

With cruise control, you can maintain a speed of about 30 mph (48 km/h) or more without keeping your foot on the accelerator. Cruise control does not work at speeds below about 30 mph (48 km/h).

If you have an automatic transmission and you apply your brakes, the cruise control will shut off.

If you have a manual transmission and you apply your brakes or push the clutch pedal, the cruise control will shut off.

⚠ 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.

1. Move the cruise control switch to on.
2. Get up to the speed you want.
3. Press in the set button at the end of the lever and release it.
4. Take your foot off the accelerator pedal. The accelerator pedal will not go down.

Resuming a Set Speed

Suppose you set your cruise control at a desired speed and then you apply the brake. This, of course, shuts off the cruise control. But you don't need to reset it.

Once you're going about 30 mph (48 km/h) or more, you can move the cruise control switch briefly from on to resume/accelerate.

The vehicle will return to your chosen speed and stay there.

If you hold the switch at resume/accelerate, the vehicle will keep going faster until you release the switch or apply the brake. So unless you want to go faster, don't hold the switch at resume/accelerate.

Increasing Speed While Using Cruise Control

There are two ways to go to a higher speed:

- Use the accelerator pedal to get to the higher speed. Press the button at the end of the lever, then release the button and the accelerator pedal. You'll now cruise at the higher speed.
- Move the cruise switch from on to resume/accelerate. Hold it there until you get up to the speed you want, and then release the switch. To increase your speed in very small amounts, move the switch briefly to resume/accelerate. Each time you do this, your vehicle will go about 1 mph (1.6 km/h) faster.

Reducing Speed While Using Cruise Control

Press in the button at the end of the lever until you reach the lower speed you want, then release it.

To slow down in very small amounts, tap the button briefly. Each time you do this, you'll go 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, your 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 want to step on the accelerator pedal to maintain your speed. When going downhill, you may have to brake or shift to a lower gear to keep your speed down. Of course, applying the brake or clutch takes you out of cruise control. Many drivers find this to be too much trouble and don't use cruise control on steep hills.

If your vehicle is equipped with the exhaust brake option and the exhaust brake is turned on, the exhaust brake may come on and try to slow down the vehicle to the set cruise control speed if the vehicle has accelerated past the set cruise control speed while going downhill.

Ending Cruise Control

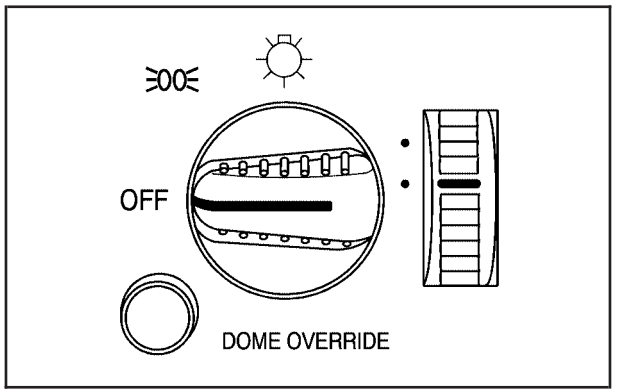
There are four different ways to turn off the cruise control:

- Step lightly on the brake pedal (manual and automatic transmissions).
- Press the clutch pedal to the floor (manual transmissions).
- Move the cruise switch to off, or
- Shift the transmission to NEUTRAL (N).

Erasing Speed Memory

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

Exterior Lamps



The control located to the left of the steering column operates the exterior lamps.

The exterior lamp control has three positions:

OFF: Turning the control to this position turns off all lamps except the Daytime Running Lamps (DRL).

(Parking Lamps): Turning the control to this position turns on the parking lamps, together with the following:

- Marker 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.

You can switch your headlamps from low to high beam by pulling the turn signal/multifunction lever toward you. Pull the lever toward you again to return to low beam.

A circuit breaker protects your headlamps. If you have an electrical overload, your headlamps will flicker on and off. Have your headlamp wiring checked right away if this ever happens.

Headlamps on Reminder

If you have this system, a tone will sound when your headlamps and/or parking lamps are turned on and your ignition is in LOCK or ACCESSORY.

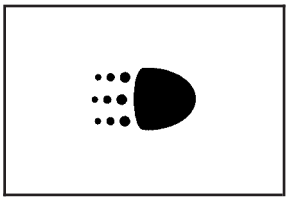
Daytime Running Lamps (DRL)

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 headlamps come on at reduced brightness when the following conditions are met:

- The ignition is on,
- the exterior lamp control is off, and
- the parking brake is released.

When the DRL are on, only your headlamps will be on. The taillamps, sidemarker and other lamps won't be on. Your instrument panel won't be lit up either.



When it begins to get dark, your DRL indicator light is a reminder to turn the headlamps on. The other lamps that come on with your headlamps, will also come on.

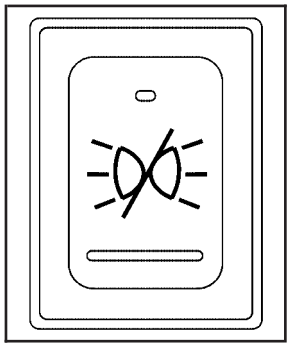
When you turn the headlamps off, the regular lamps will go off, and your low-beam headlamps will change to the reduced brightness of DRL.

To idle your vehicle with the DRL off, set the parking brake. 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.

Marker Lamps

If your vehicle has this feature, you can manually blink the marker and clearance lamps.



The marker lamp defeat switch is located in the instrument panel switchbank.

Press and hold the bottom of the switch to turn off the marker and clearance lamps. When you release the switch, the marker and clearance lamps will come back on.

Instrument Panel Brightness

This feature controls the brightness of the instrument panel lights.

The thumbwheel for this feature is located to the right of the exterior lamp control.

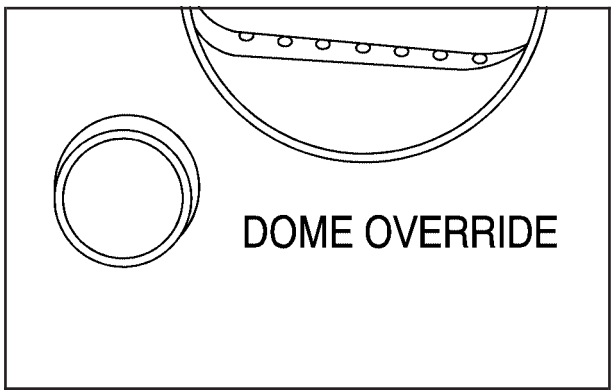
Turn the thumbwheel up to brighten the lights. When the thumbwheel is moved to the first position, the radio display and transmission selection display will go to full intensity. The instrument panel cluster will also be dimly lit. Moving the thumbwheel up to the next position will activate the interior dome lamps.

Dome Lamps

The dome lamps will come on when you open a door.

You can also turn the dome lamps on by moving the thumbwheel, located to the right of the exterior lamp control, all the way up to the second position. In this position, the dome lamps will remain on whether a door is open or closed.

You can use the dome override button to set the dome lamps to automatically come on when a door is open, or to remain off.



The dome override button is located below the exterior lamp control.

If the dome override button is pushed in, the dome lamps will not come on. Use this feature when you want to leave your door(s) open for an extended period of time and do not want to run the battery down.

If the dome override button is in the out position, the interior lamps will work as usual.

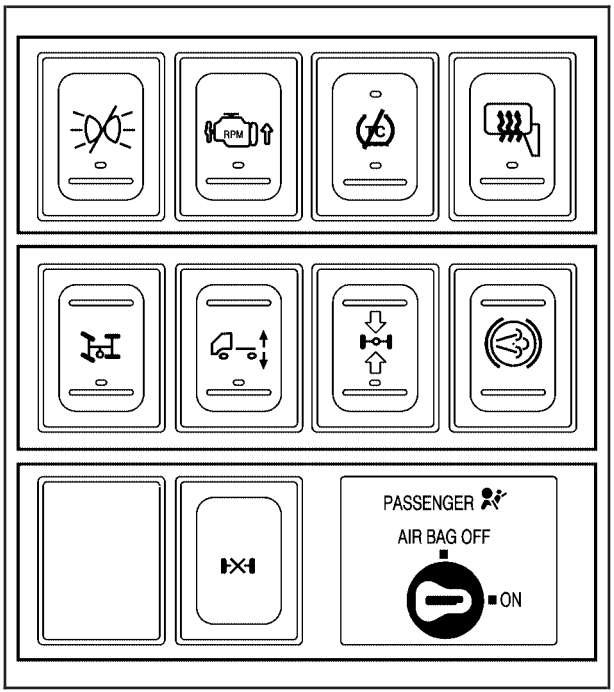
Entry Lighting

The delayed illumination feature will allow you to enter or exit your vehicle with the lights on for about 20 seconds, after the door is closed or the ignition is cycled.

Reading Lamps

If your vehicle has reading lamps, press the button next to the lamp to turn the lamp on or off.

Instrument Panel Switchbank



Vehicles Without Four-Wheel Drive

This switchbank is located in the center of the instrument panel.

(Marker Lamp Defeat Switch): See *Marker Lamps on page 3-15*.

(Manual High Idle Switch): See *High Idle System on page 2-20*.

(Traction Control Switch): See *Traction Control System (TCS) on page 4-10*.

(Outside Heated Mirror Switch): See *Outside Heated Mirrors on page 2-47*.

(Power Take Off Switch): See *Power Take-Off (PTO) on page 2-33*.

(Rear Air Suspension Dump Control Switch): *Air Suspension on page 2-43*.

(Rear Axle Shift Control Switch): See *Air Shift Control (Automatic Transmission) on page 2-28*.

(Exhaust Brake Switch): See *Diesel Engine Exhaust Brake on page 2-26*.

(Differential Lock Control Switch): See *Rear Axle Differential Lock Control on page 4-10*.

(Airbag On/Off Switch): See *Airbag Off Switch on page 1-56*.

If your vehicle does not have some of the features controlled by these switches, there will be a blank switch marker in its place.

Accessory Power Outlet(s)

With accessory power outlets, you can plug in auxiliary electrical equipment such as a cellular telephone or CB radio.

The accessory power outlet is located on the passenger's side of the instrument panel.

To use an outlet, pull the cover down. When not using it, always cover the outlet with the protective cap.

This circuit is protected by a fuse and has a maximum current level.

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 amperage 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 dealer for additional information on accessory power outlets.

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. Do not use equipment exceeding maximum amperage rating. Check with your dealer before adding electrical equipment.**

When adding electrical equipment, be sure to follow the proper 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 power plugs only.**

Ashtray(s) and Cigarette Lighter

Your vehicle may have an ashtray and a cigarette lighter located in the center floor console.To open the removable ashtray, flip open the top.

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.**

To use the cigarette lighter, push it in all the way and let it go. When it's ready, it will pop back out by itself.

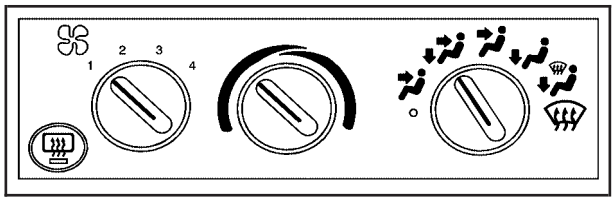
Notice: **Holding a cigarette lighter in while it is heating will not allow the lighter to back away from the heating element when it is hot. Damage from overheating may occur to the lighter or heating element, or a fuse could be blown. Do not hold a cigarette lighter in while it is heating.**

Climate Controls

Climate Control System

With these systems, you can control the heating, cooling and ventilation for your vehicle.

If your vehicle does not have air conditioning, the controls will look like this:



Vehicles Without Air Conditioning

Turn the mode knob on the far right clockwise or counterclockwise to direct the airflow inside of your vehicle.

To change the current mode, select one of the following:

(Off): This setting turns the system off.

(Vent): This mode directs air to the instrument panel vents.

(Bi-Level): This mode directs half of the air to the instrument panel vents, then directs the remaining air to the floor vents. Cooler air is directed to the upper vents and warmer air to the floor vents.

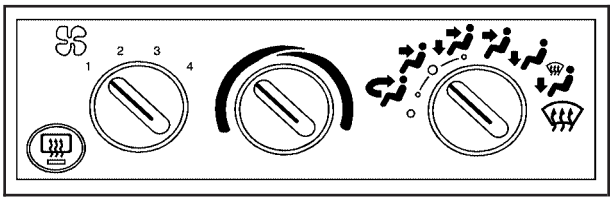
(Floor): This mode directs most of the air to the floor vents. Use this mode to send air to the rear of the vehicle. Keep the area under the front seats free of objects that could obstruct airflow to the rear of the vehicle.

The mode knob can also be used to select the defrost mode. For more information, see “Defogging and Defrosting” later in this section.

(Fan): Turn the left knob clockwise or counterclockwise to increase or decrease the fan speed. To increase airflow, turn the knob clockwise. To decrease airflow, turn it counterclockwise. To turn the fan off, turn the mode knob on the far right counterclockwise to the off position.

Temperature Knob: Turn the middle knob located clockwise or counterclockwise to increase or decrease the temperature inside of your vehicle. Turn the knob toward the red area for warmer air. Turn the knob toward the blue area for cooler air.

If your vehicle has air conditioning, the controls will look like this:



Vehicles With Air Conditioning

On hot days, open the windows to let hot inside air escape; then close them. This helps to reduce the time it takes for your vehicle to cool down. It also helps the system to operate more efficiently.

(Maximum Air Conditioning): Turn the right knob to this setting for maximum cooling. This setting puts the system in recirculation mode and helps to maximize your air conditioner’s performance and your vehicle’s fuel economy. This setting also cools the air the fastest.

(Air Conditioning): This setting is used for normal cooling on hot days. It cools outside air and directs it through the instrument panel vents.

(Bi-Level Air Conditioning): This setting divides airflow between the floor vents and instrument panel vents. The air conditioning compressor will cycle continuously in this setting as long as the outside temperature is warm enough to activate the compressor.

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 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 mode knob on the right of the climate control panel to select the defog or defrost mode.

(Defog): With this setting, the outside air comes out of both the floor and defroster outlets. Adjust the temperature knob for warmer or cooler air. The air conditioning compressor may operate in this setting to dehumidify the air.

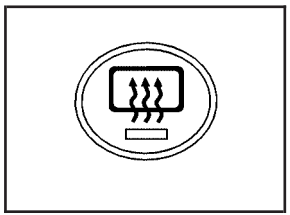
(Defrost): This setting operates the defroster. Most of the air comes out near the windshield, with some going to the floor outlets and front side windows. The air conditioning compressor may operate in this setting to dehumidify the air.

The defog setting is useful for cold weather with a large number of passengers or very humid conditions to help keep the windshield clear. Use defrost to remove fog or ice from the windshield quickly in extremely cold conditions. The temperature knob should be in the red area and the fan control toward high. Do not drive the vehicle until all the windows are clear.

Rear Window Defogger

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

Be sure to clear as much snow from the rear window as possible.



Press this button which is located near the fan control to turn the rear window defogger on or off. An indicator light in the button will come on when the rear window defogger is working.

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

The rear window defogger will turn off several minutes after the button is pressed. 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

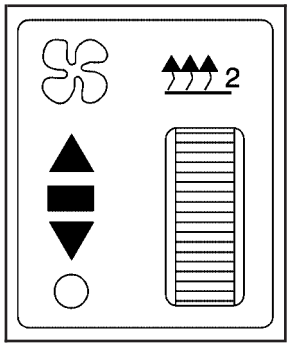
Your vehicle has air outlets on the instrument panel that allow you to adjust the direction and amount of airflow inside the vehicle.

Move the lever on the outlet up or down to direct the airflow. Increase or reduce the amount of airflow by opening and closing the louvers. The outlets can be moved side-to-side to direct the airflow.

Operation Tips

- Keep the hood and front air inlets free of ice, snow, or any other obstruction (such as leaves). The heater and defroster will work far better, reducing the chance of fogging the inside of your windows.
- Keep the air path under the front seats clear of objects. This helps air to circulate throughout your vehicle.
- Adding outside equipment to the front of your vehicle, such as hood-air deflectors, may affect the performance of the heating and air conditioning system. Check with your dealer before adding equipment to the outside of your vehicle.

Rear Heating System



If you have a crew cab and your vehicle has a rear heater, the thumbwheel for this feature is located on the headliner.

To increase and decrease the flow of heated air to the rear floor vents, turn the thumbwheel to the desired fan speed. To turn the fan off, turn the thumbwheel all the way down.

Warning Lights, Gages, and Indicators

This part describes the warning lights and gages that may be on your vehicle. The pictures will help you 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 your warning lights and gages could also save you or others from injury.

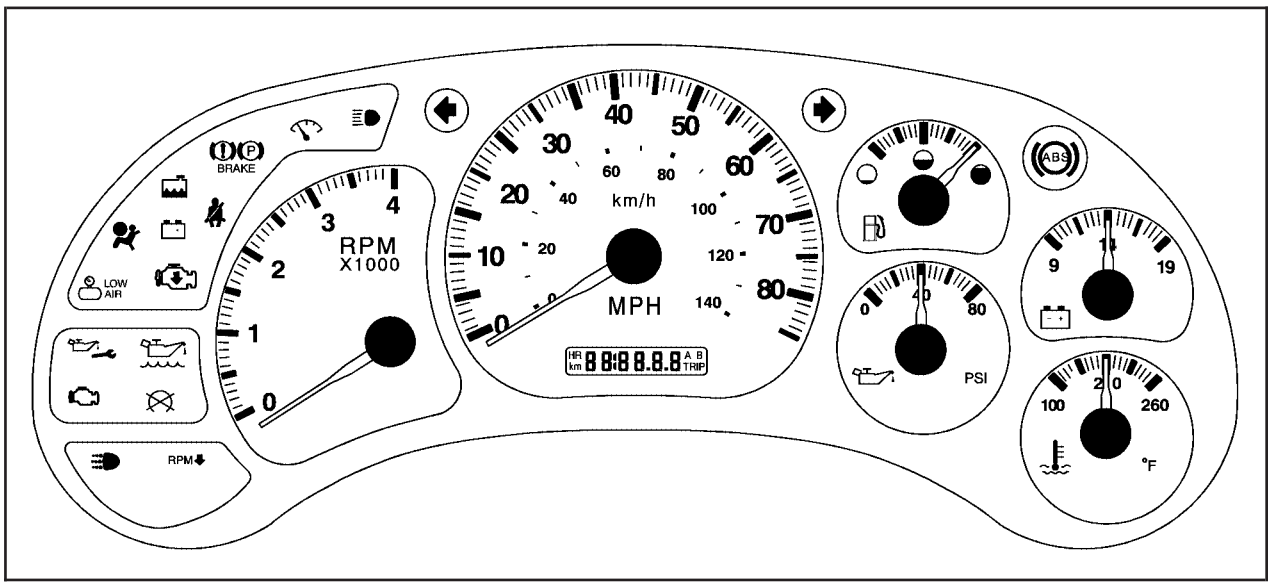
Warning lights come on when there may be or is a problem with one of your vehicle's functions. As you will see in the details on the next few pages, some warning lights come on briefly when you start the engine just to let you know they're working. If you are familiar with this section, you should not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

When one of the warning lights comes on and stays on when 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. Waiting to do repairs can be costly – and even dangerous.

Instrument Panel Cluster

Your instrument panel cluster is designed to let you know at a glance how your vehicle is running. You'll know how fast your going, about how much fuel is left and many other things you'll need to drive safely and economically.



United States 7.8L Diesel Engine shown, Canada, 6.6L Diesel and Gasoline Engine 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 (used in the United States) or kilometers (used in Canada).

Trip Odometer

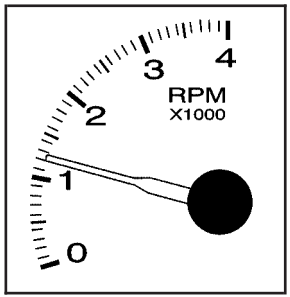
The trip odometer can tell you how far your vehicle has been driven since you last set the trip odometer to zero.

While the engine is running, press the reset button, located to the right of the trip odometer, to toggle between the trip odometer and the regular odometer. Holding the reset button for two seconds while the engine is running and the trip odometer is displayed, will reset it.

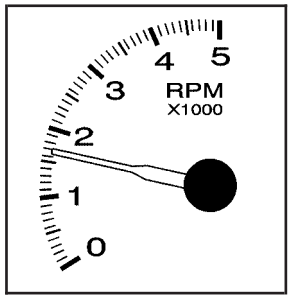
To display the odometer reading with the ignition off, press the reset button.

The hourmeter gage is accessed through the trip odometer, for more information see *Hourmeter Gage on page 3-43*.

Tachometer



7.2L Caterpillar® Diesel Engine and 7.8L DURAMAX® Diesel Engines



Gasoline and 6.6L DURAMAX® Diesel Engines

This gage shows the safe operating range for the engine speed in revolutions per minute (rpm).

Engine Speed Limiter

All engines have electronic engine speed limiting. The engine limited speeds range between 2,900 and 4,400 rpm depending on engine option content.

Engine Road Speed Governor

This system controls maximum vehicle speed automatically and reduces engine power until vehicle speed gets down to maximum governed speed.

The default setting for C4500 and C5500 models up to 19,500 lbs GVWR is 80 to 85 mph (128 to 136 km/h). Most other models have a default setting of 75 mph (120 km/h), although some tire sizes and tread patterns may limit maximum speed to 55 to 65 mph (86 to 105 km/h). You may have a label on the headliner of your vehicle with more information on your engine road speed governor. See your GM dealer for assistance with programming your engine limited speed.

Safety Belt Reminder Light

When the key is turned to RUN or START, a light will come on for several seconds to remind people to fasten their safety belts.



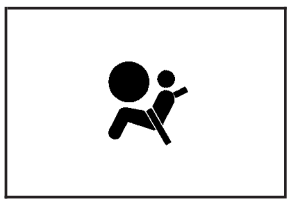
The safety belt light will also come on and stay on for several seconds.

Safety Belt Reminder Tone

If your vehicle has this feature, when you turn your key to RUN or START, a tone will sound for several seconds to remind people to fasten their safety belts.

Airbag Readiness Light

If your vehicle has airbags, there is an airbag readiness light on the instrument panel, 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 sensors, the airbag modules, the wiring, the passenger airbag suppression circuit and the crash sensing and diagnostic module. For more information on the airbag system, see *Airbag System on page 1-49*.



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.

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

⚠ CAUTION:

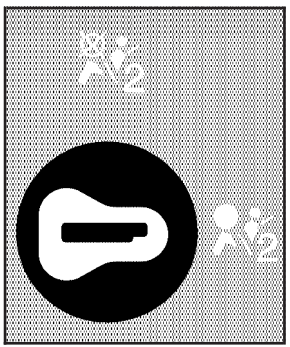
If the airbag readiness light stays on after you start your vehicle, it means the airbag system may not be working properly. The airbags in your vehicle may not inflate in a crash, or they could even inflate without a crash. To help avoid injury to yourself or others, have your vehicle serviced right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

Airbag Off Light

If your vehicle is equipped with an airbag off switch, when you turn the right front passenger's airbag off, this light will come on and stay on to remind you that the airbag has been turned off. This light will go off when you turn the airbag on. See *Airbag Off Switch on page 1-56* for more on this, including important safety information.



United States



Canada

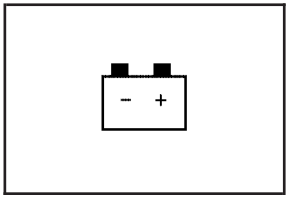
⚠ CAUTION:

If the right front passenger's airbag is turned off for a person who is not in a risk group identified by the national government, that person will not have the extra protection of an airbag. In a crash, the airbag will not be able to inflate and help protect the person sitting there. Do not turn off the passenger's airbag unless the person sitting there is in a risk group. See *Airbag Off Switch on page 1-56* for more on this, including important safety information.

⚠ CAUTION:

If the airbag readiness light ever comes on when you have turned off the airbag, it means that something may be wrong with the airbag system. The right front passenger's airbag could inflate even though the switch is off. If this ever happens, do not let anyone whom the national government has identified as a member of a passenger airbag risk group sit in the right front passenger's position (for example, do not secure a rear-facing child restraint in the right front passenger's seat) until you have your vehicle serviced. See *Airbag Off Switch on page 1-56* and *Airbag Readiness Light on page 3-27* for more on this, including important safety information.

Charging System Light



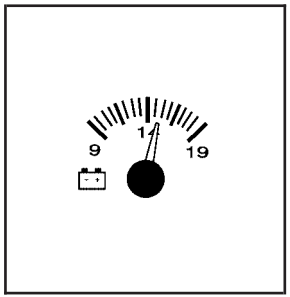
The charging system light may be located in the instrument panel cluster, or with the auxiliary warning lights in the center of the instrument panel.

It should come on briefly when you turn on the ignition, before the engine is running, as a check to show that it is working.

If it stays on, or comes on while you are driving, have your vehicle checked right away. You could have a loose generator drive belt or some other problem.

Driving while this light is on will drain your battery. If you must drive a short distance with the light on, turn off your radio and other accessories. Sustained driving with a generator failure could result in a lack of back-up braking if the engine quits or the power steering pump should fail.

Voltmeter Gage



When your engine is running, the voltmeter gage shows the charging system voltage.

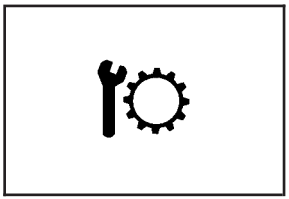
Readings in either warning zone indicate a possible problem in the electrical system.

Readings in the low warning zone may occur when a large number of electrical accessories are operating in the vehicle and the engine is left at an idle for an extended period. This condition is normal since the charging system may not be able to provide full power at engine idle. As engine speeds are increased, this condition should correct itself because higher engine speeds allow the charging system to create maximum power.

You can only drive a short time on the battery. Be sure to shut off the radio, the fan or any unnecessary accessories and have the system serviced.

Service Transmission Warning Light

If your vehicle has an Allison® automatic transmission, certain transmission malfunctions will turn this light on.



This light is located with the auxiliary warning lights in the center of the instrument panel.

If this light comes on while you are driving, do not use the transmission shift control or you may lose forward gears. The computer for the transmission senses a problem and chooses a gear to stay in so that you can drive the vehicle in that gear. You may not be able to drive as fast or back up when this light is on.

Notice: **If you continue driving your vehicle after the transmission warning light comes on, you could damage the transmission. While this light is on, the transmission cannot operate in all gears. If you attempt to shift gears, the vehicle may not continue to move. Do not attempt to shift gears while the transmission warning light is on. Instead, drive directly to a GM dealer for service. If you cannot drive to a dealer immediately, have the vehicle towed.**

Range Inhibit Warning Indicator

If your vehicle has an Allison 1000/2200/2300/ 2500 series automatic transmission, a lighted bar under the current gear selected will flash.

If your vehicle has an Allison 3000/3500 series automatic transmission, the current gear selected on the pushbutton display will flash.

The flashing bar or gear selection indicates that transmission range shifts may not occur.

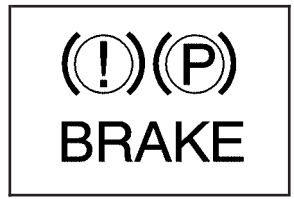
For detailed information on shift inhibit limitations, see the Allison Automatic Transmission Operator's Manual in your vehicle for further information.

Brake System Warning Light

Your vehicle has either hydraulic or air brakes. Each system has different warning lights.

Hydraulic Brake System Warning Lights

Vehicles with hydraulic brake systems have two brake system warning lights on the instrument panel.



If the BRAKE warning light comes on, it means that the fluid level in the master cylinder reservoir is low or there is another problem with your hydraulic brakes.

When it comes on, you will also hear a warning tone.

The BRAKE warning light may come on, and the warning tone may sound, when you're turning and braking at the same time. This is normal. See "Hydraulic Brake Systems" under *Braking on page 4-6*.

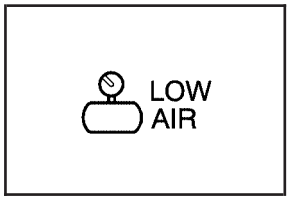
Parking Brake Warning Light

Your vehicle has a brake warning light. When the ignition is on, this light will come on when you set your parking brake. The light will stay on if your parking brake doesn't release fully.

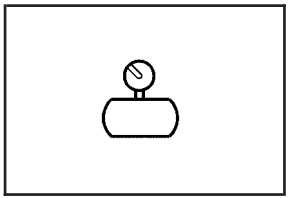
This light should also come on when you turn the ignition key to START. If it does not come on then, have it fixed so it will be ready to remind you if the parking brake is applied or has not released fully.

Air Brake System Warning Light

Vehicles with air brake systems have a brake system warning light on the instrument panel.



United States



Canada

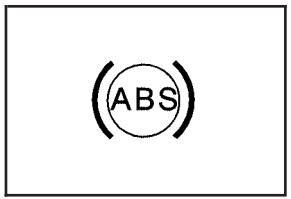
The LOW AIR warning light should come on, as a check, whenever you start the engine. However, it is designed to come on, and stay on, when brake reservoir pressure has dropped below 60 psi (410 kPa).

When the warning light comes on while you are driving, you should drive only as far as the nearest point of safety and then stop the vehicle. Here's a very important thing for you to know:

⚠ CAUTION:

If the air brake system warning light comes on and the warning tone sounds, the vehicle can stop suddenly and without further warning. This is because the parking brake will come on if the pressure falls below 35 to 45 psi (240 to 310 kPa). You or others could be injured. If the air brake system warning light comes on and the warning tone sounds, stop as soon as you can. You will not know how quickly the system is losing pressure, so be aware that the parking brake may come on suddenly.

