# CHAPTER THREE
# BASIC VEHICLE CONTROL

3.1 INSTRUMENTS AND CONTROLS

3.2 GETTING READY TO DRIVE

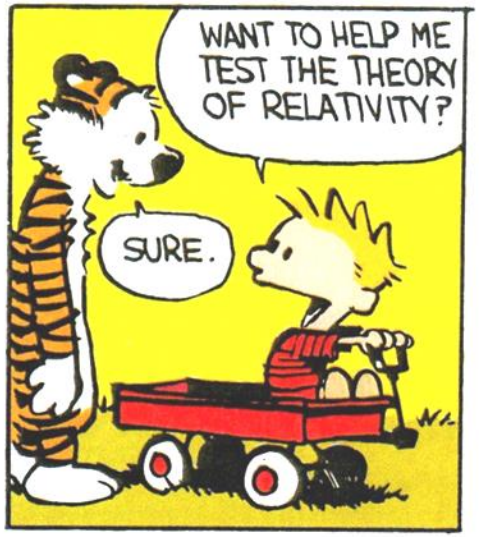
3.3 DRIVING A VEHICLE WITH AN AUTOMATIC TRANSMISSION

3.4 DRIVING A VEHICLE WITH A MANUAL TRANSMISSION NOT COVERED

# Calvin and Hobbes

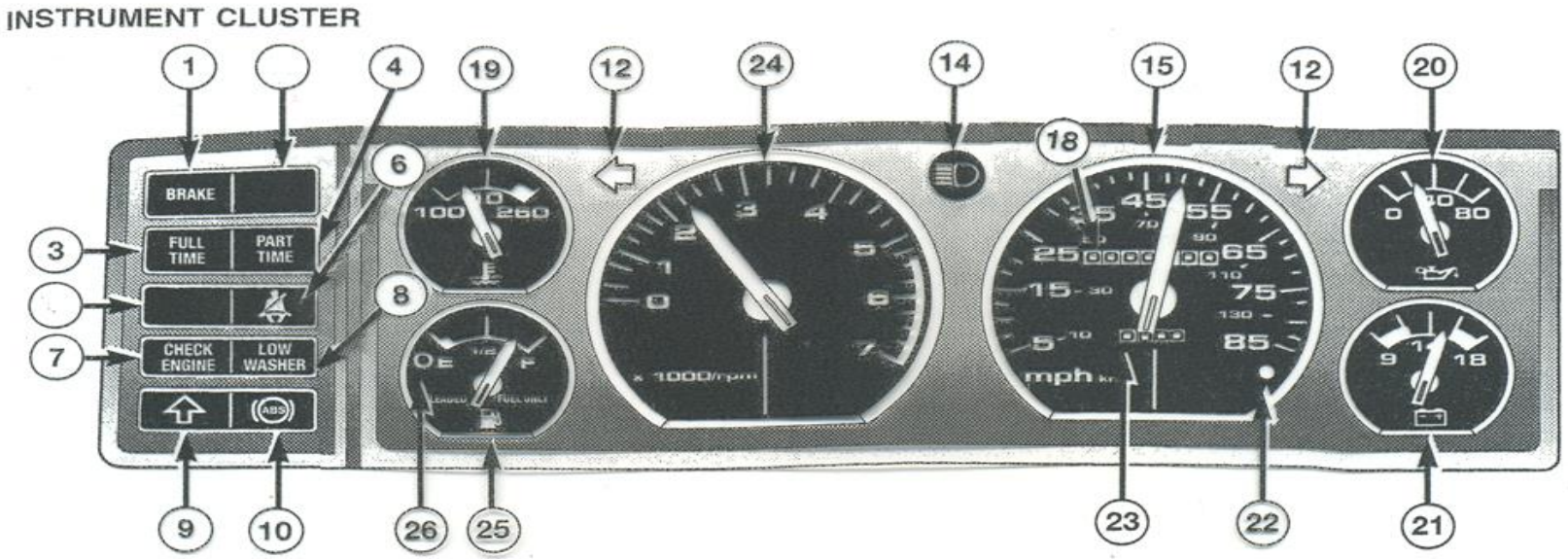
by Watterson







WHAT TIME IS IT NOW?
10:24. GO FASTER.
WATTERSON
WE'RE GOING PRETTY FAST! WHAT TIME IS IT?
10:25. TIME STILL HASN'T STOPPED.
HAS TIME STOPPED NOW?
NO, JUST MY HEART.
WELL, IT LOOKS LIKE EINSTEIN'S A FRAUD, WOULDN'T YOU SAY?
NO, HE'S RIGHT! LOOK, MY WATCH ISN'T GOING AT ALL ANY MORE!!

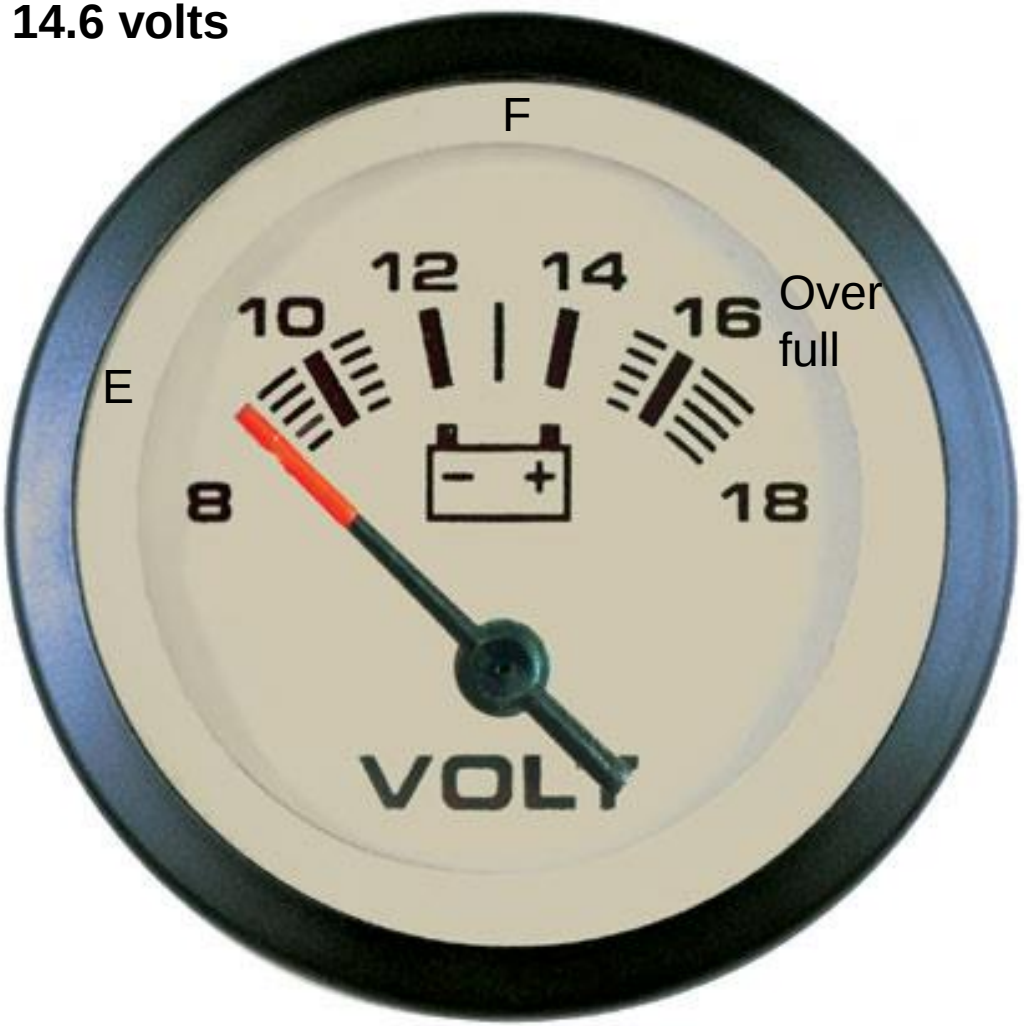



AN EXAMPLE OF AN INSTRUMENT CLUSTER WITH FULL INSTRUMENTATION

# Volt Meter

**The volt meter monitors the amount of electricity in the battery. The electrical system is 12 volts however the voltage is actually somewhere between 13.2 to 14.6 volts**

Think of the volt meter as an empty-full gauge for the battery




Batteries can become over charged. When overcharging occurs, the liquid is boiled out of the cells which can ruin the battery

Needle is in the ‘ignition off’ position or, if in the ‘ignition on’ position, the battery is severely discharged and the vehicle is not going to start

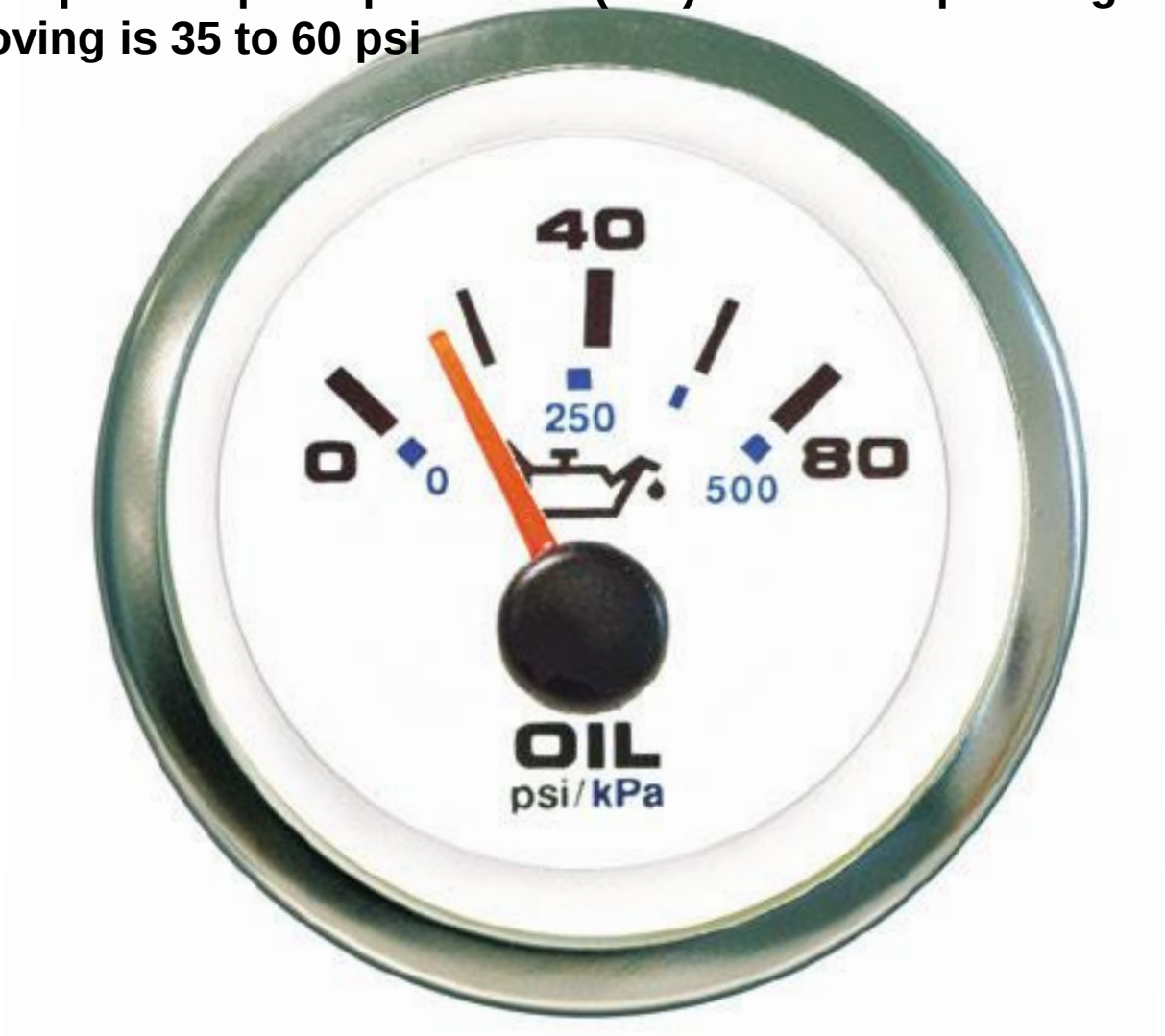
## Coolant Temperature Gauge

**The temperature gauge monitors the temperature of the engine coolant as it flows through the cooling system. Normal operating range is about 180 to 210 degrees F.**


