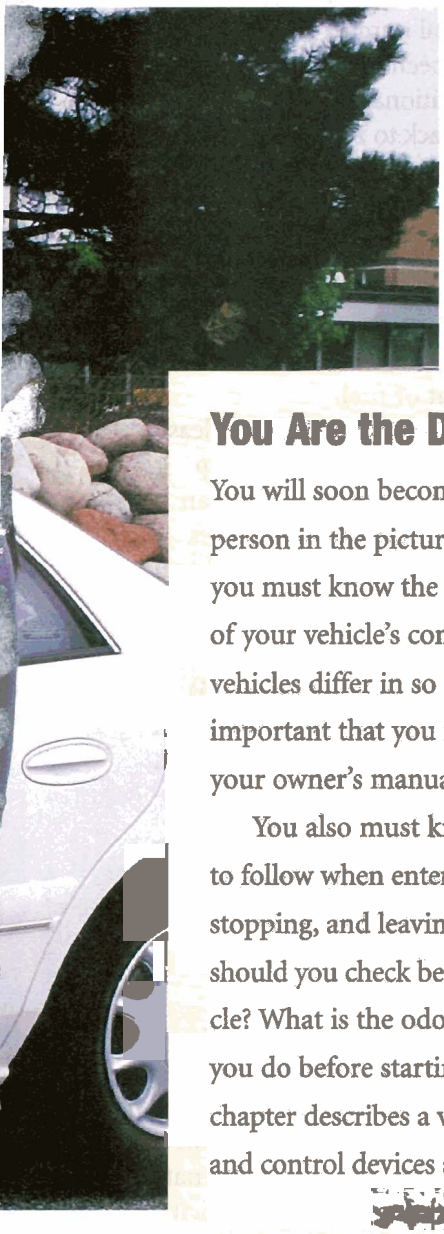

GLENBROOK NORTH H.S.
DRIVER EDUCATION
GRANT DEAN BUICK, INC.

Chapter 3
Basic Vehicle Control



You Are the Driver!

You will soon become a driver like the person in the picture. To be a safe driver, you must know the location and function of your vehicle's control devices. Since vehicles differ in so many ways, it is important that you read and understand your owner's manual.

You also must know the procedures to follow when entering, starting, moving, stopping, and leaving your vehicle. What should you check before entering the vehicle? What is the odometer? What should you do before starting the engine? This chapter describes a vehicle's instruments and control devices and how to use them.

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3.1
Instruments, Controls, and Devices

Objectives
1. Identify each gauge and warning light on an instrument panel and explain its function.
2. Explain the purpose of each control used to operate a vehicle.
3. Describe the use of the safety, communication, and comfort devices.

When you are ready to begin your driving experiences, you must know what the warning lights and gauges on the instrument panel tell you. Read the owner's manual to learn the location and operation of the devices for safety, comfort, and communication.

Instrument Panel

The instrument panel is the panel directly in front of you as you sit in the driver's seat. The location of the gauges and warning lights varies from one vehicle to another. No matter where these gauges and lights are located, their purposes are the same. You can make sure the warning lights are working if they light when the ignition switch is turned to On.

The picture on the next page shows one example of the location of the gauges and warning lights in a vehicle, though not all vehicles have the same indicators. The numbers correspond to the gauges and lights explained on this and the next page.

Speedometer (1) This instrument tells you the speed you are traveling in both miles per hour and kilometers per hour. Some vehicles have a digital speedometer.

Tachometer (2) Some vehicles have a tachometer that indicates the engine revolutions per minute. Engine damage may occur if the needle enters the red zone.

Odometer (3) The **odometer** indicates the total number of miles the vehicle has been driven. Some vehicles have an additional trip odometer that can be set back to zero when you want to know the number of miles driven during a certain period of time.

Fuel Gauge (4) The fuel gauge shows the amount of fuel in the tank. If you let the fuel tank get below one-quarter full, you risk running out of fuel.

Try to keep the fuel tank at least half full in cold weather to help prevent fuel-line freeze. This can occur when moisture condenses and freezes inside the tank and fuel line. Ice particles can then block the flow of fuel.

Temperature Light or Gauge (5) This light or gauge warns you when the coolant in the engine is too hot.

Oil Pressure Warning Light or Gauge (6) This warning light or gauge warns you when the oil is not circulating at the proper pressure. However, it does not tell you the amount of oil in the engine.

Alternator Warning Light or Gauge (7) Your vehicle's electrical system is in trouble if this light comes on or the gauge shows "discharge" while the engine is running. The alternator is not generating enough electricity to run the vehicle. When this happens, the engine must use stored electricity from the battery.

The **alternator warning light** or gauge warns that the battery is being drained. The more electricity used, the sooner the battery will be dead. Turn off as many electrical devices as possible, and have the system checked without delay.

Brake System Warning Light (8) This warning light serves two purposes. First, the light reminds you to release the parking brake before moving the vehicle. Second, if the light comes on while you are pressing the foot brake, or while you are driving, it means that part or all of the braking system is not working properly. If this occurs, brake gradually to a stop, have the vehicle towed, and have the problem corrected.

Antilock Braking System Light (9) This light tells you if the **antilock braking system (ABS)** is functioning properly. ABS keeps the wheels from locking if the driver brakes hard. If this light comes on, it indicates a problem with the system.

Safety Belt Light (10) This light reminds you to fasten your safety belt before moving your vehicle. This light comes on when you turn the key. In some vehicles the light stays on for a few seconds after the engine is started.

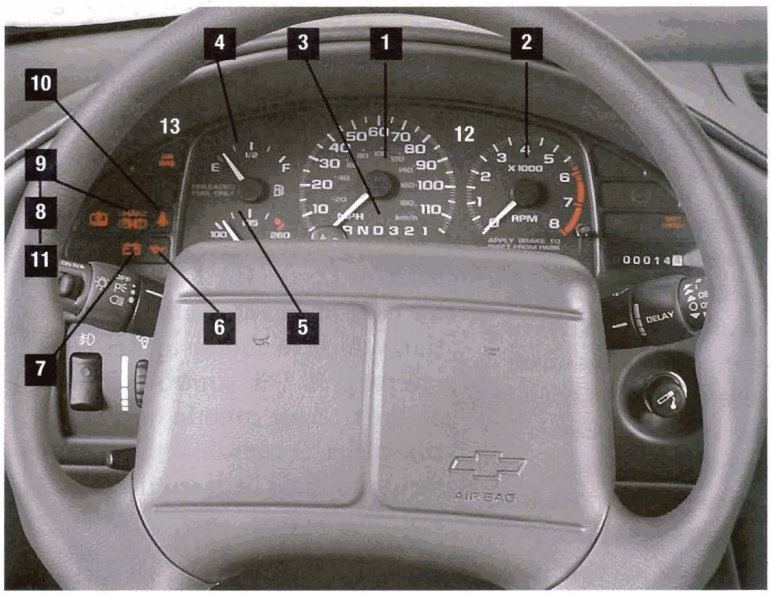
Air Bag Warning Light (11) This light tells you if the air bags are in proper working condition. When the ignition is turned on, the air-bag light comes on for a few seconds and then goes off. If the air bags are not in proper operating condition, the warning light will stay on.