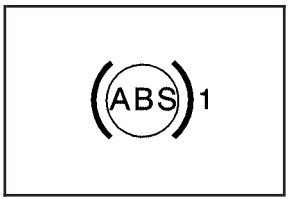
Anti-Lock Brake System Warning Light



This light should come on briefly when you start the engine, if it does not have your vehicle fixed immediately.

If the light stays on, or comes on when you're driving, your vehicle needs service. If the BRAKE or LOW AIR warning light isn't on, you still have brakes, but you don't have the anti-lock brake feature. If the BRAKE and/or LOW AIR warning light is on, you don't have anti-lock brakes and there's a problem with your regular brakes. See *Brake System Warning Light on page 3-31*.

Trailer Anti-Lock Brake System Warning Light

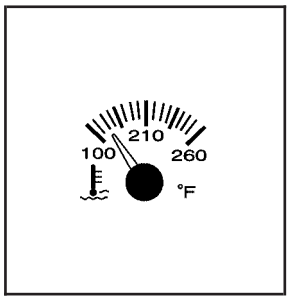


If your vehicle is connected to a trailer with anti-lock brakes, this light should come on briefly, as a check, when you turn on the ignition.

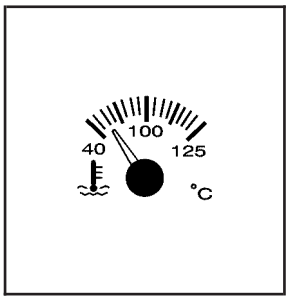
When this light comes on and stays on, it means there is something wrong in the trailer anti-lock brake system. Have the system repaired immediately.

If an anti-lock brake system equipped trailer is not connected, this light is not functional.

Engine Coolant Temperature Gage



United States

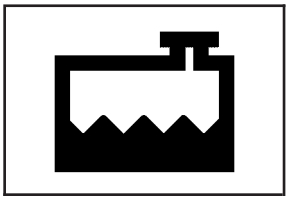


Canada

This gage shows the engine coolant temperature. If the gage pointer moves into the red area, your engine coolant might have overheated and your engine may be too hot. You should pull off the road, stop your vehicle and turn off the engine as soon as possible.

See *Engine Overheating on page 5-40*. If you have a Caterpillar® diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

Low Coolant Warning Light



You have a low coolant warning light. If this light comes on, your system is low on coolant and the engine may overheat.

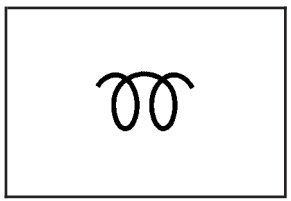
The warning light should come on briefly, as a check, when you turn on the ignition.

When it comes on, you will also hear a warning tone at several beats per second for 10 seconds. See *Engine Coolant (Gas and DURAMAX® Engines) on page 5-37* or *Engine Coolant (Caterpillar® Diesel Engines) on page 5-40* and have your vehicle serviced as soon as you can.

This light may also come on if your vehicle is equipped with the automatic engine shutdown system and engine shutdown has begun. See *Engine Alarm and Automatic Shutdown* under *Starting the Diesel Engine on page 2-15*.

Wait to Start Indicator (Diesel Engine)

If your vehicle has the DURAMAX® 6.6L diesel engine, you will have glow plugs and an air intake heater. If your vehicle has the DURAMAX® 7.8L diesel engine, you will have glow plugs and an inlet heater. If your vehicle has a Caterpillar® engine, you will have an inlet heater.

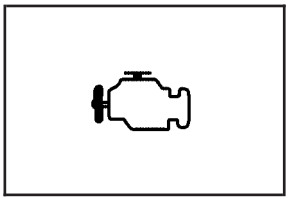


The light in the center of the instrument panel will come on when the inlet heater or glow plugs are on and the ignition key is in RUN.

Wait until the indicator light turns off before turning the ignition key to START.

Malfunction Indicator Lamp

Service Engine Soon Light



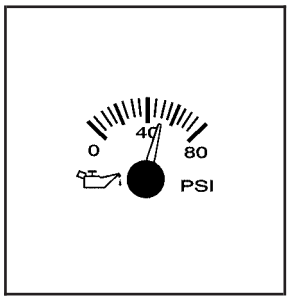
If this light comes on or flashes while you are driving, two things may happen.

First, you will not notice any difference in engine performance, but your tail pipe emissions may increase. Second, your engine may not run properly or may stall without warning. If either of these things happen, drive or tow your vehicle to your dealer for service.

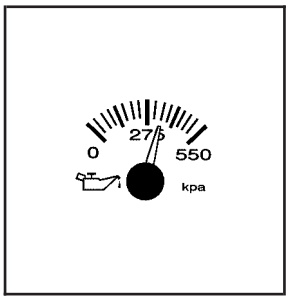
This light should come on when the ignition is on, but the engine is not running, as a check to show you it is working. If it does not come on at all, have it repaired.

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

Oil Pressure Gage



United States



Canada

The engine oil pressure gage, on the lower right portion of your instrument panel cluster, shows engine oil pressure in psi (pounds per square inch) or in kPa (kilopascals). Oil pressure may vary with outside temperature and oil viscosity, but readings of 30 to 40 psi (205 to 275 kPa) on gasoline engines at operating temperature and moderate road speeds are normal. If you have a diesel engine, the normal operating range should be between 35 and 70 psi (240 to 480 kPa).

A reading in the low pressure zone may be caused by a dangerously low oil level or other problem.

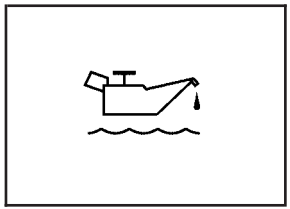
If you have a Caterpillar® diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

⚠ 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.**

Low Oil Level Light

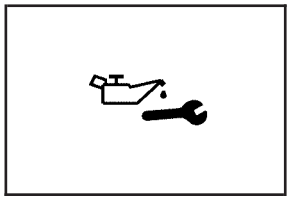


This light should come on as a check, when you start your engine. If the light fails to come on, have it repaired as soon as possible so you will be aware when the oil level is low.

If this light comes on and stays on, it means your engine is low on oil. You need to check the oil level right away. See *Engine Oil (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26* for further information.

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

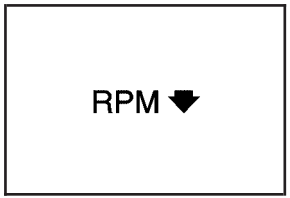


The change engine oil light should come on briefly as a bulb check when you start the engine. If the light does not come on, have it serviced.

If the change engine oil light comes on and stays on after you start the engine, have the oil changed.

For additional information on when to change engine oil for gasoline engines or DURAMAX® diesel engines, see *Engine Oil (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26* and *Scheduled Maintenance on page 6-5*. To reset the change engine oil light, see *Engine Oil Life System (Gasoline Engine) on page 5-30* or *Engine Oil Life System (DURAMAX® Diesel) on page 5-32* or *Engine Oil Life System (Caterpillar® Diesel Engine) on page 5-33*.

Engine Overspeed Warning Light

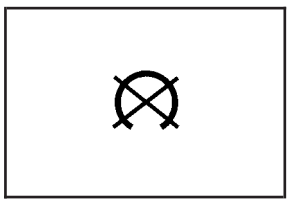


If your vehicle has this light, it will come on if your engine is operating at too many revolutions per minute (rpm).

It will also come on for a moment as a check when you start your engine.

If it comes on when you're driving, reduce your engine speed immediately.

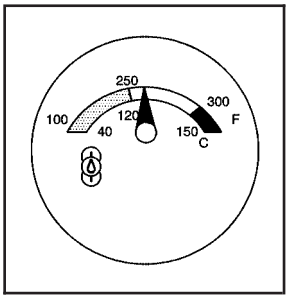
Engine Shutdown Warning Light



If your vehicle has the engine shutdown feature, this light will come on when engine shutdown is active.

For more information, see *Engine Alarm and Automatic Shutdown* under *Starting the Diesel Engine on page 2-15*.

Transmission Temperature Gage

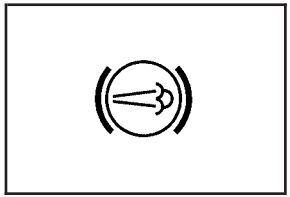


If you have an automatic transmission and this gage, it is located above the switchbank in the center of the instrument panel.

When your ignition is on, the gage shows the temperature of the transmission oil. A reading in the warning zone, the red area beginning at 300°F (150°C), means you must stop driving and check into the cause. One possible cause is a low oil level in the transmission.

Notice: **If you drive your vehicle with the transmission temperature gage above normal operating range, you can damage the transmission. This could lead to costly repairs that would not be covered by your warranty. Do not drive your vehicle while the transmission temperature gage reading is above normal. See your dealer for service.**

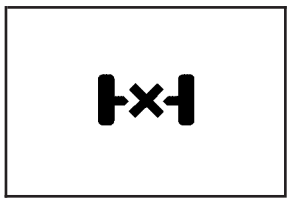
Exhaust Brake Indicator Light



If your vehicle is equipped with an exhaust brake, you will have this light, located above the climate controls in the center of the instrument panel.

The exhaust brake indicator light will come on and stay on whenever the diesel engine exhaust brake or exhaust restrictor is active. For more information, see *Diesel Engine Exhaust Brake on page 2-26* and *Exhaust Restrictor (Engine Warm-Up) on page 2-22*.

Differential Lock Indicator Light

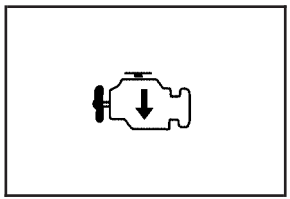


If your vehicle has this feature, this light is located in the center of the instrument panel. The light is on when the rear differential lock system is in use.

The light will come on momentarily during starting. If the light fails to come on, have it repaired as soon as possible so you will be aware when the lock system is in use.

See *Rear Axle Differential Lock Control on page 4-10* for more information.

Reduced Engine Power Light

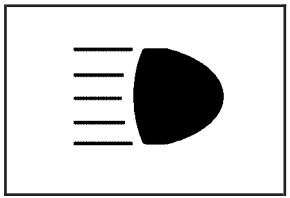


If the check engine and reduced engine power lights are on, the electronic throttle control may be disabled, and a noticeable change in the vehicle's performance may occur.

If the reduced engine power light is on, but there is no change in performance, proceed to your destination. The performance may be reduced the next time the vehicle is driven. The vehicle may be driven at a slower speed while the reduced engine power light is on, but acceleration and speed may be limited.

Anytime the check engine light stays on, the vehicle should be taken to an authorized GM dealer as soon as possible for service.

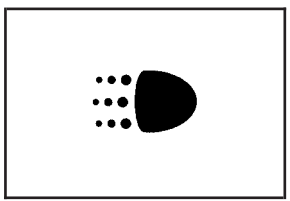
Highbeam On Light



This light will come on when the high-beam headlamps are in use.

See *Headlamp High/Low-Beam Changer on page 3-8*.

Daytime Running Lamps (DRL) Indicator Light

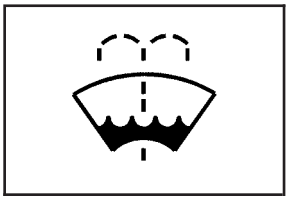


This light is located on the instrument panel cluster. It goes on whenever the Daytime Running Lamps are on.

See *Daytime Running Lamps (DRL) on page 3-14* for more information.

When it begins to get dark, the DRL indicator light is a reminder to turn on your headlamps.

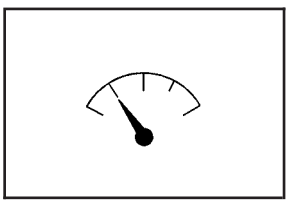
Low Washer Fluid Warning Light



This light will come on when your vehicle is low on windshield washer fluid.

For more information, see *Windshield Washer Fluid on page 5-48*.

Check Gages Warning Light



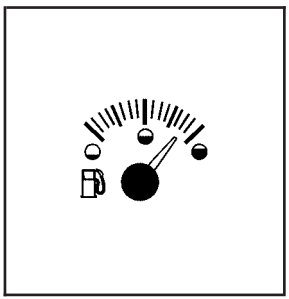
This light will come on as you're starting the engine, just as a check.

If this light comes on and stays on while you are driving. It means that either your engine coolant temperature gage or your engine oil pressure gage may be showing a reading in the warning zone.

When the check gages light comes on, you will also hear a warning tone. The tone and the light will stay activated until the problem is corrected.

This light may also come on if your vehicle is equipped with the optional automatic engine shutdown system and engine shutdown has begun. See *Engine Alarm and Automatic Shutdown* under *Starting the Diesel Engine on page 2-15*.

Fuel Gage



Your fuel gage is located on the right side of your instrument panel cluster.

When the ignition is on, your fuel gage lets you know about how much fuel you have left. When the gage first shows empty, you'll still have a little fuel left, but you should get more fuel soon.

If your vehicle has dual fuel tanks, the reading on the gage is the total fuel left in both tanks.

Here are four concerns of some operators. None of these shows a problem with your fuel gage:

- The gage moves a little when you turn a corner or speed up.
- The gage does not go back to empty when you turn off the ignition.
- At the gas station, the pump shuts off before the gage reads full.
- It takes a little more or less fuel to fill up than the gage indicated.

If you have a Caterpillar® diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

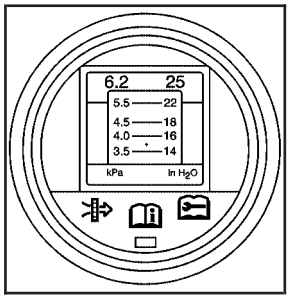
Water in Fuel Warning Light



If your vehicle has the 6.6L or 7.8L DURAMAX® diesel engine, this light will come on to warn you that there is water in the fuel system.

For more information on how this light works, see *Water in Fuel on page 5-10*.

Air Filter Restriction Indicator



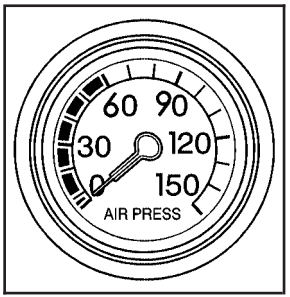
If your vehicle has this feature, the gage is located above the switchbank in the center of the instrument panel. It monitors the engine air filter.

As the filter gets dirty, the yellow indicator will begin to rise. When it reaches 25 inches of vacuum on the scale, the filter should be replaced.

After replacing the filter, reset the gage by pressing in the yellow reset button at the bottom of the gage.

If you have a Caterpillar® diesel engine, also see your Caterpillar® Operation & Maintenance Manual.

Air Pressure Gage



If your vehicle has air brakes, the air pressure gage is located above the switchbank in the center of the instrument panel.

This gage shows the air pressure for both your front and rear brake systems.

If the needle on the gage indicates that the air pressure is below 60 to 75 psi (415 to 517 kPa), the low air warning light will come on. An alarm will also sound if this happens.

The top pointer shows the pressure available for the front system, while the bottom pointer shows pressure for the rear. There should be no more than 4 psi (28 kPa) difference showing between the systems.

Don't drive until both pointers are showing at least 120 psi (827 kPa), so you'll have enough air if you need to apply your brakes.

Hourmeter Gage

To access the engine hourmeter gage, press the trip odometer button three times.

The instrument panel cluster displays the accumulated engine run time hours using the reconfigurable odometer display. The engine run time hours displays only when the ignition is in the LOCK or ACCESSORY position and the trip reset button is pressed for about four seconds. The value of the accumulated hours does not change when the battery is disconnected.

The hourmeter resets to 0.0 when 10,000 hours are accumulated. The instrument panel cluster begins to reaccumulate the engine run time hours from 0.0 hours.

Audio System(s)

If your vehicle came without a radio, the wiring provisions for a radio and an antenna were installed at the assembly plant, so that if you want, a radio can be installed at the dealer.

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 4-2*. 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 equipped).

⚠ 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. For more information, see *Defensive Driving on page 4-2*.

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 equipped).

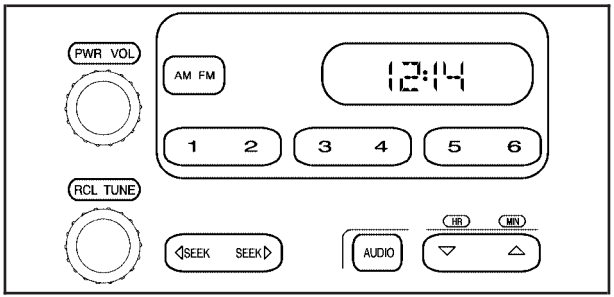
Notice: **Before adding any sound equipment to your vehicle, such as an audio system, CD player, CB radio, mobile telephone, or two-way radio, make sure that it can be added by checking with your dealer. Also, check federal rules covering mobile radio and telephone units. If sound equipment can be added, 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.**

Notice: **The chime signals related to safety belts, parking brake, and other functions of your vehicle operate through the GM radio/entertainment system. If that equipment is replaced or additional equipment is added to your vehicle, the chimes may not work. Make sure that replacement or additional equipment is compatible with your vehicle before installing it.**

Setting the Time

Press and hold the HR (down) or MIN (up) arrow for two seconds. Then press HR until the correct hour appears on the display. Press and hold MIN until the correct minute appears on the display. The time can be set with the ignition on or off.

AM-FM Radio



Playing the Radio

PWR (Power): Press this knob to turn the system on and off.

VOL (Volume): Turn this knob to increase or to decrease the volume.

RCL (Recall): Press this knob to switch the display between the radio station frequency, band, and the time. When the ignition is off, press this knob to display the time.

Finding a Station

AM FM: Press this button to switch between FM1, FM2, or AM. The display will show the selection.

TUNE: Turn this knob to select radio stations.

◁ **SEEK** ▷ **:** Press the right or the left arrow to go to the next or to the previous station and stay there.

To scan stations, press and hold either SEEK arrow for two seconds until you hear a beep. The radio will go to a station, play for a few seconds, then go on to the next station. Press either SEEK arrow again to stop scanning.

To scan preset stations, press and hold either SEEK arrow for more than four seconds until you hear two beeps. The radio will go to the first preset station stored on the pushbuttons, play for a few seconds, then go on to the next preset station. Press either SEEK arrow again to stop scanning presets.

The radio will only seek and scan stations with a strong signal that are in the selected band.

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 AM FM to select FM1, FM2, or AM.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons until you hear a beep. Whenever that numbered pushbutton is pressed, the station that was set will return.
5. Repeat the steps for each pushbutton.

Setting the Tone (Bass/Treble)

AUDIO: To adjust bass or treble, press and release AUDIO until BAS or TRE appears on the display. Then press and hold the up or the down arrow to increase or to decrease. If a station is weak or noisy, decrease the treble.

To adjust bass or treble to the middle position, select BAS or TRE. Then press and hold AUDIO for more than two seconds until you hear a beep. B and a zero or T and a zero will appear on the display.

To adjust all tone and speaker controls to the middle position, first exit out of audio mode by pressing another button, causing the radio to perform that function or by waiting five seconds for the display to return to time of day. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Adjusting the Speakers (Balance/Fade)

AUDIO: To adjust the balance between the right and the left speakers, press and release AUDIO until BAL appears on the display. Then press and hold the up or the down arrow to move the sound toward the right or the left speakers.

To adjust the fade between the front and the rear speakers, press and release AUDIO until FAD appears on the display. Then press and hold the up or the down arrow to move the sound toward the front or the rear speakers.

To adjust balance or fade to the middle position, select BAL or FAD. Then press and hold AUDIO for more than two seconds until you hear a beep. L (balance) and a zero or F and a zero will appear on the display.

To adjust all tone and speaker controls to the middle position, first exit out of audio mode by pressing another button, causing the radio to perform that function or by waiting five seconds for the display to return to time of day. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Fade may not be available if the vehicle is a regular cab model.

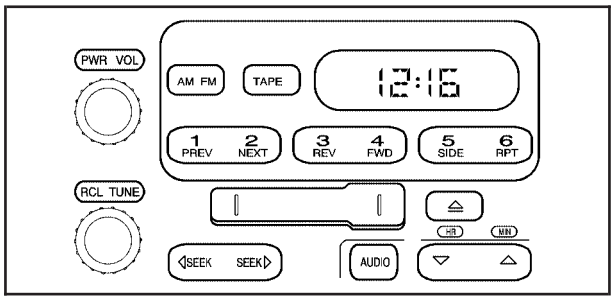
Radio Messages

CAL (Calibrated): The audio system has been calibrated for your vehicle from the factory. If CAL appears on the display it means that the radio has not been configured properly for your vehicle and must be returned to your GM dealer for service.

LOC (Locked): This message is displayed when the THEFTLOCK® system has locked up. Take the vehicle to your GM dealer for service.

If any error occurs repeatedly or if an error cannot be corrected, contact your GM dealer.

Radio with Cassette



Playing the Radio

PWR (Power): Press this knob to turn the system on and off.

VOL (Volume): Turn this knob to increase or to decrease the volume.

RCL (Recall): Press this knob to switch the display between the radio station frequency and the time. When the ignition is off, press this knob to display the time.

Finding a Station

AM FM: Press this button to switch between FM1, FM2, and AM. The display will show the selection.

TUNE: Turn this knob to select radio stations.

◁ **SEEK** ▷ **:** Press the right or the left arrow to go to the next or to the previous station and stay there.

To scan stations, press and hold one of the SEEK arrows for two seconds until you hear a beep. The radio will go to a station, play for a few seconds and flash the station frequency, then go on to the next station. Press one of the SEEK arrows again to stop scanning.

To scan preset stations, press and hold one of the SEEK arrows for more than four seconds until you hear two beeps. The radio will go to the first preset station stored on the pushbuttons, play for a few seconds and flash the station frequency, then go on to the next preset station. Press one of the SEEK arrows again to stop scanning presets.

The radio will only seek and scan stations with a strong signal that are in the selected band.

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 AM FM to select FM1, FM2, or AM.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons until you hear a beep. Whenever that numbered pushbutton is pressed, the station that was set will return.
5. Repeat the steps for each pushbutton.

Setting the Tone (Bass/Treble)

AUDIO: To adjust bass and treble, press and release AUDIO until BAS or TRE appears on the display. Then press and hold the up or the down arrow to increase or to decrease. If a station is weak or noisy, decrease the treble.

To adjust bass or treble to the middle position, select BAS or TRE. Then press and hold AUDIO for more than two seconds until you hear a beep. B and a zero or T and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio by waiting for the display to change to the clock display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Adjusting the Speakers (Balance/Fade)

AUDIO: To adjust the balance between the right and the left speakers, press and release AUDIO until BAL appears on the display. Then press and hold the up or the down arrow to move the sound toward the right or the left speakers.

To adjust the fade between the front and the rear speakers, press and release AUDIO until FAD appears on the display. Then press and hold the up or the down arrow to move the sound toward the front or the rear speakers.

To adjust balance or fade to the middle position, select BAL or FAD. Then press and hold AUDIO for more than two seconds until you hear a beep. L (balance) and a zero or F and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, end out of audio by waiting for the display to change to the time display. Then press and hold AUDIO for more than two seconds until you hear a beep. CEN will appear on the display.

Fade may not be available if the vehicle is a regular cab model.

Radio Messages

CAL (Calibration): The audio system has been calibrated for your vehicle from the factory. If CAL appears on the display it means that the radio has not been configured properly for your vehicle and must be returned to your GM dealer for service.

LOC (Locked): This message is displayed when the THEFTLOCK® system has locked up. Take the vehicle to your GM dealer for service.

If any error occurs repeatedly or if an error cannot be corrected, contact your GM dealer.

Playing a Cassette Tape

The tape player is built to work best with tapes that are up to 30 to 45 minutes long on each side. Tapes longer than that are so thin they may not work well in this player. The longer side with the tape visible should face to the right. If you hear nothing or hear a garbled sound, the tape may not be in squarely. Press the eject button to remove the tape and start over.

If the ignition and the radio are off, press the eject button or the RCL knob to insert and to begin play of a tape. If the ignition is on and the radio is off, the tape can be inserted and will begin playing. CAS will appear on the display when a tape is inserted.

While the tape is playing, use the VOL, AUDIO, and SEEK controls just as you do for the radio. The radio will display UP if the top side of the tape is playing. DN (Down) will appear if the bottom side is playing. The tape player will play the other side of the tape when it reaches the end.

Cassette tape adapter kits for portable CD players will work in the cassette tape player. See “CD Adapter Kits” later for more information.

The tape bias is set automatically when a metal or chrome tape is inserted.

If an error appears on the display, see “Cassette Tape Messages” later in this section.

1 PREV (Previous): The tape must have at least three seconds of silence between each selection for previous to work. Press this pushbutton to go to the previous selection on the tape if the current selection has been playing for less than three seconds. If pressed when the current selection has been playing from three to 13 seconds, it will go to the beginning of the previous selection or the beginning of the current selection, depending on the position on the tape. If pressed when the current selection has been playing for more than 13 seconds, it will go to the beginning of the current selection. Pressing this pushbutton multiple times will increase the number of selections to be searched back, up to –9. Pressing the NEXT pushbutton will cancel the selections.

2 NEXT: The tape must have at least three seconds of silence between each selection for next to work. Press this pushbutton to go to the next selection on the tape. Pressing this pushbutton multiple times in the next mode will increase the number of selections to be searched forward. Pressing the PREV pushbutton will cancel the selections.

3 REV (Reverse): Press this pushbutton to quickly reverse the tape. FR will appear on the display. The radio will play while the tape reverses. Press it again to return to playing speed. Select stations during reverse operation by using the TUNE or SEEK controls or by using the scan or preset scan features.

4 FWD (Forward): Press this pushbutton to quickly advance the tape. FF will appear on the display. The radio will play while the tape advances. Press this pushbutton again to return to playing speed. Select stations during forward operation by using the TUNE or SEEK controls or by using the scan or preset scan features.

5 SIDE: Press this pushbutton to play the other side of the tape.

6 RPT (Repeat): The tape must have at least three seconds of silence between each selection for repeat to work. Press and release this pushbutton to hear a selection over again. RPT will appear on the display. Press this pushbutton again to turn off repeated play. OFF will appear on the display.

◁ **SEEK** ▷ **:** The tape must have at least three seconds of silence between each selection for seek to work. The left arrow is the same as the PREV pushbutton and the right arrow is the same as the NEXT pushbutton. If either arrow is held or pressed more than once, the player will continue moving backward or forward through the tape.

AM FM: Press this button to listen to the radio when a tape is playing. The inactive tape will remain safely inside the radio for future listening.

TAPE: Press this button to play a cassette tape when listening to the radio. CAS will appear on the display when a tape is loaded.

⏏ **(Eject):** Press this button to eject a tape. Eject may be activated with the radio off. Cassette tapes can be loaded with the ignition and radio off if this button is pressed first.

Cassette Tape Messages

ERR (Error): If the player detects a tight or broken tape, this message will appear on the display and the player will eject the tape. The radio will go back to playing the last station selected.

CLN (Clean): If this message appears on the display, the cassette tape player needs to be cleaned. It will still play tapes, but it should be cleaned as soon as possible to prevent damage to the tapes and player. See *Care of the Cassette Tape Player on page 3-60*.

If the cassette is not playing correctly, for any other reason, try a known good cassette.

If any error occurs repeatedly or if an error cannot be corrected, contact your GM dealer. If the radio displays an error message, write it down and provide it to your GM dealer when reporting the problem.

CD Adapter Kits

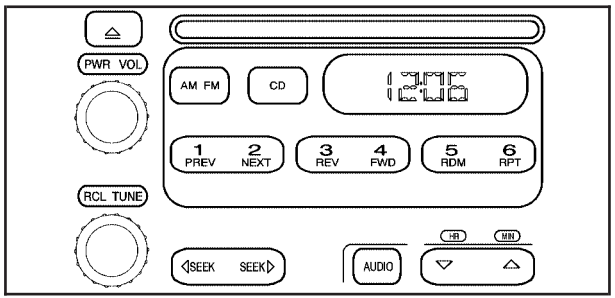
It is possible to use a portable CD player adapter kit with the cassette tape player after deactivating the tight/loose tape sensor feature on the tape player.

To deactivate this feature, use the following steps:

1. Turn the ignition on.
2. Turn the radio off.
3. Press and hold the TAPE button for two seconds until one beep is produced. CAS will flash, indicating that the TIGHT/LOOSE TAPE sensor feature is no longer active.
4. Insert the adapter into the cassette slot.

The override feature will remain active until the eject button is pressed.

Radio with CD



Playing the Radio

PWR (Power): Press this knob to turn the system on and off.

VOL (Volume): Turn this knob to increase or to decrease the volume.

RCL (Recall): Press this knob to switch the display between the radio station frequency and the time. When the ignition is off, press this knob to display the time.

Finding a Station

AM FM: Press this button to switch between FM1, FM2, and AM. The display will show the selection.

TUNE: Turn this knob to select radio stations.

◁ **SEEK** ▷ **:** Press the right or the left arrow to go to the next or to the previous station and stay there.

To scan stations, press and hold either SEEK arrow for two seconds until you hear a beep. The radio will go to a station, play for a few seconds, then go on to the next station. Press either SEEK arrow again to stop scanning.

To scan preset stations, press and hold either SEEK arrow for more than four seconds until you hear two beeps. The radio will go to the first preset station stored on the pushbuttons, play for a few seconds, then go on to the next preset station. Press either SEEK arrow again to stop scanning presets.

The radio will only seek and scan stations, with a strong signal, that are in the selected band.

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 AM FM to select FM1, FM2, or AM.
3. Tune in the desired station.
4. Press and hold one of the six numbered pushbuttons until you hear a beep. Whenever that numbered pushbutton is pressed, the station that was set will return.
5. Repeat the steps for each pushbutton.

Setting the Tone (Bass/Treble)

AUDIO: To adjust the bass or the treble, press and release the AUDIO button until BAS or TRE appears on the display. Then press and hold the up or the down arrow to increase or to decrease. If a station is weak or noisy, decrease the treble.