The needle is at about normal operating temperature (195 degrees F)

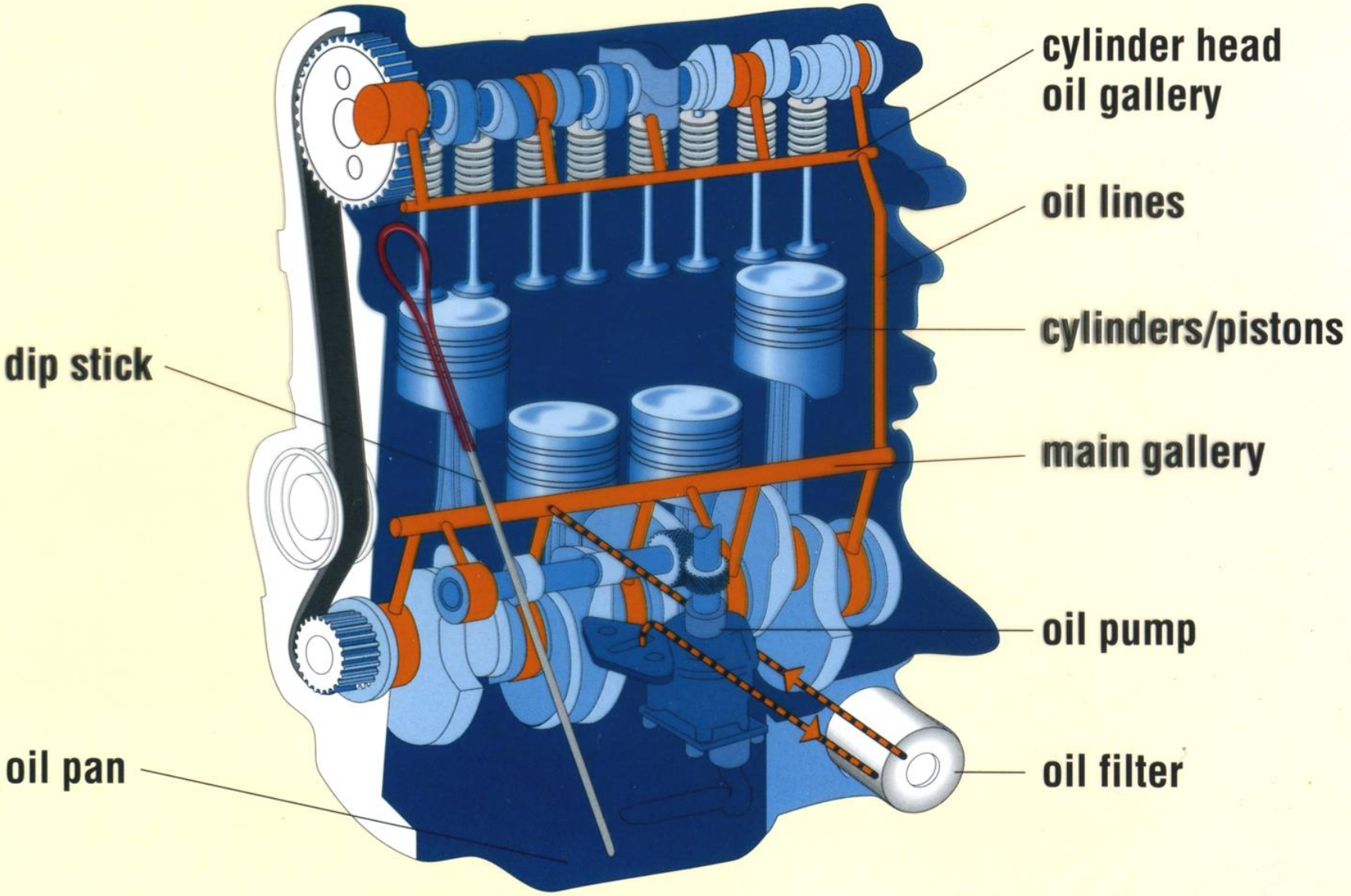
## Oil Pressure Gauge

**The oil pressure gauge monitors engine oil as it is pumped through the lubrication system by the oil pump. Because motor oil is a fluid under pressure, it is measured in pounds per square inch (PSI). Normal operating range while the vehicle is moving is 35 to 60 psi**




Needle is at about normal position for warm engine at idle

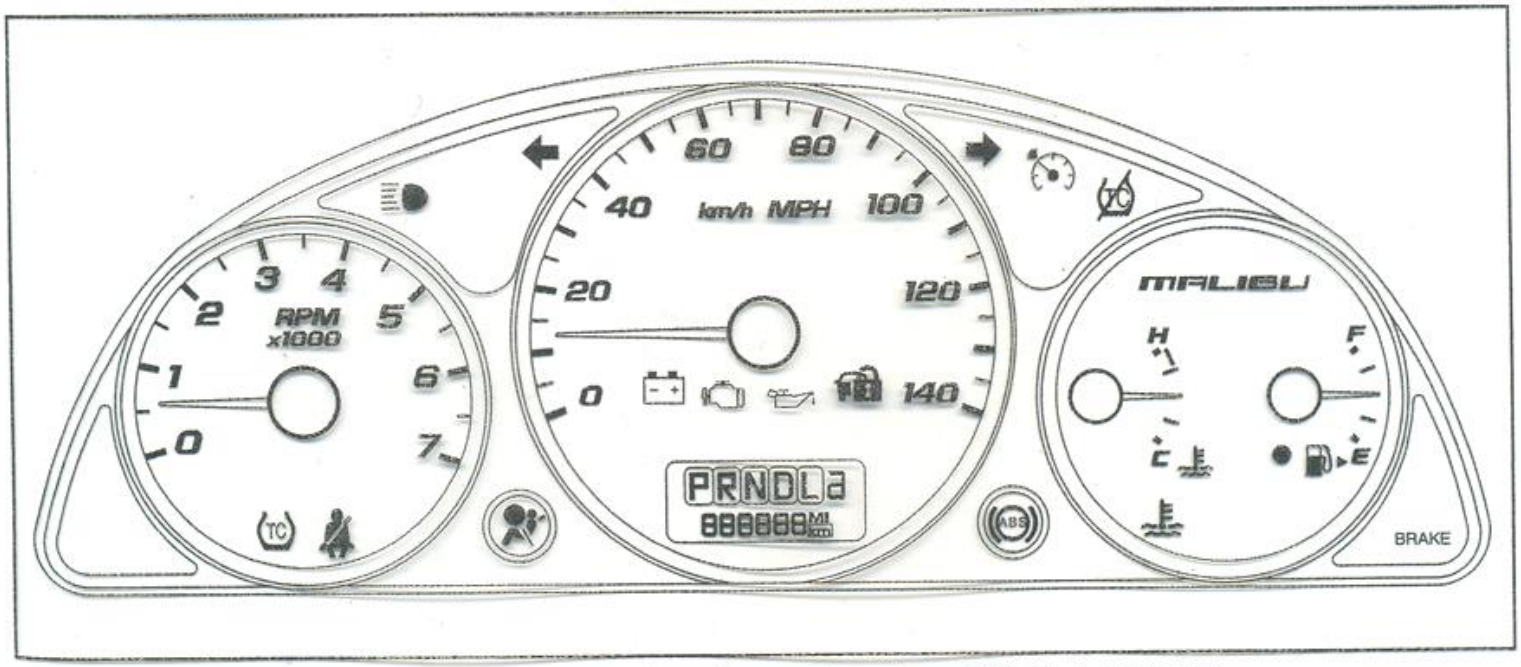
# Lubrication System



## 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 you're going, how much fuel you're using, and many other things you will need to drive safely and economically.

Your vehicle has this instrument panel cluster, which includes indicator warning lights and gages that are explained on the following pages.




United States Base version shown, Canada and SS Model Similar

VARIOUS LIGHTS WILL ILLUMINATE WHEN THE IGNITION IS ACTIVATED TO ACT AS A BULB CHECK

# SOMETHING TO REMEMBER ABOUT THE INSTRUMENT CLUSTER

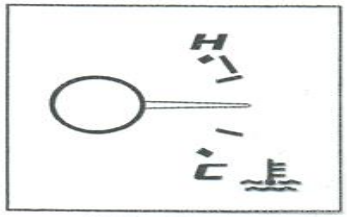
**IF, WHEN THE VEHICLE'S LIGHTS ARE ON AND THE INSTRUMENT CLUSTER IS NOT ILLUMINATED, THE VEHICLE'S TAIL LIGHTS ARE NOT ON EITHER.**

**ASSUMING, OF COURSE, THE INSTRUMENT ILLUMINATION DIMMER IS NOT TURNED ALL THE WAY DOWN.**

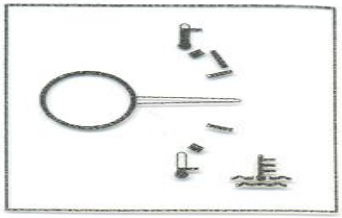
**AS A SAFETY FEATURE, THE TAIL LAMPS AND THE INSTRUMENT LAMPS ARE ON THE SAME CIRCUIT.**

**THIS IS UNIVERSAL TO ALL VEHICLES AND HAS BEEN SO FOR MORE THAN 50 YEARS.**

## Engine Coolant Temperature Gage




United States



Canada

This gage shows the engine coolant temperature. If the gage pointer moves into the red area, the light comes on and you hear a chime, your engine is too hot! It means that your engine coolant has overheated.

If you have been operating your vehicle under normal driving conditions and the gage reads hot, you should pull off the road, stop your vehicle and turn off the engine as soon as possible.

See *Engine Overheating on page 5-29.*

## Brake System Warning Light

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

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


United States

Canada

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

When the ignition is on, the brake system warning light will also come on when you set your parking brake. The light will stay on if your parking brake does not release fully. If it stays on after your parking brake is fully released, it means you have a brake problem.