Turn-Signal Indicators (12) These indicators tell you the direction you have signaled to turn. Each indicator is usually a small green arrow that flashes when you signal for a turn. The arrow stops flashing after you make the turn or when the turn signal is cancelled.

High-Beam Indicator (13) This light glows when the high-beam headlights are on. This indicator usually appears as a small light in some area of the instrument panel.

Vehicle Controls

The characteristics and locations of vehicle controls vary from one model to another. However, each control performs the same function in each vehicle. The numbers in the pictures on the next four pages match the controls explained.



Your car's instrument panel might look different, but all vehicles have similar devices to provide information.

TIP

SAFE DRIVING

Be aware of any warning light that comes on while you are driving. The light tells you there is a problem, but it does not tell you what the problem is.

Devices for starting and controlling the movement of a vehicle.

Steering Wheel (14) The steering wheel controls the direction of the front wheels. Turn right to go right; turn left to go left. Use the same steering procedure when backing the vehicle.

Steering Wheel Adjustment Lever (15) Some vehicles have an adjustable steering wheel. The wheel can be tilted up or down for better driving comfort.

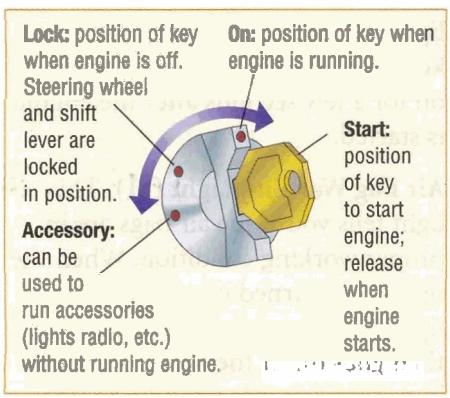
Selector Lever (16) Move the selector lever in an automatic transmission vehicle to choose forward or reverse gear. This control is located on the steering column or on the **console.** The console is the compartment mounted between the front seats in a vehicle.

Gear-Shift Lever (17) In a stickshift vehicle, shift gears by moving the shift lever to the desired position. This lever is located on the console.

Ignition and Starter Switch (18) Start the engine by putting the key into the **ignition switch.** The picture below shows all of the positions of the key in the starter switch.

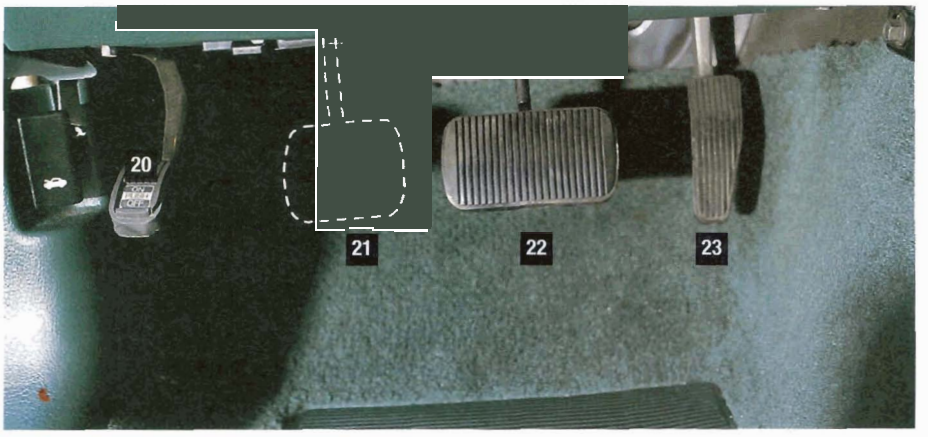
Cruise Control (19) This is an optional feature you can have on your vehicle. **Cruise control** is a device that lets you maintain your desired speed without keeping your foot on the accelerator. Tap the foot-brake pedal to cancel cruise control.

Parking Brake (20) The parking brake keeps the vehicle in place when it is parked. In many vehicles the parking brake is a pedal located on the far left. Push down on the pedal to set the parking brake. To release the parking brake, push down on the pedal until you hear a click, then lift your foot off the pedal. Some vehicles have a brake-release lever on the left side under the instrument panel. In other vehicles, the parking brake is a lever mounted on the floor or on the



Positions of the key in the starter switch (18)

Cruise control should *never* be used when road surfaces are wet or slippery or in heavy traffic. You have much less control if a conflict occurs. Using cruise control in areas of steep grades wastes fuel and puts added stress on the engine.



All vehicles have a foot-brake pedal and an accelerator pedal. Some vehicles also have a clutch pedal and/or brake pedal.

console to the right of the driver's seat. Push in the button at the tip of the lever and lower the lever to release this type of brake.

Clutch Pedal (21) In a stickshift vehicle, the **clutch pedal** is located to the left of the foot-brake pedal. Pushing this pedal down lets you shift gears.