To adjust bass or treble to the middle position, select BAS or TRE. Then press and hold the AUDIO button for more than two seconds until you hear a beep. B and a zero or T and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, first end out of audio mode by pressing another button, causing the radio to perform that function, or by waiting five seconds for the display to return to the time of day. Then press and hold the AUDIO button for more than two seconds until you hear a beep. CEN will appear on the display.

Adjusting the Speakers (Balance/Fade)

AUDIO: To adjust the balance between the right and the left speakers, press and release the AUDIO button until BAL appears on the display. Then press and hold the up or the down arrow to move the sound toward the right or the left speakers.

To adjust the fade between the front and the rear speakers, press and release the AUDIO button until FAD appears on the display. Then press and hold the up or the down arrow to move the sound toward the front or the rear speakers.

To adjust balance or fade to the middle position, select BAL or FAD. Then press and hold AUDIO for more than two seconds until you hear a beep. L (balance) and a zero or F and a zero will appear on the display.

To adjust both tone controls and both speaker controls to the middle position, first end out of audio mode by pressing another button, causing the radio to perform that function, or by waiting five seconds for the display to return to the time of day. Then press and hold the AUDIO button for more than two seconds until you hear a beep. CEN will appear on the display.

Fade may not be available if the vehicle is a regular cab model.

Radio Messages

CAL (Calibration): The audio system has been calibrated for your vehicle from the factory. If CAL appears on the display it means that the radio has not been configured properly for your vehicle and must be returned to your GM dealer for service.

LOC (Locked): This message is displayed when the THEFTLOCK® system has locked up. Take the vehicle to your GM dealer for service.

If any error occurs repeatedly or cannot be corrected, contact your GM dealer.

Playing a CD

Insert a CD partway into the slot, label side up. The player will pull it in and the CD should begin playing. CD will appear on the display. If you want to insert a CD with the ignition off, first press the eject button or the RCL knob.

If you insert a CD with the radio off and the ignition on, it will start to play.

If the ignition or radio is turned off, with a CD in the player, it will stay in the player. When the ignition or radio is turned on, the CD will start playing where it stopped, if it was the last selected audio source.

As each new track starts to play, the track number will appear on the display.

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 may 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 may 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 on page 3-61* 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 instead.

Notice: **If you add any label to a CD, insert more than one CD into the slot at a time, or attempt to play scratched or damaged CDs, you could damage the CD player. When 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 appears on the display, see “CD Messages” later in this section.

1 PREV (Previous): Press this pushbutton to go to the beginning of the current track if more than eight seconds have played. The track number will appear on the display. If this pushbutton is held or pressed more than once, the player will continue moving backward through the CD.

2 NEXT: Press this pushbutton to go to the next track. The track number will appear on the display. If this pushbutton is held or pressed more than once, the player will continue moving forward through the CD.

3 REV (Reverse): Press and hold this pushbutton to reverse quickly within a track. Release this pushbutton to play the passage. The elapsed time of the track will appear on the display.

4 FWD (Forward): Press and hold this pushbutton to advance quickly within a track. Release this pushbutton to play the passage. The elapsed time of the track will appear on the display.

5 RDM (Random): Press this pushbutton to hear the tracks in random, rather than sequential, order. RND will appear on the display. Press RDM again to turn off random play. OFF will appear on the display.

6 RPT (Repeat): Press this pushbutton once to hear a track over again. RPT will appear on the display. The current track will continue to repeat. Press RPT again to turn off repeat play. OFF will appear on the display.

◁ **SEEK** ▷ **:** Press the right or the left arrow to go to the next or to the previous track. The track number will appear on the display. If either arrow is held or pressed more than once, the player will continue moving backward or forward through the CD.

RCL (Recall): Press this knob to see the current track number or how long the current track has been playing.

AM FM: Press this button to listen to the radio when a CD is playing. The inactive CD will remain safely inside the radio for future listening.

CD: Press this button to play a CD when listening to the radio. CD will appear on the display if a CD is loaded.

⏏ **(Eject):** Press this button to eject a CD. Eject may be activated with either the ignition or radio off. CDs may be loaded with the ignition and radio off if this button is pressed first.

CD Messages

If 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 may have been a problem while burning the CD.
- The label may 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 GM dealer. If the radio displays an error message, write it down and provide it to your GM dealer when reporting the problem.

Theft-Deterrent Feature (Non-RDS Radios)

THEFTLOCK® is designed to discourage theft of your vehicle's radio. The feature works automatically by learning a portion of the Vehicle Identification Number (VIN). If the radio is moved to a different vehicle, it will not operate and LOC will appear on the display.

With THEFTLOCK® activated, the radio will not operate if stolen.

Radio Reception

You may experience frequency interference and static during normal radio reception 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 will 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 will give 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.

Care of the Cassette Tape Player

A tape player that is not cleaned regularly can cause reduced sound quality, ruined cassettes or a damaged mechanism. Cassette tapes should be stored in their cases away from contaminants, direct sunlight and extreme heat. If they aren't, they may not operate properly or may cause failure of the tape player.

The tape player should be cleaned regularly after every 50 hours of use. The radio may display CLN to indicate that the tape player has been used for 50 hours without resetting the tape clean timer. If this message appears on the display, the cassette tape player needs to be cleaned. It will still play tapes, but it should be cleaned as soon as possible to prevent damage to the tapes and player. If there is a reduction in sound quality, try a known good cassette to see if the tape or the tape player is at fault. If this other cassette has no improvement in sound quality, clean the tape player.

For best results, use a scrubbing action, non-abrasive cleaning cassette with pads which scrub the tape head as the hubs of the cleaner cassette turn. The recommended cleaning cassette is available through your dealer.

The cut tape detection feature of the cassette tape player may identify the cleaning cassette as a damaged tape. To prevent the cleaning cassette from being ejected, use the following steps:

1. Turn the ignition on.
2. Turn the radio off.
3. Press and hold the TAPE button for two seconds until the radio produces one beep. CAS will flash on the display for five seconds.
4. Insert the scrubbing action cleaning cassette.
5. Eject the cleaning cassette after the manufacturer's recommended cleaning time.

   After the cleaning cassette is ejected, the cut tape detection feature will be active again.

A non-scrubbing action, wet-type cleaner which uses a cassette with a fabric belt to clean the tape head can be used. This type of cleaning cassette will not eject on its own. A non-scrubbing action cleaner may not clean as thoroughly as the scrubbing type cleaner. The use of a non-scrubbing action, dry-type cleaning cassette is not recommended.

After the player is cleaned, press and hold the eject button for three seconds to reset the CLN indicator. The radio will display --- to show the indicator was reset.

Cassettes are subject to wear and the sound quality may degrade over time. Always make sure the cassette tape is in good condition before the tape player is serviced.

Care of Your CDs

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 will 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 Player

The use of CD lens cleaners for CD players is not advised, due to the risk of contaminating the internal lens of the CD optics with lubricants.

Fixed Mast Antenna

The fixed mast antenna can withstand most vehicle 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 fender. If tightening is required, tighten by hand, then with a wrench one quarter turn.

Chime Level Adjustment

The radio is used to adjust the vehicle's chime level. To change the volume level of the chime, press and hold pushbutton 6 with the ignition on and the radio power off. The volume level will change from the normal level to loud, and HI will appear on the radio display. To change back to the default or normal setting, press and hold pushbutton 6 again. The volume level will change from the loud level to normal, and LO will appear on the radio display. Each time the chime volume is changed, three chimes will sound as an example of the new volume selected. Removing the radio and not replacing it with a factory radio or chime module will disable vehicle chimes.

NOTES

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Your Driving, the Road, and Your Vehicle

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 1-8*.

⚠ 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.

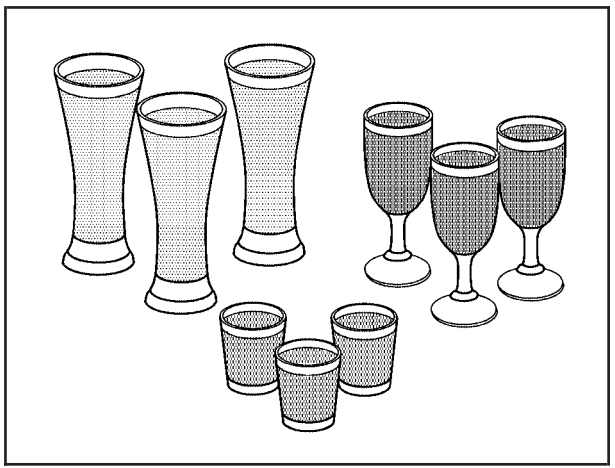
Many adults — by some estimates, nearly half the adult population — choose never to drink alcohol, so they never drive after drinking. For persons under 21, it is against the law in every U.S. state to drink alcohol. There are good medical, psychological, and developmental reasons for these laws.

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.

Braking

See *Brake System Warning Light on page 3-31*.

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 (wet, dry, icy); tire tread; the condition of your brakes; the weight of the vehicle; the weight of the load 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. Your brakes may not have time to cool between hard stops. Your 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 engine ever stops while you are driving, brake normally but do not pump your brakes. If you do, the pedal may get harder to push down. If your 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.

Hydraulic Brake Systems

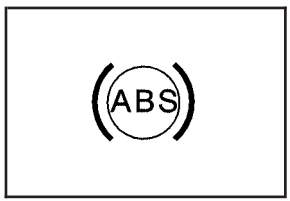
If your engine stops running, or if your primary brake system stops working, your vehicle has a reserve power assist system to help you slow down. Just slowly and steadily apply the brake pedal until you can safely get off the road. The pedal will seem harder to push down. Do not pump the pedal; the system will not work well or at all that way.

You may find that the steering wheel seems hard to turn when you are turning and braking at the same time. Also, the primary brake warning light may come on and the warning tone may sound. This is normal because the main hydraulic brake system and power steering both use the power steering pump. If this ever happens, let up on the brake pedal a little. When you let up on the brake pedal in that situation, it lets the steering get a little more help from the pump.

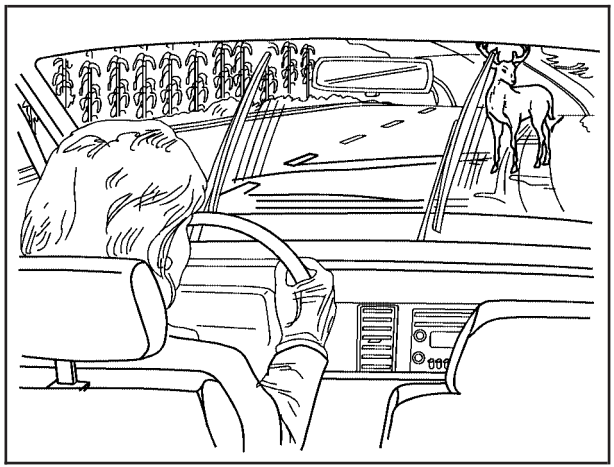
Anti-Lock Brake System (ABS)

Your vehicle has anti-lock brakes. ABS is an advanced electronic braking system that will help prevent a braking skid.

When you start your engine and begin to drive away, your anti-lock brake system will check itself. You may hear a momentary motor or clicking noise while this test is going on. This is normal.



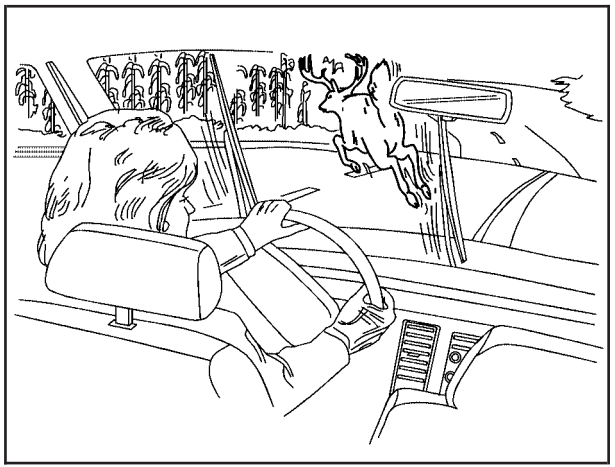
If there is a problem with the anti-lock brake system, this warning light will stay on. See *Anti-Lock Brake System Warning Light on page 3-33*.



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.

The anti-lock system 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, your computer keeps receiving updates on wheel speed and controls braking pressure accordingly.

Remember: Anti-lock 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 your brakes if that vehicle suddenly slows or stops. Always leave enough room up ahead to stop, even though you have anti-lock brakes.

Using Anti-Lock

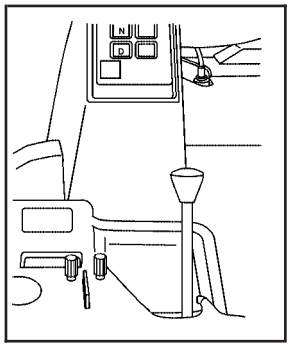
Do not pump the brakes. Just hold the brake pedal down firmly and let anti-lock work for you. You may feel the brakes pulsate, or you may hear air exhausting if you have air brakes, but this is normal.

Braking in Emergencies

With anti-lock brakes, you can steer and brake at the same time. In many emergencies, steering can help you more than even the very best braking.

Trailer Brake Hand Control Valve

If your vehicle has this feature, the control is mounted on the floor console.



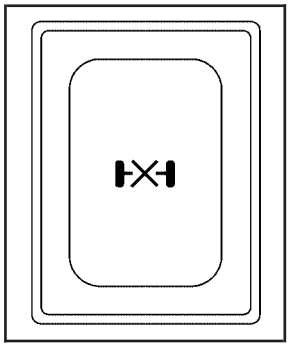
This feature lets you apply the trailer brakes without applying the tractor brakes.

You can apply the trailer brakes a little or apply them all the way if you have to. Use this control only when you are driving. Do not use it for parking or to hold the rig on a hill.

⚠ CAUTION:

Using the trailer brake hand control for parking or for holding the vehicle on a hill may not keep the vehicle from rolling. This can happen if someone hits the valve by accident, or if air pressure bleeds from the system. If the vehicle rolls, you or others could be injured. To park the vehicle or hold it on a hill, use the parking brake properly.

Rear Axle Differential Lock Control



If your vehicle has a controlled traction or locking differential axle, the switch is located in the center of the instrument panel. You'll see this control on single rear axle vehicles.

If you're approaching a slippery surface where it looks like one or even both wheels may start to slip, you can press the bottom of this switch. It locks your rear differential so that power is transmitted equally to both rear wheels.

Let up on the accelerator before you turn on your rear axle differential lock.

Notice: **Turning on the inter-axle differential lock while the rear wheels are spinning freely, as they might on snow or ice, can damage the axle(s). Turn on this control only while the wheels are not spinning freely.**

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 rear wheels are spinning or beginning to lose traction. When this happens, the system applies the brake(s) at the affected wheel(s).

The bottom light on the TCS on/off button will come on when the TCS is limiting wheel spin. You may feel or hear the system working, but this is normal. The TCS will function at speeds up to about 25 mph (42 km/h).

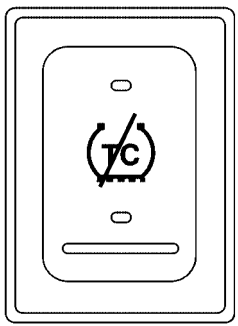
The TCS may operate on dry roads under some conditions. When this happens, you may notice a reduction in acceleration. This is normal and doesn't mean there's a problem with your vehicle. Examples of these conditions include a hard acceleration in a turn, an abrupt upshift or downshift of the transmission or driving on rough roads.

When the light in the top of the TCS button is on, the TCS is off and will not limit wheel spin. Adjust your driving accordingly.

The light in the top of the TCS button will come on if the TCS is turned off by pressing the TCS on/off button.

The light may also come on if a problem has been detected in either the traction control system or the anti-lock brake system.

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 or snow and rocking the vehicle is required. See *Rocking Your Vehicle to Get It Out on page 4-30* for more information.



To turn the system on or off, press the traction control button located on the instrument panel.

If you used the TCS button to turn the system off, the light in the top of the button will come on and stay on. You can turn the TCS back on at any time by pressing the button again; the light should go off.

Steering

Power Steering

If you lose power steering assist because the engine stops or the system is not functioning, you can steer but it will take much more effort.

On vehicles with hydraulic brakes, the power steering and main hydraulic brake system both use the power steering pump. See *Braking on page 4-6*.

Steering Tips

Driving on Curves

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 your 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 accelerate. Both control systems — steering and acceleration — have to do their work where the tires meet the road. Adding the sudden acceleration can demand too much of those places. You can lose control. See *Traction Control System (TCS) on page 4-10*.

What should you do if this ever happens? Ease up on the 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 your front wheels are straight ahead.

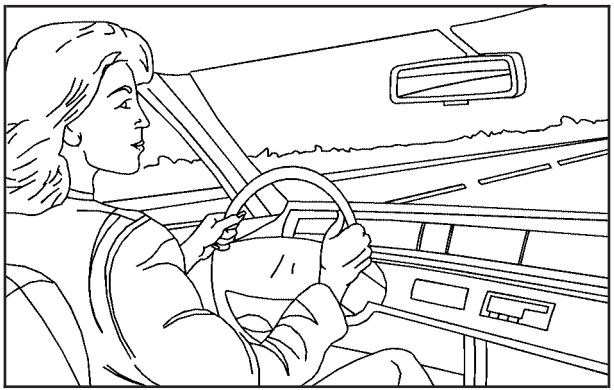
Try to adjust your speed so you can “drive” through the curve. Maintain a reasonable, steady speed. Wait to accelerate until you are out of the curve, and then accelerate gently into the straightaway.

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 your brakes.

See *Braking on page 4-6*. 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.

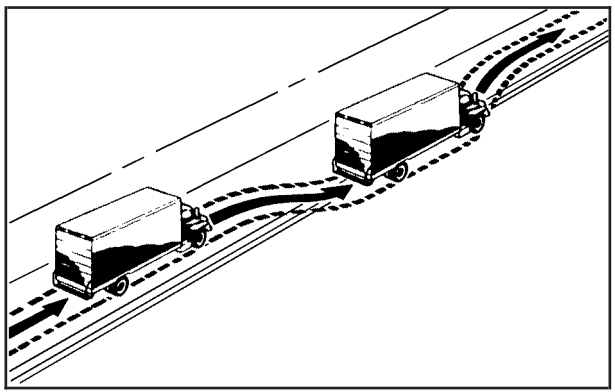


An emergency like this requires close attention and a quick decision. If you are holding the steering wheel at the recommended 9 and 3 o'clock positions, you can turn it a full 180 degrees very quickly without removing either hand. But you have to act fast, steer quickly, and just as quickly straighten 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 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 your 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:

- A vehicle like yours takes a longer time to reach passing speed, so you will need a longer stretch of clear road ahead than you would with a passenger car.
- 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 cars 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.
- Check your mirrors 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 passenger side outside mirror, activate your right lane change and move back into the right lane. Remember that if your right outside mirror is convex, the vehicle you just passed may seem to be further 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 may 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, your 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 4-10*. 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.

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 engine braking 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.

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, you may need to 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 may require at least twice as much light to see the same thing at night as a 20-year-old.

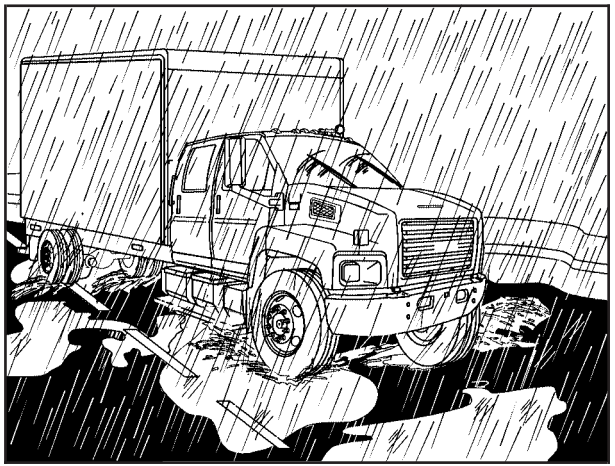
What you do in the daytime can also affect your night vision. For example, if you spend the day in bright sunshine you are wise to wear sunglasses. Your eyes will have less trouble adjusting to night. But if you are driving, do not wear sunglasses at night. They may cut down on glare from headlamps, 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 will 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 vehicle wash, apply your brake pedal lightly until your brakes work normally.

Driving too fast through large water puddles or even going through some vehicle 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 your engine's air intake and badly damage your 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. 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

- Turn on your low-beam headlamps and your marker and clearance lamps, if your vehicle has them — not just your parking lamps — to help make you more visible to others.
- 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 5-73*.

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.
- Larger vehicles cannot be driven everywhere smaller ones can. There are low underpasses, truck routes and other special situations. Usually these are well marked, so be sure to watch for the signs.
- Try to use the freeways that rim and crisscross most large cities. You will save time and energy. See *Freeway Driving on page 4-21*.
- 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 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. On some freeways, larger vehicles are not allowed to use some lanes. These places usually are well-marked.

Before changing lanes, check your mirrors. Then use your turn signal.

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 for cars — but not larger vehicles — is usually posted. You should go more slowly.

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.

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.

When you drive the vehicle for a long distance, 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 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.

Here are some tips that can make your drive through steep country safer:

- Keep the vehicle in good shape. Check all fluid levels and also the brakes, tires, cooling system, and transmission. These parts can work hard on mountain roads.

⚠ CAUTION:

If you do not shift down, your 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 your engine assist your brakes on a steep downhill slope.

⚠ CAUTION:

Coasting downhill in NEUTRAL (N) or with the ignition off is dangerous. Your 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 your 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. Use lower gears. They help cool your engine and transmission, 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, winding roads, and special truck lanes. Be alert to these and take appropriate action.

Winter Driving



Here are some tips for winter driving:

- Be sure the vehicle is in good shape for winter.
- You may want to put winter emergency supplies in your vehicle.

Also see *Tires on page 5-73*.

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.

If you have a four-wheel-drive vehicle, shift into 4HI. See *Four-Wheel Drive on page 2-34*.

If you have the Traction Control System (TCS), it will improve your ability to accelerate when driving on a slippery road. But you can turn the TCS off if you ever need to. You should turn the system off if your vehicle ever gets stuck in sand, mud, ice, or snow. See *If Your Vehicle is Stuck in Sand, Mud, Ice or Snow on page 4-30*. Even though your vehicle has TCS, you will want to slow down and adjust your driving to the road conditions. Under certain conditions, you may want to turn the TCS off, such as when driving through deep snow and loose gravel, to help maintain vehicle motion at lower speeds. See *Traction Control System (TCS) on page 4-10*.

If you do not have TCS, 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.

Unless you have the Anti-Lock Brake System (ABS), you will want to brake very gently, too. If you do have ABS, see *Anti-Lock Brake System (ABS) on page 4-7*. ABS improves your vehicle's stability when you make a hard stop on a slippery road. Whether you have ABS or not, you will want to begin stopping sooner than you would on dry pavement. Without ABS, if you feel your vehicle begin to slide, let up on the brakes a little. Push the brake pedal down steadily to get the most traction you can.

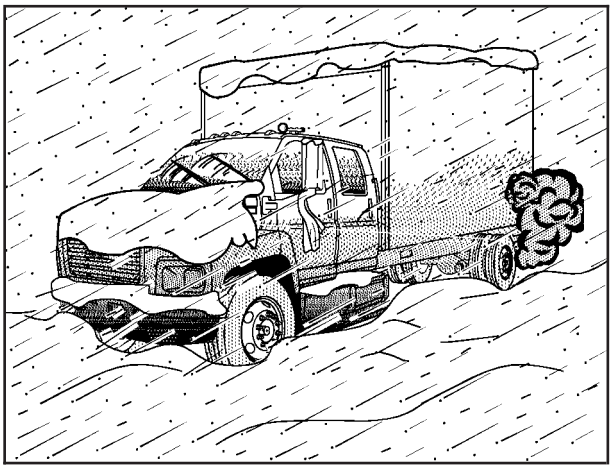
Remember, unless you have ABS, if you brake so hard that your wheels stop rolling, you will just slide. Brake so your wheels always keep rolling and you can still steer.

- Whatever your braking system, 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 mirror arm 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 if any is blocking your 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 (or batteries) charged. You will need a well-charged battery (or batteries) to restart the vehicle, and possibly for signaling later on with your headlamps. Let the heater run for a while.

If you have a diesel engine, you may have to run it at a higher speed to get enough heat.

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 tires spin at high speed, they can explode, and you or others could be injured. And, the transmission 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 your wheels can destroy parts of your vehicle as well as the tires. If you spin the wheels too fast while shifting your transmission back and forth, you can destroy your transmission.**

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 you have a four-wheel-drive vehicle, shift into 4HI. See *Four-Wheel Drive on page 2-34*. If your vehicle has traction control, you should turn the traction control system off. See *Traction Control System (TCS) on page 4-10*. Then shift back and forth between REVERSE (R) and a forward gear, or with a manual transmission, 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 transmission is in gear. By slowly spinning your wheels in the forward and reverse directions, you will cause a rocking motion that may free your vehicle. If that does not get you out after a few tries, you may need to be towed out. If you do need to be towed out, see *Towing Your Vehicle on page 4-35*.

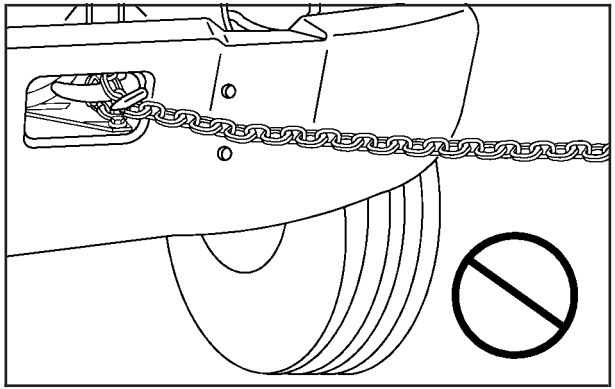
Tow Hooks

⚠ CAUTION:

These hooks, when used, are under a lot of force. Always pull the vehicle straight out. Never pull on the hooks at a sideways angle. The hooks could break off and you or others could be injured from the chain or cable snapping back.

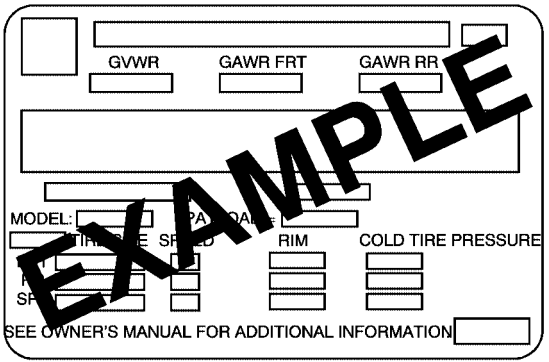
Notice: **Never use tow hooks to tow the vehicle. Your vehicle could be damaged and it would not be covered by warranty.**

If your vehicle has tow hooks, the hooks are at the front and, on some models, the rear of the vehicle. You may need to use them if you are stuck off-road and need to be pulled to some place where you can continue driving.



Loading Your Vehicle

There is a vehicle specific GVW Rating label on your vehicle that shows how much weight it may properly carry. It also shows the size of your original tires and the inflation pressures needed to obtain 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, and cargo.

The GVW Rating label is provided by the final manufacturer and should be on the door or door jamb. It 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 dealer can help you with this. Be sure to spread out your load equally on both sides of the center line.

Never exceed the GVWR for your vehicle, or the GAWR for either the front or rear axle.

And, if you do have a heavy load, you should spread it out.

⚠ 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 weight ratings. Ask your dealer to help you load your vehicle the right way.

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.**

Adding a Snow Plow or Similar Equipment

If you will be installing a snow plow on your vehicle, we recommend that the vehicle be equipped with the snow plow prep package (RPO ANQ). Before installing a snow plow, see your dealer for information on other recommended optional equipment and vehicle weight restrictions.

Notice: **The payload your vehicle can carry will be reduced when a snow plow is installed. Your vehicle can be damaged if either the front or rear axle ratings, or the GVW, are exceeded. See your dealer for more information.**

⚠ CAUTION:

On some vehicles equipped with certain front mounted equipment, such as a snow plow, it may be possible to load the front axle to the front GAWR but not have enough weight on the rear axle to have proper braking performance. If your brakes can not work properly, you could have a crash. To help your brakes work properly when a snow plow is installed, always follow the snow plow manufacturer or installer's recommendation for rear ballast to ensure a proper front and rear weight distribution ratio, even though the actual front weight may be less than the front GAWR, and the total vehicle weight is less than the GVWR. Maintaining a proper front and rear weight distribution ratio is necessary to provide proper braking performance.

Towing

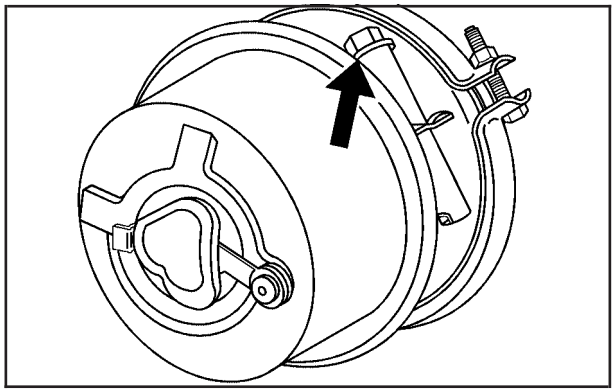
Towing Your Vehicle

Consult your dealer or a professional towing service if you need to have your disabled vehicle towed. See *Roadside Assistance Program on page 7-5*.