The Driver Information Center (DIC) may display a BRAKE FLUID message. See *DIC Warnings and Messages on page 3-50* for more information.

If the light comes on while you are driving, pull off the road and stop carefully. You may notice that the pedal is harder to push or the pedal may go closer to the floor. It may take longer to stop. Try turning off and restarting the vehicle one or two times, if the light is still on, have the vehicle towed for service. See *Towing Your Vehicle on page 4-39.*

## Anti-Lock Brake System Warning Light


If your vehicle has the anti-lock brake system, the light will come on when your engine is started and may stay on for several seconds. That's normal.

If the light stays on, turn the ignition to off. If the light comes on and the chime sounds when you are driving, stop as soon as possible and turn the ignition off. Then start the engine again to reset the system. If the light still stays on, or comes on again while you are driving, your vehicle needs service. If the regular brake system warning light is not on, you still have brakes, but you do not have anti-lock brakes. If the regular brake system warning light is also on, you do not have anti-lock brakes and there is a problem with your regular brakes. See *Brake System Warning Light on page 3-36* earlier in this section.

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

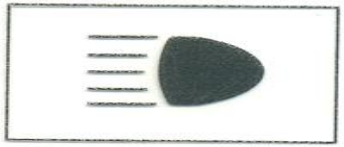
## Cruise Control Light

This light comes on whenever you set your cruise control.

CRUISE LIGHT IS USUALLY GREEN

The light will go out when the cruise control is turned off. See *Cruise Control on page 3-11* for more information.

## 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.*

HIGH BEAM INDICATOR LIGHT IS USUALLY BLUE

## 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).

Your vehicle has a tamper resistant odometer. The digital odometer will read 999,999 if someone tries to turn it back.

You may wonder what happens if your vehicle needs a new odometer installed. If the new one can be set to the mileage total of the old odometer, then it must be. But if it can't, then it's set at zero and a label must be put on the driver's door to show the old mileage reading when the new odometer was installed.

## Tachometer

The tachometer shows your engine speed in revolutions per minute (rpm).

## Trip Odometer

The trip odometer can tell you how far you have driven since you last reset it.

The trip odometer is accessed and reset through the Driver Information Center (DIC). See *DIC Operation and Displays on page 3-47* for more information.

## Safety Belt Reminder Light

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

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

If the vehicle is equipped with the passenger sensing system, the chime and light will be repeated if the driver remains unbuckled and the vehicle is in motion.

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

## Security Light

For information regarding this light, see *Theft-Deterrent Systems on page 2-18.*

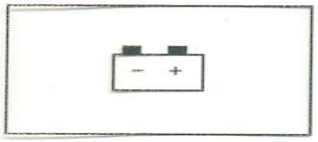
## Airbag Readiness Light

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 sensor, the pretensioners, the airbag modules, the wiring and the crash sensing and diagnostic module. For more information on the airbag system, see *Airbag System on page 1-55.*

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.

## Charging System Light




The charging system light will come on for a few seconds when you turn on the ignition as a check to show you it is working.

If it stays on, or comes on while you are driving and you hear a chime, you may have a problem with the electrical charging system. It could indicate that you have a loose generator drive belt or another electrical problem. Have it checked right away. Driving while this light is on could drain your battery.

If you must drive a short distance with the light on, be certain to turn off all your accessories, such as the radio and air conditioner.

## Engine Coolant Temperature Warning Light

This light indicates that the engine coolant has overheated or the radiator cooling fan is not working.

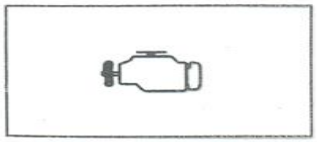
This light will come on briefly when you turn on the ignition as a check to show you it is working.

If the light comes on and the vehicle has been operating under normal driving conditions, pull off the road, stop the vehicle, and turn off the engine as soon as possible.

See *Cooling System on page 5-32* for more information.

## Malfunction Indicator Lamp

### Check Engine Light



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

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

***Notice:*** **If you keep driving your vehicle with this light on, after awhile, 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.**

### If the Light is Flashing

The following may prevent more serious damage to your vehicle:

- Reducing vehicle speed
- Avoiding hard accelerations
- Avoiding steep uphill grades
- If you are towing a trailer, reduce the amount of cargo being hauled as soon as it is possible

If the light stops flashing and remains on steady, see "If the Light Is On Steady" following.

If the light continues to flash, when it is safe to do so, stop the vehicle. Find a safe place to park your vehicle. Turn the key off, wait at least 10 seconds and restart the engine. If the light remains on steady, see "If the Light Is On Steady" following. If the light is still flashing, follow the previous steps, and see your dealer for service as soon as possible.

Have you recently changed brands of fuel?

If so, be sure to fuel your vehicle with quality fuel. See *Gasoline Octane on page 5-5.* Poor fuel quality will cause your engine not to run as efficiently as designed. You may notice this as stalling after start-up, stalling when you put the vehicle into gear, misfiring, hesitation on acceleration, or stumbling on acceleration. (These conditions may go away once the engine is warmed up.) This will be detected by the system and cause the light to turn on.

If you experience one or more of these conditions, change the fuel brand you use. It will require at least one full tank of the proper fuel to turn the light off.

If none of the above steps have made the light turn off, your dealer can check the vehicle. Your dealer has the proper test equipment and diagnostic tools to fix any mechanical or electrical problems that may have developed.

***Notice:*** **Modifications made to the engine, transaxle, exhaust, intake, or fuel system of your vehicle or the replacement of the original tires with other than those of the same Tire Performance Criteria (TPC) can affect your vehicle's emission controls and may cause this light to come on. Modifications to these systems could lead to costly repairs not covered by your warranty. This may also result in a failure to pass a required Emission Inspection/Maintenance test. See *Accessories and Modifications on page 5-3.***

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

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

### If the Light Is On Steady

You may be able to correct the emission system malfunction by considering the following:

Did you recently put fuel into your vehicle?

If so, reinstall the fuel cap, making sure to fully install the cap. See *Filling the Tank on page 5-8.* The diagnostic system can determine if the fuel cap has been left off or improperly installed. A loose or missing fuel cap will allow fuel to evaporate into the atmosphere. A few driving trips with the cap properly installed should turn the light off.

Did you just drive through a deep puddle of water?

If so, your electrical system may be wet. The condition will usually be corrected when the electrical system dries out. A few driving trips should turn the light off.

### Emissions Inspection and Maintenance Programs

Some state/provincial and local governments have or may begin programs to inspect the emission control equipment on your vehicle. Failure to pass this inspection could prevent you from getting a vehicle registration.

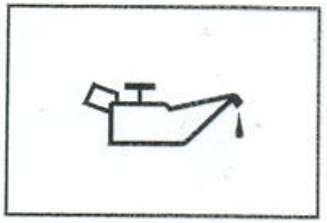
Here are some things you need to know to help your vehicle pass an inspection:

Your vehicle will not pass this inspection if the check engine light is on or not working properly.

Your vehicle will not pass this inspection if the OBD (on-board diagnostic) system determines that critical emission control systems have not been completely diagnosed by the system. The vehicle would be considered not ready for inspection. This can happen if you have recently replaced your battery or if your battery has run down. The diagnostic system is designed to evaluate critical emission control systems during normal driving. This may take several days of routine driving. If you have done this and your vehicle still does not pass the inspection for lack of OBD system readiness, your GM dealer can prepare the vehicle for inspection.

Some people call this the genie lamp

## Oil Pressure Light



If you have low engine oil pressure, this light will stay on after you start your engine, or come on and you will hear a chime when you are driving.

This indicates that your engine is not receiving enough oil. The engine could be low on oil, or could have some other oil problem. Have it fixed immediately.

This light will come on briefly when you turn on the ignition as a check to show you it is working. If it does not come on with the ignition on, you may have a problem with the bulb. Have it fixed right away.

**⚠ CAUTION:**

**Do not keep driving if the oil pressure is low. If you do, your engine can become so hot that it catches fire. You or others could be burned. Check your oil as soon as possible and have your vehicle serviced.**

***Notice:*** **Lack of proper engine oil maintenance may damage the engine. The repairs would not be covered by your warranty. Always follow the maintenance schedule in this manual for changing engine oil.**

IF YOU HAVE YOUR DEALER CHANGE YOUR OIL, THE DEALER'S RECORDS SHOULD BE SUFFICIENT FOR THE PURPOSE OF WARRANTY OR EXTENDED WARRANTY

IF YOU DO NOT CHANGE OIL AT RECOMMENDED INTERVALS AND HAVE A LUBRICATION RELATED ENGINE FAILURE, IT MAY NOT BE COVERED BY YOUR WARRANTY.

CHANGE YOUR OIL REGULARLY AND SAVE YOUR RECEIPTS TO PROTECT YOUR WARRANTY OR EXTENDED WARRANTY

Traction Control can be a stand alone feature or part of a stability package

## Traction Control System (TCS) Warning Light


If your vehicle has the Traction Control System (TCS), this light may come on for the following reasons:

- If you turn the system off by pressing the TC (traction control) button located on the center console, the light will come on and stay on. To turn the system back on, press the button again and the warning light should go out.
- If there is a brake system problem that is specifically related to traction control, the TCS will turn off and the warning light will come on.

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

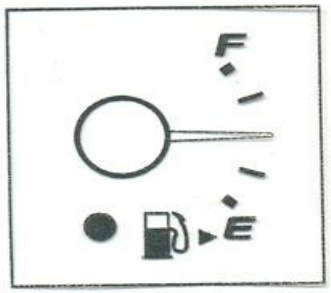
## Traction Control System Active Light


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

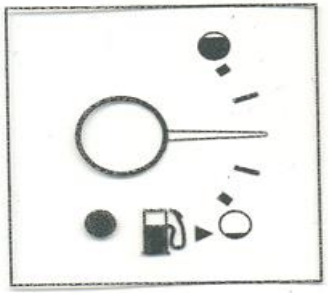
Slippery road conditions may exist if the TCS active light comes on, so adjust your driving accordingly.

The light will stay on for a few seconds after the system stops limiting wheel spin.

## Fuel Gage




United States



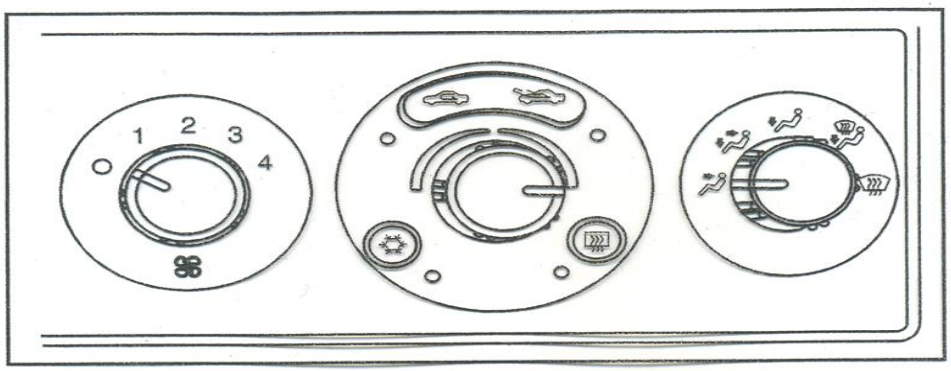
Canada

Your fuel gage tells you about how much fuel you have left, when the ignition is on. When the indicator nears empty, the amber light located left of the pump symbol will come on and you will hear a chime. You still have a little fuel left, but you should get more soon. The arrow on the fuel gage points to side of the vehicle with the fuel door.