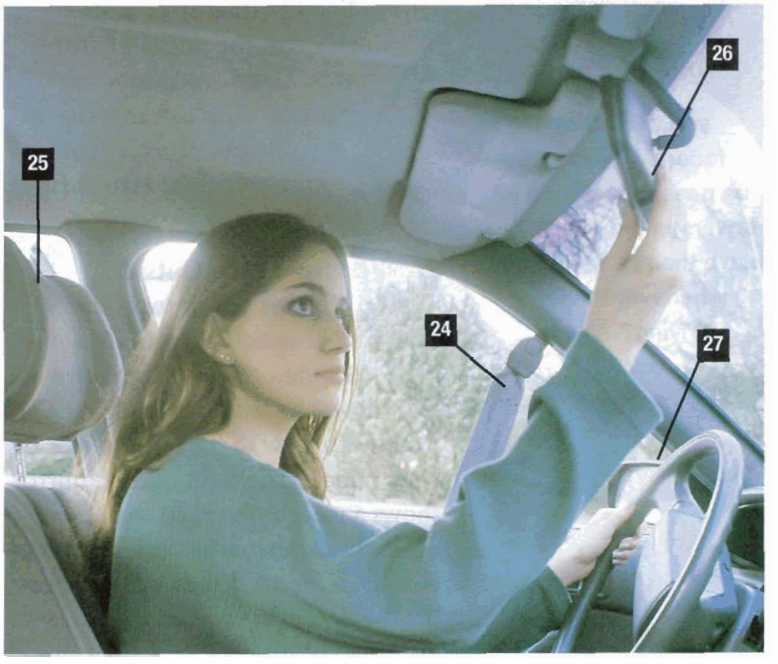
Foot-Brake Pedal (22) Pushing down on the foot-brake pedal slows or stops the vehicle. Depressing this pedal also turns on the brake lights in the back of the vehicle.

Accelerator Pedal (23) The accelerator pedal is located to the right of the foot-brake pedal. Pushing the accelerator down increases speed; releasing it slows the vehicle.

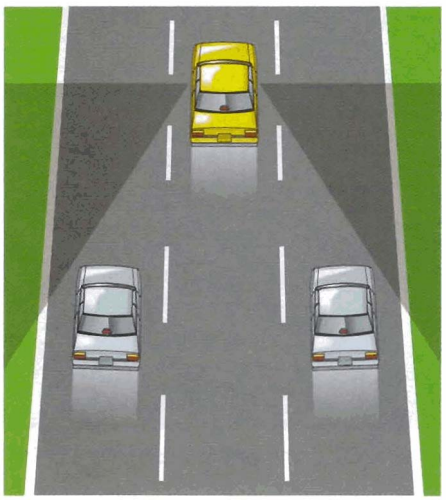
Devices for Safety, Communication, and Comfort

Locate and understand the operation of the following devices on any vehicle you drive.

Safety Belts (24) Always wear your safety belt when your vehicle is in motion. Safety belts are your best protection against injury in a collision. Fasten your safety belt to a



Safety devices help protect you and your passengers.



The dark shading indicates "blind spots"—areas that you cannot see with your mirrors.

snug fit before starting your engine. Most states require drivers and passengers to wear safety belts.

Head Restraints (25) Most vehicles have **head restraints,** padded devices on the backs of front seats. Head restraints help reduce whiplash injuries in a collision, especially if your vehicle is struck from the rear.

Inside and Outside Rearview Mirrors (26–27) The inside mirror (26) shows the view through the rear window. The left outside mirror (27) shows a view to the left and rear of your vehicle. The right outside mirror shows a view to the right rear. Even when these mirrors are adjusted properly, there are areas they cannot show the driver. These areas, as shown here, are called **blind-spot areas.** For this reason, *never* rely completely on your rearview mirrors when turning. Always glance over your shoulders to check these areas before changing lanes.

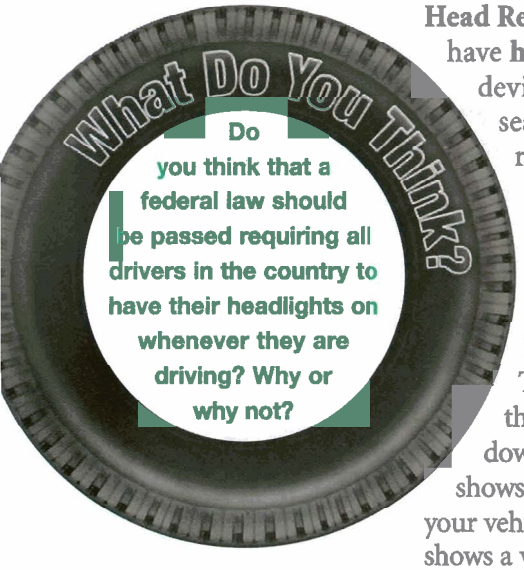
Horn (28) The horn usually is located on the steering wheel. Know how to use the horn on each vehicle you drive.

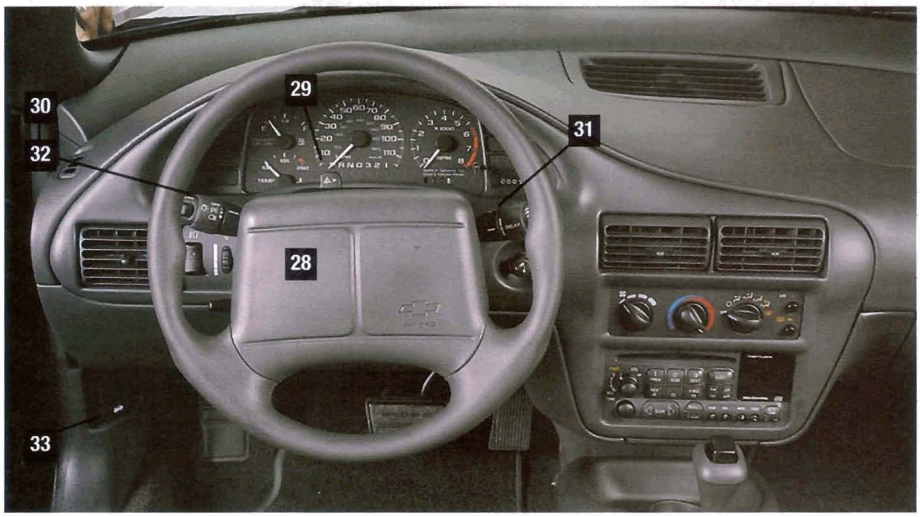
Hazard Flasher Control (29) This switch usually is located on the steering column or on the instrument panel. When the **hazard flasher** is on, both front and rear turn-signal lights flash at the same time. These lights warn others that your vehicle is a hazard or that you are in trouble.

Turn-Signal Lever (30) This lever is located on the left side of the steering column. Move the lever up to signal a right turn and down to signal a left turn. The turn signal stops flashing when the steering wheel is straightened. You might have to cancel a signal manually if the turn is slight. Hold the signal up or down lightly to signal a lane change. When released, it will cancel.

Windshield Wipers and Washers (31) One switch usually operates both the wipers and the washer to clean the outside of the windshield. This control is often mounted on the turn-signal lever. Use a windshield antifreeze solution in winter in the windshield washer container under the hood.