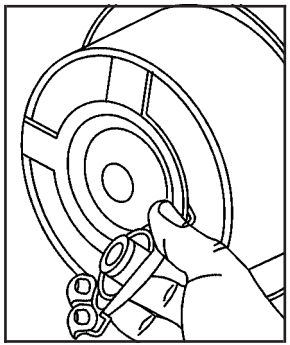
Releasing Air-Operated Parking Brakes

If your vehicle has air brakes, you could have a special towing problem. If your vehicle has to be towed because of a complete loss of air pressure from both systems, the parking brakes will have automatically engaged. The tow operator can release the brakes manually by using the following steps. Then your vehicle can be towed with all wheels or only the rear wheels on the ground.

1. Block the wheels of the vehicle.

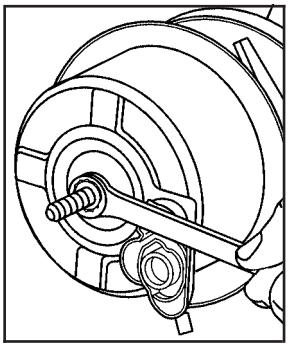


2. Remove the release stud and nut from the side of the brake chamber. Some chambers have studs which are visible at all times.



3. Remove the rubber cap from the rear of the chamber.

4. Put the release stud, nut and flat washer into the chamber.
5. Turn the stud clockwise a quarter of a turn.



6. Turn the stud nut clockwise several turns to release the brakes. Follow the same procedure to release the other brake or brakes.

7. At the repair facility, apply air pressure of at least 70 psi (480 kPa) to the brake chambers, either from an external air supply or the vehicle's air system.
8. Turn the stud nut counterclockwise several turns. Remove the stud from the chamber.
9. Replace the stud and washer and tighten the nut into the side of the chamber.
10. Replace the rubber cap.

Trailer Connections

Heavy-Duty Trailer Wiring Package

Your vehicle may be equipped with an eight-wire trailer towing harness. This harness, with a seven-pin universal heavy-duty trailer connector, is attached to a bracket on the platform hitch.

The Center High-Mounted Stoplamp (CHMSL) wire is tied next to the trailer wiring harness for use with a trailer.

The eight-wire harness contains the following trailer circuits:

- Yellow: Left Stop/Turn Signal
- Dark Green: Right Stop/Turn Signal
- Brown: Taillamps
- White: Ground
- Light Green: Back-up Lamps
- Light Blue: CHMSL
- Red: Battery Feed
- Dark Blue: Trailer Brake

Trailer Connections (C7/C8 Models Only)

If your vehicle has these trailer connections, they are located at the rear of the cab for a tractor and at the rear of the chassis when towing a trailer. There will be an air connection and an electrical connection.

Be sure that the couplings to the trailer are made correctly.

Air Connections

If you are not connecting the trailer air line connections to another piece of equipment, be sure to replace their protective caps.

Electrical Connections

This system is a seven-wire cable that will connect to the trailer, supplying power to the trailer's lighting system. When not in use, it is stored in the trailer air-hose storage bracket.

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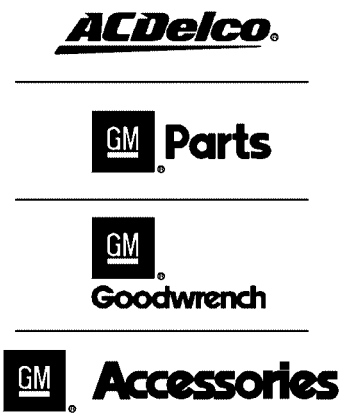
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Service

Your dealer knows your vehicle best and wants you to be happy with it. We hope you will go to your dealer for all your service needs. You will get genuine GM parts and GM-trained and supported service people.

We hope you will want to keep your GM vehicle all GM. Genuine GM parts have one of these marks:



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 will want to 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 7-11*.

Your vehicle has an airbag system. Before attempting to do your own service work, see *Servicing Your Airbag-Equipped Vehicle on page 1-59*.

You should keep a record with all parts receipts and list the mileage and the date of any service work you perform. See *Part D: Maintenance Record on page 6-34*.

Two Safety Cautions about Engine Fan Breakage

⚠ CAUTION:

Changing the Fan Drive Ratio or Engine Governed Speed:

If you change the fan drive ratio or increase the governed speed of the engine, you may increase stress and the fan could eventually fail. If the fan breaks apart while it is rotating, pieces can cause severe injury to anyone — such as a service technician — who is nearby. And, of course, the pieces can severely damage the vehicle. Do not change the fan drive ratio or increase the governed speed of the vehicle without getting the necessary information from your dealer.

Winter Fronts, Grille Covers or Obstructions:

Winter Fronts, grille covers or other add-on equipment causing obstructions in front or behind the fan should not be used on this

CAUTION: (Continued)

CAUTION: (Continued)

vehicle. If this causes the fan to eventually break apart while it is rotating, the pieces can cause severe injury to anyone nearby, such as a service technician working on the engine, and of course the pieces can severely damage the vehicle.

Fuel

If your vehicle has a diesel engine, see *Diesel Engine Fuel on page 5-7*.

For vehicles with gasoline engines, please read this.

Gasoline Octane

Use regular unleaded gasoline with a posted octane rating of 87 or higher. If the octane rating is less than 87, you may 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, your 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). General Motors recommends against the use of gasolines containing MMT. See *Additives on page 5-6* for additional information.

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 GM dealer 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. General Motors recommends 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 your fuel system and also damage the 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. General Motors recommends 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 authorized GM dealer for service.

Diesel Engine Fuel

For the Caterpillar® diesel, see the Caterpillar® Operation & Maintenance Manual for information concerning fuel usage.

Notice: **Diesel fuel or fuel additives not recommended in this manual could damage your fuel system and engine. Your warranty would not cover this damage. And:**

- **Diesel fuel that has been mixed with engine oil or automatic transmission fluid could damage your engine and emission controls.**
- **Aftermarket diesel fuel additives are not tested by General Motors. Some additives, particularly those which contain alcohol or water emulsifiers, may damage your fuel system. If you believe that unique circumstances call for a fuel additive to be used, consult your dealer for advice.**
- **If you ever run out of diesel fuel, it can be difficult to restart your engine. To avoid all this, never let your tank get empty.**

If gasoline is ever accidentally added to the fuel tank, to avoid severe engine damage, do not run the engine until the fuel tank can be drained.

If you run out of fuel, *Running Out of Fuel on page 5-16* tells you how to restart your engine.

What Fuel to Use

In the United States, for best results use No. 2-D diesel fuel year-round (above and below freezing conditions) as oil companies blend No. 2-D fuel to address climate differences. No. 1-D diesel fuel may be used in very cold temperatures (when it stays below 0°F or –18°C); however, it will produce a power and fuel economy loss. Avoid the use of No. 1-D diesel fuel in warm or hot climates. It may result in stalling, poor starting when the engine is hot, and may damage the fuel injection system.

At a minimum, the diesel fuel you use should meet the latest version of ASTM specification D 975 (Grade Low Sulfur) in the United States. In addition, the Engine Manufacturers Association (EMA) has identified properties of an improved diesel fuel for better engine performance and durability. Diesel fuels corresponding to the EMA Recommended Guideline on Premium Diesel Fuel (FQP-1A) could provide better starting, less noise, and better vehicle performance. If there are questions about the fuel you are using, contact your fuel supplier.

If your vehicle has the 6.6L engine, it is acceptable to use diesel fuel containing up to 5% biodiesel (B5), but the final blended fuel must meet the same specification, ASTM D 975 (Grade Low Sulfur), as other fuels used in your vehicle, and the biodiesel used for making this fuel must meet the latest version of ASTM specification D 6751. Biodiesel is produced from vegetable oils or animal fat that have been chemically modified to reduce the possibility of damage to your fuel system and engine. Higher concentration (i.e., greater than B5) biodiesel-containing fuels or the use of unmodified bio-oils blended into diesel fuel at any concentration is not recommended and could damage your fuel system and engine. Such damage would not be covered by your warranty. If there are questions about the biodiesel-containing fuels you are using, contact your fuel supplier.

Diesel fuel may foam when you fill your tank. This can cause the automatic pump nozzle to shut off, even though your tank is not full. If this happens, just wait for the foaming to stop and then continue to fill your tank.

⚠ CAUTION:

Heat coming from the engine may cause the fuel to expand and force the fuel out of your tank. If something ignites the fuel, a fire could start and people could be burned. To help avoid this, fill your fuel tank only until the automatic nozzle shuts off. Do not try to top it off.

What Fuel to Use in Canada

Canadian fuels are blended for seasonal changes. Diesel Type “A” fuel is blended for better cold weather starting (below 0°F or –18°C); however, you may notice some power and fuel economy loss. If Type “A” fuel is used in warmer temperatures, stalling and hard starting may occur. Diesel Type “B” fuel is blended for temperatures above 0°F (–18°C). The emission control system requires the use of diesel fuel with low-sulfur (.05% by weight) content. Both low- and higher-sulfur fuels will be available in Canada. Only low-sulfur diesel fuels are available in the United States. It is important that diesel-powered trucks are refueled only with low-sulfur fuel. Use of fuels with higher-sulfur content will affect the function of the emission components and may cause reduced performance, excessive smoke, and unpleasant odor.

At a minimum, the diesel fuel you use should meet the latest version of specification CAN/CGSB-3.517 (Low Sulfur Diesel) in Canada. In addition, the Engine Manufacturers Association (EMA) has identified properties of an improved diesel fuel for better engine performance and durability (FQP-1A). Diesel fuels corresponding to the EMA description could provide better starting, less noise, and better vehicle performance. If there are questions about the fuel you are using, contact your fuel supplier.

If your vehicle has the 6.6L engine, it is acceptable to use diesel fuel containing up to 5% biodiesel (B5), but the final blended fuel must meet the same specification, CAN/CGSB-3.517 (Low Sulfur Diesel) in Canada, as other fuels used in your vehicle, and the biodiesel used for making this fuel must meet the latest version of ASTM specification D 6751. Biodiesel is produced from vegetable oils or animal fat that have been chemically modified to reduce the possibility of damage to your fuel system and engine. Higher concentration (i.e., greater than B5) biodiesel-containing fuels or the use of unmodified bio-oils blended into diesel fuel at any concentration is not recommended and could damage your fuel system and engine. Such damage would not be covered by your warranty. If there are questions about the biodiesel-containing fuels you are using, contact your fuel supplier.

Very Cold Weather Operation

Follow the instructions listed previously under the heading “What Fuel to Use.”

Notice: **Never use home heating oil or gasoline in your diesel engine. They can cause engine damage.**

In cold weather, your fuel filter may become clogged (waxed). To unclog it, move the vehicle to a warm garage area and warm the filter to between 32°F and 50°F (0°C to 10°C). You will not need to replace it. Additional information on the fuel filter follows.

Water in Fuel

⚠ CAUTION:

Diesel fuel containing water is still flammable. You could be burned. If you ever try to drain water from your fuel, keep sparks, flames and smoking materials away from the mixture.

Notice: **If there is water in your diesel fuel and the weather is warm or humid, fungus and bacteria can grow in the fuel. They can damage your fuel system. A diesel fuel biocide can be used to sterilize your fuel system. However, your fuel system may still need to be cleaned. Your dealer can advise you of the appropriate solution.**

If your fuel tank needs to be purged to remove water, see your dealer or a qualified technician. Improper purging can damage your fuel system.

Sometimes, water can be pumped into your fuel tank along with your diesel fuel. This can happen if a service station does not regularly inspect and clean its fuel tanks, or if it gets contaminated fuel from its suppliers.



If this happens, the water-in-fuel light, if equipped, will come on in the instrument panel. If it does, the water must be drained. Your dealer can show you how to do this.

If the light comes on, use this chart to determine what action to take.

Water In Fuel Light

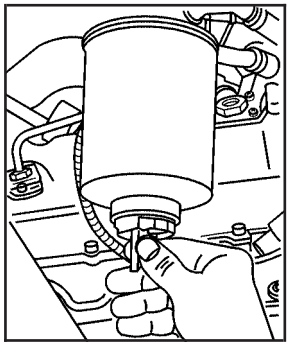
Problem	Recommended Action
Light comes on intermittently.	Drain water from the fuel filter.
Light stays on at temperatures above freezing.	Drain the fuel filter immediately. If no water can be drained and the light stays on, see your dealer for assistance.
Light stays on at temperatures below freezing.	Drain the fuel filter immediately. If no water can be drained, water may be frozen in the water drain system, or in the fuel lines. Move the vehicle to a warm location to thaw out, and then drain the filter system.
Light stays on immediately after refueling, and a large amount of water was possibly pumped into the fuel tank.	Fuel tank purging is required. See your dealer for assistance.

Notice: **If you drive when this warning indicator is on, you can damage your fuel injection system and your engine. If the indicator comes on right after you refuel, it means water was pumped into your fuel tank. Turn off your engine immediately. Then, have the water drained at once.**

To drain water, do the following:

1. Stop and park the vehicle in a safe place. Turn off the engine and apply the parking brake.
2. Remove the fuel cap.
3. Place a fuel-resistant container under the fuel filter. The filter drain valve is located on the bottom of the fuel filter.

   If your vehicle has the 6.6L engine, the fuel filter is located in the engine compartment on the driver's side of the vehicle. If your vehicle has either the 7.2L or 7.8L engine, the fuel filters are located in the engine compartment on the driver's side of the vehicle, and on the driver's side frame rail in front of the fuel tank.



4. Open the drain valve by turning two to three turns. When fuel empties from the valve, all the water has been drained. Close the valve hand-tight.
5. Remove the fuel-resistant container and properly dispose of the contaminated fuel. To find out how to properly dispose of contaminated diesel fuel, see *Engine Oil (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26*.
6. Install the fuel cap.
7. Start the engine and let it run for a few minutes. If the engine stalls, the fuel system may need to be primed. While draining the water from the fuel filter, air may enter the fuel system. If air has entered the fuel system the fuel system will need to be primed.

If the water-in-fuel light comes on again after driving a short distance or the engine runs rough or stalls, a large amount of water has probably been pumped into the fuel tank. The fuel tank should be purged.

Fuel Priming

If your vehicle has a Caterpillar® diesel engine, see the Caterpillar® Diesel Engine Operation and Maintenance Manual provided with your vehicle.

If your vehicle has a DURAMAX® diesel engine, in order for the fuel system to work properly, the fuel lines must be full of fuel and contain no air. If air gets into the fuel lines, it will be necessary to prime the fuel lines to eliminate air before operating the vehicle.

Air can get into the fuel lines if any of the following happen:

- The vehicle runs out of fuel.
- The fuel filter is removed for servicing or replacement.
- The fuel lines are removed or disconnected for servicing.
- The fuel filter water drain valve is opened while the engine is running.

If one or more of the above occurred, it is very likely that air has entered your fuel system and that you will need to prime the fuel system before operating the vehicle.

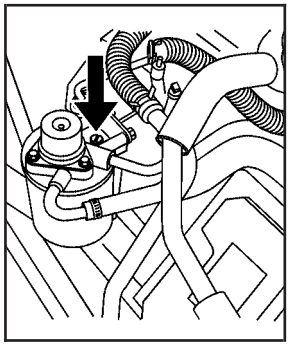
Air in the fuel lines will not harm the engine or the vehicle. However, the engine may not be able to start until the fuel system is primed and the air is removed.

Priming the 6.6L DURAMAX® Diesel Engine

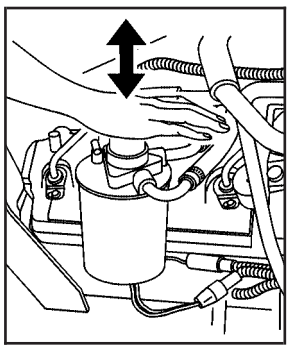
If your vehicle is equipped with the 6.6L DURAMAX® diesel engine, it has a priming pump which is part of the engine mounted fuel filter. The vent valve and the fuel filter primer pump are located on top of the fuel filter housing. The priming pump is hand operated and is designed to bring fuel to the engine to eliminate any air that may be in the fuel lines.

To prime the 6.6L DURAMAX® diesel engine, do the following:

1. Make sure there is fuel in the tank.
2. Make sure the fuel filter had been installed and properly tightened.
3. Make sure the fuel lines are properly connected and the fuel filter is cool enough to touch.
4. Remove any dirt from the fuel filter head and vent valve by wiping with a cloth.



5. Open the fuel filter vent valve by turning the screw counterclockwise several full turns.

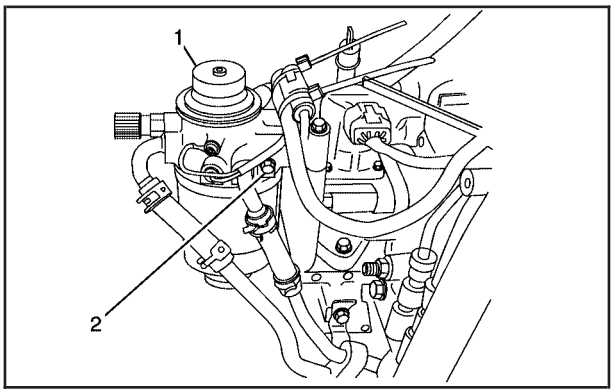


6. Repeatedly push down on the fuel filter primer pump with the palm of your hand. Let the pump return upward between pushes.

7. Operate the priming pump until a small amount of fuel seeps from the vent valve. When you see the fuel, the filter is now full of fuel and the system should be primed.
8. Close the vent valve.
9. Clean any fuel which accumulated on the fuel filter.
10. Start the engine and let it idle for a few minutes.
11. Check the filter for leaks.

Priming the 7.8L DURAMAX® Diesel Engine

If your vehicle is equipped with the 7.8L DURAMAX® diesel engine, use the following procedure to prime the engine:



1. Make sure there is fuel in the fuel tank.
2. Make sure the specified fuel filter is properly installed.
3. Make sure the fuel lines are securely connected.
4. Make sure the fuel filter is cool to the touch.
5. Use a clean cloth to remove dirt and oil from the fuel filter head and breather valve.
6. Use the palm of your hand to repeatedly press and release the plunger (1) at the top of the fuel filter priming pump. Continue until the plunger resistance becomes firm. This may take from 20 to 100 times, depending upon fuel tank location.
7. Turn the fuel filter breather valve screw (2) counterclockwise several turns to open the breather valve.
8. Use the palm of your hand to repeatedly press and release the plunger (1) at the top of the fuel filter priming pump until fuel begins to seep from the breather valve.
9. Tighten the fuel filter breather screw (2) to the specified torque, 4.9 N•m (43 in. lbs).
10. Use the palm of your hand to press and release the plunger (1) at the top of the fuel filter priming pump about 20 more times. This sends fuel to the engine.
11. Use a clean cloth to remove any fuel from the fuel filter and surrounding area.
12. Start the engine and allow it to idle for a few minutes.
13. Check the fuel filter for leakage.

Running Out of Fuel

If the diesel engine stalls and you think that you have run out of fuel, do this to restart your engine:

⚠ CAUTION:

Diesel fuel is flammable. It could start a fire if it gets on hot engine parts. You could be burned. Do not let too much fuel flow from the air bleed valve, and wipe up any spilled fuel with a cloth.

1. If you are parked on a level surface, add at least 2 gallons (7.6 liters) of fuel. However, if you are parked on a slope, you may need to add up to 5 gallons (18.9 liters) of fuel.
2. Follow the fuel priming procedure earlier in this section to prime the fuel filter.
3. Close the air bleed valve.
4. Turn the ignition key to START for 10 to 15 seconds at a time until your engine starts. If the engine tries to run, but does not run smoothly, increase the rpm a little using the accelerator pedal. This will help force air through the system.

Fuel Filter Replacement

If you want to change the diesel engine fuel filter yourself, here is how to do it:

⚠ CAUTION:

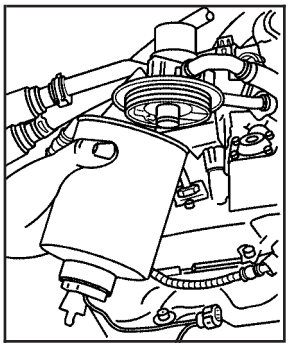
Diesel fuel is flammable. It could start a fire if something ignites it, and you could be burned. Do not let it get on hot engine parts, and keep matches or other ignition sources away.

First, drain any water from the filter by following the water draining procedure earlier in this section.

Your vehicle's engine should be off until the end of this procedure.

If your vehicle has the 6.6L engine, the fuel filter is located in the engine compartment on the driver's side of the vehicle. If your vehicle has either the 7.2L or 7.8L engine, the fuel filters are located in the engine compartment on the driver's side of the vehicle, and on the driver's side frame rail in front of the fuel tank.

1. Apply the parking brake.



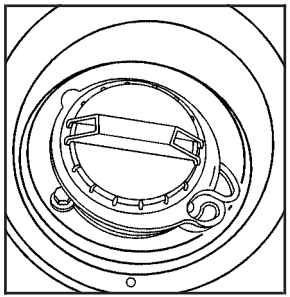
2. Unplug the water sensor wire connected to the fuel filter and unscrew the filter element.
3. Remove the filter element. If there is any dirt on the filter sealing surface, clean it off. Remove and reuse the water sensor float switch located on the bottom of the fuel filter.
4. Install the new filter element.
5. Reinstall and tighten the filter container and reconnect the water sensor wire to the filter.
6. Use the fuel filter priming procedure earlier in this section to prime the fuel filter.
7. Tighten the air bleed valve by turning it clockwise until hand-tight.
8. Start your engine and let it idle for five minutes. Check your fuel filter and air bleed valve for leaks.

Fuels in Foreign Countries

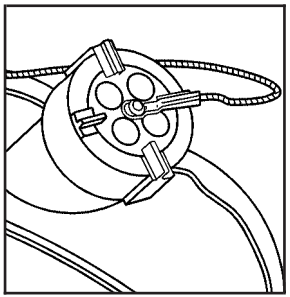
If you plan on driving in another country outside the United States or Canada, the proper fuel may be hard to find. Never use leaded gasoline or any other fuel not recommended in the previous text on fuel. Costly repairs caused by use of improper fuel would not be covered by your warranty.

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



C4/C5 Models shown, C6/C7/C8 Models with Gasoline Engines similar



C6/C7/C8 Models with Diesel Engines

⚠ CAUTION:

Fuel vapor is highly flammable. It burns violently, and that can cause very bad injuries. Do not smoke if you are near fuel or refueling your vehicle. Keep sparks, flames and smoking materials away from fuel.

The fuel cap can be on either or both sides of your vehicle depending on option content.

To take off the cap, turn it slowly counterclockwise.

⚠ CAUTION:

If you get fuel on yourself and then something ignites it, you could be badly burned. Fuel can spray out on you if you open the fuel cap too quickly. 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.

When you put the cap back on, turn it clockwise until it is tight.

Notice: **If you need a new fuel cap, be sure to get the right type. Your dealer 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 3-35*.**

If you have dual tanks, fill the driver's side tank, or forward tank, first. The fuel gage will give better readings this way. Your gage will show the total fuel left in both tanks.

If your vehicle is a C4/C5 model and you have dual tanks, the engine must be off when refueling or the fuel transfer system may become inoperable.

If you have a single tank with dual fillers, where there is a filler on each side of the vehicle, do not attempt to fill the tank through both fillers at the same time. Also, do not fill the tank with both caps removed, as this may result in over-filling the tank and fuel spillage.

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:

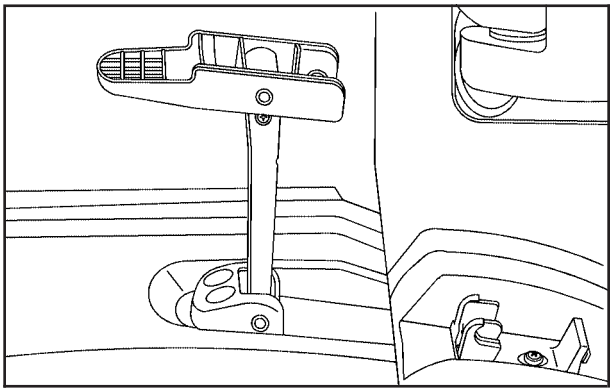
- **Dispense gasoline only into approved containers.**
- **Do not fill a container while it is inside a vehicle, in a vehicle's trunk, pickup bed, or on any surface other than the ground.**
- **Bring the fill nozzle in contact with the inside of the fill opening before operating the nozzle. Contact should be maintained until the filling is complete.**
- **Do not smoke while pumping gasoline.**

Checking Things Under the Hood

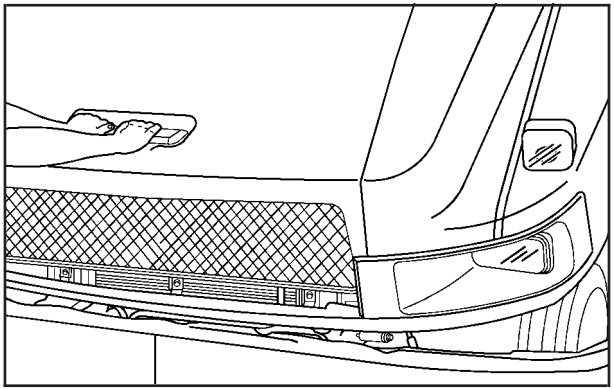
⚠ CAUTION:

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.

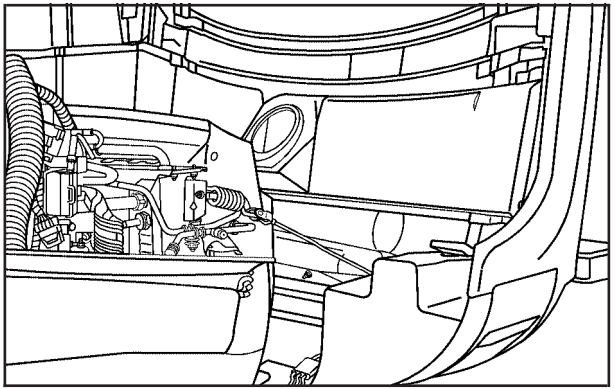
Hood Latches



To tilt the hood forward, pull back and up on each of the hood latches, located above the wheel wells on both sides of the vehicle.



Then take the hand hold and pull the hood forward.



When you tilt the hood far enough, the cables will support it. When you close the hood, make sure both latches are secured.

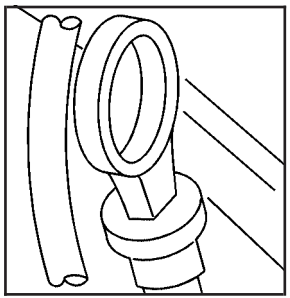
Engine Oil (Caterpillar® Diesel Engine)

See your Caterpillar® Operation & Maintenance Manual for information on oil quality and viscosities as well as the temperature range chart.

Engine Oil (DURAMAX® Diesel)

Checking Engine Oil

It is a good idea to check your engine oil level every time you get fuel.



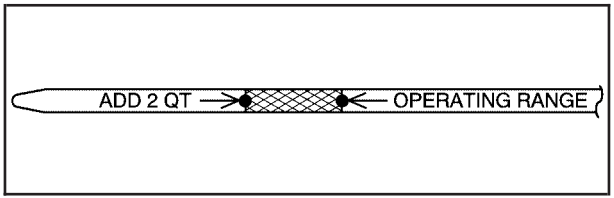
The engine oil dipstick is located in the engine compartment on the driver's side of the vehicle.

In order to get an accurate reading, the engine should be at normal operating temperature, so that the oil is warm, and the vehicle must be on level ground.

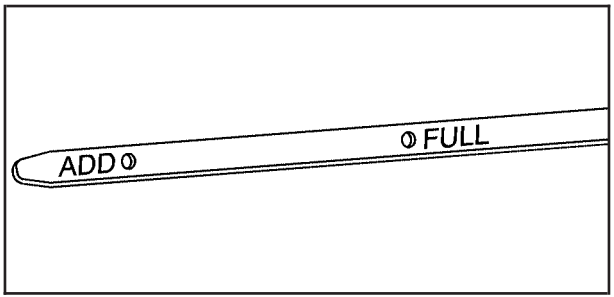
1. If the engine is at normal operating temperature and the oil is warm, turn off the engine and allow at least five minutes for the oil to drain back into the oil pan. If you do not do this, the oil dipstick might not show the actual level.

   If the engine has not been run long enough to bring it up to normal operating temperature and the oil is cool, turn off the engine and allow 30 minutes for the oil 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 a cloth, then push it back in all the way.
3. Remove the dipstick again, keeping the tip down, and check the oil level.



6.6L V8 (LLY) Engine

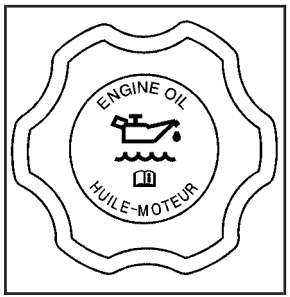


7.8L L6 (LG4) Engine

When to Add Engine Oil

If the oil is below the cross-hatched area at the tip of the dipstick for the 6.6L V8 (LLY) engine, you will need to add at least two quarts/liters of oil. If the oil is below the lower hole at the tip of the dipstick for the 7.8L L6 (LG4) engine, you will 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 5-99*.

Notice: **Do not add too much oil. If your engine has so much oil that the oil level gets above the cross-hatched area for the 6.6L V8 (LLY) engine or above the upper hole that shows the proper operating range for the 7.8L L6 (LG4) engine, your engine could be damaged.**



Add oil at the engine oil fill cap in the engine compartment. Install and fully tighten the fill cap when you are through.