Here are four things that some owners ask about. These are normal and do not indicate a problem with your fuel gage:

- At the service station, the gas pump shuts off before the gage reads full.
- It takes a little more or less fuel to fill up than the gage indicated. For example, the gage may have indicated the tank was half full, but it actually took a little more or less than half the tank's capacity to fill the tank.
- The indicator moves a little when you turn a corner or speed up.
- The gage goes back to empty when you turn off the ignition.

# Climate Control System




Note the difference in the arrows

**(Outside Air):** Press the right side of this button to turn the outside air mode on. When this mode is selected, air from outside the vehicle will circulate throughout your vehicle. When the button is pressed, an indicator light will come on to let you know that it is activated. The outside air mode can be used with all modes, but it cannot be used with the recirculation mode. Pressing this button will cancel the recirculation mode.

Use the outside air mode in the winter to prevent window fogging

**(Recirculation):** Press the left side of the button to turn the recirculation mode on. When recirculation mode is selected, the air inside the vehicle will be recirculated through the climate control system and the vehicle, not from outside your vehicle. This mode is helpful when you are trying to limit odors from entering your vehicle and for maximum air conditioning performance in hot weather. When the button is pressed, an indicator light above the button will come on to let you know that it is activated. The recirculation indicator light will blink three times if you try to use recirculation in a mode that it can not be used in. Only use this mode when it is needed for comfort, since window fogging will rapidly occur if the air conditioning compressor is not engaged.

Pressing this button will cancel the outside air mode. When you switch to the defog or defrost modes the system will automatically move from recirculation to outside air. When you move the mode knob back to another air delivery mode, the system will move back into recirculation. When the vehicle or fan is turned off and back on, the system will default to outside air automatically. Only use recirculation mode when it is needed for comfort, since window fogging may occur.

Use the recirculation mode when the air conditioner is operating to cool the passenger compartment more quickly

Do not use recirc when the heater is operating

# Airbag System

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

If your vehicle has seat-mounted side impact airbags, the words AIR BAG will appear on the airbag covering on the side of the front seatback closest to the door. If your vehicle has roof-mounted side impact airbags, the word AIRBAG will appear on the airbag covering on the ceiling near the driver's and right front passenger's window.

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

## When Should an Airbag Inflate?

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

In addition, your vehicle has "dual-stage" frontal airbags, which adjust the restraint according to crash severity. Your vehicle is equipped with electronic frontal sensors which help the sensing system distinguish between a moderate frontal impact and a more severe frontal impact. For moderate frontal impacts, these airbags inflate at a level less than full deployment. For more severe frontal impacts, full deployment occurs.

If the front of your vehicle goes straight into a wall that does not move or deform, the threshold level for the reduced deployment is about 12 to 16 mph (19 to 26 km/h), and the threshold level for a full deployment is about 18 to 24 mph (29 to 38.5 km/h). The threshold level can vary, however, with specific vehicle design, so that it can be somewhat above or below this range.

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

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

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

Your vehicle may or may not have side impact airbags. See *Airbag System on page 1-55*. Side impact airbags are intended to inflate in moderate to severe side crashes. A side impact airbag will inflate if the crash severity is above the system's designed threshold level. The threshold level can vary with specific vehicle design. Side impact airbags are not intended to inflate in frontal or near-frontal impacts, rollovers or rear impacts. A side impact airbag is intended to deploy on the side of the vehicle that is struck.

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

## What Makes an Airbag Inflate?

In an impact of sufficient severity, the airbag sensing system detects that the vehicle is in a crash. 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. Frontal airbag modules are located inside the steering wheel and the instrument panel. For vehicles with seat-mounted side impact airbags, there are also airbag modules in the side of the front seatbacks closest to the door. For vehicles with roof-mounted side impact airbags, there are also airbag modules in the ceiling of the vehicle, near the side window.

## How Does an Airbag Restrain?

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

## What Will You See After an Airbag Inflates?

After the frontal and seat-mounted side impact airbags inflate, they quickly deflate, so quickly that some people may not even realize an airbag inflated. Roof-mounted side impact airbags deflate more slowly and may still be at least partially inflated minutes after the vehicle comes to rest. Some components of the airbag module — the steering wheel hub for the driver's airbag, the instrument panel for the right front passenger's bag, the side of the seatback closest to the door for the seat-mounted side impact airbags (if equipped), and the garnish trim and the area along the ceiling of your vehicle near the side windows for the roof–mounted side impact airbags (if equipped) — 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.**

Your vehicle has a feature that may automatically unlock the doors, turn the interior lamps on, and turn the hazard warning flashers on, when the airbags inflate. You can lock the doors, turn the interior lamps off, and turn the hazard warning flashers off by using the controls for those features.

## 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.

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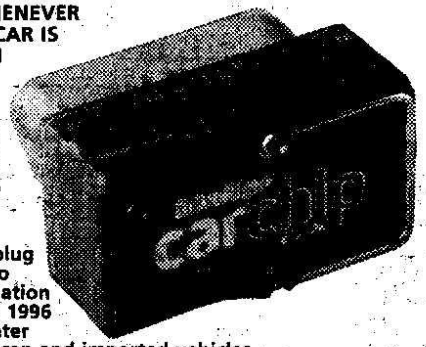
Using Carchip, owners can monitor the driving habits of anyone driving their 1996 or newer car. This device plugs in under the dashboard and records data from the computer in the car that can be read later on a home computer using the software supplied with the device.

December 2007 edition of JC Whitney catalog, page 182

## DRIVE RIGHT® CARCHIP™

**KNOW WHAT GOES ON WHENEVER YOUR CAR IS DRIVEN**




**READ YOUR CAR'S MIND!**

- **Easy plug and go installation for all 1996 and later American and imported vehicles**
- **Perfect for home mechanics to monitor their vehicle's performance**
- **A must for parents who want to monitor their teen's driving habits and lead foot tendencies**
- **Now anyone can know how their car and its drivers are performing**
- **Lets you view graphs that show summary and detailed reports for each trip**

**IT'S EASY!**

1. **Just locate your vehicle's OBD II connector (it's within 3 feet of the steering wheel)**
2. **Plug in the CarChip™ and the blinking light will tell you it is ready**
3. **Now, start driving**

**THE CARCHIP™ IMMEDIATELY STARTS LOGGING DATA.**

- **Time, date and distance for each trip**
- **Speed logged every 5 seconds**
- **Engine diagnostic trouble codes and status of other engine parameters of when the code occurred**
- **Idle time and time and date of chip installation or removal**
- **Stores 75 hours of trip details**

Includes datalogger, software, download cable and AC adapter.

Requirements: Windows 95 or above, one free serial port, 5MB of hard disk space and a CD-ROM drive. Easy instructions for data download to your PC are included. Choice of advanced CarChip EX™ or standard CarChip™.

**CarChip™ EX.** In addition to the features above, this unit stores 300 hours of trip details and measures up to 4 engine parameters every 5 to 60 seconds. Choose from 23 parameters including: RPM • Throttle Position • Engine Load • Coolant Temperature • Intake Manifold Pressure • Airflow Rate • Timing Advance • Fuel Pressure • Fuel System Status • Short term and Long term Fuel Trim • Oxygen Sensor Output Voltage • Battery Voltage • More.

**MZ495937**— **$179.99**

**Standard CarChip™.**

**MZ495936**— **$139.99**

This device uses GPS positioning to track where the vehicle has gone and vehicle speed but does not give information about the engine, etc., from the car's computer as Car Chip does

Here is a way your parents can keep tabs on you by using an in car camera.

American Family Insurance makes the cameras available to their policyholders.

# AIRBAG TRIVIA

- **AIRBAGS WERE PATENTED IN 1953 AND DEVELOPED IN THE 1960s**
- **FORD TESTED AIRBAGS IN A FLEET OF VEHICLES IN 1971. GM WAS THE FIRST TO OFFER AIRBAGS AS AN OPTION. IN THE MODEL YEARS 1974 - 1976, AIRBAGS WERE OFFERED ON SOME OLDSMOBILES, BUICKS AND CADILLACS.**
- **GM INVESTED $80 MILLION IN THEIR AIRBAG PROGRAM WITH THE INTENT OF SELLING 100,000 AIRBAG EQUIPPED CARS PER YEAR (300,000 CARS TOTAL)**
- **APPROXIMATELY 10,000 AIRBAG EQUIPPED CARS WERE SOLD IN THE MODEL YEARS 1974, 1975, 1976. GM MISSED THEIR SALES MARK BY APPROXIMATELY 290,000 VEHICLES.**
- **THE PROGRAM WAS DROPPED AFTER THE 1976 MODEL YEAR.**
- **THE AIRBAG PROGRAM COST GM ABOUT $8,000 PER CAR, WHICH WAS MORE THAN THE RETAIL PRICE OF SOME OF THE CARS ON WHICH THEY WERE INSTALLED.**

# MORE AIRBAG TRIVIA

- **WHEN AUTOMAKERS AND NHTSA WERE DISCUSSING AND NEGOTIATING THE IMPLEMENTATION OF MOTORIZED BELTS AND/OR AIRBAGS, THE GENERIC TERM PASSIVE RESTRAINT SYSTEM WAS USED.**

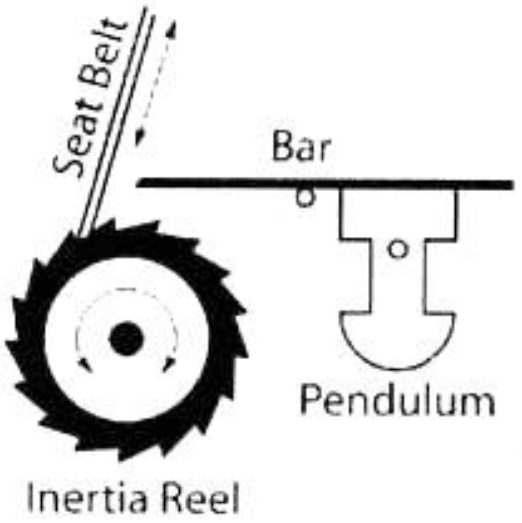
- **ONCE AIRBAGS BECAME A REALITY, AUTOMAKERS CHANGED THE TERM TO SUPPLEMENTAL RESTRAINT SYSTEM (SRS) SO THAT DRIVERS AND PASSENGERS WOULD NOT BE LULLED INTO A FALSE BELIEF THAT AIRBAGS REPLACED SAFETY BELTS. THE TERM SUPPLEMENTAL RESTRAINT SYSTEM IS MORE ACCURATE AND PROBABLY HAS SAVED THE AUTOMAKERS MUCH CONFUSION, ESPECIALLY IN LAWSUITS.**