Light Switch (32) The light switch is usually a knob or switch located on the left of the instrument panel or on the turn-signal lever. In some vehicles it may be a separate lever





These are some of the instruments that control safety and comfort.

attached to the steering column. This device controls headlights, taillights, and side-marker lights, as well as the instrument panel, license plate, and dome light. You can change the headlights from low to high beam by using the dimmer switch, usually located on the turn-signal lever.

Hood Release Lever (33) This lever usually is located on the left side under the instrument panel. Pull this lever to release the hood. You will need to operate a second release in the front of the vehicle before the hood will open.

Heater, Air Conditioner, and Defroster Heating and air-conditioning systems warm or cool the inside of the vehicle. The defroster keeps the windshield and windows free of moisture. Some vehicles have a separate switch for a rear-window defroster.

Sun Visor The sun visors are located above the windshield. Pull the visor down or to the side, to help cut glare from bright sun.

Seat Adjustment Lever This lever is usually located at the lower front or left side of the driver's seat. In vehicles with electric seats, the controls are usually on the lower left side of the driver's seat.

Review It

1. What warnings do the temperature gauge, oil pressure gauge, and brake system lights give you?
2. What is the purpose of the ignition and starter switch?
3. Why must you not rely completely on what your rearview mirrors show you?

3.2
Getting Ready to Drive

Objectives
1. List in order the checks you make when preparing to drive.
2. Describe how to enter a vehicle from the street side.
3. Describe the correct positioning of the seat and outside rearview mirrors.

Before you take your place behind the wheel to drive, you should follow certain checks and procedures. People who just get into a vehicle and drive away, with little thought or concern for themselves or others, are demonstrating high-risk driving behaviors.

Inspect your vehicle and the area around it before you get in to drive. An oil stain under the vehicle, for example, indicates there could be a problem.

Be alert for small children playing near your vehicle. Many deaths each year are attributed to driveway back ups. Also look for tools, toys, or any kind of debris that might be near your vehicle. Follow the same steps in the same order each time you get ready to drive to develop safe pre-driving habits.

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.

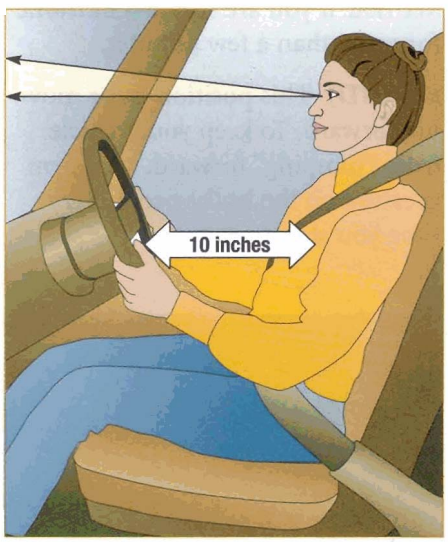
Once you have completed all the outside checks, follow these steps in order to safely enter your vehicle.

Getting Into the Vehicle

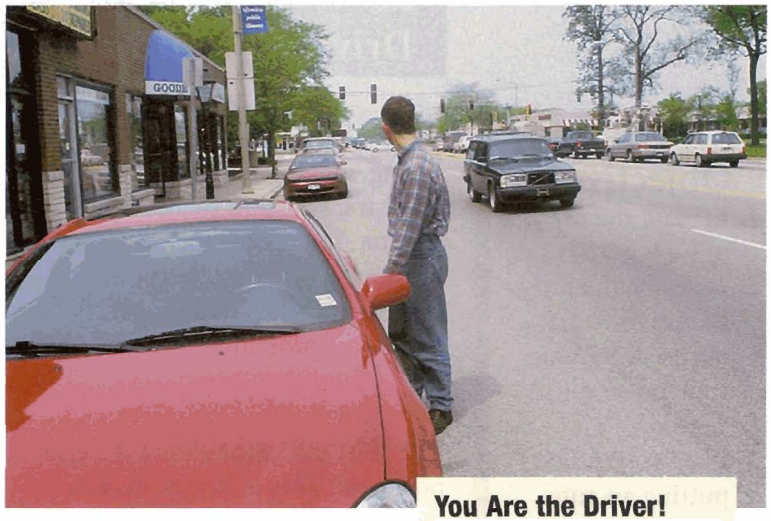
1. If you enter your vehicle from the street side, have your keys in hand ready to unlock the door. If you use a remote-control device, unlock the vehicle before you walk into the street.
2. Walk around the front of the vehicle toward the back. You then can see oncoming traffic and reduce the risk of 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.

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.

Review It

1. What outside checks should you make before entering the vehicle?
2. Why should you walk around the front of the vehicle when entering from the street side?
3. What is the correct way to position the driver's seat and mirrors of your vehicle?

3.3
Driving a Vehicle with Automatic Transmission

Objectives
1. Explain the use of each gear.
2. Describe the procedure for starting an automatic transmission vehicle.
3. List the steps for putting an automatic transmission vehicle in motion.
4. Tell the correct procedure to follow when leaving an automatic transmission vehicle from the street side.

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.

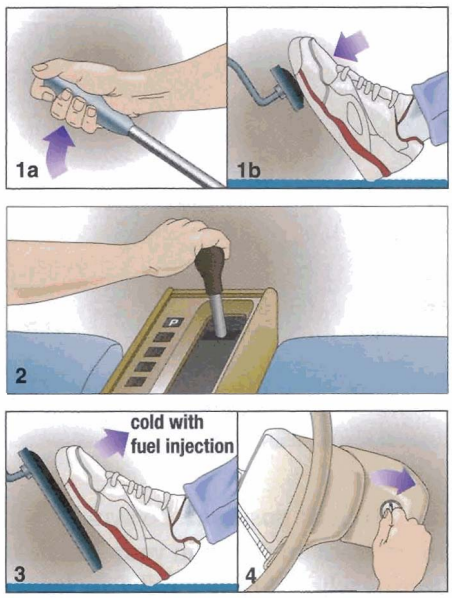
NEUTRAL (N) This position allows the wheels to roll without engine power. If the engine stalls while you are driving, shift to NEUTRAL (not PARK) to restart the engine. Shift to NEUTRAL if you are stopped in traffic for more than a few minutes.

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.



Starting the engine

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.