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

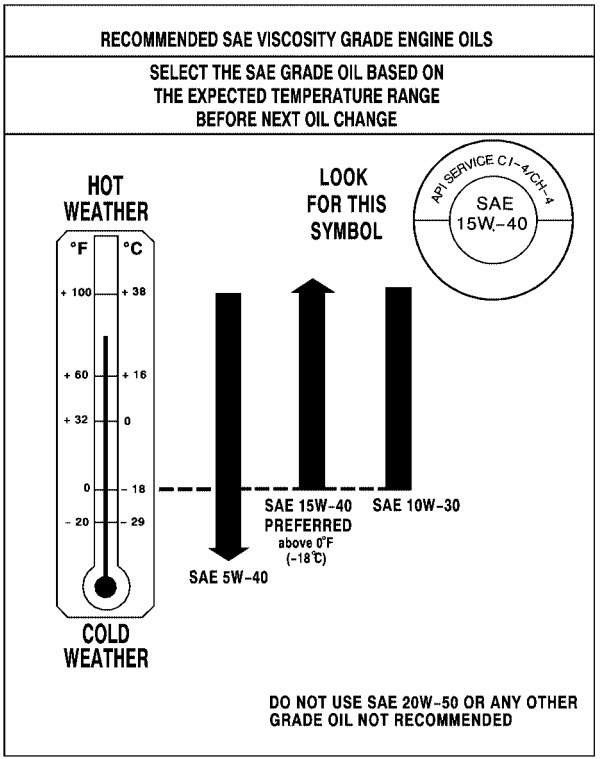
Look for these two things:

- CI-4 or CH-4

  Oils designated as API CI-4 or CH-4 are recommended for your vehicle. The CI-4 or CH-4 designations may appear either alone, together, or in combination with other API designations, such as API CI-4/SL.

  These letters show American Petroleum Institute (API) levels of quality.

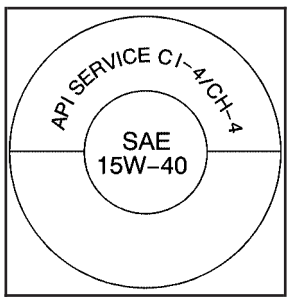
Notice: **Use only engine oils that have one of these designations CI-4 or CH-4 for the DURAMAX® diesel engine. Failure to use the recommended oils can result in engine damage not covered by your warranty.**



- SAE 15W-40

  As shown in the viscosity chart, SAE 15W-40 is best for your vehicle. However, you can use SAE 10W-30 at temperatures above 0°F (–18°C). When it is very cold, below 0°F (–18°C), you should use SAE 5W-40 to improve cold starting. 5W-40 is not recommended for use at high temperatures, above 100°F (38°C).

  These numbers on the oil container show its viscosity, or thickness. Do not use other viscosity oils such as SAE 10W-40 or SAE 20W-50.



This doughnut-shaped logo (symbol) is used on most oil containers to help you select the correct oil. It means that the oil has been certified by the American Petroleum Institute.

You should look for this on the oil container, and use *only* those oils that display this logo.

GM Goodwrench® oil of the recommended viscosity grades meets all the requirements for your vehicle.

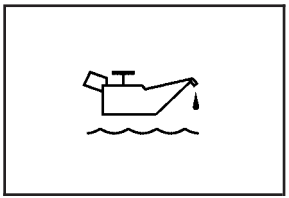
Engine Oil Additives

Do not add anything to your oil. The recommended oils with the API service symbol are all you will need for good performance and engine protection.

When to Change Engine Oil (Vehicles Without the Engine Oil Life System)

If you have the 6.6L V8 (LLY) Engine: Change engine oil and filter every 15,000 miles (24 000 km), or every 12 months, or every 750 hours of engine operation, whichever occurs first. If you have the 7.8L V6 (LG4) Engine: Change engine oil and filter every 12,000 miles (20 000 km), or every 12 months, or every 600 hours of engine operation, whichever occurs first. See *Scheduled Maintenance on page 6-5*.

Engine Oil (Gasoline Engine)

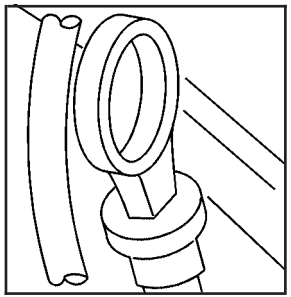


If the low oil light appears on the instrument cluster, it means you need to check your engine oil level right away. For more information, see *Low Oil Level Light on page 3-37*.

You should check your engine oil level regularly; this is an added reminder.

Checking Engine Oil

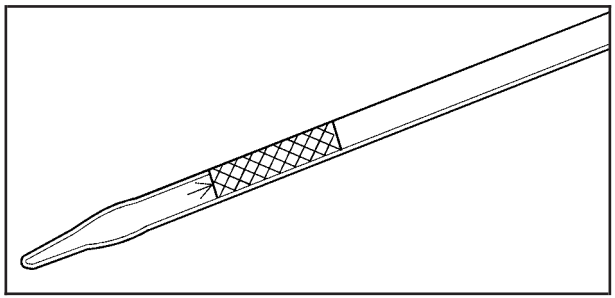
It is a good idea to check your engine oil every time you get fuel. In order to get an accurate reading, the oil must be warm and the vehicle must be on level ground.



The engine oil dipstick is located in the engine compartment on the driver's side of the vehicle.

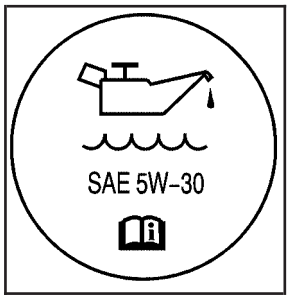
1. Turn off the engine and give the oil several minutes to drain back into the oil pan. If you do not do this, the oil dipstick might not show the actual level.
2. Pull out the dipstick and clean it with a paper towel or cloth, then push it back in all the way. Remove it again, keeping the tip down, and check the level.

When to Add Engine Oil



If the oil is below the cross-hatched area at the tip of the dipstick, you will 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 5-99*.

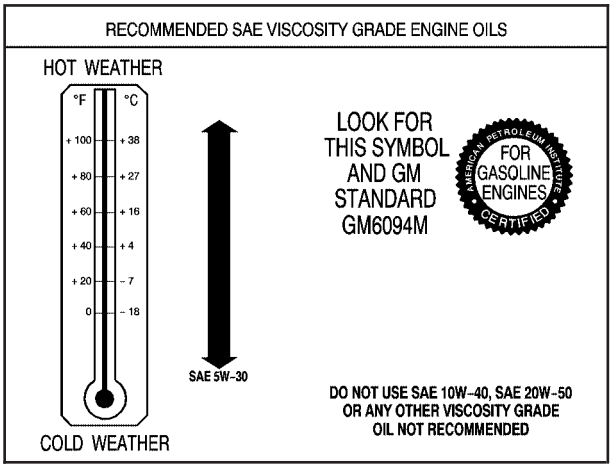
Notice: **Do not add too much oil. If the engine has so much oil that the oil level gets above the cross-hatched area that shows the proper operating range, the engine could be damaged.**



The engine oil fill cap is located near the engine oil dipstick in the engine compartment, on the driver's side of the vehicle.

Be sure to add enough oil to put the level somewhere in the proper operating range in the cross-hatched area. Push the dipstick all the way back in when you are through.

What Kind of Engine Oil to Use



Look for two things:

- GM6094M

  Your vehicle's engine requires oil meeting GM Standard GM6094M. You should 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 also have the starburst symbol on the container. This symbol indicates that the oil has been certified by the American Petroleum Institute (API).

You should 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.**

GM Goodwrench® oil meets all the requirements for your vehicle.

If you are in an area of extreme cold, where the temperature falls below –20°F (–29°C), it is recommended that you use either an SAE 5W-30 synthetic oil or an SAE 0W-30 oil. Both will provide easier cold starting and better protection for your engine at extremely low temperatures.

Engine Oil Additives

Do not add anything to your oil. The recommended oils with the API service symbol are all you will need for good performance and engine protection.

Engine Oil Life System (Gasoline Engine)

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 3-37*.

Change your 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 may not indicate that an oil change is necessary for over a year. However, your engine oil and filter must be changed at least once a year and at this time the system must be reset. Your dealer has GM-trained service people who will perform this work using genuine GM parts and reset the system. It is also important to check your oil regularly and keep it at the proper level.

If the system is ever reset accidentally, you must change your 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 your engine oil and filter based on vehicle use. Anytime your oil is changed, reset the system so it can calculate when the next oil change is required. If a situation occurs where you change your oil prior to a change engine oil light being turned on, reset the system.

To reset the change engine oil light, do the following:

1. Turn the ignition key to RUN with the engine off.
2. Fully press and release the accelerator pedal slowly three times within 10 seconds.

   If the change engine oil light flashes for five seconds, the system is resetting.
3. Turn the key to OFF.

If the change engine oil light comes back on when you start your vehicle, the engine oil life system has not reset. Repeat the procedure.

What to Do with Used Oil

Used engine oil contains certain elements that may 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 your used oil, ask your dealer, a service station or a local recycling center for help.

Engine Oil Life System (DURAMAX® Diesel)

When to Change Engine Oil

If your vehicle has the Engine Oil Life System, it has a computer system that lets you know when to change the engine oil and filter. This is based on injection timing, engine load 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 3-37*. Change your oil as soon as possible within the next 600 miles (1 000 km) or 30 hours of engine operation, whichever occurs first. It is possible that, if you are driving under the best conditions, the oil life system may not indicate that an oil change is necessary for over a year. However, your engine oil and filter must be changed at least once a year and at this time the system must be reset. Your dealer has GM-trained service people who will perform this work using genuine GM parts and reset the system. It is also important to check your oil regularly and keep it at the proper level.

If the system is ever reset accidentally, you must change your oil at 15,000 miles (24 000 km), or 150 hours of engine operation, whichever occurs first, 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 your engine oil and filter based on vehicle use. Anytime your oil is changed, reset the system so it can calculate when the next oil change is required. If a situation occurs where you change your oil prior to a change engine oil light being turned on, reset the system.

To reset the Engine Oil Life System, do the following:

1. Turn the ignition key to RUN with the engine off.
2. Fully press and release the accelerator pedal slowly three times within 10 seconds.

   If the change engine oil light flashes for five seconds, the system is resetting.
3. Turn the key to OFF.

If the change engine oil light comes back on when you start your vehicle, the Engine Oil Life System has not reset. Repeat the procedure.

What to Do with Used Oil

Used engine oil contains certain elements that may 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 your used oil, ask your dealer, a service station, or a local recycling center for help.

Engine Oil Life System (Caterpillar® Diesel Engine)

How to Reset the Engine Oil Life System

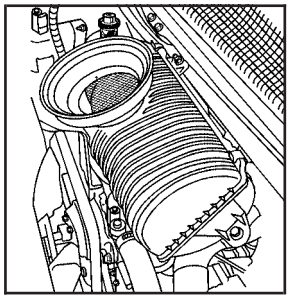
The Engine Oil Life System calculates when to change your engine oil and filter based on vehicle use. Anytime your oil is changed, reset the system so it can calculate when the next oil change is required. If a situation occurs where you change your oil prior to a change engine oil light being turned on, reset the system.

To reset the Engine Oil Life System, do the following:

1. Turn the ignition key to RUN with the engine off.
2. Fully apply and hold the brake pedal while you fully press and release the accelerator pedal, pausing slightly at each press and each release, three times within five seconds.
3. Turn the key to OFF.

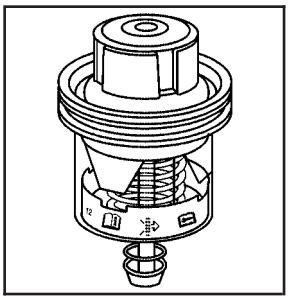
If the change engine oil light comes back on when you start your vehicle, the Engine Oil Life System has not reset. Repeat the procedure.

Engine Air Cleaner/Filter



The engine air cleaner/filter is located in the center of the engine compartment.

When to Inspect the Engine Air Cleaner/Filter



If your vehicle has an air cleaner/filter change indicator, inspect the indicator at every oil change and replace the filter when the indicator tells you to.

For vehicles without a change indicator, inspect the air cleaner/filter at every oil change and replace the filter at the first oil change after 25,000 miles (40 000 km).

How to Inspect the Engine Air Cleaner/Filter

Locate the filter change indicator. When the change indicator turns black or is in the red/orange change area, replace the filter and reset the indicator.

To inspect the engine 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.

⚠ 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 Transmission Fluid

When to Check

A good time to check your automatic transmission fluid level is when the engine oil is checked. See your Allison Automatic Transmission Operator's Manual to find out when to change your transmission fluid and filters.

How to Check and What to Use

The Allison Automatic Transmission Operator's Manual that came with the vehicle shows how to check the automatic transmission fluid and what fluid to use.

Automatic Transmission External Filter

Your automatic transmission filter requires periodic replacement.

Consult the Allison Automatic Transmission Operator's Manual that came with the vehicle for proper change intervals.

Manual Transmission Fluid

When to Check

A good time to have it checked is when the engine oil is checked. Refer to the Maintenance Schedule to find out when to check and change your manual transmission fluid. See *Scheduled Maintenance on page 6-5*.

How to Check and What to Use

Check the fluid level only when your engine is off, the vehicle is parked on a level place, and the transmission is cool enough for you to rest your fingers on the transmission case.

To check the transmission fluid level, do the following:

1. Remove the filler plug.
2. Check to be sure that the lubricant level is up to the bottom of the fill opening. On heavy duty transmissions, an inch of oil level equals about one gallon of fluid.
3. If the fluid level is good, reinstall the plug and be sure it is fully seated. If the fluid level is low, add more fluid as described in the next steps. Refer to the Maintenance Schedule to determine what kind of fluid to use. See *Part C: Recommended Fluids and Lubricants on page 6-32*.

How to Add Fluid

To add transmission fluid, do the following:

1. Remove the filler plug.
2. Add fluid at the filler plug hole. Add only enough fluid to bring the fluid level up to the bottom of the fill opening. Refer to the Maintenance Schedule to determine the proper fluid to use. See *Part C: Recommended Fluids and Lubricants on page 6-32*.
3. Reinstall the filler plug. Be sure the plug is fully seated.

Engine Coolant (Gas and DURAMAX® Engines)

The cooling system in your vehicle is filled with DEX-COOL® 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® 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 5-40*.

A 50/50 mixture of clean, drinkable water and DEX-COOL® coolant will:

- Give freezing protection down to –34°F (–37°C).
- Give boiling protection up to 265°F (129°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® may cause premature engine, heater core or radiator corrosion. In addition, the engine coolant may 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® (silicate-free) coolant in your vehicle.**

What to Use

Use a mixture of one-half clean, drinkable water and one-half DEX-COOL® coolant which will not damage aluminum parts. If you use this coolant mixture, you do not need to add anything else.

⚠ CAUTION:

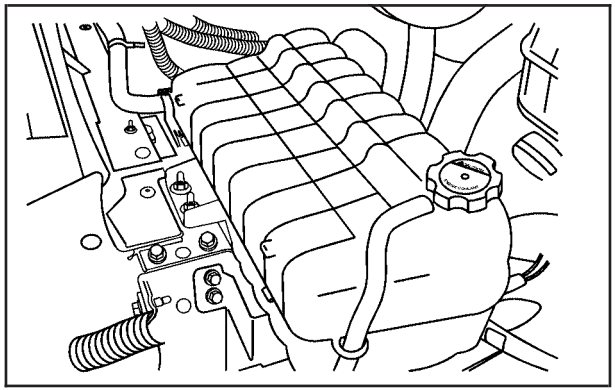
Adding only plain water to your cooling system can be dangerous. Plain water, or some other liquid such as alcohol, can boil before the proper coolant mixture will. Your vehicle's coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, your engine could get 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® 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 dealer 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 *Part C: Recommended Fluids and Lubricants on page 6-32* for more information.**

Checking Coolant

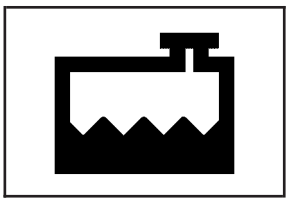


The coolant surge tank is located in the engine compartment on the driver's side of the vehicle.

⚠ 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 parked on a level surface. When your engine is cold, the coolant level should be at the FULL COLD mark or higher.



If the low coolant warning light comes on in the instrument panel cluster and stays on, it means you are low on engine coolant.

See *Low Coolant Warning Light on page 3-34* for further information.

Adding Coolant

If you need more coolant, add the proper DEX-COOL® coolant mixture at the surge tank, but only when the engine is cool.

⚠ 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.

Engine Coolant (Caterpillar® Diesel Engines)

If your vehicle has a Caterpillar® diesel engine, see the Caterpillar® Diesel Engine Operation & Maintenance Manual provided with your vehicle to find out what to add, as well as when and how to service your cooling system.

Coolant Surge Tank Pressure Cap

The coolant surge tank pressure cap is located in the engine compartment, on the driver's side of the vehicle.

Notice: **Your vehicle's surge tank pressure cap is designed for use with medium-duty cooling systems only. If the surge tank pressure cap is not tightly installed, coolant loss and possible engine damage may occur. Be sure the cap is properly and tightly secured.**

Engine Overheating

You will find an engine coolant temperature gage, as well as a low coolant warning light, on your vehicle's instrument panel. See *Engine Coolant Temperature Gage on page 3-34* and *Low Coolant Warning Light on page 3-34* for more information.

Your vehicle also has a check gages warning light on the instrument panel. See *Check Gages Warning Light on page 3-40* for more information.

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

An overheat warning, along with a low coolant light, can indicate a serious problem. See *Low Coolant Warning Light on page 3-34* for more information.

If you get an engine overheat warning with no low coolant light, 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.

If you get the overheat warning with no sign of steam, try this for a minute or so:

1. In heavy traffic, let the engine idle in NEUTRAL while stopped. If it is safe to do so, pull off the road, shift to PARK (P) or NEUTRAL and let the engine idle.
2. Turn on your heater to full hot at the highest fan speed and open the windows as necessary.
3. If climbing a hill, downshift to raise engine and fan speeds.

If you no longer have the overheat warning, you can drive. Just to be safe, drive slower for about 10 minutes. If the warning does not come back on, you can drive normally.

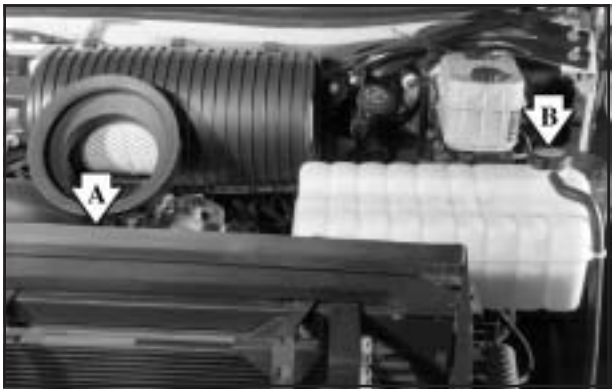
If the warning continues and you have not stopped, pull over, stop, and park your vehicle right away.

If there is still no sign of steam, you can push down the accelerator until the engine speed is about twice as fast as normal idle speed for at least 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 (Gas and DURAMAX® Engines)

When you decide it is safe to lift the hood, here is what you will see:

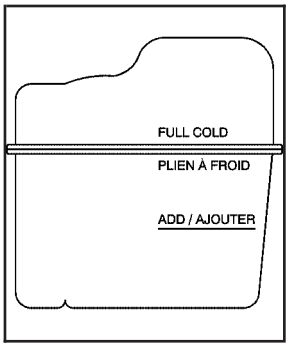


A. Engine Fan

B. Coolant Surge Tank

If your vehicle has a Caterpillar® diesel engine, see the Caterpillar® Diesel Engine Operation and Maintenance Manual provided with your vehicle.

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 FULL COLD mark or higher. If it is not, you may have a leak at the pressure cap or in 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.

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, start the engine again. The engine cooling fan speed should increase when idle speed is doubled by pushing the accelerator pedal down. If it does 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® may cause premature engine, heater core or radiator corrosion. In addition, the engine coolant may 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® (silicate-free) coolant in your vehicle.**

How to Add Coolant to the Coolant Surge Tank

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 FULL COLD mark or higher, add a 50/50 mixture of clean, drinkable water and DEX-COOL® 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 (Gas and DURAMAX® Engines) on page 5-37* or *Engine Coolant (Caterpillar® Diesel Engines) on page 5-40* for more information.

If no coolant is visible in the surge tank, add coolant as follows:

⚠ 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.

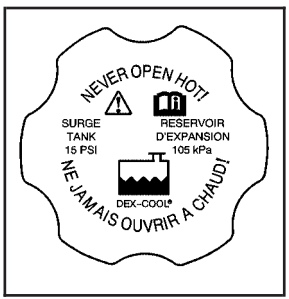
⚠ CAUTION:

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® 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 full turn. If you hear a hiss, wait for that to stop. A hiss means there is still some pressure left.

2. Then keep turning the pressure cap slowly, and remove it.



3. Fill the coolant surge tank with the proper mixture, to the FULL COLD mark.



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 mixture to the coolant surge tank until the level reaches slightly above the FULL COLD mark.

5. Then replace the pressure cap. Be sure the pressure cap is hand-tight and fully seated.

Engine Fan Noise

Your vehicle has a clutched engine cooling fan. When the clutch is engaged, the fan spins faster to provide more air to cool the engine. In most everyday driving conditions, the clutch is not fully engaged. This improves fuel economy and reduces fan noise. Under heavy vehicle loading, trailer towing and/or high outside temperatures, the fan speed increases when the clutch engages. So you may hear an increase in fan noise. This is normal and should not be mistaken as the transmission slipping or making extra shifts. It is merely the cooling system functioning properly. The fan will slow down when additional cooling is not required and the clutch disengages.

You may also hear this fan noise when you start the engine. It will go away as the fan clutch disengages.

Power Steering Fluid

See *Scheduled Maintenance on page 6-5* to determine when to check your power steering fluid.

How To Check Power Steering Fluid

Check your power steering fluid only when the engine is warm. If the engine is not warm, you probably will not get an accurate reading.

If the fluid level is between the MIN (Minimum) and MAX (Maximum) marks, you have enough. If you need fluid, add only enough of the proper fluid to bring it in between the MIN and MAX marks.

If your power steering fluid level is low, this can cause the brake or service brakes soon warning lights to come on. In addition, the steering effort and emergency brake distance could increase.

If either light remains on after you have added power steering fluid to the proper level, then shut off the engine for 10 seconds. This should reset the brake warning lights. If one or both lights stay on, see “Hydraulic Brake System Warning Lights” under *Brake System Warning Light on page 3-31* for more information.

What to Use

To determine what kind of fluid to use, see *Part C: Recommended Fluids and Lubricants on page 6-32*.

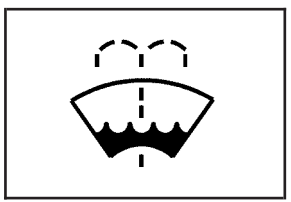
Notice: **When adding power steering fluid or making a complete fluid change, always use the proper fluid. Failure to use the proper fluid can cause leaks and damage hoses and seals.**

Windshield Washer Fluid

What to Use

When you need windshield 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 Washer Fluid



Open the cap with the washer symbol on it. Add washer fluid until the tank is full.

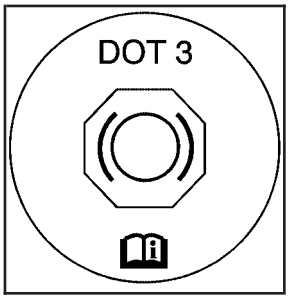
The windshield washer fluid reservoir is located in the engine compartment on the driver's side of the vehicle.

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 your washer fluid tank only three-quarters full when it is very cold. This allows for 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 your washer system and paint.**

Brakes

Brake Fluid



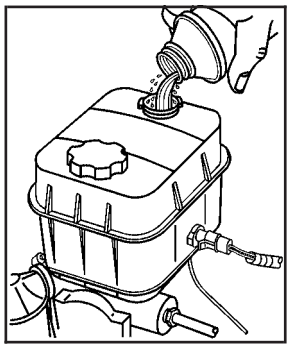
If your vehicle has hydraulic brakes, there is a brake master cylinder in the engine compartment on the driver side of the vehicle. Refer to the Maintenance Schedule to determine when to check your brake fluid.

⚠ CAUTION:

Do not add brake fluid before you check the level. If you do, you could get too much brake fluid. Brake fluid could spill on the hot engine and it can catch fire. You could be burned and your vehicle could be damaged. See "Checking Brake Fluid" in this section.

Checking Brake Fluid

Apply the brake pedal several times with the ignition off. Then clean one of the reservoir caps and the area around the cap, and remove it.



The fluid level should be even with the bottom ring of the filler opening. The brake fluid reservoir is located in the engine compartment on the driver side of the vehicle.

If it is low, add enough fluid to fill the reservoir to the proper level.

What to Add

Use the proper fluid listed in your Maintenance Schedule. Use new brake fluid from a sealed container only.

Always clean the brake fluid reservoir cap/cover and the area around the cap/cover before removing it. This will help keep dirt from entering the reservoir.

> **⚠ CAUTION:**
>
> **With the wrong kind of fluid in your brake system, your brakes may not work well, or they may not even work at all. 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 your 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, and do not use DOT-5 silicone brake 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 5-86*.**

Four-Wheel Disc Brakes (Hydraulic Only)

Your vehicle has four-wheel disc brakes.

Some driving conditions or climates may cause a brake squeal when the brakes are first applied or lightly applied. This does not mean something is wrong with your brakes.

Brake linings should always be replaced as complete axle sets.

Four-Wheel and Six-Wheel Drum Brakes (Air Only)

The brake drums should be removed and inspected each time the tires are removed for rotation or changing. When you have the front brakes replaced, have the rear brakes inspected, too.

Brake linings should always be replaced as complete axle sets.

Brake Pedal Travel

See your dealer 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 of brake trouble.

Brake Adjustment

Every time you make a brake stop, your brakes adjust for wear.

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 GM brake parts. When you replace parts of your braking system — for example, when your brake linings wear down and you need new ones put in — be sure you get new approved GM replacement parts. If you do not, your brakes may no longer work properly. For example, if someone puts in brake linings that are wrong for your vehicle, the balance between your 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.

Air Brake Systems

If your vehicle has air brakes, it is important to get rid of moisture in your system. Moisture will damage your system if it is not removed daily.

There are two ways to do this. One is automatic through the air brake vehicle's air dryer with its automatic moisture ejector that purges air from the system through a self-contained reservoir. The other way to drain moisture from the air brake system is to manually activate drain valves at each reservoir. Drain the air reservoirs occasionally to be sure the air dryer is working properly.

Drain the air brakes at full system pressure. To be sure you are at full pressure, check your air pressure gage. It should read at least 100 psi (692 kPa).

Air Dryer

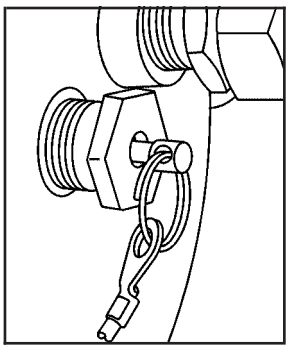
If your vehicle has air brakes, it will have an air dryer. This collects and removes dirt, moisture, or other foreign matter from the air prior to entering the brake system. The dryer also acts as a moisture ejector. It automatically ejects the moisture when the compressor cycles. The purge tank has a manual drain valve that must be drained every day. See "Air Brake Systems" for the manual drain procedure. The air dryer is mounted on the passenger side frame rail.

The dryer has a filter that you need to change at intervals. See *Scheduled Maintenance on page 6-5* for more about servicing this filter.

Electric Air Compressor

Your vehicle may have an electric air compressor. This compressor is used to run options that require pressurized air, such as air horn, air seat, 7.8L engine exhaust restrictor, or 7.8L engine exhaust brake.

The air compressor is used when vehicles are not equipped with an air brake system.



The air supply for this system must be maintained by releasing the drain valve to eject any moisture that may have built up in the system.

It is recommended that this system be drained on a weekly basis.

Clutch Pedal Free Travel

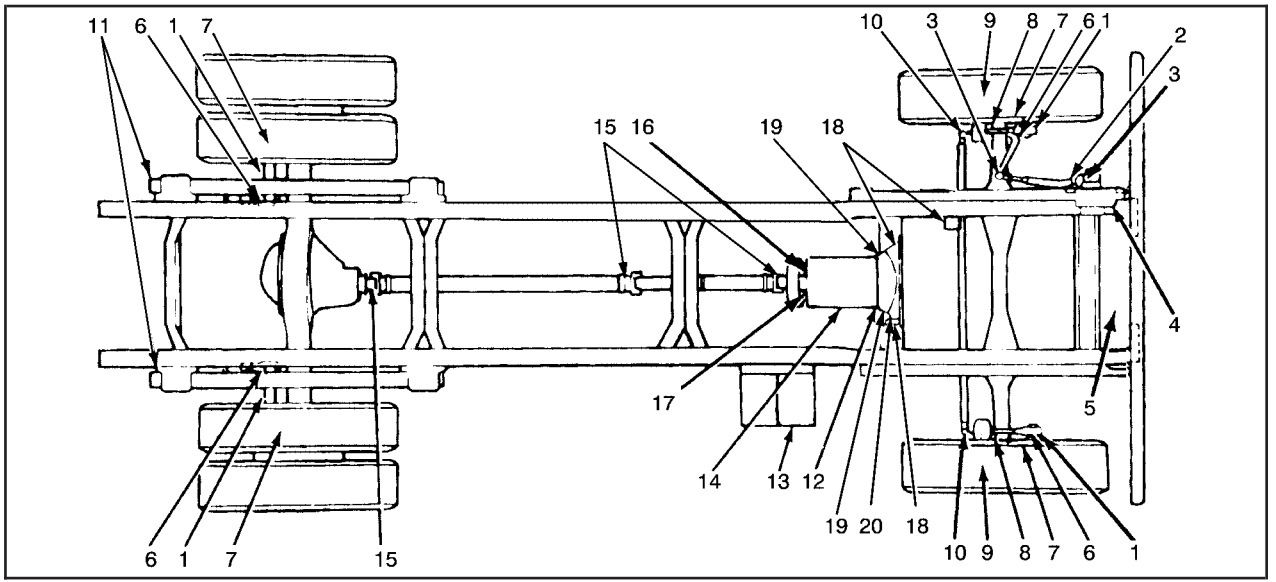
If you have a V8 engine and a manual transmission, your clutch will need adjustment when pedal free travel gets down to about 1/4 inch (32 mm), as measured at the clutch pedal pad. You should have 1 1/2 to 2 inches (38 to 51 mm) of clutch pedal free travel.