- **THE LETTERS SRS WITH THE WORD AIRBAG UNDERNEATH ARE EMBOSSED INTO THE COVER OF SOME AIRBAG MODULES AND SRS MAY BE THE ICON THAT ILLUMINATES RATHER THAN THE FAMILIAR STICK PERSON AND BALLOON**

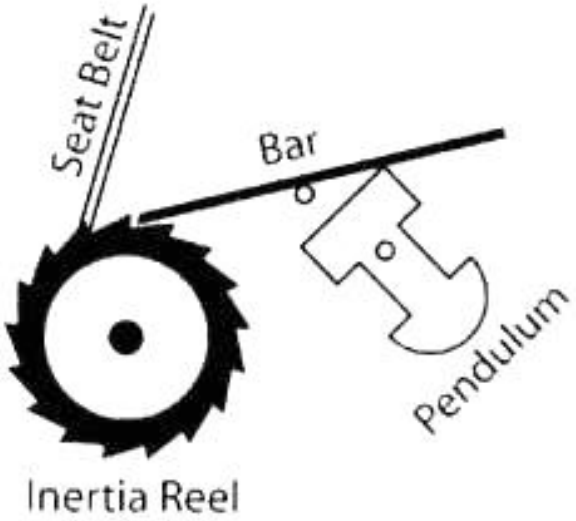
# HOW A SEAT BELT WORKS

This seat belt device is located in the door pillar

Some vehicles have a “pre-tensioner” that pulls the belt tight before the bar engages in the teeth. The pre-tensioner system is operated by the same sensors that activate the airbags




***Normal***
*Under Normal conditions, the pendulum and bar are in their rest positions. The reel, which holds the belt, is free to rotate. As the occupant leans against the belt, it "gives" or unrel's.*




***Accident*** **or hard braking**
*Under accident conditions, such as in a collision, the pendulum tilts toward the force of the impact causing the bar to engage the ratchet. The reel and seat belt now lock, restraining the occupant.*

THE MOST IMPORTANT PART OF HOW A SEATBELT WORKS IS TO ENGAGE THE BUCKLE WITH THE BELT AROUND YOU.

REMEMBER THE EXAMPLES YOU SAW OF POOR DECISIONS IN CHAPTER ONE? FOUR OF THE CASES SHOWN RESULTED IN DEATH BECAUSE EITHER THE DRIVER, PASSENGER OR BOTH CHOSE NOT TO WEAR A SEATBELT

# Iowa's Safety Belt Laws


Iowa Department of Transportation

Effective July 1, 1986, Iowa law (Section 321.445, Code of Iowa) requires drivers and front seat passengers to use safety belts when they ride in a motor vehicle on Iowa roadways.

Seat belts were required by law to be installed in cars in 1968. Note the 1986 date of the Iowa seat belt law.

The proper way to wear a three point safety belt is:

1. The lap portion should be snug and low around the hips.

2. The shoulder portion should be across the chest and over the shoulder.

Then there is an alternate way…….

# SEAT BELT TRIVIA

- **VOLVO OFFERED TWO POINT SEAT BELTS IN THE 1950s AND WAS THE FIRST TO OFFER, IN 1959, THE INTEGRATED THREE POINT BELT NOW IN STANDARD USE. THE INTEGRATED THREE POINT BELT SYSTEM WAS INVENTED BY A SWEDISH ENGINEER IN 1958**

- **FORD AND CHRYSLER, IN THE 1956 MODEL YEAR, WERE THE FIRST AMERICAN AUTOMAKERS TO OFFER SEAT BELTS.**

- **SEAT BELTS WERE OFFERED BY FORD AS PART OF A PACKAGE OF SAFETY ITEMS; SOME OPTIONAL, SOME STANDARD EQUIPMENT. IMPROVED DOOR LATCHES AND A DISHED STEERING WHEEL WERE STANDARD EQUIPMENT ON ALL FORDS IN 1956**

- **OPTIONAL EQUIPMENT INCLUDED A PACKAGE OF SEAT BELTS, PADDED DASH, PADDED VISORS. THE OPTIONAL PACKAGE WAS SOLD ON 2 PERCENT OF 1956 FORDS.**

# MORE SEAT BELT TRIVIA

- **CHEVROLET OUTSOLD FORD BY A WIDE MARGIN IN 1956. LEE IACOCCA, A FORD EXECUTIVE IN 1956, SAID IN HIS 1984 BOOK, *IACOCCA: AN AUTOBIOGRAPHY*, "FORD SOLD SAFETY, CHEVROLET SOLD CARS. "**
- **BASED ON FORD'S 1956 EXPERIENCE, AMERICAN AUTOMAKERS WOULD NOT PROMOTE SAFETY AGAIN FOR MORE THAN A DECADE.**
- **CHEVROLET MADE TWO POINT BELTS STANDARD EQUIPMENT IN 1964, FOUR YEARS BEFORE THEY WERE REQUIRED.**
- **THE TUCKER AUTOMOBILE, PRODUCED IN 1948, TOOK A DIFFERENT APPROACH TO OCCUPANT SAFETY.**

# THE TUCKER

**Preston Tucker, an automotive engineer who helped to design Miller racing cars before World War II, almost realized his ambition of producing a "completely new" passenger automobile after the war. He and his business associates leased a former Dodge aircraft plant in Chicago for this purpose. Fifty-one nearly identical Tucker automobiles, which were designed by Tucker, Alex Tremulis and J. Gordon Lippincott and Company, were built in 1948 before the Tucker Corporation became embroiled in fraud allegations. Shortly thereafter, the company was forced to go out of business.**

**The Tucker automobile had many advanced, innovative features, from its fastback shape to its swiveling center headlight and independent four-wheel suspension. Enhanced passenger safety was one of the Tucker's principal features. It had a pop-out windshield, padded dashboard, and a place where the front-seat passenger could crouch in the event of a collision**

**BUT THEY DIDN'T THINK ABOUT SEATBELTS. THEY THOUGHT ABOUT PROTECTING THE OCCUPANTS IN THE SECONDARY COLLISION THAT TAKES PLACE**

# NHTSA'S FIRST REGULATIONS 1967 MODEL YEAR

- **DAY/NIGHT INSIDE REAR VIEW MIRROR**
- **LANE CHANGING FEATURE FOR TURN SIGNALS**
- **LEFT OUTSIDE REAR VIEW MIRROR**
- **TWO SPEED WINDSHIELD WIPERS**
- **WINDSHIELD WASHERS**
- **BACKUP LIGHTS**
- **STANDARDIZED AUTOMATIC TRANSMISSION SHIFT QUADRANT OF P-R-N-D-L**
- **FOUR WAY HAZARD FLASHERS**

THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION WAS CREATED IN 1966. THE FIRST NHTSA REGULATIONS FOR VEHICLES WAS FOR 1967 MODEL YEAR.

REQUIRED EQUIPMENT INCLUDED:

* Back up lights
* Lane changing feature for turn signals
* Two speed windshield wipers
* Windshield washers
* Standardized shift quadrant of P-R-N-D-L
* Four way hazard flashers
* left outside rear view mirror
* Anti glare inside rear view mirror

MORE REGULATIONS FOLLOWED:

* Seat belts 1968
* Side marker lights 1968
* Passive restraints required by 1989, 1984
* Dual front airbags 1997
* Dual diagonal brake systems with proportioning valving
* Three point seat belts

OTHER REGULATIONS:

* Side door beams
* Impact standards
* Roll over standards
* Tire standards
* Headlamp and taillamp standards
* **Windshield glass standards**

LATEST REGULATION:

* Tire pressure inflation monitoring for 2008 model year. Optional now on some vehicles.

Stability control for 2012 model year

# WHAT'S NEXT FROM NHTSA?

- **TIRE PRESSURE MONITORING DEVICES IS THE LATEST REGULATION TO BE REQUIRED WITH FULL IMPLEMENTATION BY THE 2008 MODEL YEAR**
- **IF A TIRE LOSES 25 PERCENT OR MORE OF IT'S RECOMMENDED INFLATION PRESSURE THE DRIVER WILL BE WARNED BY AN INDICATOR LAMP**
- **THE NEXT LIKELY REGULATION WILL BE ELECTRONIC STABILITY CONTROL (ROLLOVER PREVENTION) PROBABLY BY THE 2012 MODEL YEAR FOR FULL IMPLEMENTATION**
- **AUTOMAKERS HAVE NOT OBJECTED TO EITHER OF THE ABOVE REGULATIONS SO THEY MUST BE INEXPENSIVE TO IMPLEMENT OR PERHAPS THE AUTOMAKERS ARE TIRED OF FIGHTING AND POSSIBLY LOOKING BAD TO SAFETY MINDED CONSUMERS**
- **REMEMBER THE MOTORIZED SHOULDER BELT IN THE 1980s?**
- **THE MOTORIZED BELT WAS THE AUTOMAKERS RESPONSE TO THE GOVERNMENT'S REQUIREMENT THAT VEHICLES HAD TO HAVE PASSIVE RESTRAINT DEVICES BY THE 1989 MODEL YEAR. EITHER AIRBAGS OR MOTORIZED BELTS WERE APPROVED FOR USE AT THAT TIME. THE MOTORIZED BELT SYSTEM WAS THE LEAST EXPENSIVE. AIRBAGS WERE PROPOSED BY THE GOVERNMENT, THE AUTOMAKERS PROPOSED MOTORIZED BELTS**
- **EVENTUALLY THE GOVERNMENT'S REQUIREMENTS BECAME SPECIFIC AND STRICT ENOUGH SO THAT THE AUTOMAKERS HAD TO "BITE THE BULLET" AND INSTALL AIRBAGS. DRIVERS SIDE ONLY AIRBAGS CAME FIRST (CARS), THEN BOTH SIDES OF THE FRONT AND TRUCKS IN 1997**

# WHAT IS ELECTRONIC STABILITY CONTROL?

- Traction Control – keeps wheels from spinning in poor traction situations by applying brakes to the spinning wheel and reducing the throttle (engine RPM)

- Brake Assist -- allows the most braking under hard pedal pressure without wheel lockup

- Rollover Control – senses when vehicle may roll and applies brake pressure to the appropriate wheel(s) to help prevent rollover

- Trailer Sway Control – if trailer starts to sway, it slows vehicle down and applies braking pressure to the brakes on only one side of the vehicle.

## SAFETY AND SECURITY

**1 STANDARD ELECTRONIC STABILITY PROGRAM (ESP)***

ESP, which includes all-speed traction control, Brake Assist, Electronic Roll Mitigation and Trailer Sway Control, assists drivers in maintaining control of their vehicles during extreme steering maneuvers. ESP works to correct the vehicle's course by automatically controlling the throttle and applying the brakes at individual wheels. All-speed traction control reduces engine power, applies the brakes to spinning wheels and transfers torque to the appropriate wheel when slippage is detected. Brake Assist automatically increases braking pressure to its maximum force during emergency brake situations. Electronic Roll Mitigation senses when a rollover may occur and applies braking force to the correct wheel to reduce the likelihood of such an event. Trailer Sway Control detects "sway" unique to trailering and then engages Nitro's brakes to slow the vehicle and trailer down, reduces engine torque and then increases the brake force to only one side of the vehicle to help counteract the sway from the trailer.