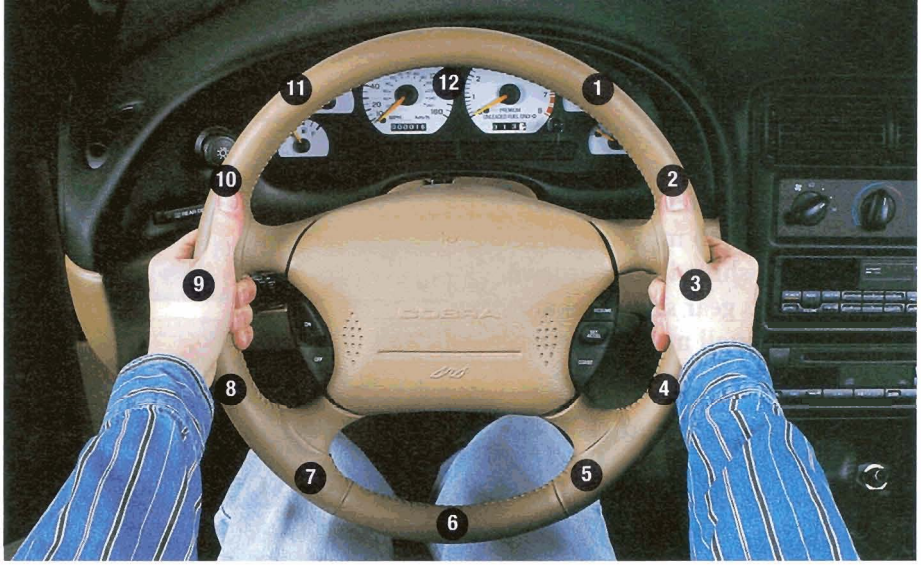
Never try to start the engine when it is already running. Expensive damage to the starter can result. Press lightly on the accelerator so you will know whether or not the engine is running. When in doubt, turn the key to "Off" and repeat the starting procedure.

Hand Positions for Controlled Steering

Steering is not just a matter of pointing the vehicle in the direction you want it to go. Controlled steering involves a comfortable and balanced hand position on the steering wheel.

Using the proper grip on the steering wheel is just as important as using the proper grip in sports like tennis or golf. With your hands in a comfortable position on the rim of the steering wheel, grip the wheel firmly on each side in a balanced position.

Imagine that the steering wheel is the face of a clock. Many drivers place their hands at the 10 o'clock and 2 o'clock, or the 9 o'clock and 3 o'clock positions. Some drivers prefer to place their hands at the 8 o'clock



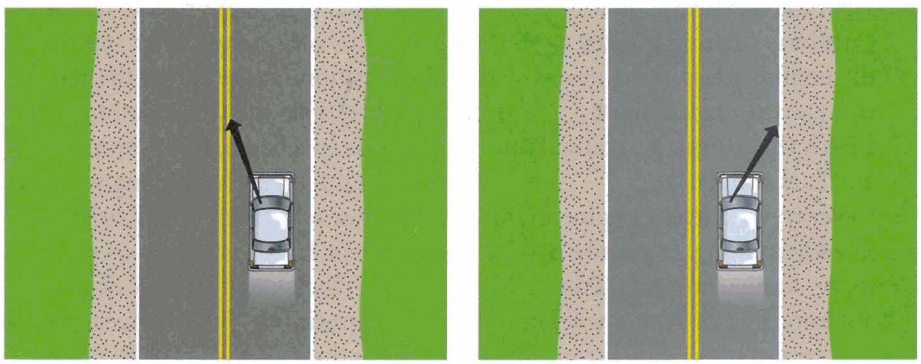
and 4 o'clock positions. To avoid injury from an airbag in your vehicle's steering wheel during a collision, keep your hands between the 9 and 3 o'clock position and the 8 and 4 o'clock position.

Always keep your knuckles outside the rim of the steering wheel. Some safety specialists recommend that the thumbs also be outside the rim of the steering wheel to reduce injury in a collision.

Steering the Vehicle

Once you have selected your comfortable and balanced hand position, you are ready to develop steering-control techniques. Begin your steering practice by picking a **target** far out in the distance. A target is a stationary object that appears in the distance in the center of your path of travel. The target is really the "aiming point" where you want your vehicle to go. Look far ahead to identify clues and hazards that could cause conflicts. In Chapter 4 you will learn different systems of seeing and identifying all the critical areas around your vehicle.

Keeping your vehicle in a straight line requires slight but critical steer-



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

ing corrections. Avoid looking directly in front of your vehicle. Do not use the road lines as guides when you practice steering. Making these mistakes, as the pictures on the bottom of page 50 show, does not allow you to see far in the distance toward the path you want to follow.

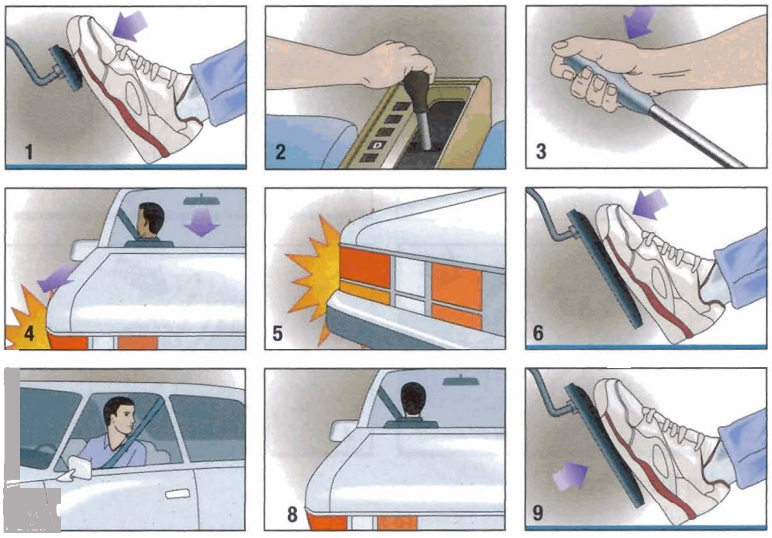
Once you learn how to make steering adjustments, you will make them automatically. You then can concentrate on the total driving task.

Most vehicles are now equipped with air bags. Even with an air bag as an added safety device, it is extremely important that you always wear your safety belt when you travel in a vehicle.

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.