If your clutch ever needs service, be sure to use only GM clutch replacement parts.

Chassis Lubrication

Your Maintenance Schedule provides all of the required chassis lubrication intervals and identifies proper lubricants to use. Be sure to see your Maintenance Schedule before performing any chassis lubrication service. To determine location of chassis lubrication items, use the following charts.

Single Axle Models

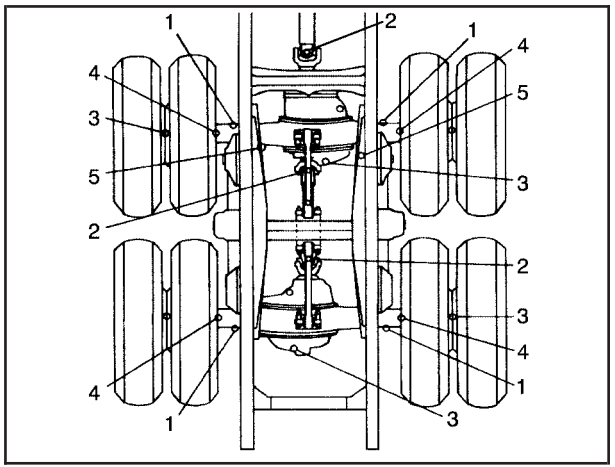


Item Number	Item	Remarks
1	Brake Camshaft**	One fitting each (apply sparingly).
2	Steering Column Slip Joint*	One fitting.
3	Steering Drag Link Ends	One fitting each end.
4	Pivot Points and Hinges	Apply chassis lubricant.
5	Pivot Points and Hinges	Apply chassis lubricant.
6	Slack Adjuster**	One fitting.
7	Brake Cam Roller Pins at interface of pin and shoe**	Apply engine oil.
8	Front Steering Knuckles	One fitting each side, lower bushing. (Hand-operated grease gun only.) Hand-pack upper bearing.
9	Front Wheel Bearings	Hand-pack or lubricate.
10	Steering Tie Rod Ends	One fitting each end.
11	Spring Slip Pads* (Multi-Leaf Only)	Apply chassis lubricant.
12	Clutch Release Bearing*	Cup or fitting.
13	Battery Terminal (except “ST” type)	Keep coated with petroleum jelly.
14	Transmission	Fill to level of filler plug.
15	Propshaft U-Joints	Lubricate with GM Part No. 1051344 Wheel Bearing Lubricant.
16	Parking Brake Clevis Pin$	Apply chassis lubricant.
17	Parking Brake Lever Pivot*, $	Apply chassis lubricant.
18	Clutch Release Cross Shaft, Master Cylinder$	Apply chassis lubricant, fill to 1/4 inch (6 mm) below opening.

Item Number	Item	Remarks
19	Release Bearing, Clutch Cross Shaft	Two fittings, apply chassis lubricant.
20	Clutch Release Fork	Two fittings.

* Applies to some vehicles.
** Applies to air brakes only.
$ Applies to hydraulic brakes only.

Tandem Axle Models



Item Number	Item	Remarks
1	Brake Camshafts	One fitting each.
2	Propshaft U-Joint	One fitting each joint. Lubricate with GM Part No. 1051344, Wheel Bearing Lubricant
3	Rear Axles	Fill to level of filler plug.
4	Brake Shoe Roller Pins	Apply engine oil at pin to shoe joint only.
5	Rear Spring Pin	One fitting each side.

Battery

Your vehicle has one or more maintenance free batteries. When it is time for a new battery, be sure it has the replacement number shown on the original battery's label. We recommend an ACDelco® replacement battery.

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 your battery from running down. (If your vehicle has more than one battery, be sure to remove the negative (–) battery cable from each battery.)

⚠ 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 5-58* for tips on working around a battery without getting hurt.

When you are ready to use the vehicle again, refer to the engine starting procedure in the Index.

Jump Starting

If your vehicle's battery (or batteries) 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 (or batteries) 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.**

If you have a diesel engine vehicle with two batteries (or more), you should know before you begin that, especially in cold weather, you may not be able to get enough power from a single battery in another vehicle to start your diesel engine.

If your vehicle has more than one battery, use the one closest to the starter — this will reduce electrical resistance.

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 transmission in PARK (P) or a manual transmission in NEUTRAL before setting the parking brake. If you have a four-wheel-drive vehicle, be sure the transfer case is in a drive gear, not in NEUTRAL.

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 accessory power outlets. 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 the negative (–) terminal locations on that vehicle.



Open the hood on your vehicle and find the remote positive (+) terminal, located under a red plastic cover on the passenger's side of the vehicle. Squeeze the tab to open the cover and access the remote positive (+) terminal.

You will not see the battery (or batteries) of your vehicle under the hood. They are located in a frame mounted battery box, which is located on either the driver's or the passenger's side of the vehicle. You will not need to access your battery (or batteries) for jump starting. The remote positive (+) terminal is for that purpose.

⚠ 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 batteries have enough water. You do not need to add water to the ACDelco® battery (or batteries) 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.

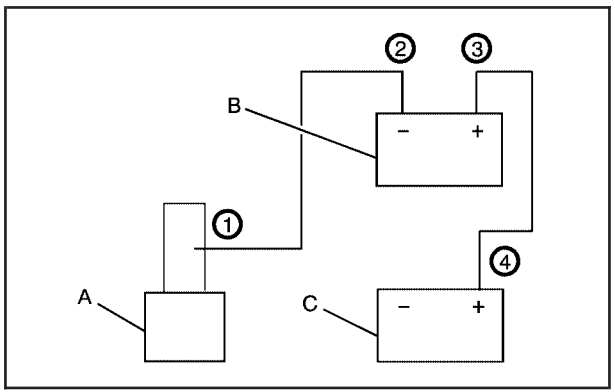
   Do not connect positive (+) to negative (–) or you will get a short that would damage the battery and maybe other parts too. And do not connect the negative (–) cable to the negative (–) terminal on the dead battery because this can cause sparks.



6. Connect the red positive (+) cable to the positive (+) terminal of 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 the remote negative (–) terminal on the vehicle with the dead battery.
9. Connect the other end of the negative (–) cable at least 18 inches (45 cm) 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.
10. Now start the vehicle with the good battery and run the engine for a while. Use the high idle option if your vehicle is equipped with it.
11. 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 positive (+) remote terminal cover to its original position.

Rear Axle

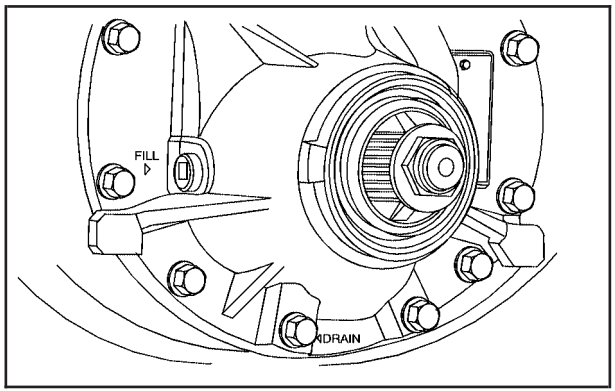
When to Check and Change Lubricant

Refer to the Maintenance Schedule to determine how often to check the lubricant and when to change it. See *Scheduled Maintenance on page 6-5*.

Notice: **If you drive your vehicle through deep water that is higher than the front or rear axle, water may enter the axle housing and cause the axle lubricant to break down. This could damage the gears inside. Avoid driving your vehicle through deep water.**

You should avoid driving your vehicle through deep puddles or standing water. If you must drive through water that is higher than the front or rear axle, see your dealer immediately afterward to have the condition of the axle lubricant checked.

How to Check Lubricant



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 rear axle, you'll need to add some lubricant. Add enough lubricant to raise the level to the bottom of the filler plug hole.

What to Use

Refer to the Maintenance Schedule to determine what kind of lubricant to use. See *Part C: Recommended Fluids and Lubricants on page 6-32*.

Rear Axle Shift Motor

When to Check and Change Fluid

If you have an optional air-shift two-speed, controlled traction, or locking differential type rear axle, a good time to check the fluid level in the axle shift motor is when the rear axle lubricant is checked. Use refrigerant oil (shift motor only).

How to Check Fluid

Remove the plug on the front plate of the axle shift motor, add enough fluid to raise the level to the bottom of the filler plug hole, then replace the plug.

What to Use

Refer to your Maintenance Schedule to determine what kind of lubricant to use. See *Part C: Recommended Fluids and Lubricants on page 6-32*.

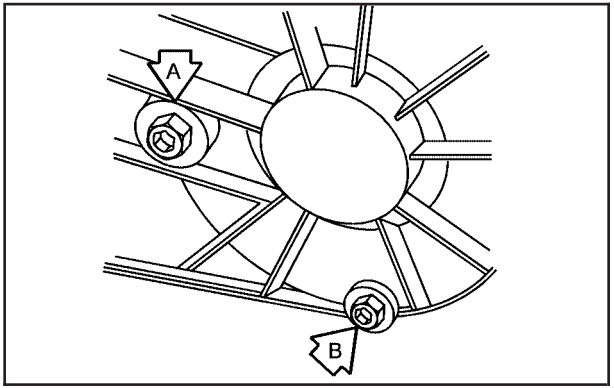
Four-Wheel Drive

Transfer Case

When to Check Lubricant

It is not necessary to regularly check transfer case fluid unless you suspect there is a leak or you hear an unusual noise. A fluid loss could indicate a problem. Have it inspected and repaired.

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 fill 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 fill plug hole. Use care not to overtighten the plug.

When to Change Lubricant

Refer to the Maintenance Schedule to determine how often to change the lubricant. See *Scheduled Maintenance on page 6-5*.

What to Use

Refer to the Maintenance Schedule to determine what kind of lubricant to use. See *Part C: Recommended Fluids and Lubricants on page 6-32*.

Front Axle

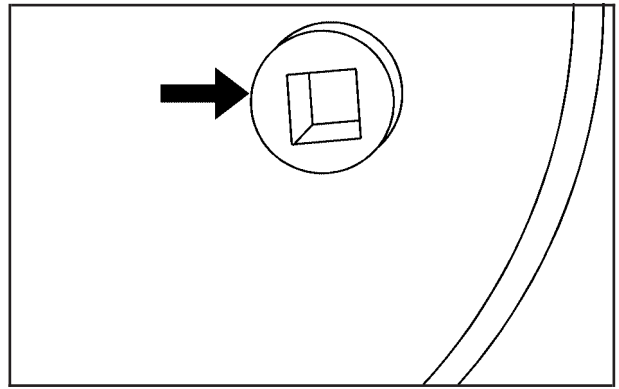
When to Check Lubricant

It is not necessary to regularly check front axle fluid unless you suspect there is a leak or you hear an unusual noise. A fluid loss could indicate a problem. Have it inspected and repaired.

Notice: **If you drive your vehicle through deep water that is higher than the front or rear axle, water may enter the axle housing and cause the axle lubricant to break down. This could damage the gears inside. Avoid driving your vehicle through deep water.**

You should avoid driving your vehicle through deep puddles or standing water. If you must drive through water that is higher than the front or rear axle, see your dealer immediately afterward to have the condition of the axle lubricant checked.

How to Check Lubricant



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, you may need to add some lubricant.

Add enough lubricant to raise the level to the bottom of the filler plug hole.

What to Use

To determine what kind of lubricant to use see *Part C: Recommended Fluids and Lubricants on page 6-32*.

Noise Control System

Tampering with Noise Control System Prohibited

The following information relates to compliance with federal noise emission standards for vehicles with a Gross Vehicle Weight Rating (GVWR) of more than 10,000 lbs (4 536 kg). The Maintenance Schedule provides information on maintaining the noise control system to minimize degradation of the noise emission control system during the life of your vehicle. The noise control system warranty is given in your warranty booklet.

These standards apply only to vehicles sold in the United States.

Federal law prohibits the following acts or the causing thereof:

1. The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control, prior to its sale or delivery to the ultimate purchaser or while it is in use; or
2. The use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below.

Insulation:

- Removal of the noise shields or any underhood insulation.

Engine:

- Removal or rendering engine speed governor (if equipped) inoperative so as to allow engine speed to exceed manufacturer specifications.

Fan and Drive:

- Removal of fan clutch (if equipped) or rendering clutch inoperative.
- Removal of the fan shroud (if equipped).

Air Intake:

- Removal of the air cleaner silencer.
- Modification of the air cleaner.

Exhaust:

- Removal of the muffler and/or resonator.
- Removal of the exhaust pipes and exhaust pipe clamps.

Bulb Replacement

It is recommended that all bulbs be replaced by your dealer.

Windshield Wiper Blade Replacement

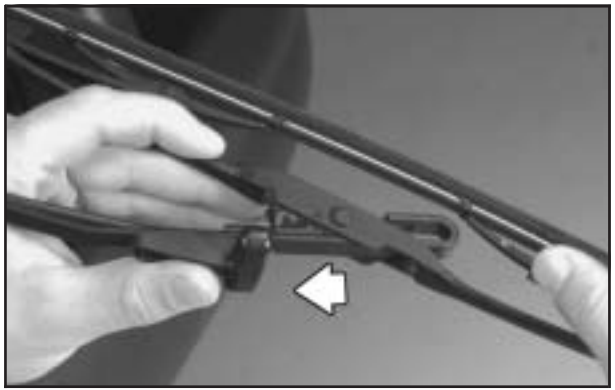
Windshield wiper blades should be inspected at least twice a year for wear or cracking. See “Wiper Blade Check” under *At Least Twice a Year on page 6-28* for more information.

Replacement blades come in different types and are removed in different ways.

Here’s how to remove the wiper blade:



1. Pull the windshield wiper arm away from the windshield.

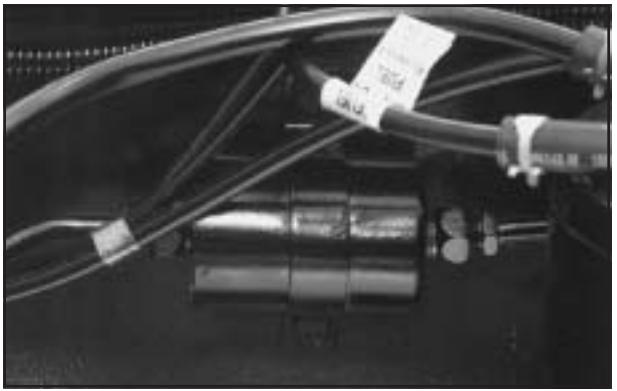


2. Push the release lever and slide the wiper assembly toward the driver's side of the vehicle.
3. Install a new blade by reversing Steps 1 and 2.

Other Service Items

Fuel Filter

Fuel Filter/Pressure Regulator (Gasoline Engines)



The steel fuel filter/pressure regulator is located near the engine compartment on the driver's side frame rail. If your vehicle has a rear steel fuel tank, the fuel filter/pressure regulator is located near the rear fuel tank, on the driver's side frame rail. See *Scheduled Maintenance on page 6-5* for recommended service intervals.

If your vehicle is equipped with the optional Davco spin-on type filter, it is located on the driver's side frame rail.

Fuel Filter (Diesel Engines)

If you have a diesel engine, your fuel filter is located in the engine compartment on the driver's side of the vehicle, or along the driver's side frame rail. See "Fuel Filter Replacement" earlier in this section for further information.

Also see *Scheduled Maintenance on page 6-5* for recommended service intervals.

Primary Fuel Filter and Water Separator



If you have a diesel engine, you may have this spin-on filter. It is located on the driver's side frame rail.

It has a clear plastic drain bowl at the bottom. Check the drain bowl occasionally for any water or particles.

To drain the bowl, do the following:

1. Shut off the engine.
2. Partially open the drain valve at the bottom of the filter.

See *Engine Oil (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26* for proper disposal procedures.

Secondary Fuel Filter and Water Separator/Heater (Caterpillar® Diesel)



If you have a Caterpillar® diesel engine, you may also have this spin-on filter and fuel separator/heater. It will be mounted in the engine compartment on the driver's side of the vehicle.

It has a metal drain bowl at the bottom. Occasionally, check the bowl for any water or particles.

To check or drain the bowl, do the following:

- Shut off the engine.
- Push up on the spring loaded drain valve until clear fuel is flowing from the valve.

The particles or water will drain out first. See *Engine Oil (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26* for proper disposal procedures.

Automatic Ether Injection System (Caterpillar® Diesel)



If you have a Caterpillar® diesel engine, you may have this feature. The ether cylinder is located in the engine compartment on the driver's side of the vehicle.

To change an empty ether cylinder, follow these steps.

1. Loosen the screw head on the cylinder-to-bracket clamp.
2. Spread the clamp apart.
3. Clean any dirt from the neck of the cylinder and the top of the valve before you take out the cylinder.
4. Check the inside of the valve for any foreign matter. Clean the valve as necessary.
5. Cover the valve to protect it from dirt and take out the cylinder.
6. Install a new gasket whenever you take out the cylinder. Use only one gasket and spread a light film of clean oil on it before installation.
7. Put in the new cylinder. Turn it clockwise until it just starts to contact the gasket.
8. Tighten the cylinder another half turn (180 degrees). Don't over-tighten.
9. Retighten the cylinder clamp.

Front Wheel Bearings with Oil-Filled Hubs

Notice: **If you drive your vehicle through deep water that is higher than the front or rear axle, water may enter the axle housing and cause the axle lubricant to break down. This could damage the gears inside. Avoid driving your vehicle through deep water.**

You should avoid driving your vehicle through deep puddles or standing water. If you must drive through water that is higher than the front or rear axle, see your dealer immediately afterward to have the condition of the axle lubricant checked.



If your vehicle has oil-filled hubs, occasionally check to see if they have enough oil. You can tell if there is oil there by using the circular gage on the sight glass.

If there isn't, clean the rubber fill plug in the center of the glass, and then remove it. Be careful not to allow any dirt or water to get into the oil. Add enough of the recommended oil to bring it up to the level mark that you'll see on the glass.

Refer to your Maintenance Schedule for the proper oil to use.

When you fill the hub, check the glass again after driving a short distance. It takes a while for the oil to flow through the system, and you may find that you have to add a little more to fill it to the proper level. Be sure not to overfill the hub.

Air Conditioning System

Every now and then, have your dealership check your air conditioning system to be sure it has not lost any cooling ability. If you think the system is not working properly, have your GM dealer check it out as soon as possible.

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 GM Warranty booklet for details. For additional information refer to the tire manufacturer's booklet included with your vehicle's Owner Manual.

⚠ CAUTION:

Poorly maintained and improperly used tires are dangerous.

- **Overloading your 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 4-32*.**
- **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. Tire pressure should be checked when your tires are cold. See *Inflation - Tire Pressure on page 5-74*.**
- **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 your tread is badly worn, or if your tires have been damaged, replace them.**

Inflation - Tire Pressure

The GVW Rating label, which is on the driver's door frame, shows the correct inflation pressures for your tires when they're cold. "Cold" means your vehicle has been sitting for at least three hours or driven no more than 1 mile (1.6 km).

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**

When to Check

Check your tires once a month or more.

Also, check the tire pressure of the spare tire (if equipped).

How to Check

Use a good quality pocket-type gage to check tire pressure. You can't tell if your tires are properly inflated simply by looking at them. Radial tires may look properly inflated even when they're underinflated.

Be sure to put the valve caps back on the valve stems. They help prevent leaks by keeping out dirt and moisture.

Wheel Loading

Wheels are stamped with a maximum load and cold inflation rating. Be sure you do not exceed these limits. If you ever think you need to exceed these limits, first contact the rim and wheel maker to get their advice.

Dual Tire Operation

When the vehicle is new, check the wheel nut tightness on all wheels with a torque wrench after your first 100 miles (160 km) and then 1,000 miles (1 600 km) after that. Whenever a wheel, wheel bolt or wheel nut is removed or serviced, repeat the 100 miles (160 km), and then 1,000 mile (1 600 km) wheel nut tightness check.

See *Tightening the Wheel Nuts on page 5-77* for wheel nut tightening information and proper torque values.

⚠ CAUTION:

If you operate your vehicle with a tire that is badly underinflated, the tire can overheat. An overheated tire can lose air suddenly or catch fire. You or others could be injured. Be sure all tires (including the spare, if any) are properly inflated.

See *Tires on page 5-73* and *Inflation - Tire Pressure on page 5-74* for more information on proper tire inflation.

When It Is Time for New Tires

Replace your tires when the tread depth is down to 1/8 of an inch (3.2 mm) for the front tires, or 1/16 of an inch (1.6 mm) for a rear tire. Also, you need a new tire if:

- 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.

⚠ CAUTION:

Mixing tires could cause you to lose control while driving. If you mix tires of different types – like radial and bias-belted tires – the vehicle may not handle properly, and you could have a crash. Be sure to use the same type of tires all around.

When you replace tires, make sure they are the same size, load range, speed rating and construction type (bias, bias-belted or radial) as your original tires.

If your vehicle has four-wheel drive, the axle differentials, propshafts and transfer case may be damaged if tires of different sizes, brands or tread types are installed on the front and rear axles. That damage would not be covered under your warranty.

Wheel Alignment and Tire Balance

The wheels on your vehicle were aligned at the factory to give you the longest tire life and best overall performance.

Proper front wheel alignment must be maintained in order to ensure efficient steering, good directional stability, and prevent abnormal tire wear. If you notice unusual tire wear or your vehicle is pulling one way or the other, the alignment may need to be reset. If you notice your vehicle vibrating when driving on a smooth road, your wheels may need to be balanced.

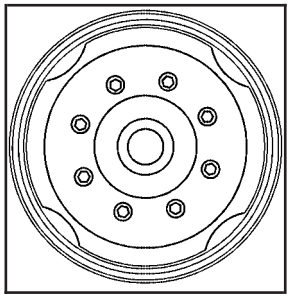
Tightening the Wheel Nuts

⚠ CAUTION:

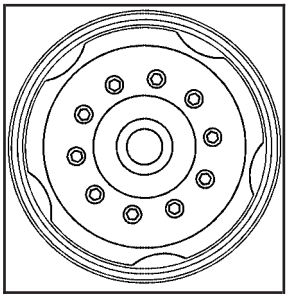
Wheel nuts that are not tight can work loose. If all the nuts on a wheel come off, the wheel can come off the vehicle, causing a crash. All wheel nuts must be properly tightened. Follow the rules in this section to be sure they are.

This section lets you know how often to check the tightness of the wheel nuts on your vehicle and how tight they must be.

First, use these pictures to decide what kind of wheels you have.



Hub-Piloted Type, 8-Hole



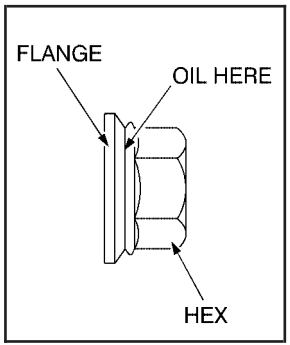
Hub-Piloted Type, 10-Hole

Then, refer to the following steps for the wheels you have.

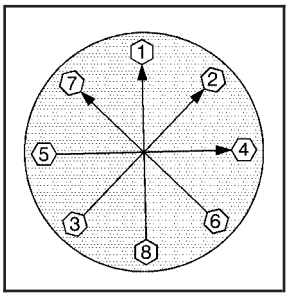
Hub-Piloted Wheels, 8-Hole or 10-Hole

The studs and nuts used with these wheels have right-hand threads.

1. With intermittent pilot pads, position a pad at 12 o'clock to center the wheel and reduce run-out.
2. Put the tire and rim assembly on the axle hub. Install the outer rear tire and rim assembly so that its valve stem is exactly opposite the valve stem on the inner tire and rim assembly.
3. Put on the wheel nuts.
4. Finger-tighten the nuts.

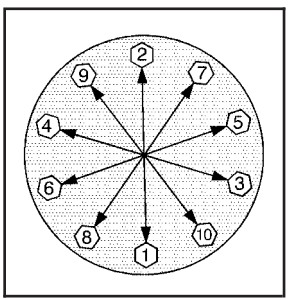


5. Oil the surfaces between the nuts and washers. Do not oil the studs or the threads of the nut.

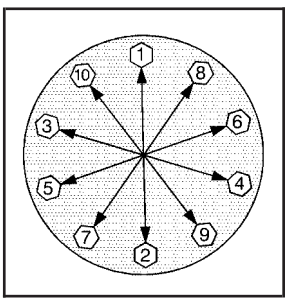


8-Hole

6. Tighten the nuts to 400 lb ft (542 N•m) if an 8-hole stud or 480 lb ft (650 N•m) if a 10-hole stud, using the following diagrams.



10-Hole (Front)



10-Hole (Rear)

⚠ CAUTION:

Never use oil or grease on studs or the threads of the wheel nuts. If you do, the wheel nuts might come loose and the wheel could fall off, causing a crash.

⚠ CAUTION:

If wheel studs are damaged, they can break. If all the studs on a wheel broke, the wheel could come off and cause a crash. If any stud is damaged because of a loose-running wheel, it could be that all of the studs are damaged. To be sure, replace all studs on the wheel. If the stud holes in a wheel have become larger, the wheel could collapse in operation. Replace any wheel if its stud holes have become larger or distorted in any way. Inspect hubs and

CAUTION: (Continued)

CAUTION: (Continued)

hub-piloted wheels for damage. Because of loose running wheels, piloting pad damage may occur and require replacement of the entire hub, for proper centering of the wheels. When replacing studs, hubs, wheel nuts or wheels, be sure to use GM original equipment parts.

⚠ CAUTION:

Rust or dirt on a wheel, or on the parts to which it is fastened, can make wheel nuts become loose after a time. The wheel could come off and cause a crash. 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 you need to, to get all the rust or dirt off.

How Often to Check

Wheel tightness is so important you should have a technician check nut tightness on all wheels with a torque wrench after your first 100 miles (160 km), and then 1,000 miles (1 600 km) after that. Be sure to repeat this service whenever you have a tire removed or serviced. See *Scheduled Maintenance on page 6-5* for further information.

Wheel Replacement

Replace any wheel that is bent, cracked or badly rusted or corroded. If wheel nuts keep coming loose, replace the wheel. If the wheel leaks air, replace it.

Your dealer 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 GM original equipment parts. This way, you will be sure to have the right wheel, wheel bolts and wheel nuts for your vehicle.

⚠ CAUTION:

A leaking wheel could fail without warning. A wheel designed for tubeless tires could be leaking because it is damaged. Do not use an inner tube or some other thing to try to stop the leaking. Get a new wheel or the proper type.

⚠ CAUTION:

Without the correct wheel, you may not be able to stop properly, and you could have other problems like a tire air-out. You could have a collision. If you do not go to your dealer to get a new wheel, be sure you get the correct one. Each new wheel should match the original wheel in load-carrying capacity, inflation pressure capacity, diameter, width, offset and mounting configuration.

Using wheels and tires with higher load-carrying limits than the original wheels and tires does not change the Gross Axle Weight Rating (GAWR) or the Gross Vehicle Weight Rating (GVWR) of your vehicle. See *Loading Your Vehicle on page 4-32* for more information.

Notice: **The wrong wheel can cause trouble in bearing life, brake cooling, speedometer/odometer calibration, headlamp aim, bumper height, vehicle ground clearance, stopping distance and tire clearance to the body and chassis. You could also have other problems like a tire air-out.**

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 GM original equipment wheel.

If a Tire Goes Flat

It is unusual for a tire to blowout while you are driving, especially if you maintain your 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.

If a tire goes flat, avoid further tire and wheel damage by driving slowly to a level place and turn on your hazard warning flashers. See *Hazard Warning Flashers on page 3-6*.

⚠ CAUTION:

Your vehicle, when new, did not include tire changing equipment or a place to store a tire in the vehicle. Special tools and procedures are required if a tire needs to be serviced. If these tools and procedures are not used, you or others could be injured or killed while trying to change or service a truck tire.

Your truck, when new, did not include tire changing equipment or a place to store a tire in the vehicle. Few drivers of these vehicles have the necessary equipment aboard to be able to change a flat tire safely. For example, you would need a truck jack that can lift several thousand pounds and a torque wrench that can generate several hundred foot-pounds (N•m) of twisting force.

⚠ CAUTION:

If you try to put air back into a tire that has run flat, even a tire that was extremely low on air, the tire can have a sudden air-out. This could cause you to lose control of the vehicle and have a serious crash. Do not refill a flat or very low tire with air without first having the tire taken off the wheel and checked for damage.

So if you are stopped somewhere by a flat or damaged tire or wheel, you should get expert help. See *Roadside Assistance Program on page 7-5*.

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 GM dealer has a product for cleaning your vehicle's glass. Should it become necessary, you can also obtain a product from your GM dealer 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 naptha, 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 *Part C: Recommended Fluids and Lubricants on page 6-32*.

Washing Your Vehicle

The paint finish on the vehicle provides beauty, depth of color, gloss retention, and durability.

The best way to preserve the vehicle's finish is to keep it clean by washing it often with lukewarm or cold water.

Do not wash the 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. GM-approved cleaning products can be obtained from your dealer. See *Vehicle Care/Appearance Materials on page 5-90*. 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 the 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 5-86*.

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 GM-approved cleaning products from your dealer. See *Vehicle Care/Appearance Materials on page 5-90*.

If 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 garaged or covered whenever possible.

Protecting Exterior Bright Metal Parts

Bright metal parts should be cleaned regularly to keep their luster. Washing with water is all that is usually needed. However, you may use chrome polish on chrome or stainless steel trim, if necessary.