**2 ADVANCED MULTISTAGE DRIVER AND FRONT-PASSENGER AIR BAGS†**

Every Nitro model features standard advanced multistage driver and front-passenger air bags with Occupant Classification System (OCS) that provide nearly instantaneous occupant protection by matching air bag output to crash severity.

**3 SUPPLEMENTAL SIDE-CURTAIN AIR BAGS†**

Standard supplemental side-curtain air bags with roll-sensing technology add additional protection to front and rear outboard passengers in the event of a side impact.

**4 ANTILOCK BRAKE SYSTEM (ABS)**

This standard four-wheel disc system helps prevent wheel lockup improved steering under extreme braking or slippery conditions.

**5 TIRE PRESSURE MONITOR**

Keep an eye on safe and proper tire pressure. A display alert com through the Electronic Vehicle Information Center (EVIC) or a warr lamp (on SXT models) when low tire pressure is detected.

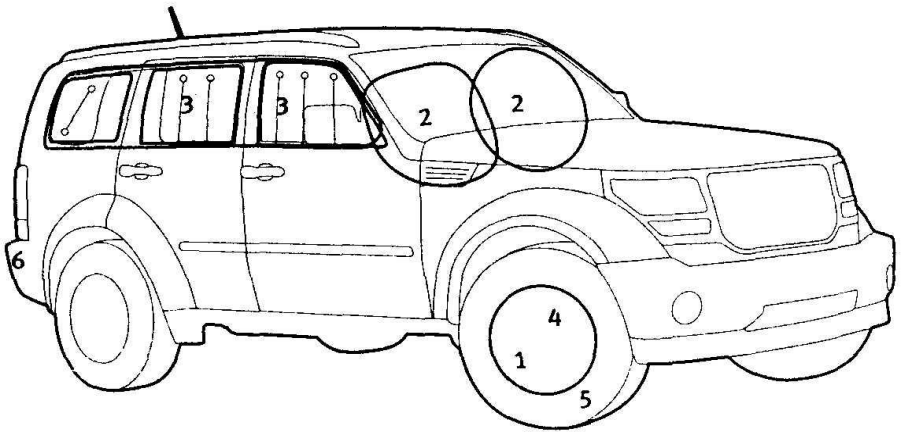
**6 PARKSENSE®**

Available ParkSense Rear Park Assist System‡ gives you some added insight before you begin to back up. Thanks to four rear fascia-mount ed sensors that emit ultrasonic sound waves to a distance of up to six feet and increase in frequency as objects get closer, you'll have a bett determination of your distance from other objects while driving in reve

*No system, no matter how sophisticated, can repeal the laws of physics or overcome care less driving actions. Performance is limited by available traction, which snow, ice and other con can affect. When the ESP warning lamp in the speedometer flashes, the driver needs to us throttle and adapt speed and driving behavior to prevailing road conditions. Always d carefully, consistent with conditions. Always wear your seat belt. †Always sit properly in t with the seat belt fastened. Always observe the passenger air bag indicator lamp to dete if the OCS classification is appropriate. Children 12 and under should always be in a bac correctly using an infant or child restraint system or the seat belt positioned correctly fo child's age and weight. ‡Always check entire surroundings before backing up.

PARKSENSE IS AN OPTION

2008 Dodge Nitro sales brochure



# COULD THIS BE COMING?

## 3.2 Getting Ready to Drive

### Outside Checks

1. Walk around your vehicle with keys in hand and look for objects in the path you intend to take. Also look for water or oil marks under the vehicle.
2. Glance at the tires to see they are inflated properly.
3. Notice the direction the front wheels are pointed. If they are not pointed straight ahead, your vehicle will go to the left or right as soon as you begin to drive.
4. Make sure the windshield, windows, headlights, and taillights are clear. If windows are covered with snow or ice, clear them completely. Do not clear off just enough for a "peephole."
5. Check the back window ledge for loose objects. Remove any objects before driving.
6. Look inside the vehicle to be sure you do not have unwanted passengers.

If you have been driving for some time on wet roadways, your headlights may be covered with road dirt. Develop the habit of cleaning the headlights often, and clean them every time you get fuel.

Once you have completed all the outside checks, follow these steps in order to safely enter your vehicle.

### Getting into the Vehicle

1. If you enter your vehicle from the street side, have your keys in hand ready to unlock the door. If you use a remote-control device, unlock the vehicle before you walk into the street.
2. Walk around the front of the vehicle toward the back. You then can see oncoming traffic and reduce the risk of being hit. Do not open the door if an oncoming vehicle is near.
3. Get in quickly, close the door, and lock it. Put the key in the ignition.

Did you know that pressing the door unlock button once on the remote unit will unlock only the driver's door?

As a security feature the button must be pressed twice to open the other doors

# INEXPERIENCE IS YOUR ENEMY

GETTING READY TO DRIVE MEANS MORE THAN FASTENING THE SEAT BELT AND ADJUSTING THE MIRROR

YOU MUST BE AWARE OF CHANGING ROAD CONDITIONS AND OTHER THINGS YOU WILL ENCOUNTER AS YOU DRIVE.

HE Record Herald And Indianola Tribune

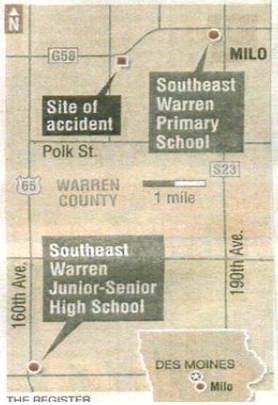
EDNESDAY, JANUARY 31, 2007 75 CENTS www.indianolarecordherald.co

# Milo girl critical after crash


e Life Flight helicopter lifts off from the ne of a Friday morning, Jan. 26, acci- nt Warren County's G58 Highway west Milo.

ree Milo teenagers were in this car en it slid out of control into the path of Southeast Warren school bus. The pas- nger in the back seat, Donna Petry, who s not wearing her seatbelt, was ejected rough the rear window. It took rescue rkers 15 minutes to find her. She's ed in serious condition at a Des Moines spital.

RHT PHOTOS/MICHAEL ROLANDS
GRAPHIC/THE DES MOINES REGISTER




THE REGISTER

## Three teenagers hurt as icy road cause collision with bus Friday a.m. near Milo

By **SARA SLEYSTER**
Record-Herald Staff Writer

Sisters Rosie and Donna Petry of I remained hospitalized Monday after car they were riding in collided v a school bus Friday. Emanual Tucker, who was driving the car, was back at school Monday coping with the help of support from her class- mates and teachers.

Donna Petr

The girls were on their way to Southeast Warren Junior-Senior High School Friday morning when Tucker's vehicle slid on frost west of Milo on Highway and went into the path school bus headed toward the Pri School.

Donna Petry was thrown from the back- seat of the car during the accident and is still in critical condition at Blank Children's Hospital in Des Moines. She is in a medically induced comma as she heals from a brain injury and lacerations to her face, Principal Terry Gladfelter

Rosie Petry

Rosie Petry was upgraded to fair dition Monday at Mercy Medical C in Des Moines. She sustained inte injuries in the crash and her spleen

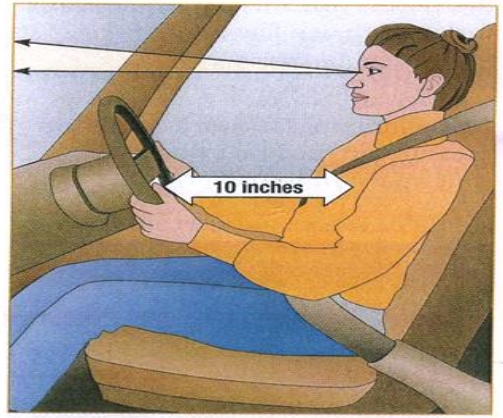
**CRASH**
Continued on page 2A


crash near Milo earlier this month was blamed on icy roads. Southeast Warren school officials want to talk with Warren County engineers about road
earing policies to see if future tragedies can be averted

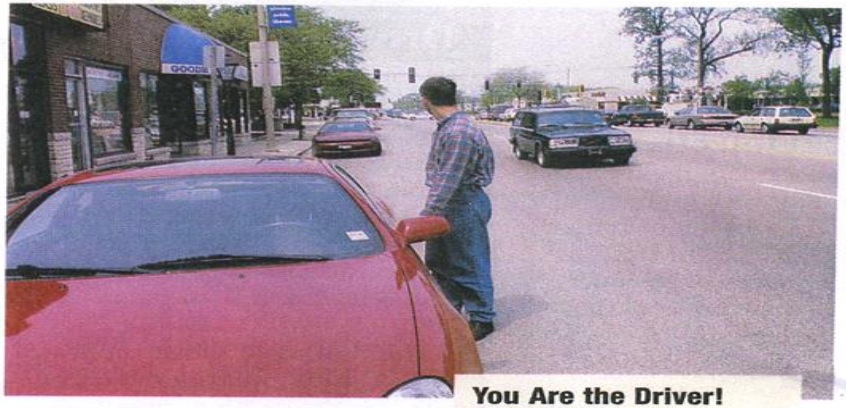
Three Milo teenagers were in this car when it slid out of control into the path of a Southeast Warren school bus. The passenger in the back seat, Donna Petry, who was not wearing her seatbelt, was ejected through the rear window. It took rescue workers 15 minutes to find her. She's listed in serious condition at a Des Moines hospital.

## Inside Checks

1. Lock all doors. Locked doors are less likely to fly open in a collision.
2. Adjust the seat for comfort and best control of foot pedals and steering wheel. Sit with your back firmly against the back of the seat. Sit high enough to see over the steering wheel. Adjust the seat so you are at least 10 inches back from the hub of the wheel to avoid injury in a crash.
3. Your hands should be in a balanced, comfortable position on the steering wheel with your elbows slightly bent. Reach for the accelerator and brake pedal with your right foot to judge a comfortable distance. Your knees should be slightly bent.
4. Adjust the head restraint to the middle of the back of your head.




Make adjustments so you are comfortable before driving.