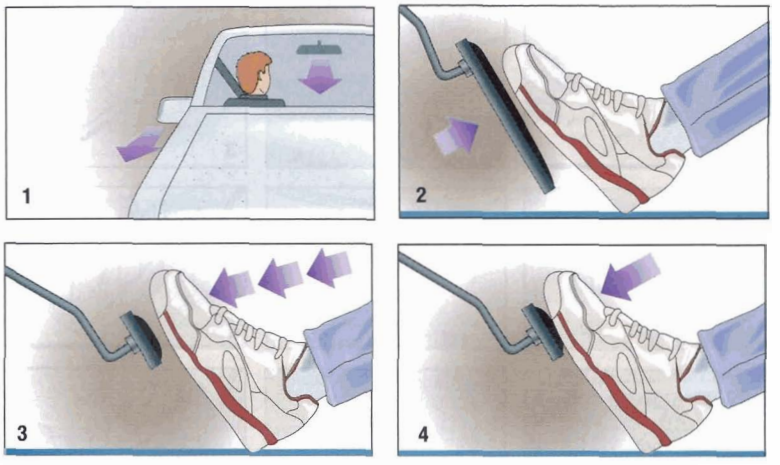


Putting the vehicle in motion

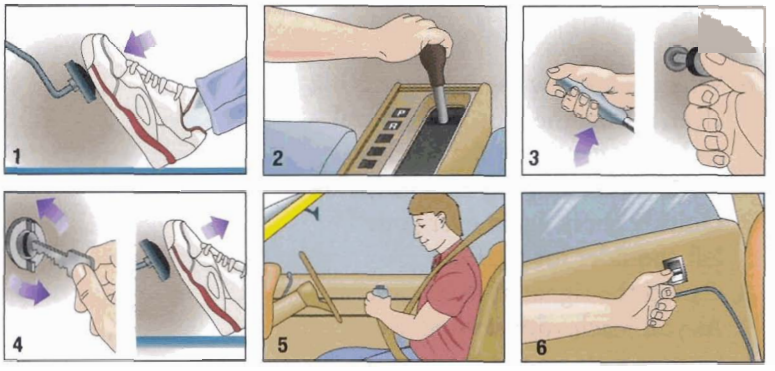
6. When you know the roadway is clear, release the foot-brake pedal and press gently on the accelerator to increase speed smoothly.
7. Quickly check again over your left shoulder for traffic.
8. Cancel the signal, if necessary.
9. As you reach your desired speed, let up a little on the accelerator. Adjust your speed to traffic.

For best control of the brake pedal and accelerator, rest the heel of your foot on the floor. This position lets you pivot the front part of your foot back and forth between the two pedals as you drive.

In a vehicle with automatic transmission, always come to a full stop before shifting to another gear. This keeps your vehicle from moving before you are ready.



Stopping the vehicle



Securing 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

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.

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.

Review It

1. What is the purpose of each gear in an automatic transmission?
2. How do you start an automatic transmission vehicle?
3. How do you put an automatic transmission vehicle in motion?
4. What procedure do you follow when leaving the vehicle?

3.4

Driving a Vehicle with Manual Transmission

Objectives

1. List the procedures for starting a stickshift vehicle.
2. Tell the correct procedure for moving a stickshift vehicle in FIRST gear.
3. Explain the procedure for stopping from higher gears.
4. Define downshifting and explain its purpose.

Learning to drive a vehicle with manual (stickshift) transmission is not difficult, especially if you already know how to drive an automatic transmission vehicle. You must learn how to coordinate using the clutch with the accelerator and gearshift lever. The key to mastering stickshift driving is to engage the clutch smoothly and control the **friction point.** The friction point is where you feel the engine take hold and the vehicle starts to move.

Selector-Lever Positions

Most stickshift vehicles have either a four-speed or a five-speed shift pattern as the pictures below show. REVERSE is usually in the upper-left corner, or in the lower-left or right corner.

FOURTH gear is used for highway driving, and FIFTH gear is used for speeds over 45 or 50 mph. These gears save fuel because they allow the engine to run slower at any speed.

Using Stickshift Gears

NEUTRAL (N) This position is the crossbar of the pattern. Use this gear when standing still or when starting the engine.

FIRST (1) Use FIRST gear to start the vehicle moving to a forward speed of 10 to 15 mph. Use FIRST gear also to pull heavy loads and when driving up or down steep hills.

SECOND (2) Use SECOND gear to accelerate to a speed of 15 to 25 mph. Use SECOND gear also for hills or driving on snow or ice.

THIRD (3) Use THIRD gear to accelerate to speeds of 25 to 40 mph.

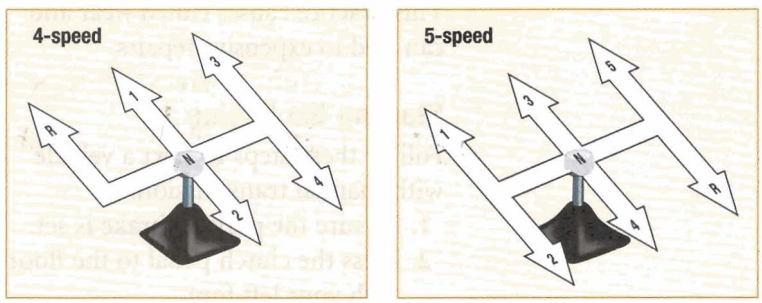
FOURTH (4) In a four-speed transmission, use FOURTH gear for highway driving. Shift to FOURTH gear at speeds above 35 mph.

FIFTH (5) In a five-speed transmission, use FIFTH gear to drive at speeds over 45 or 50 mph.