Use special care with aluminum trim. To avoid damaging protective trim, never use auto or chrome polish, steam or caustic soap to clean aluminum. A coating of wax, rubbed to high polish, is recommended for all bright metal parts.

Windshield and Wiper Blades

If the windshield is not clear after using the windshield washer, or if the wiper blade chatters when running, wax, sap, or other material may be on the blade or windshield.

Clean the outside of the windshield with a glass cleaning liquid or powder and water solution. The windshield is clean if beads do not form when it is rinsed with water.

Grime from the windshield will stick to the wiper blades and affect their performance. Clean the blade by wiping vigorously with a cloth soaked in full-strength windshield washer solvent. Then rinse the blade with water.

Check the wiper blades and clean them as necessary; replace blades that look worn.

Aluminum or Chrome-Plated Wheels

The vehicle may be equipped with either 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: **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 GM-approved cleaners on aluminum or chrome-plated wheels.**

The surface of these wheels is similar to the painted surface of your vehicle. Do not use strong soaps, chemicals, abrasive polishes, abrasive cleaners, cleaners with acid, or abrasive cleaning brushes on them because you could damage the surface. Do not use chrome polish on aluminum wheels.

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.**

Use chrome polish only on chrome-plated wheels, but avoid any painted surface of the wheel, and buff off immediately after application.

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 GM dealer. Larger areas of finish damage can be corrected in your GM dealer'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 dealer 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 the 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, GM 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.
Swirl Remover Polish	Removes swirl marks, fine scratches and other light surface contamination.

Vehicle Care/Appearance Materials (cont'd)

Description	Usage
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's side. You can see it if you look through the windshield from outside your vehicle. The VIN also appears on the Vehicle Certification 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 will help you identify your vehicle's engine, specifications, and replacement parts.

Service Statement

One of these statements is on your GVW Rating label. Here is what each one means.

TRUCK SERVICE: A vehicle made to carry property or special equipment. It is made for uniform frame loading. That includes using the vehicle to pull a full trailer.

TRUCK-TRACTOR: A vehicle made to draw other vehicles. It is made to carry part of the load of the trailer. It is made for point frame loading, usually for a semi-trailer (fifth-wheel).

MAX. VERT. CG: The highest allowable vertical center of gravity, at the highest allowable GVWR. It is measured from the level ground in inches.

TRUCK-CANADA: A vehicle first sold in Canada with a non-school bus application, or cab models with regular production option RQ2 (truck service).

TRACTOR-CANADA: A cab model first sold in Canada with regular production option RQ3 (truck-tractor service).

Service Parts Identification Label

You will find this label in a location determined by the body manufacturer. It is very helpful if you ever need to order parts. On this label, you will find the following:

- VIN
- Model designation
- Paint information
- Production options and special equipment

Be sure that this label is not removed from the vehicle.

Electrical System

Add-On Electrical Equipment

Notice: **Don't add anything electrical to your vehicle unless you check with your dealer first. Some electrical equipment can damage your vehicle and the damage wouldn't be covered by your warranty. Some add-on electrical equipment can keep other components from working as they should.**

Headlamp Wiring

The headlamp wiring is protected by a circuit breaker in the light switch. An electrical overload will cause the lights to go on and off, or in some cases to remain off. If this happens, have your headlamp wiring checked right away.

Windshield Wiper Fuses

The windshield wiper motor is protected by a circuit breaker inside the motor and a circuit breaker or fuse in the fuse block. If the motor overheats, the wipers will stop until the motor cools. If the overload is caused by an electrical problem, be sure to get it fixed.

Fusible Links

A fusible link is a short piece of wire several gauge sizes smaller than the circuit it protects. It will melt in an overload situation, opening the circuit.

Your starter and other circuits have these fusible links. The size is printed on the insulation. If the insulation is burned beyond recognition, consult your GM dealer for the proper size. Replace a fusible link with one of the same size and insulation type. Fusible link insulation is a special purpose high-temperature material.

The hydraulic brake booster motor feed circuit and starter circuit are protected by a fusible link. Vehicles with a diesel engine have a fusible link for the intake heater feed circuit.

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. This protects the circuit until the current load returns to normal or the problem is fixed.

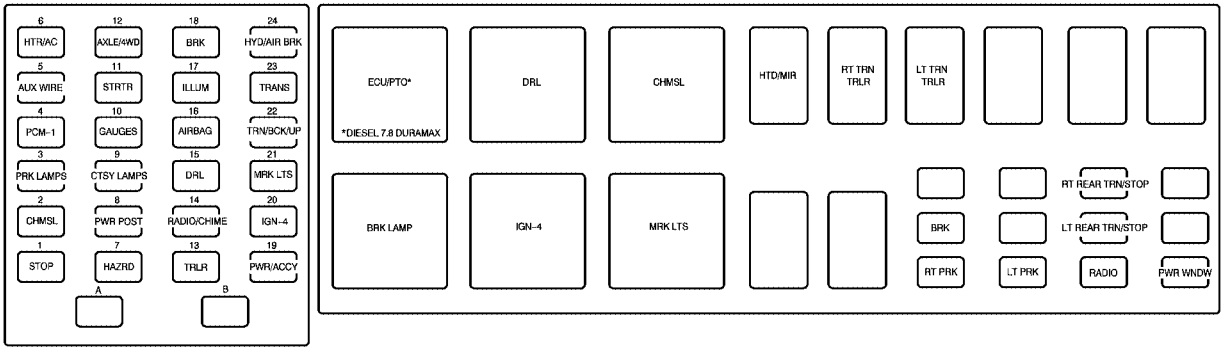
Fuses and Circuit Breakers

The wiring circuits in your vehicle are protected from short circuits by a combination of fuses, circuit breakers, maxi-fuses and fusible links. This greatly reduces the chance of a fire caused by an electrical problem. There may be a fuse taped to the wiring harness near the hydraulic brake booster.

Instrument Panel Fuse Block

There are two instrument panel fuse blocks located behind the instrument panel on the passenger's side of the vehicle.

Be sure to replace fuses with fuses of the same rating. Do not use fuses of higher amperage than those indicated on the fuse block.



Circuit Breaker	Usage
1	Stoplamps
2	Center High-Mounted Stoplamp
3	Parking Lamps
4	Powertrain Control Module
5	Auxiliary Wiring
6	Heater/Air Conditioning
7	Hazard Warning Flashers
8	Power Post

Circuit Breaker	Usage
9	Courtesy Lamps
10	Warning Lights, Gages and Indicators
11	Starter
12	Rear Axle/Four-Wheel-Drive
13	Trailer Turn Signals/Hazard Warning Flashers
14	Radio/Chime
15	Daytime Running Lamps

Circuit Breaker	Usage
16	Airbag System
17	Exterior/Interior Lamps
18	Parking Brake
19	Accessory Power
20	Ignition 4
21	Sidemarker Lamps
22	Turn Signal/Backup Lamps
23	Transmission
24	Hydraulics/Air Brake
A	Spare
B	Spare

Fuse	Usage
HTD/MIRR	Heated Mirrors
Blank	Not Used
RT TRN TRLR	Passenger's Side Trailer Turn Signal
Blank	Not Used
LT TRN TRLR	Driver's Side Trailer Turn Signal
Blank	Not Used
BRK	Brake Warning Lamp
RT PRK	Passenger's Side Parking Lamps
Blank	Not Used
Blank	Not Used
Blank	Not Used
LT PARK	Driver's Side Parking Lamps
Blank	Not Used
RT REAR TRN/ STOP	Passenger's Side Rear Turn Signal/Stoplamp
LT REAR TRN/ STOP	Driver's Side Rear Turn Signal/Stoplamp
RADIO	Radio
Blank	Not Used
Blank	Not Used
Blank	Not Used
PWR WNDW	Power Windows

Relay	Usage
ECU/PTO*	Engine Control Unit/Power Take-Off *Diesel 7.8 DURAMAX®
BRK LAMP	C4/C5 Brake Lamps, C6/C7/C8 Tractor/Trailer Wiring
DRL	Daytime Running Lamps
IGN-4	Ignition
CHMSL	Center High Mounted Stop Lamp
MRK LTS	Sidemarker and Clearance Lamps

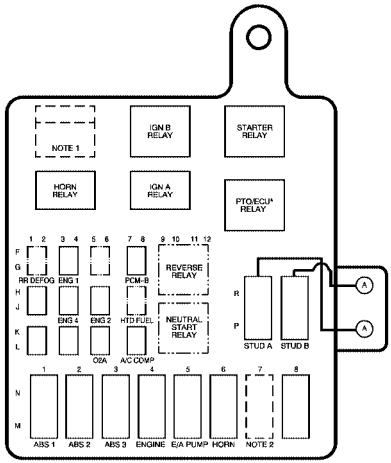
Underhood Fuse Block

When a circuit goes out, the problem could be in either the primary or secondary underhood fuse blocks. These blocks use blade-type fuses.

Both underhood fuse blocks are located in the engine compartment, on the passenger's side of the vehicle.

To access the fuse blocks, gently squeeze both sides of the cover to unlatch the tabs at the top. Then, unsnap both attachments at the bottom and remove the cover.

Be sure to replace fuses with fuses of the same rating. Do not use fuses of higher amperage than those indicated on the fuse block.

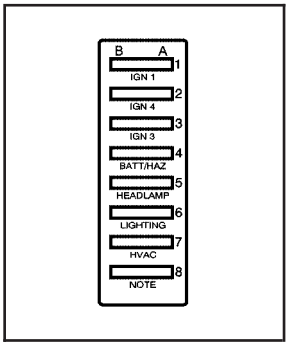


Primary Underhood Fuse Block

Fuse	Usage
RR DEFOG	Rear Defog
ENG 1	Engine 1
BLANK	Not Used
PCM-B	Powertrain Control Module
BLANK	Not Used
ENG 4	Engine 4
ENG 2	Engine 2

Fuse	Usage
HTD FUEL	Heated Fuel
BLANK	Not Used
BLANK	Not Used
02A	Emissions
A/C COMP	Air Conditioning Compressor
ABS 1	Anti-lock Brake System 1
ABS 2	Anti-lock Brake System 2
ABS 3	Anti-lock Brake System 3
ENGINE	Engine
E/A PUMP	Electronic/Automatic Pump
HORN	Horn
NOTE 2	L18 Fuel, LG4 Powertrain Control Valve, LG5 Electronic Control Module
BLANK	Not Used
STUD A	Spare
STUD B	Spare

Relay	Usage
NOTE 1	LG4 Powertrain Control Valve, L18 Fuel Pump, LG5 Heated Fuel
IGN B	Ignition
STARTER	Starter
HORN	Horn
IGN A	Ignition
PTO/ECU*	Power Take-Off/Engine Control Unit *Diesel 7.8L DURAMAX®™
REVERSE	Reverse
NEUTRAL START	Neutral Start



Secondary Underhood Fuse Block

Fuse	Usage
IGN 1	Four-Wheel Drive Module
IGN 4	Ignition 4
IGN 3	Ignition 3
BATT/HAZ	Battery/Hazard Warning Flashers
HEADLAMP	Headlamps
LIGHTING	Interior/Exterior Lamps
HVAC	Climate Control System
NOTE	C4/C5 Electric Brake, C6/C7/C8 Brake Lamps

Capacities and Specifications

The following approximate capacities are given in English and metric conversions. See *Part C: Recommended Fluids and Lubricants on page 6-32* for more information.

Application	Capacities	
	English	Metric
Cooling System – C4/C5 Models		
6.6L AutomaticTransmission	27.3 qt	25.8 L
6.6L Manual Transmission	27.6 qt	26.1 L
8.1L Automatic Transmission	29.8 qt	28.2 L
8.1L Manual Transmission	30.1 qt	28.5 L
Cooling System – C6/C7/C8 Automatic Transmission		
7.2L Engine (hp 207 - 230)	31.4 qt	29.7 L
7.2L Engine (hp 250 - 300)	31.2 qt	29.5 L
7.8L Engine (hp 200 - 215)	33.7 qt	31.9 L
7.8L Engine (hp 230 - 275)	33.3 qt	31.5 L
8.1L Engine (hp 225 - 295)	32.5 qt	30.8 L
Cooling System – C6/C7/C8 Manual Transmission		
7.2L 207 - 230 hp Engine	29.3 qt	27.7 L
7.2L 207 - 230 hp Engine with A/C and Increased Cooling	33.0 qt	31.2 L
7.2L 250 - 300 hp Engine	32.8 qt	31.0 L

Application	Capacities	
	English	Metric
7.2L 250 - 300 hp Engine with A/C and Increased Cooling	33.3 qt	31.5 L
7.8L 200 - 230 hp Engine	31.6 qt	29.9 L
7.8L 200 - 230 hp Engine with A/C and Increased Cooling	35.3 qt	33.4 L
7.8L 250 - 300 hp Engine	34.9 qt	33.0 L
7.8L 250 - 300 hp Engine with A/C and Increased Cooling	35.4 qt	33.5 L
8.1L 225 - 295 hp Engine	33.3 qt	31.5 L
8.1L with A/C and Increased Cooling	34.9 qt	33.0 L
Engine Oil with Filter		
6.6L	14.6 qt	13.8 L
7.2L	30.0 qt	28.4 L
7.8L[1]	23.8 qt	22.5 L
8.1L	10.0 qt	9.4 L
Check fill level on the oil indicator after initial fill to make sure it is actually full. Oil level may vary depending on vehicle option content. [1]Additional oil is required with auxiliary oil filter systems. Make sure to add enough extra oil to fill the auxiliary oil filter system. For vehicles equipped with the LUBERFINER 750-C, add 14 quarts (13.25 L).		
Fuel Capacity – C4/C5 Models		
Standard	25 gal	94.6 L
Optional	32 gal	121.1 L

Application	Capacities	
	English	Metric
Optional	35 gal	132.5 L
Optional (Single Tank)	40 gal	151.4 L
Optional[1] (Dual Tanks)	40 gal	151.4 L
Optional	60 gal	227.1 L
Optional	80 gal	302.8 L
[1]One 25-gallon (94.6 L) tank and one 15-gallon (56.8 L) tank		
Fuel Capacity – C6/C7/C8 Models		
Optional	35 gal	132.4 L
Standard	50 gal	189.2 L
Optional	50 gal	189.2 L
Optional[1] (Dual Tanks)	70 gal	264.8 L
Optional[2] (Dual Tanks)	75 gal	283.8 L
Optional[3] (Dual Tanks)	100 gal	378.5 L
[1]Two 35-gallon (132.4 L) tanks [2]One 25-gallon (94.6 L) tank and one 50-gallon (189.2 L) tank [3]Two 50-gallon (189.2 L) tanks		
Front 4WD Axle (G38) and (FRX)	7.0 pt	3.6 L
Rear Axle – Single Speed		
80 (GL4)	8.0 pt	3.7 L

Application	Capacities	
	English	Metric
19060D (HPM), 19060S (HPK), 21060D (HPN), 21060S (HPP), 22060S (HPG)	31.0 pt	14.7 L
23090S (HPT)	42.5 pt	20.1 L
23105D (HNB), 23105S (HNA)	51.0 pt	24.1 L
26105S (HPA)	51.0 pt	24.1 L
S110 (HD2) and S130 (HD1)	15.0 pt	7.1 L
Rear Axle – Tandem		
DS344 (front) (HPI)	34.0 pt	16.1 L
DS344 (rear) (HPI)	31.0 pt	14.7 L
DS404 (HPE), DS404P (HPJ)	32.0 pt	15.1 L
RSH44 (HP3)	29.0 pt	13.7 L
Rear Axle – Two-Speed		
19060T (HPL), 22060T (HPH)	38.0 pt	18.0 L
21060T (H15)	38.0 pt	18.0 L
23082T (H25)	44.0 pt	20.8 L
26080T (GJ4)	44.0 pt	20.8 L
Transfer Case (Four-Wheel Drive)	4.0 pt	1.9 L
Transmission Fluid, Automatic		

Application	Capacities	
	English	Metric
3000 RDS and EVS, and 3500 RDS and EVS	52.0 pt	24.6 L
1000 HS, RDS, MH, PTS and EVS, 2200 HS, RDS, MH, PTS and EVS, 2500 HS and RDS, and 2300 HS and RDS	35.0 pt	13.5 L
Add 2 pints (1 L) when changing spin-on or remote filter. See the Allison® Automatic Transmission Operator's Manual for fluid check and maintenance information.		
Transmission Fluid, Manual		
FS5205A, FS5205C	11.6 pt	5.5 L
FS6305A, FS6305B,	18.4 pt	8.7 L
FS5406, FSO8406	18.5 pt	8.8 L
RT6609	12.5 pt	5.9 L
RT8709B	25.1 pt	11.8 L
RT8908LL	29.1 pt	13.8 L
ZF S6-650	12.7 pt	6.0 L
All capacities are approximate. When adding, be sure to fill to the approximate level, as recommended in this manual. Recheck the fluid level after filling.		

Engine Specifications

Engine	RPO	Type
6.6L V8 DURAMAX®	LLY	Common Rail Fuel System
7.2L L6 Caterpillar® C7	LG5	Hydraulic/Electronic Unit Injector Fuel System
7.8L L6 DURAMAX®	LG4	Common Rail Fuel System
8.1L V8 VORTEC™	L18	Single Port Fuel Injector Fuel System

Normal Maintenance Replacement Parts

Replacement parts identified by name, part number, or specification can be obtained from your dealer.

Part	GM Part Number	ACDelco® Part Number
Air Compressor Filter Haldex compressor (8.1L Engine Only)	88915425	A507CF
Engine Air Cleaner/Filter		
6.6L; 8.1L (C4/C5 Models)	88937527	A2032C
7.2L; 7.8L (C6/C7/C8 Models) with Standard Air Cleaner	88937525	A2031C
7.2L; 7.8L (C6/C7/C8 Models) with Heavy Duty Air Cleaner	88937525[1]	A2031C
8.1L (C6/C7/C8 Models) with Heavy Duty Air Cleaner	88937525	A2031C
8.1L (C6/C7/C8 Models) with Standard Air Cleaner	88937545	A2034C

Part	GM Part Number	ACDelco® Part Number
Engine Oil Filter		
6.6L	88917036	PF2232
7.2L	—	1R-1807††
7.8L	94037791	—
8.1L	25324052	PF454
Fuel Filter		
6.6L	97385488	TP1298A
7.2L	—	1R-0751††
7.8L	94392474	—
8.1L (NG6/NK1)	21998364	—
8.1L (All others)	—	S3202†
Power Steering Fluid Filter	88892858	—
Secondary Fuel Filter		
6.6L	—	—
7.2L	25014274	TP915D
7.2L (KUK)	88983117	TP1519
7.2L (NWB)	15618921	—
7.8L	25014274	TP915D
7.8L (KUK)	88983117	TP1519
8.1L (K28 and standard Uhaul)	25014476	TP1247

Part	GM Part Number	ACDelco® Part Number
Spark Plugs		
6.6L	—	—
7.2L	—	—
7.8L	—	—
8.1L	12578277	41-983

[1]Optional air filter (GM Part No. 88937548 AC Delco No. A2035C) for C6/C7/C8 Models. Fits inside standard size filter (GM Part No. 88937525 AC Delco No. A2031C) listed previously.
†Racor part number.
††Caterpillar® part number.
See the Allison Transmission® Operator's Manual in your vehicle for external filter part numbers and information.

Section 6 Maintenance Schedule

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Maintenance Schedule

Introduction

Important: Keep engine oil at the proper level and change as recommended.



Have you purchased the GM Protection Plan? The Plan supplements your new vehicle warranties. See your Warranty and Owner Assistance booklet or your dealer for details.

Maintenance Requirements

Maintenance intervals, checks, inspections 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 may 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. 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.

How This Section is Organized

This maintenance schedule is divided into four parts:

“Part A: Scheduled Maintenance Services” explains what to have done and how often. Some of these services can be complex, so unless you are technically qualified and have the necessary equipment, you should let your GM dealer’s service department do these jobs.

Your GM dealer has GM-trained and supported service people that will perform the work using genuine GM parts.

⚠ 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, have a qualified technician do the work. See *Doing Your Own Service Work on page 5-4*.

If you want to purchase service information, see *Service Publications Ordering Information on page 7-11*.

“Part B: Owner Checks and Services” tells you what should be checked and when. It also explains what you can easily do to keep your vehicle in good condition.

“Part C: Recommended Fluids and Lubricants” lists some recommended products necessary to help keep your vehicle properly maintained. These products, or their equivalents, should be used whether you do the work yourself or have it done.

“Part D: Maintenance Record” is a place for you to record and keep track of the maintenance performed on your vehicle. Keep your maintenance receipts. They may be needed to qualify your vehicle for warranty repairs.

Part A: Scheduled Maintenance Services

In this part are scheduled maintenance services which are to be performed at the mileage intervals specified.

Using the Maintenance Schedule

We at General Motors want to help 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 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 dealer.

This part tells you the maintenance services you should have done and when to schedule them.

When you go to your dealer for your service needs, you will know that GM-trained and supported service people will perform the work using genuine GM parts.

The proper fluids and lubricants to use are listed in Part C. Make sure whoever services your vehicle uses these. All parts should be replaced and all necessary repairs done before you or anyone else drives the vehicle.

This schedule is for vehicles that:

- carry passengers and cargo within recommended limits. You will find limits on your vehicle's GVW Rating label. See *Loading Your Vehicle on page 4-32*.
- are driven on reasonable road surfaces within legal driving limits.
- use the recommended fuel. See *What Fuel to Use on page 5-7*.

Scheduled Maintenance Supplements

If your vehicle has a Caterpillar® diesel engine, your owner's manual is supplemented by the Caterpillar® Diesel Engine Operation & Maintenance Manual. If your vehicle has an Allison transmission, your owner's manual is supplemented by an Allison Transmission® Operator's Manual. Always refer to these manuals for related maintenance services.

Scheduled Maintenance

The services shown in this schedule up to 100,000 miles (166 000 km) should be repeated after 100,000 miles (166 000 km) at the same intervals for the life of this vehicle. The services shown after 100,000 miles (166 000 km) should be repeated at the same miles (km) after those intervals for the life of this vehicle.

Gasoline engine vehicles and some DURAMAX® diesel engine vehicles have a computer that lets you know when to change your engine oil. This is not based on mileage, but on engine operation and engine temperature. When the computer has calculated that the oil needs changing, the Engine Oil Life System will indicate that a change is necessary. See *Engine Oil Life System (Gasoline Engine) on page 5-30* or *Engine Oil Life System (DURAMAX® Diesel) on page 5-32* or *Engine Oil Life System (Caterpillar® Diesel Engine) on page 5-33*.

The “Footnotes” at the end of this Maintenance Schedule further explain maintenance services.

See *Service Publications Ordering Information on page 7-11*.

100 Miles (160 km)

- ❑ Wheel stud nut service. *(36)*

1,000 Miles (1 600 km)

- ❑ Wheel stud nut service. *(36)*
- ❑ Rear axle air shift motor service. *(10)*

7,500 Miles (12 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first).*(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*

- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first).*(34)*

12,000 Miles (20 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*

15,000 Miles (24 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ 6.6L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ 6.6L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (9)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first).*(11)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.

- ❑ DURAMAX® Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

22,500 Miles (36 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first).*(11)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Cooling system service. Clean the cooling system filter cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.

- ❑ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(22) (36)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24) †*
- ❑ Rear axle air shift motor service. *(10)*

24,000 Miles (40 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*

30,000 Miles (48 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ 6.6L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ 6.6L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (9)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ DURAMAX® Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(2)*
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).

- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ C600, C700, and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first.) *(17)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

36,000 Miles (55 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*

37,500 Miles (60 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

45,000 Miles (72 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ 6.6L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ 6.6L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (9)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Replace engine air cleaner filter. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ DURAMAX® Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first).*(11)*
- ❑ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed.) *(22) (36)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*

- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Rear axle air shift motor service. *(10)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24) †*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

48,000 Miles (75 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*

50,000 Miles (80 000 km)

- ❑ Inspect air compressor discharge port (or every 6 months or every 1,800 hours, whichever occurs first.)

52,500 Miles (84 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first).*(11)*

- ❑ Wheels and tires service. *(14)*
- ❑ DURAMAX® Diesel Engine Only: Adjust valve lash (or every 2,625 hours of engine operation, whichever occurs first). *(18)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

60,000 Miles (96 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ 6.6L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ 6.6L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (9)*
- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*
- ❑ Gasoline Engine Only (Vehicles with GVW greater than 16,000 lbs): Spark plug service. *(2) (25)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*

- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ DURAMAX® Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(2)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ C600, C700, and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(17)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

67,500 Miles (108 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first).*(11)*
- ❑ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(22) (36)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Rear axle air shift motor service. *(10)*
- ❑ Air intake system service (or every 24 months, whichever occurs first).*(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24) †*

72,000 Miles (115 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*

75,000 Miles (120 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ 6.6L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ 6.6L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (9)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ DURAMAX® Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).

- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first).*(34)*
- ❑ Fuel tank, fuel cap and fuel lines service (or every 72 months, whichever occurs first). *(2) (26) †*
- ❑ Exhaust Gas Recirculation (EGR) system inspection (if equipped) (or every 72 months, whichever occurs first). *(2) (27)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

82,500 Miles (132 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Wheel bearings service — Eaton® axle, oil-filled, (or every 24 months, whichever occurs first). *(22) (36)*

84,000 Miles (140 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX® Diesel)" in the Index. *(2) (7)*

90,000 Miles (144 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ 6.6L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ 6.6L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX® Diesel)" in the Index. *(2) (9)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Replace engine air cleaner filter. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 5-34* for more information.
- ❑ DURAMAX® Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Wheel bearing (grease type) service (or every 24 months, whichever occurs first, and whenever hubs are removed). *(22) (36)*
- ❑ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(2)*
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*

- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ C600, C700, and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(17)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Rear axle air shift motor service. *(10)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24) †*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months or every 800 hours, whichever occurs first).

96,000 Miles (152 000 km)

- ❑ 7.8L DURAMAX® Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 600 hours of engine operation, whichever occurs first). *(2)*
- ❑ 7.8L DURAMAX® Diesel With Engine Oil Life System Only: Check oil life system (or every 12 months, or every 600 hours of engine operation, whichever occurs first). If engine oil and filter are changed, reset system. See “Engine Oil (DURAMAX® Diesel)” in the Index. *(2) (7)*

97,500 Miles (156 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See “Engine Oil (Gasoline Engine)” in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

100,000 Miles (160 000 km)

- ❑ Diesel Only: Inspect engine drive belt; replace as necessary.
- ❑ Gasoline Engine Only (Vehicles with GVW of 16,000 lbs or less): Spark plug service. *(2) (25)*
- ❑ Change power steering fluid (or every 36 months, whichever occurs first). *(12)*
- ❑ Replace power steering reservoir filter element (or every 24 months, whichever occurs first).
- ❑ Except four-wheel drive: Front axle service. *(31)*
- ❑ Four-wheel drive only: Front axle service. *(30)*
- ❑ Four-wheel drive only: Transfer case service. *(30)*
- ❑ Rear axle service — Eaton®, Rockwell®, Spicer® axles (or every 12 months, whichever occurs first). *(30)*
- ❑ Exhaust brake service, if equipped. Check for excessive spindle free play and smooth operation. Lubricate ball joint cap.
- ❑ Inspect air compressor discharge port (or every 6 months or every 1,800 hours, whichever occurs first).
- ❑ Manual transmission (ZF 6-speed only) fluid replacement (or every 48 months, whichever occurs first).
- ❑ Trailer brake hand control valve service (or every 12 months, or every 3,600 hours, whichever occurs first). *(35)*

120,000 Miles (192 000 km)

- ❑ C600, C700, and C800 Gasoline Engines Only: Replace engine drive belts.
- ❑ C400 and C500 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(17)*

150,000 Miles (240 000 km)

- ❑ Cooling system service (or every 60 months since last service, whichever occurs first). *(2) (29)*
- ❑ Diesel Engine Only: Inspect engine drive belt; replace as necessary.

200,000 Miles (320 000 km)

- ❑ Remove, disassemble, clean, and inspect the air brake trailer supply valve (or every 2 years, or every 7,200 hours, whichever occurs first).
- ❑ Diesel Engine Only: Inspect engine drive belt; replace as necessary.

250,000 Miles (400 000 km)

- ❑ Four-wheel drive only: Front axle service. *(30)*
- ❑ Four-wheel drive only: Transfer case service. *(30)*
- ❑ Manual transmission (except ZF 6-speed) fluid replacement (or every 60 months, whichever occurs first).

300,000 Miles (480 000 km)

- ❑ Remove, disassemble, clean, and inspect the air brake air dryer (or every 3 years, or 10,800 hours, whichever occurs first). Replace desiccant.

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.

(1) = If your vehicle has an Allison Transmission®, your GM owner manual is supplemented by an Allison Transmission® Operator's Manual. Always refer to these manuals for related maintenance services.

(2) = An Emission Control Service.

(3) = A Noise Emission Control Device.

(4) = Applies to vehicles sold in the United States and is recommended for vehicles sold in Canada.

(5) = Check fluid level in brake master cylinder, power steering pump, axle, transmission, and hydraulic spring parking brake pump (if equipped). A low fluid level in the brake master cylinder can indicate worn brake linings and should be checked accordingly.

(6) = 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 caliper assemblies. Check brake pedal for excessive free play or travel (or every 6 months, whichever occurs first) and have serviced if needed. Check brakes more often if driving habits and conditions result in frequent braking.

(7) = This vehicle has the Engine Oil Life System. This system will show you when to change the engine oil and filter — usually between 3,000 miles (5 000 km) and 12,000 miles (20 000 km) since your last oil change. Under severe conditions, the indicator may come on before 3,000 miles (5 000 km). Never drive your 7.8L diesel engine vehicle more than 12,000 miles (20 000 km), or 12 months, or 600 engine hours, without an oil and filter change.