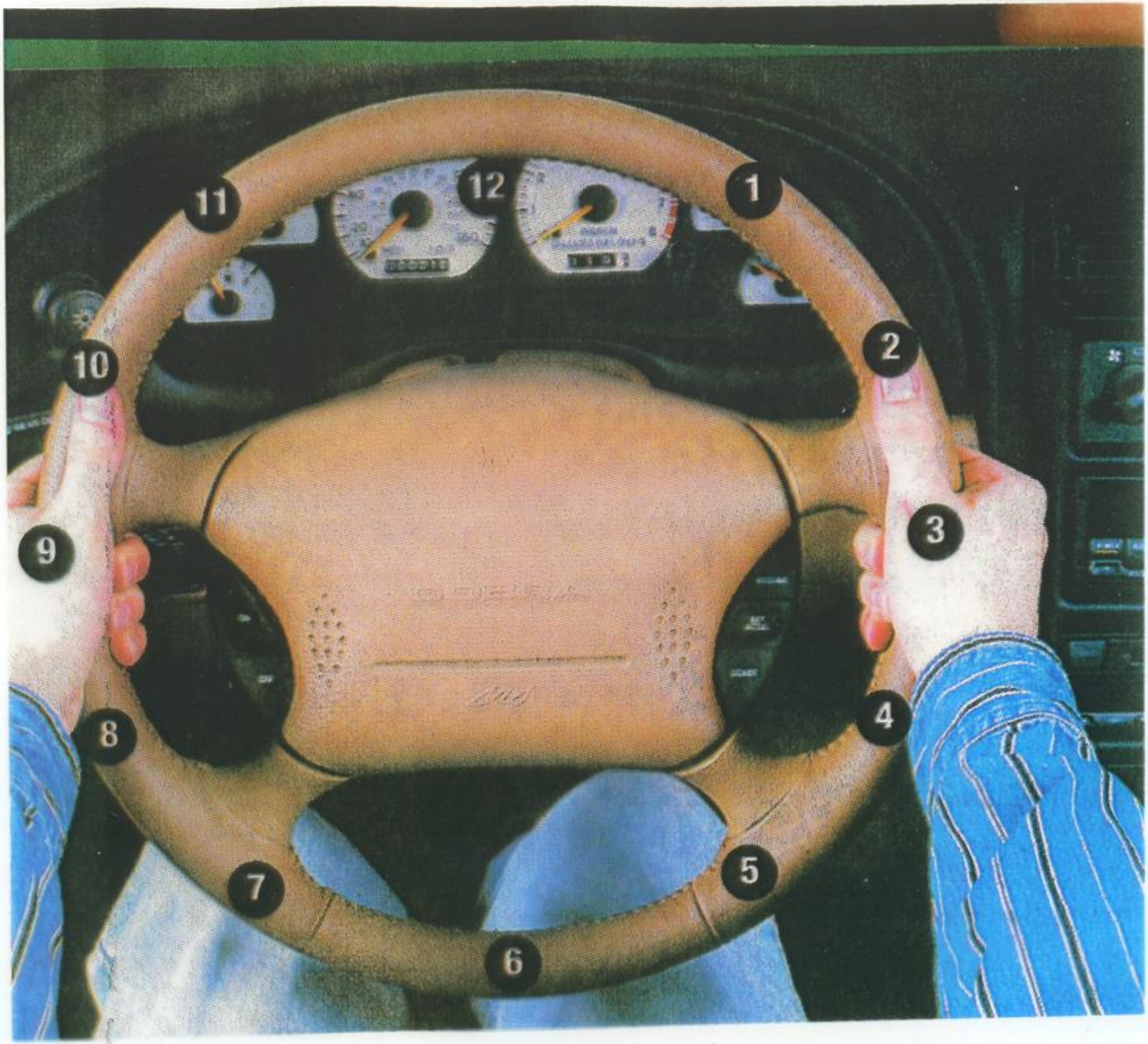
**You Are the Driver!**
What procedures is the driver following to enter the car safely?

5. Adjust the inside rearview mirror so it shows the area behind you through the rear window.
6. Adjust the left and right outside rearview mirrors so they show a slight amount of the sides of the vehicle.
7. Fasten your safety belt and ask all passengers to fasten theirs.

Be a smart driver. When you enter the vehicle from the street side, walk around the front of the vehicle so you are facing traffic.

Attempt to be about 10 inches away from the steering wheel in the event of a crash or airbag deployment.

Be sure you can see over the steering wheel. The top of the wheel should not be above the height of your shoulders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## 3.3
# Driving a Vehicle with Automatic Transmission

Learning the correct steps for starting, moving, and stopping an automatic transmission vehicle is not difficult. You choose the gear you want by moving the gear selector lever. Practice each step in the correct order so that the procedures become a habit.

### Selector-Lever Positions

The **shift indicator** shows the gear positions. This indicator may be located on the steering column, on the instrument panel, or on the console to the right of the driver. The first picture shows the shift indicator on the instrument panel and tells you the vehicle is in PARK. The second picture shows the indicator mounted on the console and tells you the vehicle is in PARK.

PARK (P) This gear position locks the transmission. Your vehicle should be in PARK before you start driving. You should also shift to PARK every time you stop driving since the vehicle cannot roll in this gear. Never shift to PARK when the vehicle is moving. In many vehicles you can remove the key from the ignition only when the lever is in PARK.

REVERSE (R) This gear is used for backing. Always come to a complete stop before shifting into REVERSE. Expensive damage to the transmission can result from shifting to REVERSE when the vehicle is moving forward.

When you shift to REVERSE, the **backup lights** come on. These are white lights at the rear and tell others that you are backing.

NEUTRAL (N) This position allows the wheels to roll without engine power. If the engine stalls while you are driving, shift to NEUTRAL (not PARK) to restart the engine. Shift to NEUTRAL if you are stopped in traffic for more than a few minutes.

DRIVE (D) This position is for moving forward. To keep your vehicle from "jumping" forward, keep firm pressure on the brake pedal every time you shift to DRIVE.

Gear indicators can be on the control panel or on the console.

Many vehicles are equipped with overdrive, shown by a "D" with a circle or square around it. At speeds of 40–45 mph the vehicle automatically shifts into overdrive. Driving in this gear saves fuel and can be used for all normal forward driving.

LOW (L1 and L2, or 1 and 2) These positions allow the engine to send more power to the wheels at lower speeds. Both positions are for slow, hard pulling and for going up and down steep hills. LOW 2 is used when driving in snow. Use LOW 1 when going up or down very steep grades and when pulling heavy loads.

Some vehicles will have an overdrive light to alert the driver when the overdrive is off or the shift lever is not in the overdrive position.

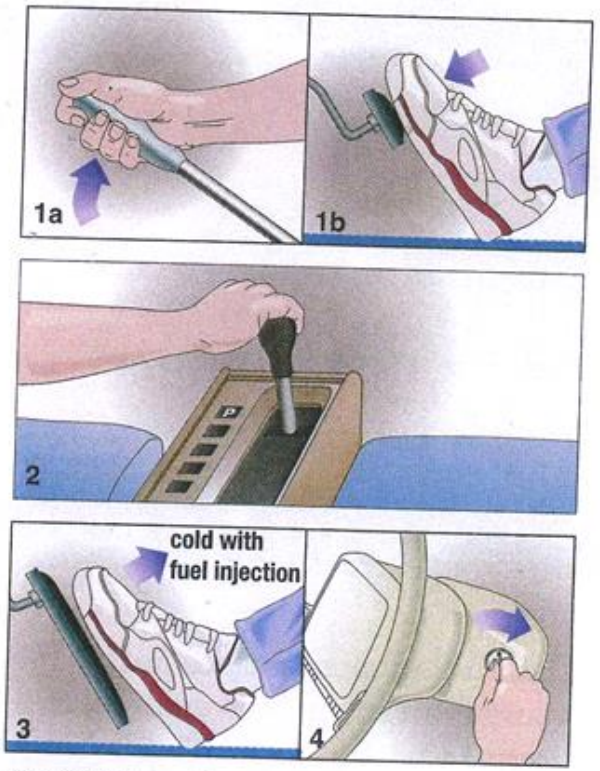
The light will only illuminate when the overdrive is off to remind the driver to use overdrive to get the best fuel economy.

## Starting the Engine

Use this procedure to start the engine of a vehicle with an automatic transmission. The pictures correspond to the steps listed.

1. Make sure the parking brake is set.
2. Make sure the selector lever is in PARK. If you are starting the vehicle after the engine has stalled, place the selector lever in NEUTRAL.
3. If your vehicle has fuel injection and the engine is cold, keep your foot off the accelerator.
4. Turn the ignition switch to On. Continue turning the key to start the engine. Release the key as soon as the engine starts.
5. Check the gauges, warning lights, and fuel supply.

Never try to start the engine when it is already running. Expensive damage to the starter can result. Press lightly on the accelerator so you will know whether or not the engine is running.



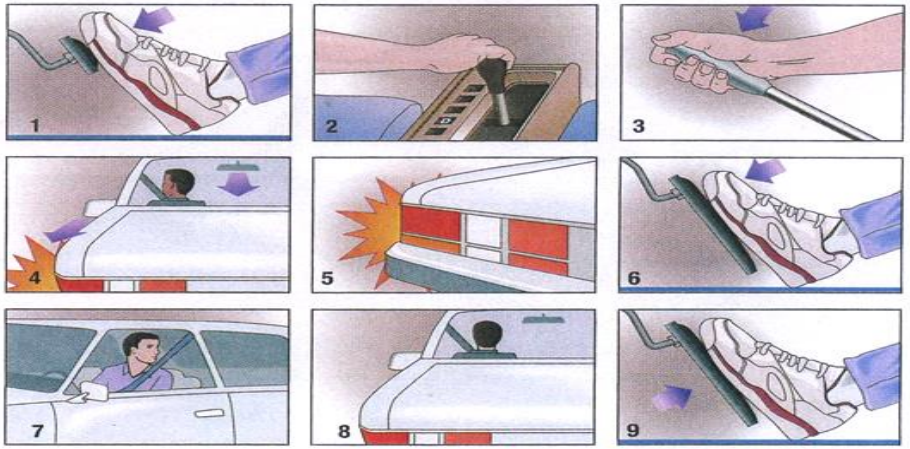
Starting the engine

A safer method, rather than pressing the accelerator, is to look at the tachometer, if equipped, to determine if the engine is running. Or, if your car has power steering, you can try moving the steering wheel just a bit. If the wheel moves easily, the motor is running.

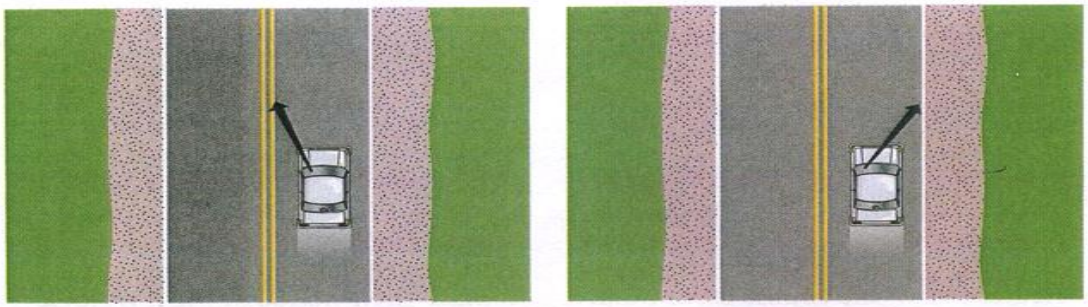
## Putting the Vehicle in Motion

After you have started the engine and checked all the gauges, you are ready to put your vehicle in motion. Follow these steps in the same order each time you move your vehicle. The numbered steps correspond to the numbered pictures above.

1. Press firmly on the foot brake.
2. Move the selector lever to DRIVE.
3. Release the parking brake while still pressing the foot-brake pedal.
4. Check for traffic ahead and in rearview mirrors. Look over your left shoulder to see if a vehicle is approaching from the rear.
5. If you are going to move away from the right curb, use the left turn signal to alert other drivers. Check mirrors again.
6. When you know the roadway is clear, release the foot-brake pedal and press gently on the accelerator to increase speed smoothly.
7. Quickly check again over your left shoulder for traffic.
8. Cancel the signal, if necessary.
9. As you reach your desired speed, let up a little on the accelerator. Adjust your speed to traffic.