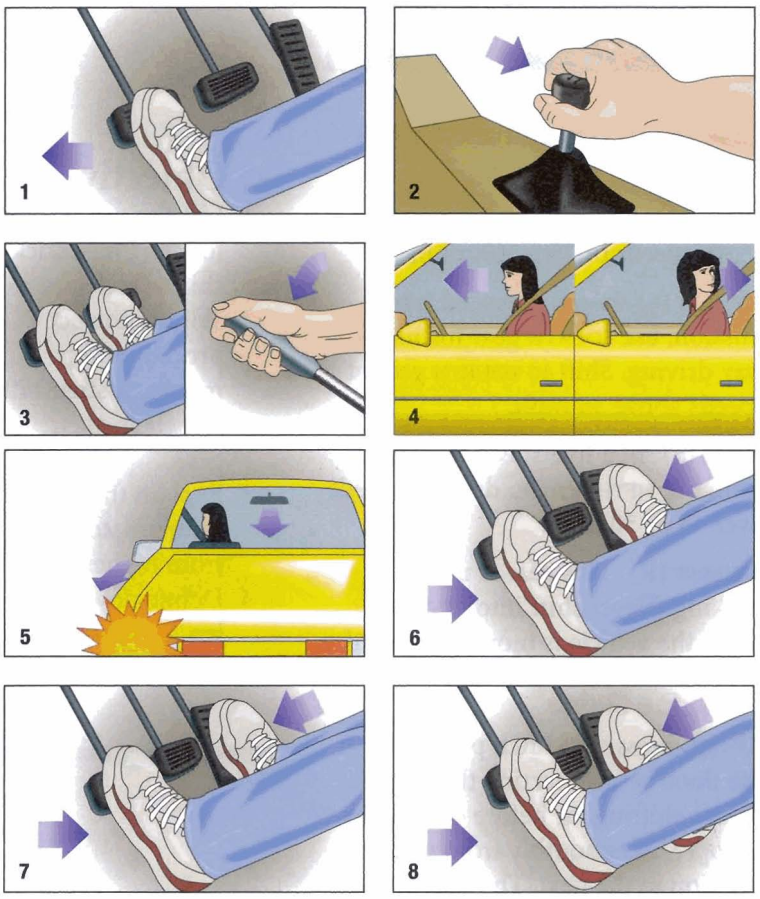
REVERSE (R) This gear is used for backing. Never shift into REVERSE while the vehicle is moving forward.

Using the Clutch

Always press the clutch pedal to the floor before starting the engine, before shifting, or before coming to a stop. Shift smoothly from one gear position to the next. The speeds given here for shifting are only guidelines. Read your owner's manual to know the recommended shifting speeds for your vehicle.



Typical patterns of gear positions for four- and five-speed transmissions. Positions may vary, especially for REVERSE.



Putting the vehicle in motion

Do not develop the habit of **riding the clutch.** That means resting your foot on the clutch pedal while driving. This practice causes clutch wear and can lead to expensive repairs.

Starting the Engine

Follow these steps to start a vehicle with manual transmission:

1. Be sure the parking brake is set.
2. Press the clutch pedal to the floor with your left foot.
3. Put the gear-shift lever in NEUTRAL.
4. Turn on ignition switch and check warning lights.
5. Turn the key forward until the engine starts, then release it.

Putting the Vehicle in Motion

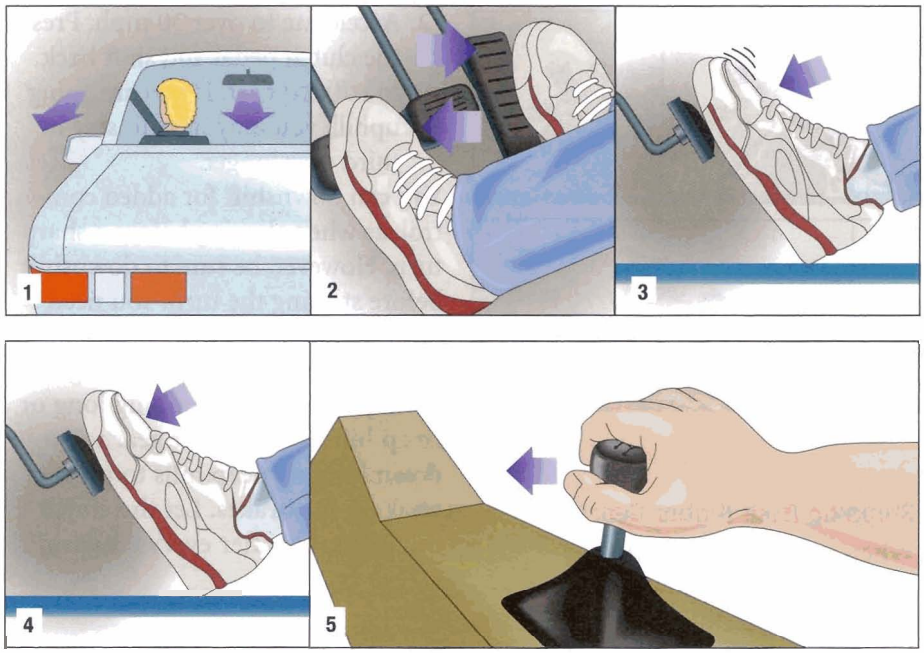
Once the engine is running, follow these steps to put the vehicle in motion. Each numbered step is pictured.

1. Press the clutch pedal to the floor.
2. Move the gear-shift lever to FIRST.
3. Depress the foot brake and release the parking brake.
4. Check traffic ahead and in rear-view mirrors. If you are moving away from the curb, glance over your left shoulder to see if any vehicle is approaching from the rear.
5. Use the turn signal to alert other drivers.
6. If the roadway is clear, accelerate gently and gradually and release the clutch slowly to the friction point. Releasing the clutch suddenly causes the vehicle to jerk forward or stall the engine.
7. Hold the clutch momentarily at the friction point until the vehicle starts to move.
8. Continue gradual acceleration, and let the clutch up all the way.

Shifting from FIRST to SECOND

At about 10 to 15 mph follow these steps to shift from FIRST to SECOND:

1. Press the clutch down and release the accelerator at the same time.
2. Move the gear-shift lever to SECOND. Pause slightly as you go across NEUTRAL into SECOND. This action helps you shift more smoothly.



Stopping from FIRST, SECOND, OR REVERSE

3. Accelerate gently as you slowly release the clutch. Hesitate briefly at the friction point, then release the clutch all the way.

Stopping from FIRST, SECOND, OR REVERSE

The pictures on this page correspond to these steps:

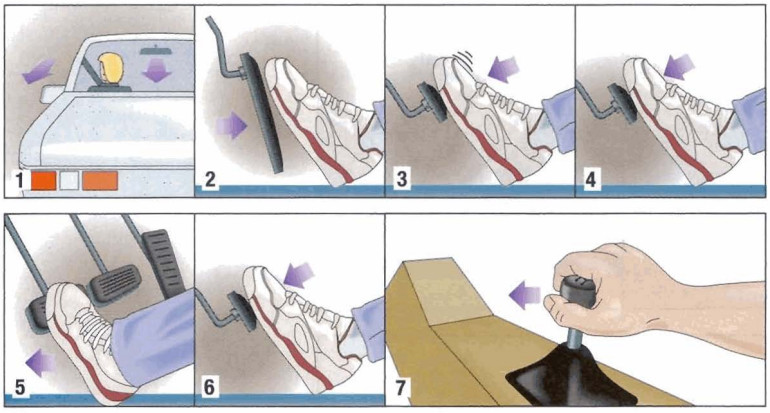
1. Check traffic in mirrors.
2. Press the clutch pedal down while releasing accelerator.
3. Tap the brake pedal lightly to signal for a stop.
4. Press the foot brake gently to a stop.
5. Shift to NEUTRAL when stopped.