Remember to reset the Engine Oil Life System whenever the oil is changed. For more information, see *Engine Oil Life System (Gasoline Engine) on page 5-30* or *Engine Oil Life System (DURAMAX® Diesel) on page 5-32* or *Engine Oil Life System (Caterpillar® Diesel Engine) on page 5-33*.

(8) = This vehicle has the Engine Oil Life System. This system will show you when to change the engine oil and filter — usually between 3,000 miles (5 000 km) and 7,500 miles (12 000 km) since your last oil change. Under severe conditions, the indicator may come on before 3,000 miles (5 000 km). Never drive your gasoline engine vehicle more than 7,500 miles (12 000 km) or 12 months without an oil and filter change.

Remember to reset the Engine Oil Life System whenever the oil is changed. For more information, see *Engine Oil Life System (Gasoline Engine) on page 5-30* or *Engine Oil Life System (DURAMAX® Diesel) on page 5-32* or *Engine Oil Life System (Caterpillar® Diesel Engine) on page 5-33*.

(9) = This vehicle has the Engine Oil Life System. This system will show you when to change the engine oil and filter — usually between 3,000 miles (5 000 km) and 15,000 miles (24 000 km) since your last oil change. Under severe conditions, the indicator may come on before 3,000 miles (5 000 km). Never drive your 6.6L diesel engine vehicle more than 15,000 miles (24 000 km), or 12 months, or 750 engine hours, without an oil and filter change.

Remember to reset the Engine Oil Life System whenever the oil is changed. For more information, see *Engine Oil Life System (Gasoline Engine) on page 5-30* or *Engine Oil Life System (DURAMAX® Diesel) on page 5-32* or *Engine Oil Life System (Caterpillar® Diesel Engine) on page 5-33*.

(10) = Inspect rear axle air shift motor for fluid leaks. Remove plug to check fluid level. Inspect air lines and hoses for proper hook-up, binding, leaks, etc. Inspect at 1,000 miles (1 600 km) and 22,500 miles (36 000 km) and then every 22,500 miles (36 000 km) thereafter.

(11) = Chassis Lubrication Service: Lubricate all grease fittings in front suspension, front axle, and steering linkage. DO NOT lubricate kingpin bushings with air pressure equipment; instead, use a hand grease gun to ensure complete purge and eliminate sealer cap distortion. Front axle tie rod ends, both upper and lower kingpin fittings, and both steering linkage relay rod ends should be greased with the vehicle loaded on the ground and wheels turned straight ahead, NOT with the vehicle on a hoist. Apply kingpin bushing lubricant to both upper and lower kingpin grease fittings until new lubricant purges from between the upper shim pack and thrust bearing. Lubricate transmission and shift linkage, hood latches and hood hinges, parking brake lever pivot, clevis pins and linkage, disc brake caliper rails, clutch linkage and release bearing (if equipped), bearing pads, propshaft universal joints, brake camshaft bracket, slack adjusters, pedal shaft, clutch cross shaft, clutch pedal springs, and clutch cable bushing at transmission. Lubricate suspension, axle, and steering linkage more often when operating under dusty or muddy conditions and in excessive off-road use. Frequently power-washed vehicles will require more frequent lubrication.

(12) = Check steering system:

- Look for damaged, loose, or missing parts. Inspect the steering linkage relay rod and tie rod ends for looseness or lack of lubricant. Also look for parts showing signs of wear or lack of lubrication. Replace parts as needed. Also check steering gear mounting bolts, pitman arm nut, gear housing upper cover and side cover attaching bolts, steering column mounting bolts and cardan joint clamp bolts; tighten if necessary. See the service manual.
- Inspect power steering hoses, tubes, and fittings for leaks. Hoses and lines must not be twisted, kinked, or tightly bent. Make sure clips, clamps, supporting tubes, and hoses are in place and properly secured.
- Check steering gear for leakage around pitman shaft and housing. If leakage is evident (lubricant oozing out, not just oily film), leak should be corrected immediately.

(13) = Check front and rear suspension. Look for damaged, loose, or missing parts or parts showing signs of wear or lack of lubrication. Replace parts as needed.

(14) = Adjust tire pressures as indicated on the Gross Vehicle Weight (GVW) Rating label for optimum tire life. See *Tires on page 5-73* for further details. Check tires for excessive or abnormal wear or damage. Also check for damaged wheels. Replace wheels and/or tires as needed.

(15) = Check spring-to-axle U-bolts and shackle bolts for proper torque. See the service manual for torque sequence and specifications. When parts are replaced, the torque must be checked and adjusted more often during the first 6,000 miles (10 000 km). Check torque at 500 miles (800 km) and 2,000 miles (3 000 km) after first use of parts.

(16) = Check complete exhaust system and cab areas near the exhaust system for broken, damaged, missing, or out-of-position parts. Also inspect for open seams, holes, loose connections, or other conditions which could let exhaust fumes seep into the driver compartment. Needed repairs should be made at once. To help maintain system integrity, replace exhaust pipes whenever a new muffler is put on.

(17) = Check all gasoline engine drive belts for cracks, fraying, and wear. Replace as needed.

(18) = Adjust valve lash. Incorrect valve clearance will result in increased engine noise and reduced engine output.

(19) = With the engine off and below normal operating temperature, check to see that the thermostatically controlled engine cooling fan can be rotated by hand on viscous-operated drives. Replace as needed.

(20) = Check shields and underhood insulation for damage or looseness. Adjust or replace as needed.

(21) = Inspect parking brake drum and linings for wear or cracks and check linkage and adjustment.

(22) = Wheel bearing service:

- Grease type — Clean, inspect, and lubricate with the proper wheel bearing grease at designated intervals or when hubs are removed. See *Part C: Recommended Fluids and Lubricants on page 6-32*.
- Oil-filled type — Some wheel bearings are lubricated by rear axle lubricant. When you have oil-filled hubs, use lubricant identical to that used in your rear axle. Lubricant change intervals are the same for front and rear axles. However, you must maintain the proper oil level between change intervals. See *Front Wheel Bearings with Oil-Filled Hubs on page 5-72* and *Part C: Recommended Fluids and Lubricants on page 6-32*.

(23) = Check the air intake system installation to see that gaskets are seated properly and all hose connections, fasteners, and other components are tight. Tighten connections and fasteners or replace parts as required.

(24) = Evaporative Control System Service, if equipped: Check all fuel and vapor lines and hoses for proper connections and correct routing (or every 24 months, whichever occurs first). Replace parts as needed.

(25) = Replace spark plugs. Inspect wires for damage. Check the wire boot and boot heat shield fit at spark plugs and coil. Replace parts as needed.

(26) = Check the fuel tank, fuel cap and fuel lines for damage which could cause leakage. Inspect fuel cap for correct sealing ability and any indications of damage. Check fuel cap gasket for even filler neck imprint. Replace parts as needed.

(27) = Check Exhaust Gas Recirculation (EGR) system as described in the service manual. See *Service Publications Ordering Information on page 7-11*.

(28) = Inspect Electronic Vacuum Regulator Valve (EVRV) filter for excessive contamination or plugging. If needed, clean filter with solution of soap and water, let dry and install.

(29) = Drain, flush, and refill cooling system. This service can be complex; you should have your dealer perform this service. See *Part C: Recommended Fluids and Lubricants on page 6-32* for what to use. Inspect hoses. Clean radiator, condenser, pressure cap, and neck. Pressure test cooling system and pressure cap. For Caterpillar® diesel engines, always refer to the Caterpillar® Diesel Engine Operation & Maintenance Manual for coolant recommendations and change intervals.

(30) = Change the lubricant. See *Part C: Recommended Fluids and Lubricants on page 6-32*.

(31) = Front axle service: Re-pack upper kingpin roller bearing.

(32) = Air brake service:

- Inspect brake lines and hoses for proper hook-up, binding, leaks, cracks, chafing, etc. Inspect drum brake linings for wear or cracks. Inspect other brake parts at each wheel, including drums and wheel speed sensor wiring. Check brake pedal for excessive free play or travel (or every 6 months, whichever occurs first) and have serviced if needed. Check brakes more often if driving habits and conditions result in frequent braking. Replace air dryer cartridge only if excessive oil or moisture is present. A small amount of oil in the system is normal and should not be considered as a reason to replace the cartridge.

- Test air lines for leaks; tighten as needed. Replace compressor filter.
- Inspect air parking brake chamber for leaks and damage. Inspect lines and hoses for leaks, cracks, chafing, etc. Also check all attachments for tightness, wear, or damage. Note: The spring brake section of the rear brake diaphragms are non-serviceable.
- Replace the air compressor filter element, mounted on the air compressor. For remote air compressor intake service, refer to engine air cleaner filter replacement.
- Remove, disassemble, clean, and inspect the safety valve, standard brake chambers, quick release valves, quick release/double check valve combinations, parking brake control valve, double check valves, pressure protection valves, and alcohol injector (if equipped).
- Remove, disassemble, and clean the application valve; replace parts showing wear.
- Remove, disassemble, clean, and inspect the spring brake control valve; replace rubber parts.

(33) = Clean and lubricate air brake automatic slack adjuster. Check pushrod travel and auto adjustment operation. Have serviced if needed.

(34) = Air brake chamber service: Check operation, mounting clamps, and air lines and check for leaks.

(35) = Trailer brake hand control valve service: Check operation; lubricate cam and follower.

(36) = Tighten the wheel stud nuts to the specified torque values at 100 miles (160 km). Thereafter, tighten them 1,000 miles (1 600 km) after each time the wheel is removed. See *Tightening the Wheel Nuts on page 5-77*.

(37) = Inspect and clean any accumulated dirt, gravel, or other foreign objects from the valves and valve boots as needed. Using light oil, lubricate brake pedal to brake application valve linkage components. Check any rubber boots for cracks, holes, or deterioration and replace if necessary.

Part B: Owner Checks and Services

Listed in this part are owner checks and services which should be performed at the intervals specified to help ensure the safety, dependability and emission control performance of your vehicle.

For your safety and that of others, any of the safety-related components that may have been damaged in an accident should be checked and any needed repairs made before operating the vehicle.

At the minimum, these routine checks should be made every 6 months or 6,000 miles (10 000 km), whichever occurs first. Whenever repairs are needed, have them completed before operating the vehicle.

At Each Fuel Fill

It is important for you or a service station attendant 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 (Caterpillar® Diesel Engine) on page 5-22* or *Engine Oil (DURAMAX® Diesel) on page 5-22* or *Engine Oil (Gasoline Engine) on page 5-26* for further details.

Engine Coolant Level Check

Check the engine coolant level and add DEX-COOL® coolant mixture if necessary. See *Engine Coolant (Gas and DURAMAX® Engines) on page 5-37* or *Engine Coolant (Caterpillar® Diesel Engines) on page 5-40* 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. See *Windshield Washer Fluid on page 5-48* for further details.

Tire Inflation Check

Check tire inflation cold. Make sure tires are inflated to the pressures specified on the GVW Rating label. See *Loading Your Vehicle on page 4-32* and *Tires on page 5-73* for further details.

At Least Twice a Year

Restraint System Check

Make sure the safety belt reminder light (if equipped) 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.

Wiper Blade Check

Inspect wiper blades for wear or cracking. Replace blade inserts that appear worn or damaged or that streak or miss areas of the windshield. Also see *Windshield and Wiper Blades on page 5-87*.

Weatherstrip Lubrication

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 more frequent application may be required. Part C tells you what to use.

Body Lubrication Service

Lubricate all exposed surfaces such as door checks, door lock bolts, lock strike plates, door hinge bushings, latches, and dovetail bumper wedges. Where oil holes are provided, a dripless oil can be used. The seat adjusters, seat track, door weatherstrips, and rubber cap bumpers should also be lubricated. Part C tells you what to use. More frequent lubrication may be required when exposed to a corrosive environment.

Parking Brake Check

Park on a fairly steep hill and hold the vehicle with the parking brake only. This checks holding ability.

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 brakes.

   Do not use the accelerator pedal, and be ready to turn off the engine immediately if it starts.
3. On automatic transmission vehicles, try to start the engine in each gear. The starter should work only in PARK (P), if equipped, or NEUTRAL (N). If the starter works in any other position, your vehicle needs service. On manual transmission vehicles, the starter should work only when the clutch pedal is all the way down.

Automatic Transmission Shift Indicator Check

Check that the indicator points to the gear chosen.

Steering Check

Be alert for any changes in steering action, abnormal front tire wear or steering wheel position. An inspection or service is needed when the steering wheel is harder to turn or has too much free play, or if there are strange sounds when turning or parking.

Brake System Check

Be alert to illumination of the low air warning lamp or for the tone alarm, or changes in braking action, such as repeated pulling to one side, unusual sounds when braking or increased brake pedal travel. Make sure air brake system reservoirs are drained daily with full system air pressure, and check system for leaks. Any of these conditions could indicate the need for brake system inspection and/or service.

Engine Cooling System Service

Inspect the hoses and have them replaced if they are cracked, swollen, or deteriorated. Inspect all pipes, fittings, and clamps; replace as needed. Clean the outside of the radiator and air conditioning condenser. To help ensure proper operation, a pressure test of the cooling system and pressure cap is recommended at least once a year.

Exhaust System Check

Be alert for any changes in the sound of the exhaust system or any smell of fumes. These are signs the system may be leaking. Have it checked and/or repaired at once. Refer to *Engine Exhaust on page 2-44* and *Running the Engine While Parked on page 2-45*.

Windshield Wipers and Washers Check

Check operation and condition of the wiper blades. Check the flow of the washer spray.

Defroster Check

Move the control to the defrost symbol and the fan to HI or the high symbol. Then check the airflow from the ducts at the inside base of the windshield.

Mirrors and Sun Visors Check

Check that friction joints hold mirrors and sun visors in place.

Seat Adjuster Check

When adjusting a manual seat, be sure seat adjusters latch by attempting to move the seat after latching.

Lamps Check

Check panel lighting, warning lights, indicator lights, and interior lamps. On the outside, check: license plate lamps, sidemarker lamps, reflectors or lights on outside mirrors, headlamps, parking lamps, identification and clearance lamps, taillamps, brake lamps, turn signals, backup lamps, and hazard warning flashers. Have headlamp aim checked at once if beams seem improperly aimed.

Glass, Mirrors, Lamps and/or Reflectors Condition Check

Look for broken, scratched, dirty, or damaged glass, mirrors, lamps, or reflectors that could reduce the view or visibility or cause injury. Replace, clean or repair promptly.

Door Latches Check

Check that doors close, latch, and lock tightly. Check for broken, damaged, or missing parts that might prevent tight latching.

Hood Latches Check

Check that the hood closes firmly. Check for broken, damaged, loose, or missing parts that might prevent tight latching. Make sure the secondary latch (if equipped) keeps the hood from opening all the way when the primary latch is released.

Fluid Leaks Check

Check for fuel, coolant, oil, or other fluid leaks by looking at the surface beneath the vehicle after it has been parked for awhile.

Underbody Inspection

Corrosive materials used for ice, snow removal, and dust control can collect on the underbody. If these materials are not removed, accelerated corrosion (rust) can occur on underbody parts such as fuel lines, frame, floor pan, and exhaust system. At least every spring, flush these materials from the underbody with plain water. Take care to clean well any areas where mud and other debris can collect. Sediment packed in closed areas of the frame should be loosened before being flushed.

Engine Cover Check

Check that the cab's engine cover and seal (if equipped) are not torn or damaged. Be sure that the cover is clamped down firmly to the floor.

At Least Once a Year

Key Lock Cylinders Service

Lubricate the key lock cylinders with the lubricant specified in Part C.

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.

Tractor Protection (Breakaway) Valve Check

On air brake models, remove, disassemble, clean and inspect the tractor protection (breakaway) valve.

Part C: Recommended Fluids and Lubricants

Fluids and lubricants identified below by name, part number, or specification may be obtained from your dealer.

Usage	Fluid/Lubricant
Engine Oil (Gasoline 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 "Engine Oil" in the Index.
Engine Oil (DURAMAX® Diesel Engine)	Engine oil with the letters CI-4 or CH-4 is best for your vehicle. The CI-4 or CH-4 designation may appear either alone or in combination with other API designations, such as API CI-4/SL. These letters show American Petroleum Institute levels of quality. To determine the preferred viscosity for your vehicle's diesel engine, see "Engine Oil" in the Index.
Engine Oil (Caterpillar® Diesel Engine)	See the Caterpillar® Operation & Maintenance Manual for engine oil recommendations.
Engine Coolant (Caterpillar® Diesel Engine)	See the Caterpillar® Operation & Maintenance Manual for engine coolant recommendations.
Engine Coolant (Gasoline Engine & DURAMAX® Diesel)	50/50 mixture of clean, drinkable water and use only DEX-COOL® Coolant. See *Engine Coolant (Gas and DURAMAX® Engines) on page 5-37* or *Engine Coolant (Caterpillar® Diesel Engines) on page 5-40*.
Hydraulic Brake System	Delco® Supreme 11 Brake Fluid or equivalent DOT-3 brake fluid.
Windshield Washer Solvent	GM Optikleen® Washer Solvent.
Clutch Bearing Lubricant	Clutch Bearing Lubricant (GM Part No. 12378484 or equivalent NLGI #3 consistency).
Exhaust Brake Ball Joint Cap Lubricant	High-Temperature Grease (GM Part No. U.S. 1051344, in Canada 903037) or NLGI #3 consistency.
Power Steering System	DEXRON®-VI Automatic Transmission Fluid.
Manual Transmission (Except ZF 6-Speed)	Synthetic Manual Transmission Fluid (GM Part No. U.S. 12345724, in Canada 10953510).

Usage	Fluid/Lubricant
Manual Transmission (ZF 6-Speed)	Synthetic Transmission Fluid approved to Allison Transmission® specification TES-295 (GM Part No. U.S. 12378515, in Canada 88900701).
Automatic Transmission	See the Allison Transmission® Operator's Manual for correct transmission fluid.
Key Lock Cylinders	Multi-Purpose Lubricant, Superlube (GM Part No. U.S. 12346241, in Canada 10953474).
Chassis Lubrication	Chassis Lubricant (GM Part No. U.S. 12377985, in Canada 88901242) or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Front Wheel Bearings (Except Oil Filled Hubs)	Wheel bearing lubricant meeting requirements of NLGI #2, Category GC or GC-LB (GM Part No. U.S. 1051344, in Canada 993037).
Front Wheel Bearings with Oil Filled Hubs	SAE 75W-90 Synthetic Axle Lubricant for Medium Duty Trucks (GM Part No. U.S. 89021675, in Canada 10953512).
Transfer Case (Four-Wheel Drive)	DEXRON®-III Automatic Transmission Fluid. Look for "Approved for the H-Specification" on the label.

Usage	Fluid/Lubricant
Front Axle (Four-Wheel Drive)	SAE 75W-90 Synthetic Axle Lubricant for Medium Duty Trucks (GM Part No. U.S. 89021675, in Canada 10953512).
Rear Axle and Rear Hubs	SAE 75W-90 Synthetic Axle Lubricant for Medium Duty Trucks (GM Part No. U.S. 89021675, in Canada 10953512).
Rear Axle Shift Motor Lubricant	Refrigerant Oil (GM Part No. U.S. 5416939, in Canada 10953496).
Propshafts and Splines	Wheel bearing lubricant meeting requirements of NLGI #2, Category GC or GC-LB (GM Part No. U.S. 1051344, in Canada 993037).
Cab — Door Hinges and Latches	Multi-Purpose Lubricant, Superlube (GM Part No. U.S. 12346241, in Canada 10953474).
Weatherstrip Conditioning	Dielectric Silicone Grease (GM Part No. U.S. 12345579, in Canada 992887).
Weatherstrip Squeaks	Synthetic Grease with Teflon, Superlube (GM Part No. U.S. 12371287, in Canada 10953437).

Part D: Maintenance Record

After the scheduled services are performed, record the date, odometer reading and who performed the service, and any additional information from “Owner Checks and Services” on the following record pages. Also, you should retain all maintenance receipts.

Date	Miles/km Or Hours	Serviced By	Maintenance Record

Date	Miles/km Or Hours	Serviced By	Maintenance Record

Date	Miles/km Or Hours	Serviced By	Maintenance Record

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Customer Assistance and Information

Customer Satisfaction Procedure

Your satisfaction and goodwill are important to your dealer and to GMC. Normally, any concerns with the sales transaction or the operation of your vehicle will be resolved by your dealer's sales or service departments. Sometimes, however, despite the best intentions of all concerned, misunderstandings can occur. If your concern has not been resolved to your satisfaction, the following steps should be taken:

STEP ONE: Discuss your concern with a member of dealership management. Normally, concerns can be quickly resolved at that level. If the matter has already been reviewed with the sales, service or parts manager, contact the owner of the dealership or the general manager.

STEP TWO: If after contacting a member of dealership management, it appears your concern cannot be resolved by the dealership without further help, contact the GM Medium Duty Truck Customer Assistance Center at 1-800-862-4389. In Canada, contact GM of Canada Customer Communication Centre in Oshawa by calling 1-800-263-3777 (English) or 1-800-263-7854 (French).

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 is available from the vehicle registration or title, or the plate at the top left of the instrument panel and visible through the windshield.
- Dealership name and location.
- Vehicle delivery date and present mileage (kilometers).

When contacting GMC please remember that your concern will likely be resolved at a dealer's facility. That is why we suggest you follow Step One first if you have a concern.

STEP THREE: Both General Motors and your dealer are committed to making sure you are completely satisfied with your new vehicle. However, if you continue to remain unsatisfied after following the procedure outlined in Steps One and Two, you should file with the BBB Auto Line Program to enforce any additional rights you may have. Canadian owners refer to your Warranty and Owner Assistance Information booklet for information on the Canadian Motor Vehicle Arbitration Plan (CAMVAP).

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. 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 will generally be heard within 40 days. If you do not agree with the decision given in your case, you may reject it and proceed with any other venue for relief available to you.

You may contact the BBB Auto Line Program using the toll-free telephone number or write 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. General Motors reserves the right to change eligibility limitations and/or discontinue its participation in this program.

Customer Assistance for Text Telephone (TTY) Users

To assist customers who are deaf, hard of hearing, or speech-impaired and who use the Text Telephones (TTYs), GMC has TTY equipment available at its Customer Assistance Center. Any TTY user can communicate with GMC by dialing: 1-800-GMC-8583 (462-8583). (TTY users in Canada can dial 1-800-263-3830.)

Customer Assistance Offices

GMC encourages customers to call the toll-free number for assistance. However, if a customer wishes to write or e-mail, refer to the addresses below.

United States – Customer Assistance

GM Medium Duty Truck Customer Assistance Center
Customer Assistance Center
P.O. Box 44947
Detroit, MI 48244

www.GMC.com

1-800-862-4389
1-800-462-8583 (For Text Telephone devices (TTYs))
Fax Number: 313-381-0022

From Puerto Rico
1-800-496-9992 (English)
1-800-496-9993 (Spanish)
Fax Number: 313-381-0022

U.S. Virgin Islands:
1-800-496-9994
Fax Number: 313-381-0022

Canada – Customer Assistance

General Motors of Canada Limited
Customer Communication Centre, 163-005
1908 Colonel Sam Drive
Oshawa, Ontario L1H 8P7

1-800-263-3777 (English)
1-800-263-7854 (French)
1-800-263-3830 (For Text Telephone devices (TTYs)
Roadside Assistance: 1-800-268-6800

Overseas – Customer Assistance

Please contact the local General Motors Business Unit.

Mexico, Central America and Caribbean Islands/Countries (Except Puerto Rico and U.S. Virgin Islands) – Customer Assistance

General Motors de Mexico, S. de R.L. de C.V.
Customer Assistance Center
Paseo de la Reforma # 2740
Col. Lomas de Bezares
C.P. 11910, Mexico, D.F.
01-800-508-0000
Long Distance: 011-52-53 29 0 800

GM Mobility Reimbursement Program



This program, available to qualified applicants, can reimburse you up to $1,000 of the cost of eligible aftermarket adaptive equipment required for your vehicle, such as hand controls or a wheelchair/scooter lift.

The offer is available for a very limited period of time from the date of vehicle purchase/lease. For more details, or to determine your vehicle's eligibility, visit gmmobility.com or call the GM Mobility Assistance Center at 1-800-323-9935. Text telephone (TTY) users, call 1-800-833-9935.

GM of Canada also has a Mobility Program. Call 1-800-GM-DRIVE (463-7483) for details. TTY users call 1-800-263-3830.

Roadside Assistance Program

GM Medium Duty Truck's Roadside Assistance provides stranded owners with towing service for disabled vehicles.

This service combines the efforts of trained telephone representatives with a network of GM Medium Duty Truck's dealer services.

Just dial GM Medium Duty Truck Roadside Assistance at **1-800-862-4389** to reach a qualified representative who can assist you in a repair or arrange a tow. Other recommended services can also be arranged for situations such as retrieving locked in keys, changing a tire, or delivering gasoline, at a charge to the customer. We also provide dealer information at no charge, such as location of the nearest authorized medium duty GM Truck dealer and their hours of operation.

Roadside Assistance is available 24 hours a day, 7 days a week, 365 days a year. Should you have any questions about Roadside Assistance, call the GM Medium Duty Truck Roadside Assistance Center or contact your dealer.

Canadian Roadside Assistance

In Canada, Medium Duty trucks are not eligible for Roadside Assistance services. However, owners/operators who contact Roadside Assistance by calling **1-800-268-6800** may have a tow arranged for them at the owner/operator expense.

If a Medium Duty truck is towed to the nearest General Motors dealership and the towing was necessary due to failure of a warranted part, the dealer will accept the towing charges and submit them as part of the warranty claim.

Vehicle Data Collection and Event Data Recorders

Your vehicle, like other modern motor vehicles, has a number of sophisticated computer systems that monitor and control several aspects of the vehicle's performance. Your vehicle uses on-board vehicle computers to monitor emission control components to optimize fuel economy, to monitor conditions for airbag deployment and, if so equipped, to provide anti-lock braking and to help the driver control the vehicle in difficult driving situations. Some information may be stored during regular operations to facilitate repair of detected malfunctions; other information is stored only in a crash event by computer systems, such as those commonly called event data recorders (EDR).

In a crash event, computer systems, such as the Airbag Sensing and Diagnostic Module (SDM) in your vehicle may record information about the condition of the vehicle and how it was operated, such as data related to engine speed, brake application, throttle position, vehicle speed, safety belt usage, airbag readiness, airbag performance, and the severity of a collision. This information has been used to improve vehicle crash performance and may be used to improve crash performance of future vehicles and driving safety. Unlike the data recorders on many airplanes, these on-board systems do not record sounds, such as conversation of vehicle occupants.

To read this information, special equipment is needed and access to the vehicle or the device that stores the data is required. GM will not access information about a crash event or share it with others other than:

- 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.

In addition, once GM collects or receives data, GM may:

- use the data for GM research needs,
- make it available for research where appropriate confidentiality is to be maintained and need is shown, or
- share summary data which is not tied to a specific vehicle with non-GM organizations for research purposes.

Others, such as law enforcement, may have access to the special equipment that can read the information if they have access to the vehicle or the device that stores the data.

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 will 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 GM dealer 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 will help guard against post-accident legal action.
- If you need roadside assistance, call GM Roadside Assistance. See *Roadside Assistance Program on page 7-5* for more information.
- If your vehicle cannot be driven, know where the towing service will be 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 will 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 will 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 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 GM dealer 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 will not be 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 General Motors.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or General Motors.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in the Washington, D.C. area) or write to:

NHTSA, U.S. Department of Transportation
Washington, D.C. 20590

You can also obtain other information about motor vehicle safety from the hotline.

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
Place de Ville Tower C
330 Sparks Street
Ottawa, Ontario K1A 0N5

Reporting Safety Defects to General Motors

In addition to notifying NHTSA (or Transport Canada) in a situation like this, we certainly hope you'll notify us. Please call us at 1-800-862-4389, or write:

GM Medium Duty Truck
Customer Assistance Center
P.O. Box 44947
Detroit, MI 48244

In Canada, please call us at 1-800-263-3777 (English) or 1-800-263-7854 (French). Or, write:

General Motors of Canada Limited
Customer Communication Centre, 163-005
1908 Colonel Sam Drive
Oshawa, Ontario L1H 8P7

Service Publications Ordering Information

Service Manuals

Service Manuals have the diagnosis and repair information on engines, transmission, axle suspension, brakes, electrical, steering, body, etc.

Transmission, Transaxle, Transfer Case Unit Repair Manual

This manual provides information on unit repair service procedures, adjustments, and specifications for GM transmissions, transaxles, and transfer cases.

Service Bulletins

Service Bulletins give technical service information needed to knowledgeably service General Motors cars and trucks. Each bulletin contains instructions to assist in the diagnosis and service of your vehicle.

In Canada, information pertaining to Product Service Bulletins can be obtained by contacting your General Motors dealer or by calling 1-800-GM-DRIVE (1-800-463-7483).

Owner's Information

Owner publications are written specifically for owners and intended to provide basic operational information about the vehicle. The owner's manual will include the Maintenance Schedule for all models.

In-Portfolio: Includes a Portfolio, Owner's Manual, and Warranty Booklet.

RETAIL SELL PRICE: $35.00

Without Portfolio: Owner's Manual only.

RETAIL SELL PRICE: $25.00

Current and Past Model Order Forms

Service Publications are available for current and past model GM vehicles. To request an order form, please specify year and model name of the vehicle.

ORDER TOLL FREE: 1-800-551-4123
Monday-Friday 8:00 AM - 6:00 PM
Eastern Time

For Credit Card Orders Only
(VISA-MasterCard-Discover), visit Helm, Inc. on the World Wide Web at: www.helminc.com

Or you can write to:

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

Prices are subject to change without notice and without incurring obligation. Allow ample time for delivery.

Note to Canadian Customers: All listed prices are quoted in U.S. funds. Canadian residents are to make checks payable in U.S. funds.

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