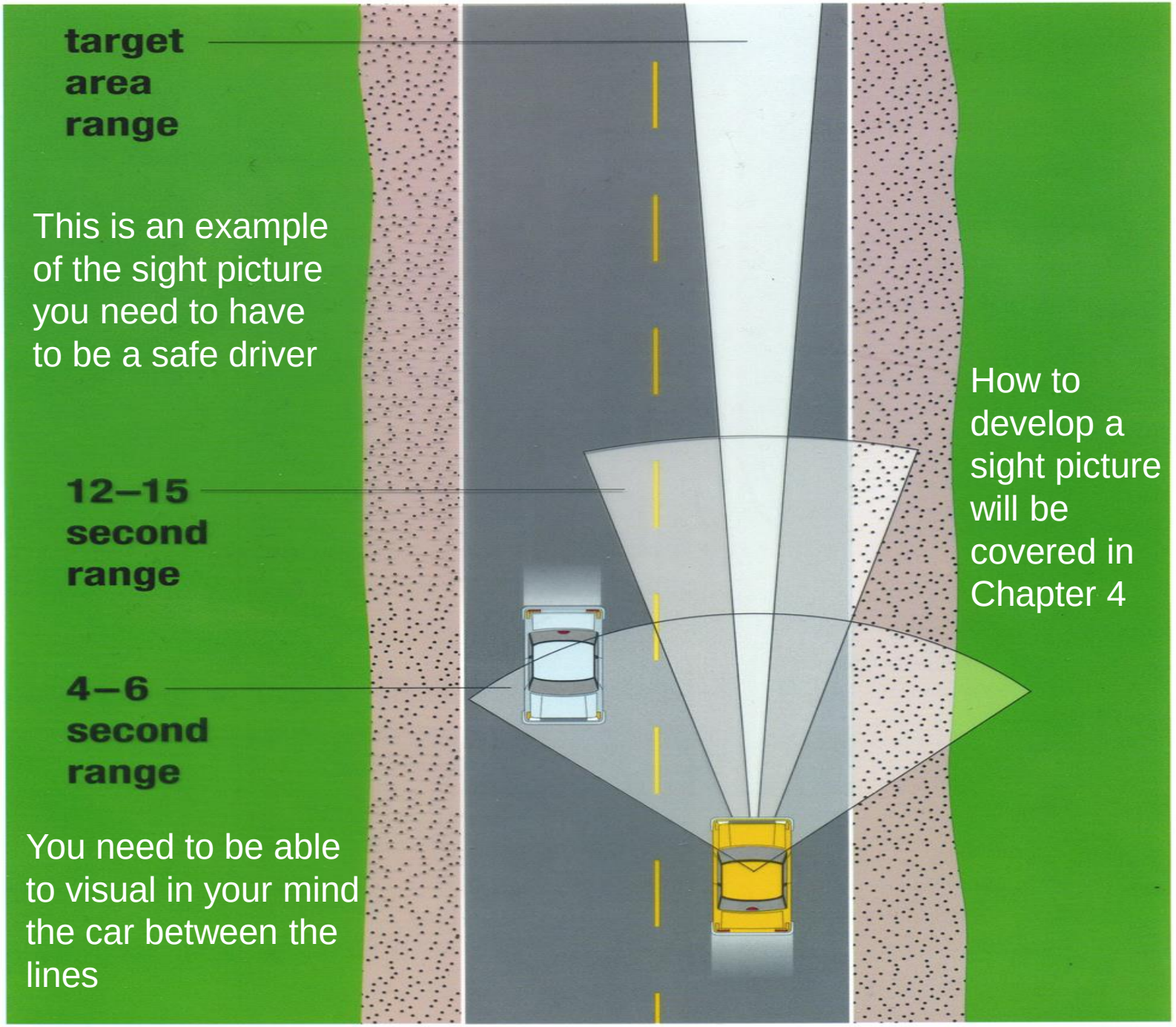


Putting the vehicle in motion


Don't use the road lines as a guide for where to look when you practice steering.

Be a smart driver. If you use road lines as a guide you will not get an adequate picture of what is going on around you AND your car will wander.

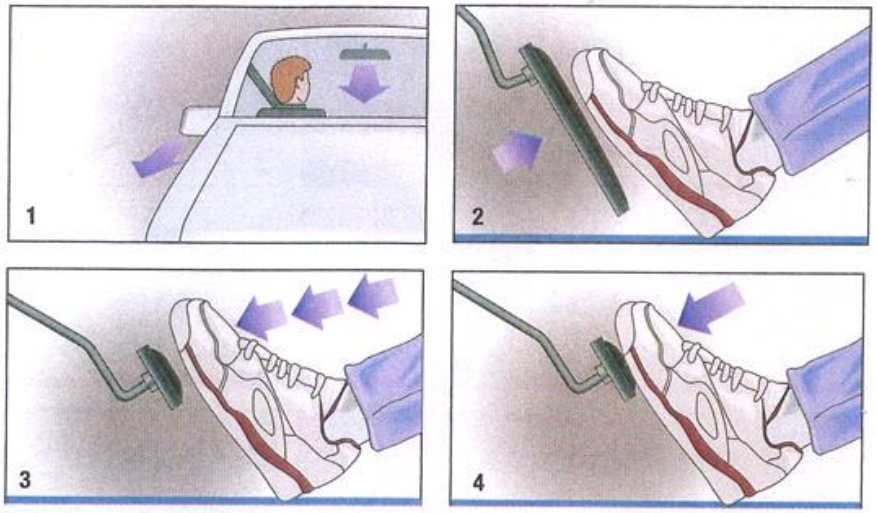
You need a good sight picture




This is an example of the sight picture you need to have to be a safe driver

How to develop a sight picture will be covered in Chapter 4

You need to be able to visual in your mind the car between the lines

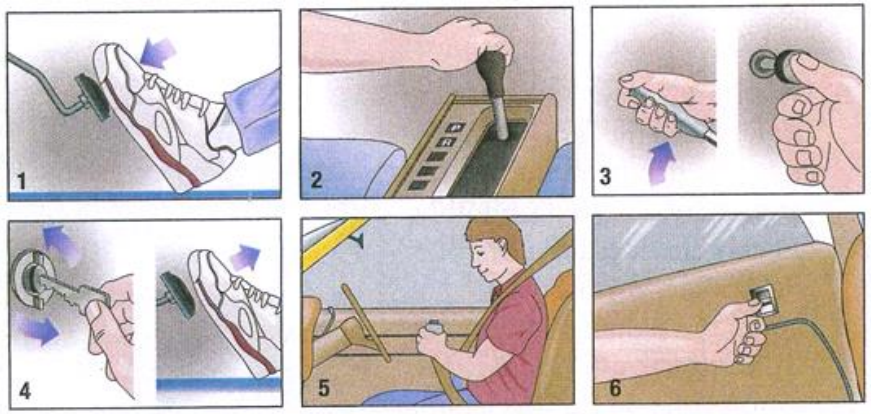



Stopping the vehicle

## Stopping the Vehicle

The numbered steps correspond to the numbered pictures.

1. Check traffic in both mirrors before slowing down.
2. Let up on the accelerator.
3. Tap the foot brake lightly.
4. Gradually press down on the foot-brake pedal. Ease up on the brake just before stopping. Leave the selector lever in DRIVE if you plan to start moving again immediately. Otherwise, shift to PARK.

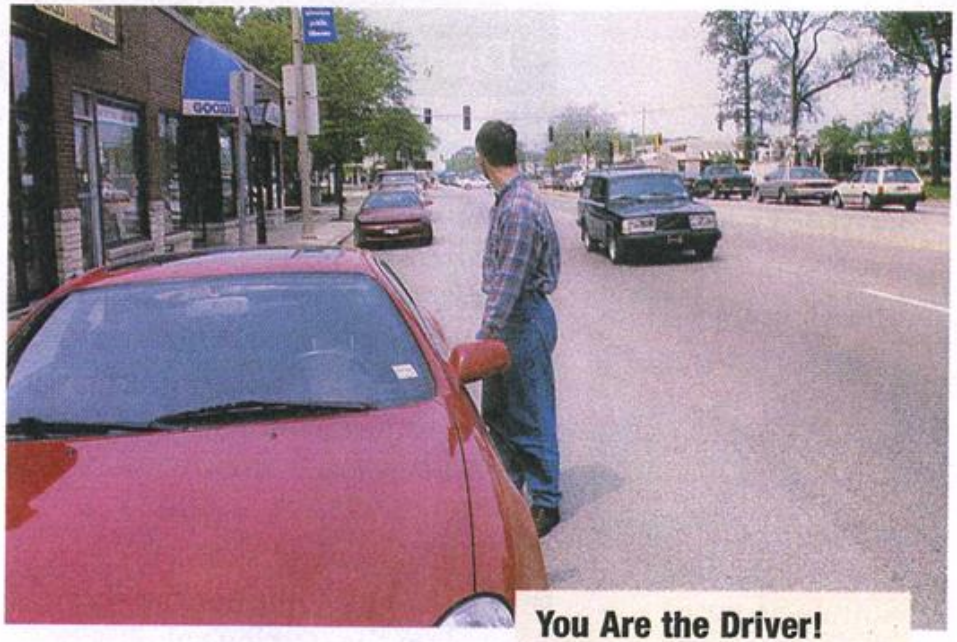



Securing the vehicle

## Securing the Vehicle

This procedure applies to both automatic and stickshift vehicles.

1. Once you have stopped, continue pressing the foot brake.
2. Shift to PARK in an automatic or to REVERSE in a stickshift vehicle.
3. Set the parking brake. Turn off all accessories. Close all windows.
4. Turn off the ignition switch. Remove the key. Release the foot brake.
5. Unfasten your safety belt.
6. Lock all doors.



**You Are the Driver!**
What procedures is the driver following to enter the car safely?

## Leaving the Vehicle

If you leave the vehicle from the street side, follow these steps.

1. Check inside and outside mirrors.
2. Make sure you have your keys.
3. Glance over your left shoulder before opening the door.
4. When it is safe, open the door and get out quickly.
5. Make sure all doors are locked. Walk around the rear of the vehicle to reduce your risk of being hit.

Be a smart driver. Always face the traffic. When you exit the vehicle from the street side, be sure you walk toward the back side of the vehicle.

## Decision Making


Fuel


Alternator


Oil Pressure


Temperature

1. While you are driving, the gauges on the instrument panel could look like the pictures above. What does each gauge tell you? What problems might you have? What should you do?

2. The driver is going to enter the car and drive. Identify the incorrect procedure the driver is following. Explain why the procedure is unsafe. What error should the driver correct? What safety checks should the driver make?

3. What steps did this driver forget when getting ready to drive? Is this a safe steering position? How might the driver achieve more controlled steering? What safety device is missing?


4. You are preparing to turn this very sharp curve. You are driving a four-speed car in FOURTH gear. What should you do before entering the curve? Describe the procedure you would use.