Shifting to THIRD, FOURTH, and FIFTH

Once you have accelerated to the higher-speed ranges described for THIRD, FOURTH, and FIFTH gears, follow these step for shifting:

1. Press the clutch down.
2. Release the accelerator.
3. Shift to the desired gear. Do not hurry the shift or you may shift to the wrong gear.
4. Accelerate gradually while releasing the clutch smoothly.

SHIFTING GEARS There is no one correct speed for shifting from one gear to another. Speed for each gear depends on engine power and type of transmission. As you drive different stickshift vehicles, you will develop a feel for proper accelerating and shifting in each one.



Stopping from higher gears

Stopping from Higher Gears

When stopping from THIRD, FOURTH, or FIFTH, slow down before depressing the clutch. The engine helps slow the vehicle. The pictures on this page correspond to these steps:

1. Check the mirrors for traffic.
2. Let up on the accelerator.
3. Tap the brake to signal a stop.
4. Brake to about 15 to 20 mph.
5. Press the clutch pedal down.
6. Brake to a smooth stop.
7. Shift to NEUTRAL when stopped.

Downshifting

The term **downshifting** means shifting from a higher to a lower gear. The engine has greater pulling power in lower gears than in higher ones. If you have slowed below 30 mph in FOURTH gear, or if you are going uphill, you must downshift to THIRD in order to regain speed. Follow these steps to downshift:

1. Press the clutch pedal down and shift to THIRD. Accelerate gradually while releasing the clutch.
2. Accelerate to over 30 mph. Press the clutch pedal and shift back to FOURTH gear. If you are going uphill, you may have to stay in third gear longer.

You can downshift for added control, as when slowing before a sharp turn. However, be sure to downshift before starting the turn. You need both hands ready to steer.

You can also downshift to gain extra power when climbing long or steep hills. Use a lower gear to go down long or steep hills to prevent wear on the brakes. Let the clutch out smoothly after every downshift.

Review It

1. What is the procedure for starting a stickshift vehicle?
2. What are the steps for moving a stickshift vehicle in FIRST gear?
3. What steps should you follow when stopping from higher gears?
4. What is meant by downshifting and for what reasons might you downshift?

Chapter 3 Review

Reviewing Chapter Objectives

1. Instruments, Controls, and Devices

1. What is the name and function of each gauge on the instrument panel? (40–41)
2. What is the purpose of each control used to operate a vehicle? (42–43)
3. How do you use the safety, communication, and comfort devices on a vehicle? (43–45)

2. Getting Ready to Drive

4. What checks should you make when preparing to drive? (46)
5. How should you enter a vehicle from the street side? (46–47)
6. How do you position the seat and outside rearview mirrors of your vehicle? (47)

3. Driving a Vehicle with Automatic Transmission

7. What is the use of each gear in an automatic transmission vehicle? (48–49)
8. What is the procedure for starting an automatic transmission vehicle? (49)
9. What are the steps for putting an automatic transmission vehicle in motion? (51)
10. What is the correct procedure to follow when leaving an automatic transmission vehicle from the street side? (52)

4. Driving a Vehicle with Manual Transmission

11. How do you start a stickshift vehicle? (53–54)
12. What is the correct procedure for moving a stickshift vehicle in FIRST gear? (54)
13. What is the procedure for stopping a stickshift vehicle from higher gears? (56)
14. What does "downshifting" mean? (56)

Projects

Individuals

Demonstrate Make a poster that illustrates the instrument panel on your family vehicle. Present the illustration to the class, describing the location, function, and operation of each device on the panel.

Investigate Research the antilock braking system (ABS). Who invented this system? How does the system work? When was it first available? What were the first vehicle models to feature the system? Investigate the differences between antilock brakes and brakes that are not antilock. Write a report on your findings.

Groups

Use Technology Each group member should observe the driver of a stickshift vehicle. Record the speed at which the driver shifts out of each gear. Make a group spreadsheet of your findings.

Demonstrate Make a video demonstrating the outside checks you should make before getting into and driving a vehicle. Group members should take turns demonstrating the steps. Present the video to your class.

Chapter 3
Review

Chapter Test

Check Your Knowledge

Multiple Choice Copy the number of each sentence below on a sheet of paper. Choose the letter that best completes the statement or answers the question.

1. Which of the following is *not* found on a vehicle's instrument panel?
   (a) speedometer (c) tachometer
   (b) horn (d) fuel gauge
2. When entering a vehicle from the street side, you should
   (a) be ready to unlock the door.
   (b) walk around the front of the vehicle toward the back.
   (c) get in quickly, then close and lock the door.
   (d) all of the above
3. When starting an automatic transmission vehicle, the selector lever should be in
   (a) LOW-L1 or L2, or 1 or 2 (c) PARK-P or NEUTRAL-N
   (b) DRIVE-D (d) REVERSE-R
4. The friction point is the point
   (a) where the vehicle starts to move.
   (b) where you feel the engine turn off.
   (c) when you suddenly release the clutch.
   (d) none of the above

Completion Copy the number of each sentence below. After each number, write the word or words that complete the sentence correctly.

5. The _____ pedal in a stickshift vehicle enables a driver to shift gears.
6. A vehicle's rearview mirrors cannot show _____ areas.
7. The alternator warning light warns that the _____ is being drained.

Review Vocabulary

Copy the number of each definition in List A. Match the definition in List A with the term it defines in List B.

List A

8. compartment mounted between the front seats in a vehicle
9. device on the instrument panel indicating the total number of miles the vehicle has been driven
10. stationary object appearing in the distance in the center of your intended path of travel
11. shifting from a higher to a lower gear
12. device that shows the different driving gears and the one being used
13. padded devices on the backs of front seats that help reduce whiplash injuries in a collision

List B

a. downshifting
b. odometer
c. head restraints
d. console
e. shift indicator
f. target

Think Critically

Write a paragraph to answer each question.

1. Explain the term downshifting, and give two reasons for using this action.
2. List and explain the procedure you should follow for securing your vehicle once you have stopped.

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.